

H4 LED Downlight Series 2nd Generation – LED Light Engines

The Halo H4 LED is a family of 4” aperture recessed downlights with H457 series housings designed for use with Halo EL406 Series LED Light Engines and compatible TL4 and TLS4 Series LED trims. Halo H4 LED housings have integral LED drivers that offer dimming as a standard feature.

Halo H4 LED is a three part system: EL406 Light Engines, with TL4/ TLS4 trims and H457 housings. H4 LED 2nd Generation features 90 CRI color rendering index and offers a superior optical design that yields productive beam lumens, good cutoff and low glare.

Catalog #		Type
Project		
Comments		Date
Prepared by		

DESIGN FEATURES

MECHANICAL

(A) Upper Heat Sink

- Durable extruded aluminum construction.
- Conducts heat away from the LED keeping the junction temperatures below specified maximums, even when installed in insulated ceiling environments.

(B) Lower Heat Sink

- Durable die-cast aluminum construction.
- Precision keyed flange designed to lock with matching keyed slots in H4 trim rings.
- Works in conjunction with the upper heat sink for heat conduction away from the LED

MOUNTING

(C) Friction Blades

- Precision formed stainless steel spring blades provide retention of the EL406 series of light engines in the H457 series housings.
- Friction blade design allows the light engine to be installed in any position within the housing aperture (360 degrees).

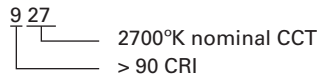
ELECTRICAL

(D) LED Connection

- LED connector is non-screw base offering easy installation with the H457 Series housings.
- LED connector is compliant with high-efficacy luminaire code requirements as a non-screw base socket.
- Separate grounding cable included on the module for attachment to the housing during installation.

COLOR SPECIFICATION & QUALITY STANDARDS

- Halo employs a tight chromaticity specification and LED color binning process to ensure LED color uniformity, sustainable Color Rendering Index (CRI) and Correlated Color Temperature (CCT) consistency over the useful life of the LED
- Halo H4 LED chromaticity specification is 3SDCM initial and 5SDCM at rated life, which exceeds ENERGY STAR® SSL color standards (as per ANSI 78.377-2008).
- Every Halo LED Module is quality tested and performance measured on the production line, and serialized to register lumens, wattage, CRI and CCT
- Halo LED’s serialized testing and measurement process further ensures color and lumen consistency to meet stringent Cooper Lighting specifications and exceed ENERGY STAR® SSL standards
- Halo LED Modules and light engines include color designation in the model number
- Example: EL406927

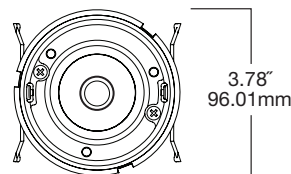
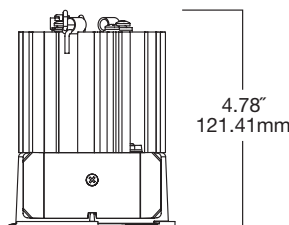


QUALIFICATION

- Halo LED offers the choice of four correlated color temperatures: 2700°K, 3000°K, 3500°K, 4000°K
- 90 CRI
- LED package consisting of an engineered array of multiple LEDs to create one virtual source, for a productive “cone of light”
- Designed for interchangeable trim choices, with selection from multiple reflector, baffle, and lens trim options
- H4 LED Light Engines are ENERGY STAR® Qualified as used with designated LED trims*
- Can be used to meet State of California Title 24, Washington State Energy Code - WSEC, and International Energy Conservation Code – IECC, High Efficacy requirements when used with designated LED trims*
- LED emits no ultraviolet and only minimal infrared wavelengths
- ROHS compliant



*Qualified & Compliant as designated with LED Light Engine and Trim. Refer to ENERGY STAR® Qualified Products List and CEC (T24) Appliance Database for listings.

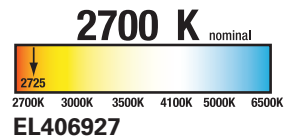


H4 LED Downlight Series 2nd Generation

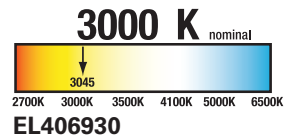
LED Light Engines

Available in
2700K
3000K
3500K
4000K

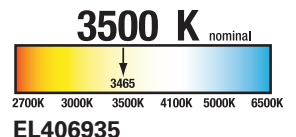
Correlated Color Temperatures



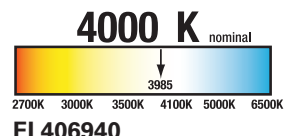
4” LED Light Engine, 2700K



4” LED Light Engine, 3000K



4” LED Light Engine, 3500K



4” LED Light Engine, 4000K

Color Rendering Index (CRI, Ra): 90

H4 LED 2nd Generation Downlight Collection - Lumen and Compliance Summary

H4 LED Downlight Collection		EL406927 - 2700K				EL406930 - 3000K				EL406935 - 3500K				EL406940 - 4000K			
Trim Type	Trim Model	LUMENS (1)	ENERGY STAR (2)	California T24 (3)	IECC & WSEC (4)	LUMENS (1)	ENERGY STAR (2)	California T24 (3)	IECC & WSEC (4)	LUMENS (1)	ENERGY STAR (2)	California T24 (3)	IECC & WSEC (4)	LUMENS (1)	ENERGY STAR (2)	California T24 (3)	IECC & WSEC (4)
Specular Reflector, Diffuse Polymer Lens	TL410SC	660	Yes	Yes	Yes	720	Yes	Yes	Yes	730	Yes	Yes	Yes	810	Yes	Yes	Yes
Haze Reflector, Diffuse Polymer Lens	TL410H	650	Yes	Yes	Yes	710	Yes	Yes	Yes	720	Yes	Yes	Yes	800	Yes	Yes	Yes
White Reflector, Diffuse Polymer Lens	TL410WH	630	Yes	Yes	Yes	690	Yes	Yes	Yes	700	Yes	Yes	Yes	770	Yes	Yes	Yes
Specular Black Reflector, Diffuse Polymer Lens	TL410SBK	460	No	No	No	500	No	No	No	510	No	No	No	560	Yes	No	Yes
Satin Nickel Reflector, Diffuse Polymer Lens	TL410SN	560	Yes	No	Yes	610	Yes	Yes	Yes	620	Yes	Yes	Yes	680	Yes	Yes	Yes
Tuscan Bronze Reflector, Diffuse Polymer Lens	TL410TBZ	450	No	No	No	500	No	No	No	510	No	No	No	560	Yes	No	Yes
White Baffle, Diffuse Polymer Lens	TL411WB	647	Yes	Yes	Yes	690	Yes	Yes	Yes	700	Yes	Yes	Yes	770	Yes	Yes	Yes
Black Baffle, Diffuse Polymer Lens	TL411BB	450	No	No	No	490	No	No	No	500	No	No	No	550	No	No	Yes
Solite® Glass Lens Specular Clear Reflector	TL402SCS	710	Yes	Yes	Yes	770	Yes	Yes	Yes	780	Yes	Yes	Yes	860	Yes	Yes	Yes
Solite® Glass Lens Haze Reflector	TL402HS	740	Yes	Yes	Yes	810	Yes	Yes	Yes	820	Yes	Yes	Yes	900	Yes	Yes	Yes
Solite® Glass Lens White Reflector	TL402WHS	710	Yes	Yes	Yes	780	Yes	Yes	Yes	790	Yes	Yes	Yes	870	Yes	Yes	Yes
Solite® Glass Lens White Baffle	TL403WBS	700	Yes	Yes	Yes	760	Yes	Yes	Yes	780	Yes	Yes	Yes	850	Yes	Yes	Yes
Solite® Glass Lens Specular Black Reflector	TL402SBKS	650	Yes	Yes	Yes	710	Yes	Yes	Yes	720	Yes	Yes	Yes	800	Yes	Yes	Yes
Solite® Glass Lens Satin Nickel Reflector	TL402SNS	660	Yes	Yes	Yes	720	Yes	Yes	Yes	730	Yes	Yes	Yes	800	Yes	Yes	Yes
Solite® Glass Lens Tuscan Bronze Reflector	TL402TBZS	630	Yes	Yes	Yes	690	Yes	Yes	Yes	700	Yes	Yes	Yes	770	Yes	Yes	Yes
Solite® Glass Lens Black Baffle	TL403BBS	630	Yes	Yes	Yes	690	Yes	Yes	Yes	700	Yes	Yes	Yes	770	Yes	Yes	Yes
Square Baffle Trim, Solite® Glass Lens, White Ring & White Baffle	TLS408WHWB	680	Yes	Yes	Yes	740	Yes	Yes	Yes	750	Yes	Yes	Yes	830	Yes	Yes	Yes
Square Baffle Trim, Solite® Glass Lens, White Ring & Black Baffle	TLS408WHBB	640	Yes	Yes	Yes	710	Yes	Yes	Yes	720	Yes	Yes	Yes	790	Yes	Yes	Yes
Square Baffle Trim, Solite® Glass Lens, Satin Nickel Ring & Black Baffle	TLS408SNBB	660	Yes	Yes	Yes	720	Yes	Yes	Yes	730	Yes	Yes	Yes	800	Yes	Yes	Yes
Square Baffle Trim, Solite® Glass Lens, Tuscan Bronze Ring & Black Baffle	TLS408TBZBB	630	Yes	Yes	Yes	690	Yes	Yes	Yes	700	Yes	Yes	Yes	770	Yes	Yes	Yes
Wall Wash, Semi-Specular Reflector with Diffuse Polymer Lens & White Ring	TL409WW	640	Yes	Yes	Yes	700	Yes	Yes	Yes	710	Yes	Yes	Yes	780	Yes	Yes	Yes
Wall Wash, White Reflector, with Diffuse Polymer Lens & White Ring	TL409HWW	640	Yes	Yes	Yes	710	Yes	Yes	Yes	720	Yes	Yes	Yes	790	Yes	Yes	Yes
White Baffle Shower Trim, All Polymer: Lens, Baffle & Ring	TL422PS	680	Yes	Yes	Yes	750	Yes	Yes	Yes	760	Yes	Yes	Yes	840	Yes	Yes	Yes

(1) Trims are tested with designated LED Light Engines in accordance with IES LM-79 Photometric Measurement Standards. Field results may vary.

(2) Tested and qualified to ENERGY STAR® standards, consult the ENERGY STAR® Qualified Products List

(3) May be used for California Title 24 compliance, and registered with State of California; consult the CEC Title 20 Appliance Database

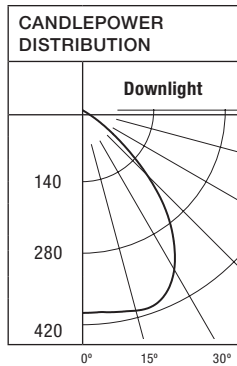
(4) May be used for IECC - International Energy Conservation Code and WSEC - Washington State Energy Code

Halo H4 LED 2nd Generation Downlight Photometry

Representative photometric test report for 3000°K color temperature, 90CRI. Multipliers may be used to determine relative lumen values with other color temperatures

Correlated Color Temperature (CCT) as tested: 3000°K				
Color Temperature	2700°K	3000°K	3500°K	4000°K
Multiplier	0.913	1.000	1.014	1.118

EL406930-TL410SC		
Test Number	P123670	
LED Module	EL406930	
Trim	4" Specular Clear Reflector, Polycarbonate Frost Dome Lens, White Ring	
Lumens	55.4 Lm/W	
SC	1.29 / 1.29 / 1.25	

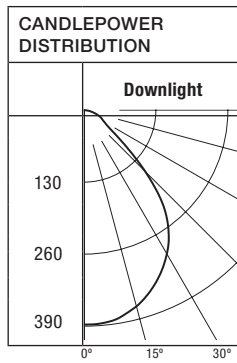


CONE OF LIGHT			
D	FC	L	W
5.5'	13.1	7	7
7'	8.1	9	9
8'	6.2	10.2	10.2
9'	4.9	11.6	11.6
10'	4	12.8	12.8
12'	2.8	15.4	15.4

LUMINANCE DATA	
Angle	0°
45	41329
55	14297
65	1601
75	685
85	0

ZONAL LUMEN SUMMARY		
Zone	Lumens	%Fixture
0-30	333	46.2
0-40	527	73.2
0-60	714	99.2
0-90	720	100.0
90-180	0	0.0
0-180	720	100.0

EL406930-TL411WB		
Test Number	P123690	
LED Module	EL406930	
Trim	4" White Baffle, Polycarbonate Frost Dome Lens, White Ring	
Lumens	53.1 Lm/W	
SC	1.16 / 1.16 / 1.2	

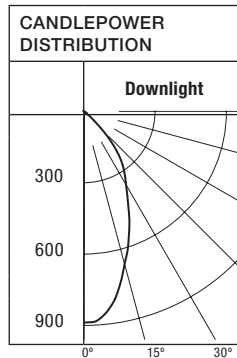


CONE OF LIGHT			
D	FC	L	W
5.5'	12.8	6.2	6.2
7'	7.9	8	8
8'	6	9.2	9.2
9'	4.8	10.4	10.4
10'	3.9	11.4	11.4
12'	2.7	13.8	13.8

LUMINANCE DATA	
Angle	0°
45	48625
55	21600
65	18264
75	16267
85	10819

ZONAL LUMEN SUMMARY		
Zone	Lumens	%Fixture
0-30	290	42.0
0-40	455	66.0
0-60	630	91.3
0-90	690	100.0
90-180	0	0.0
0-180	690	100.0

EL406930-TL402SCS		
Test Number	P123702	
LED Module	EL406930	
Trim	4" Specular Clear Reflector w/ Solite® Glass Lens, White Ring	
Lumens	59.2 Lm/W	
SC	0.75 / 0.75 / 0.84	

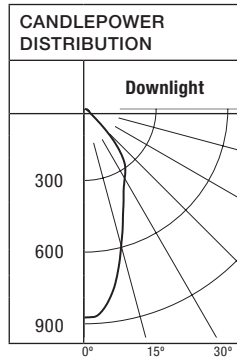


CONE OF LIGHT			
D	FC	L	W
5.5'	29.3	4	4
7'	18.1	5.2	5.2
8'	13.9	6	6
9'	11	6.6	6.6
10'	8.9	7.4	7.4
12'	6.2	9	9

LUMINANCE DATA	
Angle	0°
45	25791
55	4747
65	3240
75	0
85	0

ZONAL LUMEN SUMMARY		
Zone	Lumens	%Fixture
0-30	472	61.3
0-40	652	84.7
0-60	760	98.7
0-90	770	100.0
90-180	0	0.0
0-180	770	100.0

EL406930-TL403WBS		
Test Number	P123714	
LED Module	EL406930	
Trim	4" White Baffle w/ Solite® Glass Lens, White Ring	
Lumens	58.5 Lm/W	
SC	0.66 / 0.66 / 0.82	



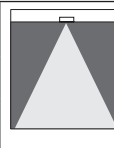
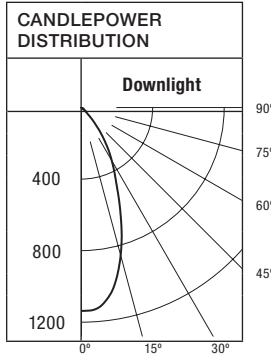
CONE OF LIGHT			
D	FC	L	W
5.5'	28.9	3.6	3.6
7'	17.8	4.6	4.6
8'	13.6	5.2	5.2
9'	10.8	5.8	5.8
10'	8.7	6.6	6.6
12'	6.1	7.8	7.8

LUMINANCE DATA	
Angle	0°
45	28616
55	8005
65	6824
75	3921
85	2033

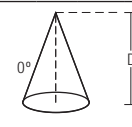
ZONAL LUMEN SUMMARY		
Zone	Lumens	%Fixture
0-30	424	55.8
0-40	606	79.7
0-60	733	96.4
0-90	760	100.0
90-180	0	0.0
0-180	760	100.0

Halo H4 LED 2nd Generation Downlight Photometry

EL406930-TLS408WHWB	
Test Number	P123750
LED Module	EL406930
Trim	4" Square Baffle Trim, Solite Lens, White Ring with White Baffle
Lumens	56.9 Lm/W
SC	0.71 / 0.69 / 0.73

CONE OF LIGHT



D	FC	L	W
5.5'	37.6	3.8	3.8
7'	23.2	4.8	4.8
8'	17.8	5.6	5.4
9'	14	6.2	6.2
10'	11.4	7	6.8
12'	7.9	8.4	8.2

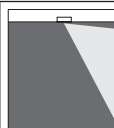
LUMINANCE DATA

Angle	0°
45	16824
55	9999
65	11645
75	6288
85	4891

ZONAL LUMEN SUMMARY

Zone	Lumens	%Fixture
0-30	554	74.9
0-40	676	91.3
0-60	726	98.1
0-90	740	100.0
90-180	0	0.0
0-180	740	100.0

EL406930-TL409WW	
Test Number	P123730
Light Module	EL406930
Trim	4" Wall Wash, Semi-Specular Clear Reflector, White Ring
Lumens	53.8 Lm/W
SC	1.19 / 1.24 / 1.22



SINGLE UNIT FOOTCANDLES

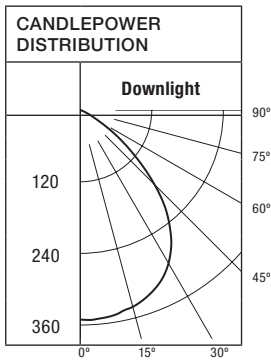
2.5' FROM WALL
(Distance From Fixture Along Wall)

DD	1'	2'	3'	4'	5'	6'
1'	8.1	5.6	2.2	0.7	0.2	0.1
2'	14.9	12.3	6.9	3.1	1.3	0.5
3'	9.7	8.5	5.9	3.8	2	0.9
4'	6.2	5.7	4.4	3	1.9	1.2
5'	4	3.8	3.1	2.4	1.6	1.1
6'	2.7	2.6	2.2	1.8	1.4	1
7'	1.9	1.8	1.6	1.4	1.1	0.8
8'	1.3	1.3	1.2	1	0.9	0.7
9'	1	0.9	0.9	0.8	0.7	0.6
10'	0.7	0.7	0.7	0.6	0.6	0.5

MULTIPLE UNIT FOOTCANDLES

2.5' FROM WALL
(Spacing Between Fixtures)

DD	--3'--	--4'--
1'	8.9 7.5 8.9	8.4 4.4 8.4
2'	18 19.5 18	16.1 13.9 16.1
3'	13.5 14.5 13.5	11.7 11.9 11.7
4'	9.2 10.1 9.2	8.1 8.8 8.1
5'	6.4 7 6.4	5.7 6.2 5.7
6'	4.5 4.8 4.5	4 4.4 4
7'	3.2 3.4 3.2	2.9 3.2 2.9
8'	2.4 2.5 2.4	2.2 2.4 2.2
9'	1.8 1.8 1.8	1.7 1.8 1.7
10'	1.4 1.4 1.4	1.3 1.4 1.3



LUMINANCE DATA

Angle	0°
45	48255
55	51372
65	33851
75	13321
85	3882

ZONAL LUMEN SUMMARY

Zone	Lumens	%Fixture
0-30	271	38.7
0-40	428	61.1
0-60	645	92.2
0-90	700	100.0
90-180	0	0.0
0-180	700	100.0

Ordering Information - H4 LED 2nd Generation Downlight

SAMPLE NUMBER: H457ICAT1E - EL406927 - TL410SC

Complete unit includes LED housing, light engine and trim; ordered separately.

H4 LED Housing	H4 LED Light Engine			Trim Options	Accessories <small>(see product details for application information)</small>
	EL406	CRI	CCT		
<p>H457ICAT1E = 4" Dedicated LED Insulated Ceiling AIR-TITE™ Housing, 120V Driver with LE/TE* phase control dimming capable</p> <p>H457RICAT1E = 4" Dedicated LED Insulated Ceiling AIR-TITE™ Remodel Housing, 120V Driver with LE/TE* phase control dimming capable</p> <p>H457TATE010 = 4" Dedicated LED Non-IC AIR-TITE™ Housing, 120V-277V Driver with LE/TE* phase control and 0-10V dimming capable</p> <p>H457TCPE010 = 4" Chicago Plenum Dedicated LED Non-IC AIR-TITE™ Housing, 120V-277V Driver with LE/TE* phase control and 0-10V dimming capable</p> <p>H457RTATE010 = 4" Dedicated LED Non-IC AIR-TITE™ Remodel Housing, 120V-277V Driver with LE/TE* phase control and 0-10V dimming capable</p>	<p>EL406 = 4" LED Downlight Engine, 2nd Generation</p>	<p>9 = 90 CRI</p>	<p>27 = 2700K 30 = 3000K 35 = 3500K 40 = 4000K</p>	<p>TL410SC = Specular Clear Reflector, Diffuse Polymer Dome Lens, White Ring, Shower Rated</p> <p>TL410H = Haze Reflector, Diffuse Polymer Dome Lens, White Ring, Shower Rated</p> <p>TL410WH = White Reflector, Diffuse Polymer Dome Lens, White Ring, Shower Rated</p> <p>TL410SN = Satin Nickel Reflector, Diffuse Polymer Dome Lens, Satin Nickel Ring, Shower Rated</p> <p>TL410TBZ = Tuscan Bronze Reflector, Diffuse Polymer Dome Lens, Tuscan Bronze Ring, Shower Rated</p> <p>TL410SBK = Specular Black Reflector, Diffuse Polymer Dome Lens, White Ring, Shower Rated</p> <p>TL411WB = White Baffle, Diffuse Polymer Dome Lens, White Ring, Shower Rated</p> <p>TL411BB = Black Baffle, Diffuse Polymer Dome Lens, White Ring, Shower Rated</p> <p>TL402SCS = Specular Clear Reflector, Solite® Glass Lens, and White Ring, Shower Rated</p> <p>TL402HS = Haze Reflector, Solite® Glass Lens, and White Ring, Shower Rated</p> <p>TL402WHS = White Reflector, Solite® Glass Lens, and White Ring, Shower Rated</p> <p>TL402SNS = Satin Nickel Reflector, Solite® Glass Lens, and Satin Nickel Ring, Shower Rated</p> <p>TL402TBZS = Tuscan Bronze Reflector, Solite® Glass Lens, and Tuscan Bronze Ring, Shower Rated</p> <p>TL402SBKS = Specular Black Reflector, Solite® Glass Lens, and White Ring, Shower Rated</p> <p>TL403WBS = White Baffle, Solite® Glass Lens, and White Ring, Shower Rated</p> <p>TL403BBS = Black Baffle, Solite® Glass Lens, and White Ring, Shower Rated</p> <p>TLS408WHWB = Square Baffle Trim, Solite® Glass Lens, White Ring with White Baffle, Shower Rated</p> <p>TLS408WHBB = Square Baffle Trim, Solite® Glass Lens, White Ring with Black Baffle, Shower Rated</p> <p>TLS408SNBB = Square Baffle Trim, Solite® Glass Lens, Satin Nickel Ring with Black Baffle, Shower Rated</p> <p>TLS408TBZBB = Square Baffle Trim, Solite® Glass Lens, Tuscan Bronze Ring with Black Baffle, Shower Rated</p> <p>TL409WW = Wall Wash, Semi-Specular Clear Reflector with White Ring, Shower Rated</p> <p>TL409WHWW = Wall Wash, White Reflector with White Ring, Shower Rated</p> <p>TL422PS = Polymer "Dead Front" White Baffle & Regressed Lens, White Ring, Shower Rated</p>	<p>Thin Profile Designer Trim Rings <i>For use with Round TL4 trims (not compatible with Square TLS4 trims)</i></p> <p>TRM400WH = White TRM400BK = Black TRM400SN = Satin Nickel TRM400TBZ = Tuscan Bronze TRM400PC = Polished Chrome</p>

* LE = Leading Edge (forward phase control) dimming

* TE = Trailing Edge (forward phase control) dimming

Solite® is a registered trademark of AGC Flat Glass North America