LEO 360 Solar

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Specification Sheet | LE201/202

Clean lines and the understated design of LEO for 360 Solar fit a variety of use cases and architectural styles. Its 19” diameter housing strikes an aesthetic balance for varying pole heights and spacing. Single luminaire, and back to back arrangements support a range of requirements, including pathways, greenway connectors, roadways and parking lots. 360 Solar fulfils the promise of solar for public space lighting applications in both pedestrian and vehicle-oriented spaces.

LEO for 360 Solar is International DarkSky Approved

Housing & Materials

Cast Aluminum construction. Factory sealed and replaceable light engine cartridge with UV stable, impact modified clear acrylic lens. All hardware is magni-coated for optimum corrosion and ‘anti-seize’ protection. Assembly is IP66 rated.

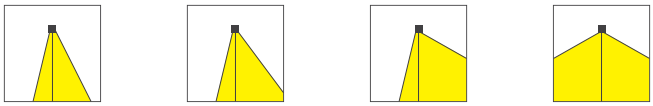
360 Solar - System Components

System consists of: Solar modules (1-3 units), pre-wired with MPPT controllers and required connectors. Each Solar module is home-run connected to the control unit housed within the pole. Control unit (IP67 rated enclosure) contains solar control electronics, LED driver and Lithium-NMC battery. System ships with all required cables and connectors-overmolded and labeled for use. Each 360 Solar control unit is programmed with voltage and drive current parameters pre-configured at the factory to match its designated luminaire and performance specification.

Light Engine

High output light engine features efficacy up to up to 188lm/W and 10,300lm delivered through a selection of roadway distribution types. High power LEDs on RoHS compliant circuit board with secondary optics. All cofigurations are available in 2700K, 3000K, and 4000K, >80CRI across all available color temperatures. Other CCT’s available on request.
Luminiares meet TM21 L70: >60,000hrs. L90: 59,000hrs (at maximum operating current).

Distributions



TII TIII TIV TV

Warranty

Luminaires are warranted for six years.
360 Solar technology warranted for three years.

Certification

UL Listed for Wet Location (Luminaire only), CE, International DarkSky Approved, RoHS Compliant

Designed by FlexSol Lighting Solutions & John Rizzi

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360 Solar Technology Specifications

Solar Module	
Solar technology	Monocrystalline silicon solar cells
Qty of solar modules	Variable, from 1 up to 3. 4 available on request
Cell efficiency	> 24%
Module power	> 110 Wp
Total system power	110 - 440 Wp
Number of cells per module	32
Number of strings per module	4 strings
Number of MPPT channels	4 per solar module
Cylinder Material	Borosilicate glass - toughened
Solar module color	Black
Dimensions per module	Ø 8.0 x 43.7 inches
Weight per module	~ 19 lbs

Control Unit	
Control Unit Location	In pole, rail mounted
Control Unit Material	Marine grade aluminum EN AW 6060-T66
Finishing	Anodized
Ingress protection	IP67
Security	Security screw-fixed handhole, with provisions for additional internal padlock protection (client-provided)
Control Unit Weight	850 Wh ~ 18 lbs 1275 Wh ~ 22 lbs
Battery technology	Lithium (NMC)
Battery capacity	850 Wh or 1275 Wh
Battery voltage	14.9 Vdc (850 Wh) 22.3 Vdc (1275 Wh)
Battery State of Charge window	10 ~ 95%
Service life	~10 years
Battery Operating temperature	-5 to 140 °F

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360 Solar Technology Specifications

Control Electronics	
Battery Management System (BMS)	Integrated 6-cell monitoring and balancing
Control electronics temperature and humidity monitoring	Integrated temperature sensor built-in lithium pack Integrated temperature sensor built-in electronics Integrated humidity sensor built-in electronics
LED driver type	Integrated high-efficiency (>97%) DC LED driver
Max. drive voltage	75 Vdc (limited to 36V dc)
Max. drive current	1850 mA
Max. power	80 W
SIM card	Global M2M eSIM (inc.), NanoSIM (opt.)
GNSS	GPS, BeiDou, Galileo, GLONASS, QZSS
Over-the-Cable updateable	Yes (USB-programming device optional)
Over-the-Air updateable	Yes
Remote monitoring and configuring	Available - Contact Factory
Time and date	Astronomical clock
Lighting scheme	Automatic adaptation to sunset and sunrise
Dimming scheme	HelioSync™ algorithmic, off-hours dimming scheme included. Other profiles available - contact factory.
Smart city ready	Yes
Service plan	5 years included. 10 year plans and extended features available - contact factory.

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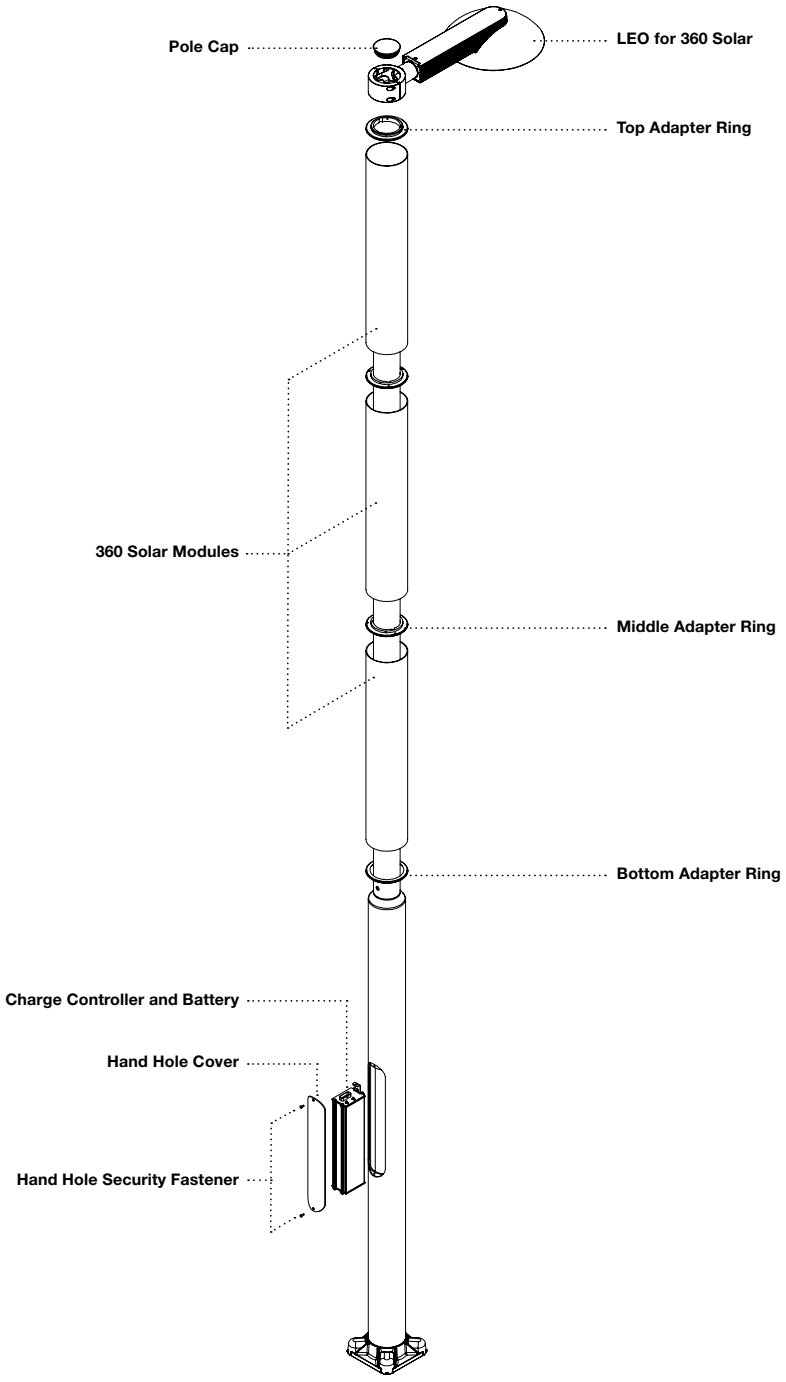
360 Solar - System Components



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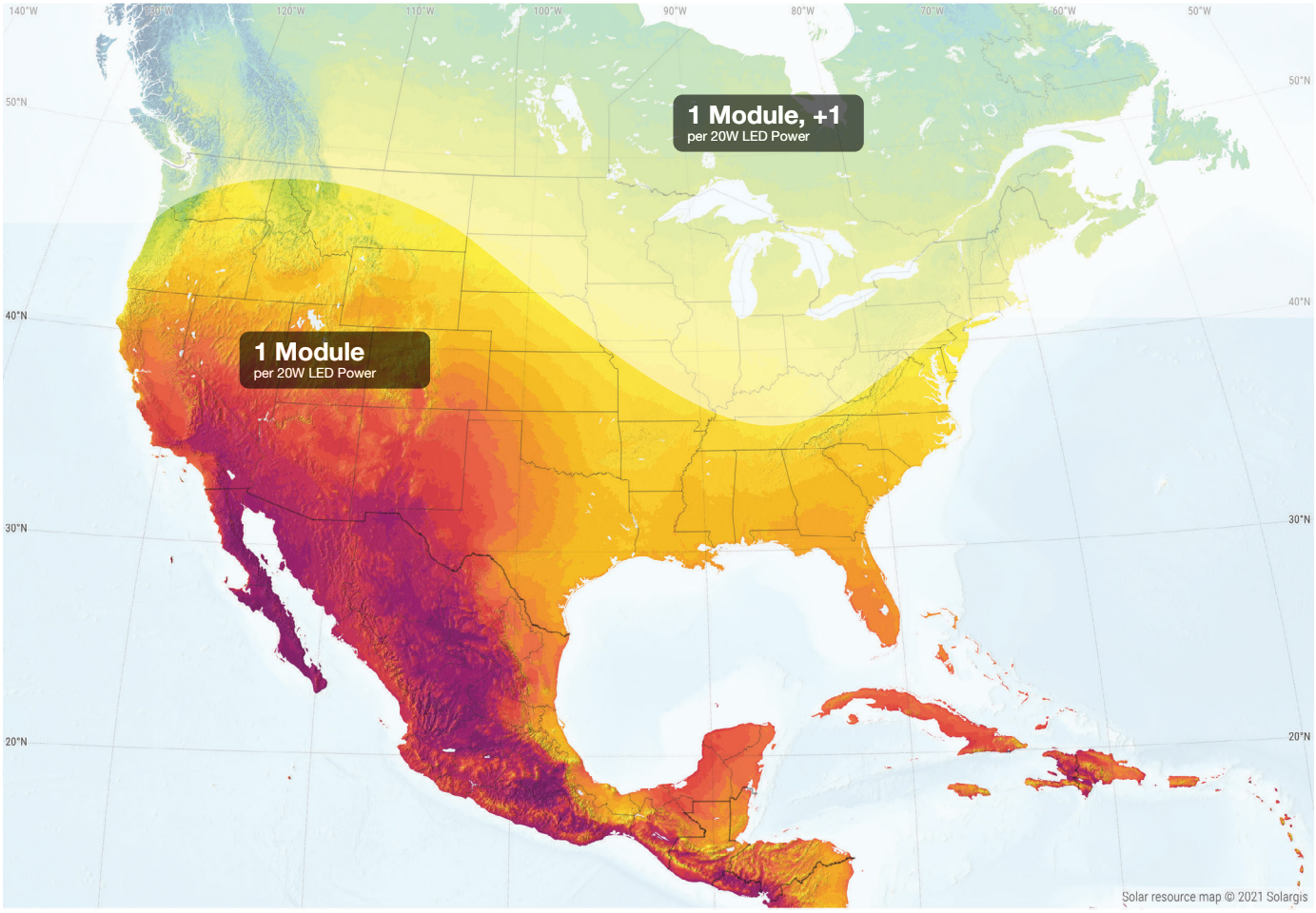
Will it Work Here?



GHI: Long-term average of global horizontal irradiation, period 1999-2020

500 km

Yearly Totals:	800	900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300
Daily Totals:	2.19	2.46	2.74	3.01	3.29	3.56	3.83	4.11	4.38	4.65	4.93	5.20	5.48	5.75	6.02	6.30

kWh/m²

Global Horizontal Irradiation - North America

This chart provides guidance on the recommended number of solar modules required to support 20W increments of rated LED power (Watts). This provides a baseline for reliable performance based on latitude. Further site-specific considerations may be required. Refer to FAQ document for additional information or contact factory.

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Specification

Luminaire #1 _____

Luminaire #2 _____

(If Applicable)

Pole _____

(Luminaire arrangement and Pole Configuration)

Luminaire

Product LEO Solar	LED Configuration	Light Engine Power*	Color Temp	Distribution	Lens	Powdercoat
LE201 *(Single Luminaire)* **LE202** *(2 Luminaire - back to back)*	**36** *(36 LEDs)*	**16W** **20W** **30W** **40W** **50W** **60W**	**27K** *(3000K)* **30K** *(3000K)* **40K** *(4000K)*	**T2** *(Type II)* **T3** *(Type III)* **T4** *(Type IV)* **T5** *(Type V)*	**CLR** *(Clear)*	**See powdercoat color options on the Material / Colors Sheet.**

* Refer to the Global Horizontal Irradiation Map.

Example: LE201-36-20W-30K-T3-CLR-MBK

360 Solar - Luminaire and Pole Configuration, Modules and Battery

Product Solar Pole For Leo	Lens Height/ Configuration	Solar Module	Battery Size	Base Cover	Powdercoat
LES *(360 Solar Pole)*	**12-A** *(Single 12')* **14-A** *(Single 14')* **16-A** *(Single 16')* **20-A** *(Single 20')* **16-B** *(Back to back 16')* **20-B** *(Back to back 20')*	**1^** *(Single Module)* **2^^** *(Double Module)* **3^^^** *(Triple Module)*	**85*** *(850Wh Battery)* **128** *(1277Wh Battery)*	**NUT** *(Nut Cover)*	**See powdercoat color options on the Material / Colors Sheet.**

*Available with single solar module only.
^Use up to 16'
^^16' min lens height required
^^^20' min lens height required

Example: LES-16-A-2-128-NUT-MBK

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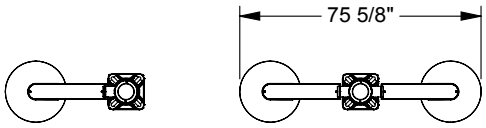
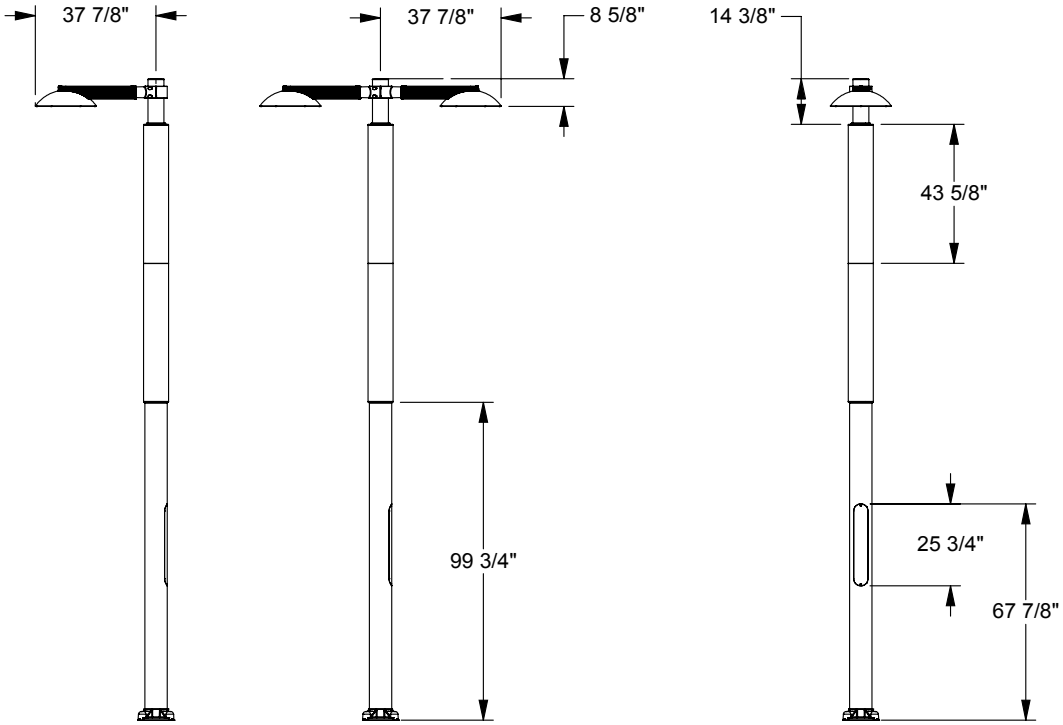
Luminaire Dimensions, weights and EPA's

Single Luminaire Arm Mount
Weight: 39.95 lbs
EPA: 1.180 ft²



Dual Luminaire Arm Mount
Weight: 72.47 lbs
EPA: 2.360 ft²



Pole Modifications

Part Number	Modification	Description
CAM	Camera	
SPE	Speaker	
WAP	WiFi Access Point	
BAN	Banner Arms	
VIB	Vibration Dampener	
CPH	Custom Pole Height	
CLH	Custom Lens Height	
CPC	Custom Powdercoat Color	
--	Other	

Modifications listed are the most common changes/additions requested. If your requirements aren't shown here, select 'other' and write in the modification needed. Please provide as much detail as possible to streamline the quoting process. All modifications to standard products will require evaluation and quoting approved by Landscape Forms prior to order placement.

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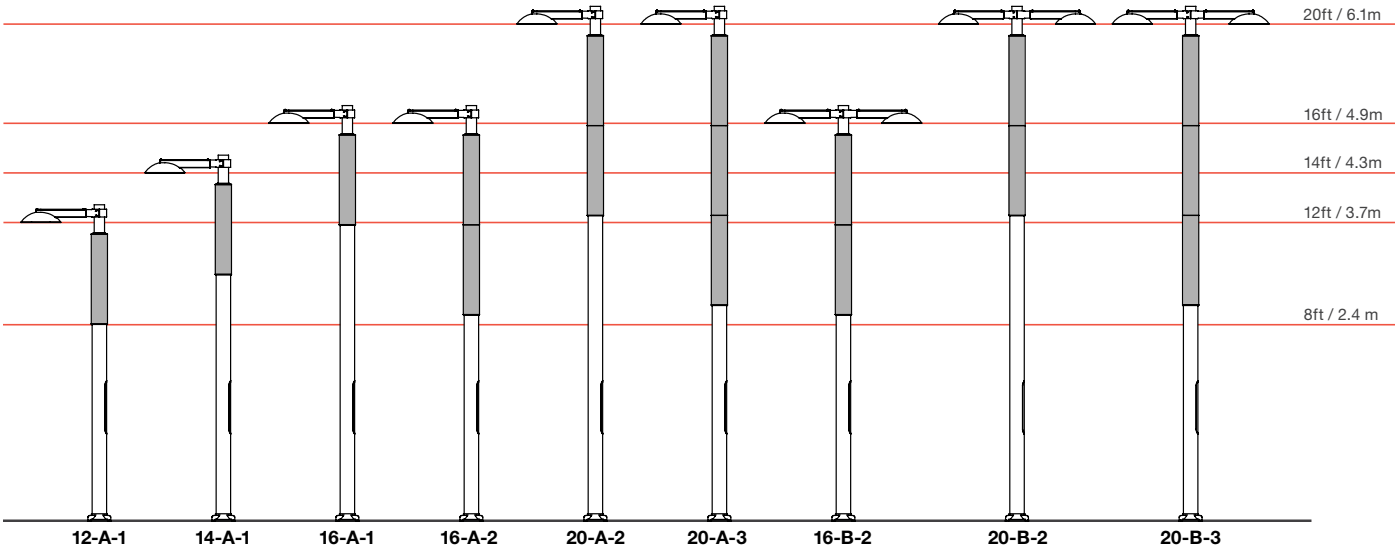
Specification Sheet | LE201/202

Lens Height and Pole Configuration Selection Guide



Pole & Base

Poles are manufactured from seamless aluminum alloy with a flush mounted, oversized and locakble hand hole cover. Poles are pre-drilled to suit the specified mounting conditions prior to powdercoating, and include flush top pole cap. Pole base plate is cast aluminum and includes four cast aluminum nut covers. Mounting template and anchor hardware included. Anchor bolts conform to ASTM F1554 Grade 55 and are provided with two hex nuts and two flat washers. Bolts have an “L” bend on one end and are galvanized a minimum of 12” on the threaded end.

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Wind Load Chart

		Luminaire		Max EPA (ft^2)					Max Wind Speed (MPH)		
Part Number	**Lens Height Description**	**Total Weight (lbs)**	**Total EPA (ft^2)**	**90 MPH**	**100 MPH**	**110 MPH**	**120 MPH**	**130 MPH**	**Max Wind Speed (MPH)**	**Base Overturning (ft-lbf)**	**Base Shear (lbf)**
LES-12-A-1	12ft Lens Height, 1 Solar Module, 1 Luminaire	38.95	1.180	31.0	25.0	20.5	17.1	14.4	307	8580	1108
LES-14-A-1	14ft Lens Height, 1 Solar Module, 1 Luminaire	38.95	1.180	25.7	20.6	16.8	14.0	11.8	271	8565	969
LES-16-A-1	16ft Lens Height, 1 Solar Module, 1 Luminaire	38.95	1.180	21.5	17.2	14.0	11.6	9.8	242	8503	857
LES-16-A-2	16ft Lens Height, 2 Solar Module, 1 Luminaire	38.95	1.180	21.5	17.2	14.0	11.6	9.8	242	8503	857
LES-16-B-2	16ft Lens Height, 2 Solar Module, 2 Luminaires	72.47	2.360	21.4	17.1	13.9	11.5	9.7	209	8513	775
LES-20-A-2	20ft Lens Height, 2 Solar Module, 1 Luminaire	38.95	1.180	14.8	11.7	9.4	7.7	6.4	199	8488	700
LES-20-B-2	20ft Lens Height, 2 Solar Module, 2 Luminaires	72.47	2.360	14.7	11.6	9.3	7.6	6.3	174	8438	633
LES-20-A-3	20ft Lens Height, 3 Solar Module, 1 Luminaire	38.95	1.180	14.8	11.7	9.4	7.7	6.4	199	8488	700
LES-20-B-3	20ft Lens Height, 3 Solar Module, 2 Luminaires	72.47	2.360	14.7	11.6	9.3	7.6	6.3	174	8438	633

Generic weight adder for max EPA calcs: 50lbs
Default Wall thickness 0.188”

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Luminaire Performance Data - 3000K

Wattage	Distribution Type	Lumen Output	Efficacy	Input Power (W)	BUG Rating
16W	T2	2788	169	16.5	B1 - U0 - G1
	T3	3090	188	16.5	B1 - U0 - G1
	T4	2793	169	16.5	B1 - U0 - G1
	T5	2769	168	16.5	B1 - U0 - G0
20W	T2	3425	167	20.5	B1 - U0 - G1
	T3	3796	186	20.5	B1 - U0 - G1
	T4	3431	168	20.5	B1 - U0 - G1
	T5	3402	166	20.5	B1 - U0 - G0
30W	T2	4958	162	30.6	B2 - U0 - G2
	T3	5495	180	30.6	B2 - U0 - G2
	T4	4966	162	30.6	B2 - U0 - G2
	T5	4924	161	30.6	B2 - U0 - G1
40W	T2	6523	157	41.4	B2 - U0 - G2
	T3	7230	175	41.4	B2 - U0 - G2
	T4	6534	158	41.4	B2 - U0 - G2
	T5	6479	156	41.4	B2 - U0 - G1
50W	T2	7858	153	51.3	B2 - U0 - G2
	T3	8710	170	51.3	B3 - U0 - G3
	T4	7871	153	51.3	B2 - U0 - G2
	T5	7804	152	51.3	B3 - U0 - G1
60W	T2	9310	149	62.5	B3 - U0 - G3
	T3	10318	165	62.4	B3 - U0 - G3
	T4	9325	149	62.5	B3 - U0 - G3
	T5	9246	148	62.5	B3 - U0 - G1

Lumen output scaling factors: 2700K (0.947), 3500K (1.046), 4000K (1.053)

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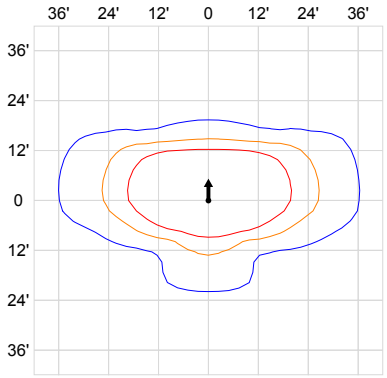
Specification Sheet | LE201/202

200 Series - 36 LED 16W at 12’

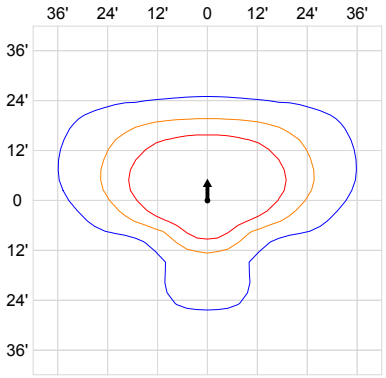
1.0fc 0.5fc 0.2fc

Performance light engine @ 3000K

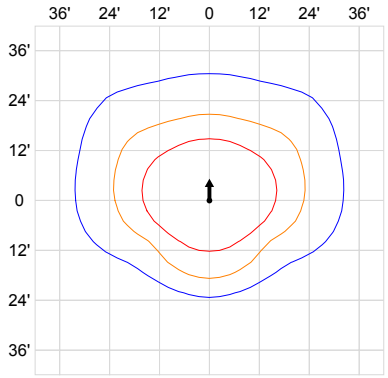
12’ Lens Height, Type II



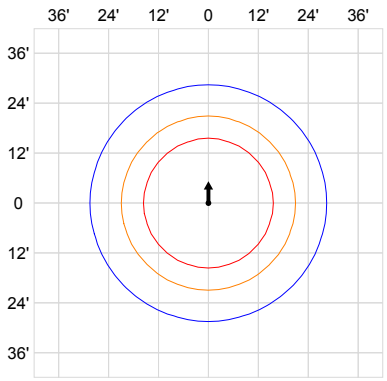
12’ Lens Height, Type III



12’ Lens Height, Type IV



12’ Lens Height, Type V



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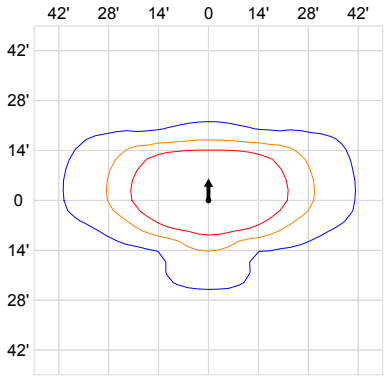
Specification Sheet | LE201/202

200 Series - 36 LED 20W at 14’

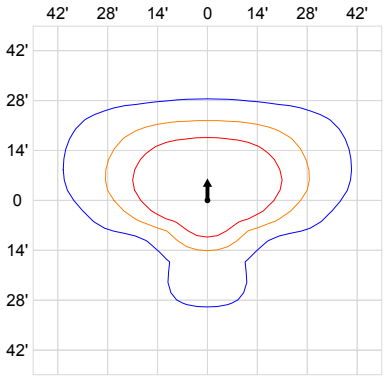
1.0fc 0.5fc 0.2fc

Performance light engine @ 3000K

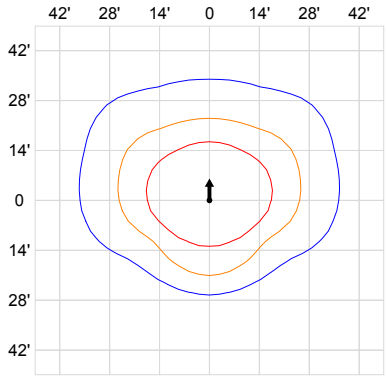
14’ Lens Height, Type II



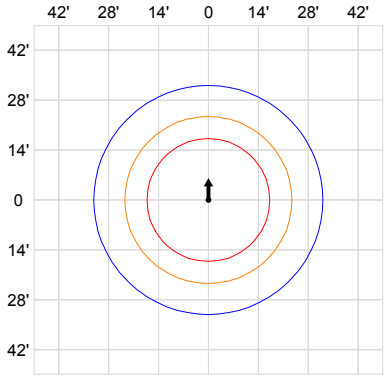
14’ Lens Height, Type III



14’ Lens Height, Type IV



14’ Lens Height, Type V



LEO 360 Solar

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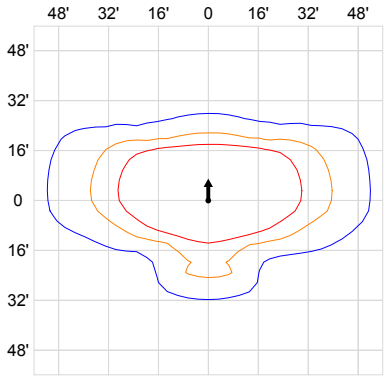
Specification Sheet | LE201/202

200 Series - 36 LED 40W at 16’

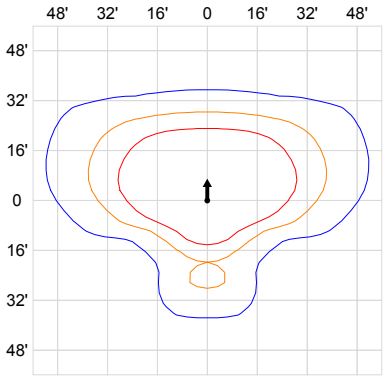
1.0fc 0.5fc 0.2fc

Performance light engine @ 3000K

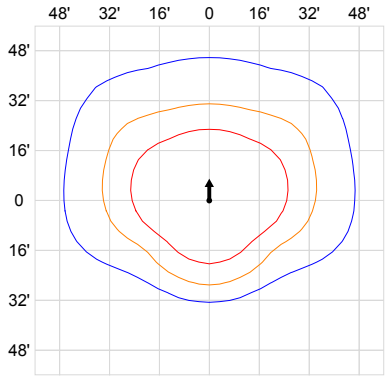
16’ Lens Height, Type II



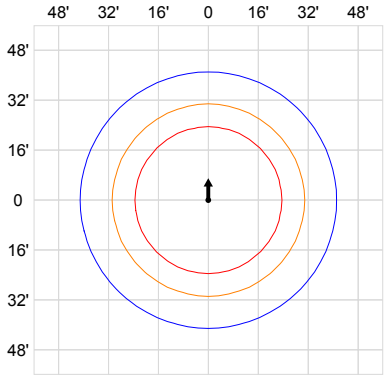
16’ Lens Height, Type III



16’ Lens Height, Type IV



16’ Lens Height, Type V



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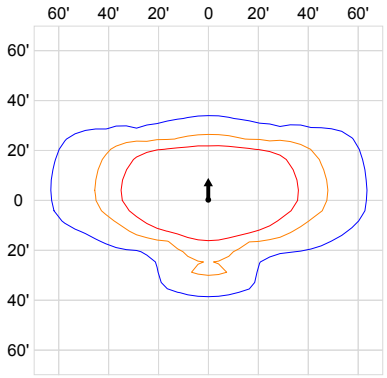
Specification Sheet | LE201/202

200 Series - 36 LED 60W at 20’

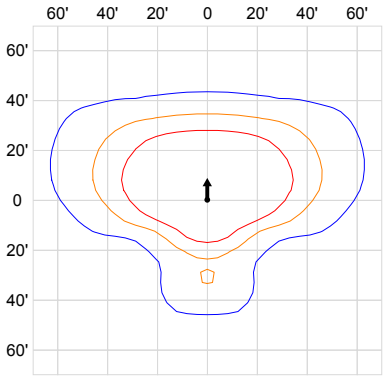
1.0fc 0.5fc 0.2fc

Performance light engine @ 3000K

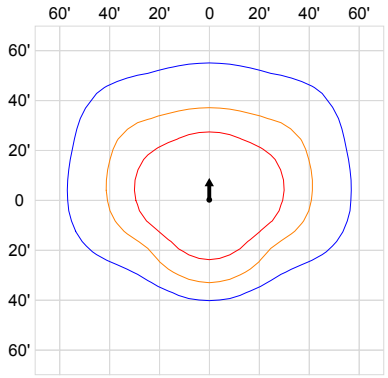
20’ Lens Height, Type II



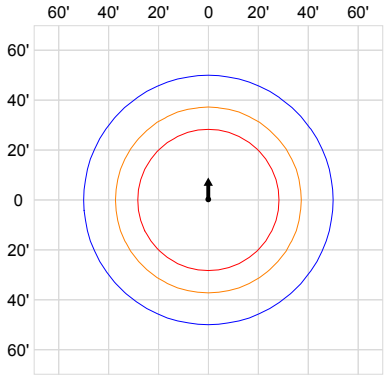
20’ Lens Height, Type III



20’ Lens Height, Type IV



20’ Lens Height, Type V



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Architectural Series - Powdercoated Metal* (Fine Texture)

FOG (Fog)


OBD (Obsidian)


MBK (Matte Black)


TER (Terra)


NMG (Nutmeg)


ONX (Onyx)


SAG (Sage)


BLA (Blue Ash)


DSK (Dusk)

Neutral Series - Powdercoated Metal*

SIL (Silver Metallic)

MER (Mercury Metallic)


STL (Steel Metallic)


BRZ (Bronze Metallic)


TNM (Titanium Metallic)


BLK (Gloss Black)


WHT (Gloss White)

Vivid Series - Powdercoated Metal* (Fine Texture)


CLY (Clay)

LMN (Lemon)


MNG (Mango)


STG (Loll Sunset Orange)


CHL (Chili)


APR (Loll Apple Red)


LFG (Loll Leaf Green)


MSS (Moss)


FOR (Forest)


NVY (Loll Navy Blue)

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Powdercoated Metal

Powdercoated Metal Pangard II® Polyester Powdercoat is a hard, yet flexible, finish that resists rusting, chipping, peeling and fading. In addition to colors shown, a wide selection of optional and custom colors may be specified for an upcharge.

* All colors and patterns shown are approximate and may vary from sample and final.

Visit landscapeforms.com for more information.
Specifications are subject to change without notice.

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