Project		Catalog #		Type	
Prepared by		Notes		Date	

HALO

ML56
Downlighting System

A LED module with integral driver suitable for use with 5 or 6-inch new construction or remodel housings. Optional TIR optics and lens wall wash snap into the LED module or trims to provide various lighting distributions.

Typical Applications

Residential • Hospitality • Retail

Interactive Menu

- Order Information page 2
- Product Specifications page 4
- Energy Data page 4
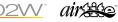- Photometric Data page 5
- Product Warranty

Product Certification

ENERGY STAR | IECC International Energy Conservation Code High Efficacy Compliance | T24 Can be used to comply with Title 24 Part 6 LED Enclosed Light Source Requirements (JA8) | T20 California Title 20 Certified LED Tier 1 Lamp | UL CERTIFIED | RoHS COMPLIANT

Refer to ENERGY STAR® Certified Products List.
Can be used to comply with California Title 24 High Efficacy requirements.
Certified to California Appliance Efficiency Database under JA8.

Product Features

5 seleCCTable colors
2700K • 3000K • 3500K
4000K • 5000K | D2W | air•ite | Showerlight requires lens trim

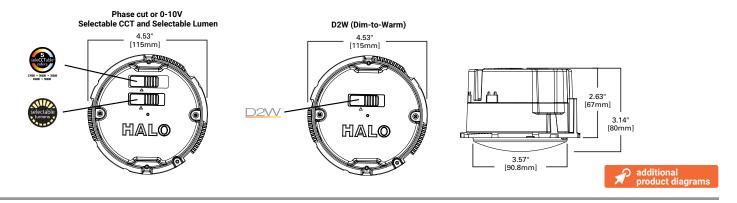### Top Product Features

- Field selectable 2700, 3000, 3500, 4000 or 5000K CCT, 90 CRI minimum
- Optional full spectrum color, 97 CRI minimum
- Field interchangeable TIR optics 25, 40, 55, 75 degree distribution patters and soft focus lens. Ships with soft focus lens.
- Field Snap in rotatable Wall Wash directional trims available in both 5" and 6" versions
- Use with new construction or remodeler housings, can be used to retrofit most 5" or 6" incandescent housings, ships with E26 adapter
- 120V LE/TE phase cut or 120-277V 0-10V dimming to 5% with select controls

Dimensional and Mounting Details

Phase cut or 0-10V
Selectable CCT and Selectable Lumen

5 seleCCTable colors
2700K • 3000K • 3500K
4000K • 5000K

selectable lumens

4.53"
[115mm]

HALO

D2W (Dim-to-Warm)

4.53"
[115mm]

D2W

HALO

2.63"
[67mm]

3.14"
[80mm]

3.57"
[90.8mm]

additional product diagrams

Order Information

SAMPLE ORDER NUMBER: **H550ICAT - ML5615LSVWFL9FS1E - 592H**

A complete luminaire consists of a housing + module + trim, order separately.

Module [1]
ML5615LSVWFL9FS1E = 5"/6" Retrofit, Lumen Select (650/900/1100lms), 5CCT selectable, 90CRI, Soft focus lens, 120V LE/TE 5% Dim [2]
ML5612LSVWFL97FS1E = 5"/6" Retrofit, Lumen Select (450/650/900lms), 5CCT selectable, 97CRI, Soft focus lens, 120V LE/TE 5% Dim [2]
ML5615LSVWFL9FSE010 = 5"/6" Retrofit, Lumen Select (650/900/1100lms), 5CCT selectable, 90CRI, Soft focus lens, 120V-277V 0-10V 5% Dim [2]
ML5609VWFLD2W1E = 5"/6" Retrofit, 650lms, Selectable D2W, 90CRI, Soft focus lens, 120V LE/TE 5% Dim [3]

Notes
1. All Modules ship with soft focus diffuse lens.
2. 5CCT selectable includes (2700, 3000, 3500, 4000, 5000K)
3. D2W selectable includes (1800K to 3000K, or 1800K to 2700K)

Alternate lumen packages are available using TIR optics

Catalog Number	Optional TIR Optic	Available Lumen Options
ML5615LSVWFL9FS1E	TIR56FL40	900/1200/1500 lms
ML5612LSVWFL97FS1E	TIR56FL40	600/900/1200 lms
ML5615LSVWFL9FSE010	TIR56FL40	900/1200/1500 lms
ML5609VWFLD2W1E	TIR56FL40	900 lms

Notes
*other TIR optics provide similar lumen packages but may vary

Accessories	
TIR Optics **TIR56NFL25** = 25° narrow flood optic **TIR56FL40** = 40° flood optic **TIR56WFL55** = 55° wide flood optic **TIR56VWFL75** = 75° very wide flood optic **Wall Wash Kit** **ML5WW** = 5" Wall Wash kit **ML6WW** = 6" Wall Wash kit	**ML56CLIP** = Friction clip mounting kit, for retrofitting into housings without torsion spring receivers, compatible with 6" baffle and reflector trims only, 691, 692, 693, 695 and 696 series **Oversize Trim rings** **TRM690WH** = 6" oversize trim ring for use with 69* series trims, white 6.9" I.D., 9.5" O.D. Ring slips over trim, inset design allows 6" trim to fit into oversize ring for an even trim surface **TRM590WH** = 5" oversize trim ring for use with 59* series trims, white 6.3" I.D., 7.5" O.D. Ring slips over trim flange, inset design allows 5" trim to fit into oversize ring for an even trim surface

Notes

Trims

	Catalog Number	Optional TIR Optic
	591 = 5" polymer baffle, non-conductive **691** = 6" polymer baffle, non-conductive	**WB** = Matte white baffle and flange
	592 = 5" reflector **692** = 6" reflector	**H** = Semi-specular reflector and matte white flange **SC** = Specular reflector and matte white flange **W** = Matte white reflector and flange
	593 = 5" baffle **693** = 6" baffle	**BB** = matte black baffle and matte white flange **SNB** = satin nickel baffle and flange **TBZB** = bronze baffle and flange **WB** = matte white baffle and flange
	594 = 5" gimbal **694** = 6" gimbal	**SNB** = satin nickel gimbal and matte white flange [4] **TBZB** = bronze gimbal and matte white flange **WB** = matte white gimbal and flange
	596 = 5" shallow baffle **696** = 6" shallow baffle	**WB** = Matte white baffle and flange

Notes

4. 694SNB option is not available

Trim Compatibility Matrix

Size	Trim	ML5615LSVWFL9FS1E	ML5612LSVWFL97FS1E	ML5615LSVWFL9FSE010	ML5609VWFLD2W1E
5"	**591WB**	Not Available	Not Available	Not available with Shallow Housings	Not available with Shallow Housings
	592H	Y	Y	Y	Y
	592SC	Y	Y	Y	Y
	592W	Y	Y	Y	Y
	593WB	Y	Y	Y	Y
	593BB	Y	Y	Y	Y
	593SNB	Y	Y	Y	Y
	593TBZB	Y	Y	Y	Y
	594WB	Y	Y	Y	Y
	594SNB	Y	Y	Y	Y
	594TBZB	Y	Y	Y	Y
	596WB	Y	Y	Y	Y
6"	**691WB**	Not available with Shallow Housings	Not Available	Y	Y
	692H	Y	Y	Y	Y
	692SC	Y	Y	Y	Y
	692W	Y	Y	Y	Y
	693WB	Y	Y	Y	Y
	693BB	Y	Y	Y	Y
	693SNB	Y	Y	Y	Y
	693TBZB	Y	Y	Y	Y
	694WB	Y	Y	Y	Y
	694SNB	Y	Y	Y	Y
	694TBZB	Y	Y	Y	Y
	696WB	Y	Y	Y	Y

COOPER
Lighting Solutions

Housing – Compatibility

The ML56 LED module - trim combination is cULus Listed or UL Classified for use with any 5" or 6" diameter recessed housing constructed of steel or aluminum with an internal volume that exceeds 115 in³ in addition to those noted below.

Halo UL Listed Compatibility

0-10V LED Housings

0-10V LED Housings	
5" Housings (works with Trims 591x, 592x, 593x, 594x, 595x, 596x)	**6" Housings (works with Trims 691x, 692x, 693x, 694x, 695x, 696x)**
Halo 5-inch LED Housings **H550ICATD010 =** 5" IC, airtight new construction housing, LED, 120-277V, 0-10V control **H550RICATD010 =** 5" IC, airtight remodel housing, LED, 120-277V, 0-10V control	**Halo 6-inch LED Housings** **H750ICATD010 =** 6" IC, airtight new construction housing, LED, 120-277V, 0-10V control **H750RICATD010 =** 6" IC, airtight remodel housing, LED, 120-277V
Halo 5-inch Fire Rated LED Housings **H550FR2ICAT =** 5" fire safe, IC, airtight new construction housing, LED, 120-277V, 0-10V or Phase control	**Halo 6-inch Fire Rated LED Housings** **H750FR2ICAT =** 6" fire safe, IC, airtight new construction housing, LED, 120-277V, 0-10V or Phase control

Phase Cut LED Housings

Phase Cut LED Housings	
5" Housings (works with Trims 591x, 592x, 593x, 594x, 595x, 596x)	**6" Housings (works with Trims 691x, 692x, 693x, 694x, 695x, 696x)**
Halo 5-inch LED Housings **H550ICAT =** 5" IC, airtight new construction housing, LED, 120-277V **H550RICAT =** 5" IC, airtight remodel housing, LED, 120-277V, 120-277V **E550ICAT =** 5" IC, airtight new construction housing, LED, 120-277V **E550RICAT =** 5" IC, airtight remodel housing, LED, 120-277V, 120-277V **Halo 5-inch Fire Rated LED Housings** **H550FR2ICAT =** 5" fire safe, IC, airtight new construction housing, LED, 120-277V, 0-10V or Phase control	**Halo 6-inch LED Housings** **H750ICAT =** 6" IC, airtight new construction housing, LED, 120-277V **H750RICAT =** 6" IC, airtight remodel housing, LED, 120-277V, 0-10V control **H750T =** 6" non-IC new construction housing, LED, 120-277V **H750TCP =** 6" non-IC, CCEA Chicago Plenum new construction housing, LED, 120-277V **H750TCPD010 =** 6" non-IC, CCEA Chicago Plenum new construction housing, LED, 120-277V, 0-10V control **E750ICAT =** 6" IC, airtight new construction housing, LED, 120-277V **E750RICAT =** 6" IC, airtight remodel housing, LED, 120-277V **Halo 6-inch Shallow LED Housings** **H2750ICAT =** 6" IC, airtight shallow new construction housing, LED, 120-277V (use w/ 691X, 694X, 696X trims only) **H2750RICAT =** 6" IC, airtight shallow remodel housing, LED, 120-277V (use w/ 691X, 694X, 696X trims only) **Halo 6-inch Fire Rated LED Housings** **H750FR2ICAT =** 6" fire safe, IC, airtight new construction housing, LED, 120-277V, 0-10V or Phase control

Traditional Housings (E26 Socket)

Traditional Housings (E26 Socket)	
5" Housings (works with Trims 591x, 592x, 593x, 594x, 595x, 596x)	**6" Housings (works with Trims 691x, 692x, 693x, 694x, 695x, 696x)**
Halo 5-inch Incandescent Housings (use with Edison medium base E26 to CJT adapter) **H5ICAT =** 5" Insulated Ceiling, Air-Tite New Construction Housing **H5RICAT =** 5" IC, airtight remodel housing, E26 medium base, 120V **H5ICATNB =** 5" IC, airtight new construction housing, no bracket, E26 medium base, 120V **H5T =** 5" non-IC new construction housing, E26 medium base, 120V **H5RT =** 5" non-IC remodel housing, E26 medium base, 120V **E5ICAT =** 5" IC, airtight new construction housing, E26 medium base, 120V **E5RICAT =** 5" IC, airtight remodeler housing, E26 medium base, 120V **E5ICATNB =** 5" IC, airtight new construction housing, no bracket, E26 medium base, 120V **E5TAT =** 5" non-IC, airtight new construction housing, E26 medium base, 120V **E5RTAT =** 5" non-IC, airtight remodeler housing, E26 medium base, 120V **E5TATNB =** 5" non-IC, airtight new construction housing, no bracket, E26 medium base, 120V **Halo 5-inch Shallow Incandescent Housings (use with Edison medium base E26 to CJT adapter)** **H25ICAT =** 5" IC, airtight shallow new construction housing (use with 691X, 694X, 696X trims only) **H25ICATNB =** 5" IC, airtight shallow new construction housing, no bracket (use with 691X, 694X, 696X trims only)	**Halo Standard Housings 6-inch** **H7ICAT =** 6" IC, airtight new construction housing, E26 medium base, 120V **H7RICAT =** 6" IC, airtight remodel housing, E26 medium base, 120V **H7ICATNB =** 6" IC, airtight new construction housing, no bracket, E26 medium base, 120V **H7ICT =** 6" IC new construction housing, E26 medium base, 120V **H7RICT =** 6" IC remodel new construction housing, E26 medium base, 120V **H7ICTNB =** 6" IC new construction housing, no bracket, E26 medium base, 120V **H7T =** 6" non-IC new construction housing, E26 medium base, 120V **H7RT =** 6" non-IC remodel housing, E26 medium base, 120V **H7TNB =** 6" non-IC new construction housing, no bracket, E26 medium base, 120V **H7TCP =** 6" non-IC, CCEA Chicago Plenum new construction housing, E26 medium base, 120V H7RT **H7UICAT =** 6" Insulated Ceiling, Universal, Air-Tite, New Construction Housing **E7ICAT =** 6" IC, airtight new construction housing, E26 medium base, 120V **E7RICAT =** 6" IC, airtight remodeler housing, E26 medium base, 120V **E7ICATNB =** 6" IC, airtight new construction housing, no bracket, E26 medium base, 120V **E7TAT =** 6" non-IC, airtight new construction housing, E26 medium base, 120V **E7RTAT =** 6" non-IC, airtight remodeler housing, E26 medium base, 120V **E7TATNB =** 6" non-IC, airtight new construction housing, no bracket, E26 medium base, 120V **Halo 6-inch Shallow Incandescent Housings (use with Edison medium base E26 to CJT adapter)** **H27ICAT =** 6" IC, airtight shallow new construction housing (use with 691X, 694X, 696X trims only) **H27RICAT =** 6" IC, airtight shallow remodel housing (use with 691X, 694X, 696X trims only) **H27T =** 6" non-IC shallow new construction housing (use with 691X, 694X, 696X trims only) **H27RT =** 6" non-IC shallow remodel housing (use with 691X, 694X, 696X trims only) **E27ICAT =** 6" IC, airtight shallow new construction housing (use with 691X, 694X, 696X trims only) **E27RICAT =** 6" IC, airtight shallow remodel housing (use with 691X, 694X, 696X trims only) **E27TAT =** 6" non-IC, airtight shallow new construction housing (use with 691X, 694X, 696X trims only) **E27RTAT =** 6" non-IC, airtight shallow remodel housing (use with 691X, 694X, 696X trims only)

Housing – Trim Compatibility

Housing compatibility in the ML56 System is determined by the ML56 trim dimensions.

ML56 trims are available in 5-inch and 6-inch aperture (5-inch = 59xx series and 6-inch = 69xx series trims).

(Note: "xx" in the trim model number denotes finish code.)

5-inch Trims

591
5" "dead front" shallow baffle

591WB
white "dead front" shallow baffle
(for 600 Series module only)

592
5" reflector

592W
white

592SC
specular clear

592H
haze

593
5" baffle

593WB
white baffle and trim

593BB
black baffle, white trim

593SN
satin nickel baffle and trim

593TBZ
tuscan bronze baffle and trim

594
5" eyeball

594WB
white

594SNB
satin nickel

594TBZB
tuscan bronze

596
5" shallow baffle

596WB
white shallow baffle and trim

6-inch Trims

691
6" "dead front" shallow baffle

691WB
white "dead front" shallow baffle
(for 600 Series module only)

692
6" reflector

692W
white

692SC
specular clear

692H
haze

693
6" baffle

693WB
white baffle and trim

693BB
black baffle, white trim

693SN
satin nickel baffle and trim

693TBZ
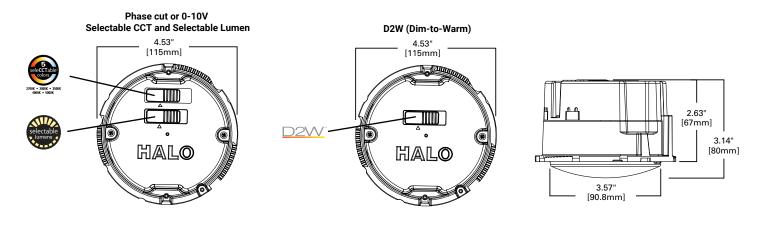tuscan bronze baffle and trim

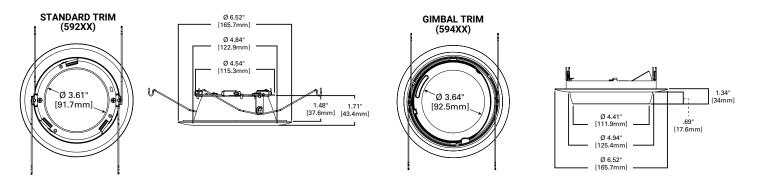**694**
6" eyeball

694WB
white

694TBZB
tuscan bronze

696
6" shallow baffle

696WB
white shallow baffle and trim

Dimensional and Mounting Details

Modules

**Phase cut or 0-10V
Selectable CCT and Selectable Lumen**

4.53"
[115mm]

5 seleCCTable colors
2700K • 3000K • 3500K
4000K • 5000K

selectable lumens

HALO

D2W (Dim-to-Warm)

4.53"
[115mm]

D2W

HALO

2.63"
[67mm]

3.14"
[80mm]

3.57"
[90.8mm]

Trims

**STANDARD TRIM
(592XX)**

Ø 3.61"
[91.7mm]

Ø 6.52"
[165.7mm]

Ø 4.84"
[122.9mm]

Ø 4.54"
[115.3mm]

1.48"
[37.6mm]

1.71"
[43.4mm]

**GIMBAL TRIM
(594XX)**

Ø 3.64"
[92.5mm]

1.34"
[34mm]

Ø 4.41"
[111.9mm]

.69"
[17.6mm]

Ø 4.94"
[125.4mm]

Ø 6.52"
[165.7mm]

TIR Optics & Lens

ø 3.73"
[94.8mm]

TIR OPTIC

1.24"
[31.4mm]

.34"
[8.6mm]

ø 3.55"
[90.2mm]

ø 3.73"
[94.8mm]

SOFT FOCUS LENS

.74"
[18.8mm]

Ø 3.33"
[84.5mm]

1.6"
[40.7mm]

Ø .97"
[24.5mm]

COOPER
Lighting Solutions

Product Specifications

Module

- Field interchangeable and upgradable LED module consists of LED array, primary optic and driver
- Ships with very wide flood soft diffused optic factory installed order alternate distributions or replacements separately
- Optional TIR optics provide higher lumen select values than default soft diffused optic
- Integral die cast aluminum heat sink provides passive thermal cooling achieving L70 at 50,000 hours in IC and non-IC applications

LED Array

- Proximity phosphors over chip on board LEDs provide a uniform source with high efficiency and no pixilation
- Available in 90 CRI minimum, 97CRI option, R9 greater than 50 and color accuracy within 3 SDCM at end points and 4 SDCM in the middle providing color accuracy and uniformity

Electrical Power Connections

- LED connector is a non-screw base luminaire disconnect offering easy installation in Halo 5" H550 series and 6" H750 and 2750 series housings (per LED trim 5" or 6").
- LED Connector meets high-efficacy luminaire requirements for a non-screw base, and where required.
- The included E26 medium screw-base Edison adapter* provides easy retrofit of incandescent housings (non-California product only) (see Housing Section).

Ground Connection

- Separate grounding cable included on the module for attachment to the housing during installation.

Driver

- Integral 120V 60 Hz constant current driver provides noise free operation
- Continuous, flicker-free dimming from 100% to 5% with select leading or trailing edge 120V phase cut control
- Optional UNV 120-277V 50/60 Hz driver with 0-10V analog dimming from 100% to 5%, provided with inline electrical quick connect for low voltage connections
- Medium base (E26) to CJT adapter (provided) support use of incandescent housings and field retrofits

Dimming

- Designed for dimming capability to nominal 5% in normal operation with standard 120V Leading Edge (LE) and Trailing Edge (TE) phase control dimmers or 120-277V 0-10V dimmers (Consult dimmer manufacturer for dimmer compatibility and details. Note, some dimmers require a neutral in the wall box).

Primary Optic

- Soft Focus lens is standard on all ML56 LED light modules
- Impact-resistant polycarbonate
- Convex form for lamp-like appearance
- High lumen transmission
- Optional beam forming optic is field installed. Order separately (accessories).

Optional TIR Optic

- Precision molded TIR optic organizes source flux into useful beams without stray lumens in the field
- Polarized turn and lock mounting aligns optic to source and maintains accurate focus
- Meets ENERGY STAR® color angular uniformity requirements, color deviation is typically less than 0.006 u' v'
- Available in narrow flood, flood, wide flood and very wide flood distributions
- Optional media holder accepts (1) 3.45" lens or filter, order separately

VividTune

- Field selectable 2700, 3000, 3500, 4000 or 5000 K CCT, factory set at 3000 K CCT
- Natural full spectrum color, 97 CRI with R1-R15 values ranging from 92 to 100, excellent TM-30 metrics; Rf ranging from 96-98 and Rg from 99-100
- D2W™ dim-to-warm selectable option shifts color temperature from 3000-1800K or 2700-1800K CCT as fixture dims mimicking the black body dimming response of halogen lamps

Trims

- Spun aluminum baffle and reflector trims are available in 5-, or 6-inch apertures and can be interchanged in the field
- Polymer trims are available in 5-, or 6-inch apertures and molded of non-conductive plastic meeting local code requirements for "dead-front" construction
- Gimbal trims are available in 5-, or 6-inch apertures, provide 350° rotation and 35° of tilt holding any aiming position
- Available in a broad range of painted or plated finishes, can be painted in the field to match any décor
- (3) integral compression springs attach trim to LED module, tab alignment assembly
- (2) integral torsion springs hold trim + module assembly securely in housing

Gaskets

- Closed cell gaskets achieve restrictive airflow requirements without additional caulking

Compliance

- cULus certified for use with Halo housings, classified for use with other's housings, see instruction sheet for conditions of acceptability
- Damp location listed, gimbal trim only
- Damp and wet location listed, covered ceilings only and IP65, below the ceiling only with lens trims
- Airtight per ASTM-E283
- Suitable for use in clothes closets when installed in accordance with the NEC 410.16 spacing requirements
- EMI/RFI emissions per FCC 47CFR Part 15 consumer limits
- Contains no mercury or lead and RoHS compliant
- Photometric testing in accordance with IES LM-79-08
- Lumen maintenance projections in accordance with IES LM-80-08 and TM-21-11
- ENERGY STAR® certified, reference Certified Light Fixtures database
- Certified to State of California Title 20, State-regulated LED Lamp; reference Modernized Appliance Efficiency Database System (MAEDBS) for State-regulate d LED Lamp
- Can be used for State of California Title 24 high efficacy LED compliance under JA8, reference Modernized Appliance Efficiency Database System (MAEDBS) for 2019 JA8 High Efficacy Lighting

Warranty

- Five year limited warranty, consult website for details. www.cooperlighting.com/warranty

LED Module in New or Retrofit Existing Construction – Housings other than Halo

- If used in recessed housings other than Halo, the Cooper Lighting Solutions 5-year limited warranty applies to the LED Module and Trim only.
- As with any electrical installation, a qualified electrician must ensure compatibility of use with a particular housing; this includes all applicable national and local electrical and building codes. Installer is responsible to properly and securely retain the LED Module and LED Trim in the housing at time of installation.

Energy Data

	ML5615LSVWFL9FS1E	ML5615LSVWFL9FS1E010		ML5612LSVWFL97FS1E	ML5609VWFLD2W1E
Lumens (nom)	1500	1500	1500	1200	900
Input Voltage (VAC)	120	120	277	120	120
Input Current (A)	0.14A	0.128	0.057	0.14	0.1
Efficency	83.20%	83.06%	83.79%	83.20%	85.48%
Inrush Current (A)	1.94A	5.32	7.1	1.94	1.92
Inrush Duration (ms)	33	2	1.5	33	32
THD	≤ 20%	≤ 20%	≤ 20%	≤ 20%	≤ 20%
PF	≥ 0.90	≥ 0.90	≥ 0.90	≥ 0.90	≥ 0.90
T Ambient (C)	-30 to +40	-30 to +40	-30 to +40	-30 to +40	-30 to +40
Sound Rating	≤ 22dBA	≤ 22dBA	≤ 22dBA	≤ 22dBA	≤ 22dBA

ML5615LSVWFL9FS1E	CCT	Lumens	Power (W)	LPW
Field Selectable CCT	2700K	1684	16.9	100.0
	3000K	1695	16.9	100.5
	3500K	1735	16.9	102.6
	4000K	1775	16.9	104.8
	5000K	1869	17.1	109.6

ML5615LSVWFL9FSE010	CCT	Lumens	Power (W)	LPW
Field Selectable CCT	2700K	1705	15.8	107.8
	3000K	1744	15.9	109.7
	3500K	1782	15.9	112.2
	4000K	1828	16.0	114.6
	5000K	1911	16.0	119.6

ML5612LSVWEL9ZESIE	CCT	Lumens	Power (W)	LPW
Field Selectable CCT	2700K	1449	15.8	92.0
	3000K	1475	15.9	93.0
	3500K	1514	15.8	95.7
	4000K	1556	15.9	97.6
	5000K	1626	15.9	102.2

ML5609VWFLD2W1E	CCT	Lumens	Power (W)	LPW
Dim-to-Warm	2700K	1083	12	1083
	3000K	1171	12.1	1171

COOPER
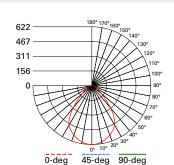Lighting Solutions

Photometric Data

Standard Diffuse Lens + 592W
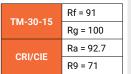

ML5609LSVWFLD2W1E - 592W - 900LM - 3000K
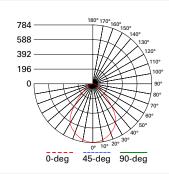Spacing criterion:
(0-180) 1.16 | (90-270) 1.16 | (Diagonal) 1.14
Beam Angle: 80°
Field Angle: 126°
Lumens: 1051
Input Watts: 11.8 W
Efficacy: 89 LPW
UGR: 17
Test Report: P640444

Zonal Lumen	Lumens	% Lumens
0-30	463	44
0-40	714	68
0-60	959	91.2
0-90	1051	100

TM-30-15	Rf = 91
	Rg = 100
CRI/CIE	Ra = 92.7
	R9 = 71

80°

ML5612LSVWFL97FS1E - 592W - 1200LM - 3000K
Spacing criterion:
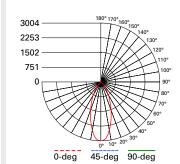(0-180) 1.16 | (90-270) 1.16 | (Diagonal) 1.14
Beam Angle: 80°
Field Angle: 126°
Lumens: 1324
Input Watts: 16.5 W
Efficacy: 80.3 LPW
UGR: 18
Test Report: P641622

Zonal Lumen	Lumens	% Lumens
0-30	583	44
0-40	900	68
0-60	1208	91.2
0-90	1324	100

TM-30-15	Rf = 98
	Rg = 101
CRI/CIE	Ra = 97.6
	R9 = 98

80°

ML5615LSVWFL9FS1E - 592W - 1500LM - 3000K
Spacing criterion:
(0-180) 1.16 | (90-270) 1.16 | (Diagonal) 1.14
Beam Angle: 80°
Field Angle: 126°
Lumens: 1559
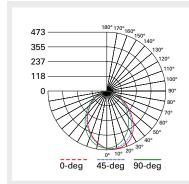Input Watts: 17.1 W
Efficacy: 91.2 LPW
UGR: 18
Test Report: P643442

Zonal Lumen	Lumens	% Lumens
0-30	687	44
0-40	1060	68
0-60	1422	91.2
0-90	1559	100

TM-30-15	Rf = 93
	Rg = 83
CRI/CIE	Ra = 95.3
	R9 = 69

80°

ML5WW + 592W

ML5615LSWW9FS1E - 592W WW - 1500LM - 3000K
Spacing criterion:
(0-180) 1.16 | (90-270) 1.13 | (Diagonal) 1.23
Beam Angle: 88°
Tilt Angle: 8°
Lumens: 1005
Input Watts: 17.1 W
Efficacy: 58.8 LPW
Test Report: P644117

Zonal Lumen	Lumens	% Lumens
0-30	341	33.9
0-40	537	53.4
0-60	862	85.8
0-90	1005	100

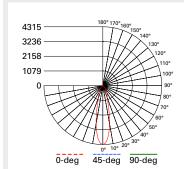| TM-30-15	Rf = -93
	Rg = 98
CRI/CIE	Ra = 95.3
	R9 = 69

88°

Photometric Data

TIR Optic + 592W

ML5615LSNFL259FS1E - 592W - 1500LM - 3000K

Spacing criterion:
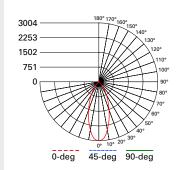(0-180) 0.43 | (90-270) 0.43 | (Diagonal) 0.44
Beam Angle: 25°
Field Angle: 72°
Lumens: 1671
Input Watts: 17.1 W
Efficacy: 97.7 LPW
UGR: 14
Test Report: P642752

Zonal Lumen	Lumens	% Lumens
0-30	1145	68.5
0-40	1431	85.6
0-60	1619	96.9
0-90	1671	100

TM-30-15	Rf = -93
	Rg = 98
CRI/CIE	Ra = 95.3
	R9 = 69

25°

ML5615LSFL409FS1E - 592W - 1500LM - 3000K

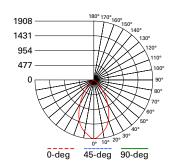Spacing criterion:
(0-180) 0.64 | (90-270) 0.64 | (Diagonal) 0.69
Beam Angle: 40°
Field Angle: 80°
Lumens: 1818
Input Watts: 17.1 W
Efficacy: 106.3 LPW
UGR: 12
Test Report: P642407

Zonal Lumen	Lumens	% Lumens
0-30	1328	73
0-40	1642	90.3
0-60	1797	98.8
0-90	1818	100

TM-30-15	Rf = 93
	Rg = 98
CRI/CIE	Ra = 95.3
	R9 = 69

40°

ML5615LSWFL559FS1E - 592W - 1500LM - 3000K

Spacing criterion:
(0-180) 0.86 | (90-270) 0.86 | (Diagonal) 0.89
Beam Angle: 57°
Field Angle: 93°
Lumens: 1794
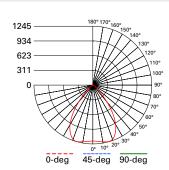Input Watts: 17.1 W
Efficacy: 104.9 LPW
UGR: 14
Test Report: P643787

Zonal Lumen	Lumens	% Lumens
0-30	1130	63
0-40	1540	85.8
0-60	1773	98.8
0-90	1794	100

TM-30-15	Rf = 93
	Rg = 98
CRI/CIE	Ra = 95.3
	R9 = 69

57°

ML5615LSVWFL759FS1E - 592W - 1500LM - 3000K

Spacing criterion:
(0-180) 1.19 | (90-270) 1.19 | (Diagonal) 1.09
Beam Angle: 74°
Field Angle: 100°
Lumens: 1724
Input Watts: 17.1 W
Efficacy: 100.8 LPW
UGR: 15
Test Report: P643097

Zonal Lumen	Lumens	% Lumens
0-30	979	56.8
0-40	1432	83.1
0-60	1691	98.1
0-90	1724	100

TM-30-15	Rf = 93
	Rg = 98
CRI/CIE	Ra = 95.3
	R9 = 69

74°

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Lighting Solutions

Cooper Lighting Solutions
1121 Highway 74 South
Peachtree City, GA 30269
P: 770-486-4800
www.cooperlighting.com