



- 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
- Industry leading 5-year limited warranty
- ETL certified for damp locations

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# 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,  $\pm 0.005$  on chromaticity (CCx, CCy) measurements and a tolerance of  $\pm 2$  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

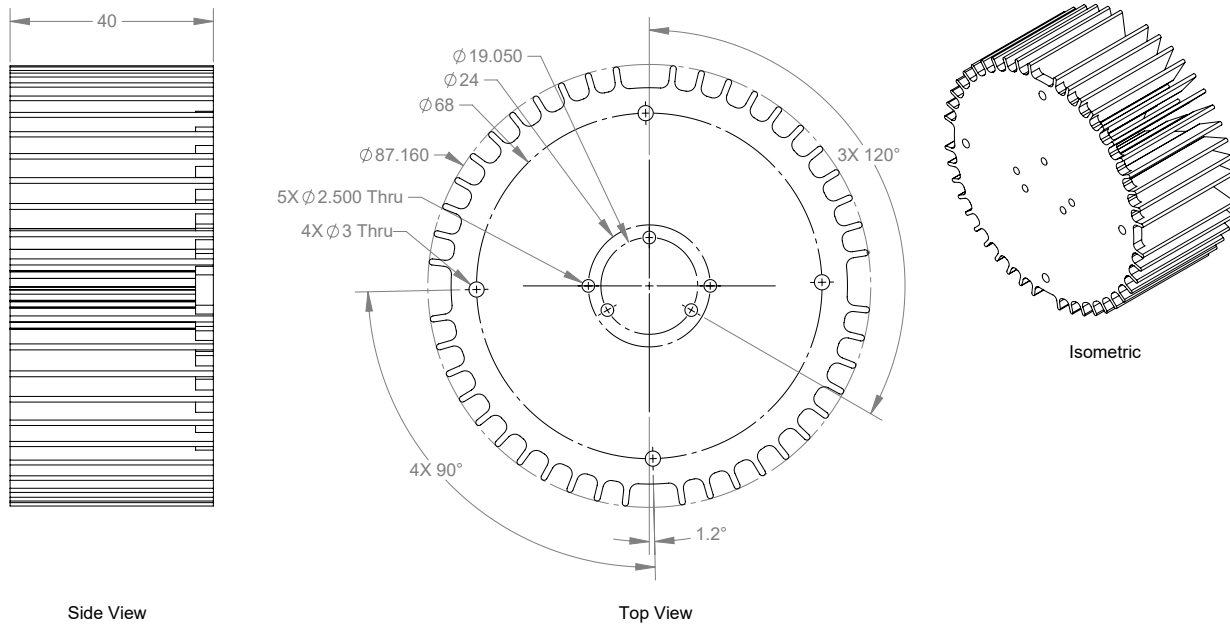
# NELM Performance Specifications

## 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.

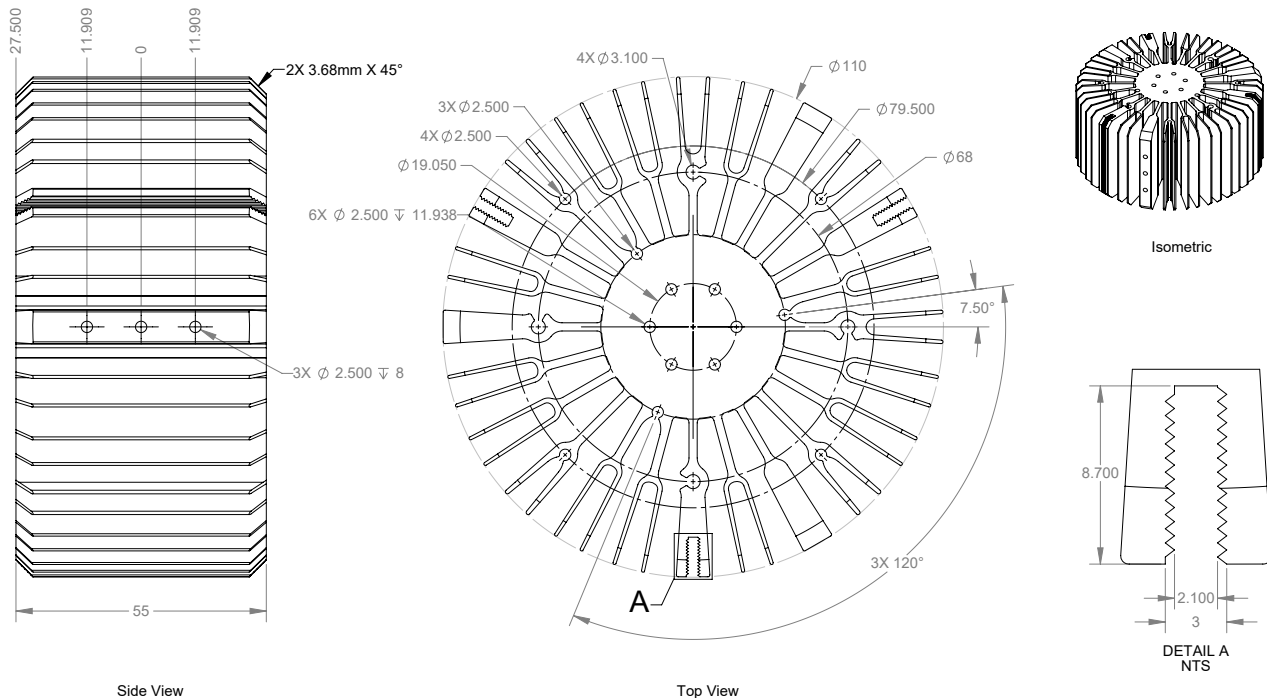
**Disclaimer: Customer is responsible for proper thermal management.**

### OEM Option 1: NELM-HS-30-00 Suitable for Standard Modules



Note: Dimensions in Millimeters

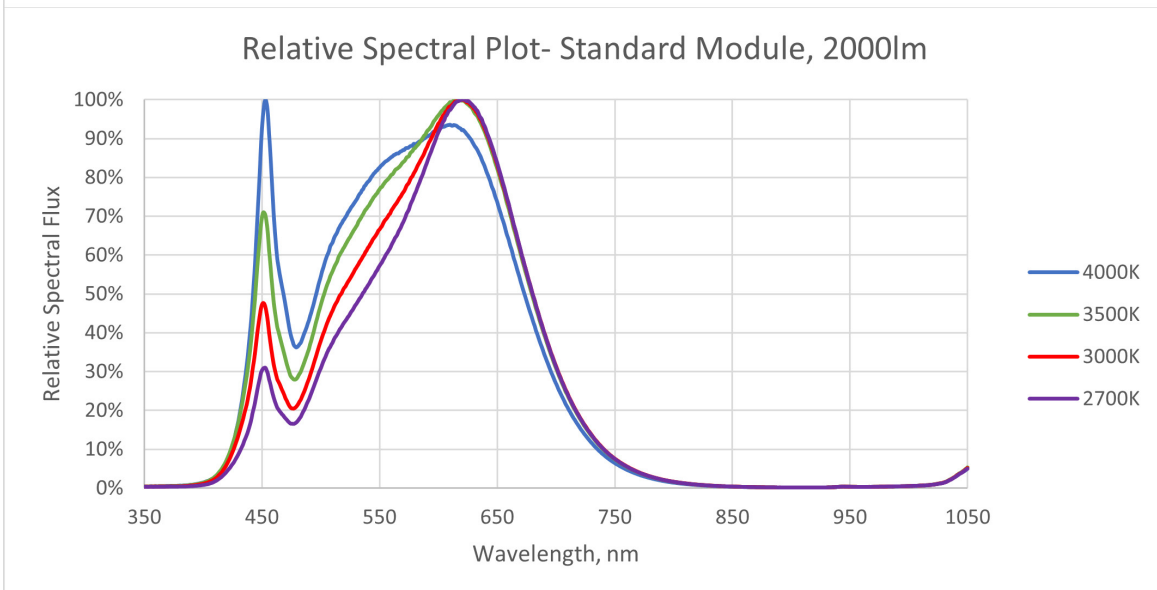
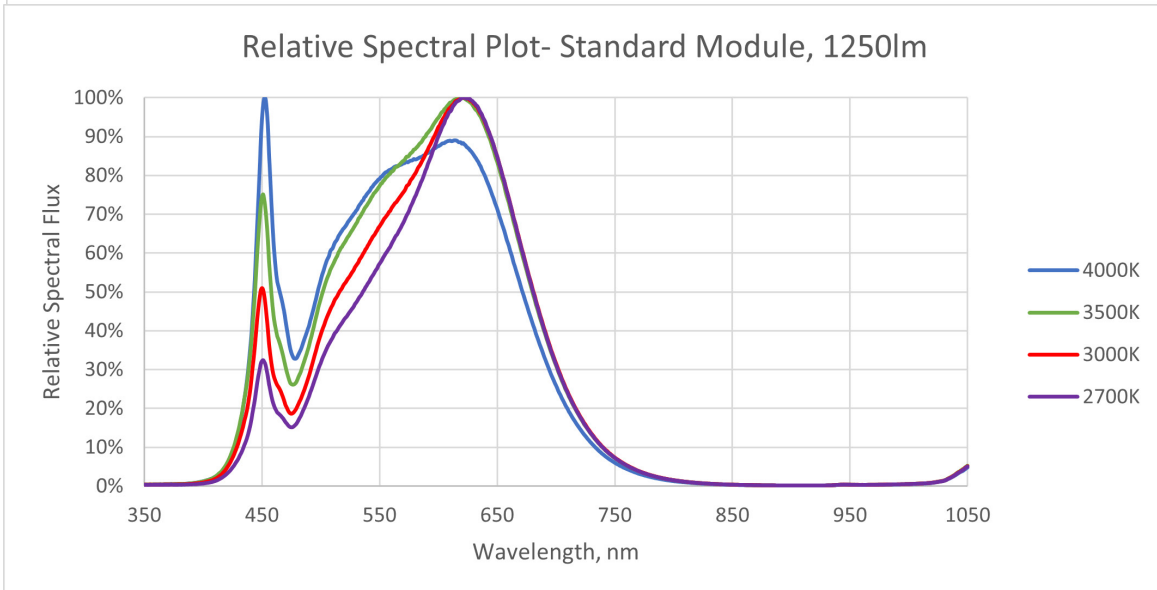
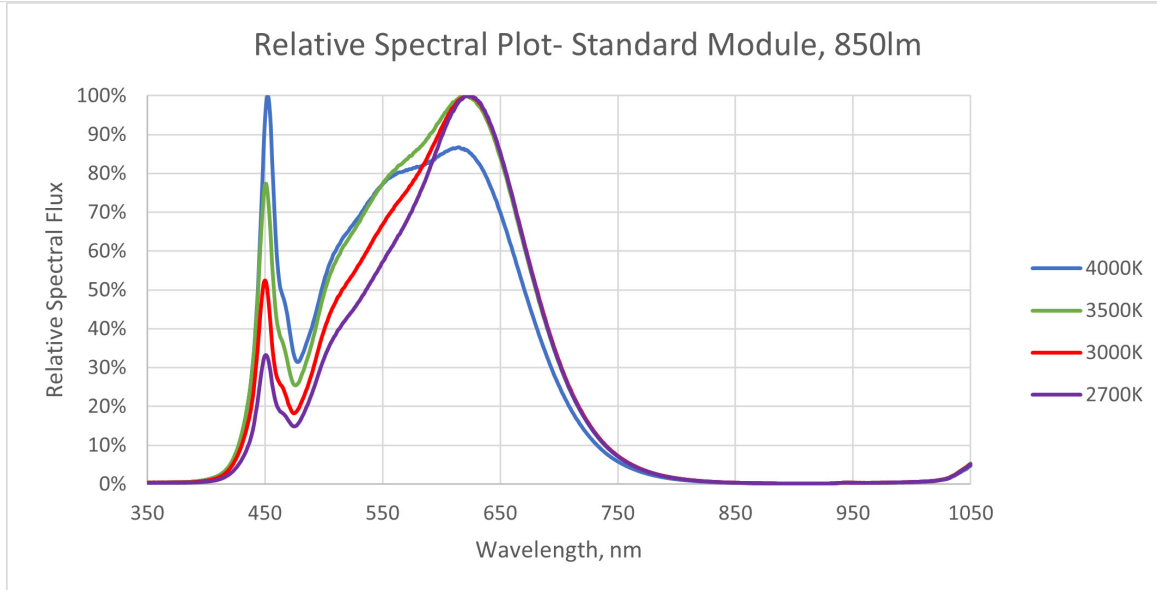
### OEM Option 2: NELM-HS-40-00 Suitable for Performance Modules



Note: Dimensions in millimeters

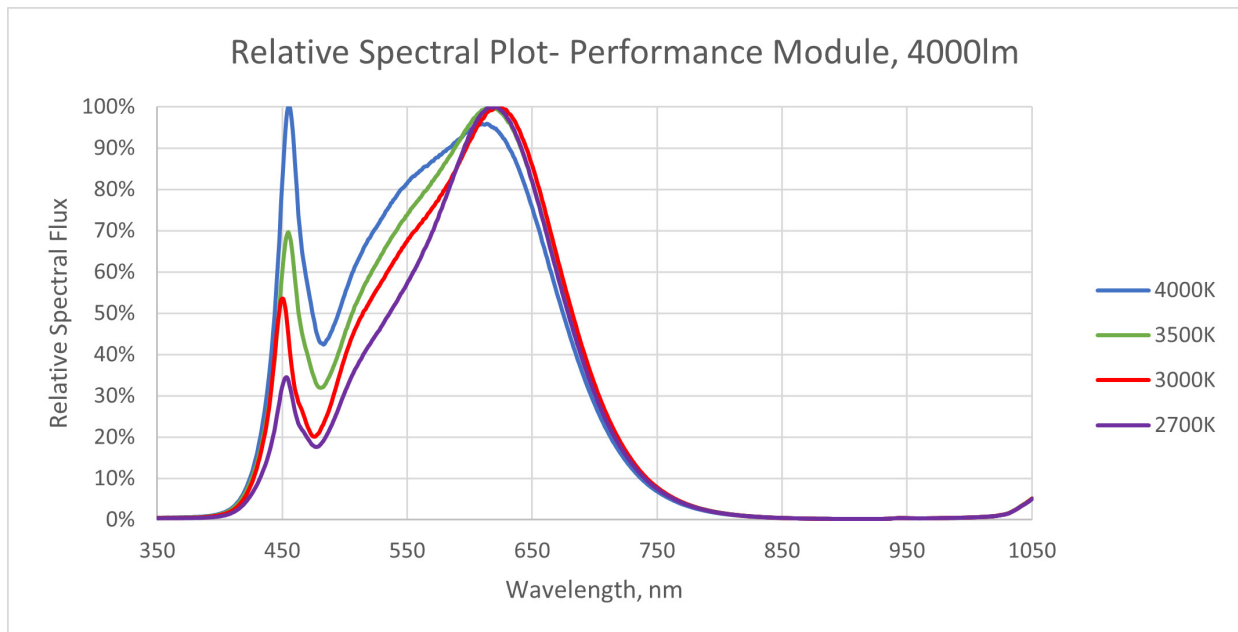
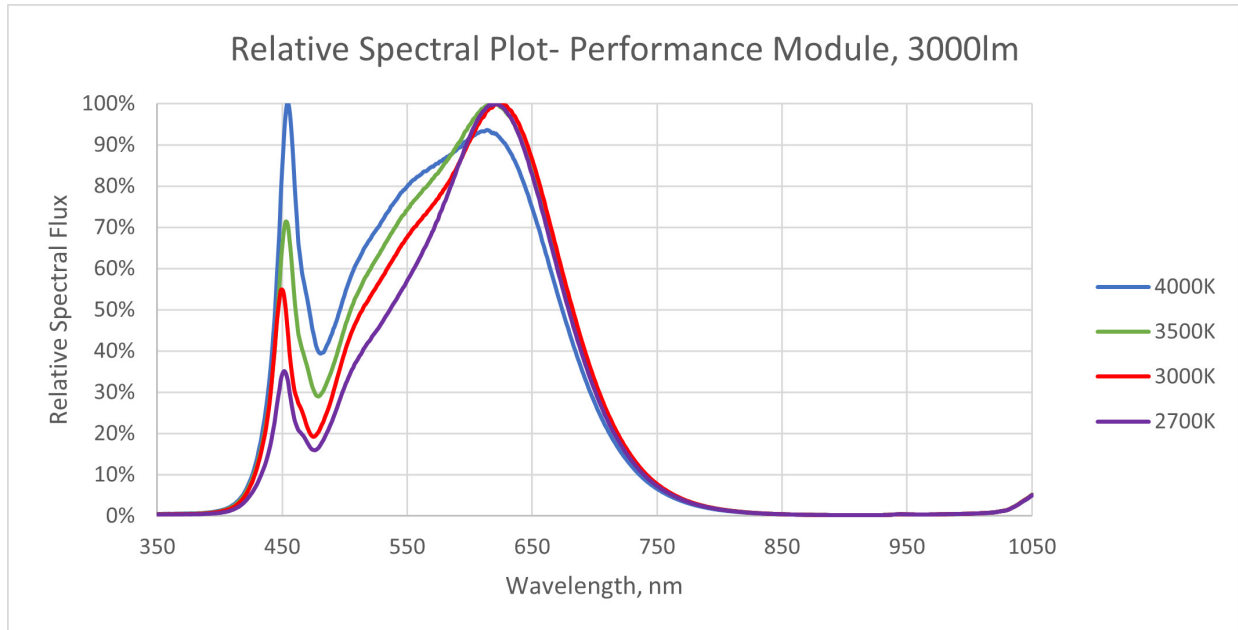
# NELM Performance Specifications

## Performance Characteristics - Standard Module Spectral Plot

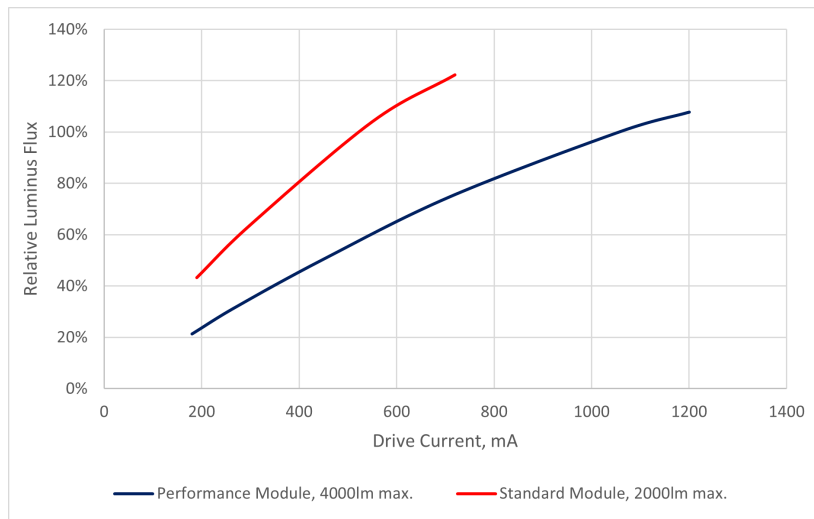


# NELM Performance Specifications

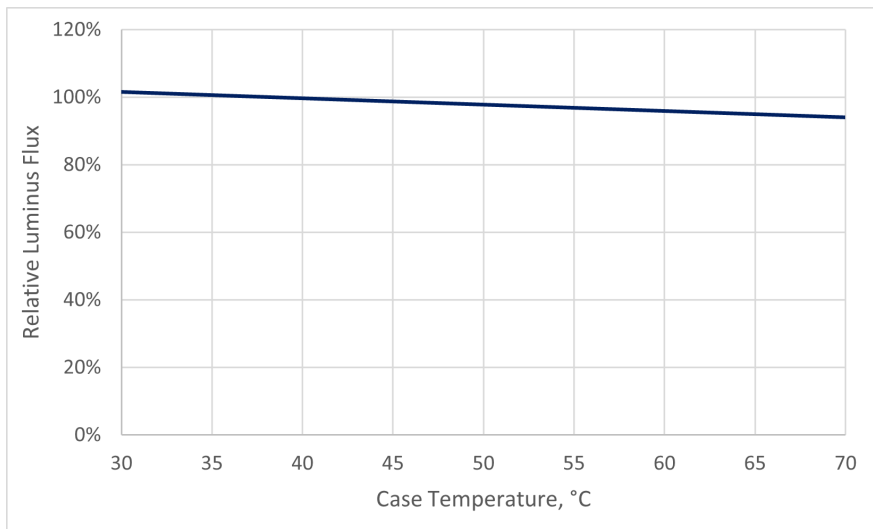
## Performance Characteristics - Performance Spectral Plot



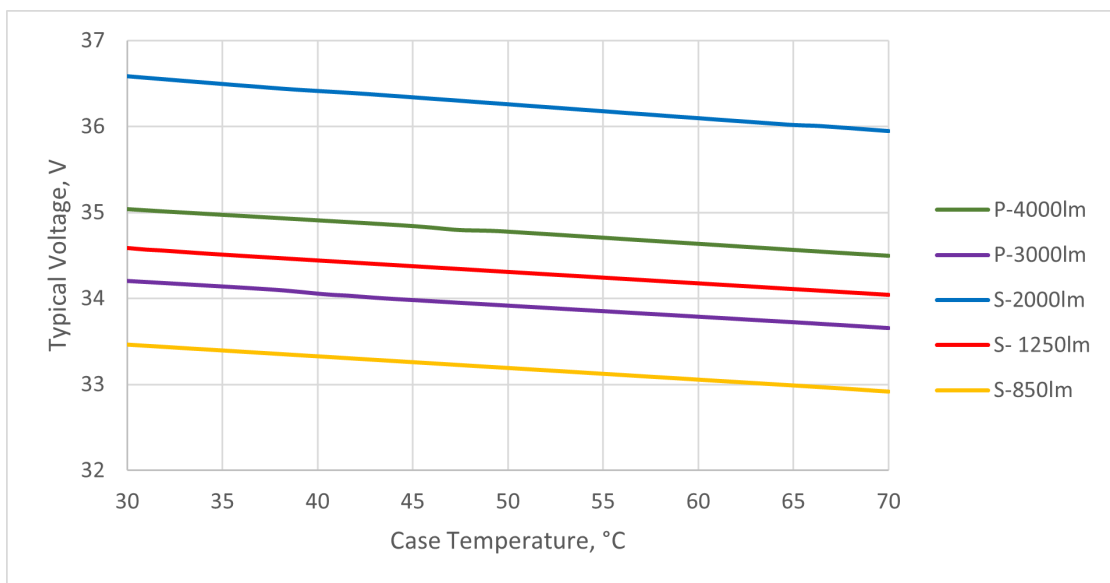
## Relative Luminous Flux vs. Drive Current



## Relative Luminous Flux vs. Case Temperature



## Typical Voltage vs. Case Temperature

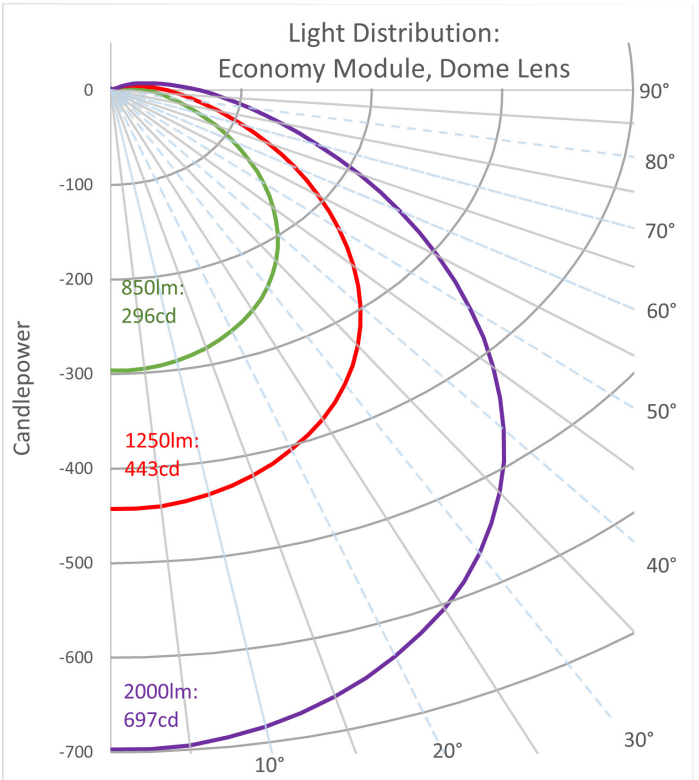


# NELM Performance Specifications

## Photometric Distributions - Standard Module

### Dome Lens

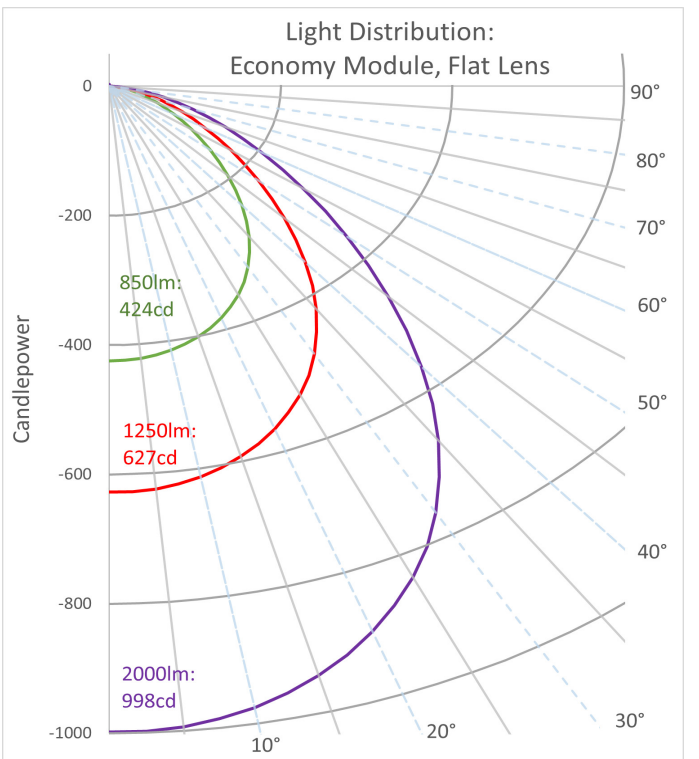
Intensity (Candlepower)			
Angle	850lm	1250lm	2000lm
0	296.3	442.7	697.2
5	295.5	441.5	695.3
15	282	421.4	663.6
25	256.9	383.9	604.6
35	220.7	329.8	519.4
45	176.2	263.2	414.5
55	130	194.3	306
65	89.4	133.5	210.2
75	57.7	86.2	135.7
85	36.6	54.7	86.1
90	29	43.4	68.3



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%

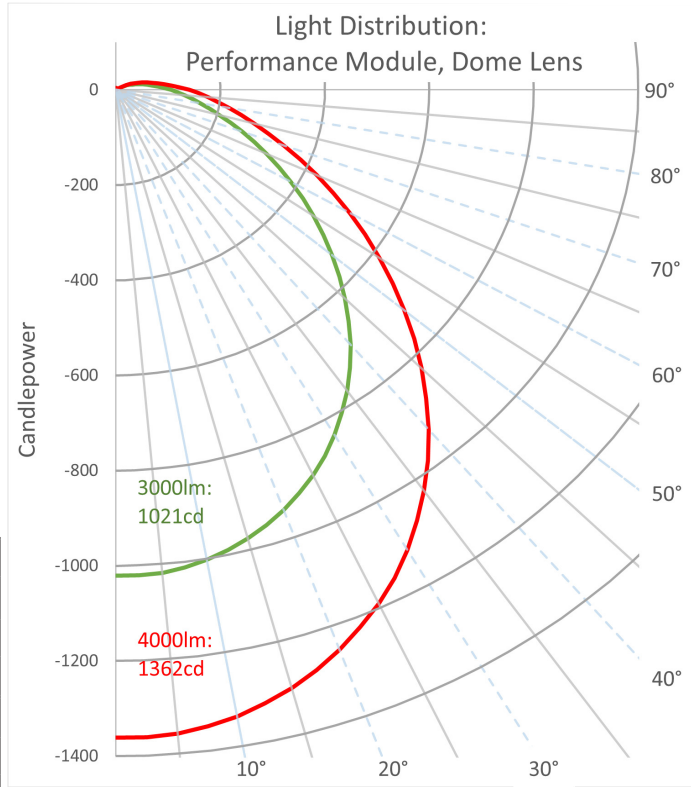


# NELM Performance Specifications

## Photometric Distributions - Performance Module

### Dome Lens

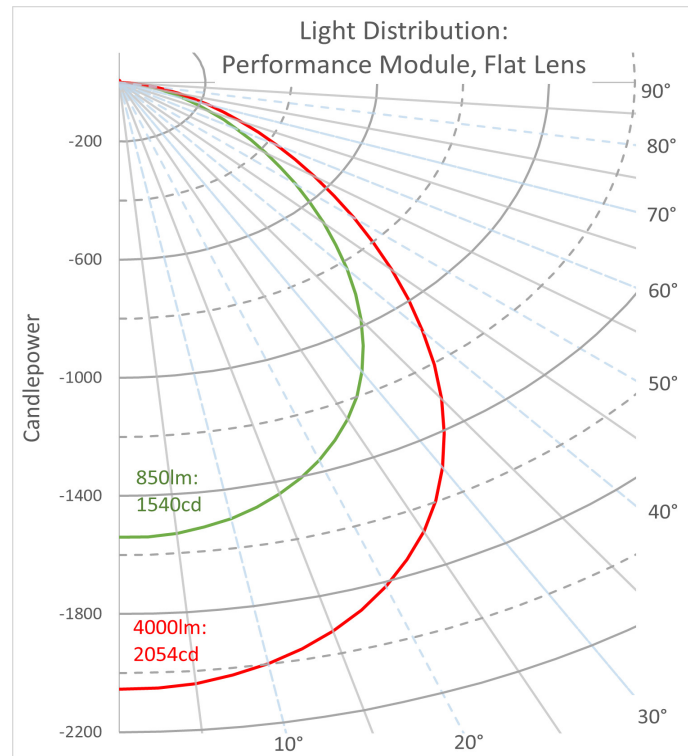
Intensity (Candlepower)		
Angle	3000lm	4000lm
0	1021.2	1361.5
5	1018.6	1358.1
15	975.9	1301.2
25	893.5	1191.3
35	771.4	1028.6
45	620.6	827.5
55	462	616.1
65	318.9	425.2
75	206.3	275
85	132.5	176.7
90	105.1	140.1



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%

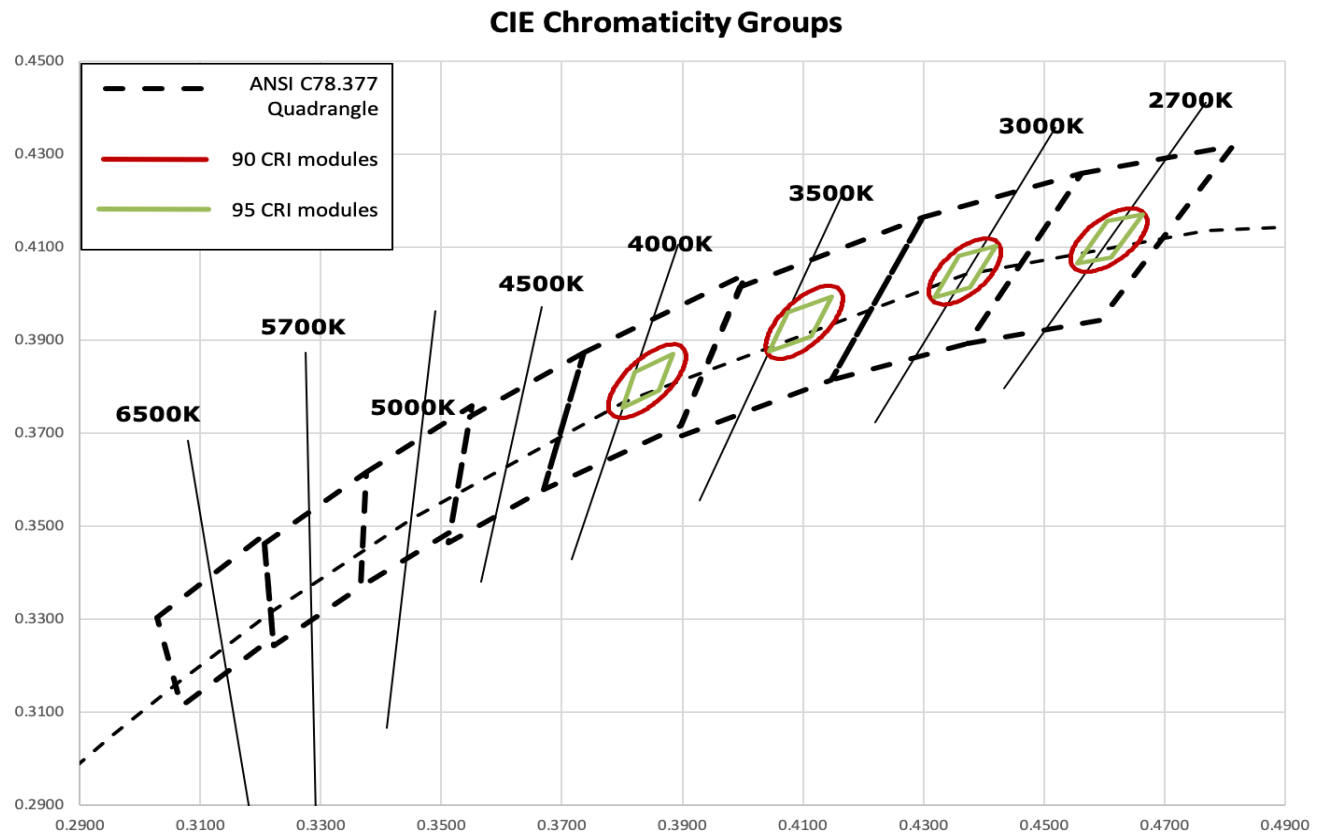
# NELM Chromaticity Group 90

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

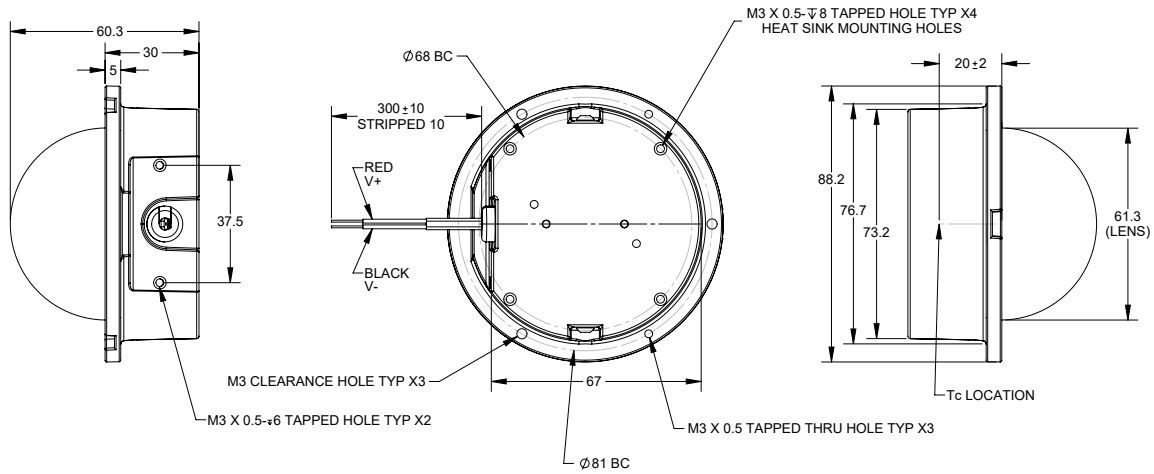
# ANSI Binning Curve



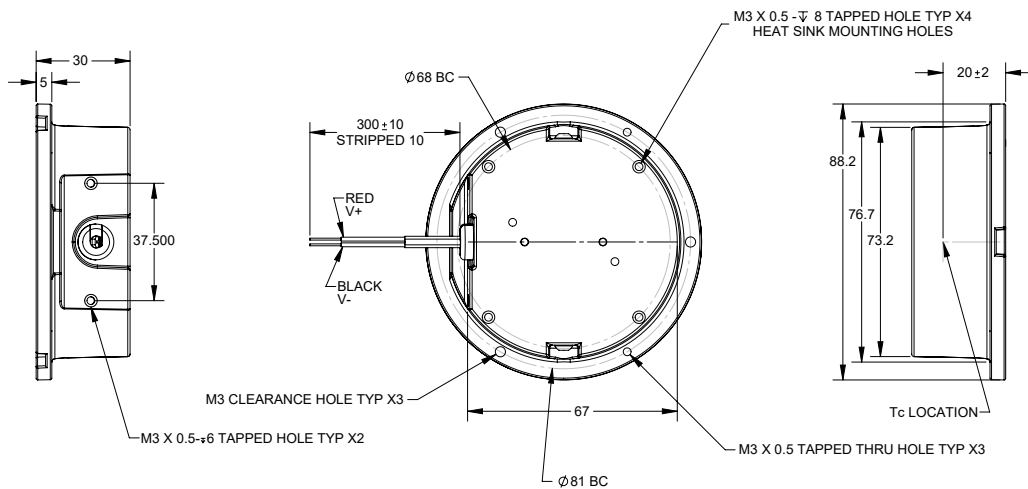
# NELM Performance Specifications

## 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	NELM-HS-30-00	450 x 95 x 95	Carton of 5 boxes, or 50 heat sinks: 500 x 460 x 115
Optional Heat Sink 2	NELM-HS-40-00	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.**