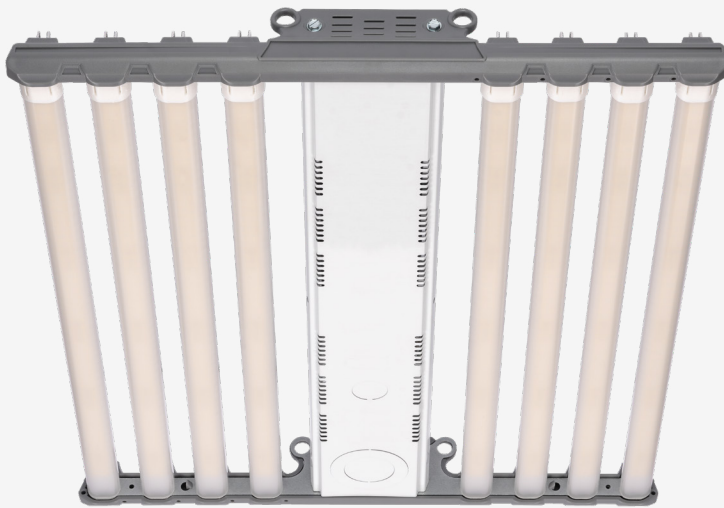


SPEC SHEET

Commercial High Bay (CH2)

LED HIGH BAY



Linmore LED
ULTRALINK
CONTROLS REIMAGINED



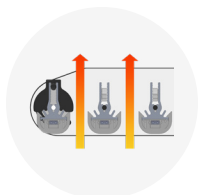
KEY FEATURES

- 6,000 to 37,000 lumens
- Up to 173 LPW
- New compact design
- Up to 55°C ambient³
- Guaranteed light levels for 10 years
- Dimmable 0-10V (standard)
- 6KV surge protection (10KV & 20KV optional)



Guaranteed Performance

Performance of the light fixture is guaranteed for 10 years, including lumen output (L70), color temperature, and LED driver.



Superior Thermal Design

Vertical extruded aluminum heat sinks with ample separation for maximum heat dissipation and airflow through the fixture.



Controls and IoT Ready

Optional integrated controls systems available including basic on/off, dimming and Bluetooth® advanced wireless controls.

TECHNICAL SPECS

Nominal Lumens	Frame Size ⁵	5000K - CRI80 - Clear Lens			5000K - CRI80 - Frosted Lens			5000K - CRI80 - Narrow Lens		
		Lumens ^{1,2}	Watts	Efficacy	Lumens ^{1,2}	Watts	Efficacy	Lumens ^{1,2}	Watts	Efficacy
6K	2MS	5,676	35	164	5,509	35	159	5,500	35	160
9K	2MS	8,672	55	158	8,418	55	153	8,480	55	154
13K	4MS	12,898	78	165	12,520	78	160	12,613	78	161
15K	4MS	15,612	96	163	15,155	96	158	15,266	96	159
17K	4MS	17,421	106	164	16,911	106	159	17,036	106	160
20K	4MS	20,117	125	162	19,586	124	157	19,730	125	158
25K	6MS	25,313	150	168	24,571	150	163	24,752	150	165
28K	6MS	28,256	170	166	27,428	170	161	27,630	170	163
31K	8MS	30,784	178	173	29,822	178	168	30,102	178	169
33K	8MS	33,406	196	171	32,427	196	166	32,666	196	167
37K	8MS	37,147	223	167	36,058	223	162	36,325	223	163

Typical lumen output (±10%) at 277V (LV) under 25°C ambient temperature.

Lumen Multipliers

Allows to calculate the actual lumen output for your application. Apply each multiplier to the lumens of the shaded table.

LUMENS VS AMBIENT TEMP ³			COLOR TEMP ²		COLOR RENDERING		LIGHT DISTRIBUTION	
C°	F°	Multiplier	CCT	Multiplier	CRI	Multiplier	Lens	Multiplier
25	77	1.000	5000	1.000	80	1.000	CL	1.000
35	95	0.995	4000	0.990	90	0.860	FR	0.970
45	113	0.995	3500	0.990			AL	0.970
55	131	0.990					NW	0.980

Example: How to calculate the actual lumen output of the model 33K at these conditions: 45°C ambient temp, 4000K, CRI80, Frosted Lens.

- 1) Find the lumens from the shaded column.
2) Apply all the corresponding multipliers.

33,406

x

0.995

x

0.990

x

1.000

x

0.970

=

31,919

Nominal lumensTemp.CCTCRILensActual lumens

LUMEN MAINTENANCE

All fixtures come with our Standard Warranty, covering **L70 light levels for 10 years**. That's 87,600 hours of guaranteed life based on a 24/7 operation.



Ambient Temp.		Lumen Maintenance in Hours ¹			Lumen Maintenance Factor ¹			Reported Life (6X) ¹	
C°	F°	L90	L80	L70	50Khrs	75Khrs	100Khrs	Tested Time	Extrapolated
25	77	51K	111K	180K	0.90	0.86	0.82	13,000 hrs	> 78,000 hrs
30	86	51K	111K	180K	0.90	0.86	0.82	LEDs tested for 13,000 hrs based on LM-80. Extrapolating as per TM-21: 13,000 hrs x 6 = 78,000 hrs of reported life.	
35	95	47K	107K	174K	0.90	0.85	0.82		
40	104	45K	102K	167K	0.89	0.85	0.81		
45	113	44K	99K	161K	0.89	0.84	0.80		

All values calculated in accordance to IESNA standards, per TM-21.

ORDERING

SERIES MODEL - COMPLIANCE - LUMENS - SIZE	COLOR TEMP	CRI	LENS	VOLTAGE	MOUNTING
CH20S-A1-06K-2MS CH20S-A1-09K-2MS CH20S-A1-13K-4MS CH20S-A1-15K-4MS CH20S-A1-17K-4MS CH20S-A1-20K-4MS ³ CH20S-A1-25K-6MS CH20S-A1-28K-6MS CH20S-A1-31K-8MS CH20S-A1-33K-8MS CH20S-A1-37K-8MS ^{4,18}	50 5000K 40 4000K 35¹⁰ 3500K Other CCT available upon request	80 80+ CRI (standard) 90^{6,22,23} 90+ CRI	CL Clear lens FR Frosted lens AL Aisle lens NW Narrow lens	LV 120-277V HV¹⁶ 347-480V	CRM⁶ Cable-ready (standard) for suspension mounting or 3/4" stem mount MBR^{3,6} Factory installed mounting box and bracket for surface mount applications - adds 1 1/2" to fixture height STEM⁶ Factory installed mounting box and bracket for stem mount applications - adds 1 1/2" to fixture height HOOK⁶ Field installed mounting kit, includes hook and one leveling Y-cable Plate⁶ and Hanger⁶ mount also available, sold and packaged separately, see Accessories, order as CRM. Other mounting options available, contact factory.

BLUETOOTH® CONTROLS ^{6,14,16,17}		CORDS & PLUGS ^{6,9}		OPTIONS ⁶	DIMMING
ULTRALINK ^{10,20}		6' 18AWG cord with the following		10' 18AWG cord with the following	10V 0–10V
ULTRA Linmore UltraLink Bluetooth mesh Controls installed		CW Cord, 15A, 3-wire, no plug		10CW Cord, 15A, 3-wire, no plug	
ULTRAHGA Linmore UltraLink Bluetooth mesh Controls installed with High-Gain antenna		DW Dimming cord, 15A, 5-wire, no plug		15' 18AWG CORD WITH THE FOLLOWING	
ULTRAPIR20 Linmore UltraLink Bluetooth PIR sensor installed, 20' lens		C515 Cord, 15A, straight plug 120V (5–15P)		15CW Cord, 15A, 3-wire, no plug	
ULTRAPIR40 Linmore UltraLink Bluetooth PIR sensor installed, 40' lens		CL515 Cord, 15A, locking plug 120V (L5–15P)		15DW Dimming cord, 15A, 5-wire, no plug	
Contact factory. UltraLink requires commissioning in the field via iOS app.					
FIXTURE CONTROLS ^{5,16, 21}					
IR-TEC ¹⁹					
ON / OFF		DIMMING			
TOCCWD (LV) ⁴ OCC sensor, w/photocell, wide distribution, LV only, up to 27' mounting height		TOCCDIMWD (LV/HV) ^{7,18} OCC sensor, dimmable w/ photocell, wide distribution, all LV, some HV see footnote 18, up to 27' mounting height			
TOCCNW (LV) ⁴ OCC sensor, w/photocell, narrow distribution, LV only, up to 49' mounting height		TOCCDIMNW (LV/HV) ^{7,18} OCC sensor, dimmable w/ photocell, narrow distribution, all LV, some HV see footnote 18, up to 49' mounting height			
TOCCAL (LV) ⁴ OCC sensor, w/photocell, aisle distribution, LV only, up to 40' mounting height		TOCCDIMAL (LV/HV) ^{7,18} OCC sensor, dimmable w/ photocell, aisle distribution, all LV, some HV see footnote 18, up to 40' mounting height			
WATTSTOPPER					
ON / OFF		DIMMING			
OCC8 (HV ONLY) OCC sensor, on/off, w/ photocell, 8' mounting height		OCCDIM8 (LV/HV) ⁷ OCC sensor, dimmable, w/ photocell, 8' mounting height, programmable via remote		OCCDIM30BLE (LV/HV) OCC sensor, dimmable, w/photocell, up to 30' mounting height, Bluetooth® programmable via app	
OCC30 (HV ONLY) OCC sensor, on/off, w/ photocell, up to 30' mounting height		OCCDIM8BLE (LV/HV) OCC sensor, dimmable, w/ photocell, 8' mounting height, Bluetooth® programmable via app.		OCCDIM40 (LV/HV) ⁷ OCC sensor, dimmable, w/ photocell, 40' mounting height, programmable via remote	
OCC40 (HV ONLY) OCC sensor, on/off, w/ photocell, up to 40' mounting height		OCCDIM30 (LV/HV) ⁷ OCC sensor, dimmable, w/ photocell, 30' mounting height, programmable via remote		OCCDIM40BLE (LV/HV) OCC sensor, dimmable, w/photocell, up to 40' mounting height, Bluetooth® programmable via app	
				Other cord options available, contact factory	

EMBS ^{3,6,10,12} Emergency battery back-up, LV only. Adds 1.25" to fixture height	EMB2 ^{3,10,12} High lumen emergency battery back-up, LV Only. Adds 1.25" to fixture height	SRGOFF ^{10,13,17} Fixture installed 20kA surge suppression device, fails to OFF	SRG ^{16,17} Fixture installed 10kA surge protector fails to ON	QDC Driver Quick Disconnect	BOX Individual box packaging available	CTRLR ^{4,10,11} Control Ready 5-wire harness (factory installed)	WG ¹⁰ Fixture Wire Guard	CTOPEND Cord mounted on top edge of wireway
---	--	---	--	--------------------------------	---	--	--	--

ORDERING EXAMPLES

Standard: CH20S-A1-17K-4MS-50-80-FR-LV-CRM-10V
With Options: CH20S-A1-17K-4MS-50-80-FR-LV-CRM-**ULTRA-CW-EMB**-10V
DLC: CH20S-A1-17K-4MS-40-80-FR-[LV, HV]-[ALL MOUNTING OPTIONS]-[ALL OCCUPANCY SENSORS]-[ALL CORDS]-[ALL OPTIONS]-10V

ACCESSORIES

Must be ordered separately. Packaged separately.

FIXTURE ACCESSORIES ⁶		
Part Number	Type	Description
SAFETYCABLE	Safety Kit	Kit includes (1) 10 ft. aircraft cable with single snap hook, L-bracket, screw and nut. For use with HOOK, MBR, PLATE MOUNT or stem mounting options.
CABLEKIT	Cable Kit	Kit includes (2) 10 ft. aircraft "Y" cables and (2) snap hooks.
HANGER	Hanger Mounting Option	Kit includes (2) wire V hangers. Order fixture with CRM mounting option.
PLATE	Plate Mounting Option	Kit includes (1) hanging plate with mounting hole for 3/4" conduit and (4) 5 ft. aircraft cables and snap hooks. Order fixture with CRM option.
SWG	Occupancy Sensor Wire Guard	Wire guard for occupancy sensors, field install. Shipped in separate box.
	Power Supply Replacement	Power supply replacement available upon request. Contact factory for details.

LIGHTING CONTROLS ^{6,10,18}		
Part Number	Type	Description
ULTRAGATEWAY	UltraLink Bluetooth® Gateway	Optional wireless gateway for use with UltraLink. Needed for energy monitoring, scheduling, astronomical clock and heat mapping.
ULTRASR	UltraLink Bluetooth® Switch	Bluetooth Wireless, self-powered Dimming Wall Switch, Single Rocker, On/Off/Dim, for use with UltraLink.
ULTRADR	UltraLink Bluetooth® Switch	Bluetooth Wireless, self-powered Dimming Wall Switch, Double Rocker, On/Off/Dim/Scenes, for use with UltraLink.
ULTRAACT	UltraLink Bluetooth® Service	UltraLink Factory Activation, Zone Identification on Packaging. For use with all Bluetooth Ready Fixtures / Systems.
ULTRADESIGN	UltraLink Bluetooth® Service	UltraLink System Design Services.
ULTRADASH	UltraLink Bluetooth® Service	Dashboards for Energy, Occupancy Heat Mapping, and Energy Heat Mapping. Gateway (ULTRAGATEWAY) required, Sold Separately.
ULTRATIME	UltraLink Bluetooth® Accessory	Battery Backup Bluetooth Node, includes outdoor rated enclosure and long range antenna. For use to keep time during a power outage and for in node scheduling.
TOCCDIMPROG ^{7,15}	IR-TEC Wireless Programmer for Dimmable Occupancy Sensors	Handheld wireless programmer for setup TOCCDIMXX dimmable occupancy sensors. Required with TOCCDIM20 and TOCCDIM40 selection.
OCCDIMPROG	Wattstopper Wireless Programmer for Dimmable Occupancy Sensor(s)	Handheld wireless programmer for setup OCCDIMXX dimmable occupancy sensors. Required with OCCDIM8, OCCDIM20 and OCCDIM40 selection.

FEATURES & SPECIFICATIONS

CONSTRUCTION

- **Extruded Aluminum Heat Sinks:** provide optimal thermal management by decreasing LED junction temperature, ensuring longer life and higher efficacy. LED boards attached to the heat sink using a high quality thermally conductive adhesive rather than screws or rivets. This ensures good contact between PCB and heat sinks for excellent thermal conductivity.
- **LED Boards:** FR4 PCB is used to limit stress on solder joints by matching coefficient of thermal expansion between the LED and the PCB more closely.
- **Power Supply Access:** Wireway cover allows easy access and quick wiring. Hole accepting 3/4" stem (not centered) and also 1/2" KO near top end of wire way. If center stem mount is required, select STEM in mounting options.
- **Wire Guards:** Optional factory-installed wire guards for the fixture.

ELECTRICAL

- **Power Input:** 120-277V or 347-480 (50/60Hz), typical, depending on model.
- **Power Factor:** Greater than 0.9 (0.96–0.99 typical).
- **Total Harmonic Distortion:** Less than 20%, 10% typical.
- **Surge Protection:** Standard is 6kV for drivers. Additional surge protection is available. All HV orders will have 10kV SRG automatically added (contact sales for questions).
- **Emergency Battery Backup (EMB and EMB2):** EMB produces ~2700 lumens for a minimum of 90 minutes. EMB2 produces ~4300 lumens for a minimum of 90 minutes. EMB has 15 watts output, EMB2 has 25 watts output. Factory installation only, not able to be field installed. Available in LV.^{3,6,10,12}

OPERATION

- **Environment:** Dry/Damp, for interior applications (IP4X). Dust-resistant LED modules.
- **Ambient Range Operation:** -40°C up to 45°C (-40°F up to 113°F).³ CH20S-A1-20K-4MS operating ambient range 40°C up to 55°C, (-40°F up to 131°F).

OPTICS

- **CCT:** 3500K, 4000K and 5000K standard, other CCT available (extended lead time).²
- **CRI:** 80+ standard, 85 typical.
- **Lenses:** UV stable polycarbonate⁸ Clear, Aisle and Narrow or acrylic (PMMA) Frosted available.²
- **Field-replaceable lenses:** Clear, Frosted, Aisle, and Narrow.



MOUNTING

- **Mounting:** Fixture is cable ready (CRM). Other options are STEM (comes with a 3/4" opening in the center of the STEM box), HOOK and surface mount (with optional MBR). MBR reduces ambient range by 5°C when mounted flush to junction box.

CONTROLS

- **Dimming²⁰:** 0-10V standard. Dimming range 100% to 10%.
- **UltraLink Bluetooth® Controls:** Advanced wireless controls available. Requires commissioning in the field, contact factory.
- **Occupancy and Dimming Occupancy Sensors:** Optional - factory installed photocell sensors. IR-TEC and Wattstopper available, other options available upon request. Wattstopper Bluetooth sensors programmed via Bluetooth app.

WARRANTY

- **10 Year Performance Warranty:** Performance of the light fixture is guaranteed for 10 years, including lumen maintenance (L70), color temperature, and LED driver. "Defective" is considered if ten percent (10%) or more of the LEDs, per product, are non-operating LEDs, total lumen depreciation exceeds 30% (L70), or color temperature has shifted more than 500° Kelvin within the warranty period. See terms and conditions at <https://linmoreled.com/warranty>

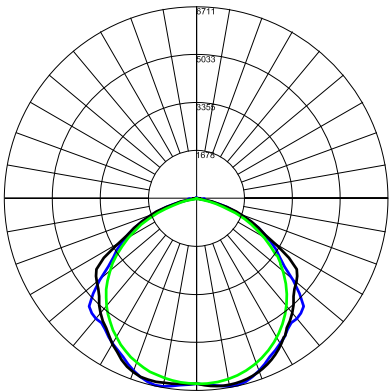
LISTINGS & CERTIFICATIONS

- Conforms to ETL listed (UL 1598:2018 Ed.4).
- RoHS compliant.
- DesignLights™ Consortium
- EMI: Title 47 CFR 15 Class A and ICES-005.
- CSA C22.2#250.0:2018 Ed.4.



CLEAR

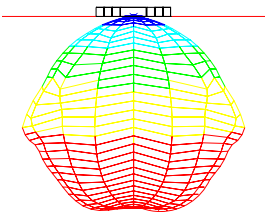
Polar Graph



Zonal Lumen Summary

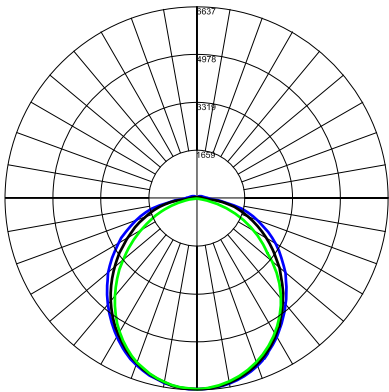
CH20S-A1-20K4MS-40-80-CL			
Zone	Lumens	% Lamp	% Fixt.
0-30	5,302.46	26.40	26.40
0-40	8,800.28	43.70	43.70
0-60	16,000.25	79.50	79.50
0-90	19,840.73	98.60	98.60
0-180	20,116.98	100.00	100.00
Total luminaire efficiency = 100.00%			

Light Intensity



FROSTED

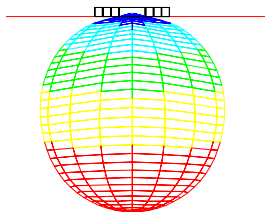
Polar Graph



Zonal Lumen Summary

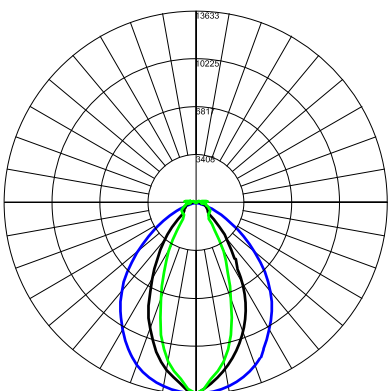
CH20S-A1-20K4MS-40-80-FR			
Zone	Lumens	% Lamp	% Fixt.
0-30	5,096.06	26.10	26.10
0-40	8,278.58	42.40	42.40
0-60	14,438.44	74.00	74.00
0-90	18,910.90	96.90	96.90
0-180	19,514.43	100.00	100.00
Total luminaire efficiency = 100.00%			

Light Intensity



NARROW

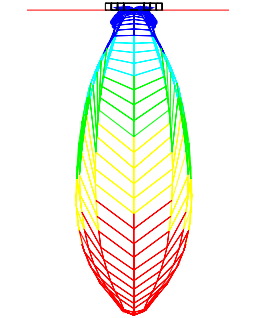
Polar Graph



Zonal Lumen Summary

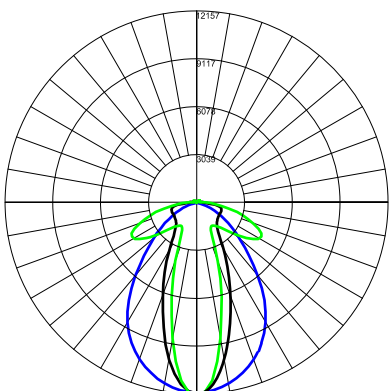
CH20S-A1-20K4MS-40-80-NW			
Zone	Lumens	% Lamp	% Fixt.
0-30	8,090.40	41.00	41.00
0-40	11,474.24	58.20	58.20
0-60	15,997.12	81.10	81.10
0-90	18,668.61	94.70	94.70
0-180	19,714.75	100.00	100.00
Total luminaire efficiency = 100.00%			

Light Intensity



AISLE

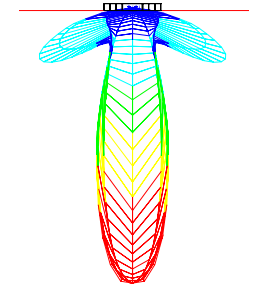
Polar Graph



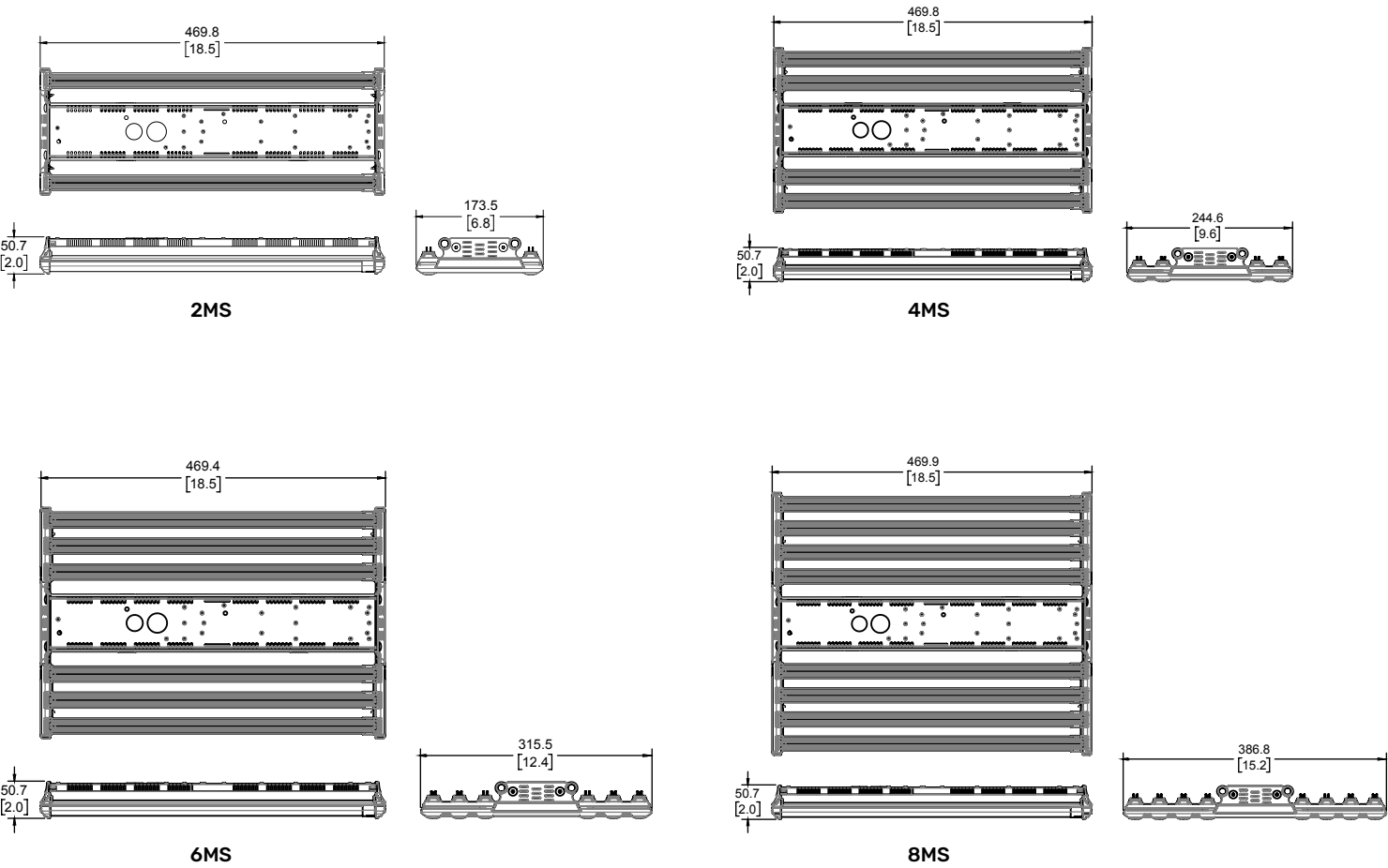
Zonal Lumen Summary

CH20S-A1-20K4MS-40-80-AL			
Zone	Lumens	% Lamp	% Fixt.
0-30	5,947.13	30.50	30.50
0-40	8,274.55	42.40	42.40
0-60	12,889.66	66.10	66.10
0-90	18,344.27	94.00	94.00
0-180	19,513.06	100.00	100.00
Total luminaire efficiency = 100.00%			

Light Intensity



DIMENSIONS & DRAWINGS



DIMENSIONS¹²

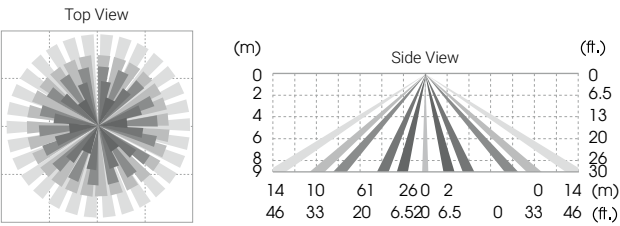
Size	Length (in)	Width (in)	Height (in)	Weight (lb)
2MS	18.5	6.8	2.0	~4
4MS	18.5	9.6	2.0	~5.5
6MS	18.5	12.4	2.0	~7.5
8MS	18.5	15.2	2.0	~9

MBR, STEM and EMB mounting options adds 1 1/2" to fixture height. Weights are approximate and vary by model, if weight is a concern, please contact factory.

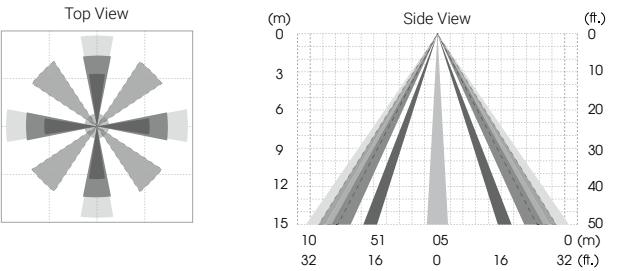
OCCUPANCY SENSORS

IR-TEC

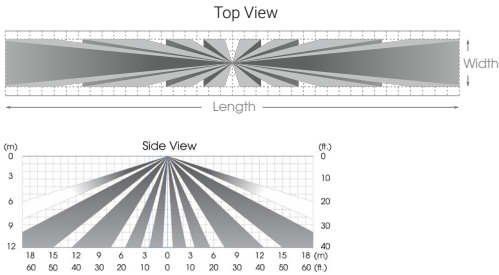
TOCCWD / TOCCDIMWD



TOCCNW / TOCCDIMNW

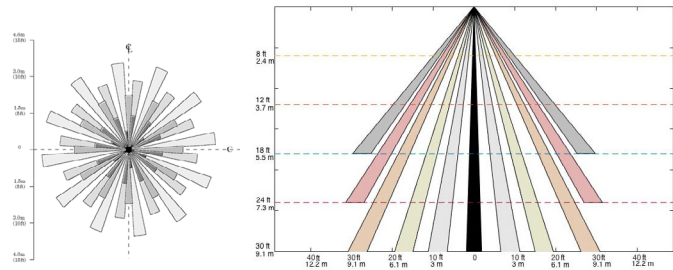


TOCCAL / TOCCDIMAL

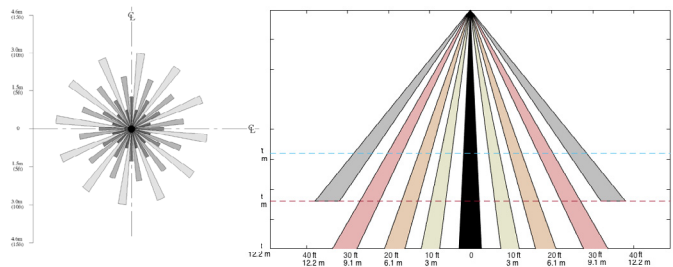


ULTRALINK

ULTRAPIR20

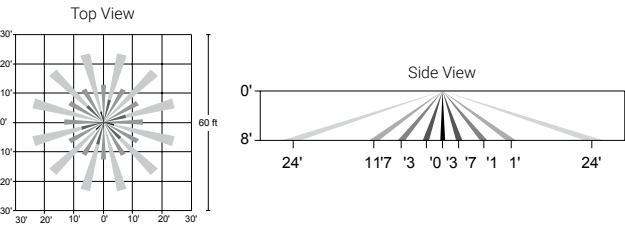


ULTRAPIR40

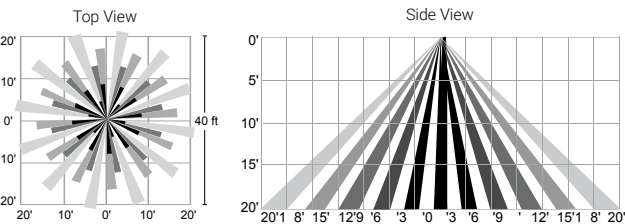


WATTSTOPPER

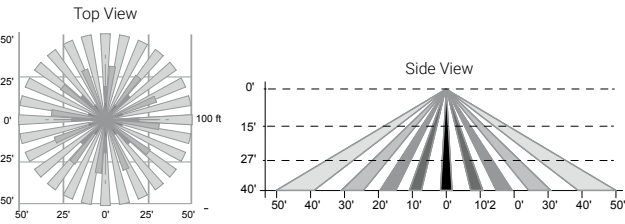
OCC8 / OCCDIM8



OCC30 / OCCDIM30



OCC40 / OCCDIM40



FOOTNOTES

1. LM-79, LM 80 tests and reports are performed in accordance to IESNA standards, per TM-21. Lumen maintenance in hours (L70 via TM-21) based on 24/7 operation.
2. Typical ($\pm 10\%$) at 277V (LV), 25°C (77°F), 5000K, Clear Lens, CRI 80+. Lumen Multipliers: 5000K = 1.00; 4000K = 0.99; 3500K = 0.99; Frosted Lens = 0.97; Aisle Lens = 0.97; Narrow Lens = 0.98; 80+ CRI = 1.00; 90+ CRI = 0.86.
3. MBR, max. temp 5°C less, typical. EMB fixtures 32°F to 113°F (0°C to 45°C). EMB or EMB2, when mounted to the ceiling, EMB max. ambient 35°C. EMB factory installation only, not able to be field installed. Temperatures below -20°C have limited switch cycles, consult factory. CH20S-A1-20K-4MS operating ambient range -40°C up to 55°C, (-40°F up to 131°F). All other CH20S are rated for -40°C up to 45°C, (-40°F up to 113°F).
4. 122-277V Only.
5. Optional CABLEKIT ordered separately. See ACCESSORIES.
6. Optional add-on. See price list for pricing.
7. Wireless programmer required for final field setup. See ACCESSORIES.
8. Clear, Narrow and Aisle Lens only.
9. All cords are 18/3 AWG and 600V. DW and 15DW are 18/5 and 600V.
10. Consult factory for orders requiring 3500K CCT, EMB, EMB2, UltraLink, CTRLR, SRGOFF, WINSTA, WG, CACS and CACSMC. They may have extended lead times.
11. CTRLR includes 5 wires, capped off inside of fixture for use with customer supplied field installed controls.
12. Dimensions listed are for the fixture only. See dimensional drawings for measurements with mounting hardware. Weights are approximate and vary by model, if weight is a concern, please contact factory. Weight changes when battery backup is added.
13. 20kA surge suppression device in which, when triggered, the fixture will fail in the "Off" mode (fixture will not illuminate).
14. Optional commissioning available. Priced separately. Contact factory.
15. SRG (10kA protection) is a standard option for all LV fixtures and it is included on all HV fixtures.
16. Linmore LED recommends all controls and sensors should have optional SRG or SRGOFF added. They are not protected by the internal surge suppression provided by the driver.
17. UltraLink controls require commissioning in the field via iOS app, contact factory. UltraLink not available on CH20S-A1-33K-8MS and CH20S-A1-37K-8MS. UltraLink available in LV (120-277V) ONLY for CH20S-A1-06K-2MS and CH20S-A1-09K-2MS.
18. TOCCDIMxx available in HV (347-480V) on the following fixtures: CH20S-13K-4MS, CH20S-15K-4MS, CH20S-17K-4MS, CH20S-20K-4MS, CH20S-25K-6MS, CH20S-28K-6MS, CH20S-31K-8MS.
19. Not for use in dusty environments.
20. When using UltraLink, drivers are 0-10V dimming, DIM to OFF via the Aux output. Without controls, the fixture is 0-10V dimming only.
21. Sensor settings from factory:
OCCxx - If no movement for 15 mins, OFF (WS Factory Settings).
TOCCxx - If no movement for 10 mins, OFF (IR-Tec Factory Settings).
OCCDIMxx(BLE) - If no movement for 5 mins, dim to 10%, if no movement for 60 mins, OFF (WS Factory Settings).
All OCCDIMxxBLE uses the SENSOR CONFIGURATION APP from Wattstopper. Available as a download on the App Store or Play Store.
All OCCDIMxx uses the OCCDIMPROG (FSR-100) remote for configuration. See Accessories.
TOCCDIMxx - If no movement for 10 mins, dim to 30%. If no movement for 10 mins, OFF. TOCCDIMPROG (SRP-280) requires remote for configuration. See Accessories. (IR-Tec Factory Settings).
22. Not DLC certified.
23. Extended lead time may apply.

Linmore LED Labs, Inc.

2360 S Orange Ave, Fresno, CA 93725

559 485 6010 | info@linmoreled.com | linmoreled.com



All specifications are subject to change without notice. Please visit linmoreled.com for latest information. All values are typical or design values and series averages. Actual performance may differ as a result of end-user environments and applications. Consult Linmore LED with specific inquiries. Copyright © 2023, Linmore LED Labs, Inc. All rights reserved. No part of this document may be reproduced in any form without the prior written permission of Linmore LED.

Updated: 2023.03.09