Halo LED ICAT Housing for New Construction

Recessed 6″ sloped ceiling LED ICAT housing for ceilings from 2/12 to 12/12 pitch. The socket aiming mechanism tilts the lamp straight down regardless of ceiling pitch. Rotational collar allows trim alignment of up to 20 degree rotation. The HL612 system consists of 1) housing with integral LED driver, 2) high-efficacy LED light engine with a selection of beam-forming lenses, and 3) slope trim. Housing is suitable for residential or commercial installations in insulated ceilings* and features airtight code compliant construction.

Catalog #		Type	
Project			
Comments		Date	
Prepared by			

Design Features

1. Housing
- Single wall square aluminum housing construction
- Sealed and gasketed for airtight ASTM-E283 compliance
- Shipped with overspray protector installed
- Mechanism can be removed from the plaster frame to provide access to the junction box.

Plaster Frame
- Galvanized steel frame. Housing adjusts in plaster frame to accommodate up to 1-3/8″ ceiling thickness.
- Regressed locking screw for securing hanger bars.
- Cutouts included for easily crimping hanger bars in position.
- Bar hangers can be repositioned at 90°.

Aiming Mechanism
- Exclusive socket aiming mechanism tilts and rotates to properly align the LED light engine.
- LED light engine may be tilted and locked to accommodate 2/12 to 12/12 pitch
- LED light engine and trim may be rotated laterally up to 20 degrees for compound slope ceilings or to compensate off-axis aiming

Slide-N-Side™ Junction Box
- Positioned to accommodate straight conduit runs.
- Seven ½″ trade size conduit knockouts with true pry-out slots.
- Three Slide-N-Side wire traps allow non-metallic sheathed cable to be without removing knockouts.
- Allows wiring connections to be made outside the box.
- Simply insert the cable directly into the trap after connections are made.
- Accommodates the following standard non-metallic sheathed cable type:
  - U.S. #14/2, #14/3, #12/2, #12/3
  - Canada: #14/2, #14/3, #12/2
- Push-wire quick connectors included for field connections.

GOT-NAIL!™ Pass-N-Thru™ Bar Hangers
Bar Hanger features include:
- Captive preinstalled bar hangers adjust to 24″ wide
- Housing can be positioned at any point within 24″ span
- Pre-installed nail easily installs in regular lumber, engineered lumber and laminated beams.

- Safety and Guidance system prevents snagging, ensures smooth, straight nail penetration and allows bar hangers to be easily removed if necessary
- Automatic leveling flange aligns the housing and allows holding the housing in place with one hand while driving nails.
- Score lines allow tool-free shortening in narrow joists and bar hangers do not need to be removed for shortening.
- Bar hangers may be repositioned 90° on plaster frame
- Integral T-bar clip snaps onto T-bars; no additional clips are required.

LED Driver
- Integral to the housing, 120V-277V 50/60 Hz universal voltage, constant current dimmable driver provides high-efficiency operation.
- Driver meets FCC 47CFR Part 15 EMI/RFI consumer limits for use in residential and commercial installations.
- Driver features high power factor and low THD and has integral thermal protection in the event of over temperature or internal failure.
- Driver is specifically designed for compatibility with HLM6 LED light engines.
- If dimming is not required the fixture can be operated from a standard wall switch.

Dimming - Phase Control
- Designed for continuous dimming capability to nominally 5% with many 120V Leading Edge (LE) and Trailing Edge (TE) Phase Control dimmers. (Dimmers with low end trim adjustment offer greater assurance of achieving 5% level.)
- Consult dimmer manufacturer for compatibility and conditions of use. (Note some dimmers require a neutral in the wallbox.)

Dimming - 0-10V
- Dimmable to 10% in typical operation with compatible 0-10V DC low voltage dimmers.
- 0-10V DC dimmers operate using two low voltage dimming wires (color coded violet and gray). The low voltage dimming wires are separate from the 120V AC or 277V AC power.
- Switching on/off is controlled via the line voltage (120V AC or 277V AC) power, and dimming is controlled via the 2-wire 0-10V DC low voltage wiring.

2. Optical LED Light Engines (Order Separately)
- Exclusively designed for the HL6 slope system, the form-factor and performance replicate expected PAR lamp qualities in a high lumen LED light engine
- Turn-to-lock base provides secure retention of the LED light engine to the aiming mechanism, and provides a low-voltage electrical quick-connector.
- Proximity phosphors over chip on board LEDs provide a uniform source with high efficiency and no pixilation.
- See ordering information for available CCT options.
- Passive thermal management achieves L70 at 50,000 hours in IC applications.

LED Chromaticity
- A tight chromaticity specification ensures LED color uniformity, sustainable Color Rendering Index (CRI) and Correlated Color Temperature (CCT) over the useful life of the LED
- High color performance with 90 CRI minimum, and R9 greater than 50.
- LED color uniformity of 3 SDCM exceeds ENERGY STAR® color standards per ANSI C78.377- 2008.
- Every Halo LED is quality tested, measured, and serialized in a permanent record to register lumens, wattage, CRI and CCT.
- Halo LED serialized testing and measurement ensures color and lumen consistency on a per-unit basis, and validates long-term product consistency over time.

3. Beam Forming Lenses (Interchangeable)
- HLM6 LED light engines are designed to accept HL6 series lens optics
- The 40-degree Flood (FL) lens is included with the LED light engine, and may be ordered separately as a replacement
- Alternate beam options are offered in 25-degree Narrow Flood (NFL) and 55-degree Wide Flood (WFL), ordered separately
- The interchangeable lenses feature beam distributions with refined visual shielding to control beam angle and lumen delivery in accommodating various ceiling heights.

*Not to be used in direct contact with spray foam insulation

HL612ICAT

1200 Lumen Slope Ceiling LED 6″ Insulated Ceiling Air-Tite™ Recessed Housing System

Compatible with HLM6 LED Modules, HL6 Beam-Forming Lens Optics & Designated Trims

High Efficacy LED Housing 20W Maximum

FOR DIRECT CONTACT WITH INSULATION*

air·tite™ TAA

T24 Can be used to comply with California Title 24 High Efficacy requirements
T20 Certified to California Title 20 Appliance Database

ENERGY STAR IECC Can be used for International Energy Conservation Code High Efficacy Compliance RoHS Compliant

Refer to ENERGY STAR® Certified Products List.
Can be used to comply with California Title 24 High Efficacy requirements.
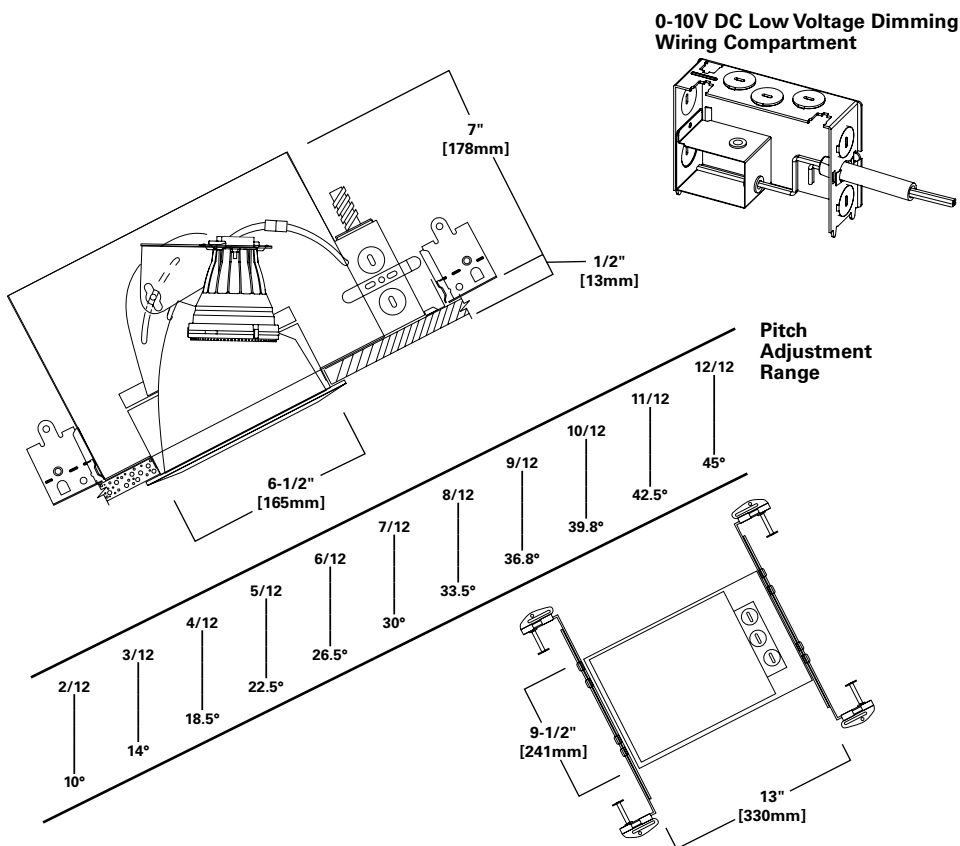Certified to California Title 20 Appliance Efficiency Database.

Code Compliance

- cULus 1598 Type IC, suitable for direct contact with insulation*
  - Listed for damp locations.
  - Wet location listed with designated lens trims
- AIR-TITE™
  - Certified per ASTM E283; not exceeding 2.0 CFM under 75 Pascals pressure difference
- Options to meet Trade Agreements Act requirements

- Energy Code compliant
  - ENERGY STAR® certified luminaire - consult ENERGY STAR® Certified Product List
  - Can be used for California Title 24 residential or non-residential compliance - Title 20 certified
  - Can be used for International Energy Conservation Code (IECC) compliance
  - Can be used for Washington State Energy Code compliance

- EMI/RFI per FCC 47CFR Part 15 Class B Consumer limits (residential and commercial compliant)
- Contains no mercury or lead and RoHS compliant
- Junction box features a seperate compartment for 0-10V DC low voltage dimming connections, to comply with NEC.

Dimensional Information

0-10V DC Low Voltage Dimming Wiring Compartment
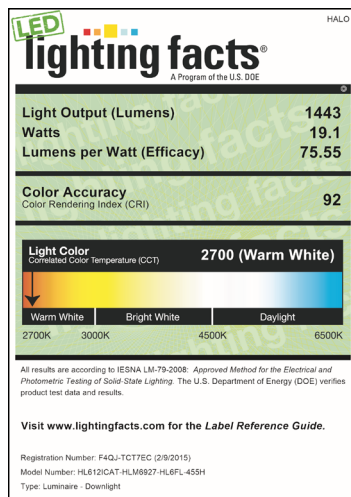
7" [178mm]

1/2" [13mm]

6-1/2" [165mm]

Pitch Adjustment Range

12/12 45°
11/12 42.5°
10/12 39.8°
9/12 36.8°
8/12 33.5°
7/12 30°
6/12 26.5°
5/12 22.5°
4/12 18.5°
3/12 14°
2/12 10°

9-1/2" [241mm]

13" [330mm]

Energy Data

HL612ICAT (1200 Series)

Min. operating temperature	-30C/-22F	
Input Voltage	120V	277V
Input Current (A)	0.16	0.07
Input Power (W)	19.1	20.0
Input Frequency	50/60Hz	
FCC 47CFR Part 15 EMI/RFI	Consumer Limits (Residential & Commercial)	
THD	≤ 20%	
Power Factor	≥ 0.9	
Sound Rating	Class A	

Installation Details

For proper slope aiming install with junction box in upward position.
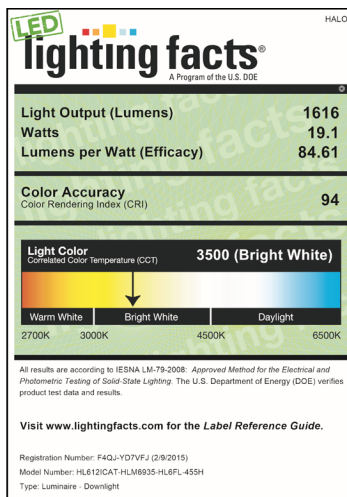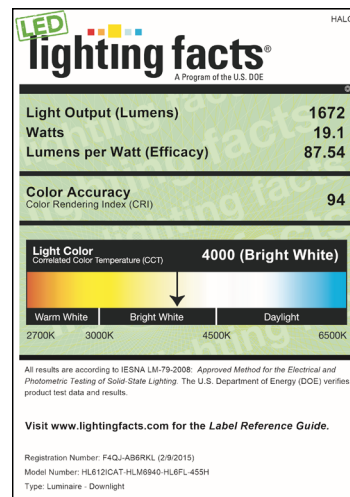

Improper Install

Lighting Facts

LED lighting facts®	
A Program of the U.S. DOE	HALO
Light Output (Lumens)	1443
Watts	19.1
Lumens per Watt (Efficacy)	75.55
Color Accuracy Color Rendering Index (CRI)	92
Light Color Correlated Color Temperature (CCT)	2700 (Warm White)

All results are according to IESNA LM-79-2008: *Approved Method for the Electrical and Photometric Testing of Solid-State Lighting.* The U.S. Department of Energy (DOE) verifies product test data and results.

Visit www.lightingfacts.com for the *Label Reference Guide.*

Registration Number: F4QJ-TCT7EC (2/9/2015)
Model Number: HL612ICAT-HLM6927-HL6FL-455H
Type: Luminaire - Downlight

HL612ICAT-HLM6927-HL6FL-455H

LED lighting facts®	
A Program of the U.S. DOE	HALO
Light Output (Lumens)	1527
Watts	19.1
Lumens per Watt (Efficacy)	79.95
Color Accuracy Color Rendering Index (CRI)	93
Light Color Correlated Color Temperature (CCT)	3000 (Bright White)

All results are according to IESNA LM-79-2008: *Approved Method for the Electrical and Photometric Testing of Solid-State Lighting.* The U.S. Department of Energy (DOE) verifies product test data and results.

Visit www.lightingfacts.com for the *Label Reference Guide.*

Registration Number: F4QJ-UL4F2Y (2/9/2015)
Model Number: HL612ICAT-HLM6930-HL6FL-455H
Type: Luminaire - Downlight

HL612ICAT-HLM6930-HL6FL-455H

LED lighting facts®	
A Program of the U.S. DOE	HALO
Light Output (Lumens)	1616
Watts	19.1
Lumens per Watt (Efficacy)	84.61
Color Accuracy Color Rendering Index (CRI)	94
Light Color Correlated Color Temperature (CCT)	3500 (Bright White)

All results are according to IESNA LM-79-2008: *Approved Method for the Electrical and Photometric Testing of Solid-State Lighting.* The U.S. Department of Energy (DOE) verifies product test data and results.

Visit www.lightingfacts.com for the *Label Reference Guide.*

Registration Number: F4QJ-YD7VFJ (2/9/2015)
Model Number: HL612ICAT-HLM6935-HL6FL-455H
Type: Luminaire - Downlight

HL612ICAT-HLM6935-HL6FL-455H

LED lighting facts®	
A Program of the U.S. DOE	HALO
Light Output (Lumens)	1672
Watts	19.1
Lumens per Watt (Efficacy)	87.54
Color Accuracy Color Rendering Index (CRI)	94
Light Color Correlated Color Temperature (CCT)	4000 (Bright White)

All results are according to IESNA LM-79-2008: *Approved Method for the Electrical and Photometric Testing of Solid-State Lighting.* The U.S. Department of Energy (DOE) verifies product test data and results.

Visit www.lightingfacts.com for the *Label Reference Guide.*

Registration Number: F4QJ-AB6RKL (2/9/2015)
Model Number: HL612ICAT-HLM6940-HL6FL-455H
Type: Luminaire - Downlight

HL612ICAT-HLM6940-HL6FL-455H

COOPER Lighting Solutions

Ordering Information

Sample Number: HL612ICAT - HLM6930 - 455W
Order LED housing, LED engine with lens optic, and trim separately for a complete luminaire.

Domestic Preferences[1]	1. Housing	2. LED Light Engines	2. Lens Optics Beam Forming	3. LED Trims
[Blank] = Standard **TAA** = Trade Agreements Act	**HL612ICAT** = 6" slope ceiling, insulated ceiling rated, Air-Tight, recessed housing, UNV 120V/277V	**HLM6927** = 90CRI, 2700K 40˚ Flood Lens **HLM6930** = 90CRI, 3000K 40˚ Flood Lens **HLM6935** = 90CRI, 3500K 40˚ Flood Lens **HLM6940** = 90CRI, 4000K 40˚ Flood Lens	**HL6NFL** = 25° Narrow Flood **HL6FL** = 40° Flood (1 Included with LED light engine) **HL6WFL** = 55° Wide Flood **HL6LHRPK** = Replacement lens holder ring	**Reflector - OD: 7-1/4" [184mm]** **455SC** = Specular Clear Reflector, White Metal Trim Ring **455H** = Semi-Specular Haze Reflector, White Metal Trim Ring **455SN** = Satin Nickel Reflector, Satin Nickel Metal Trim Ring **455TBZ** = Tuscan Bronze Reflector, Tuscan Bronze Metal Trim Ring **Baffles - OD: 7-1/4" [184mm]** **456W** = White Coilex Baffle, White Metal Trim Ring **456P** = Black Coilex Baffle, White Metal Trim Ring **Lenses and Diffusers "Dead Front" - OD: 8" [203mm]** **70P** = Albalite Glass Lens, White Polymer Trim Ring **70PS** = Albalite Glass Lens, White Polymer Trim Ring, Wet Location - Showerlight **70SNS** = Albalite Glass Lens, Satin Nickel Polymer Trim Ring, Wet Location - Showerlight **71P** = Drop Opal Glass Lens, White Polymer Trim Ring **71PS** = Drop Opal Glass Lens, White Polymer Trim Ring, Wet Location - Showerlight **73P** = Fresnel Glass Lens, White Polymer Trim Ring **73PS** = Fresnel Glass Lens, White Polymer Trim Ring, Wet Location - Showerlight **ERT702** = Drop Opal Plastic Lens, Gloss White Polymer Trim Ring, Wet Location - Showerlight

1. Housing

2. Light Engine with Lens Optic

3. Trim
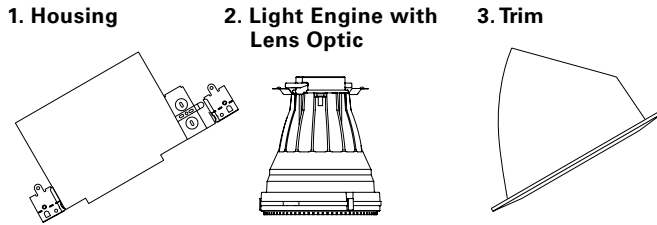
System Accessories

Oversize Trim Rings

OT400P = Oversize White Metal Trim Ring, for use with 6" trims (to be used behind standard trim ring) 6.0" I.D., 9.25" O.D.
OT403P = Oversize gloss white polymer trim ring, replaces standard ring included with 455 and 456 trims 6.0" I.D., 8.0" O.D.
TRM690WH = 6" LED oversize trim ring, white 6.9" I.D., 9.5" O.D.Ring slips over LED trim. Inset design allows 6" trim to fit into oversize ring surface

Designer Trim Rings
(O.D. 7-1/4" 184mm)
TRM6C = Chrome Metal
TRM6MB = Black Metal
TRM6P = White Metal
TRM6SN = Satin Nickel Metal
TRM6TBZ = Tuscan Bronze Metal
TRM7MB = Black Polymer

(6" Designer trim rings, for 455 and 456 trims)

Notes: (1) Only product configurations with this designated prefix are built to be compliant with the Trade Agreements Act of 1979 (TAA). Please refer to DOMESTIC PREFERENCES website for more information. Components shipped separately may be separately analyzed under domestic preference requirements.Accessories sold separately will be separately analyzed under domestic preference requirements. Consult factory for further information.

Lumen & Energy Code Compliance Summary – HL612ICAT (1200 Series)

Trims	HL612ICAT - HLM6927 Lumens	LpW	Compliance	HL612ICAT - HLM6930 Lumens	LpW	Compliance	HL612ICAT - HLM6935 Lumens	LpW	Compliance	HL612ICAT - HLM6940 Lumens	LpW	Compliance
70PS	743	38		804	42	ES, IECC, WSEC	853	44	ES, IECC, WSEC	883	46	ES, IECC, WSEC
71PS	764	40		826	43	ES, IECC, WSEC	877	45	ES, IECC, WSEC	907	47	ES, IECC, WSEC
ERT702	1010	52	ES, IECC, WSEC	1093	57	ES, IECC, WSEC	1159	60	ES, T24, IECC, WSEC	1200	62	ES, T24, IECC, WSEC
73PS	1068	55	ES, IECC, WSEC	1155	60	ES, T24, IECC, WSEC	1225	64	ES, T24, IECC, WSEC	1268	66	ES, T24, IECC, WSEC
456P	1355	70	ES, T24, IECC, WSEC	1465	76	ES, T24, IECC, WSEC	1555	81	ES, T24, IECC, WSEC	1609	84	ES, T24, IECC, WSEC
455TBZ	1366	71	ES, T24, IECC, WSEC	1477	77	ES, T24, IECC, WSEC	1567	82	ES, T24, IECC, WSEC	1622	84	ES, T24, IECC, WSEC
455SN	1399	73	ES, T24, IECC, WSEC	1513	79	ES, T24, IECC, WSEC	1606	84	ES, T24, IECC, WSEC	1662	87	ES, T24, IECC, WSEC
455H	1443	75	ES, T24, IECC, WSEC	1527	79	ES, T24, IECC, WSEC	1616	89	ES, T24, IECC, WSEC	1672	87	ES, T24, IECC, WSEC
456W	1461	76	ES, T24, IECC, WSEC	1580	82	ES, T24, IECC, WSEC	1676	87	ES, T24, IECC, WSEC	1735	90	ES, T24, IECC, WSEC
455SC	1475	77	ES, T24, IECC, WSEC	1595	83	ES, T24, IECC, WSEC	1692	88	ES, T24, IECC, WSEC	1751	92	ES, T24, IECC, WSEC

Wattage 19.1
LpW = Lumens per Watt
**ES:** Refer to the ENERGY STAR® Certified Products List
T24: Can be used to comply with California Title 24 High Efficacy requirements. Certified to California Title 20 Appliance Efficiency Database.
IECC: Can be used to comply with International Energy Conservation Code Residential Energy Efficiency, High Efficacy Luminaire
WSEC - Washington State Energy Code Residential Energy Efficiency, High Efficacy Luminaire

Tested in accordance with IES LM-79 Photometric Measurement Standards. Field results may vary.

COOPER Lighting Solutions

Application Modeling – (2/12 Pitch – 1200 Series)
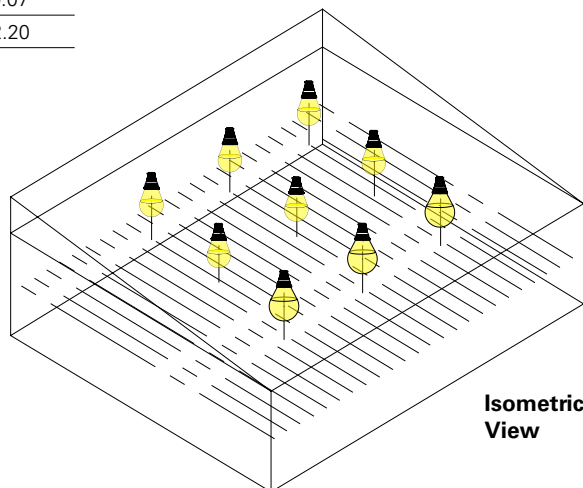
FL 40°	FL 40°	WFL 55°

6'

5'
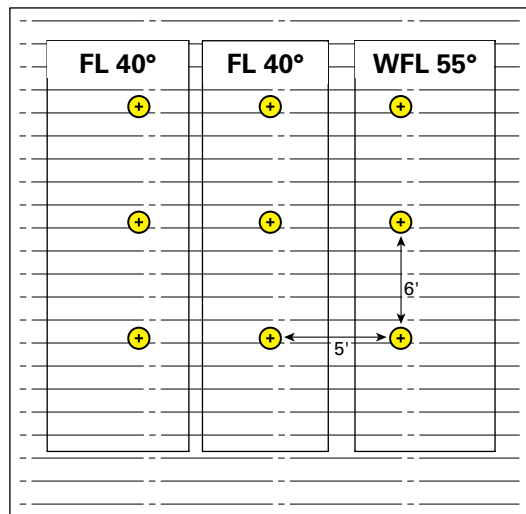
Floor Plan View

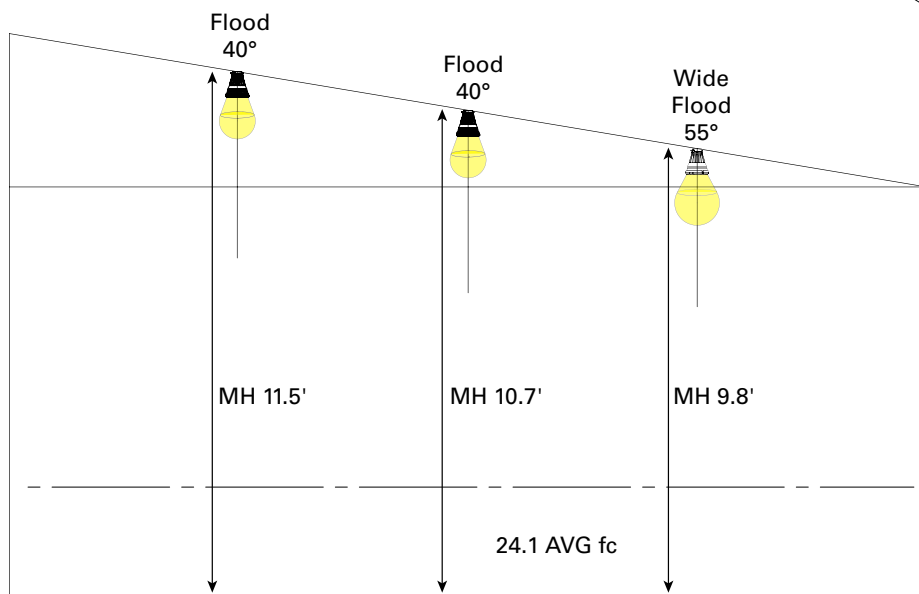**Steep 2/12 pitch slope ceiling**
Room Data
2/12 Pitch (10° angle)
5' x 6' Spacing
20' X 24' Room

Luminaire Data
HL612ICAT (1200 Series)
2700K HLM6927
Haze trim 455H

2/12 Pitch	Value
Avg. fc	24.10
Max. fc	48.30
Min. fc	1.50
Avg/Min	19.07
Max/Min	32.20

Isometric View

Flood 40°

Flood 40°

Wide Flood 55°

MH 11.5'

MH 10.7'

MH 9.8'

24.1 AVG fc

Side View 2/12 Pitch

COOPER
Lighting Solutions

6/12 Pitch • 1200 Series • 90 CRI

Multiplier Table

CCT Option	2700 K	3000 K	3500 K	4000 K
CCT Multiplier	0.925	1.000	1.061	1.120

Table based upon testing with 3000°K color temperature, 90CRI.
Multipliers may be used to determine relative lumen values with other color temperatures.

HL612ICAT - HLM6930 - HL6NFL - 455H

Test Number	P130198
Light Module	1200 Series, 90CRI
Lens Optic	25° Narrow Flood
Trim	6" Aperture, Haze Trim
Lumens	1535 Lm
Efficacy	80.4 Lm/W
CCT	3000K
SC (0/90/45)	1.94 / 0.73 / 1.15
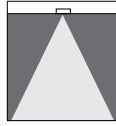
Candlepower Distribution
Slope Downlight
6/12 Pitch (NFL Optic)

Legend
0-deg: – – – –
90-deg: ———
180-deg: — — —

Cone of Light

D	FC	L	W
5.5'	129.9	2.8	2.6
7'	80.2	3.6	3.2
8'	61.4	4.1	3.8
9'	48.5	4.6	4.2
10'	39.3	5.2	4.6
12'	27.3	6.2	5.6
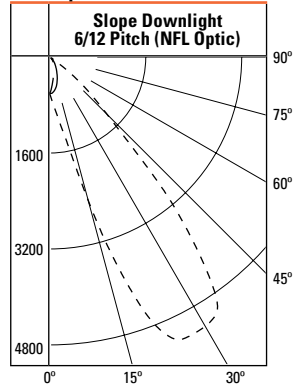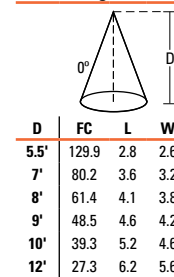
Zonal Lumen Summary

Zone	Lumens	%Fixture
0-30	761	49.6
0-40	1241	80.8
0-60	1521	99.1
0-90	1535	100
90-180	0	0
0-180	1535	100

HL612ICAT - HLM6930 - HL6FL - 455H

Test Number	P130162
Light Module	1200 Series, 90CRI
Lens Optic	40° Flood
Trim	6" Aperture, Haze Trim
Lumens	1556 Lm
Efficacy	81.5 Lm/W
CCT	3000K
SC (0/90/45)	1.6 / 0.65 / 1.06
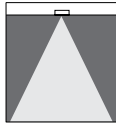
Candlepower Distribution
Slope Downlight
6/12 Pitch (FL Optic)

Legend
0-deg: – – – –
90-deg: ———
180-deg: — — —

Cone of Light

D	FC	L	W
5.5'	76.1	4	3.6
7'	47	5.1	4.6
8'	36	5.8	5.4
9'	28.4	6.6	6
10'	23	7.4	6.6
12'	16	8.8	8
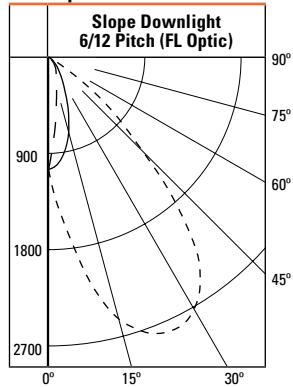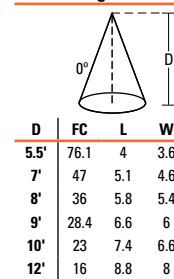
Zonal Lumen Summary

Zone	Lumens	%Fixture
0-30	814	52.3
0-40	1219	78.3
0-60	1537	98.8
0-90	1556	100
90-180	0	0
0-180	1556	100

HL612ICAT - HLM6930 - HL6WFL - 455H

Test Number	P130235
Light Module	1200 Series, 90CRI
Lens Optic	55° Wide Flood
Trim	6" Aperture, Haze Trim
Lumens	1535 Lm
Efficacy	80.4 Lm/W
CCT	3000K
SC (0/90/45)	1.45 / 0.76 / 1.17
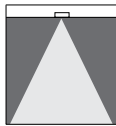
Candlepower Distribution
Slope Downlight
6/12 Pitch (WFL Optic)

Legend
0-deg: – – – –
90-deg: ———
180-deg: — — —

Cone of Light

D	FC	L	W
5.5'	47.8	5.1	5
7'	29.5	6.5	6.4
8'	22.6	7.5	7.2
9'	17.9	8.4	8.2
10'	14.5	9.4	9
12'	10	11.3	11
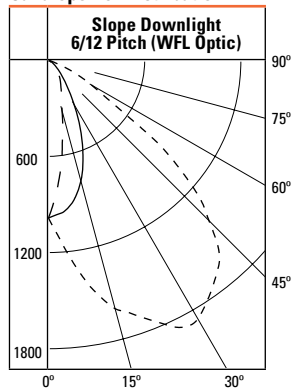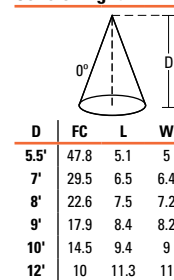
Zonal Lumen Summary

Zone	Lumens	%Fixture
0-30	689	44.9
0-40	1070	69.7
0-60	1502	97.8
0-90	1535	100
90-180	0	0
0-180	1535	100

Photometric tests are per IES measurement standards. Tests represent typical fixture performance. Field results may vary.

COOPER Lighting Solutions