

Description

Recessed LED module with interchangeable 2-inch round or square wall wash apertures are available in various finishes to suit any décor. Use with 4-inch nominal recessed housings suitable for residential and shallow plenum commercial construction or can be used to retrofit existing installations. Asymmetric primary optic redirects light through linear spread lens providing useful vertical foot-candles. Use to light walls, paintings and textured surfaces including stone, masonry and wood when energy savings, long life and optical control are required.

Specification Features

Module

- Field interchangeable and upgradable LED module consists of LED array, primary optic and driver
- Integral die cast aluminum heat sink provides passive thermal cooling achieving L70 at 50,000 hours in IC and non-IC applications

Retention

- Stainless steel springs hold module securely in the housing, can be removed thru the aperture for service or replacement

LED Array

- Proximity phosphors over chip on board LEDs provide a uniform source with high efficiency and no pixilation
- Available in 90 CRI minimum, R9 greater than 50 and color accuracy within 3 SDCM provide color accuracy and uniformity

Gaskets

- Closed cell gaskets achieve restrictive airflow requirements without additional caulking

Trims

- Die formed steel trims are available in 2-inch round or square pinhole apertures and can be interchanged in the field
- Available in a broad range of painted or plated finishes, can be painted in the field to match any décor
- Magnetic attachment holds trim tightly to ceiling and eliminates light leaks.

Media

- Integral media holder provided accepts (1) 2" diameter 3.0mm thick color filters, lens or louvers
- Order media separately

Primary Optic

- Precision molded TIR optic organizes source flux into useful beams without stray lumens in the field
- Two-piece construction with matte black mounting ring and polarized turn and lock mounting aligns optic to source and minimizes backlight in the housing
- Exceeds ENERGY STAR® color angular uniformity requirements, color deviation is typically less than 0.002 u' v'.
- Available in spot, narrow flood, flood and wide flood distributions, ships with narrow flood or flood factory installed, order alternate distributions or replacement separately
- Integral media holder accepts (1) lens or louver

VividTune

- D2W™ dim-to-warm option shifts color temperature from 3000 K to 1850 K as fixture dims mimicking the black body dimming response of halogen sources

Driver

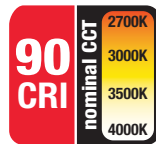
- Integral UNV 120 - 277V 50/60 Hz constant current driver provides noise free operation and can be replaced in the field
- Continuous, flicker-free dimming from 100% to 5% with select leading or trailing edge 120V phase cut dimmers
- Optional UNV 120-277V 50/60 Hz driver with 0 -10V analog dimming from 100% to 5%, provided with inline electrical quick connect for low voltage connections
- Medium base (E26) to CJT adapter (provided) provides mains connection.

Compliance

- cULus listed for use with Halo housings, classified for use with other's housings, see instruction sheet for conditions of acceptability
- Wet location listed, covered ceilings only.
- 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
- Can be used for State of California Title 24 high efficacy LED compliance under JA8, reference Modernized Appliance Efficiency Database System (MAEDBS) for 2016 JA8 High Efficacy Lighting
- Certified to State of California Title 20, State-regulated LED Lamp; reference Modernized Appliance Efficiency Database System (MAEDBS) for State-regulated LED Lamp
- ENERGY STAR® certified, reference Certified Light Fixtures database.

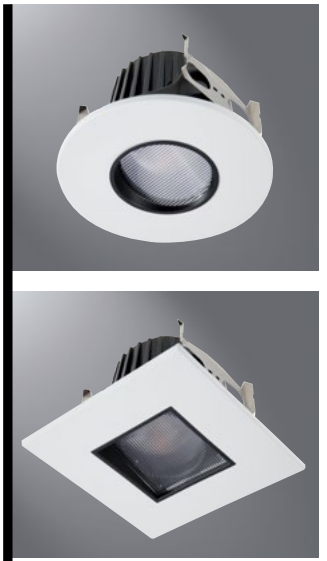
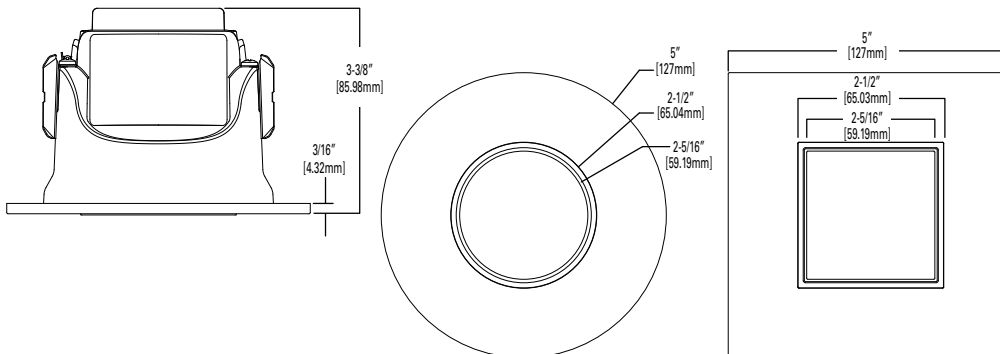
Warranty

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



Refer to ENERGY STAR® Qualified Products List.
 Can be used to comply with California Title 24 High Efficacy requirements.
 Certified to California Appliance Efficiency Database under JA8.
 Indoor LED nominal CCT of 4000K or less.

Dimensions



ML4D

TL45R

TL46S

2-Inch Round and Square Lens Wall Washer

Up to 700 lumens

ENERGY DATA

Lumens	900 Series	
Input Voltage	120V	277V
Input Current	107 (mA)	50 (mA)
Input Power	12.8 (W)	12.5 (W)
Inrush (A)	1.1 (A)	1.9 (A)
THD: ≤ 20%		
PF: ≥ 0.90		
T Ambient -40 - +40°C		
Sound Rating ≤ 20dba		

Ordering Information

SAMPLE NUMBER: ML4D09NFL927E - TL45R6GMWWB
A complete luminaire consists of a housing, LED module and trim, order separately.

Models	Lumens	Distribution	CRI/CCT	Driver	Accessories
ML4D= 4" LED module	09=900 lumens (nominal)	NFL=25 degree narrow flood FL=40 degree flood	927=90 CRI (min), 2700K 930=90 CRI (min), 3000K 935=90 CRI (min), 3500K 940=90 CRI (min), 4000K D2W=90 CRI (min) color shifts from 3000 to 1850K mimicking black body dimming ³	E=UNV 120 - 277V 50-60Hz, LE & TE phase cut 5% dimming at 120V only E010=UNV 120 - 277V 50-60Hz, 0 - 10V analog 5% dimming ¹	TIR45SP15=15° spot TIR45NFL25=25° narrow flood TIR45FL40=40° flood TIR45WFL55=55° wide flood TIR50AWW25=25° narrow flood asymmetric / wall wash TIR45MH12PK=replacement media holder, package of 12 L100 Series=2.0" lens and filters, see spec sheet

Trims	Shielding	Flange Finish	Accessories
TL45R= 2" round asymmetric / lens wall wash TL46S= 2" square asymmetric / lens wall wash	6G=Linear spread lens	MWWB=Matte white flange, white lens frame MWBB=Matte white flange, black lens frame	T24HWKIT=Title 24 hard wire kit, converts incandescent, low voltage and compact fluorescent housings to LED

Housings

Halo Ultra-shallow LED Housings

H245ICAT=4" IC, airtight ultra-shallow new construction housing, LED, 120 - 277V
H245RICAT=4" IC, airtight ultra-shallow remodeler housing, LED, 120 - 277V

Halo LED Housings

H995ICAT=4" IC, airtight shallow new construction housing, LED, 120 - 277V
H995RICAT=4" IC, airtight shallow remodeler housing, LED, 120 - 277V

Halo Housings*

H45ICATD010=4" IC, airtight shallow new construction housing, LED, 120 - 277V, 0 – 10V dimming
H45RICATD010=4" IC, airtight shallow remodeler housing, LED, 120 - 277V, 0 – 10V dimming
H99TAT=4" non-IC, airtight shallow new construction housing, E26, 120V
H99RTAT=4" non-IC, airtight shallow remodeler housing, E26, 120V
H99ICAT=4" IC, airtight shallow new construction housing, E26, 120V
E4TATSB=4" non-IC, airtight shallow new construction housing, adjustable socket bracket, E26, 120V
E4RTATSB=4" non-IC, airtight shallow remodeler housing, adjustable socket bracket, E26, 120V
E4ICATSB=4" non-IC, airtight shallow new construction housing, adjustable socket bracket, E26, 120V
H4NCMF=4" new construction mounting frame

Halo Surface Mount Housings

HS4R=Surface round, 120-277V
HS4S=Surface square, 120-277V



HE26LED*
Requires Edison Base Adapter for retrofit (order separately)

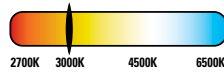
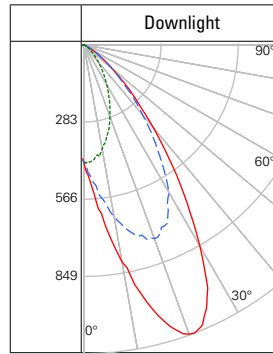
- Notes:**
- 1. The TL45R* and TL46S* trims ship with the TIR50AWW25 25° narrow flood asymmetric / wall wash optic
 - 2. For 0-10V control the "E010=UNV 120 - 277V 50-60Hz, 0 - 10V analog 5% dimming" option must be used with either H45ICATD010 or H45RICATD010 housings
 - 3. Actual lumens for D2W.

Photometry**ML4D09_930 - TIR50AWW25 - TL45R6GMWBB - TL46S6GMWBB**

Description	Halo 2 Inch ML4 Round and Square Wall Wash- MWWB
Test Number	P275385
Module	900 Series, 90CRI
Trim	TL45R6GMWBB / TL46S6GMWBB
Lumens	651 Lm
Efficacy	57.6
Spacing Criteria	1.32

Color Metric Summary

TM-30-15	R _f = 92.7
	R _g = 99.1
CRI/ CIE	R _a = 94.2
	R ₉ = 59.9

**Candlepower Distribution****Candelas at Nadir**

Angle	0-deg
0	429
5	600
10	808
20	1129
30	851
40	396
50	136
60	30
70	3
80	1
90	0

Single Unit Footcandles
2.5' from wall
(distance from fixture along wall)

DD	•	1'	2'	3'
1'	0.6	0.5	0.2	0.1
2'	9	6.3	2.6	0.7
3'	16.9	12.6	5.7	1.9
4'	17.8	14.2	7.4	3.1
5'	14.5	12.1	7.2	3.5
6'	10.2	8.8	5.8	3.2
7'	6.9	6.2	4.5	2.8
8'	4.6	4.2	3.3	2.2
9'	3.2	3	2.4	1.7
10'	2.2	2.1	1.8	1.4

Multiple Unit Footcandles
2.5' from wall
(spacing between fixtures)

•	-- 3' --	•
0.7	0.8	0.7
9.7	8.6	9.7
18.9	17.8	18.9
20.9	21.4	20.9
18	19.3	18
13.4	14.9	13.4
9.6	10.7	9.6
6.8	7.6	6.8
4.9	5.4	4.9
3.6	3.9	3.6

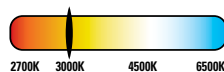
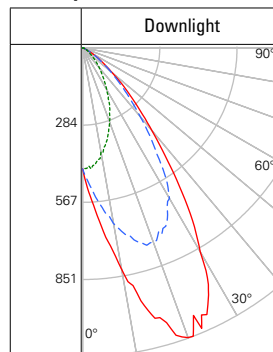
•	-- 4' --	•
0.6	0.4	0.6
9.2	5.2	9.2
17.5	11.4	17.5
18.9	14.8	18.9
16	14.3	16
11.8	11.6	11.8
8.4	8.9	8.4
6	6.5	6
4.3	4.8	4.3
3.2	3.6	3.2

ML4D09_930 - TIR50AWW25 - TL45R6GMWBB - TL46S6GMWBB

Description	Halo 2 Inch ML4 Round and Square Wall Wash MWWB
Test Number	P27791
Module	900 Series, 90CRI
Trim	TL45R6GMWBB / TL46S6GMWBB
Lumens	691 Lm
Efficacy	61.1
Spacing Criteria	1.33

Color Metric Summary

TM-30-15	R _f = 92.7
	R _g = 99.1
CRI/ CIE	R _a = 94.2
	R ₉ = 59.9

**Candlepower Distribution****Candelas at Nadir**

Angle	0-deg
0	444
5	619
10	827
20	1132
30	864
40	396
50	143
60	41
70	8
80	2
90	0

Single Unit Footcandles
2.5' from wall
(distance from fixture along wall)

DD	•	1'	2'	3'
1'	1.3	0.9	0.4	0.2
2'	9.4	6.7	2.6	0.7
3'	16.9	12.6	5.7	2
4'	18.5	14.6	7.4	3
5'	14.8	12.2	7.3	3.5
6'	9.8	8.9	5.9	3.4
7'	6.9	6.1	4.4	2.8
8'	4.6	4.2	3.3	2.3
9'	3.2	3	2.4	1.8
10'	2.3	2.1	1.8	1.4

Multiple Unit Footcandles
2.5' from wall
(spacing between fixtures)

•	-- 3' --	•
1.4	1.1	1.4
10.2	8.8	10.2
18.9	17.9	18.9
21.4	21.6	21.4
18.2	19.9	18.2
13.2	14.9	13.2
9.7	10.7	9.7
6.8	7.6	6.8
4.9	5.5	4.9
3.7	4	3.7

•	-- 4' --	•
1.3	0.7	1.3
9.7	5.1	9.7
17.5	11.3	17.5
19.6	14.8	19.6
16.3	14.5	16.3
11.5	11.7	11.5
8.5	8.9	8.5
6	6.5	6
4.4	4.8	4.4
3.3	3.5	3.3

Multiplier Table

CCT Option	2700K	3000K	3500K	4000K
CCT Multiplier	0.93	1.00	1.04	1.06

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