

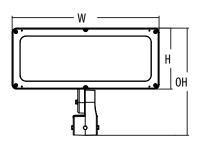


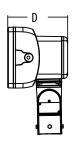




### **Specifications**

3.6 ft<sup>2</sup> EPA: (0.34 m<sup>2</sup>) 10" Depth: (25.4 cm) 25" Width: (63.5 cm) 10" Height: (25.4 cm) Overall 19" Height: (48.3 cm) 61 lbs Weight: (27.6 kg)









## \*\* Capable Luminaire

This item is an A+ capable luminaire, which has been designed and tested to provide consistent color appearance and system-level interoperability.

- All configurations of this luminaire meet the Acuity Brands' specification for chromatic consistency
- This luminaire is A+ Certified when ordered with DTL® controls marked by a shaded background. DTL DLL equipped luminaires meet the A+ specification for luminaire to photocontrol interoperability1
- This luminaire is part of an A+ Certified solution for ROAM® or XPoint™ Wireless control networks, providing out-of-the-box control compatibility with simple commissioning, when ordered with drivers and control options marked by a shaded background¹

To learn more about A+, visit <a href="www.acuitybrands.com/aplus">www.acuitybrands.com/aplus</a>.

- 1. See ordering tree for details.
- 2. A+ Certified Solutions for ROAM require the order of one ROAM node per luminaire. Sold Separately: Link to Roam; Link to DTL DLL

## **Ordering Information**

### **EXAMPLE:** HLF1 LED P1 40K WFL MVOLT IS DDBXD

HLF1 LED								
Series	Performance package	Color temperature	Distribution	Voltage	Mounting	Options	Finish (required)	
HLF1 LED	P1 P2 P3	30K 3000 K 40K 4000 K 50K 5000 K	VNSP Very narrow spot (7°)¹ NSP Narrow spot (15°) SP Spot (22°) NFL Narrow flood (45°) MNFL Medium narrow flood (70°) MFL Medium flood (6x6) WFL Wide flood (6x7)	MVOLT <sup>2</sup> 120 <sup>3</sup> 208 <sup>3</sup> 240 <sup>3</sup> 277 <sup>3</sup> 347 <sup>3</sup> 480 <sup>3</sup>	Shipped included IS Integral slipfitter (fits 2-7/8" 0.D. tenon) YKC62 Yoke with 16-3 SO cord	Shipped installed  PER NEMA twist-lock receptacle only (controls ordered separate) 4.5  PER5 Five-wire receptacle only (controls ordered separate) 4.5  PER7 Seven-wire receptacle only (controls ordered separate) 4.5  PER7 Seven-wire receptacle only (controls ordered separate) 4.5  SF Single fuse (120, 277, 347V) 3  DF Double fuse (208, 240, 480V) 3  CFB Black faceplate  DMG 0-10 dimming driver (controls ordered separate)  Shipped separately 6  UBV Upper/bottom visor (universal)  FV Full visor  WG Wire guard  VG Vandal guard (polycarbonate)	DDBXD Dark bronze DBLXD Black DNAXD Natural aluminum DWHXD White	



## **Ordering Information**

### **Accessories**

Ordered and shipped separate

FTS CG6 DDBXD U Slipfitter for 2-3/8" to 2-7/8" OD tenons; mates with yoke mount (specify finish)

DSHORT SBK U Shorting cap 7

DLL127F 1.5 JUPhotocell - SSL twist-lock (120-277V) 7DLL347F 1.5 CUL JUPhotocell - SSL twist-lock (347V) 7DLL480F 1.5 CUL JUPhotocell - SSL twist-lock (480V) 7

For more mounting options, visit our Floodlighting Accessories pages.

For more control options, visit DTL and ROAM online.

#### NOTES

- VNSP includes an external reflector that ships separately. For installation instructions, refer to the instruction sheet provided with the reflector. VNSP is limited to aiming from 0-90° only. VNSP is not available for use with options CFB, UVB, FV, WG or VG.
- 2. MVOLT driver operates on any line voltage from 120-277V.
- 3. Single fuse (SF) requires 120, 277 or 347 voltage option. Double fuse (DF) requires 208, 240 or 480 voltage option.

  4. Specifies a ROAM® enabled luminaire with 0-10V dimming capability. Additional
- Specifies a ROAM® enabled luminaire with 0-10V dimming capability. Additional hardware and services required for ROAM® deployment; must be purchased separately. Call 1-800-442-6745 or email: sales@roamservices.net.
- 5. For units with a photocontrol receptacle, the mounting must be restricted to  $\pm$  45° from horizontal aim per ANSI C136.10-2010.
- 6. Must be ordered with luminaire. Requires in-field assembly.
- Requires luminaire to be specified with PER, PER5 or PER7 option. Ordered and shipped as a separate line item.

### **Performance Data**

### **Lumen Output**

Lumen values are from photometric tests performed in accordance with IESNA LM-79-08. Data is considered to be representative of the configurations shown, within the tolerances allowed by Lighting Facts. Contact factory for performance data on any configurations not shown here.

Performance Package	System Watts			Field Beam Angle Angle			30K (3000 K, 70 CRI)			40K (4000 K, 70 CRI)			50K (5000 K, 70 CRI)		
rackage									LPW	Max Cd	Lumens	LPW	Max Cd		LPW
		VNSP	30	30	11	10	217,885	15,596	94	225,623	16,150	97	228,686	16,370	99
		NSP	50	49	26	25	63,943	18,059	109	66,214	18,700	113	67,113	18,954	114
		SP	52	51	31	30	59,950	18,756	113	62,079	19,421	117	62,922	19,686	119
P1	166W	NFL	76	75	49	48	27,704	18,805	113	28,688	19,472	117	29,078	19,737	119
		MNFL	92	91	68	67	16,003	18,745	113	16,571	19,410	117	16,796	19,674	119
		MFL	109	114	84	103	9,070	18,706	113	9,410	19,370	117	7,296	19,633	118
		WFL	124	133	107	113	6,936	18,544	112	7,196	19,203	116	8,533	19,464	117
	246W	VNSP	30	30	11	10	302,828	21,677	88	313,583	22,446	91	317,840	22,751	92
		NSP	50	49	26	25	88,871	25,099	102	92,027	25,990	106	93,277	26,344	107
		SP	52	51	31	30	83,322	26,068	106	86,281	26,993	110	87,452	27,360	111
P2		NFL	76	75	49	48	38,505	26,136	106	39,873	27,064	110	40,414	27,432	112
		MNFL	92	91	68	67	22,241	26,053	106	23,031	26,978	110	23,344	27,344	111
		MFL	101	114	84	103	12,834	26,416	107	13,278	27,354	111	10,294	27,725	113
		WFL	124	133	107	113	9,815	26,187	106	10,154	27,117	110	12,040	27,486	112
		VNSP	28	28	10	9	400,242	25,129	85	425,929	26,741	91	427,942	26,868	91
		NSP	45	45	23	23	121,824	28,765	98	129,642	30,611	104	130,255	30,756	104
		SP	49	48	29	29	106,286	29,737	101	113,107	31,644	107	113,642	31,795	108
P3	295W	NFL	72	71	46	45	48,277	29,491	100	51,375	31,383	106	51,618	31,532	107
		MNFL	87	85	64	63	28,665	29,357	100	30,504	31,240	106	30,648	31,388	106
		MFL	101	114	84	103	12,468	30,670	104	13,278	32,638	111	10,194	32,792	111
		WFL	127	130	112	112	9,535	30,366	103	12,422	32,315	110	11,923	32,467	110

# Lumen Ambient Temperature (LAT) Multipliers

Use these factors to determine relative lumen output for average ambient temperatures from 0-40 $^{\circ}$ C (32-104 $^{\circ}$ F).

Am	Ambient						
0°C	32°F	1.05					
10°C	50°F	1.03					
20°C	68°F	1.01					
25°C	77°F	1					
30°C	86°F	0.98					
40°C	104°F	0.95					

### **Projected LED Lumen Maintenance**

Operating Hours	0	25,000	50,000	100,000				
	HLF1 LED P1							
	1	0.98	0.96	0.93				
Lumen Maintenance								
Factor	1	0.98	0.96	0.93				
		HLF1 L	ED P3					
	1	0.93	0.9	0.83				

### **Electrical Load**

			Current (A)									
Power Package	System Watts	120V	208V	240V	277V	347V	480V					
P1	166W	1.4	0.8	0.7	0.7	0.5	0.4					
P2	246W	2.1	1.2	1.0	0.9	0.7	0.6					
P3	295W	2.5	1.4	1.2	1.1	0.9	0.7					

PER Table											
Control	PER	PER	5 (5 wire)		PER7 (7 wire)						
Control	(3 wire)		Wire 4/Wire5		Wire 4/Wire5	Wire 6/Wire7					
Photocontrol Only (On/Off)	~	A	Wired to dimming leads on driver	A	Wired to dimming leads on driver	Wires Capped inside fixture					
ROAM	0	V	Wired to dimming leads on driver	A	Wired to dimming leads on driver	Wires Capped inside fixture					
ROAM with Motion (ROAM on/off only)	0	A	Wires Capped inside fixture	A	Wires Capped inside fixture	Wires Capped inside fixture					
Future-proof*	0	A	Wired to dimming leads on driver	/	Wired to dimming leads on driver	Wires Capped inside fixture					
Future-proof* with Motion	0	A	Wires Capped inside fixture	<b>V</b>	Wires Capped inside fixture	Wires Capped inside fixture					



\*Future-proof means: Ability to change controls in the future.



## Mounting, Options and Accessories



IS - Integral slipfitter (fits 2-7/8" O.D. tenon)



YKC62 Yoke with 16-3 SO cord



UBV Upper/Bottom visor (universal)



Full visor



VG Vandal guard





CFB Black faceplate

### **Optics**

Depending on the distribution chosen, luminaires are built using internal and external reflectors or hybrid silicone optical technology.



Internal reflectors MFL, WFL



Hybrid silicone optics NSP, SP, NFL, MNFL

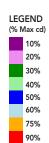


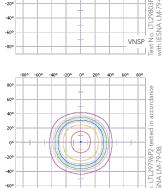
Internal and external reflectors VNSP

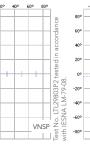
## **Photometric Diagrams**

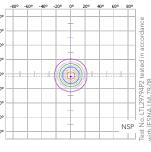
To see complete photometric reports or download .ies files for this product, visit Lithonia Lighting's HLF Size 1 homepage.

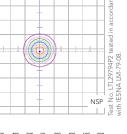
Isofootcandle plots for the HLF1 LED P3 40K. Distances are in units of mount height (20ft).

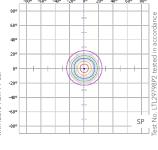


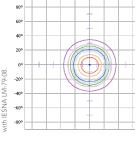




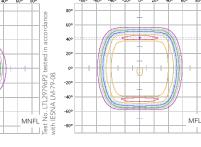


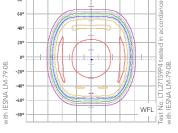






NFL





The following is a list of approved mounting brackets for use with the HLF1. These are rated for use in up to 90mph wind zones. Mounting brackets are ordered separate from the luminaires.

*Aluminum Bullhorns	Catalog Number	Weight (lbs.)	Max Luminaire Weight/Arm (lbs.)	Bracket EPA ft² (m²)	Bracket Configuration	Weight of Luminaires (lbs.)	Luminaire Tilt	Luminaire EPA ft² (m²)	Total EPA ft² (m²)
L							0°	2.4 (0.22)	6.1 (0.57)
15"							15°	2.5 (0.23)	6.3 (0.59)
13	*RBA28	8.4	100	1 2 (0 12)	3 \( \) 100°	2 x 61 = 122	30°	2.8 (0.26)	6.9 (0.64)
12"	"KDAZ8	8.4	100	1.3 (0.12)	2 @ 180°	2 X 0 1 = 122	45°	3.5 (0.33)	8.3 (0.77)
							60°	3.6 (0.34)	8.5 (0.79)
RBA28							90°	3.6 (0.34)	8.5 (0.79)
							0°	2.4 (0.22)	8.9 (0.83)
41-1/2"							15°	2.5 (0.23)	9.2 (0.85)
24"	*RBA32	14.2	100	17(015)	2 0 1200	3 x 61 = 183	30°	2.8 (0.26)	10.1 (0.94)
		14.3	100	1.7 (0.15)	3 @ 120°		45°	3.5 (0.33)	12.2 (1.13)
RBA32							60°	3.6 (0.34)	12.5 (1.16)
TIDAGE							90°	3.6 (0.34)	12.5 (1.16)
,			400	20(040)	3 @ 180°		0°	2.4 (0.22)	9.2 (0.85)
30*						3 x 61 = 183	15°	2.5 (0.23)	9.5 (0.88)
30"	*RBA38						30°	2.8 (0.26)	10.4 (0.97)
12"	"KBA38	12.5	100	2.0 (0.18)			45°	3.5 (0.33)	12.5 (1.16)
RBA38							60°	3.6 (0.34)	12.8 (1.19)
							90°	3.6 (0.34)	12.8 (1.19)
							0°	2.4 (0.22)	11.8 (1.10)
34"							15°	2.5 (0.23)	12.2 (1.13)
	*RBA49	17.5	100	2.2 (0.20)	4 \( \) 100°	461 244	30°	2.8 (0.26)	13.4 (1.24)
12"	"ква49	1/.5	100	2.2 (0.20)	4 @ 180°	4 x 61 = 244	45°	3.5 (0.33)	16.2 (1.51)
RBA49							60°	3.6 (0.34)	16.6 (1.54)
							90°	3.6 (0.34)	16.6 (1.54)

<sup>\*</sup> This can only be used with 4.0" OD tenon/pole tops



The following is a list of approved mounting brackets for use with the HLF1. These are rated for use in up to 90mph wind zones. Mounting brackets are ordered separate from the luminaires.

Steel Bullhorns	Catalog Number	Weight (lbs.)	Max Luminaire Weight/Arm (lbs.)	Bracket EPA ft² (m²)	Bracket Configuration	Weight of Luminaires (lbs.)	Luminaire Tilt	Luminaire EPA ft² (m²)	Total EPA ft² (m²)
Removable							0°	2.4 (0.22)	5.8 (0.54)
36" Cap							15°	2.5 (0.23)	6.0 (0.56)
	BS28	21	150	1.0 (0.09)	2 @ 180°	2 (4 422	30°	2.8 (0.26)	6.6 (0.61)
12"	D320	21	130	1.0 (0.09)	2@100	2 x 61 = 122	45°	3.5 (0.33)	8.0 (0.74)
(3) 3/8" x 1/2"							60°	3.6 (0.34)	8.2 (0.76)
set screws @120° 2-7/8" O.D.Tubing							90°	3.6 (0.34)	8.2 (0.76)
41							0°	2.4 (0.22)	8.5 (0.79)
41" 24"							15°	2.5 (0.23)	8.8 (0.82)
	BS32	34	150	1.3 (0.12)	3 @ 120°	3 x 61 = 183	30°	2.8 (0.26)	9.7 (0.90)
12"	D332	34	150	1.3 (0.12)	3 @ 120	3 X 0 1 = 183	45°	3.5 (0.33)	11.8 (1.10)
							60°	3.6 (0.34)	12.1 (1.12)
120°							90°	3.6 (0.34)	12.1 (1.12)
	- BS38			1.6 (0.14)	3 @ 180°	3 x 61 = 183	0°	2.4 (0.22)	8.8 (0.82)
30"		32					15°	2.5 (0.23)	9.1 (0.85)
			150				30°	2.8 (0.26)	10.0 (0.93)
12"	D330		130	1.0 (0.14)			45°	3.5 (0.33)	12.1 (1.12)
(3) 3/8" x 1/2" set screws @120°							60°	3.6 (0.34)	12.4 (1.15)
2-7/8" O.D.Tubing							90°	3.6 (0.34)	12.4 (1.15)
							0°	2.4 (0.22)	11.9 (1.11)
30" 15" + 15" 4							15°	2.5 (0.23)	12.3 (1.14)
30"	BS48	44	125	2.2 (0.21)	4 \(\tau \) 100°	4 x 61 = 244	30°	2.8 (0.26)	13.5 (1.25)
	D348	44	125	2.3 (0.21)	4 @ 180°	4 X 0 I = 244	45°	3.5 (0.33)	16.3 (1.51)
12'							60°	3.6 (0.34)	16.7 (1.55)
							90°	3.6 (0.34)	16.7 (1.55)
34"							0°	2.4 (0.22)	11.2 (1.04)
24"							15°	2.5 (0.23)	11.6 (1.08)
	BS49	44	150	1.6 (0.14)	4 0 000	Av.61 344	30°	2.8 (0.26)	12.8 (1.19)
12"	b349	44	150	1.0 (0.14)	4 @ 90°	4 x 61 = 244	45°	3.5 (0.33)	15.6 (1.45)
							60°	3.6 (0.34)	16.0 (1.49)
90°							90°	3.6 (0.34)	16.0 (1.49)



The following is a list of approved mounting brackets for use with the HLF1. These are rated for use in up to 90mph wind zones. Mounting brackets are ordered separate from the luminaires.

*Steel Cross Arms (Square Poles only)	Catalog Number	Weight (lbs.)	Max Luminaire Weight/Arm (lbs.)	Bracket EPA ft² (m²)	Bracket Configuration	Weight of Luminaires (lbs.)	Luminaire Tilt	Luminaire EPA ft² (m²)	Total EPA ft² (m²)
							0°	2.4 (0.22)	5.9 (0.55)
30"							15°	2.5 (0.23)	6.1 (0.57)
Tenon 4" x 2-7/8" Dia.	SBS28*	30	250	1.1 (0.10)	2 @ 180°	2 x 61 = 122	30°	2.8 (0.26)	6.7 (0.62)
(4) 3/8*-16 Set Screws	38328"	30	250	1.1 (0.10)	2@180	2 X 0 1 = 122	45°	3.5 (0.33)	8.1 (0.75)
Removable Front Cap							60°	3.6 (0.34)	8.3 (0.77)
SBS28							90°	3.6 (0.34)	8.3 (0.77)
30"							0°	2.4 (0.22)	8.9 (0.83)
	SBS38*	42					15°	2.5 (0.23)	9.2 (0.85)
Tenon 4" x 2-7/8" Dia.			150	1.7 (0.15)	3 @ 180°	3 x 61 = 183	30°	2.8 (0.26)	10.1 (0.94)
(4) 3/8"-16 Set Screws			150	1.7 (0.13)	3 @ 100	3,01 – 103	45°	3.5 (0.33)	12.2 (1.13)
Removable Front Cap							60°	3.6 (0.34)	12.5 (1.16)
SBS38							90°	3.6 (0.34)	12.5 (1.16)
							0°	2.4 (0.22)	11.7 (1.09)
42"							15°	2.5 (0.23)	12.1 (1.12)
Tenon 4" x 2-7/8" Dia.	SBS49*	45	150	2.1 (0.20)	4 @ 90°	4 x 61 = 244	30°	2.8 (0.26)	13.3 (1.24)
Removable Front Cap	)D)47	43	130	2.1 (0.20)	4 @ 90	4 X 0 I = 244	45°	3.5 (0.33)	16.1 (1.50)
Set Screws							60°	3.6 (0.34)	16.5 (1.53)
38040							90°	3.6 (0.34)	16.5 (1.53)

<sup>\*</sup>Requires T20 (2-7/8" max OD) tenon on pole for mounting

Aluminum Cross Arms (Square Poles only)	Catalog Number	Weight (lbs.)	Max Luminaire Weight/Arm (lbs.)	Bracket EPA ft² (m²)	Bracket Configuration	Weight of Luminaires (lbs.)	Luminaire Tilt	Luminaire EPA ft² (m²)	Total EPA ft² (m²)
×							0°	2.4 (0.22)	5.7 (0.53)
6" 18"							15°	2.5 (0.23)	5.9 (0.55)
18"	CD420.4	42	100	0.0 (0.00)	2 0 4000	2 (4 422	30°	2.8 (0.26)	6.5 (0.60)
2-7/8°0.D.	SBA28-4	12	100	0.9 (0.08)	2 @ 180°	$2 \times 61 = 122$	45°	3.5 (0.33)	7.9 (0.73)
3"\$q.							60°	3.6 (0.34)	8.1 (0.75)
\$ \$4. * SBA28							90°	3.6 (0.34)	8.1 (0.75)
30" 2-7/8"O.D.							0°	2.4 (0.22)	8.7 (0.81)
							15°	2.5 (0.23)	9.0 (0.84)
	SBA38-4	17	100	1.5 (0.12)	2 0 1000	3 x 61 = 183	30°	2.8 (0.26)	9.9 (0.92)
		17	100	1.5 (0.13)	3 @ 180°		45°	3.5 (0.33)	12.0 (1.11)
3"Sq. SBA38							60°	3.6 (0.34)	12.3 (1.14)
							90°	3.6 (0.34)	12.3 (1.14)
_				22 (222)	4 0 1000	4 x 61 = 244	0°	2.4 (0.22)	11.9 (1.11)
30"							15°	2.5 (0.23)	12.3 (1.14)
15"	CDA 40. 4						30°	2.8 (0.26)	13.5 (1.25)
30" 2-7/8"0.D.	SBA48-4	22	75	2.3 (0.21)	4 @ 180°		45°	3.5 (0.33)	16.3 (1.51)
3"Sq.							60°	3.6 (0.34)	16.7 (1.55)
SBA48							90°	3.6 (0.34)	16.7 (1.55)
34" ——							0°	2.4 (0.22)	11.3 (1.05)
24"							15°	2.5 (0.23)	11.7 (1.09)
2-7/8"0.D.	CDA 40. 4	22	100	17(015)	4 0 000	4(1 244	30°	2.8 (0.26)	12.9 (1.20)
2-1/8 U.U.	SBA49-4	22	100	1.7 (0.15)	4 @ 90°	$4 \times 61 = 244$	45°	3.5 (0.33)	15.7 (1.46)
3"Sq.							60°	3.6 (0.34)	16.1 (1.50)
SBA49							90°	3.6 (0.34)	16.1 (1.50)



The following is a list of approved mounting brackets for use with the HLF1. These are rated for use in up to 90mph wind zones. Mounting brackets are ordered separate from the luminaires.

Wall Mount Brackets	Catalog Number	Weight (lbs.)	Max Luminaire Weight/Arm (lbs.)	Bracket EPA ft² (m²)	Bracket Configuration	Weight of Luminaires (lbs.)	Luminaire Tilt	Luminaire EPA ft² (m²)	Total EPA ft² (m²)
							0°	2.4 (0.22)	
9/16" Dia.							15°	2.5 (0.23)	
7"	FRWB	12	80	N/A	1	1 x 61 = 61	30°	2.8 (0.26)	N/A
7" \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \	FRWD	12					45°	3.5 (0.33)	
12"—							60°	3.6 (0.34)	
							90°	3.6 (0.34)	

#### **FEATURES & SPECIFICATIONS**

#### INTENDED US

The contemporary design of the High Lumen LED Flood reflects its embedded high performance LED technology and its versatility. It is ideal for large signage, retail, sports fields, truck yards, and many commercial applications.

#### CONSTRUCTION

The High Lumen LED Flood's die-cast aluminum housing has integral heat sink fins to optimize thermal management through conductive and convective cooling. The LED drivers are mounted in direct contact with the casting to promote low operating temperature and long life. Housing is completely sealed against moisture and environment contaminants (IP66). Low EPA 3.6 ft² (0.34 m²) for optimized wind loading.

#### FINISH

Exterior parts are protected by a zinc-infused Super Durable TGIC thermoset powder coat finish that provides superior resistance to corrosion and weathering. A tightly controlled multi-stage process ensures a minimum 3 mils thickness for a finish that can withstand extreme climate changes without cracking or peeling.

### OPTICS

Specular reflectors are engineered for superior field-to-beam ratios, uniformity, and spacing. Light engines are available in 3000 K (70 CRI min.), 4000 K (70 CRI min.) and 5000 K (70 CRI min.) configurations. Optional visors minimize uplight and reduce light trespass.

### ELECTRICAL

Light engines consist of chip-on-board (COB) LEDs directly coupled to the housing to maximize heat dissipation and promote long life (100,000 hrs at 25°C, L83). Class 1 electronic driver has a power factor >90%, THD <20%, and has an expected life of 100,000 hours with <1% failure rate. 10kV surge protection meets a minimum Category C low operation per ANSI/IEEE C62.41.2.

### INSTALLATION

Integral adjustable slipfitter or yoke mounting assemblies facilitate quick and easy installation with a variety of mounting accessories. This secure connection enables the High Lumen LED Flood to withstand up to a 1.5 G vibration load rating per ANSI/IEEE C136.31.

### LISTINGS

CSA certified to U.S. and Canadian standards. IP 66 rated for outdoor applications. Rated for -40  $^{\circ}$ C minimum ambient conditions.

DesignLights Consortium® (DLC) qualified product. Not all versions of this product may be DLC qualified. Please check the DLC Qualified Products List at <a href="https://www.designlights.org">www.designlights.org</a> to confirm which versions are qualified.

### WARRANTY

5-year limited warranty. Complete warranty terms located at:

www.acuitybrands.com/CustomerResources/Terms\_and\_conditions.aspx.

**Note:** Actual performance may differ as a result of end-user environment and application. All values are design or typical values, measured under laboratory conditions at 25 °C. Specifications subject to change without notice.

