



- NELM Light Source with Flat Lens



- NELM Light Source with Dome Lens

Product Description

New Energy LED modules (NELM) provide lighting designers and manufacturers with simple, easy-to-adopt LED lighting solutions that reduce luminaire development time and speed time-to-market. New Energy modules are the ideal choice for enabling rapid luminaire development where bright, beautiful, long-life lighting is required. The ease of use of the NELM series enables this versatile LED lighting module to jump-start the design process for recessed downlights, wall sconces or pendant lights in demanding end markets such as retail, museums and studio lighting.

Features

- Industry-leading light-source efficacy (steady state) of up to 97 lm/W or better for all luminous flux outputs
- 850-4000 lm available in 2700K, 3000K, 3500K and 4000K
- > 90 CRI for all color temperatures CCTs
- Designed to last 50,000 hours at L70
- Easy mounting - designed for quick mounting to a housing or bracket
- RoHS compliant
- ETL Recognized
- Custom - private label or design changes available
- ETL certified for damp locations

Last modified: 01/18/2024

TABLE OF CONTENTS

| | |
|---------------------------------------------------|----|
| NELM Performance Specifications | 2 |
| NELM Order Codes | 3 |
| Thermal Management Guidelines | 4 |
| Relative Spectral Power Distribution | 5 |
| Relative Luminous Flux vs. Case Temperature | 7 |
| Typical Voltage vs. Case Temperature | 7 |
| Photometric Distributions | 8 |
| Performance Groups - Chromaticity | 10 |
| CIE Color Space..... | 10 |
| Mechanical Dimensions | 11 |
| Packaging | 12 |



RoHS

NELM Performance Specifications

Product Selection Table

| Characteristics | Unit | Minimum | Typical | Maximum |
|----------------------------------------------|-----------------|---------|---------|---------|
| Viewing angle (FWHM) - Standard flat lens | degrees | | 86 | |
| Viewing angle (FWHM) - Standard dome lens | degrees | | 102 | |
| Viewing angle (FWHM) - Performance flat lens | degrees | | 82 | |
| Viewing angle (FWHM) - Performance dome lens | degrees | | 102 | |
| DC forward current - Standard 850 lm | mA | 180 | 190 | 200 |
| DC forward current - Standard 1250 lm | mA | 280 | 300 | 320 |
| DC forward current - Standard 2000 lm | mA | 490 | 530 | 560 |
| DC forward current - Performance 3000 lm | mA | 680 | 710 | 750 |
| DC forward current - Performance 4000 lm | mA | 960 | 1040 | 1100 |
| Forward voltage - Standard 850 lm | V | | 33.4 | 33.5 |
| Forward voltage - Standard 1250 lm | V | | 34.4 | 34.6 |
| Forward voltage - Standard 2000 lm | V | | 36.2 | 36.4 |
| Forward voltage - Performance 3000 lm | V | | 33.7 | 33.8 |
| Forward voltage - Performance 4000 lm | V | | 34.6 | 34.8 |
| Luminous flux - Standard 850 lm | lm | 860 | 865 | 869 |
| Luminous flux - Standard 1250 lm | lm | 1274 | 1292 | 1324 |
| Luminous flux - Standard 2000 lm | lm | 1997 | 2031 | 2079 |
| Luminous flux - Performance 3000 lm | lm | 2996 | 3012 | 3025 |
| Luminous flux - Performance 4000 lm | lm | 3972 | 4008 | 4031 |
| LED module case temperature (Tc) | °C | | 55 | 85 |
| CRI - 90 CRI | 100-point scale | 90 | 92 | |
| CRI - 95 CRI | 100-point scale | 95 | 98 | |

NOTES:

- NELM modules are not designed for reverse bias operation.
- New Energy maintains a tolerance of $\pm 7\%$ on flux measurements, $\pm 10\%$ on power measurements, ± 0.005 on chromaticity (CCx, CCy) measurements and a tolerance of ± 2 on CRI measurements.
- 55 °C measured at case temperature (Tc) point shown on page 6.
- Luminous flux values for the flat lens NELM LED module can be up to 3% lower.

RoHS COMPLIANCE:

The levels of RoHS restricted materials in this product are below the minimum concentration values (also referred to as the threshold limits) permitted for such substances, or are used in an exempted application, in accordance with EU Directive 2011/65/EC (RoHS2), as implemented January 2, 2013. RoHS Declarations for this product can be obtained from a New Energy, LLC representative.

RoHS COMPLIANCE:

Users should be cautioned not to stare at the light of this LED product. The bright light can damage the eye.

NELM Performance Specifications

Order Code Formatting

| Product Family | Typical Luminous Flux (lm) | CCT (K) | CRI | Order Code | |
|----------------|----------------------------|---------|-----|-----------------------|-----------------------|
| | | | | Flat | Dome |
| NELM | XX/XX/XX | | XX | F | D |
| NELM | 850/1250/2000 | 2700 | 90 | NELM-85/12/20-27-90-F | NELM-85/12/20-27-90-D |
| NELM | 850/1250/2000 | 3000 | 90 | NELM-85/12/20-30-90-F | NELM-85/12/20-30-90-D |
| NELM | 850/1250/2000 | 3500 | 90 | NELM-85/12/20-35-90-F | NELM-85/12/20-35-90-D |
| NELM | 850/1250/2000 | 4000 | 90 | NELM-85/12/20-40-90-F | NELM-85/12/20-40-90-D |
| NELM | 850/1250/2000 | 2700 | 95 | NELM-85/12/20-27-91-F | NELM-85/12/20-27-91-D |
| NELM | 850/1250/2000 | 3000 | 95 | NELM-85/12/20-30-91-F | NELM-85/12/20-30-91-D |
| NELM | 850/1250/2000 | 3500 | 95 | NELM-85/12/20-30-91-F | NELM-85/12/20-30-91-D |
| NELM | 850/1250/2000 | 4000 | 95 | NELM-85/12/20-30-91-F | NELM-85/12/20-30-91-D |
| NELM | 3000/4000 | 2700 | 90 | NELM-30/40/00-27-90-F | NELM-30/40/00-27-90-D |
| NELM | 3000/4000 | 3000 | 90 | NELM-30/40/00-30-90-F | NELM-30/40/00-30-90-D |
| NELM | 3000/4000 | 3500 | 90 | NELM-30/40/00-35-90-F | NELM-30/40/00-35-90-D |
| NELM | 3000/4000 | 4000 | 90 | NELM-30/40/00-40-90-F | NELM-30/40/00-40-90-D |
| NELM | 3000/4000 | 2700 | 95 | NELM-30/40/00-27-91-F | NELM-30/40/00-27-91-D |
| NELM | 3000/4000 | 3000 | 95 | NELM-30/40/00-30-91-F | NELM-30/40/00-30-91-D |
| NELM | 3000/4000 | 3500 | 95 | NELM-30/40/00-35-91-F | NELM-30/40/00-35-91-D |
| NELM | 3000/4000 | 4000 | 95 | NELM-30/40/00-40-91-F | NELM-30/40/00-40-91-D |

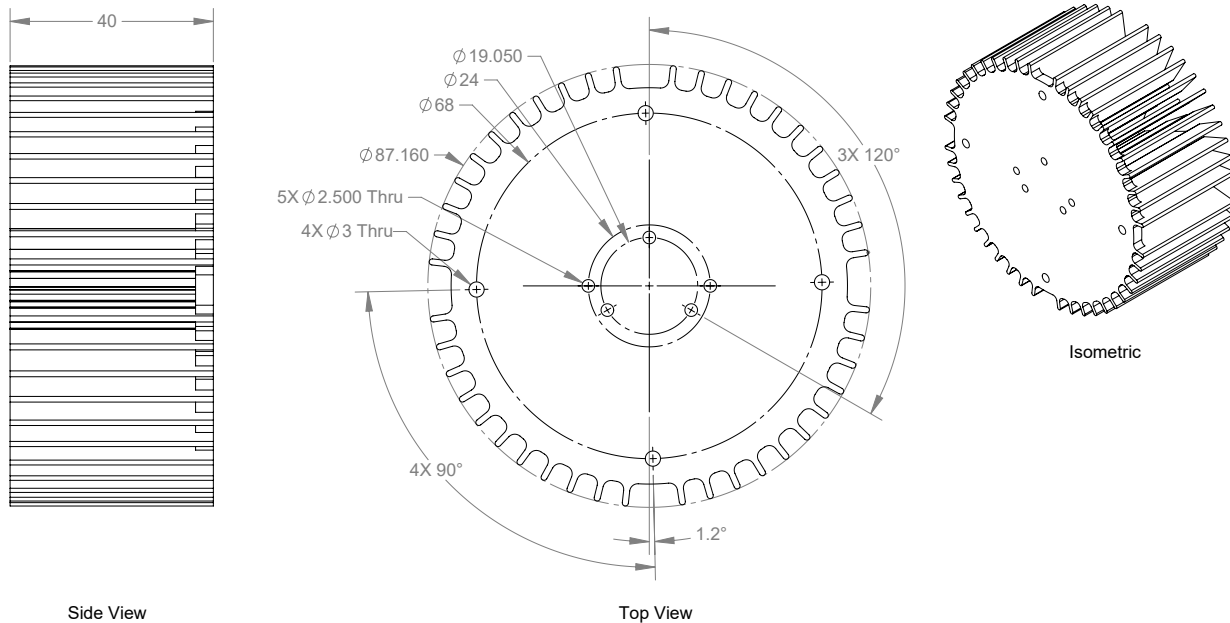
NELM Performance Specifications

Thermal Management Guidelines

The NELM is designed to perform in a variety of environments without the need for active cooling. To achieve lifetime and performance estimates, and to maintain the warranty, the final luminaire design cannot allow the Tc point shown on page 10 to exceed 85 °C for the light source when the luminaire is at thermal equilibrium. The optional heat sinks shown below are available from New Energy.

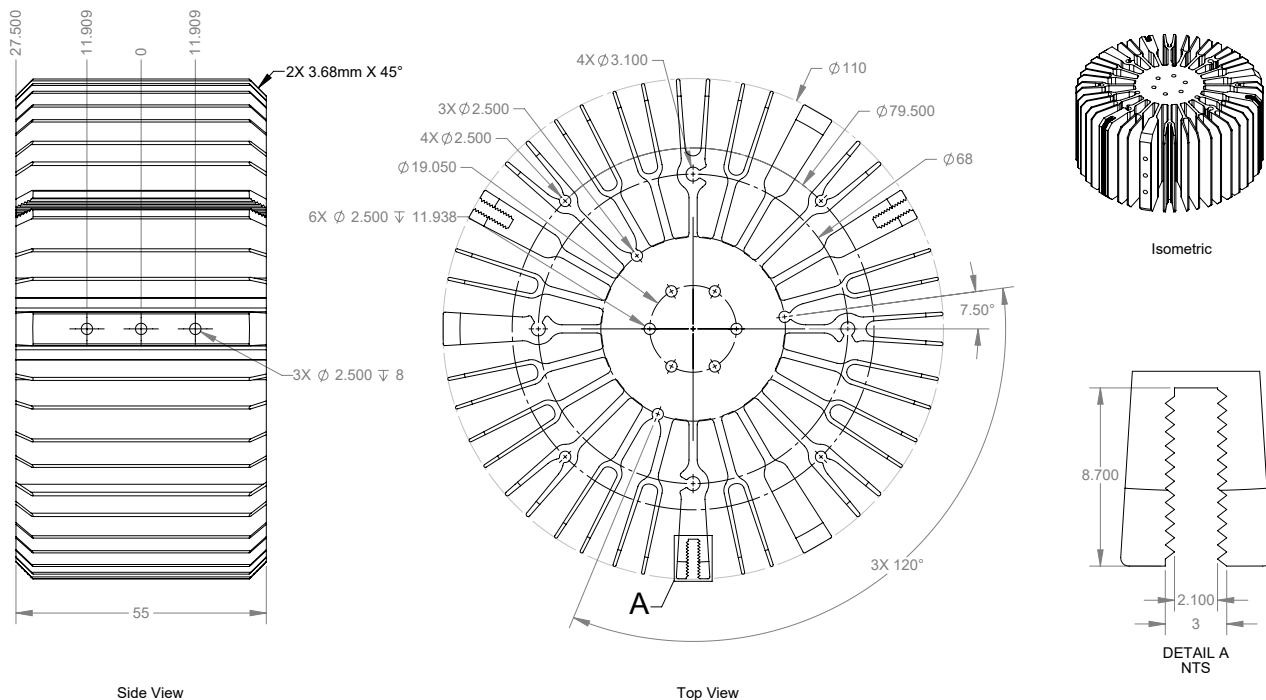
Disclaimer: Customer is responsible for proper thermal management.

OEM Option 1: NEHS-LM-30-XX Suitable for Standard Modules



Note: Dimensions in Millimeters

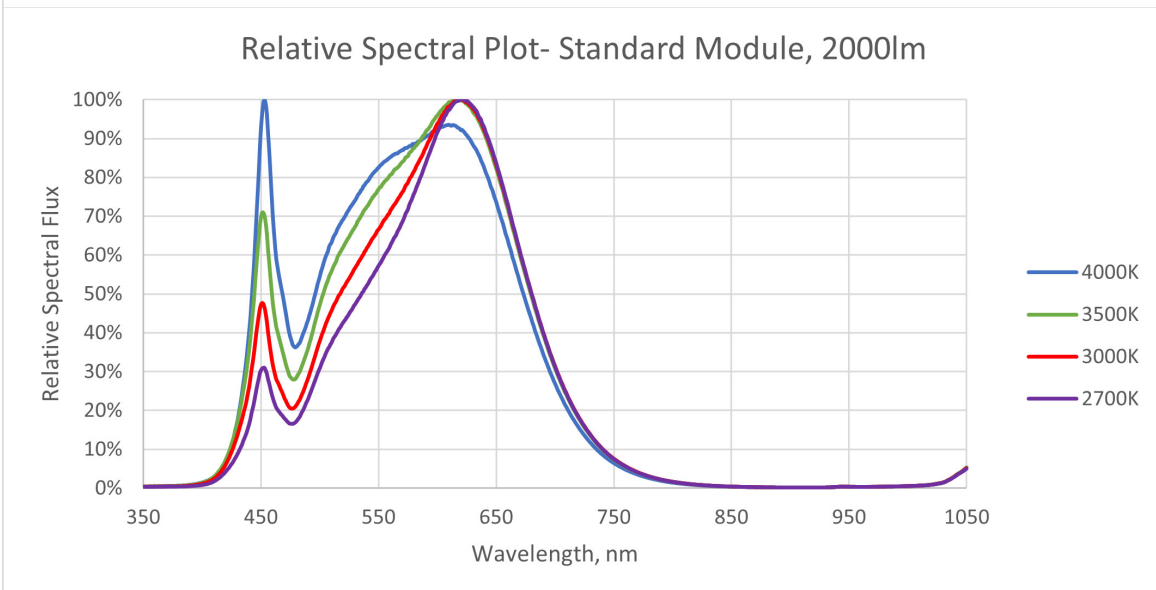
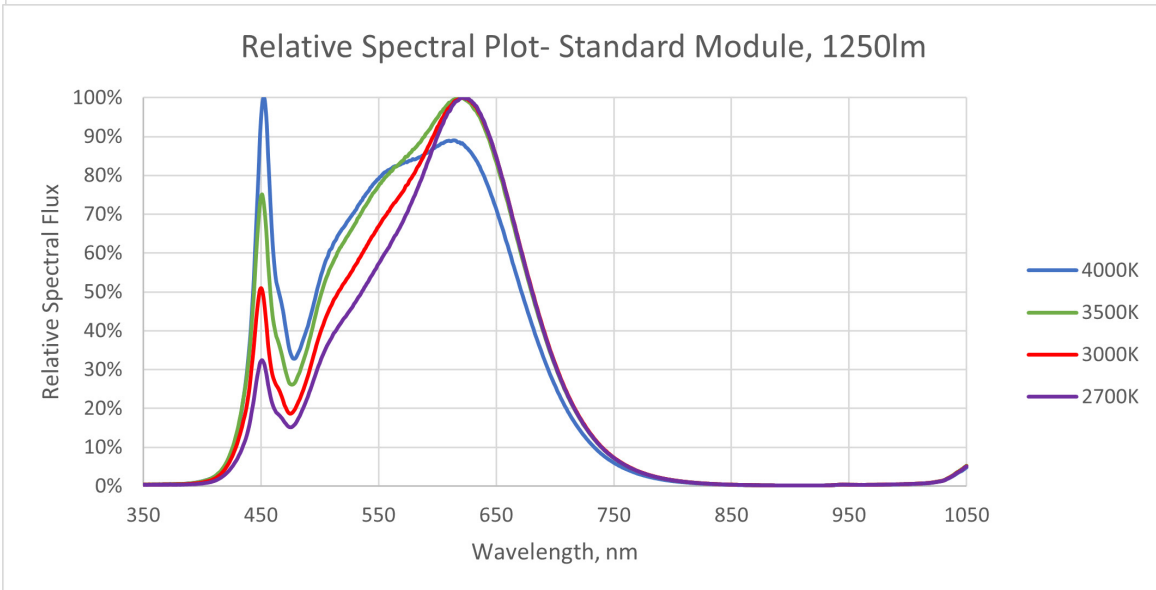
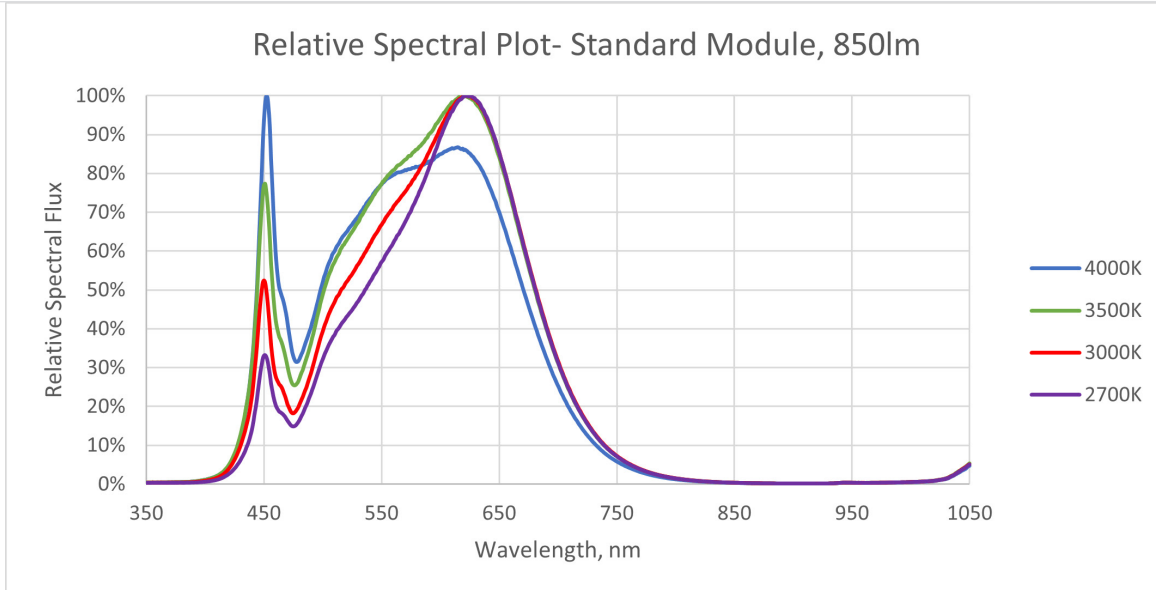
OEM Option 2: NEHS-LM-40-XX Suitable for Performance Modules



Note: Dimensions in millimeters

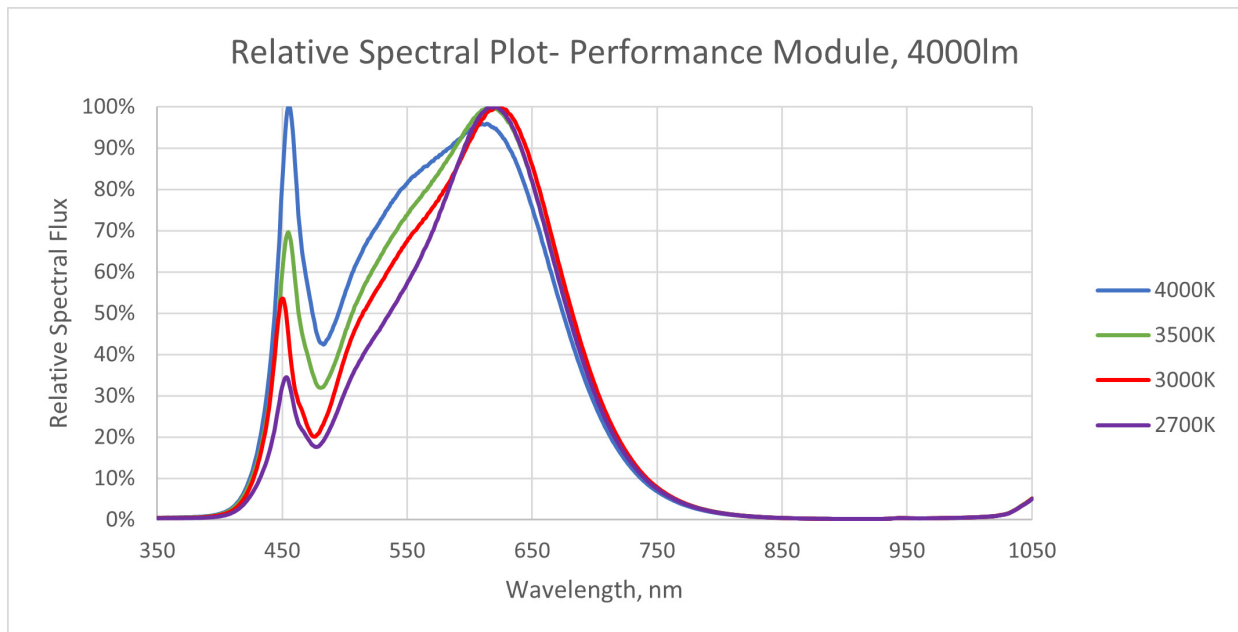
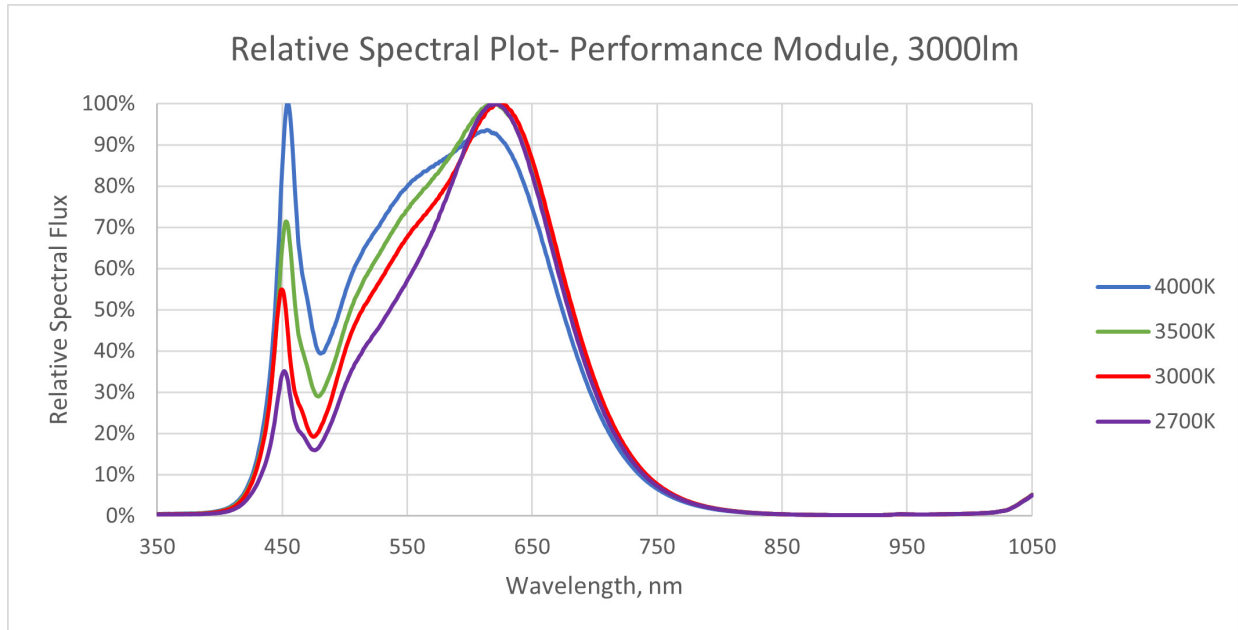
NELM Performance Specifications

Performance Characteristics - Standard Module Spectral Plot

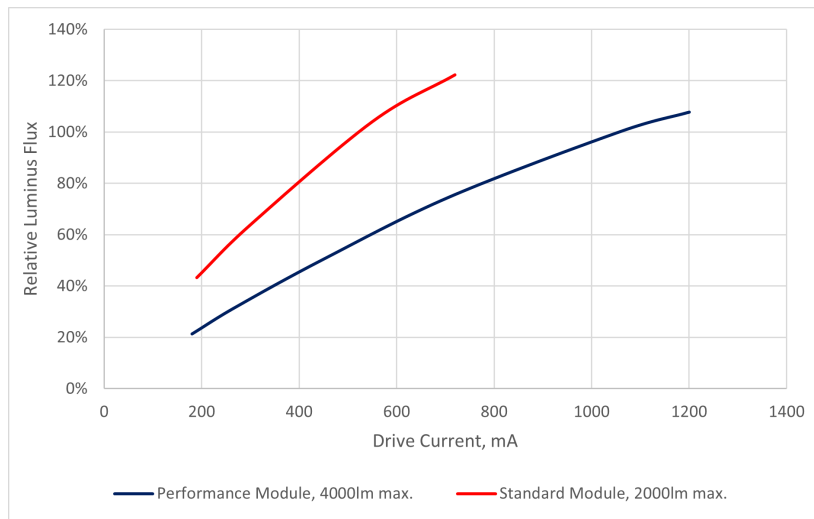


NELM Performance Specifications

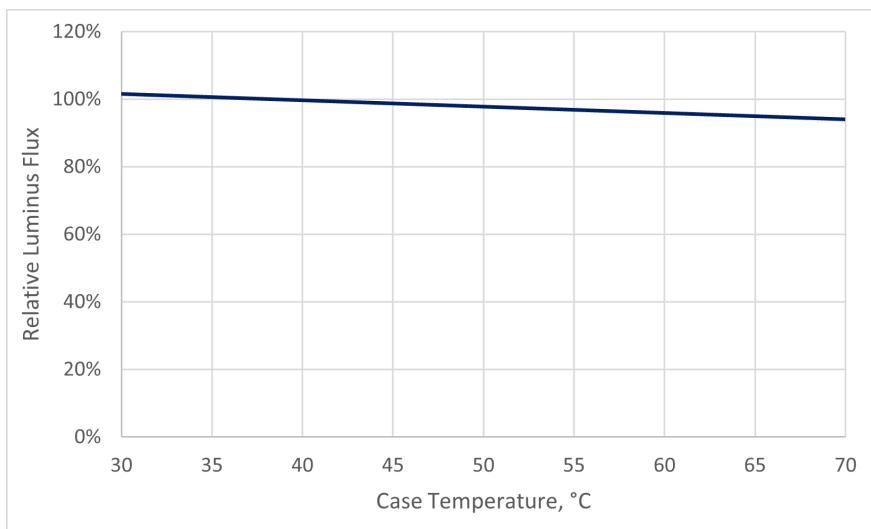
Performance Characteristics - Performance Spectral Plot



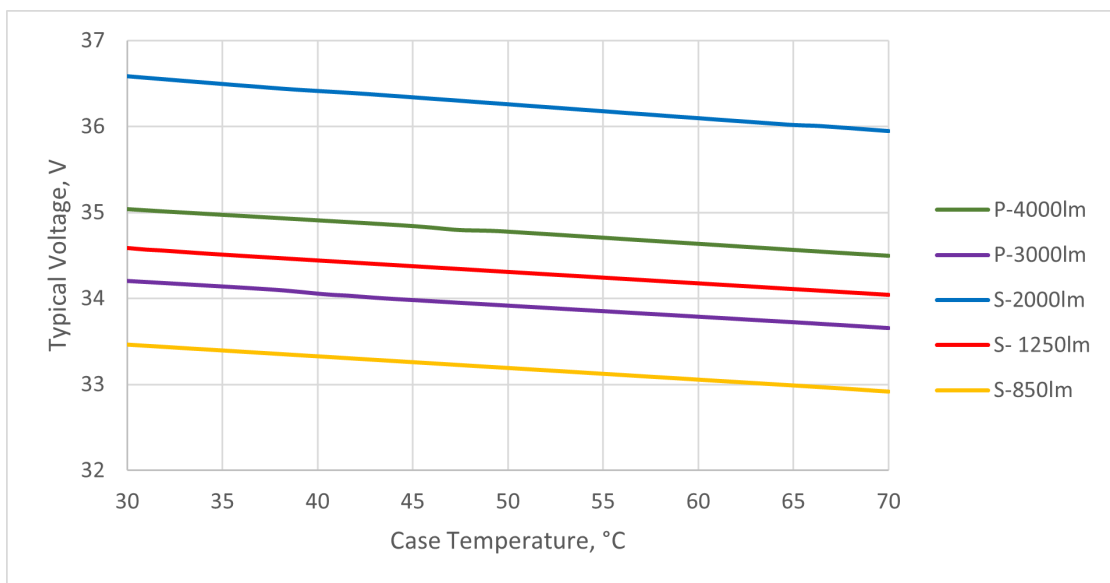
Relative Luminous Flux vs. Drive Current



Relative Luminous Flux vs. Case Temperature



Typical Voltage vs. Case Temperature

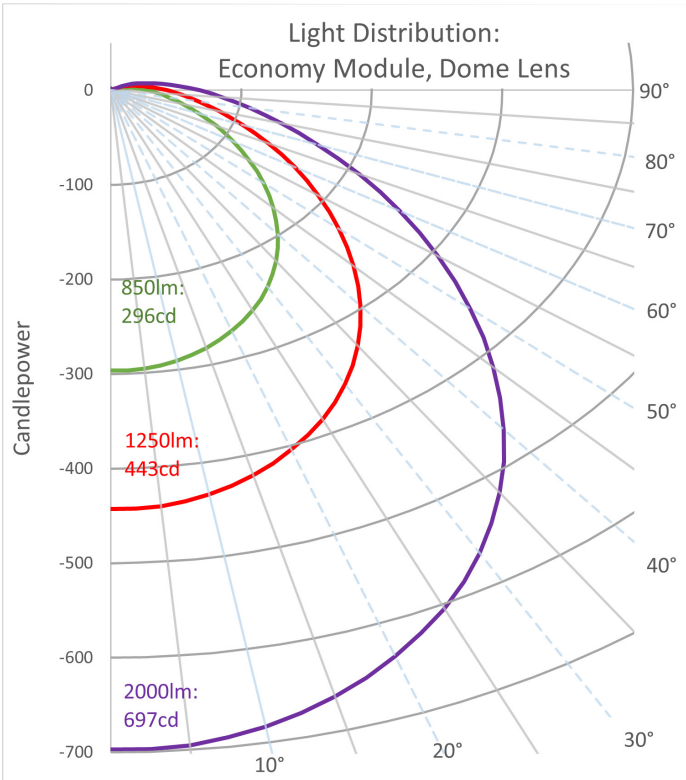


NELM Performance Specifications

Photometric Distributions - Standard Module

Dome Lens

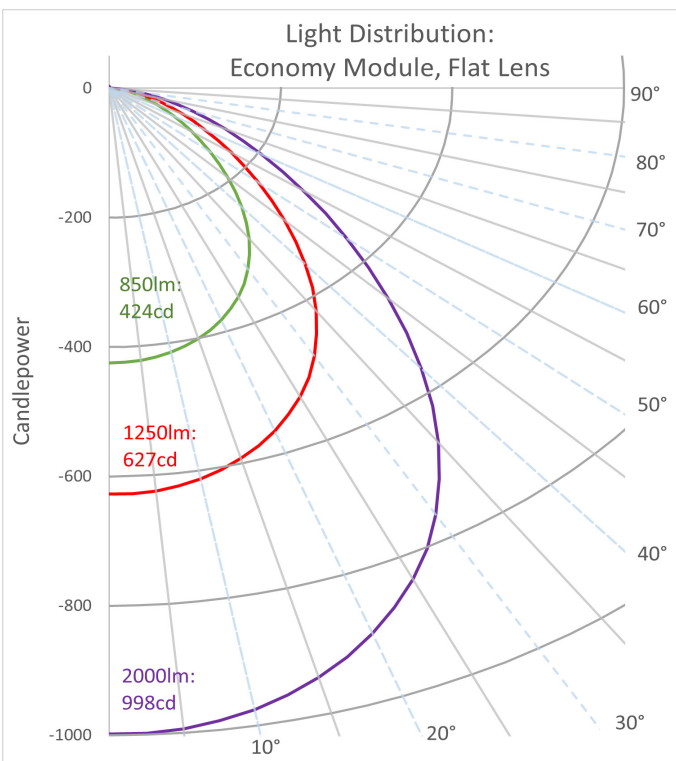
| Intensity (Candlepower) | | | |
|-------------------------|-------|--------|--------|
| Angle | 850lm | 1250lm | 2000lm |
| 0 | 296.3 | 442.7 | 697.2 |
| 5 | 295.5 | 441.5 | 695.3 |
| 15 | 282 | 421.4 | 663.6 |
| 25 | 256.9 | 383.9 | 604.6 |
| 35 | 220.7 | 329.8 | 519.4 |
| 45 | 176.2 | 263.2 | 414.5 |
| 55 | 130 | 194.3 | 306 |
| 65 | 89.4 | 133.5 | 210.2 |
| 75 | 57.7 | 86.2 | 135.7 |
| 85 | 36.6 | 54.7 | 86.1 |
| 90 | 29 | 43.4 | 68.3 |



| Zonal Lumens | | | | |
|--------------|-------------|--------------|--------------|-------------|
| Zone | Lumens/ 850 | Lumens/ 1250 | Lumens/ 2000 | % Luminaire |
| 0-30 | 224 | 330 | 528 | 26.4% |
| 0-40 | 361 | 531 | 850 | 42.5% |
| 0-60 | 612 | 900 | 1440 | 72.0% |
| 0-90 | 802 | 1180 | 1888 | 94.4% |
| 0-180 | 850 | 1250 | 2000 | 100.0% |

Flat Lens

| Intensity (Candlepower) | | | |
|-------------------------|-------|--------|--------|
| Angle | 850lm | 1250lm | 2000lm |
| 0 | 424.3 | 627.5 | 998.4 |
| 5 | 422.5 | 624.8 | 994.1 |
| 15 | 400.8 | 592.7 | 943 |
| 25 | 356 | 526.5 | 837.7 |
| 35 | 284.2 | 420.3 | 668.7 |
| 45 | 195.6 | 289.3 | 460.3 |
| 55 | 117.6 | 173.9 | 276.7 |
| 65 | 63.8 | 94.4 | 150.2 |
| 75 | 28.1 | 41.5 | 66 |
| 85 | 4.6 | 6.8 | 10.8 |
| 90 | 0 | 0 | 0 |



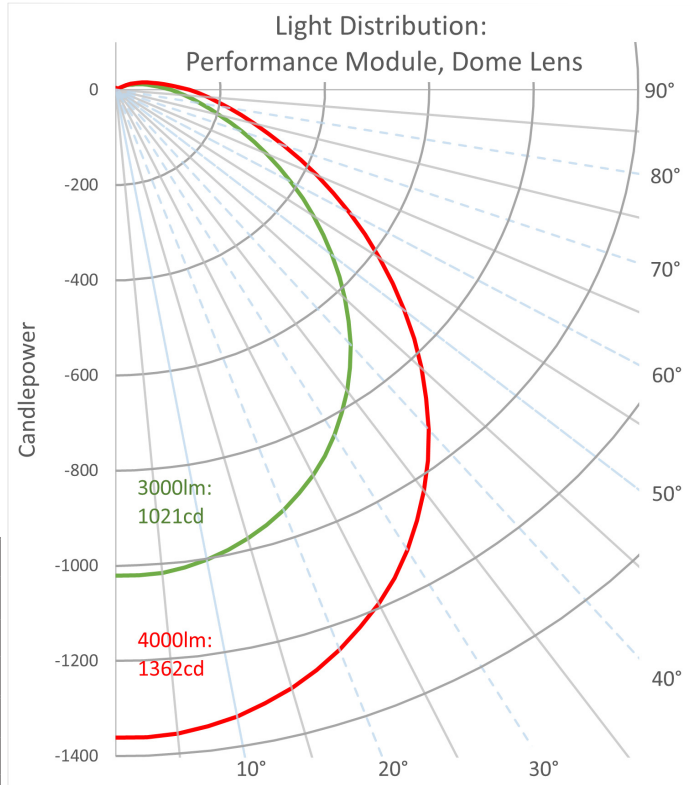
| Zonal Lumens | | | | |
|--------------|-------------|--------------|--------------|-------------|
| Zone | Lumens/ 850 | Lumens/ 1250 | Lumens/ 2000 | % Luminaire |
| 0-30 | 315 | 463 | 740 | 37.00% |
| 0-40 | 490 | 721 | 1154 | 57.70% |
| 0-60 | 747 | 1099 | 1758 | 87.90% |
| 0-90 | 848 | 1248 | 1996 | 99.80% |
| 0-180 | 850 | 1250 | 2000 | 100.00% |

NELM Performance Specifications

Photometric Distributions - Performance Module

Dome Lens

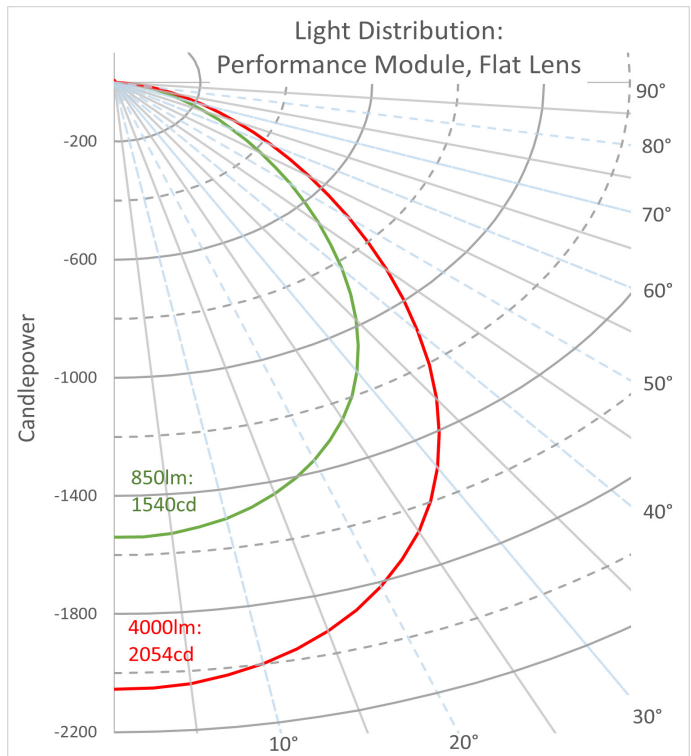
| Intensity (Candlepower) | | |
|-------------------------|--------|--------|
| Angle | 3000lm | 4000lm |
| 0 | 1021.2 | 1361.5 |
| 5 | 1018.6 | 1358.1 |
| 15 | 975.9 | 1301.2 |
| 25 | 893.5 | 1191.3 |
| 35 | 771.4 | 1028.6 |
| 45 | 620.6 | 827.5 |
| 55 | 462 | 616.1 |
| 65 | 318.9 | 425.2 |
| 75 | 206.3 | 275 |
| 85 | 132.5 | 176.7 |
| 90 | 105.1 | 140.1 |



| Zonal Lumens | | | |
|--------------|-------------|-------------|-------------|
| Zone | Lumens/3000 | Lumens/4000 | % Luminaire |
| 0-30 | 780 | 1040 | 26.0% |
| 0-40 | 1260 | 1680 | 42.0% |
| 0-60 | 2148 | 2864 | 71.6% |
| 0-90 | 2829 | 3772 | 94.3% |
| 0-180 | 3000 | 4000 | 100.0% |

Flat Lens

| Intensity (Candlepower) | | |
|-------------------------|--------|--------|
| Angle | 3000lm | 4000lm |
| 0 | 1540.4 | 2053.8 |
| 5 | 1532.6 | 2043.5 |
| 15 | 1442.3 | 1923.1 |
| 25 | 1258 | 1677.4 |
| 35 | 980.8 | 1307.7 |
| 45 | 672.2 | 896.2 |
| 55 | 415.4 | 553.9 |
| 65 | 233.5 | 311.4 |
| 75 | 105.4 | 140.5 |
| 85 | 18.1 | 24.2 |
| 90 | 0 | 0 |



| Zonal Lumens | | | |
|--------------|-------------|-------------|-------------|
| Zone | Lumens/3000 | Lumens/4000 | % Luminaire |
| 0-30 | 1122 | 1496 | 37.4% |
| 0-40 | 1731 | 2308 | 57.7% |
| 0-60 | 2622 | 3496 | 87.4% |
| 0-90 | 2994 | 3992 | 99.80% |
| 0-180 | 3000 | 4000 | 100.00% |

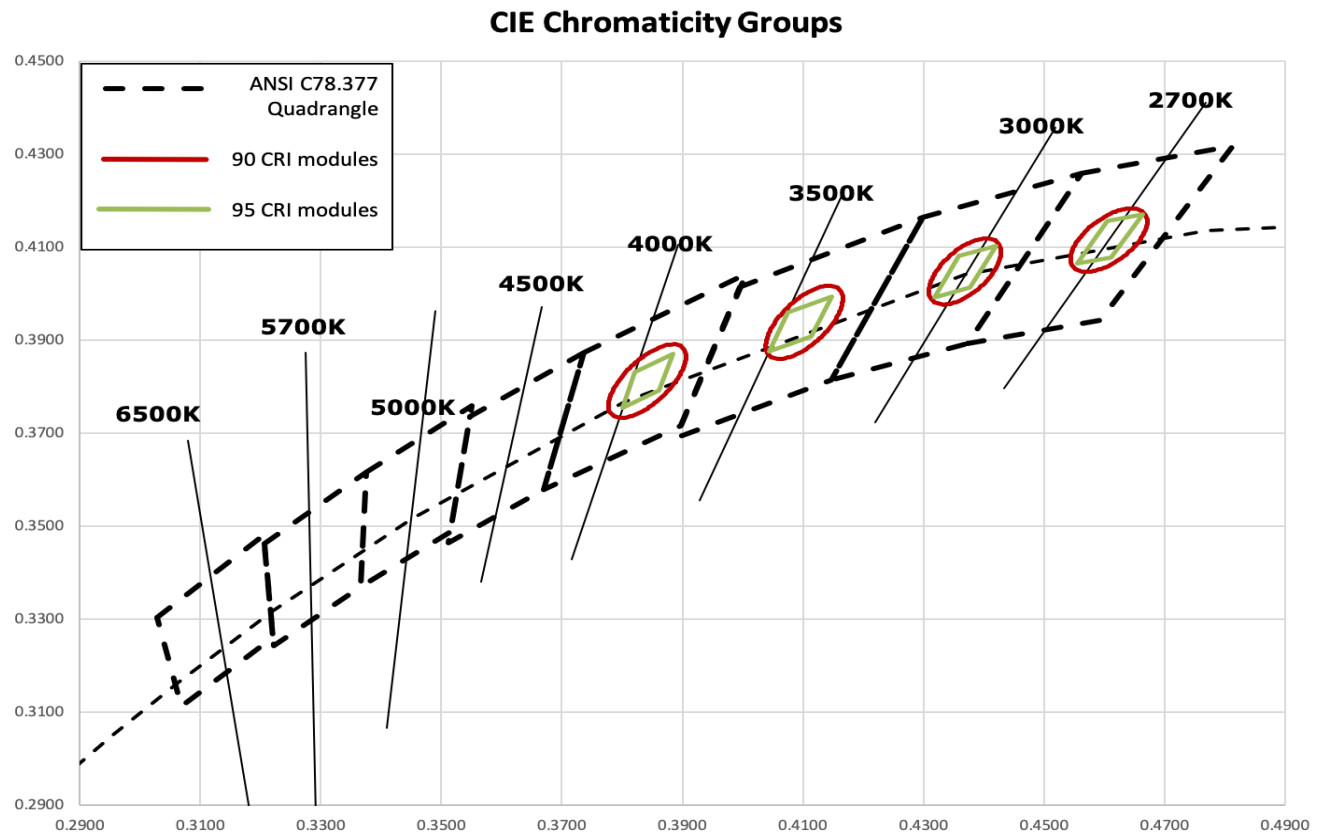
NELM Chromaticity Group 90

| Code | CCT | Center Point | | Major Axis | Minor Axis | Rotation Angle |
|------|-------|--------------|----------|------------|------------|----------------|
| | | x | y | a | b | |
| 27 | 2700K | 0.460777 | 0.411593 | 0.00834 | 0.00420 | 48.5 |
| 30 | 3000K | 0.436888 | 0.404812 | 0.00834 | 0.00408 | 53.2 |
| 35 | 3500K | 0.410237 | 0.393903 | 0.00927 | 0.00414 | 54.0 |
| 40 | 4000K | 0.384167 | 0.381233 | 0.00939 | 0.00402 | 53.7 |

NELM Chromaticity Group 95

| Code | CCT | ccx | ccy | Code | CCT | ccx | ccy |
|------|-------|----------|----------|------|-------|----------|----------|
| 27 | 2700K | 0.455477 | 0.406493 | 35 | 3500K | 0.404466 | 0.387583 |
| | | 0.460477 | 0.415693 | | | 0.407566 | 0.395983 |
| | | 0.466337 | 0.417093 | | | 0.414766 | 0.399483 |
| | | 0.461177 | 0.407893 | | | 0.411366 | 0.390883 |
| 30 | 3000K | 0.431788 | 0.399312 | 40 | 4000K | 0.380067 | 0.375433 |
| | | 0.435888 | 0.408212 | | | 0.382067 | 0.383133 |
| | | 0.442088 | 0.410412 | | | 0.388467 | 0.387033 |
| | | 0.437788 | 0.401412 | | | 0.386167 | 0.379233 |

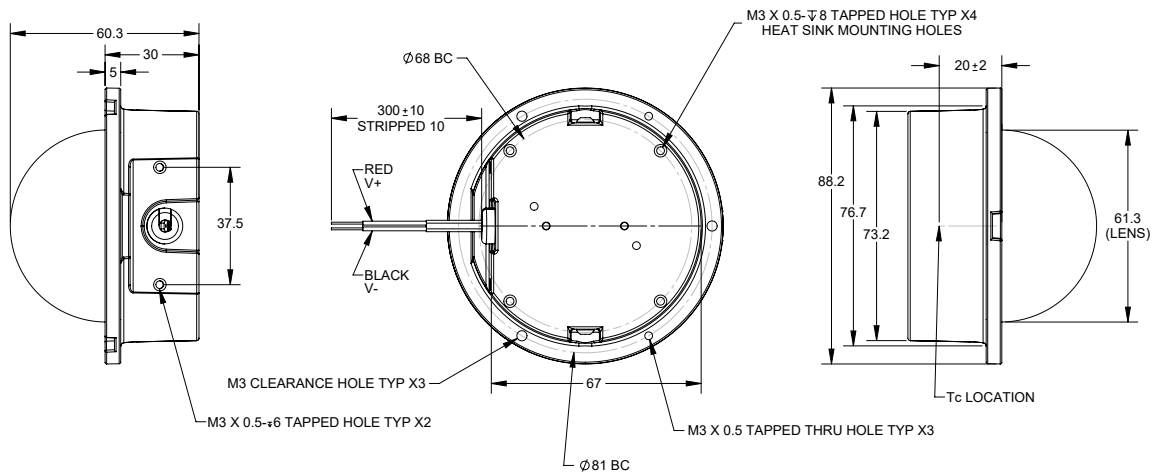
ANSI Binning Curve



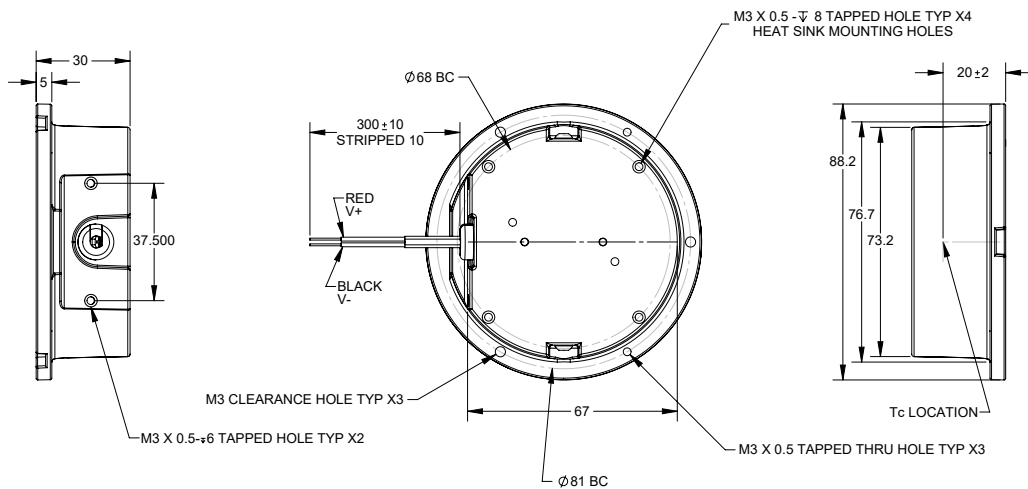
NELM Performance Specifications

Mechanical Dimensions

Dome Lens Module



Flat Lens Module



Dimensions in mm

NELM Performance Specifications

Packaging

NELM light sources are packaged in boxes of 10, which are then combined in cartons of 5 boxes, or 50 NELM light sources. Box and carton sizes are as follows.

Box of 10 NELM light sources: 320 x 280 x 115 mm
Carton of 5 NELM boxes: 600 x 300 x 350 mm

Optional heat sinks are packaged in boxes of 10. Each box also includes 40 screws. Boxes are combined in cartons as shown below. Box and carton sizes are as follows.

| Heat Sink | Order Code | Box Size (mm) | Carton Size (mm) |
|----------------------|---------------|-----------------|------------------------------------------------------|
| Optional Heat Sink 1 | NEHS-LM-30-XX | 450 x 95 x 95 | Carton of 5 boxes, or 50 heat sinks: 500 x 460 x 115 |
| Optional Heat Sink 2 | NEHS-LM-40-XX | 600 x 120 x 120 | Carton of 2 boxes, or 20 heat sinks: 620 x 260 x 150 |

Disclaimer: Customer is responsible for proper thermal management.