

# LEO 360 Solar

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

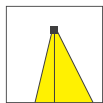
System consists of: Solar modules (1-3 units), pre-wired with MPPT controllers and required connectors. Each Solar module is home-run connected to the control unit housed within the pole. Control unit (IP67 rated enclosure) contains solar control electronics, LED driver and Lithium-NMC battery. System 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

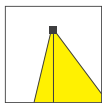
High output light engine features efficacy up to up to 188lm/W and 10,300lm delivered through a selection of roadway distribution types. High power LEDs on RoHS compliant circuit board with secondary optics. All configurations are available in 2700K, 3000K, and 4000K, >80CRI across all available color temperatures. Other CCT's available on request.

Luminaires meet TM21 L70: >60,000hrs. L90: 59,000hrs (at maximum operating current).

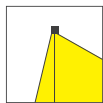
## Distributions



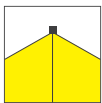
TII



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<br>1275 Wh ~ 22 lbs                                                                         |
| Battery technology             | Lithium (NMC)                                                                                               |
| Battery capacity               | 850 Wh or 1275 Wh                                                                                           |
| Battery voltage                | 14.9 Vdc (850 Wh)<br>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

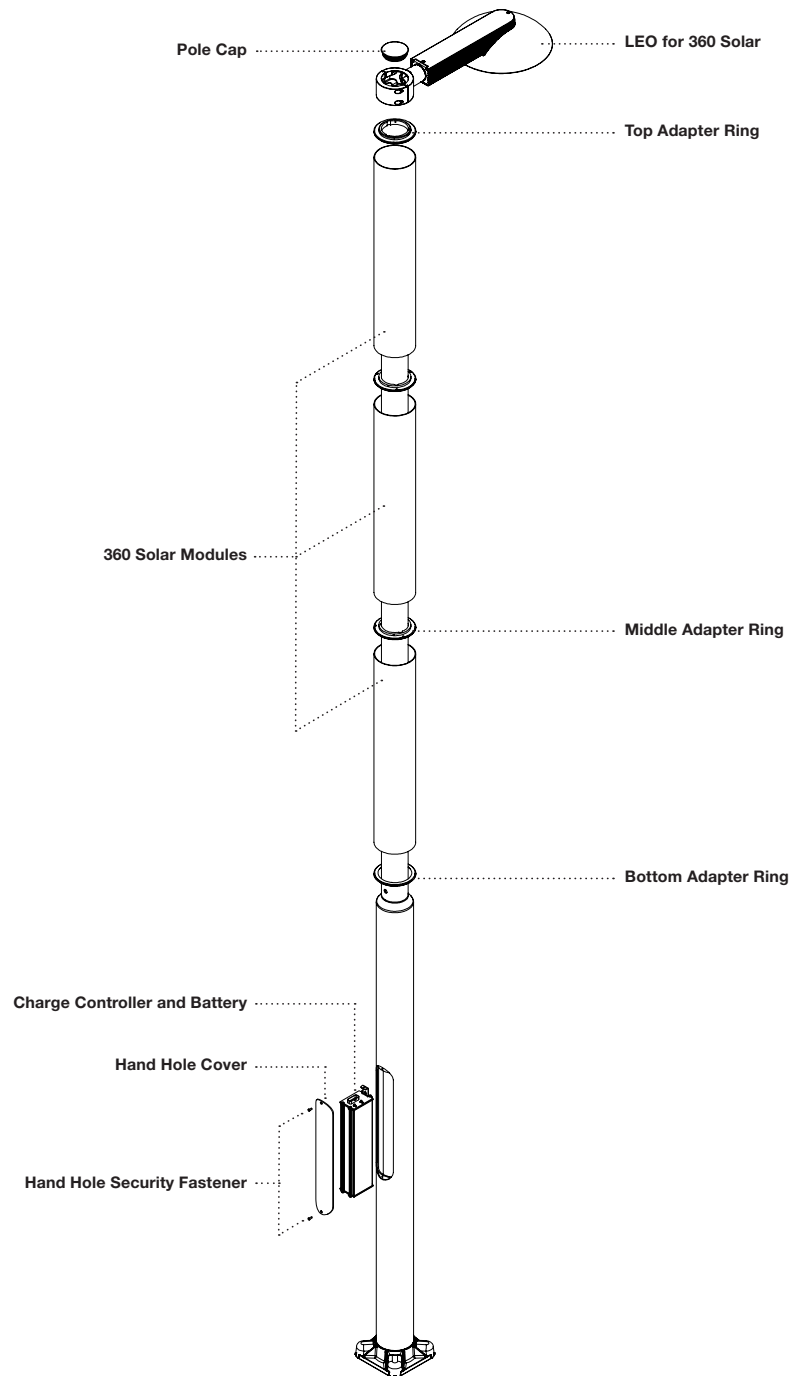
| Control Electronics                                     |                                                                                                                                                              |
|---------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Battery Management System (BMS)                         | Integrated 6-cell monitoring and balancing                                                                                                                   |
| Control electronics temperature and humidity monitoring | Integrated temperature sensor built-in lithium pack<br>Integrated temperature sensor built-in electronics<br>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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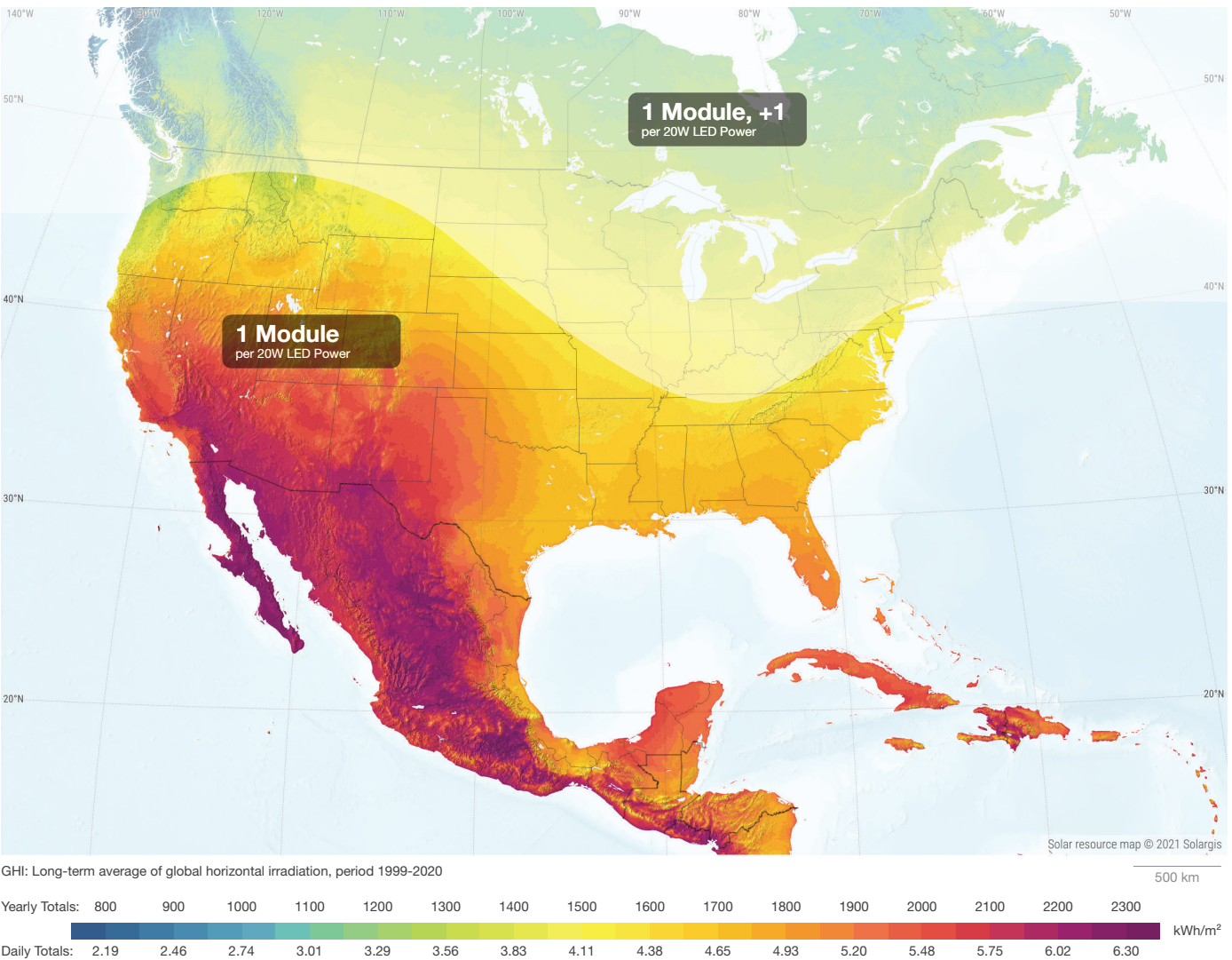
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## Global Horizontal Irradiation - North America

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

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

### 360 Solar - Luminaire and Pole Configuration, Modules and Battery

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

\*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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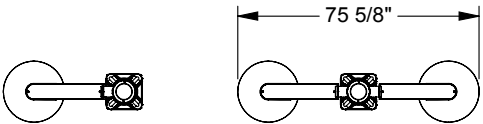
## Specification Sheet | LE201/202

### Luminaire Dimensions, weights and EPA's

#### Single Luminaire Arm Mount

Weight: 39.95 lbs

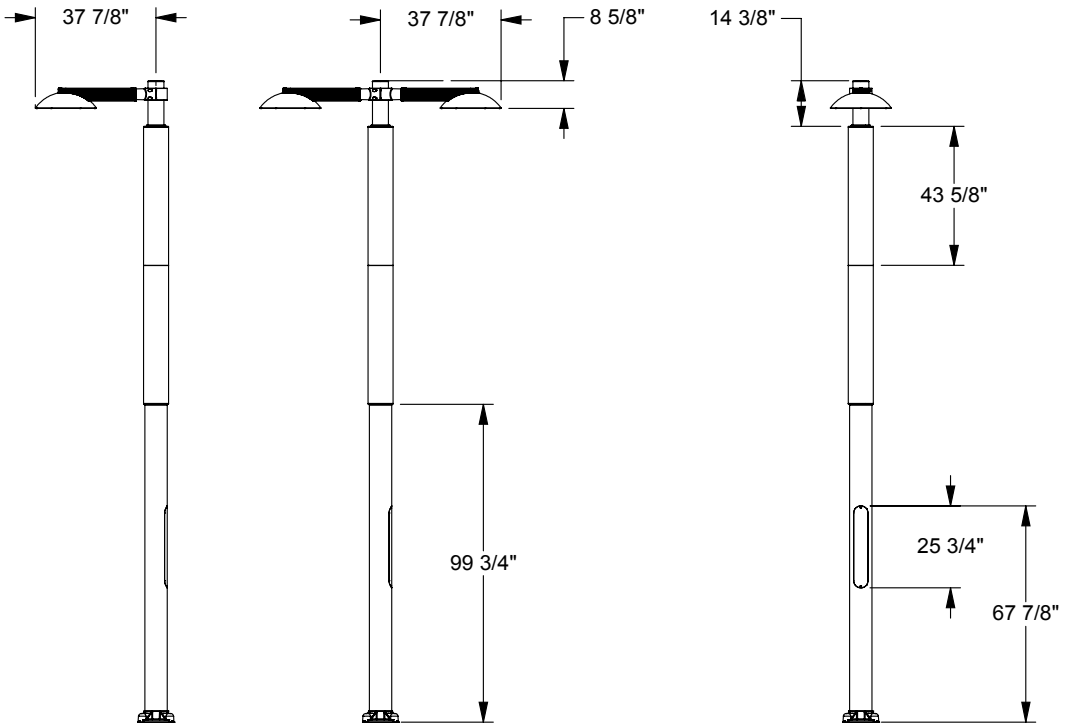
EPA: 1.180 ft<sup>2</sup>



#### Dual Luminaire Arm Mount

Weight: 72.47 lbs

EPA: 2.360 ft<sup>2</sup>



### Pole Modifications

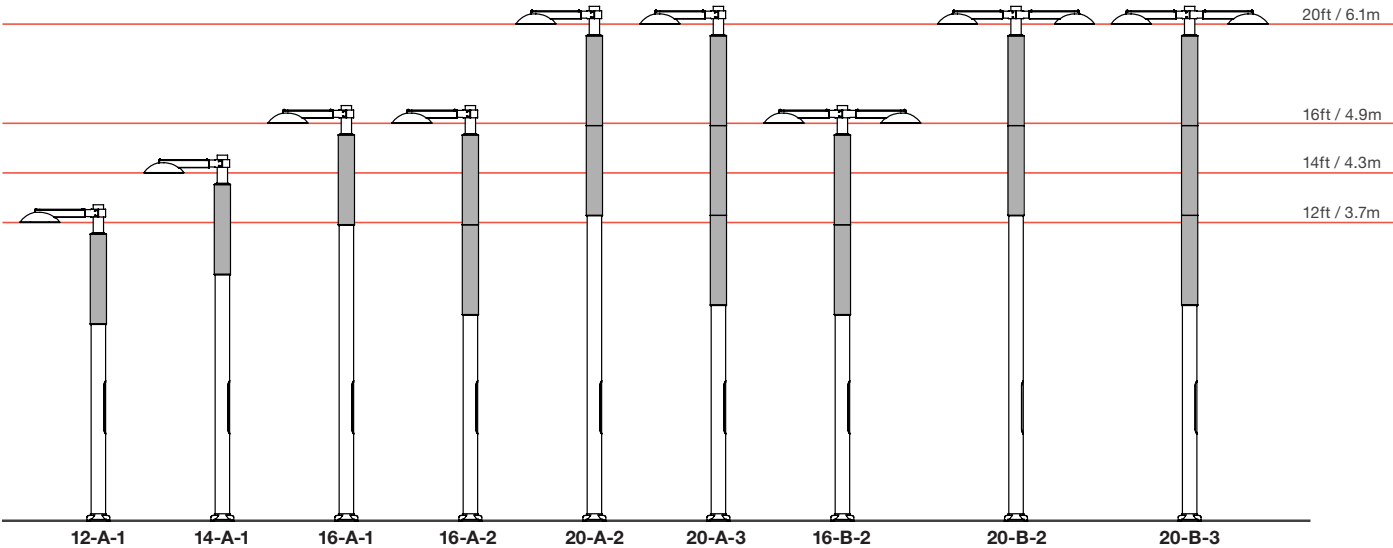
| Part Number | Modification            | Description |
|-------------|-------------------------|-------------|
| CAM         | Camera                  |             |
| SPE         | Speaker                 |             |
| WAP         | WiFi Access Point       |             |
| BAN         | Banner 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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## Wind Load Chart

| Part Number | Lens Height Description                        | Luminaire          |                 | Max EPA (ft²) |         |         |         |         | Max Wind Speed (MPH) |                           |                  |
|-------------|------------------------------------------------|--------------------|-----------------|---------------|---------|---------|---------|---------|----------------------|---------------------------|------------------|
|             |                                                | Total Weight (lbs) | Total EPA (ft²) | 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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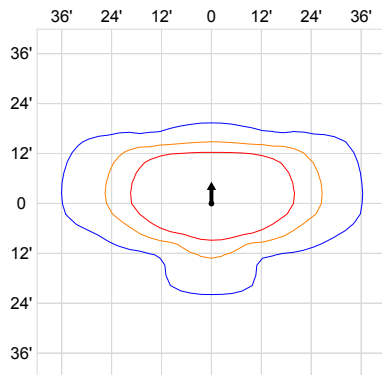
## Specification Sheet | LE201/202

### 200 Series - 36 LED 16W at 12'

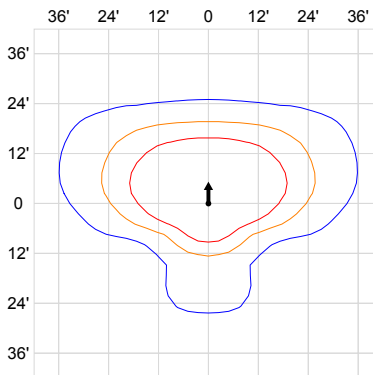
Performance light engine @ 3000K

1.0fc 0.5fc 0.2fc

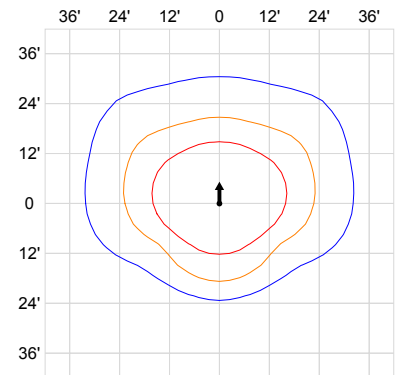
12' Lens Height, Type II



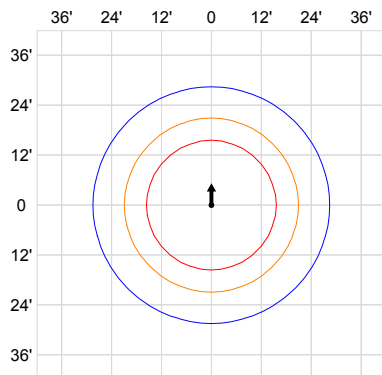
12' Lens Height, Type III



12' Lens Height, Type IV



12' Lens Height, Type V



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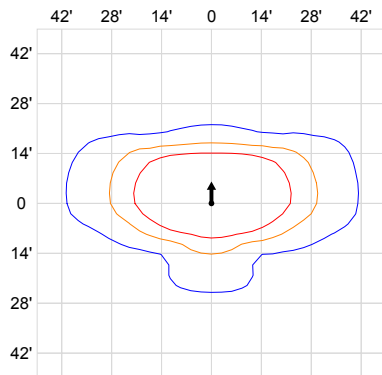
## Specification Sheet | LE201/202

### 200 Series - 36 LED 20W at 14'

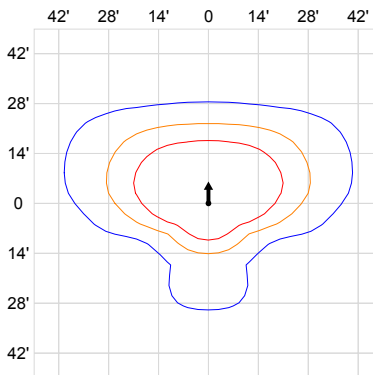
Performance light engine @ 3000K

1.0fc 0.5fc 0.2fc

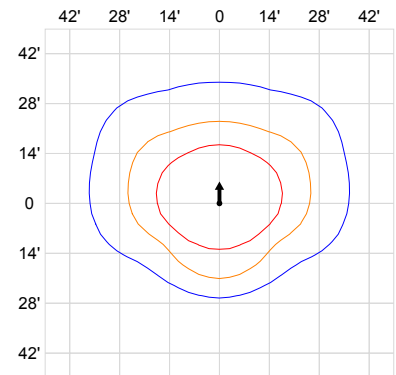
14' Lens Height, Type II



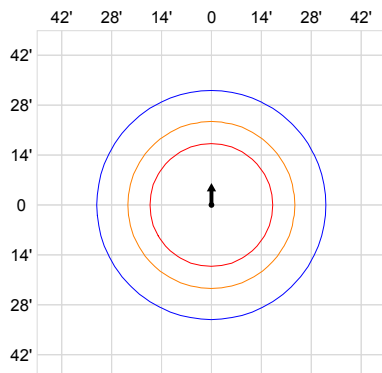
14' Lens Height, Type III



14' Lens Height, Type IV



14' Lens Height, Type V



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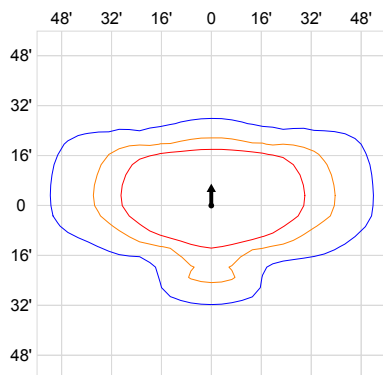
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### 200 Series - 36 LED 40W at 16'

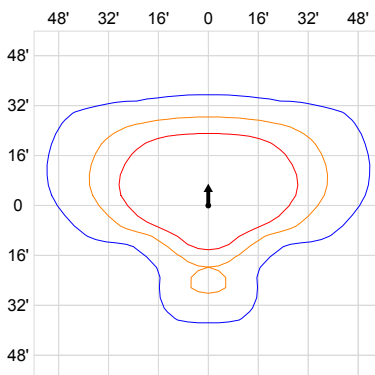
Performance light engine @ 3000K

1.0fc 0.5fc 0.2fc

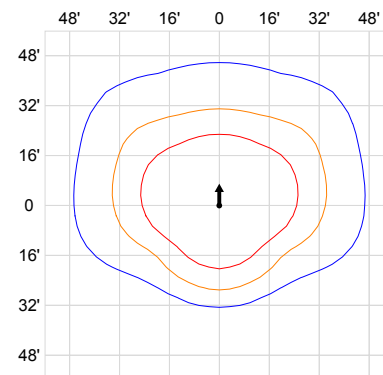
16' Lens Height, Type II



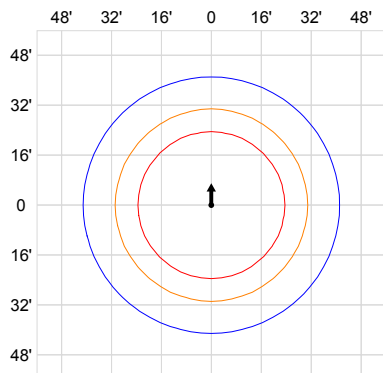
16' Lens Height, Type III



16' Lens Height, Type IV



16' Lens Height, Type V



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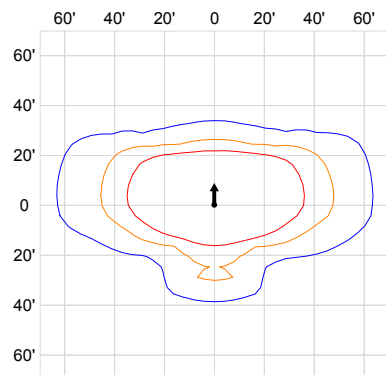
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### 200 Series - 36 LED 60W at 20'

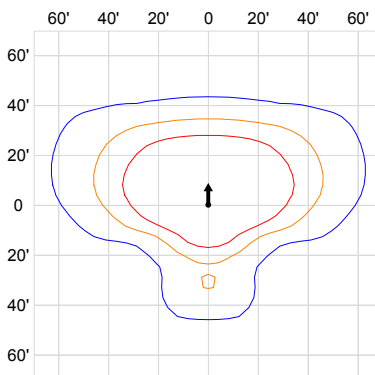
Performance light engine @ 3000K

1.0fc 0.5fc 0.2fc

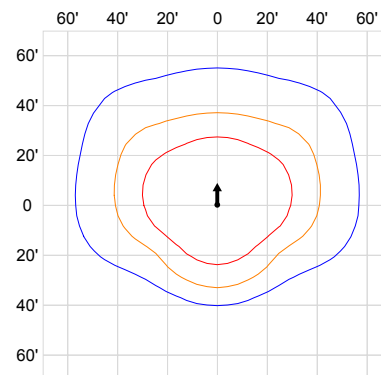
20' Lens Height, Type II



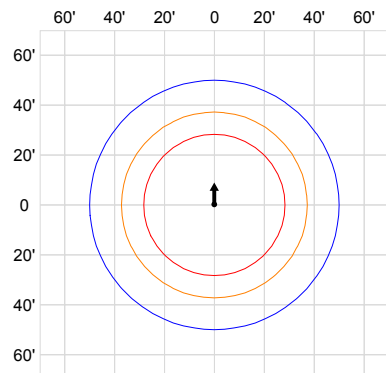
20' Lens Height, Type III



20' Lens Height, Type IV



20' Lens Height, Type V

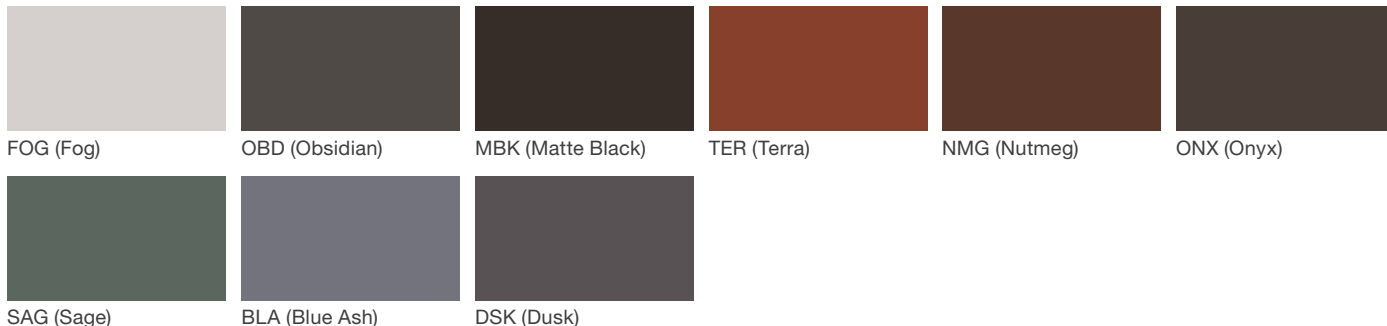


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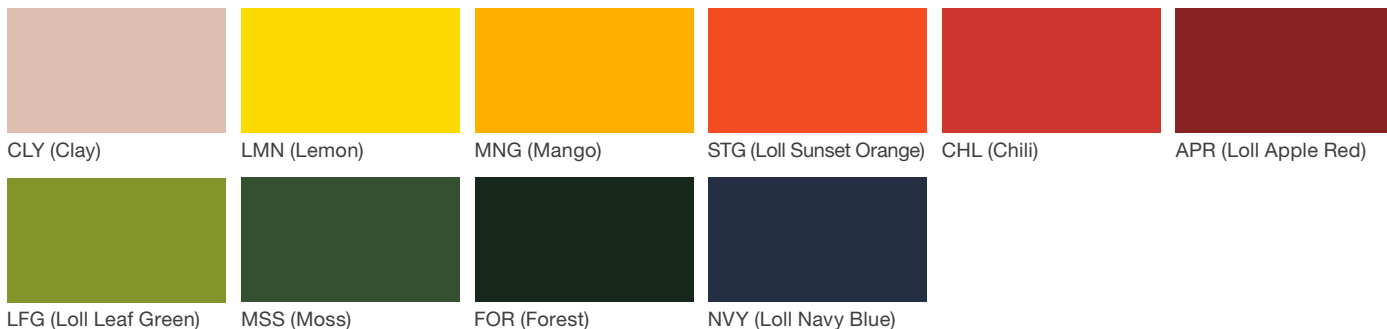
## Architectural Series - Powdercoated Metal\* (Fine Texture)



## Neutral Series - Powdercoated Metal\*



## Vivid Series - Powdercoated Metal\* (Fine Texture)



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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.

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