

Description

The ML56 LED downlight system is a flexible solution for your recessed lighting needs. High color fidelity 90 CRI modules are available in three lumen outputs and four color temperatures and because they are compatible with Halo LED housing and many other existing screw based housings, the ML56 LED system can be used in remodel, retrofit and new construction installations. An optional dim-to-warm (D2W™) feature creates an additional lighting solution as it provides a smooth warm transition from 3000K to 1850K when dimmed.

Catalog #		Type
Project		
Comments		Date
Prepared by		

Specification Features

Mechanical

Light Module

- Module includes LED package, LED driver, heat sink, and lens
- Durable die-cast aluminum construction.
- Heat sink designed to conduct heat away from the LED keeping the junction temperatures below specified maximums, including insulated ceiling environments

Optics

- Diffuse lens is standard on all 1200 Series LED light modules
 - Impact-resistant polycarbonate
 - Convex form for lamp-like appearance
 - High lumen transmission
- Optional beam forming optic replaces diffuse lens and provide narrow flood (NFL) 25° nominal distribution. Beam forming optic is field installed. Order separately (accessories).

Mounting

- Modules attach to reflector and baffle trims via locking tabs, and attach to eyeballs via keyed twist-to-lock mating bosses
- The complete light module and trim assembly installs into housings with precision formed torsion springs located on the trim
- Use retrofit adapter band (ML7RAB) accessory when housing does not have receivers for torsion springs.

Housing Compatibility

A complete ML56 system includes a LED Module, LED trim, and a compatible housing (new construction, remodel, or existing retrofit). Housing compatibility in the ML56 System is determined by the ML56 trim dimensions. ML56 trims are available in 5" and 6" aperture (5" = 59xx series and 6" = 69xx series trims). Refer to Housing – Trim Section in this document.

LED

- 1200 Series = 1200 design lumens typical. Delivered lumens vary upon 5" or 6" trim, color temperature, and trim finish.
- Color Temperature options: 2700K, 3000K, 3500K, 4000K
- Dim-to-warm (D2W) Option: 3000K, shifts to 1850K as it dims CRI>90 throughout dimming range

- CRI: 90, R9>50
- L70 at 50,000 hours, projected in accordance with IES TM-21

Color Specification & Quality Standards

- 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
- LED color uniformity of 3 SDCM exceeds ENERGY STAR® color standards per ANSI C78.377- 2008.
- High color performance which maintains 90CRI and R9>50 throughout dimming range.
- Every Halo LED Module is quality tested and performance measured, and then serialized in a permanent record to register lumens, wattage, CRI and CCT.
- Halo LED serialized testing and measurement process ensures color and lumen consistency on a per-unit basis, and validates long-term product consistency over time
- ML56 LED Modules include lumen, CRI, and CCT in the model number
- Example: **ML5612930**
56 = 5" / 6" aperture series
12 = 1200 lumen series
9 = >90 CRI
30 = 3000K nominal CCT

Electrical Power Connections

- LED connector is a non-screw base luminaire disconnect offering easy installation in Halo 5" H550 Series and 6" H750 and H2750 Series housings (per LED trim 5" or 6").
- LED Connector meets high-efficacy luminaire requirements as a non-screw base, and where required.
- The included E26 medium screw-base Edison adapter provides easy retrofit of incandescent housings (see Housing Section).

Ground Connection

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

LED Driver

- Driver is universal voltage 120V-277V, and may be controlled from a switch in Halo LED housings at 120V, 220V, 230V, 240V, and 277V.
- Driver is dimmable at 120V operation when connected to a compatible dimmer.
- Driver is a high efficiency, electronic power supply providing DC power to the LED.
- Driver meets FCC EMI/RFI Consumer Level limits on 120V main inputs, and is compliant for use in residential and commercial installations.
- Driver features high power factor, low THD, and has integral thermal protection in the event of over temperature or internal failure.
- Driver is replaceable, if replacement should be required.

Dimming

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

Warranty

Eaton provides a (5) five year limited warranty on the Halo ML56 LED Module.

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

- If used in recessed housings other than Halo the Eaton 5-year limited warranty applies to the LED Light 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.



ML56 LED System

1200 Series with Beam Forming Reflector Option 90 CRI

ML5612927

ML5612930

ML5612D2W930

ML5612935

ML5612940

5-Inch and 6-Inch 1200 Lumen LED Module for

New Construction, Remodel and Retrofit

For use with 59x and 69x Series 5" and 6" Trims

FOR USE IN INSULATED CEILING AND NON-INSULATED CEILING RATED HOUSINGS

HIGH EFFICACY LED WITH INTEGRAL DRIVER - DIMMABLE



ML5612927
5" or 6" LED 1200 Series



ML5612930
5" or 6" LED 1200 Series



ML5612D2W930
5" or 6" LED 1200 Series, dim-to-warm



ML5612935
5" or 6" LED 1200 Series



ML5612940
5" or 6" LED 1200 Series

Compliance

- cULus listed 1598 Luminaire (Halo housings)
- UL Classified when used in retrofit (refer to housing section)
- cULus listed for damp locations
- cULus Wet location listed with baffle and reflector trims only
- Airtight certified per ASTM E283 (not exceeding 2.0 CFM under 57 Pascals pressure difference)
- IP56 ingress protection rated with baffle and reflector trims only
- RoHS compliant
- May be used in IC (insulated ceiling) housings in direct contact with insulation* and combustible material
- Can be used for California Title 24 compliance / Title 20 certified
- Can be used for International Energy Conservation Code (IECC) high efficiency luminaire compliance.
- Can be used for Washington State Energy Code compliance
- ENERGY STAR® certified luminaire - consult ENERGY STAR® certified product list
- EMI/RFI per FCC 47CFR Part 15 Class B Consumer limits (commercial and residential compliant)
- Photometric testing in accordance with IES LM-79
- Lumen maintenance projections in accordance with IES LM-80 and TM-21
- CE Mark - "Conformité Européene" conformity with the Council of European Communities Directives, meeting internationally recognized compliance when used with Halo H550, H750, and H2750 Series LED housings only

* Not for use with housings in direct contact with spray foam insulation.

Energy Data

ML56 1200/90 Series

(Values at non-dimming line voltage)

Minimum Starting Temp: -30°C (-22°F)
EMI/RFI: FCC Title 47 CFR, Part 15, (Consumer)
Sound Rating: Class A
Input Voltage: UNV 120V-277V
Power Factor: >0.95 @ 120V and >0.9 @277V
Input Frequency: 50/60Hz
THD: <20%
Input Power: 17.5W
Input Current at 120V: 0.14A
Input Current at 277V: 0.07A
Driver Compliance: UL8750, Class II rated
Maximum IC (Insulated Ceiling) Ambient Continuous Operating Temperature: 25°C (77°F)
Maximum Non-IC Ambient Continuous Operating Temperature: 40°C (104°F)

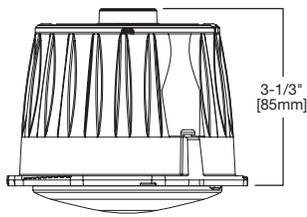
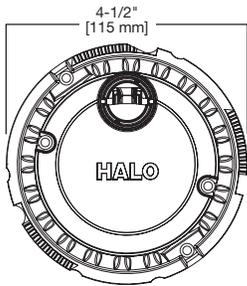


Refer to ENERGY STAR® Certified Products List.
 Can be used to comply with California Title 24 High Efficacy requirements.
 Certified to California Title 20 Appliance Efficiency Database.

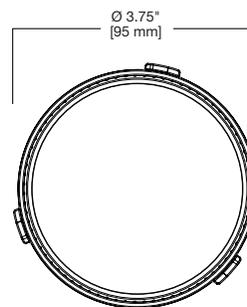


Dimensions

ML56 LED Module



Beam Forming Optic (Accessories)



Ordering Information

Sample Number: **ML5612930 593WB**

Order LED Module and trim separately.

A complete system also includes a compatible housing (new construction, remodel, or existing retrofit). Housing aperture size in the ML56 System is determined by the ML56 trim dimensions. ML56 trims are available in 5" and 6" aperture (5" = 59xx series and 6" = 69xx series trims). Refer to Housing Section in this document.

ML56 LED Modules 1200 Series / 90 CRI

ML5612927= 5"/6" LED module, 1200 lumen, 90CRI, 2700K
ML5612930= 5"/6" LED module, 1200 lumen, 90CRI, 3000K
ML5612935= 5"/6" LED module, 1200 lumen, 90CRI, 3500K
ML5612940= 5"/6" LED module, 1200 lumen, 90CRI, 4000K
ML5612D2W930**= 5"/6" dim-to-warm LED module, 1200 lumen, 90CRI, 3000K to 1850K

ML56 LED 5" and 6" Trims

590 Series - 5" LED Trims

592SC=5" LED trim, specular reflector & white flange
592H=5" LED trim, haze reflector & white flange
592W=5" LED trim, white reflector & flange
593WB=5" LED trim, white micro-step baffle & flange
593BB=5" LED trim, black micro-step baffle & white flange
594WB=5" LED directional trim, white eyeball, baffle & flange – shallow and standard housings
595WW=5" LED trim, wall wash - specular reflector, repositionable specular kick reflector, white flange
596WB=5" LED trim, white shallow baffle & flange – shallow and standard housings

690 Series - 6" LED Trims

692SC=6" LED trim, specular reflector & white flange
692H=6" LED trim, haze reflector & white flange
692W=6" LED trim, white reflector & flange
693WB=6" LED trim, white micro-step baffle & flange
693BB=6" LED trim, black micro-step baffle & white flange
693TBZB=6" LED trim, tuscan bronze micro-step baffle & flange
693SNB=6" LED trim, satin nickel micro-step baffle & satin nickel flange
694WB=6" LED directional trim, white eyeball, baffle & flange – shallow and standard housings
694TBZB=6" LED directional trim, tuscan bronze eyeball, baffle & flange – shallow and standard housings
694SNB=6" LED directional trim, satin nickel eyeball, baffle & flange – shallow and standard housings
695WW=6" LED trim, wall wash - specular reflector, repositionable specular kick reflector, white flange
696WB=6" LED trim, white shallow baffle & flange – for use with shallow and standard housings

ML56 Beam Forming Optic / Media 1200 Series Accessories**

BFR56NFL=Beam forming reflector kit, narrow flood, 25° nominal
BFR56MH=Media holder, accepts one 3.45" lens. (Requires BFR56NFL & L345SF, order separately.)
L345SF=3.45" diameter soft focus lens. Requires (BFR56NFL and BFR56MH, order separately.)

**Beam forming optics/media not recommended for use with ML5612D2W930 LED module.

ML56 System Accessories

ML7RAB=Retrofit adapter band for housings without torsion spring receivers. The ML7RAB kit supplies parts to retrofit four housings; the kit includes:
 4 – Retrofit adapter bands with screws and locking wire nuts
WW595SC=5" Wall wash insert - kick reflector for 595WW (1-included with trim) double or corner wall wash***
WW695SC=6" Wall wash insert - kick reflector for 695WW (1-included with trim) double or corner wall wash***
TRM590WH=5" LED oversize trim ring for use with 59" series trims, white 6.3" I.D., 7.5" O.D. Ring slips over LED trim. Inset design allows 5" trim to fit into oversize ring for an even trim surface
TRM690WH=6" LED oversize trim ring for use with 69" series trims, white 6.9" I.D., 9.5" O.D. Ring slips over LED trim. Inset design allows 6" trim to fit into oversize ring for an even trim surface

***Wall Wash Trims 595WW and 695WW Feature an exclusive Repositionable Kick Reflector for fine-tuning adjustment of the wall wash effect. The WW595SC and WW695SC are Repositionable Kick Reflectors sold separately for addition to the Wall Wash Trim when a double or corner wall wash is needed, or for replacement of original kick reflector included with the trim.

Lighting Facts

ML5612927

PRODUCT SPECIFICATIONS	
Lumens (Light Output)	1141
Watts	17.5
Lumens Per Watt (Efficacy)	65.2
Color Accuracy (CRI)	94
Light Color (CCT) Correlated Color Temperature (CCT)	2700K
MODEL# ML5612927 ADV141606JBL	

ML5612930

PRODUCT SPECIFICATIONS	
Lumens (Light Output)	1180
Watts	17.5
Lumens Per Watt (Efficacy)	67.4
Color Accuracy (CRI)	94
Light Color (CCT) Correlated Color Temperature (CCT)	3000K
MODEL# ML5612930 ADV141607JBL	

ML5612D2W930

PRODUCT SPECIFICATIONS	
Lumens (Light Output)	1180
Watts	17.5
Lumens Per Watt (Efficacy)	67.4
Color Accuracy (CRI)	94
Light Color (CCT) Correlated Color Temperature (CCT)	3000K
MODEL# ML5612930 ADV141607JBL	

ML5612935

PRODUCT SPECIFICATIONS	
Lumens (Light Output)	1241
Watts	17.5
Lumens Per Watt (Efficacy)	70.9
Color Accuracy (CRI)	94
Light Color (CCT) Correlated Color Temperature (CCT)	3500K
MODEL# ML5612935 ADV141608JBL	

ML5612940

PRODUCT SPECIFICATIONS	
Lumens (Light Output)	1374
Watts	17
Lumens Per Watt (Efficacy)	78.5
Color Accuracy (CRI)	93
Light Color (CCT) Correlated Color Temperature (CCT)	4000K
MODEL# ML5612940 ADV141609JBL	