




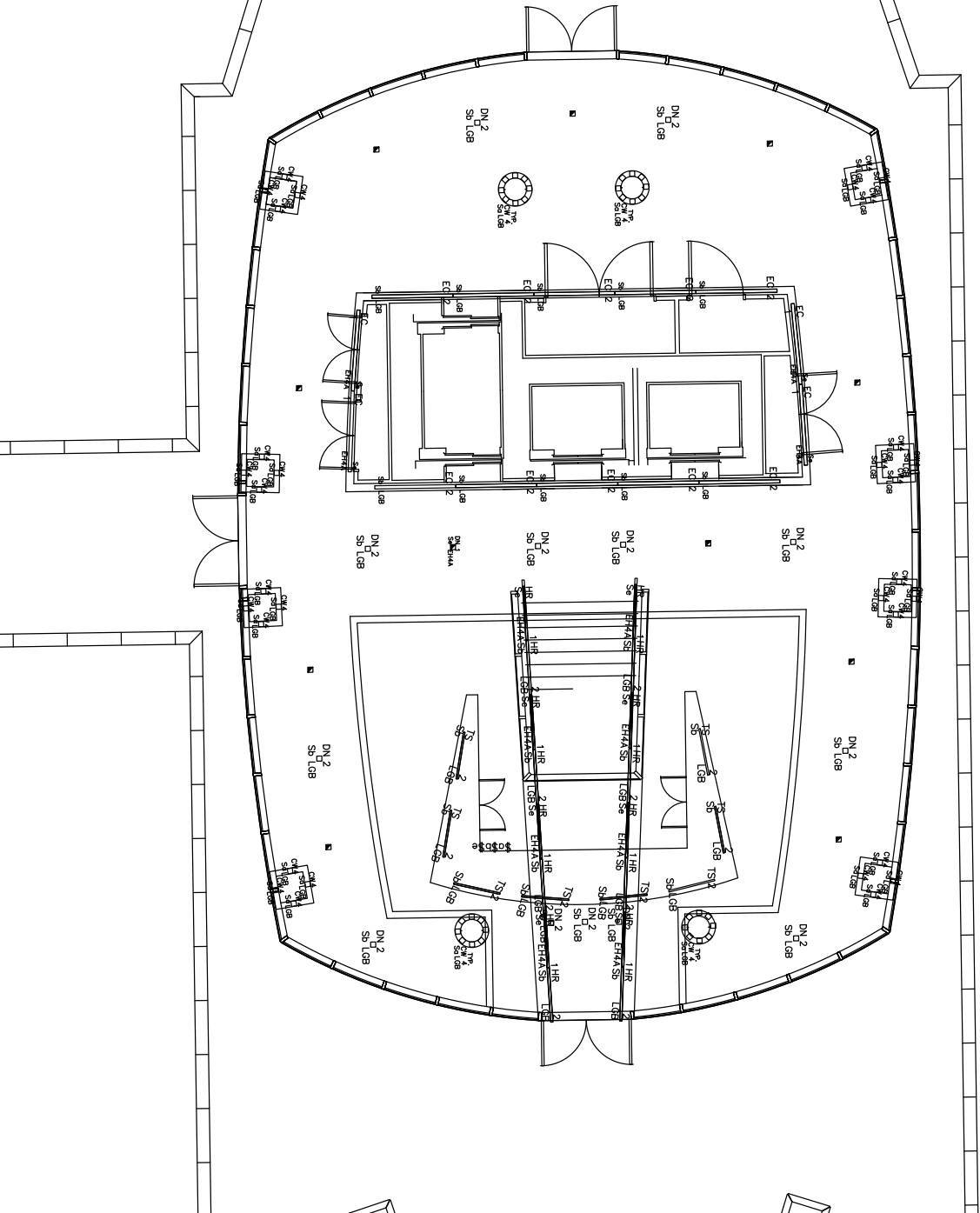

APPENDIX A | LIGHTING

The following pages include all lighting plans, a full luminaire equipment schedule specifying luminaires, lamps, and ballast characteristics, and luminaire cut sheets in order of the luminaire equipment schedule.

LUMINAIRE EQUIPMENT SCHEDULE

TYPE	MANUFACTURER	CATALOGUE NUMBER	DESCRIPTION	LAMP	CCT	BALLAST (OR DRIVER)	LOCATION	ELECTRICAL	INPUT WATTAGE	QUANTITY	PF
C	METALUX-COOPER LIGHTING	MBF-2-54T5FB	4" (2)T5 industrial fixture die formed channel from 20 gauge rolled steel with pretreated iron phosphate for rust inhibitor, reflector minimum 95% total reflectivity, mounted with suspension cables or surface mounted, integral occupancy sensor available.	(2) F54W/T5/835/ECO	3500	99651 – GE254MVP500-F	AUDITORIUM	120/277	117	20	1.0
CW	FOCAL POINT	FL44-11LED-L40-277-SO-T L44-50-TD-TS	4.5" X 4.5" wall washing LED module with remote phosphor technology generating high system efficacy, luminaire design maintains form factors, lumen output, and thermal management for module and driver components, intelligent driver technology, flicker free. Housing made of die-cast aluminum incorporated with an angled MicroGlow lens redirecting light delivering asymmetric distribution.	Fortimo LED TDLM 1100 21 W/840 277V MODULE: 929000613903	4000	LED-120A-0012V-21-F	LOBBY	120	21	64	0.9
DN	FOCAL POINT	FL44-11LED-L40-277-SO-T L44-50-DN-TD-TS	4.5" X 4.5" downlight LED module with remote phosphor technology, powered by Philips' Fortimo LED and AdvanceTitanium LED driver, aluminum heat sink incorporated into die-cast aluminum housing, clear acrylic reflector cone for superior brightness control and 55 degree cutoff, easy replacement, 70% luminaire efficiency.	Fortimo LED TDLM 1100 21 W/840 277V MODULE: 929000613903	4000	LED-120A-0012V-21-F	LOBBY	120/277	21.6	24	0.9
DS	PRESCOUTE-HUBBELL LIGHTING	CF8W26QEB	8" wall mounted cylinder, 26W CFL, quad tube, electronic ballast	F26T8X/835/A/ECO	3500	97608 – F26DBX/835/ECO	AUDITORIUM	120/277	27	5	1.0
EC	THE LIGHTING QUOTIENT-FRAQTR	S301-R06G-5-00-1-00-0-30-00	Cove LED system of extruded aluminum integrated with proper heat sinks, impact-resistant extruded acrylic lens and holographic diffuser, rotating/locking hinges to allow for proper alignment; Philips Lumiled LUXEON LEDs, remote driver in aluminum enclosure, mounting L-brackets can be interlocked for continuous acting luminaire, luminaire provides uniform asymmetric distribution utilizing reflection and inter-refraction of light.	LXMB3-PW51	4000	LED-120A01400C0240F	LOBBY	120	42.1	14	0.9
GG	BEGA	5014	17.7" in diameter, portable garden luminaire with stainless steel base plate, white synthetic safety glass sphere housing one lamp, sphere distributes light softly and uniformly over surface.	CF7EL/SUPER/830/BL	3000	SELF BALLASTED	EXTERIOR	120	7	33	1.0
HR	IO by Cooper Lighting	0.06.555.2.PM.NR.65.3K.GB3.120	Handrail integrated LED chips delivers functional outputs effectively illuminating paths of egress, available in two rail diameters and three beam spread angles, constructed of steel and aluminum, practical for indoor and outdoor applications, ADA and ANSI compliant, proper LED thermal management in accordance with LED manufacture specifications, generally provided in 4' OC.	LED PROVIDED BY IO	3000	DR200AM	LOBBY	120/277	11	18	0.9
PS	BEGA	7785MH	1.3' W x 1.3' L x 1.5' H, two piece die-cast aluminum construction providing a symmetrical distribution, construction robust enough for human weight, spun aluminum lamp housing location inside lower top covering shielded, anchored with secured plates to lower casting with four stainless steel rods, finished in black, UL listed for wet locations.	CMH39T/U/942/G12	4000	GEMH39-MC-120	EXTERIOR	120	40	45	1.0
SB	CREE LED LIGHTING	LR6C-DR1000	6" recessed architectural downlight, Cree True White Technology LED, delivers 80 lumens/W, CRI 90	LMR040-0700-35F9-10100TW	3500	LED-120A-0350C-33-F	AUDITORIUM	120	11.9	11	0.9
SC	IVALO INC.-LUTRON	LNN-275NL-2WNUMT	27" interior decorative sconce, direct/indirect, ADA compliant (3-7/8" off of wall), white LED strings; incorporated reflector within housing of luminaire, finished in case aluminium, mounts on wall from base bracket with locking screws.	5W 27" LED STRING	4000	LED-UNIA-0700C-12-F	OPEN OFFICE	120	5	12	0.5

SP		ERCO	EN-1-ERCO-72085-000	4.9" track spot light, powder coated cast aluminum with .180" tilt capabilities, able to connect with a DALI track system, LED module replaceable	STANDARD WHITE LED	3200	LED-UNIA-0700C-12-F	AUDITORIUM	120	14	5	0.9
ST		IO LED-Cooper	0.01.SL.3K.N.100.3.0	5.9" x 5.9" square LED step light for interior or exterior applications, UL listed for wet/damp locations, gasketed and corrosion resistant metal casting, polycarbonate lens, LED replaceable.	STANDARD WHITE LED	3500	LED-UNIA-0700C-12-F	AUDITORIUM	120/277	8	40	0.5
TA		THE LIGHTING QUOTIENT-TAMBIENT	L201-3653-M-EL15-T-30	Task ambient luminaire 34.75" long with integral hang-on mounting, 1.21W T5 luminaire, high performance louver on top for maximum uplight coverage and minimal glare at eye height, clear prismatic acrylic task lens reducing veiling reflections, housed in extruded aluminum with downlight reflector.	F21T5/635/WM/ECCO	3500	IDA-128-D	OPEN OFFICE	120	27	240	1.0
TS		IO by Cooper Lighting	0.09.I.3K.NG.1.6.1.1	1.39" W X .66" D X .36" L shelf integrated task light, LEDge is a part of the IO linear LED-based family, low voltage, neoprene gasketed, housing made of extruded aluminum, finished in anodized aluminum.	Standard LED	4000	DR200S	LOBBY	24	19.8	8	0.9
TT		Bega	7502	1.3" W x 1.5" L x 8.85" H LED floorlight, housed in aluminum alloy, stainless steel, and clear safety glass, silicone gasketed, inner reflector made of anodized pure aluminum, mounting box with 2 fixing holes for permanent locking, UL label for wet locations	Standard LED	5000	Integral with fixture	exterior	120	17	55	0.9



KEYNOTES

VIRGINIA ADVANCED
 SHIPBUILDING AND
 CARRIER INTEGRATION
 CENTER
 2401 W. AVENUS
 NEWPORT NEWS, VA
 23607

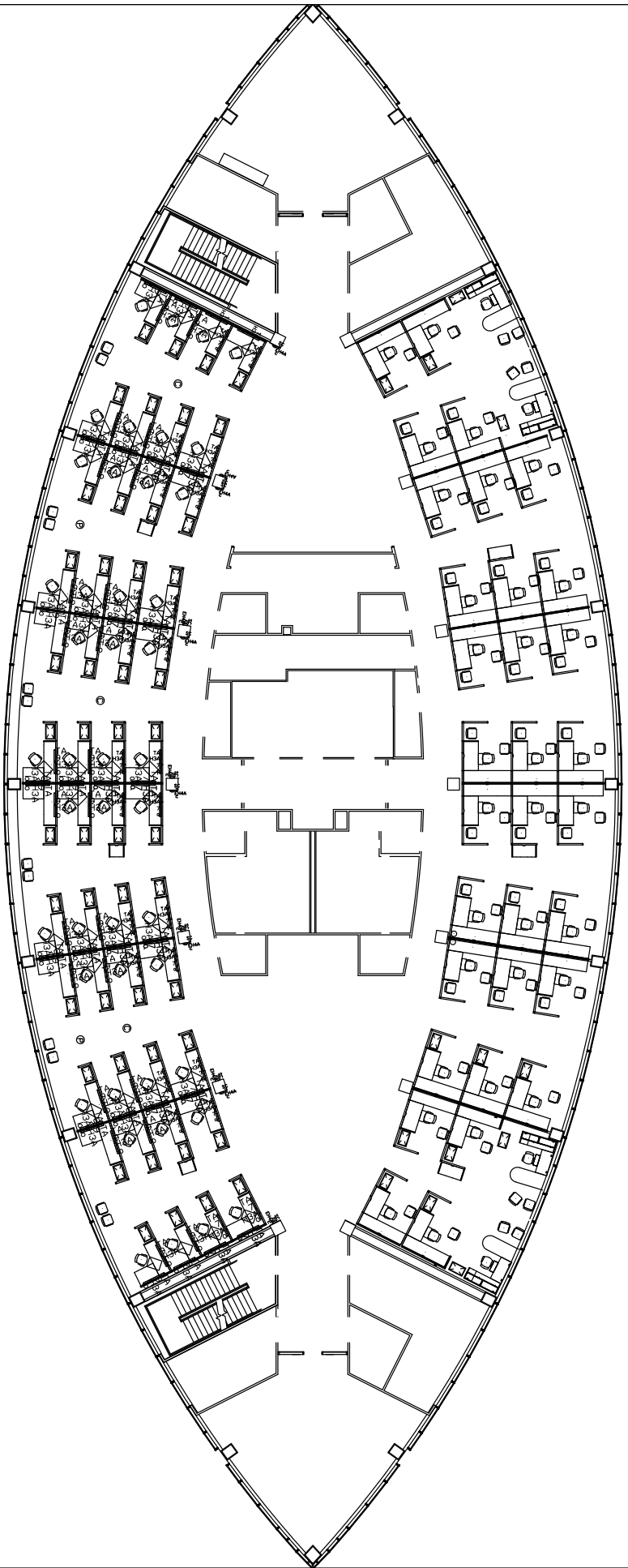
DRAWN BY: ALYSON LARIMER
 PENN. STATE AE SENIOR THESIS

LIGHTING CONSULTANT: DR. RICHARD MISTRICK
 TITLE: LOBBY LIGHTING PLAN

DATE: 7-APRIL-2011
 SCALE: 1/8" = 1'-0"



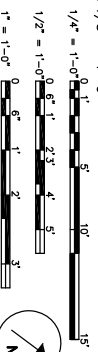
L1-1



KEY

- ⊙ OCCUPANCY SENSOR
- Ⓟ PHOTOSENSOR

DRAWN BY: ALYSON LARIMER
 PENN STATE AE SENIOR THESIS
 ELECTRICAL CONSULTANT: PROF. TED DANNERTH
 TITLE: OPEN OFFICE LUMINAIRE LAYOUT
 DATE: 07-APRIL-2011
 SCALE: 1/8" = 1'-0"



L2-1

KEYNOTES

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NEWPORT NEWS, VA
23607



DRAWN BY: ALYSON LARIMER
PENN STATE AE SENIOR THESIS
LIGHTING CONSULTANT: DR. RICHARD MISTRICK
TITLE: AUDITORIUM LIGHTING LAYOUT
DATE: 7-APRIL-2011



L3-1

METALUX[®]

DESCRIPTION

The Micro-Bay series is a functional and multi-purpose narrow profile fluorescent High-Bay that incorporates premium performance with durable construction. Designed for T5 fluorescent technology, the MBF series offers both high performance and application versatility with three optical configurations for general and aisle applications. Illumination solution in commercial, industrial and retail applications, MBF series can be used in warehouses and retail store distribution centers.

Catalog #		Type
Project		
Comments		Date
Prepared by		

SPECIFICATION FEATURES

A -- Construction

Die formed channel from 20 gauge prime cold rolled steel. Numerous KOs for ease of installation. End plate quickly converts to snap-in channel connector for continuous row alignment. Push-in style lampholders snap in to installed tracks. Channel/Wireway cover positively secured with mechanical fastener.

B -- Electrical*

Ballasts are Class "P" and are positively secured. RotorLock lampholders ensure positive lamp retention. Optional pre-wired factory installed multiple circuit plug-in connectors. UL/CUL listed. Suitable for damp locations.

C -- Finish

Multistage Iron phosphate pretreatment ensures maximum bonding and rust inhibitor.

D -- Channel/Wireway Cover

Heavy gauge prime cold rolled steel. Tight fit for ease of maintenance.

E -- Reflector

Specular Miro reflectors for precise light control minimum 95% total reflectivity. Three optical distribution patterns are available:

- Focus - $SC < .5$
- Task - $.5 \leq SC < .9$
- Normal - $.9 \leq SC \leq 1.2$

Mounting

Suspension is convenient and flexible with the SS Aircraft Cable "Y" Toggle Mounting Kits. Adjustment for luminaire mounting height is provided at luminaire rather than structure. Order a rigid exterior connector/coupling with pre-punched holes facilitates easy installation of coupled sections up to 32' long.

Option

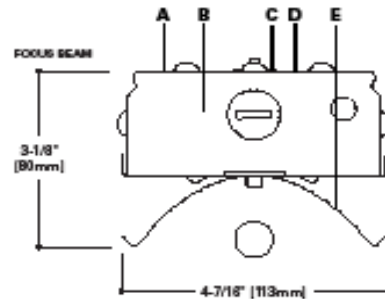
Integral occupancy sensor available and provides from 600 sq. ft. up to 1250 sq. ft. of coverage in a maximum mounting height of 40'.



MBF
154
254

4' OR 8' MICROBAY*
1 OR 2 LAMP

T5 Lamp Technology
Task Beam
Focus Beam
Normal Beam



ENERGY DATA

Input Watts @ 120V:
Electronic Ballast & STD Lampe
154 (62)
254 (117)
454 (229)
8T154 (117)
8T254 (229)

Luminaire Efficacy Rating
LER = 60
Catalog Number: MB-154TS

Yearly Cost of 1000 lumens,
3000 hrs at .06 KWH = \$3.47

Reference the lampballast data in the
Technical Section for specific lampballast
requirements.

LAMPS OBTAIN ENERGY. DISPOSE ACCORDING
TO LOCAL, STATE OR FEDERAL LAWS

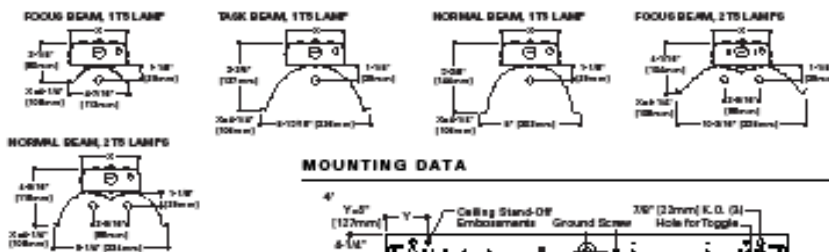
COOPER LIGHTING
Sole and convenient means of
disconnecting power

*Patent Pending

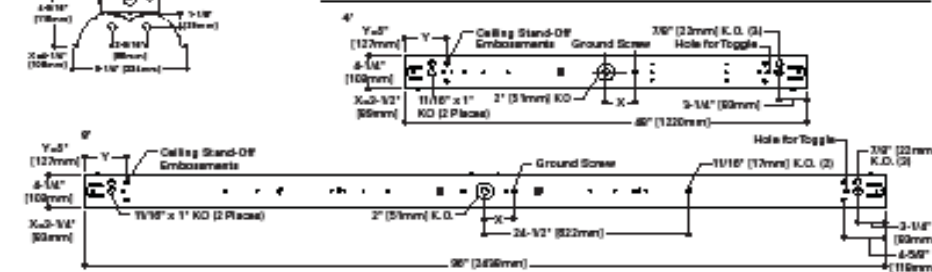
ADF00486



LAMP CONFIGURATIONS

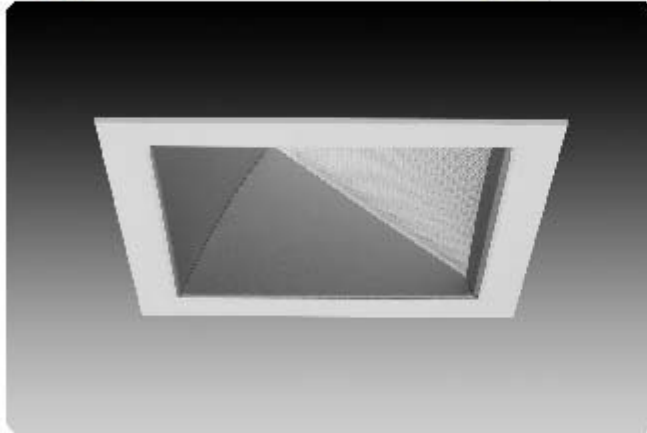


MOUNTING DATA



COOPER LIGHTING

4.5" x 4.5" – wall wash
id'



Patent Pending



features

LED module features remote phosphor technology enabling a high system efficacy and minimum 80 CRI.

Future-proof LED system design maintains form factor, lumen output, and thermal characteristics of module and driver as technology advances, allows for easy replacement and upgrades.

Rated life is 50,000 hours at 70% lumen maintenance (L70).

5 year limited warranty.

Intelligent driver delivers specified lumen output regardless of color temperature.

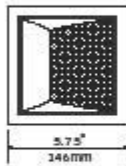
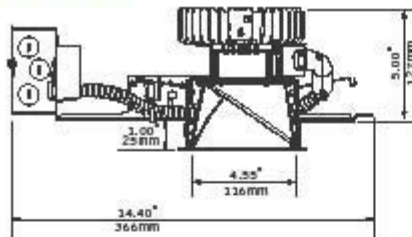
Flicker-free 0-10V analog dimming capability standard.

Low profile 5" housing.

Housing design allows die-cast trim flange to rotate to align with architecture and adjacent luminaires.

Angled MicroGlow lens redirects light to deliver asymmetric distribution.

dimensional data



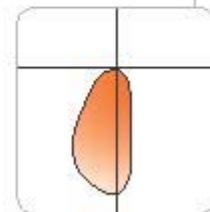
February 2011 D

performance

25W, 3500K, 1200 Lumen LED Module
Clear Diffuse Reflector
Total Luminaire Output: 1261ms
Photometric performance is measured in accordance with IESNA LM-79.



Use everGreen LED downlights in place of a 4" x 4" compact fluorescent



Visit focalprintlights.com for complete photometric data.

4.5" x 4.5"-led wall wash
1300 lumen, 3500 K
id*

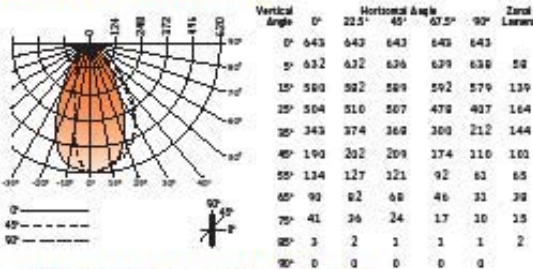


Filename: FL44WWMGCD13LEDL55.JES
Catalog #: FL44-13LED-L435-50-T, L44-50-WWMG-CD-WH
Photometric Report #: 20162

Footcandle values - example



CANDLEPOWER DISTRIBUTION



FOOTCANDLE VALUES - units 24" from the wall

distance from ceiling	18"	24"	30"	36"
1'	29 29 29	23 22 23	20 16 20	19 13 19
2'	37 38 37	29 30 29	24 23 24	21 19 21
3'	38 40 38	30 31 30	25 25 25	22 21 22
4'	30 31 30	25 25 25	20 21 20	17 18 17
5'	21 22 21	18 18 18	15 15 15	13 13 13
6'	15 15 15	13 13 13	11 11 11	10 10 10
7'	10 11 10	9 10 9	8 8 8	7 7 7
8'	8 8 8	7 7 7	6 6 6	6 6 6
9'	6 6 6	5 5 5	5 5 5	4 4 4
10'	4 4 4	4 4 4	4 4 4	3 4 3

FOOTCANDLE VALUES - units 18" from the wall

distance from ceiling	18"	24"	30"	36"
1'	49 47 49	40 34 40	36 24 36	34 16 34
2'	54 56 54	42 42 42	36 21 36	33 23 33
3'	44 45 44	34 36 34	28 29 28	25 23 25
4'	28 29 28	23 23 23	19 20 19	16 17 16
5'	18 19 18	15 16 15	13 13 13	11 12 11
6'	12 13 12	11 11 11	9 9 9	8 8 8
7'	9 9 9	8 8 8	7 7 7	6 6 6
8'	6 6 6	5 5 5	5 5 5	4 5 4
9'	4 4 4	4 4 4	4 4 4	3 3 3
10'	3 3 3	3 3 3	3 3 3	3 3 3

FOOTCANDLE VALUES - units 30" from the wall

distance from ceiling	18"	24"	30"	36"
1'	18 18 18	14 14 14	12 11 12	11 8 11
2'	27 28 27	22 22 22	18 18 18	16 15 16
3'	28 29 28	23 24 23	19 20 19	16 16 16
4'	27 29 27	23 24 23	19 20 19	16 17 16
5'	22 22 22	18 19 18	16 16 16	13 14 13
6'	16 16 16	14 14 14	12 12 12	11 11 11
7'	12 12 12	10 11 10	9 10 9	8 8 8
8'	9 9 9	8 8 8	7 7 7	6 7 6
9'	7 7 7	6 6 6	6 6 6	5 5 5
10'	5 5 5	5 5 5	4 5 4	4 4 4

Footcandle results based on AIAA-1; with an omnidirectional lens; Reflectance=0.90; L.L.F.=

4.5" x 4.5"-led wall wash
1100 lumen, 3500 K
id*

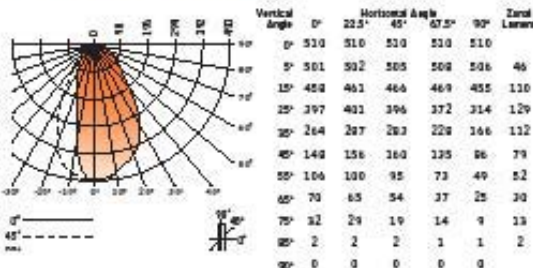


Filename: FL44WWMGCD11LEDL55.JES
Catalog #: FL44-11LED-L435-50-T, L44-50-WW-CD
Photometric Report #: 20164

Footcandle values - example



CANDLEPOWER DISTRIBUTION



FOOTCANDLE VALUES - units 24" from the wall

distance from ceiling	18"	24"	30"	36"
1'	23 23 23	18 17 18	14 14 14	15 9 15
2'	29 30 29	23 23 23	22 22 22	17 15 17
3'	29 30 29	23 24 23	22 23 22	17 16 17
4'	23 24 23	19 20 19	21 22 21	13 14 13
5'	16 17 16	14 14 14	17 17 17	10 10 10
6'	12 12 12	10 10 10	12 13 12	8 8 8
7'	9 9 9	7 7 7	9 9 9	6 6 6
8'	6 6 6	5 6 5	7 7 7	4 4 4
9'	4 4 4	4 4 4	5 5 5	3 4 3
10'	3 3 3	3 3 3	4 4 4	3 3 3

FOOTCANDLE VALUES - units 18" from the wall

distance from ceiling	18"	24"	30"	36"
1'	39 37 39	32 27 32	29 19 29	27 13 27
2'	41 40 41	33 32 33	28 24 28	25 18 25
3'	34 35 34	26 26 26	22 22 22	19 18 19
4'	22 23 22	18 18 18	15 15 15	12 13 12
5'	14 15 14	12 12 12	10 10 10	9 9 9
6'	10 10 10	8 9 9	7 7 7	6 6 6
7'	7 7 7	6 6 6	5 5 5	5 5 5
8'	5 5 5	4 4 4	4 4 4	3 4 3
9'	4 4 4	3 3 3	3 3 3	3 3 3
10'	3 3 3	3 3 3	2 2 2	2 2 2

FOOTCANDLE VALUES - units 30" from the wall

distance from ceiling	18"	24"	30"	36"
1'	14 14 14	11 11 11	10 9 10	9 7 9
2'	22 22 22	18 18 18	15 14 15	13 12 13
3'	22 23 22	18 18 18	15 15 15	13 13 13
4'	21 22 21	17 18 17	15 15 15	12 13 12
5'	17 17 17	14 15 14	12 13 12	10 11 10
6'	12 13 12	11 11 11	10 10 10	8 8 8
7'	9 9 9	8 8 8	7 7 7	6 7 6
8'	7 7 7	6 6 6	6 6 6	5 5 5
9'	5 5 5	5 5 5	4 5 4	4 4 4
10'	4 4 4	4 4 4	3 4 3	3 3 3

Footcandle results based on AIAA-1; with an omnidirectional lens; Reflectance=0.90; L.L.F.=



features

LED module features remote phosphor technology enabling a high system efficacy and minimum 80 CRI.

Future-proof LED system design maintains form factor, lumen output, and thermal characteristics of module and driver as technology advances, allows for easy replacement and upgrades.

1300 Lumen module is Energy Star qualified, 1100 Lumen module is built to Energy Star standards.

Rated life is 50,000 hours at 70% lumen maintenance (L70).

5 year limited warranty.

Intelligent driver delivers specified lumen output regardless of color temperature.

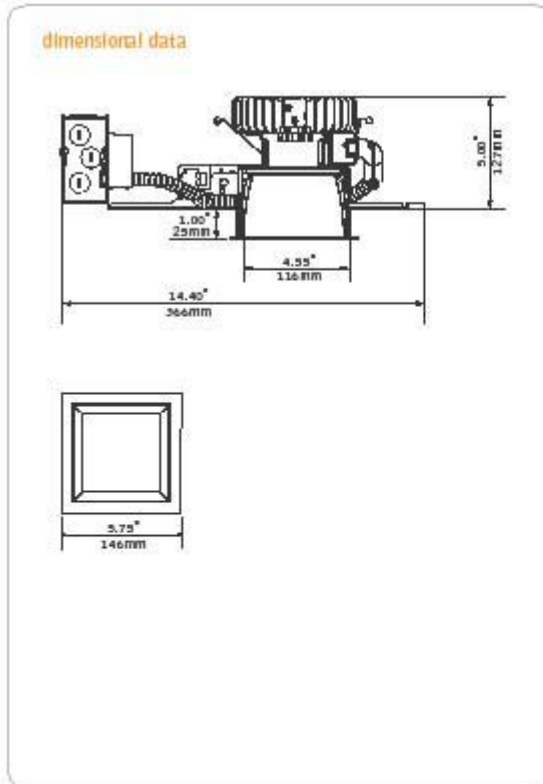
Flicker-free 0-10V analog dimming capability standard.

Low profile 5" housing.

Housing design allows die-cast trim flange to rotate to align with architecture and adjacent luminaires.

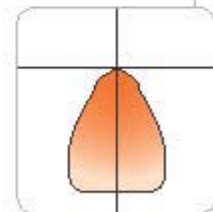
Clear Diffuse reflector cone features superior brightness control and 55 degree cutoff to light source and its image.

February 2011 E

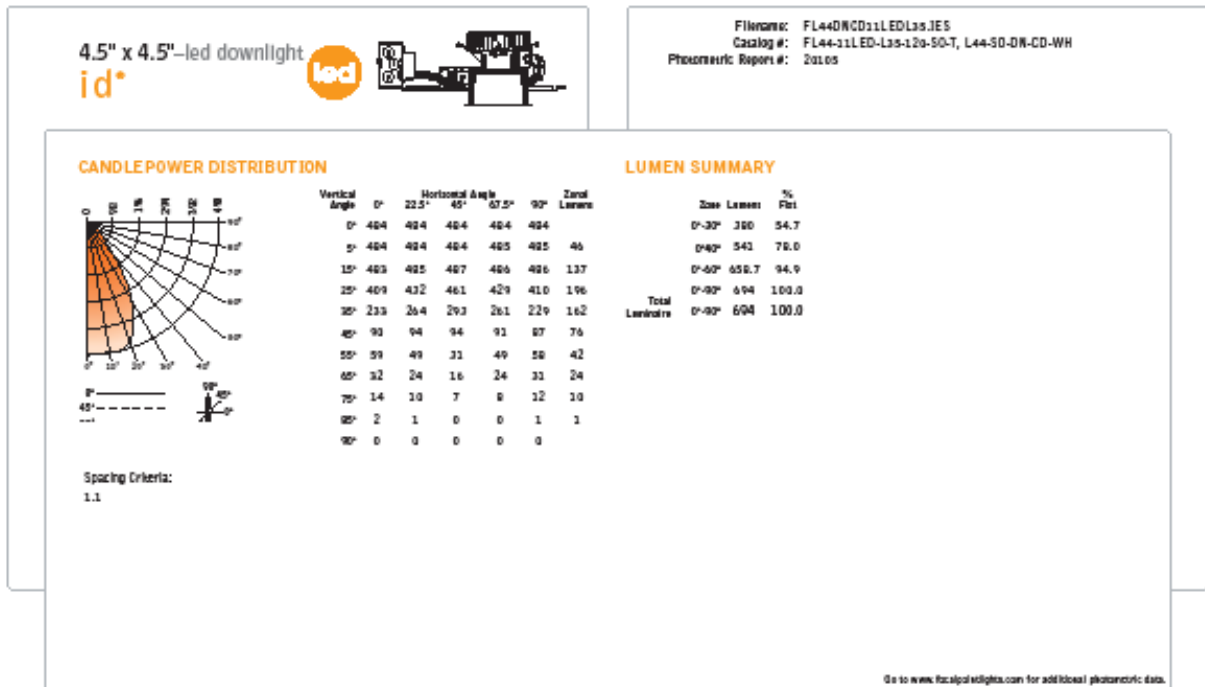
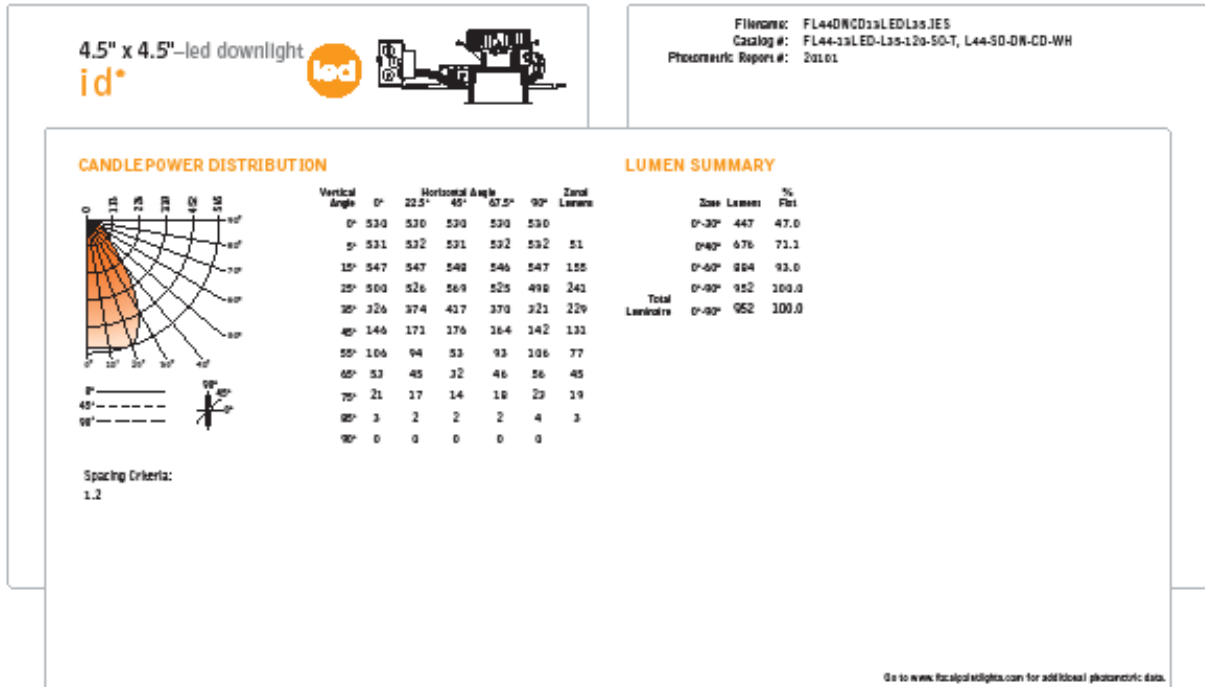


performance

25W, 3500K, 1300 Lumen LED Module
 Clear Diffuse Reflector
 Total Luminaire Output: ~52lm
 Photometric performance is measured in accordance with IESNA LM-79.



Visit focalprintlights.com for complete photometric data.





Featuring Reflectors

8" Direct Wall Mount Cylinder

CF8W13QEB

CF8W18QEB

CF8W26QEB

One 13W, 18W, or 26W CFL Quad Tube 4-Pin Lamp
Wet Location
120V-277V or 347V

DATE: _____ TYPE: _____
FIRM NAME: _____
PROJECT: _____



For conversion to millimeters, multiply inches by 25.4
Not to Scale

APPLICATIONS:

The CF8W is an 8" wall mounted cylinder used to achieve direct illumination patterns on vertical walls or columns. The CF8W is ideal for a wide variety of commercial, retail, hospitality and institutional applications where the added energy benefit of compact fluorescent sources is required.

HOUSING:

.064" extruded aluminum cylinder featuring durable powder coat painted finish. Cast aluminum arm bracket canopy with extruded aluminum arm. Specify: brushed aluminum, matte black, bronze, matte white or Prescolite's exclusive Zet, metallic silver.

REFLECTOR:

Specify clear, champagne gold Alzak, or black baffle reflector. Virtual Source® optical system provides excellent glare and brightness control for visual comfort.

BALLAST:

One (1) 13W, 18W, or 26W compact fluorescent Class P® multi-watt, multi-volt electronic ballast. High power factor standard.

LAMP:

One (1) 13W (G24q-1 base), 18W (G24q-2 base), or 26W (G24q-3 base) 4-pin quad tube compact fluorescent lamp. Lamp furnished by others.

SOCKET:

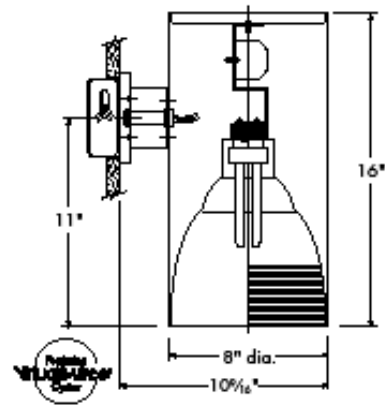
One (1) injection molded socket. Reflector/socket mounting bracket factory set for specified wattage.

INSTALLATION:

Easy installation onto standard Jbox.

LABELS:

UL listed or UL/CSA listed with CDN option for damp locations



CATALOG NUMBER:

EXAMPLE: CF8W26QEBCRZ

CYLINDERS	CYLINDER OPTIONS	CYLINDER OPTIONS	REFLECTOR FINISHES	CYLINDER FINISHES
<input type="checkbox"/> CF8W13QEB 8" Direct wall mount cylinder, 13W CFL quad, electronic ballast (120-277V)	<input type="checkbox"/> CDN Canadian electrical code compliant ballast disconnect <input type="checkbox"/> CDN 347V⁵ Canadian electrical code compliant ballast disconnect <input type="checkbox"/> MW26 Max Wattage label, 26W <input type="checkbox"/> SYL⁴ Osram Sylvania Ballast (available only for standard EB option) <input type="checkbox"/> DM Electronic dimming ballast (contact factory for wall control system compatibility) <input type="checkbox"/> 7DM Advance Mark 7 Dimming Ballast to 5%, 4-wire, 0-10V, analog (120V-277V)	<input type="checkbox"/> XDM^{1,3} Advance Mark 10 Dimming Ballast to 5%, 2-wire line voltage <input type="checkbox"/> SDM^{1,3} Lutron Compact SE Dimming Ballast to 5%, 3-wire low voltage <input type="checkbox"/> 2DM^{1,3} Lutron Tu-Wire Dimming Ballast to 5%, 2-wire line voltage	<input type="checkbox"/> BB Black Baffle <input type="checkbox"/> CR Clear Alzak <input type="checkbox"/> CG Champagne gold	<input type="checkbox"/> BA Brushed aluminum <input type="checkbox"/> BL Matte black <input type="checkbox"/> BZ Bronze <input type="checkbox"/> WH Matte white <input type="checkbox"/> Z "Zet" metallic silver
<input type="checkbox"/> CF8W18QEB 8" Direct wall mount cylinder, 18W CFL quad, electronic ballast (120-277V)				Special Reflector Finishes: Refer to specification sheet #LFO-CFL026 for reflector capabilities 1. Specify voltage and wattage 2. Not available for 13W or 18W 3. Not available for 13W 4. Available for Osram Sylvania Quick 60+® limited Warranty when used with Osram lamp(s). See www.prescolite.com for details. 5. Dimming not available for 347V.
<input type="checkbox"/> CF8W26QEB 8" Direct wall mount cylinder, 26W CFL quad, electronic ballast (120-277V)				



In a continuing effort to offer the best product possible we reserve the right to change, without notice, specifications or materials that in our opinion will not alter the function of the product.
Web: www.prescolite.com • Tech Support: (888) 777-4832

LFO-CFL-005

PHOTOMETRIC DATA

LiteForms™ - 8" Direct Wall Mount Cylinder CF8W13QEB/CF8W18QEB/CF8W26QEB

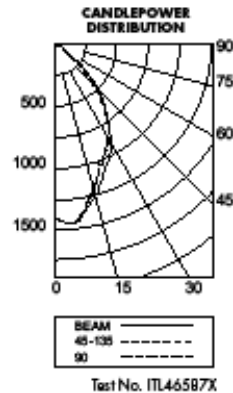
BALLAST DATA	13W			18W			26W		
	120V	277V	347V	120V	277V	347V	120V	277V	347V
Total System Watts	16W	17W	16W	20W	20W	20W	20W	29W	31W
Input Current (Amps)	0.13	0.06	0.08	0.17	0.08	0.06	0.17	0.11	0.09
Input Frequency	50/60Hz	50/60Hz	50/60Hz	50/60Hz	50/60Hz	50/60Hz	50/60Hz	50/60Hz	50/60Hz
Power Factor	>97%	>97%	>97%	>97%	>97%	>97%	>97%	>97%	>97%
Ballast Factor	>98%	>98%	1	>98%	>98%	1	>98%	>98%	1
Total Harmonic Distortion	<10%	<10%	<10%	<10%	<10%	<10%	<10%	<10%	<10%
Minimum Starting Temp.	-18°C (0°F)	-18°C (0°F)	-18°C (0°F)	-18°C (0°F)	-18°C (0°F)	-18°C (0°F)	-18°C (0°F)	-18°C (0°F)	-18°C (0°F)

LAMP DATA	13W Quad	18W Quad	26W Quad
Rated Watts	13W Quad	18W Quad	26W Quad
Rated Lumens	860	1250	1800
Efficacy (LPW)	67	69	69
Rated Life	10,000 hours	10,000 hours	10,000 hours
CR1	82	82	82
Minimum Starting Temp.	0° F	0° F	0° F

LUMINANCE DATA IN CANDELA/SQ. METER	Angle in Vertical	Average 0°	Average 45°	Average 90°
	45°	16421	17590	17770
55°	388	998	887	
65°	0	0	0	
75°	0	0	0	
85°	0	0	0	

CF8W26QEBCE
One 32W Triple
Spacing Criteria: 1.0
Efficiency: 70.9%

AVERAGE INITIAL FOOTCANDLES				
Multiple Units (Square Array)				
Ceiling 80% Wall 50% Floor 20%				
32W Triple				
SPACING	RCR1	RCR3	RCR7	
8.0	24	20	15	
9.0	19	16	12	
10.0	15	13	9	
11.0	13	11	8	
12.0	11	9	6	



CANDLEPOWER SUMMARY			
Angle	0°	45°	90°
0	1397	1397	1397
5	1443	1450	1443
15	1260	1210	1194
25	1012	961	940
35	707	712	707
45	365	391	395
55	7	18	16
65	0	0	0
75	0	0	0
85	0	0	0

		COEFFICIENTS OF UTILIZATION Zonal Cavity Method													
		% Effective Floor Cavity Reflectance					% Effective Floor Cavity Reflectance								
Beam	Cavity Ratio	80%		70%		50%		30%		10%					
		70	50	30	10	70	50	30	10	70	50	30	10		
1	1	80	78	76	74	71	70	70	70	71	71	70	69	68	67
2	2	76	72	69	66	74	71	68	65	68	66	64	63	62	61
3	3	71	66	63	59	70	65	62	59	63	60	58	57	56	55
4	4	67	61	57	53	66	60	56	53	59	55	52	51	50	49
5	5	63	57	52	49	63	56	52	48	55	51	48	47	46	45
6	6	59	52	48	44	58	51	47	44	51	47	44	43	42	41
7	7	56	49	44	41	55	48	44	40	47	43	40	39	38	37
8	8	53	45	41	37	51	45	40	37	44	40	37	36	35	34
9	9	50	42	38	35	49	42	38	34	41	37	34	33	32	31
10	10	47	40	35	32	46	39	35	32	39	35	32	31	30	29

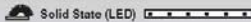
CF8W26QEBCE Test No. 17L46587X

NOTES
 ☞ Denotes a Virtual Source reflector.
 Refer to www.prescolite.com for additional photometric tests (IES Files).

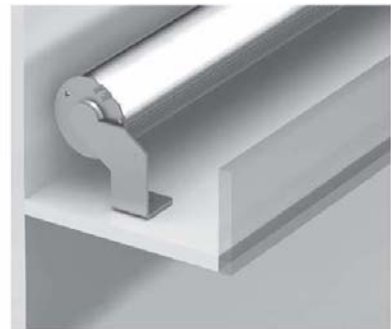
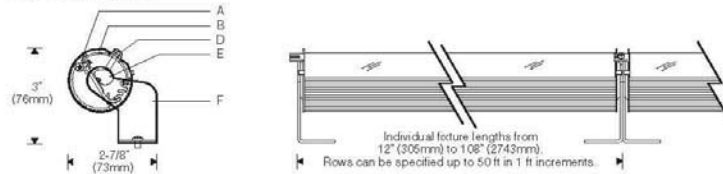


Web: www.prescolite.com • Tech Support: (888) 777-4832
 701 Millennium Blvd., Greenville, SC 29607 U.S.A. • Phone (864) 678-1000
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 Specifications subject to change without notice. • Printed in U.S.A. • IPO-CL005 • 6/17/10

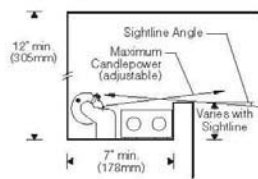


Lighting the Ceiling Xtra small concealed, remote  **fraqtir™ Style S301**

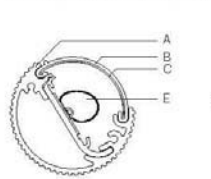
Style S301 1.4 Scale



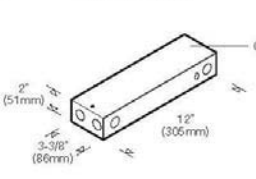
Cove 1.8 Scale



Optical Assembly 1.2 Scale



Remote Driver



Specifications

- A** Extruded aluminum exterior, heat sink/housing
- B** Impact-resistant extruded lens
- C** Holographic diffuser
- D** Rotation locking tab/screw
- E** Removable light engine assembly with fraqtir™ acrylic refractor
- F** L-shaped mounting feet, one pair per optical assembly (fasteners by others)
- G** Remote driver in aluminum enclosure

Optic Assembly:

Two-piece extruded aluminum heat sink/optic housing. Exterior heat sink anodized for maximum emissivity. Removable interior extrusion treated to maximize thermal conductivity. Precision formed asymmetric optical light bar of high temperature, water-clear acrylic. Extruded impact resistant, high temperature, acrylic outer protective lens. Elliptical distribution holographic diffuser captured within outer protective lens, maximizes lateral distribution without disturbing asymmetric forward throw.

Finish:

Mounting brackets and driver enclosure – mill finish aluminum. All luminaire hardware – stainless steel.

Mounting:

L-shaped mounting brackets can be base or wall mounted. Two brackets are supplied for each optical assembly. Luminaires can be mounted individually or joined together to form a continuous row. Optical assembly aiming is fully adjustable and is fixed in position by rotation locking screws at each mounting bracket. When mounted in a continuous row, assemblies lock together allowing all in the row to be aimed together.

Electrical:

Use 90°C wire for supply connections. 5' (1.5m) wire leads exit center of the housing. 90° connector and 4' (1.2m) of flexible metal conduit are provided.

Remote electronic Class II driver. Aluminum driver enclosure includes (8) 7/8" dia. entries and a knockout for an accessory fuse. Maximum wire length between electronic driver and fixture is 12 feet. Optional electronic dimming driver, compatible dimming controls (by others). See website for dimming compatibility and specifications.

Standard:

UL listed or CSA certified for dry location.

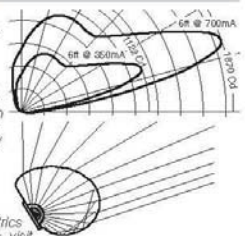
Features

- fraqtir™ technology – combines several principles of refraction, including TIR, for precise asymmetric optical control
- Wide lateral distribution – no socket shadows
- Fully adjustable and lockable optic assembly
- Easily serviced – LED light engine assembly can be removed for service/upgrade



Performance

fraqtir™ technology uses multiple refractive surfaces and total internal reflections to drive light across the ceiling from one edge. Glare is minimized and asymmetry of the beam is maximized, resulting in high beam efficiency and superior surface uniformity.



For complete photometrics including LM-79 results, visit theLightingQuotient.com

1/11 U.S. and foreign patents pending.



To Order

To form a Catalog Number

S | 3 | 0 | 1 | R | | S | 0 | 0 | | 0 | 0 | | 3 | 0 |

1 2 3 4 5 6 7 8 9 10

Project: Type:

fraqtir™ Style S301

Example

S301-R12G-S-00-1-00-0-30-00

Small concealed LED, 12 foot long (3.65m) continuous row driven at 300 lumens per foot. Aluminum sidearms with mounting tabs, anodized reflector, mill finish brackets and remote driver enclosure. 120V input, UL listed or CSA certified for U.S., dry location. 3103-3197K, 82-83 CRI.

1 Source
S = Solid state (LED)

2 Style
301 = Small concealed LED with remote driver

3 Row Length and Light Output
R = Row length and LED array configuration

Lumens per foot @ drive current
G = 300 lm/ft (350mA), 7 W/ft
H = 500 lm/ft (700mA), 15 W/ft

Row length (in feet) from 1 to 50 ft, examples:
01 = 1 ft (305mm) row
50 = 50 ft (15.24m) row

4 Mounting
S = Sidearms with mounting tabs

5 Finish
00 = Anodized optical housing/heat sink, mill finish brackets and remote driver enclosure, stainless steel luminaire hardware

6 Voltage/Driver
Electronic Driver Electronic Dimming Driver*
1 = 120V T = 120V
2 = 277V V = 277V

* Dimming not available for all input voltages and control types – see thelightingquotient.com for additional dimming specifications and limitations.

7 Option (See Accessories Section for specifications)
00 = No options

8 Destination Requirement
0 = UL listed or CSA certified for U.S.
J = UL listed or CSA certified for Canada

9 Color Temperature
30 = 3103-3197K, 82-83 CRI

10 Dimming
00 = Non-dimming
M7 = Advance Xitanium 0-10V analog dimming (controls by others)
RD = Roal Strato 0-10V analog dimming (controls by others)

"G" light output (below) is 300 lm/ft (350 mA), 7 W/ft.

fraqtir by The Lighting Quotient

lighting facts^{CM}
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Light Output (Lumens)	1906
Watts	42.1
Lumens per Watt (Efficacy)	45
Color Accuracy Color Rendering Index (CRI)	82
Light Color Correlated Color Temperature (CCT)	3103 (Bright White)

2700K 3000K 4500K 6500K

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: 3HVJ-VSPRLS
Model Number: S301/S305-R06G
Type: Cove light

"H" light output (below) is 500 lm/ft (700 mA), 15 W/ft.

fraqtir by The Lighting Quotient

lighting facts^{CM}
A Program of the U.S. DOE

Light Output (Lumens)	1528
Watts	45.5
Lumens per Watt (Efficacy)	33
Color Accuracy Color Rendering Index (CRI)	83
Light Color Correlated Color Temperature (CCT)	3197 (Bright White)

2700K 3000K 4500K 6500K

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: 3HVJ-ZYBM3Z
Model Number: S301/S305-R03H
Type: Cove light

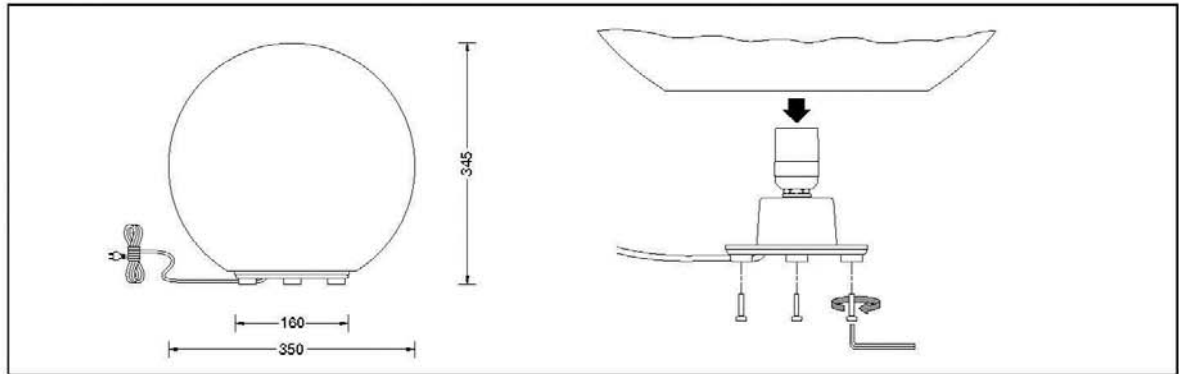


elliptipar from The Lighting Quotient
114 Boston Post Road, West Haven, Connecticut 06516, USA
Voice 203.931.4455 • Fax 203.931.4464 • thelightingquotient.com

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18.11 · Technische Änderungen vorbehalten · Technical amendments reserved · Sous réserve de modifications techniques

<p>Gebrauchsanweisung Instructions for use Fiche d'utilisation</p>	<p>Gartenleuchte Garden luminaire Luminaire de jardin</p>	<p style="text-align: right; font-size: small;">BEGA Lichttechnische Spezialfabrik Hennenbusch · D - 58708 Menden</p> <p style="text-align: right; font-weight: bold; font-size: large;">BEGA</p> <p style="text-align: right;"> IP 65 5013 </p>
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Anwendung

Ortsveränderliche Gartenleuchte mit Bodenplatte, Anschlussleitung und Netzstecker, die ohne Befestigung auf Bodenflächen steht.
 Die weiße Kunststoffkugel verringert in einem erheblichen Maße die Leuchtdichte der Lampe und verteilt das Licht weich und gleichmäßig über die gesamte Oberfläche.
 Für eine akzentuierende und effektvolle Beleuchtung am Haus oder im privaten Garten.

Application

Portable garden luminaire with bottom plate, mains supply cable and power plug, which is standing on the floorspace without any fixation.
 The white plastic sphere reduces the luminance of the lamp to a considerable extent and distributes the light softly and uniformly over the whole surface.
 For an accentuating and sensational illumination at the house or in the private garden.

Utilisation

Luminaire de jardin pouvant être déplacé, avec platine, câble de raccordement et fiche, et qui reste sur le sol sans fixation.
 La boule synthétique blanche réduit de façon considérable la luminance de la lampe et répand un éclairage doux et uniforme sur toute la surface du verre.
 Pour un éclairage plein d'effets permettant de mettre en valeur les abords de la maison ou le jardin privé.

Lampe

Leuchte mit Sockel E 27
 Lampenleistung max. 75 W

Lamp

Luminaire with lampholder E 27
 Lamp wattage max. 75 W

Lampe

Luminaire avec douille E 27
 Puissance de lampe max. 75 W

Kompakt-Leuchtstofflampe · E 27
 Osram:
 Dulux Superstar Micro Twist 7 W 420 lm

Compact fluorescent lamp · E 27
 Osram:
 Dulux Superstar Micro Twist 7 W 420 lm

Lampes fluorescente compacte · E 27
 Osram:
 Dulux Superstar Micro Twist 7 W 420 lm

Bitte beachten Sie die Betriebshinweise der Lampenhersteller.

Please note the lamp manufacturers' operating instructions.

Veuillez respecter les instructions des fabricants de lampes.

Produktbeschreibung

Leuchte mit Bodenplatte aus Edelstahl
 Werkstoff-Nr. 1.4301
 Kunststoffkugel weiß
 Anschlussfertig verdrahtet mit 5 m Anschlussleitung H05RN-F 3G1⁰ und Netzstecker
 Fassung E 27
 Schutzklasse I
 Schutzart · Schutzkontaktstecker IP X4
 Schutz gegen Spritzwasser
 Schutzart · Leuchte IP 65
 Staubdicht und Schutz gegen Strahlwasser
 ▽ Zeichen – Leuchte ist für die Montage auf normal entflammaren Befestigungsflächen geeignet
 – Sicherheitszeichen
 – Konformitätszeichen
 Gewicht: 3,1 kg

Product description

Luminaire with bottom plate made of stainless steel
 Steel grade no. 1.4301
 White plastic sphere
 Factory pre-wired with 5 m connecting cable H05RN-F 3G1⁰ and power plug
 Lampholder E 27
 Safety class I
 Protection class · safety plug IP X4
 Protection against splash water
 Protection class · luminaire IP 65
 Dust tight luminaires and protected against water jets
 ▽ Symbol – Luminaire is suitable for mounting on normal inflammable fixing surfaces.
 – Safety mark
 – Conformity mark
 Weight: 3.1 kg

Description du produit

Luminaire avec platine en acier inoxydable
 Matériau no. 1.4301
 Boule blanche en matière synthétique
 Prêt au raccordement avec 5 m de câble H05RN-F 3G1⁰ et fiche
 Douille E 27
 Classe de protection I
 Degré de protection · fiche IP X4
 Protection contre les projections d'eau
 Degré de protection · luminaire IP 65
 Étanche à la poussière et protégé contre les jets d'eau
 ▽ Sigle – Luminaire approprié à l'installation sur des surfaces de fixation normalement inflammables
 – Sigle de sécurité
 – Sigle de conformité
 Poids: 3,1 kg

Sicherheit

Für die Installation und für den Betrieb dieser Leuchte sind die nationalen Sicherheitsvorschriften zu beachten. Der Hersteller übernimmt keine Haftung für Schäden, die durch unsachgemäßen Einsatz oder Montage entstehen. Werden nachträglich Änderungen an der Leuchte vorgenommen, so gilt derjenige als Hersteller, der diese Änderungen vornimmt.

Montage

Die elektrische Verbindung zwischen Schutzkontaktstecker und Schutzkontaktsteckdose muss der Schutzart IP X4 entsprechen. Innensechskantschrauben lösen und Bodenplatte mit elektrischer Einrichtung aus der Kunststoffkugel herausnehmen. Lampe einsetzen. Bodenplatte in die Kugel einsetzen und Schrauben gleichmäßig fest anziehen. Auf richtigen Sitz der Dichtung achten.

Lampenwechsel - Wartung

Anlage spannungsfrei schalten. Leuchte öffnen und reinigen. Nur lösungsmittelfreie Reinigungsmittel verwenden. Lampe auswechseln. Dichtung überprüfen. Die Anschlussleitung H05RN-F 3G 1,0² ist zwischen Leuchte und Schutzkontaktstecker auf äußere Beschädigungen zu prüfen. Eine beschädigte Anschlussleitung muss ersetzt werden. Die Neumontage darf nur durch eine Elektro-Fachkraft erfolgen. Für Reinigungsarbeiten dürfen keine Hochdruckreiniger verwendet werden.

Safety indices

The installation and operation of this luminaire are subject to national safety regulations. The manufacturer is then discharged from liability when damage is caused by improper use or installation. If any luminaire is subsequently modified, the persons responsible for the modification shall be considered as manufacturer.

Installation

The electrical connection between safety plug and safety socket outlet must correspond to protection class IP X4. Undo hexagon socket head screws and remove bottom plate with electrical unit from the plastic sphere. Insert lamp. Insert bottom plate into the sphere and tighten screws evenly. Make sure that gasket is positioned correctly.

Relamping - Maintenance

Disconnect the electrical installation. Open the luminaire and clean. Use only solvent-free cleansers. Change the lamp. Check the gasket. Inspect mains supply cable H05RN-F 3G 1,0² between luminaire and plug regarding obvious damages. Replace damaged cables. The installation has to be carried out by a qualified electrician only. When cleaning please do not use high pressure cleaners.

Sécurité

Pour l'installation et l'utilisation de ce luminaire, respecter les normes de sécurité nationales. Le fabricant décline toute responsabilité résultant d'une mise en œuvre ou d'une installation inappropriée du produit. Toutes les modifications apportées au luminaire se feront sous la responsabilité exclusive de celui qui les effectuera.

Installation

La connexion électrique de la fiche du luminaire à la prise de courant du réseau doit être conforme au degré de protection IP X4. Desserrer les vis à six pans creux et retirer la platine avec appareillage électrique de la boule synthétique. Installer la lampe. Installer la platine dans la boule et serrer régulièrement et fort les vis. Veiller au bon emplacement du joint.

Changement de lampe - Entretien

Travailler hors tension. Ouvrir le luminaire et nettoyer. N'utiliser que des produits d'entretien ne contenant pas de solvant. Changer la lampe. Vérifier le joint. Vérifier si le câble de raccordement H05RN-F 3G 1,0² n'est pas endommagé entre le projecteur et la fiche du câble. Un câble endommagé doit être remplacé. Le remontage ne doit être effectué que par un électricien professionnel. Lors des travaux de nettoyage ne pas utiliser de nettoyeur haute pression.

Ersatzteile

Bezeichnung	Bestellnummer
Kunststoffkugel	150149.6
Anschlussleitung mit Netzstecker	620137
Fassung	630105
Dichtung Gehäuse	820325
Dichtung Kugel	830986

Spares

Description	Part no
Synthetic sphere	150149.6
Connecting cable with mains plug	620137
Lampholder	630105
Gasket housing	820325
Gasket sphere	830986

Pièces de rechange

Désignation	No de commande
Boule synthétique	150149.6
Câble de raccordement avec fiche	620137
Douille	630105
Joint du boîtier	820325
Joint de la boule	830986



luxrail™



Application

ANSI and ADA compliant, **luxrail** is an indoor/outdoor LED-based handrail that delivers functional illumination. Two intensities may be specified: standard output and high output. The standard light output version delivers illuminance levels appropriate for exterior applications (2 footcandles at grade) as well as for dark interior environments with low ambient illumination levels (e.g., themed environments, theatres and residential areas). The high output version delivers illuminance levels applicable to interior environments – providing in excess of 10 footcandles along the path of egress (ANSI required for stair treads). Independent photometric test reports and IES Format data are available at www.io-lighting.com.

luxrail's standard handrail gripping surfaces are circular in cross section and meet 2004 ADAAG (Americans with Disability Act Accessibility Guidelines). Patented optical assemblies deliver 10°, 45° and 65° beam spreads. The 45° and 65° beam patterns are most suitable for illuminating pathways, while the 10° beam spread offers accent lighting for optional glass or stainless steel cable railing infills. Reference page 44 of this catalog for information regarding infill options. **io** ensures that each LED is provided thermal and electrical management properties in accordance with the LED manufacturers recommendations. Projected average rated life is 50,000 hours at 70% of lamp lumen output. Contact factory for IES LM-80 compliance. To ensure proper performance, architectural details should allow for ventilation and air flow around the fixture. Ambient temperature surrounding the fixture shall not exceed 120°F (48.9°C).

Light Output

Two luminous intensities are available for white light. All values below are initial lumens per foot. IES LM-79 format files may be obtained from the factory or downloaded from www.io-lighting.com.

	Standard Output	High Output
2700K White:	48 lms/ft	180 lms/ft
3000K White:	48 lms/ft	180 lms/ft
5000K White:	63 lms/ft	240 lms/ft

Construction

luxrail may be post mounted or wall mounted. Mounting hardware (post or wall) is typically required up to 5' O.C., depending on the handrail alloy. Final post and wall bracket spacing must be determined by a licensed architect or structural engineer. **io** can provide engineering upon request. **luxrail** is available in stainless steel and aluminum. **grab bars** are available in aluminum only. The lighting fixture component of the **luxrail** is a stand alone unit and is available in incremental nominal lengths that range from 6" to 60". Vandal resistant access chamber allows units to be removed for maintenance purposes.

All handrail component parts are engineered for quick installation. Field welding or cutting is typically not required. All parts are prefabricated to field dimensions and are assembled in the field with mechanical connection or epoxy. Contact **io** Lighting for recommended handrail installers.

The light fixture's housing is made of a light weight, yet durable aluminum, providing the recommended heat sink requirements for the LEDs. Housing, patented optical assembly and stainless steel end caps are bonded to prevent water infiltration.

Electrical

luxrail houses a low voltage LED-based light fixture that is integrated into the underside of the handrail. 24 volt 96 watt power supplies are provided as a standard. For detailed information regarding daisy chain limitations, remote distance limitations, power supply options, and dimming options consult the **io** website, the **io** catalog (pages 98-100) or an **io** representative.

Dimming modules must be specified separately. For detailed information, see page 98 of this brochure or download the power supply specification sheet from www.io-lighting.com.

Power Consumption

Standard Output: 1.44 w/ft High Output: 7.62 w/ft

Power consumption does not include power supply losses.

Dimensions

1.66"
(42.2mm)

1.90"
(48.3mm)

io lux rail 65°, 3KHO

lighting facts^{CM}
A Program of the U.S. DOE

Light Output (Lumens)	244
Watts	20.9
Lumens per Watt (Efficacy)	11
Color Accuracy <small>Color Rendering Index (CRI)</small>	72
Light Color <small>Correlated Color Temperature (CCT)</small>	3027 (Bright White)

Warm White

2700K

Bright White

3000K

Daylight

4500K

6500K

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.

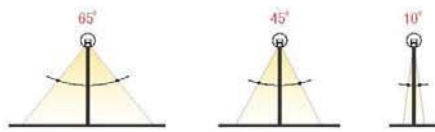
Visit www.lightingfacts.com for the Label Reference Guide.

Registration Number: 6 PPA-728788
Model Number: 0 03 1319HO 65 1.05 2
Type: Outdoor path lights

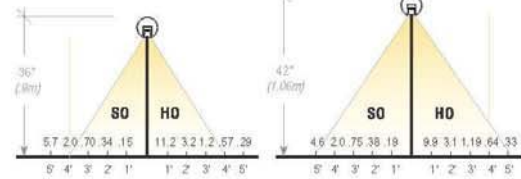
Label references 30" **luxrail** fixture with a 65° beam spread in High Output 3000K. Lighting Facts for additional beam spreads and light output levels may be obtained from **io** Lighting



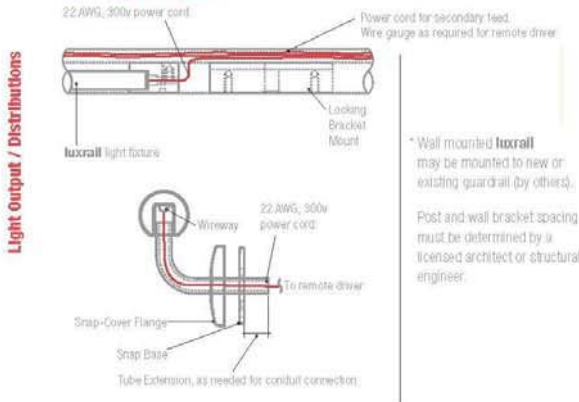
BEAM SPREAD OPTIONS



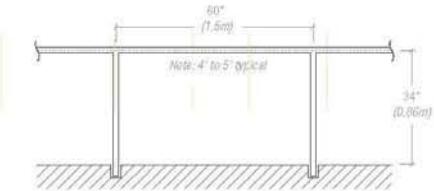
LIGHT OUTPUT - 65 DEGREE WARM WHITE



WALL MOUNT DETAILS*



POST MOUNT APPLICATION



Wildlife Friendly Fixtures



IDA's Fixture Seal of Approval

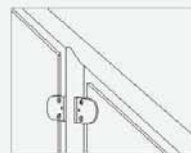
Mounting / Infill Options



PM (post mounted)



WM (wall mount intermediate)



Glass infill
(glass provided by others)



Stainless steel cable infill
(only available on flat surfaces)

Order Code



1. PRODUCT FAMILY 06 luxrail	4. MOUNTING PM Post mounted ⁽¹⁾ WM Wall or guard rail mounted	7. LIGHT COLOR 27K Warm White 3K Warm White ⁽³⁾ 5K Cool White ⁽³⁾ 27KH0 Warm White 3KH0 Warm White ⁽³⁾ 5KH0 Cool White ⁽³⁾ R Red ⁽⁴⁾ G Green ⁽⁴⁾ B Blue ⁽⁴⁾ A Amber ⁽⁴⁾	9. VOLTAGE / DIMMING 1 120v 2 277v 3 120v w/dim 4 277v w/dim 5 Other
2. ALLOY / FINISH SSS Stainless steel satin SSP Stainless steel polished CAA Clear anodized aluminum ⁽⁷⁾	5. INFILL AC Stainless steel cable ⁽⁶⁾ GL Glass (provided by others) C Custom NR Not required	8. LENGTH GB2 2' nominal ⁽⁶⁾ GB3 3' nominal ⁽⁶⁾ GB4 4' nominal ⁽⁶⁾ GB5 5' nominal ⁽⁶⁾ In Feet / Inches provide overall length of each handrail section ⁽⁶⁾⁽⁷⁾	10. SPECIFY DRIVER / DIMMING⁽¹⁾ <i>Note: If not specified otherwise, io will supply 96 watt drivers. Download Power Supply specification sheet from www.io-lighting.com</i>

Footnotes

1. Power Supply Specification Sheet may be downloaded from www.io-lighting.com
2. Each handrail application will be custom to accommodate varying field conditions and design requirements. Shop drawings will be required to manage specifics of each handrail section.
3. White light variance between LEDs within a single fixture will not exceed ANSI Illuminating Standards.
4. Only available in 7.6 watt.
5. Stainless Steel cable available for flat surfaces only.
6. Detailed elevation drawings of handrail section are required for quote.
7. grab bars available in aluminum only.

SSL Chromaticity Standard: ANSI C78.337

Color	Nominal CCT	Target CCT & Tolerance (M)
White	2700K	2725 ± 145
White	3000K	3045 ± 175
White	5000K	5028 ± 283

For Metric Conversion

1"	1"	1'
25.4mm	2.54cm	0.3m



io Lighting 1100 Busch Pkwy Buffalo Grove, IL 60089 T 847.777.3900 F 847.777.3901 E info@iolighting.com W io-lighting.com

Shielded bollards with symmetrical light output

Housing: Two piece die-cast aluminum construction consisting of a die-cast post and a die-cast top casting. The upper and lower castings are secured by four stainless steel fasteners which need to be removed for lamp access. The construction is robust enough for people to sit or stand on.

Lamp enclosure: One piece spun aluminum lamp housing is located inside the lower post. A clear frosted, hand blown, crystal glass diffuser with a screw neck is also located inside of the housing to create a sealed lamp/ballast module independent of the outer castings.

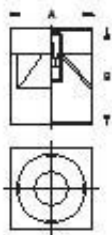
Electrical: Lampholders are porcelain, G12 base with nickel plated contacts. Ballasts are located inside the lower casting and are electronic, universal voltage (120V through 277V).

Anchor base: Thick gauge aluminum plate provided with slotted holes. The plate secures to the lower casting with four stainless steel rods. The plate mounts to a BEGA #900E anchorage kit (supplied).

Finish: Available in five standard BEGA colors: Black (BLK); White (WHT); Bronze (BRZ); Silver (SLV); Eurocoat™ (URC). To specify, add appropriate suffix to catalog number. Custom colors supplied on special order.

U.L. listed, suitable for wet locations. Protection class: IP 65.

Type:
 BEGA Product:
 Project:
 Voltage:
 Color:
 Options:
 Modified:



Lamp	Lumen	A	B	Anchorage
7765MH 1 30W T6 G12 MH	3300	15 1/4	18	800E



BEGA-US 1000 BEGA Way, Carpinteria, CA 93013 (805)684-0533 FAX(805)566-9474

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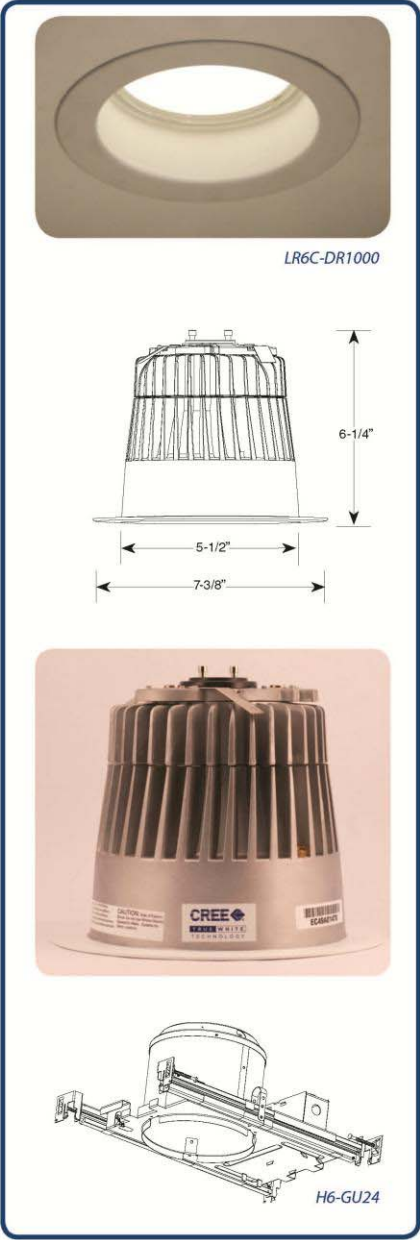
6" Recessed Downlight LR6-DR1000

Product Description
 The LR6-DR1000 is a recessed architectural downlight that utilizes Cree TrueWhite® Technology to deliver 1,000 lumens of high quality light, with an unprecedented efficacy of 80 lumens per watt. Its exceptional CRI of 90 brings out the true beauty of applications ranging from offices, schools, hospitals, restaurants, airports, hotels, and homes. US Patent #7,213,940. Numerous patents pending.

- Performance Summary**
- Utilizes Cree TrueWhite® Technology
 - Delivered Light Output = 1,000 lumens
 - Input Power = 12.5 Watts
 - CRI = 90
 - CCT = 2700K or 3500K
 - Dimmable to 20%
 - Five Year Warranty

- Ordering Information**
 Intended for use with Cree H6 Housing, may be retrofitted into 6" housings from select manufacturers using the supplied GU24 whip adapter.
- Light Engine**
- LR6-DR1000 - 120V, Incandescent Color (2700K), GU24 Base
 - LR6C-DR1000 - 120V, Neutral Color (3500K), GU24 Base

- Accessories** - Reference accessory product information sheets for more detail
- | | |
|--|---|
| Accessory Trims | Housings |
| <ul style="list-style-type: none"> • LT6A-DR - Diffuse anodized • LT6AW-DR - Wheat diffuse anodized • LT6AP-DR - Pewter diffuse anodized • LT6AB-DR - Black anodized • LT6BB-DR - Flat black • LT6WH-DR - Smooth white | <ul style="list-style-type: none"> • H6 - Architectural • RC6 - New construction • RR6 - Retrofit • SC6 - Surface mount • SC6-CM - Cord mount • SC6-WM - Wall mount |



LR6-DR1000 6" Recessed Downlight

Product Information

Cree TrueWhite® Technology

- A better way to generate white light that utilizes a patented mixture of unsaturated yellow and saturated red LEDs.
- Tuned to optimal color point before shipment.
- Color management system maintains color consistency over time and temperature.
- Designed to last 50,000 hours and maintain at least 70% of initial lumen output in IC and non-IC installations.

Construction

- Durable die-cast aluminum upper housing, lower housing, and upper cover.
- Integrated thermal management system conducts heat away from LEDs and transfers it to the surrounding environment. LED junction temperatures stay below specified maximums.
- Designed for use with H6-GU24 housing from Cree, 6" recessed architectural housing with rugged, integral, extruded aluminum bar hangers (h = 7").

Optical System

- Proprietary optical system utilizes a unique combination of reflective and refractive optical components to achieve a uniform, comfortable appearance. Pixelation and direct view of unshielded LEDs are eliminated.
- White Lower Reflector balances brightness of refractor with the ceiling to create comfortable high-angle appearance. Works with refractor to deliver an optimized distribution that illuminates walls and vertical surfaces increasing the perception of spaciousness.

Electrical System

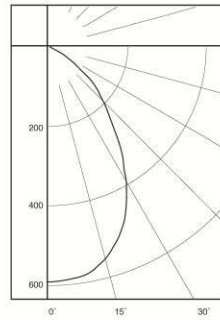
- Integral, high efficiency driver and power supply.
- Power factor > 0.9
- Input voltage = 120V, 60Hz.
- Dimmable to 20% with certain incandescent dimmers (reference www.CreeLEDLighting.com for recommended dimmers).

Regulatory and Voluntary Qualifications

- cULus Listed®. Suitable for damp locations.
- Utilize GU-24 base for new construction projects in California or other areas where high efficacy line voltage sockets are required.
- Exceeds California Title-24 high efficacy luminaire requirements.

Photometry

LR6-DR1000 Based on OnSpex 30012426-F



Intensity (Candlepower) Summary

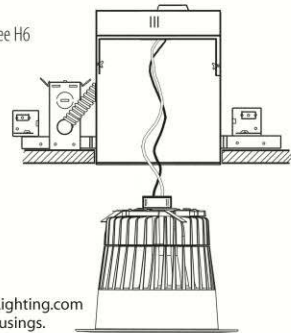
ANGLE	MEAN CP
0°	597
5°	593
15°	559
25°	463
35°	329
45°	207
55°	120
65°	61
75°	32
85°	7
90°	0

Zonal Lumen Summary

ZONE	LUMENS	%LAMP	%FIX
0° - 30°	424	42.42	42.42
0° - 40°	629	62.89	62.89
0° - 60°	897	89.71	89.71
0° - 90°	1000	100.00	100.00

Installation

- Designed to easily install in Cree H6 and 6" housings from select manufacturers.*
- Quick install system utilizes a unique retention feature. Simply attach socket to LR6-DR1000. Move light to ready position and slide into housing.

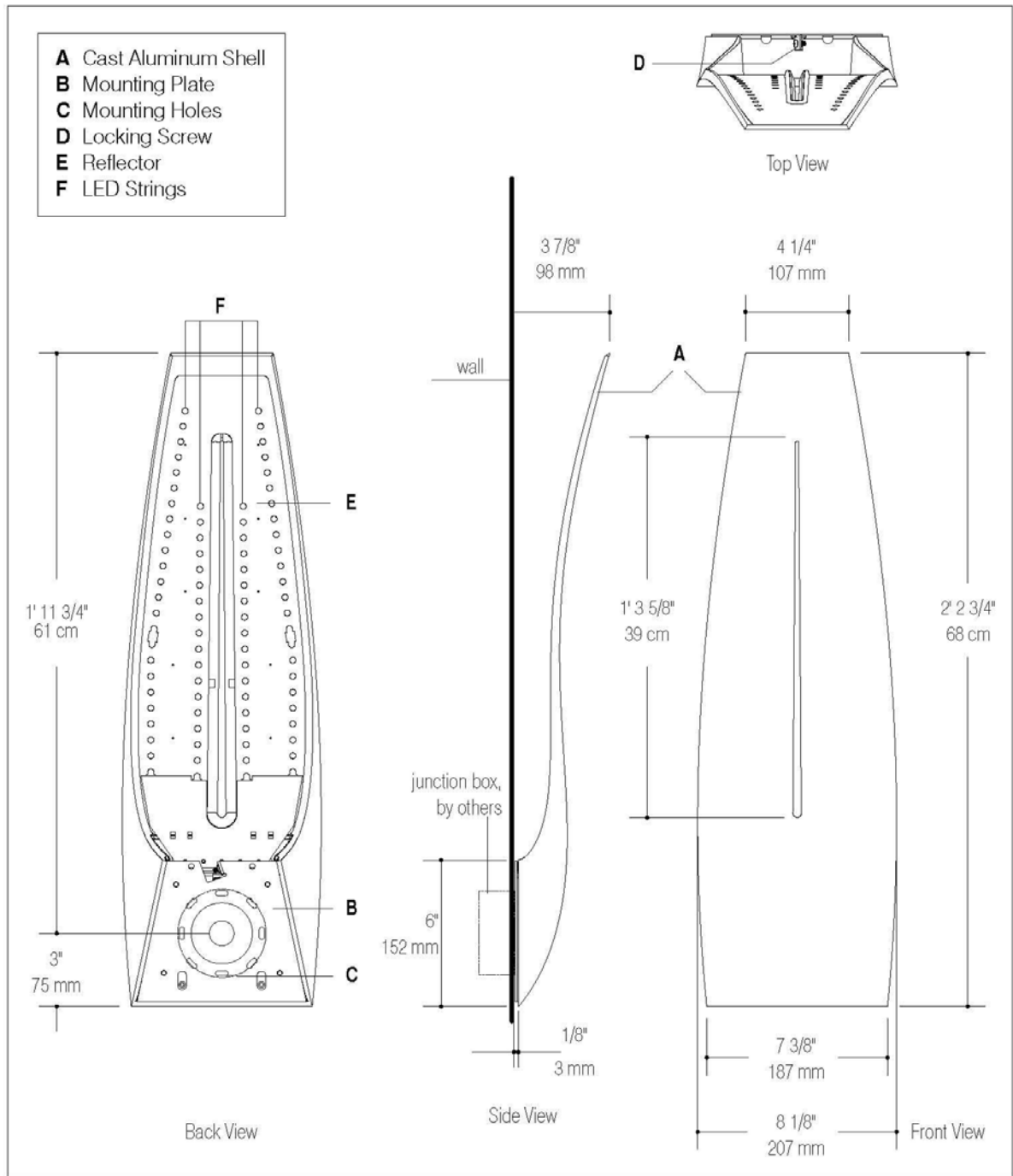


* Reference www.CreeLEDLighting.com for a list of compatible housings.



Cree LED Lighting
 Morrisville • NC • 27560 • USA
 1-919-287-7700 Fax 1-919-991-0730
www.CreeLEDLighting.com

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L'ale[®]

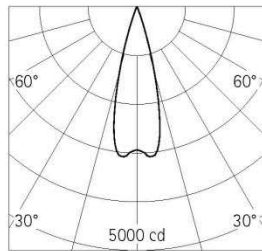
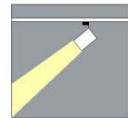
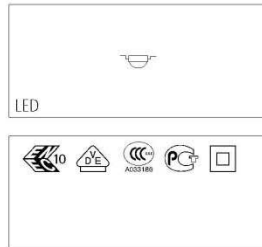
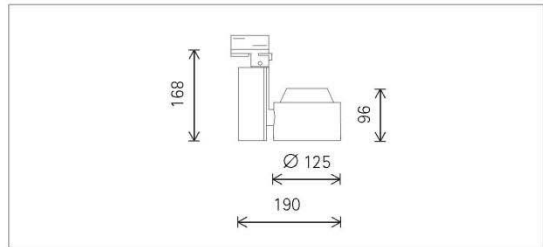
Interior Sconce

Interior Sconce
 27" long, direct/indirect, ADA compliant. For use on all walls, flanking doors, and between windows and elevators. Lamp: white LED.

Standard colors: matte: Titanium, slate, graphite
 Custom automotive paint colors available on request, gloss or matte

ERCO Optec Spotlight

with LED and DALI adapter



72086.000 White (RAL9002)
 LED 14W 870lm 3200K warm white
 DALI
 Version 2
 Spherulit lens, flood

Product description

Cylindrical light head: cast aluminium, powder-coated. 180° tilt. Peripheral groove for fixing accessories.
 Housing: plastic, rotatable on DALI adapter through 360°.
 Electronic control gear, with plug and play connectivity.
 ERCO DALI adapter for DALI track: plastic.
 Replaceable LED module: high-power LEDs on metal-core PCB. Collimating lens made of optical polymer.
 Weight 1.25kg

LED 14W 870lm 3200K

h(m)	E(lx)	D(m)
		29°
1	2935	0.52
2	734	1.03
3	326	1.55
4	183	2.07
5	117	2.59



Mounting

ERCO DALI track
 Hi-trac DALI track
 Monopoll DALI track
 DALI singlet

ERCO GmbH
 Brockhauser Weg 80-82
 58507 Lüdenscheid
 Germany
 Tel.: +49 2351 551 0
 Fax: +49 2351 551 300
 info@erco.com

Technical Region: 230V/50Hz
 We reserve the right to make technical and design changes.
 Edition: 25.10.2010
 Current version under
www.erco.com/72086.000



plane

STEP LIGHT



Application

The **plane** step light is an LED-based luminaire that offers a variety of different color combinations for edge glow accents and functional pathway lighting. For use in exterior and interior architectural applications, **plane** mounts directly to a recessed junction box for wall mount applications. UL listed for wet / damp locations.

Light Output

plane delivers illuminance levels that exceed the National Electrical Codes (NEC) requirement for emergency egress. Recommended mounting 18" to 24" A.G. IES format photometric data available at www.iolighting.com.

Construction

Environmentally sealed, enclosed and gasketed 5.9" sq. corrosion resistant metal casting (stainless steel optional). Mounts directly to a UV stable, optically clear, high strength polycarbonate housing. LED luminaire modules contained within the housing are replaceable.

Mounting Options

plane mounts directly to a junction box while the driver (power supply) resides within the junction box. Three types of junction box configurations are compatible with **plane**:

- 1) 1½" deep, 4" octagonal junction box. Hanger bars must be side mounted.
- 2) 2½" deep, 4" octagonal junction box with side mounted hanger bars.
- 3) 2½" deep, 4" square junction box with plaster ring.

Electrical

120v or 277v energy saving current limiting Class 2 power supply (driver) must be located within a 1½" or 2½" deep, 4" square junction box with plaster ring.

LED Magnetic Driver Specifications

Input voltage:	120v or 277v
Output Load:	8 watts including center and perimeter LEDs
Operating Temperature of the Luminaire:	-20°F + 140°F -30°C + 60°C
UL Class:	2
Surface Temperature:	25°C
Expected Life:	50,000 hours

Power Consumption

Standard Output: 8 w

Step Optic

Precision molded polycarbonate lens with superior optical properties offers a 90° cut-off with 70% fixture efficiency. Full cut-off visor option is available. Visor option meets IDA Dark Sky requirements.

Finish

Metal die-cast face plate may be polyester powder coated or plated. Plated finishes are for interior applications only. Face plate may also be specified in stainless steel.

Dimensions

io plane step light

lighting facts^{CM}
A Program of the U.S. DOE

Light Output (Lumens)	93
Watts	7.5
Lumens per Watt (Efficacy)	12
Color Accuracy <small>Color Rendering Index (CRI)</small>	71
Light Color <small>Correlated Color Temperature (CCT)</small>	3016 (Bright White)

Warm White 2700K
Bright White 3000K
Daylight 4500K
6500K

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.

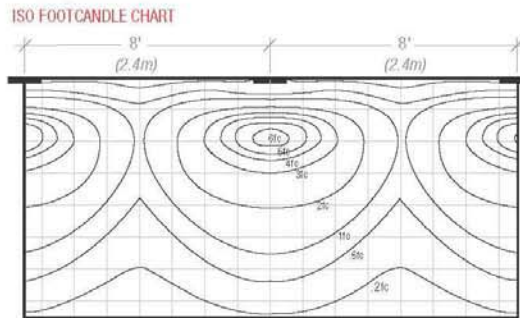
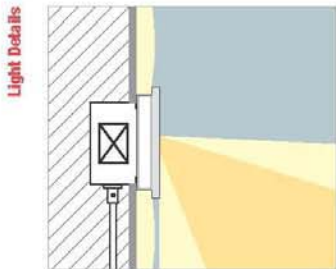
Registration Number: EPLA-M7205V
Model Number: 0 01 0L 91N 100 1
Type: Outdoor step lights

Label references: **plane step light** in 3000K with no perimeter LEDs.

io Lighting 1100 Busch Pkwy Buffalo Grove, IL 60089 T 847.777.3900 F 847.777.3901 E info@iolighting.com wiolighting.com



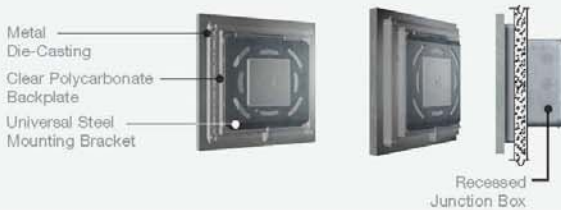
Note: Any combination of Red, Green, Blue, Amber, 3000K White, and 5000K White may be specified for the center and perimeter accent.



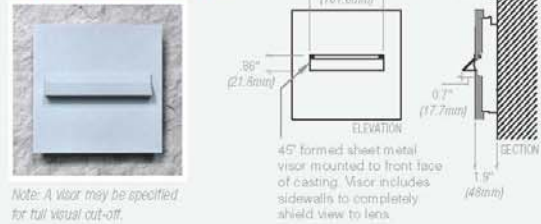
Note: Illuminance levels based on 24" mounting height above grade.

plane's step light optic has been designed to focus the luminous flux down onto a pathway keeping almost all light below 90°. **plane** may be spaced up to 8'-0" O.C. delivering footcandles that exceed the National Electrical Code's (NEC) requirement for emergency egress (1 FC.AVE.). IES Format photometric data available on the **io** website.

MOUNTING OPTIONS



VISOR OPTION
Dark Sky compliance requires visor.



0	01	SL							
io	1	2	3	4	5	6	7	8	

- Order Code**
- 1. **PRODUCT FAMILY**
01 Plane
 - 2. **TYPE**
SL Step light
 - 3. **CENTER COLOR**
3K Warm White
5K Cool White
R Red
G Green
B Blue
A Amber

- 4. **PERIMETER COLOR**
3K Warm White
5K Cool White
R Red
G Green
B Blue
A Amber
N None
- 5. **MOUNTING**
100 J-Box
999 Custom

- 6. **FINISH**
METAL CASTING (POWDER COATED)
1 Black
2 Bronze
3 Satin Aluminum
4 White
METAL CASTING (PLATED)
INTERIOR APPLICATIONS ONLY
5 Satin Nickel
6 Chrome
7 Satin Brass
STAINLESS STEEL
8 Brushed
CUSTOM COLOR
9 Custom

- 7. **VOLTAGE**
0 120v
1 277v
Note: Consult factory for custom voltage options. Dimming not available.
- 8. **SHIELDING**
V Visor ¹⁾
Note: Leave blank if visor is not required.

Footnotes

1. Visor only available in powder coated finishes.

For Metric Conversion		
1"	1"	1"
25.4mm	2.54cm	0.3m



io Lighting 1100 Busch Pkwy Buffalo Grove, IL 60089

T 847.777.3900 F 847.777.3901 E info@iolighting.com W iolighting.com

Task Ambient, Linear T5 Lamp
T5 Fluorescent
Styles L201, L202

Back of L201 showing cord exit and mounting slot

Mounting brackets: Hang-on option available for most modular furniture systems. Order separately for mounting slot at rear of L201

Louvers: High performance for maximum uplight coverage. Low brightness from below standing eye height. Lift out for re-lamping and cleaning.

Fillers: extruded aluminum. 3/8" to 6" long depending on luminaire length. Standard modular length units do not require fillers.

Housing: extruded aluminum, radiused edges

On/off switch (optional) is centered on the bottom of the luminaire.

Task lens: clear, linear prismatic acrylic, 18" long. Slides to any position along length to reduce veiling reflections.

Downlight reflectors: specular extruded aluminum

T5 lamp(s) included

Personal switch for dimming control (for L201, optional)

Cord: 9' 18-3 SJT, molded NEMA 5-15 grounded plug, factory installed. Chicago Code cord with integral circuit breaker available.

End plates: stamped steel, finished black, mate with bridge stanchions and end mount brackets

Low profile: 6" (152mm) wide, 2-1/2" (64mm) high

Removable decorative end plates provided. Use where luminaire ends are not concealed by furniture. Pair. Each adds 3/8" to luminaire length.

Features

- Task and ambient lighting from a single T5 lamp
- Typical energy consumption is 0.6 W/ft or less
- Integrates with embedded wireless controls (consult factory)
- Low profile; integrates with open plan office furniture systems
- Portable; may be reconfigured along with the furniture
- Reduces glare, eyestrain and visual distraction

Performance

Lighter curve at left shows 180° to 0°. Darker curve shows 90° to 270°.

High lamp height position, see website for alternate positions. Illuminance based on a minimum of ten workstations. Light levels will be 5-10% greater in large rooms with more workstations. Ballast factor 0.98, input watts 52, maximum candlepower at 140" is 629 cd.

For complete photometrics, see theightingquotient.com

Specifications

Finish: Painted housing, fillers, decorative end plates, and mounting accessories (panel hooks, end mount rails, stanchions)

Painted surfaces – environmentally friendly 6-stage pretreatment and electrostatically applied thermoset powder coat provides a long lasting, scratch resistant finish. Choice of standard colors. RAL and computer matched colors available on request.

Reflector – extruded aluminum, chemically brightened and clear anodized.

Louver tiles – specular vacuum metalized polycarbonate with clear polymer topcoat for easy cleaning.

Mounting: L201 has a continuous mounting slot along the rear of the unit, and can be mounted to a wall, furniture panel, or desk clamp stanchion. L201 cords are routed along the mounting slot and can be specified for right- or left-hand exit.

L202 has a smooth back surface for mounting with end mount rails (for 24" wide end panels) or with desk clamp stanchions. L202 cord exits are specified left or right, rear or bottom of unit, depending on mounting method. Stanchions feature a cord management slot.

Electrical: Integral electronic ballast is HPF thermally protected class P, 120 v/dt, BF > 0.98. Programmed start maximizes lamp life and minimizes energy use.

Cord – 9' 18-3 SJT, molded NEMA 5-15 grounded plug, factory installed. Chicago Code cord with integral circuit breaker available. Low profile grounded plug with 45° rotation is available. Black is standard; gray and beige cords are available at additional cost.

Standard output T5 lamps are included. Choose from 3000K, 3500K and 4100K lamps.

Standard: UL listed or CSA certified.

To Order

Sample number: L201-71S6-M-EL15-1-R-0S-35

Project:

Type:

L

2

0

-

-

-

-

-

-

-

-

-

Style
Length/Lamp(s)
Code
Optic
Finish
Electrical
Cord
Cord
Exit
Options
Lamp
Color

Styles L201, L202

Style

L201 Task ambient luminaire with integral hang-on mounting channel

L202 Task ambient luminaire with smooth back panel

Length/Lamps

Code	Length (mm)	Lamp(s)	Input
24S2	24" (610)	1xF14T5	14W
36S3	35-3/4" (910)	1xF21T5	27W
48S4	47-1/2" (1205)	1xF28T5	33W
60S5	59" (1500)	1xF36T5	41W
71S6	70-3/4" (1800)	2xF21T5	49W
83S7	82-1/2" (2095)	1xF21T5 + 1xF28T5	60W
95S8	94-1/4" (2395)	2xF28T5	66W

Other lengths and lamping are available, consult factory.

Optic

TA
1.1

L Low-mount (L202 shown)

For low-mount IES information, consult factory.

M Mid-mount (L202 shown)

Download IES file.

H High-mount (L202 shown)

Download IES file.

Mounting Height	Worksurface Depth	
	24"	30"
48" - 50"	Low	Low
51" - 52"	Mid	Low
53" - 57"	Mid	Mid
58" - 61"	High	Mid
62" - 63"	High(1)	High
64" - 66"	(1)	High

(1) Consult factory. Notation for height 62" - 63" is for L202.

Electrical

120 V only

1 Electronic ballast

T Dimming ballast for personal dimming control option (L201 only, specify with option **OD**). For other dimming applications, consult factory.

Cord

90° SW rotation plug, 9 feet:

- 1 Black
- 3 Gray
- 5 Beige
- 7 Chicago cord, integral circuit breaker, black

Straight plug, 9 feet (L202 only):

- 2 Black
- 4 Gray
- 6 Beige
- 8 Chicago cord, integral circuit breaker, black

Cord Exit

R Right rear (L201, L202)

L Left rear (L201, L202)

E Right bottom (L202 only)

W Left bottom (L202 only)

For L202, **R** and **L** are on dual stanchion only. **E** and **W** exits (L202) are 1-1/2" from end of luminaire.

Options

00 None

0S On/off switch

0D Dimming switch (L201, for use with dimming ballast only)

X0 Dual stanchion pre-drill (L202)

XS Dual stanchion pre-drill and integral on/off switch (L202)

XX Custom modification (specify)

Lamp Color

30 3000K, 85 CRI

35 3500K, 85 CRI

41 4100K, 85 CRI

Finish

EL02 Eggshell white

EL06 Dark bronze

EL07 Silver

EL08 Semi-gloss black

EL12 British racing green

EL15 Warm metallic

TASL Semi-gloss slate

XXXX Custom color (specify or submit sample)

or 4-digit RAL color code (color chart available)

Mounting Accessories

TPH Panel Hooks, pair (L201)

TPR End Mount Rail Kit (L202)

*For compatible furniture systems, see website.

TPH Panel Hooks mount to slotted panel frame. Stamped and formed CRS, pair.

TPR End Mount Rails (for 24" wide end panels) mount to slotted panel frames. Several models are available to interface with a variety of panel systems. Pair of rails, includes pair of black interface plates.

TPE End Mount Brackets, pair (P202)

Support the ends of the luminaire, black, pair.

TMHDW Wall Brackets, pair (L201)

TMHDW Wall Brackets mount to stud framed walls, millwork, and other solid surfaces. Stamped and formed CRS, black, pair.

TSH Desk Clamp Stanchion (L201)

TSX Desk Clamp Stanchion (L202)

Desk Clamp Stanchions mount to edge of worksurface - 1/2" to 3-1/4" thick. Extruded aluminum post. Resilient pads resist slippage, protect surfaces. Integral cord management. **TSH19-TSX19** places top of luminaire 19-1/2" above worksurface. Sold individually, some luminaires require two stanchions.

L202 with TSX stanchion, back view

TPH

TPR

TPE

TMHDW

TSH

TSX

tambient from The Lighting Quotient
114 Boston Post Road, West Haven, Connecticut 06516, USA
Voice 203.931.4455 • Fax 203.931.4464 • thelightingquotient.com

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LEDge

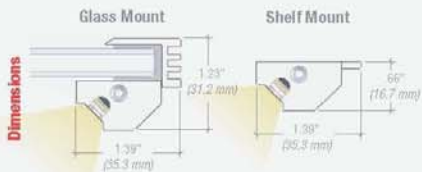
Application

LEDge is a member of **io's Ilne™** family of linear LED-based products. **LEDge** is a low voltage linear shelf light that offers exceptional warm and cool white light for a variety of different shelf and casework conditions. **LEDge** offers illumination levels equivalent to halogen and fluorescent-based alternates with significant benefits. **LEDge** delivers exquisite white light without the damaging ultra-violet (UV) and infrared (IR) wavelengths or radiant heat that conventional light sources produce. **LEDge** also offers superior definition to three-dimensional objects and sparkle to reflective surfaces. **io** ensures that each LED is provided thermal and electrical management properties in accordance with the LED manufacturers recommendations. Projected average rated life is 50,000 hours at 70% of lamp lumen output. Contact factory for IES LM-80 compliance. To ensure proper performance, architectural details should allow for ventilation and air flow around the fixture. Ambient temperature surrounding the fixture shall not exceed 120°F (48.9°C).

Light Output

LEDge's beam spread and luminous intensities are perfect for shelf lighting applications. Two luminous intensities are available. All values below are initial lumens per foot. IES LM-79 format files may be obtained from the factory or downloaded from www.ioighting.com. Consult factory for High CRI options and availability.

	Standard Output	High Output
2700K White:	126 lms/ft	180 lms/ft
3000K White:	126 lms/ft	180 lms/ft
5000K White:	168 lms/ft	240 lms/ft



Construction

Available in two profiles, **LEDge** can either be mounted directly to 1/8" glass or surface mounted to the underside of any shelving unit provided the shelf materials can accept self-tapping screws. The **LEDge** housing is made of extruded aluminum, providing the recommended heat sink requirements for **io's** proprietary printed circuit boards (PCBs). Both **LEDge** profiles are provided with neoprene gaskets, which isolate the majority of the heat from surfaces on which they are mounted. **LEDge** is UL listed for dry locations.

Electrical

LEDge is supplied with a field adjustable 4'-0" 20 AWG, 300 volt rated power cord. A 24 volt 96 watt power supply will be provided as a standard. For detailed information regarding daisy chain limitations, remote distance limitations, power supply options, and dimming options consult the **io** website, the **io** catalog (pages 98-100) or an **io** representative.

Power Consumption

Standard Output: 5.34 w/ft High Output: 7.62 w/ft

Power consumption does not include power supply losses.

Finish

Anodized aluminum finish is standard. Custom finishes may be available upon request.

io LEDge 3KH0

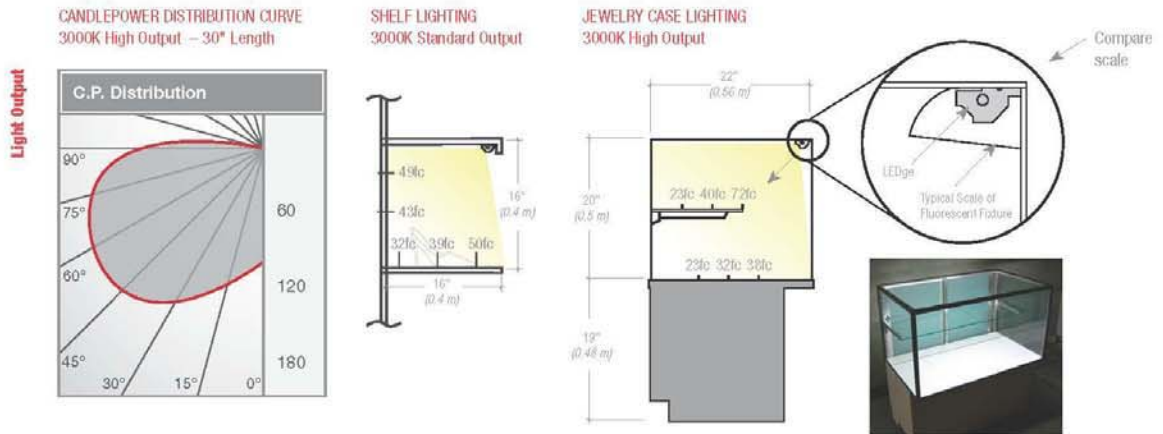
lighting facts^{CM}

A Program of the U.S. DOE

Light Output (Lumens)	319
Watts	20.7
Lumens per Watt (Efficacy)	15
Color Accuracy	
Color Rendering Index (CRI)	73
Light Color	
Correlated Color Temperature (CCT)	3054 (Bright White)
Warm White	Bright White
2700K	3000K
4500K	6500K
All results are according to IESNA LM-79-0200: 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. Products qualified under the DOE ENERGY STAR® program have the ENERGY STAR mark on this label.	
Visit www.lightingfacts.com for the Label Reference Guide.	
Registration Number: 16PRA YPTTLE Model Number: 0.09 1.31CH0 NG 1.30 1 Type: (2)Recessed track lights	

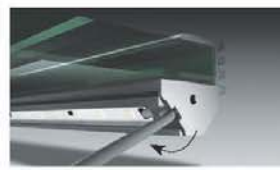
Label references 30° LEDge fixture in High Output 3000K. Lighting Facts for additional beam spreads and light output levels may be obtained from **io** Lighting.



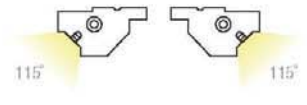


Side feed

Left end cap shown here. Electrical feed is **field adjustable** from side feed to front feed.

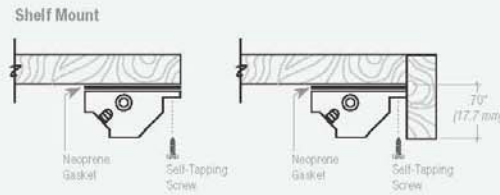
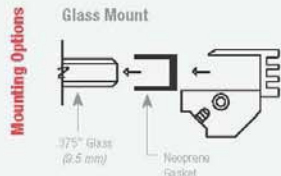


Front feed



Left side feed

Right side feed



Note: Recommended minimum to conceal view to fixture.



- Order Code**
- 1. PRODUCT FAMILY**
 - 09 LEDge
 - 2. LOCATION**
 - 1 Interior only
 - 3. COLOR**
 - 27K 2700K
 - 27Q10 2700K High Output
 - 3K 3000K
 - 3K310 3000K High Output
 - 5K 5000K
 - 5K310 5000K High Output
 - 4. MOUNTING**
 - 38 3/8" glass
 - NG No glass
 - 5. FINISH**
 - 1 Anodized aluminum
 - 2 Anodized custom color
 - 6. LENGTH**
 - Specify as required to 1/8" between 6" and 64"
 - 7. ELECTRICAL FEED**
 - 1 Right feed
 - 2 Left feed
 - 3 Right and left feed
 - 8. VOLTAGE / DIMMING**
 - 1 120v
 - 2 277v
 - 3 120v w/dim
 - 4 277v w/dim
 - 5 Other
 - 9. SPECIFY DRIVER / DIMMING**
 - Note: If not specified otherwise, io will supply 96 watt drivers. Refer to pages 98-100 for Power Supply options or download Power Supply specification sheet from www.iolighting.com

SSL Chromaticity Standard: ANSI C78.337

Color	Nominal CCT	Target CCT & Min/Max ΔE
White	2700K	2725 ±145
White	3000K	3045 ± 175
White	5000K	5028 ± 283

For Metric Conversion

1"	1"	1"
25.4mm	2.54cm	0.3m

Footnotes

1. White light variance between LEDs within a single fixture will not exceed ANSI Binning Standards.

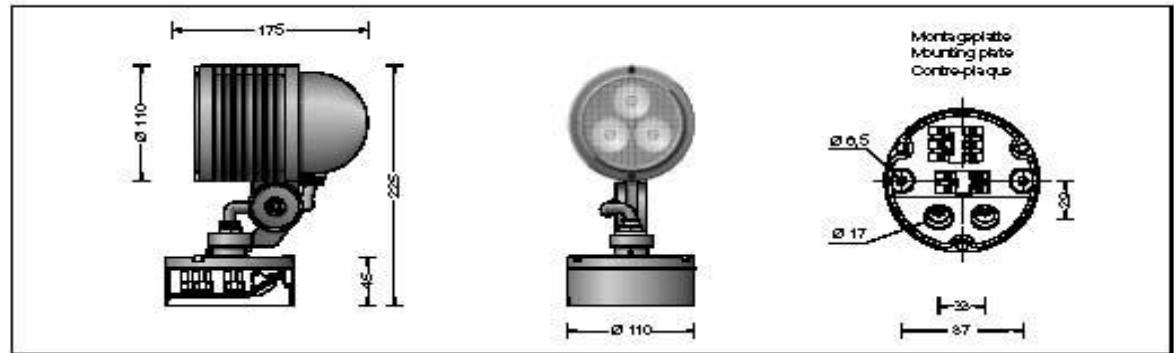
2. Printed Circuit Board (PCB) is available in 6" increments. Therefore, there will be no more than 3" of lampless space on either end of fixture.



io Lighting 1100 Busch Pkwy Buffalo Grove, IL 60089 T 847.777.3900 F 847.777.3901 E info@iolighting.com W iolighting.com

05.11 Technische Änderungen vorbehalten Technical amendments reserved Sous réserve de modifications techniques

		BEGA Lichttechnische Spezialfabrik Hannenbusch D 58708 Minden	BEGA
Gebrauchsanweisung Instructions for use Fiche d'utilisation	LED Scheinwerfer LED Floodlight Projecteur à LEDs	IP 65	7502



Anwendung

LED-Scheinwerfer mit Montagedose für die ortsfeste Montage auf einer Wand, unter einer Decke oder auf einem Sockel.
Hohe Wirtschaftlichkeit durch lange Wartungsintervalle und hohe Lichtleistung bei niedrigem elektrischen Anschlusswert.

Application

LED-Floodlight with mounting box for permanent installations on a wall, under a ceiling or on a pillar.
High operating efficiency because of long maintenance intervals and high light output with low connected load.

Utilisation

Projecteur à LEDs avec boîte de montage pour l'installation fixe sur un mur, au plafond ou sur un pilier.
Installation économique grâce à une faible maintenance et un rendement élevé pour une faible consommation.

Lampe

LED 17 W
Anschlussleistung 17 W
Farbtemperatur 5000 K

1000 lm

Lamp

LED 17 W
Connected wattage 17 W
Colour temperature 5000 K

1000 lm

Lamp

LED 17 W
Puissance de raccordement 17 W
Colour temperature 5000 K

1000 lm

Produktbeschreibung

Leuchte besteht aus Aluminiumguss, Aluminium und Edelstahl
Sicherheitsglas klar
Silikonichtung
Reflektor aus eloxiertem Reinst-Aluminium
Drehbereich des Scheinwerfers 350°
Schwenkbereich des Scheinwerfers um die waagerechte Achse +90°/-45°
Montagedose mit 2 Befestigungsbohrungen ø 6,5 mm - Abstand 87 mm
2 Leitungseinführungen zur Durchverdrahtung der Nebenschleifleitung
bis ø 10,5 mm max. 3 x 1,5°
Steckvermittlung
Anschlussklemme 2,5°
Schutzleiteranschluss
Elektronisches Netzteil
100-230 V ~ 50-60 Hz
Dimmbar 1-10 V SELV
Schutzklasse I
Schutzart IP 65
Staubdicht und Schutz gegen Strahlwasser
▽ Zeichen – Leuchte ist für die Montage auf normal entflammbaren Befestigungsoberflächen geeignet
CE – Konformitätszeichen
Gewicht: 1,7 kg

Product description

Luminaire made of aluminium alloy, aluminium and stainless steel
Clear safety glass
Silicone gasket
Reflector made of anodised pure aluminium
Rotation range of floodlight 350°
Swivel range of the floodlight around the horizontal axis +90°/-45°
Mounting box with 2 fixing holes ø 6.5 mm 87 mm spacing
2 cable entries for through-wiring of mains supply cable up to ø 10.5 mm max. 3 x 1.5°
Plug connection
Connecting terminal 2.5°
Earth conductor connection
Electronic power supply unit
100-230 V ~ 50-60 Hz
Dimmable 1-10 V SELV
Safety class I
Protection class IP 65
Dust tight and protection against water jets
▽ Symbol – Luminaire is suitable for mounting on normal inflammable fixing surfaces.
CE – Conformity mark
Weight: 1.7 kg

Description du produit

Luminaire fabriqué en fonte d'aluminium, aluminium et acier inoxydable
Verre de sécurité clair
Joint silicone
Réflecteur en aluminium pur anodisé
Projecteur orientable sur 350°
Réglage du projecteur sur l'axe horizontal +90°/-45°
Boîte de montage avec 2 trous de fixation ø 6,5 mm - Entraxe 87 mm
2 entrées de câble pour branchement en dérivation d'un câble de raccordement jusqu'à ø 10,5 mm max. 3 x 1,5°
Connecteur embrochable
Bornier 2,5°
Raccordement de mise à la terre
Bloc d'alimentation électronique
100-230 V ~ 50-60 Hz
Graduable 1-10 V SELV
Classe de protection I
Degré de protection IP 65
Étanche à la poussière et protégé contre les jets d'eau
▽ Signe – Luminaire approprié à l'installation sur des surfaces de fixation normalement inflammables
CE – Signe de conformité
Poids: 1,7 kg

Lichttechnik

Leuchtdaten für das Lichttechnische Berechnungsprogramm DIALux für Außenbeleuchtung, Straßenbeleuchtung und Innenbeleuchtung, sowie Leuchtdaten im ELLUMDAT und im IES-Format finden Sie auf der BEGA-Internetseite www.bega.de.

Light technique

Luminaire data for the light planning program DIALux for outdoor lighting, street lighting and indoor lighting as well as luminaire data in ELLUMDAT and IES-format you will find on the BEGA web page www.bega.com.

Technique d'éclairage

DIALux est un programme de calcul d'éclairage pour l'éclairage extérieur, l'éclairage des rues et l'éclairage intérieur. Vous le trouverez sur le site BEGA www.bega.fr ainsi que les données des luminaires aux formats ELLUMDAT et IES.

Sicherheit

Für die Installation und für den Betrieb dieser Leuchte sind die nationalen Sicherheitsvorschriften zu beachten. Der Hersteller übernimmt keine Haftung für Schäden, die durch unsachgemäßen Einsatz oder Montage entstehen. Werden nachträglich Änderungen an der Leuchte vorgenommen, so gilt derjenige als Hersteller, der diese Änderungen vornimmt.

Montage

Die Leuchte darf nur mit ihrer vollständigen Schutzabdeckung betrieben werden. Montagedose öffnen. Netzanschlussleitung durch die Leitungsführung in die Montagedose führen. Montagedose mit beiliegendem oder anderem geeignetem Befestigungsmaterial am Montagegrund befestigen. Schutzleiterverbindung herstellen und elektrischen Anschluss an 3-poliger Steckverbindung vornehmen. Zur analogen Dimmung ist der 2-polige Steckverbinder (1-10V) zu verwenden. **Die Dimmung 1-10 V darf nur mit einer Versorgungseinheit für 1-10 V SELV (Schutzkleinspannung) betrieben werden.** Bei Nichtbelegung dieser Klemme wird die Leuchte mit voller Lichtleistung betrieben. Steckerteil in Steckvorrichtungen bis zum Anschlag eindrücken. Auf richtigen Sitz der Dichtungen achten. Scheinwerfereinheit auf Montagedose setzen und fest verschrauben. Leitungsverdrahtungen nachziehen. Scheinwerfereinstellung vornehmen.

Reinigung - Pflege

Leuchte regelmäßig mit lösungsmittelfreien Reinigungsmitteln von Schmutz und Ablagerungen säubern. Dafür keinen Hochdruckreiniger verwenden. Ein gebrochenes Glas muss ersetzt werden.

Safety indices

The installation and operation of this luminaire are subject to national safety regulations. The manufacturer is then discharged from liability when damage is caused by improper use or installation. If any luminaire is subsequently modified, the persons responsible for the modification shall be considered as manufacturer.

Installation

The luminaire must only be operated with the complete protective cover. Open mounting box. Lead mains supply cable through the cable entry into the mounting box. Fix the mounting box with enclosed or any other suitable fixing material onto the mounting surface. Make earth conductor connection and electrical connection to the 3-pole plug connection. In case of analogue dimming please use the 2-pole plug connector (1-10V). **Dimming 1-10 V must only be operated with a supply unit for 1-10 V SELV (safety extra low voltage).** In case this connector is not used the luminaire will be operated at full light output. Push plug into couplers as far as they will go. Make sure that gaskets are positioned correctly. Place floodlight unit onto the mounting box and screw up tightly. Retighten the screw cable glands. Adjust floodlight.

Cleaning - Maintenance

Clean luminaire regularly with solvent-free cleansers from dirt and deposits. Do not use high pressure cleaners. A broken glass must be replaced.

Sécurité

Pour l'installation et l'utilisation de ce luminaire, respecter les normes de sécurité nationales. Le fabricant décline toute responsabilité résultant d'une mise en œuvre ou d'une installation inappropriée du produit. Toutes les modifications apportées au luminaire se feront sous la responsabilité exclusive de celui qui les effectuera.

Installation

Le luminaire ne doit jamais fonctionner sans son couvercle complet de protection. Ouvrir la boîte de montage. Introduire le câble de raccordement par l'entrée de câble dans la boîte de montage. Fixer la boîte de montage sur la surface de montage avec le matériel de fixation fourni ou tout autre matériel approprié. Mettre à la terre et procéder au raccordement électrique du connecteur embrochable tri-polaire. Pour gradation analogue enfiler le connecteur embrochable 2-polaire (1-10V). **La gradation 1-10 V ne doit être effectuée qu'avec un bloc d'alimentation pour 1-10 V SELV (très basse tension).** Si ce bornier n'est pas raccordé le luminaire fonctionne sur la puissance maximale. Enfoncer la fiche dans les connecteurs embrochables jusqu'à la butée. Veiller au bon emplacement des joints. Poser le projecteur sur la boîte de montage et visser fermement. Resserrer les presse-étoupes. Procéder au réglage du projecteur.

Nettoyage - Entretien approprié

Nettoyer régulièrement le luminaire et débarrasser le, des dépôts et des souillures. N'utiliser que des produits d'entretien ne contenant pas de solvant. Ne pas utiliser de nettoyeur haute pression. Un verre endommagé doit être remplacé.

Ersatzteile

Bezeichnung	Bestellnummer
Ersatzglas	140757
Dichtung Montagedose	830462
Dichtung Glas	830488
Dichtung Gehäuse	830489

Spares

Description	Part no
Spare glass	140757
Gasket mounting box	830462
Glass gasket	830488
Gasket housing	830489

Pièces de rechange

Désignation	Référence
Verre de rechange	140757
Joint de la boîte de montage	830462
Joint du verre	830488
Joint du boîtier	830489

Curvatura™ 3-D System



Two-Directional CURVATURA System with Perforation/
CURVATURA 15/16" Suspension System

LEED Credits

Recycled Content: Up to 90%

MR			EQ			
Waste Reduction	Recycled Content	Regional Materials ¹	Rapidly Renewable Materials	Low-Emitting Materials	Daylight and Views	Acoustical Performance ²
●	●	●				●

Features and Benefits

- Create dramatic three-dimensional curved designs that combine shape, texture and lighting
- Curved main tee segments and flexible panels provide endless combinations
- Available in two configurations: One-Directional CURVATURA™ with 2'x6' infill panels, and Two-Directional CURVATURA™ with 2'x2' panels
- Two suspension profiles: traditional CURVATURA (15/16" grid profile) and CURVATURA Elite (9/16" profile with 5/32" reveal)
- Custom colors available

Applications

- Contemporary office environments
- Entertainment, gaming
- High-bay areas
- Retail space



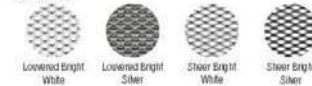
To order samples, go to usg.com

See Metal Finishes selector for panel, suspension and trim color availability.

Painted Metals (HRC Finishes)



Diamondflex²



Wood looks² (HRC Finishes)

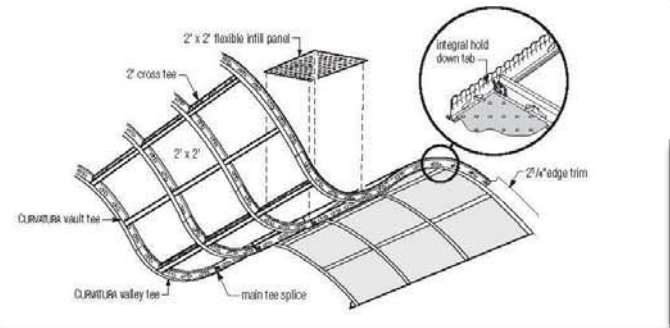
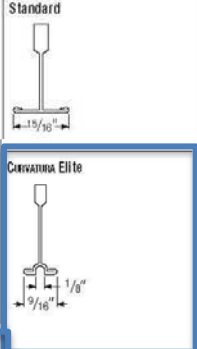
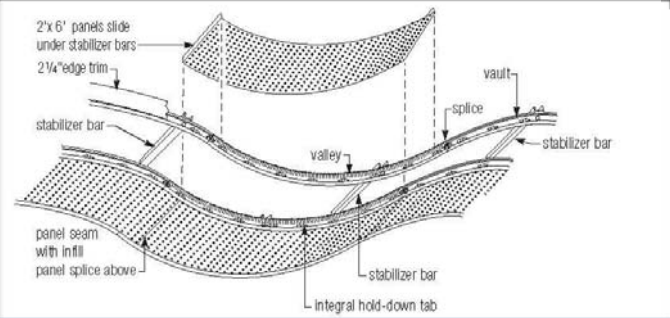



Curvatura™ 3-D System

To order samples/literature:
 - Web: usg.com
 - E-mail: samplit@usg.com
 - Fax: 888.874.2348
 Technical Services: 800.USG.4YOU

Web Sites: usg.com
usgdesignstudio.com
sustainableceilings.com
seismicceilings.com

See usg.com for the most up-to-date product information.

		Product Information			
		Materials		Finishes	
		Panel: Available smooth or perforated, in Painted Metals and Diamondflex expanded metal. 2'x2' TRANSLUCENTS™ panels are also available.		Available with perforation and/or embossing	
Perspective	Two-Directional System	2' x 2' Panels		Available Grid Profile	
					
	One-Directional System	2' x 6' Panels			
					
Curved Components (Available as vaults and valleys)	10' Length	8' Length	6' Length	4' Length	
	R = 229"	R = 183"	R = 138"	R = 92"	
	R = 153"	R = 122"	R = 92"	R = 61"	
	R = 115"	R = 92"	R = 69"	R = 46"	
	R = 77"	R = 61"	R = 46"	R = 31"	
For More Information	Product literature System brochure: IC399 Data sheet: IC310 Design selector: IC36108 Perforation selector: IC425		Online tools usg.designstudio.com usg.com/resources/online-tools/CurvaturaDesignCenter.jsp		Recycled Content Curvatura aluminum panels: up to 90% recycled content. Steel panels: 25% recycled content. Suspension: 25% recycled content.
					Footnote 1. For details, see LEED report generator at taggsignstudio.com . 2. Requires perforation and Acoustex backer. 3. Diamondflex and Wood Tone panels available for Two-Directional Curvatura.
		Manufactured by USG Interiors, Inc. 550 West Adams Street Chicago, IL 60661		The following are trademarks of USG Interiors, Inc. or a related company: Curvatura, TRANSLUCENTS, USG.	
		Safety First! Follow good safety/industrial hygiene practices during installation. Wear appropriate personal protective equipment. Read MSDS and literature before specification and installation.		IC310/rev. 4-10 © 2010, USG Interiors, Inc. Printed in U.S.A.	

Translucents™



TRANSLUCENTS Luminous Infill Panels/
CENTRICREE DXT Suspension System

MR				EQ		
Waste Reduction	Recycled Content	Regional Materials	Rapidly Renewable Materials	Low-Emitting Materials	Daylight and Views	Acoustical Performance
●	●					

Features and Benefits

- Fully accessible translucent (luminous) infill panels
- Panels can be used with standard Down® brand DX®, DXL™, CENTRICREE™ DXT, CURVATURA™ 3-D System and GridWare™ suspension systems
- Available in 7 finishes: Lexan® (2 color choices), Natural (4 color choices), Woven (3 color choices), Industrial (2 color choices) Shimmer (2 color choices), Textiles (7 color choices) and Embossed (2 color choices)
- 2' x 2' panels (23-3/4" x 23-3/4") in all finishes
- 2' x 6' panels (23-3/4" x 71-3/4") in all finishes
- Woven, Shimmer, Textiles, Industrial and natural finishes contain a minimum 40% recycled content
- Embossed acrylic panels contain a minimum of 50% recycled content
- Class A finish rating only applies to the Lexan panels. Others are Class B
- Coordinating suspension and trim colors as well as larger color swatches can be found on the Translucents Finishes page (CS62)

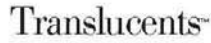
Applications

- Lobbies
- Contemporary office environments
- Entertainment, gaming areas
- High-bay areas
- Retail stores



To order samples, go to usg.com

Lexan®					
Glass Green Matte	Clear Matte	Leaves™	Seerlight™	Paper Leaf™	Woodland™
Woven		Industrial		Shimmer	
Blush™	Iris™	White Mesh™	Silver Spun™	Mandarin Indescent™	Blue Ice™
Textiles					
White Fiberoptic™	Matrix™	Avant™	Lipstick Meander™	White Meander™	Cache White™
Embossed					
Ovalesque First™	Rain™				



To order samples/literature:
 - Web: usg.com
 - E-mail: samplit@usg.com
 - Fax: 888.874.2348
 Technical Services: 800.USG.4YOU

Web Sites: usg.com
usgdesignstudio.com
sustainableceilings.com
seismicceilings.com

See usg.com for the most up-to-date product information.

Product Information			
Materials	Typical Sizes		System Weight
	Nominal	Actual	
Glass Green, Clear – 0.060" Lexan	2'x 2'	23-3/4" x 23-3/4"	Approximately 0.7 lbs per sq. ft.
Woven, Shimmer, Textiles, Natural	2'x 2'	23-3/4" x 23-3/4"	Approximately 0.9 lbs per sq. ft.
Industrial – 0.118" PETG	2'x 6'	23-3/4" x 71-3/4"	
Embossed Acrylic	2'x 2'	23-3/4" x 23-3/4"	Approximately 0.9 lbs per sq. ft.
	2'x 6'	23-3/4" x 71-3/4"	

Acoustics	This product does not offer any acoustical properties.
Lighting	For Translucents panels, fluorescent strip fixtures should be placed a minimum of 18" above the ceiling and 18" o.c. for best results.
Suspension Systems	Lays into standard DX/DXL, CENTRICEE DXT, CURMATURA 3-D system and GridWARE suspension systems.

For More Information	Product literature Data sheet IC406	Code approval Lexan infill panels meet Class A requirements for flame spread and smoke developed as defined by ASTM E1264, NFPA and IBC (IBC) as tested in accordance with ASTM E84. Translucents panels meet Class B requirements for flame spread and smoke developed as defined by ASTM 1264 and as tested in accordance with ASTM E84. (40/175) USG Translucents panels also meet:	Class A requirements of NFPA and IBC (IBC) as interior finishes, not to be part of an air supply/return system. Designers and installers are advised to consult a fire protection engineer, NFPA 13 and their local codes for guidance where automatic fire detection and suppression systems are present.	Matte and Clear Matte 0.900 lb./sq. ft. (Woven, Textiles, Shimmer, Natural, Industrial, Embossed) Recycled content Lexan panels: 0% recycled content. 100% recyclable. Woven, Textiles, Shimmer, Natural, Industrial panels: min. 40% recycled content. 100% recyclable. Embossed panels: 50% recycled content. 100% recyclable.
	Online tools usgdesignstudio.com This product is produced to order and will vary from batch to batch—panels ordered at the same time will be produced together and will be identical. USG cannot guarantee batch to batch consistency.			

	Manufactured by USG Interiors, Inc. 550 West Adams Street Chicago, IL 60661 The color names listed herein are trademarks of Lumicon, Inc and are used with permission.	The following are trademarks of USG Interiors, Inc., or a related company: CENTRICEE, CURMATURA, Down, DX, DXL, DXT, GridWARE, Translucents, USG. Lexan is a registered trademark of General Electric Company. Woven, Shimmer, Industrial, Natural, Embossed and Textiles manufactured by USG Interiors, Inc.	Safety First! Follow good safety/industrial hygiene practices during installation. Wear appropriate personal protective equipment. Read MSDS and literature before specification and installation.	IC406/rev 4-10 © 2010, USG Interiors, Inc. Printed in U.S.A.
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Wireless Task Ambient Photo Sensor

DLSEN-E17C-0A

Overview

Tambient lighting control devices are based on EnOcean wireless technology and include the features of other wireless control technologies like "peel and stick" installation of sensors, simple adaptation to a tenants changing needs, and reduced wiring costs. With EnOcean technology, the radios require very little power allowing ambient energy sources to power the sensors eliminating the maintenance burden of replacing batteries and disposing of them. The push of a light switch or the light within an office is all that's needed to energize the sensor and broadcast the signal. Tambient's DLSEN-E17C uses photo-sensors hidden behind a unique opaque lens to monitor the interior light level and transmit the value to tambient's portable TCH Control Hub. The TCH Control Hub in turn provides a corresponding 0-10V dimming signal to the associated dimming ballast(s) according to configured lighting set points. The same photo-sensors are used to absorb energy from the surrounding environment creating enough power to operate the DLSEN-E17C. The DLSEN-E17C is a key component in tambient's portable, plug-and-play lighting applications that assist facility operators in controlling energy costs. For more information on this application, please contact applications@thelightingquotient.com.



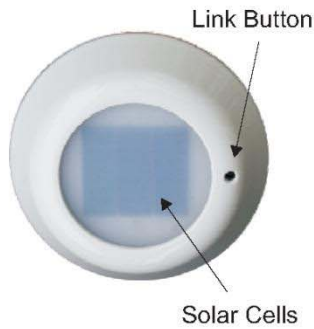
Features

- ⇒ Battery-free wireless light level sensing
- ⇒ temperature set-point adjustment
- ⇒ Provides accurate feedback to day-light harvesting controllers
- ⇒ No mounting hardware needed → maximum space flexibility
- ⇒ 100m line-of-sight transmission range, interior range typically 30m
- ⇒ operates in low light conditions
- ⇒ 0 - 510 lux range, optionally 0 - 1024 lux

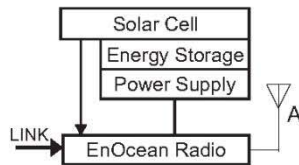


DLSEN-E17C-0A

Functional Diagram



Block Diagram



EnOcean Equipment Profiles

EEP: 07-06-02, Light Sensor DB_1: 0 lux - 1024 lux
 DB_2: 0 lux - 512 lux

Technical Specifications

Power Supply	Dual Solar cell
Operational Light Level	40 lux minimum
Charging Period	6 hours full charge
Initial Operation	5 minutes in 40 lux
Full Charge Operation	8 hours in 0 lux
Telegram Transmission	2% change in lux of full scale range on 10 second intervals or on heartbeat period
Telegram Heartbeat Period	100 seconds ± 20 seconds
Communications	
Radio Type	315 EnOcean radio
Antenna	Integrated whip
Transmission Range	30m (100 ft.) - commercial office space
Inputs	LINK button for assignment to receiver

Mechanical Specifications

Operating Temperature	-13°F to 145°F (-25°C to 65°C)
Relative Humidity	5% to 95% RH (non-condensing)
Weight	2.6 oz. (74 gms.)
Dimensions	4.0"round x 0.9" (100 mm x 23 mm)
Mounting	mount with screws or tape (Velcro®), not supplied



The Lighting Quotient
 114 Boston Post Road, West Haven, Connecticut 06516, USA
 Voice 203.931.4455 Fax 203.931.4464 thelightingquotient.com



Wireless SmartSpace Controller

HWREN-E20C-0A

Overview

Today's building owners are seeking solutions to drive-down their facilities energy footprint without enduring the expense and disruption of installing a networked automation system.

Tambient answers this need with the SmartSpace Controller that provides for manual and automatic occupancy response switching of 120V receptacle power circuits for controlling tambient plug-and-play luminaires. Tambient Smart Space Controllers can also switch and/or dim supplemental building integrated lighting in response to tambient self-powered wireless switches, occupancy sensors and photo sensors.

Tambient's SmartSpace Controllers communicate with nearby low-voltage and/or wireless sensors to monitor workstation occupancy, and they communicate wirelessly with each other. This eliminates much of the wiring normally required for multi-zone distributed control. This translates into quick installations with less disruption to occupants and simplified building infrastructures allowing facilities to accelerate retrofit schedules reduce embodied energy.

The SmartSpace Controllers have Switch Click technology which allows installers and facility operators to manage configuration settings without any tools reducing call-backs and installation expense.

All tambient's wall switches and sensors are developed entirely on EnOcean technology making them battery-free. By harvesting energy from the surrounding environment for power, these battery-free devices eliminate the maintenance burden of replacing and disposing of batteries.



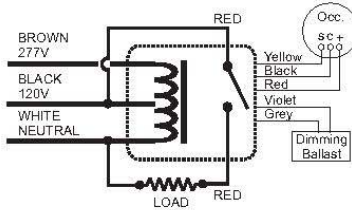
Features

- ⇒ Lighting circuit control with dimming ballast control output
- ⇒ Embedded Switch Click configuration for fast and easy commissioning
- ⇒ Occupancy based lighting controls with Auto-ON/OFF or manual ON, auto-OFF
- ⇒ Integrated day-light harvesting control
- ⇒ Listens for tambient battery-free wall switches, photo sensors and occupancy sensors
- ⇒ Near-cross switching technology for long relay life
- ⇒ Easy installation on electrical junction boxes with 1/2" mounting nipple
- ⇒ Broadcasts controller status to BMS gateways
- ⇒ Doubles as a telegram repeater

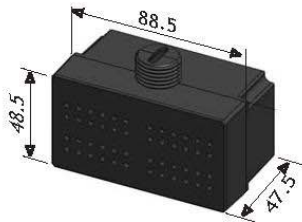


HWREN-E20C-0A

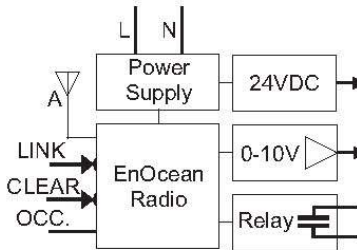
Wiring Diagram



Dimensional Drawing



Block Diagram



EnOcean Equipment Profiles - remote devices supported

EEP: 05-02-02	Light and Blinds Control - US/Canada application
EEP: 07-06-02	Light Sensor [range 0 - 1024 lux]
EEP: 07-07-01	Occupancy Sensor

Hardware Specifications

Power Supply	120/277 VAC, 60Hz
Power Consumption	4.25 W max. full load
Power Output	24 VDC @ 35 mA
Input	Optically Isolated 24VDC input
Outputs	N.O. Relay rating 20A@120 or 277 VAC
	0-10 VDC @ 25mA maximum, sinking current only
Inputs	LEARN and CLEAR buttons for sensor assignment
Communications	315 MHz EnOcean radio with whip antenna

Mechanical Specifications

Operating Temperature	14° F to 113° F (-10° C to 45° C)
Relative Humidity	5% to 95% RH (non-condensing)
Weight	13.5 oz. (385 gms.)
Dimensions	3.5" x 1.9" x 1.9" (88 mm x 48 mm x 48 mm)
Mounting	½" nipple

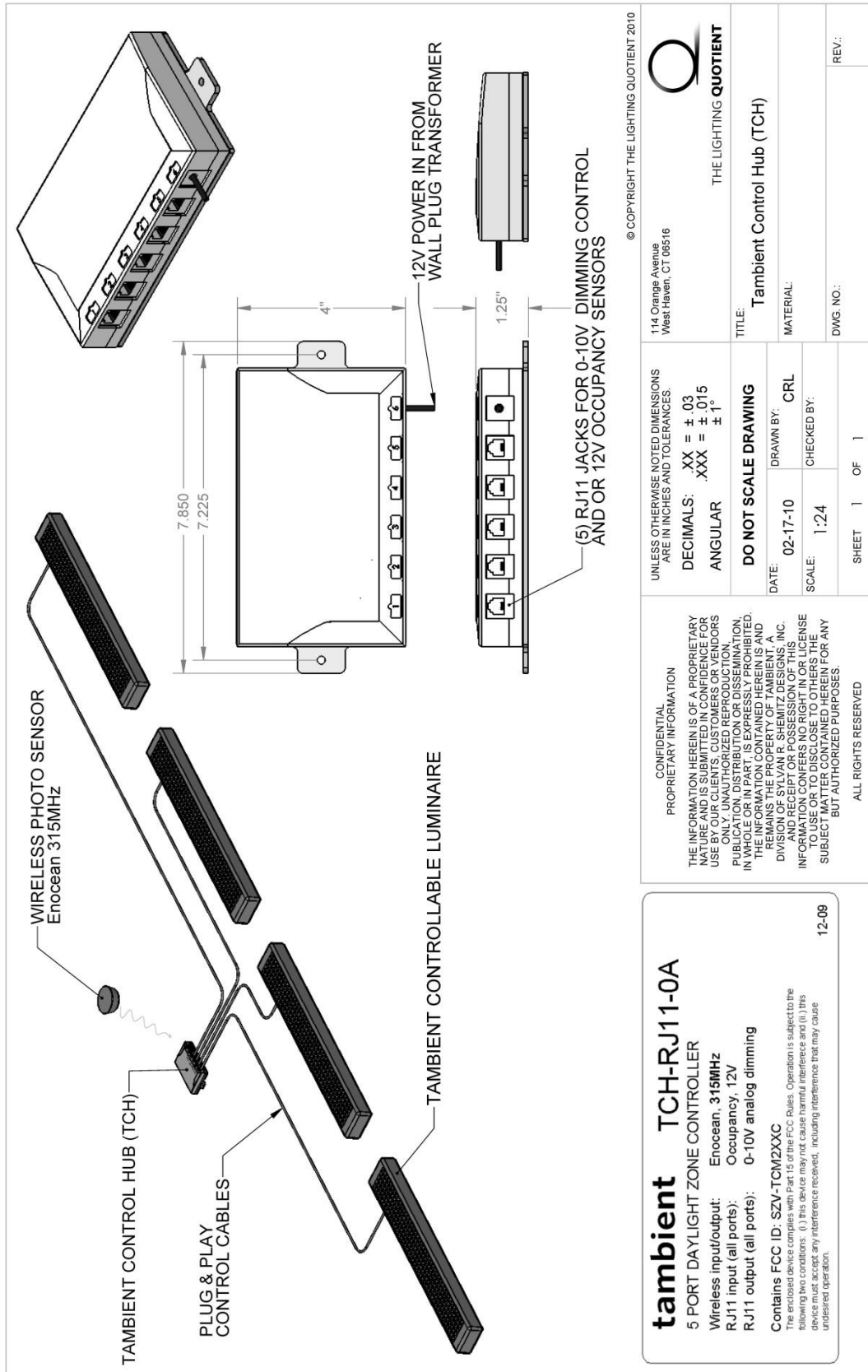
Agency Listing and Compliance

Safety	ETL Recognized Component 3188207 Conforms to UL Standard 508 Certified to CAN/CSA Std. C22.2 No.14
Radio Frequency	UL 2043 Plenum rated FCC Part 15.231 - Remote Control Transmitter IC RSS-210



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 114 Boston Post Road, West Haven, Connecticut 06516, USA
 Voice 203.931.4455 Fax 203.931.4464 thelightingquotient.com





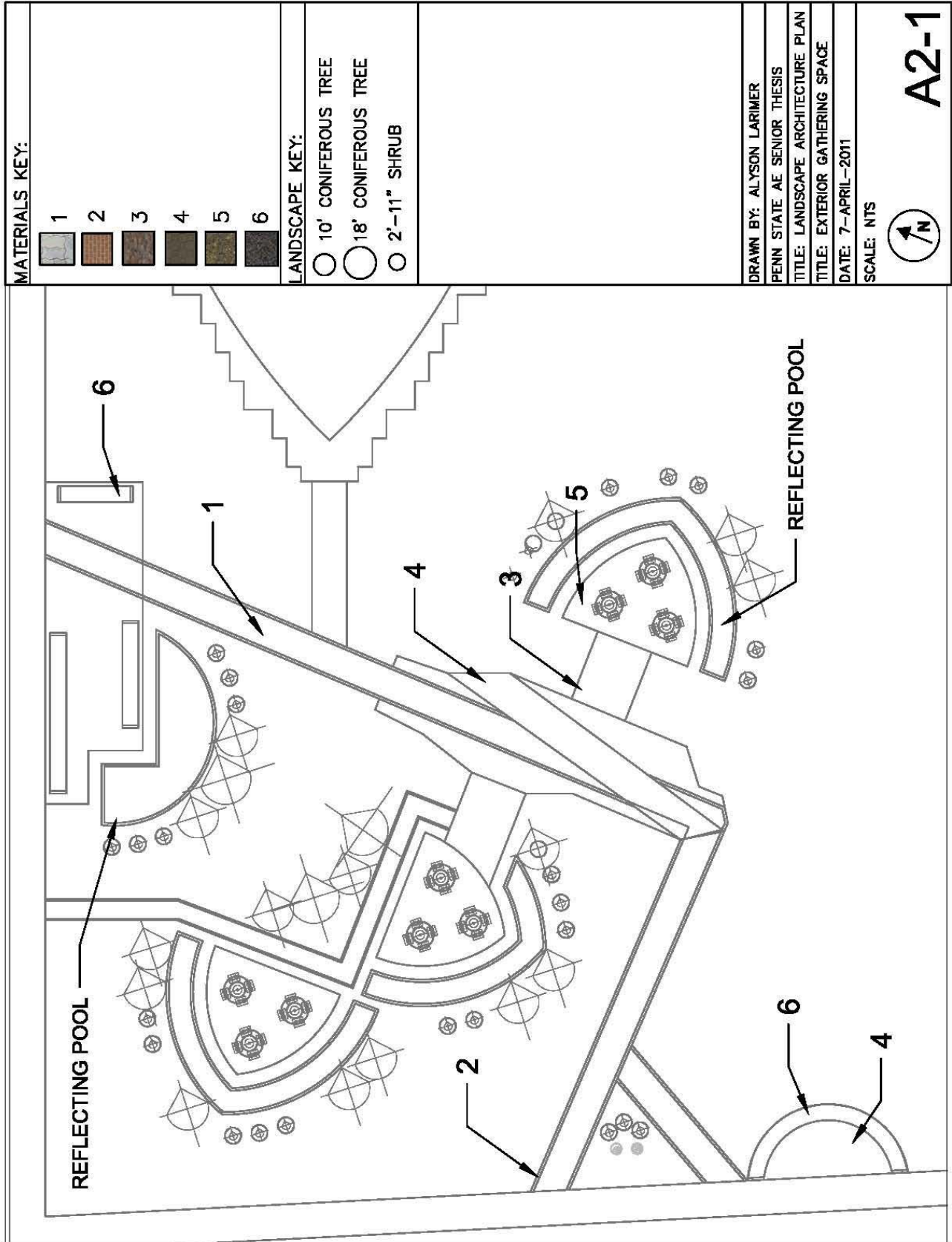
UNLESS OTHERWISE NOTED DIMENSIONS ARE IN INCHES AND TOLERANCES. DECIMALS: .XX = ± .03 .XXX = ± .015 ANGULAR: = ± 1°		114 Orange Avenue West Haven, CT 06516 THE LIGHTING QUOTIENT
CONFIDENTIAL PROPRIETARY INFORMATION THE INFORMATION HEREIN IS OF A PROPRIETARY NATURE AND IS SUBMITTED IN CONFIDENCE FOR USE BY OUR CLIENTS, CUSTOMERS OR VENDORS ONLY. UNAUTHORIZED REPRODUCTION, PUBLICATION, DISTRIBUTION, DISSEMINATION, IN WHOLE OR IN PART IS EXPRESSLY PROHIBITED. THE INFORMATION CONTAINED HEREIN IS AND REMAINS THE PROPERTY OF TAMBIENT, A DIVISION OF SYLVAN R. SHERMITS DESIGNS, INC. AND RECEIPT OR POSSESSION OF THIS INFORMATION DOES NOT CONSTITUTE AN AGREEMENT TO USE OR TO DISCLOSE TO OTHERS THE SUBJECT MATTER CONTAINED HEREIN FOR ANY BUT AUTHORIZED PURPOSES. ALL RIGHTS RESERVED		TITLE: Tambient Control Hub (TCH) MATERIAL: DATE: 02-17-10 SCALE: 1:24 DRAWN BY: CRL CHECKED BY:
DO NOT SCALE DRAWING		DWG. NO.: REV.:
SHEET 1 OF 1		

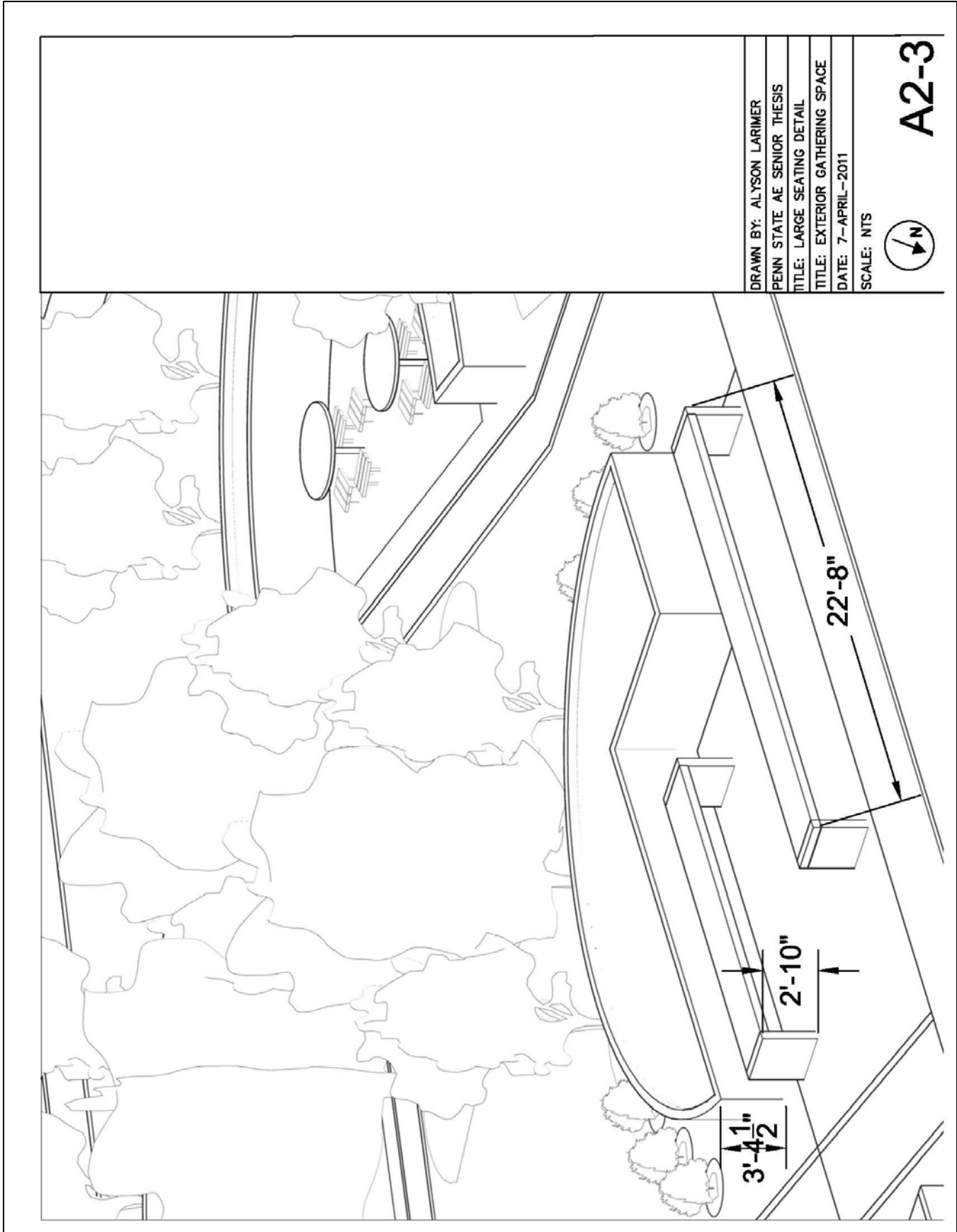
tambient TCH-RJ11-0A
 5 PORT DAYLIGHT ZONE CONTROLLER
 Wireless input/output: EnOcean, 315MHz
 RJ11 input (all ports): Occupancy, 12V
 RJ11 output (all ports): 0-10V analog dimming
 Contains FCC ID: SZV-TCM2XXC
 The enclosed device complies with Part 15 of the FCC Rules. Operation is subject to the following conditions: (1) This device may not cause harmful interference and (2) This device must accept any interference received, including interference that may cause undesired operation.

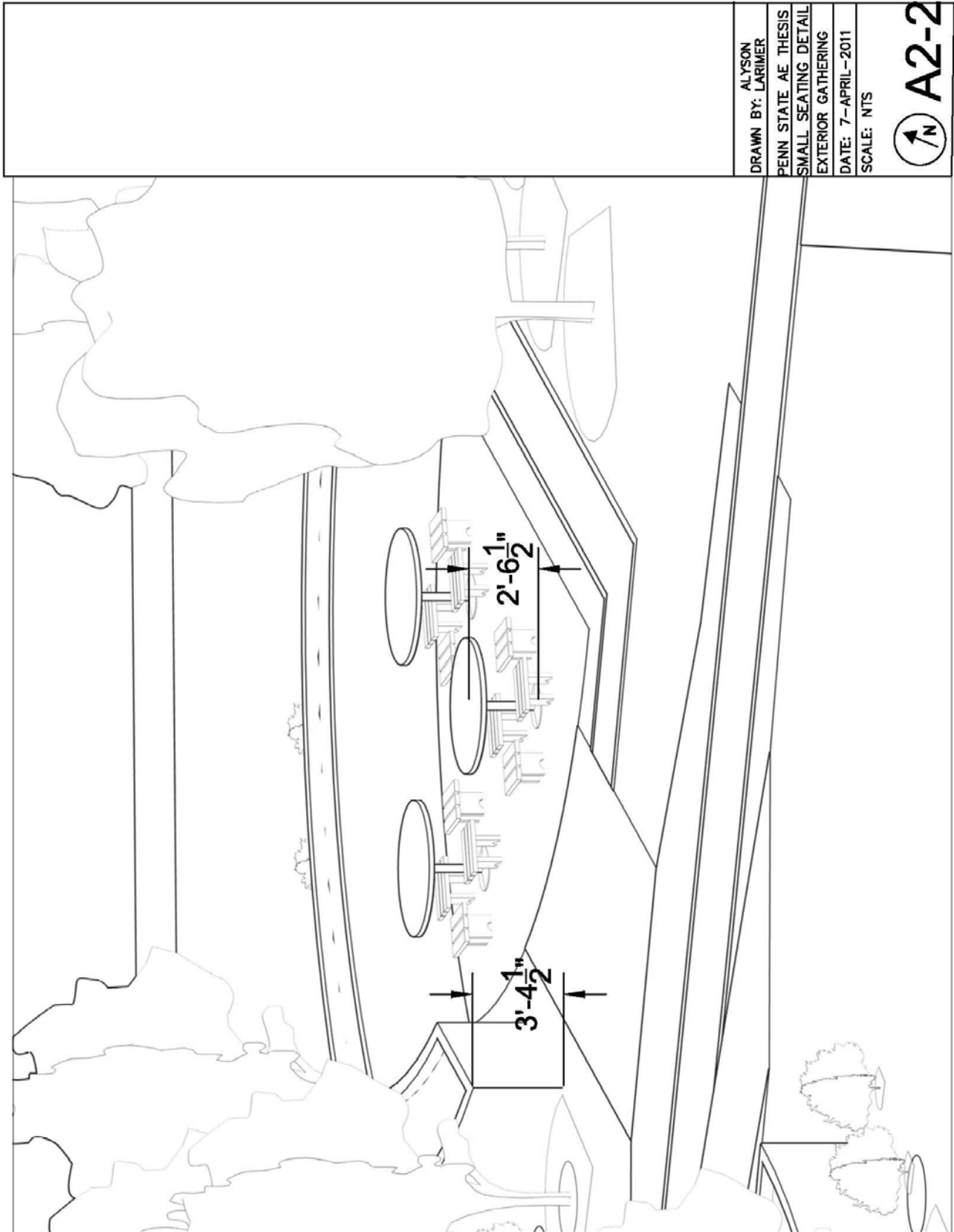
12-09

APPENDIX B | LANDSCAPE

The following pages include all landscape plans and details.
Materials and landscape planning are noted as well as dimensions
of seating elements within the space.

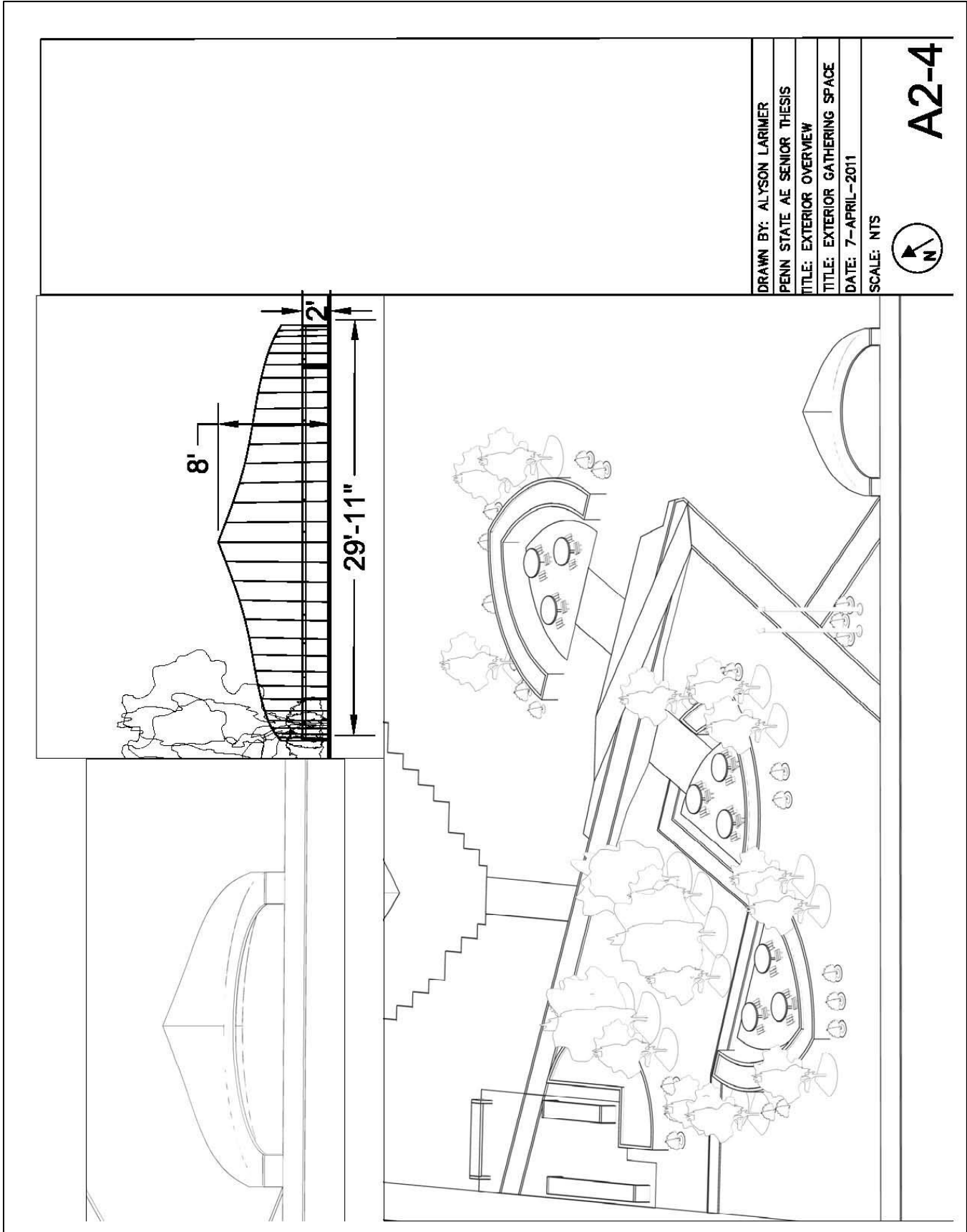






DRAWN BY: ALYSON LARIMER
PENN STATE AE THESIS
SMALL SEATING DETAIL
EXTERIOR GATHERING
DATE: 7-APRIL-2011
SCALE: NTS

 A2-2



APPENDIX C | ELECTRICAL

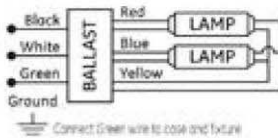
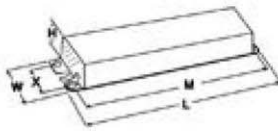
The following pages include all ballast and driver specification sheets in order of the luminaire equipment schedule found in Appendix A. Some ballasts were used for multiple fixtures but were not inserted twice.



99651 - GE254MVPS90-F

GE LFL UltraStart® Electronic Program / Rapid Start Ballast

- High Efficiency T5 ballast with Continuous Cathode Cutout Technology
- Lower Maintenance Costs with Parallel Lamp Operation
- Fast Starting Time <700ms
- Multi-Voltage technology means a single ballast handles voltage from 108V to 305V
- Auto-Restart withstands temporary losses in power without the need to cycle power
- UltraCool™ Operation 90C case rating
- Anti-Striation Control for better light quality, with no striations.



GENERAL CHARACTERISTICS

Application	2 or 1 - F54T5HO 120 to 277 UltraStart PRS Hight Temp F Can
Category	Linear Fluorescent
Ballast Type	Electronic - Program / Rapid Start
Starting Method	Programmed start
Lamp Wiring	Parallel
Line Voltage Regulation (+/-)	10 %
Case Temperature	90 °C(194 °F)
Ballast Factor	Normal
Power Factor Correction	Active
Sound Rating	A (20-24 decibels)
Enclosure Type	Metal
Additional Info	Auto-restart/End of Life Protection (EOL)/Thermally protected/Universal voltage

PRODUCT INFORMATION

Product Code	99651
Description	GE254MVPS90-F
Standard Package	Case
Standard Package GTIN	10043168996515
Standard Package Quantity	10
Sales Unit	Standard Pack
No Of Items Per Sales Unit	1
No Of Items Per Standard Package	10
UPC	043168996518

DIMENSIONS

Case dimensions			
Length (L)		11.8 in(298.45 mm)	
Width (W)		1.7 in(43.18 mm)	
Height (H)		1.2 in(30.48 mm)	
Mounting dimensions			
Mount Length (M)		11.1 in(282.96 mm)	
Mount Slots (MS)		0.2 in(6.35 mm)	
Weight		1.85 lb	
Exit Type		Side	
Remote Mounting Distance		8 ft	
Remote Mounting Wire Gauge		18 AWG	
Lead lengths	Qty	Exit	Length (± 1 in.)
Black	1	Left/Right	25.0 (635mm)
Blue	2	Left/Right	34.0 (864mm)
Green	1	Left/Right	3.5 (89mm)
Red	2	Left/Right	34.0 (864mm)
White	1	Left/Right	25.0 (635mm)
Yellow	1	Left/Right	45.0 (1143mm)
Yellow	2	Left/Right	45 (1143mm)

ELECTRICAL CHARACTERISTICS

Supply Current Frequency	50 Hz/60 Hz
--------------------------	-------------

SAFETY & PERFORMANCE

- CSA
- FCC - CLASS A Non-Consumer
- UL Class P
- UL Listed
- UL Type 1 Outdoor
- UL Type CC
- UL Type HL
- RoHs Compliant
- Meets ANSI Standard C82.11-Cons 2002
- Meets ANSI Standard C62.41-1991
- High Temperature Rated: Suitable for high temperature applications
- 70C max case temp 5 yr warranty or 90C max case temp 3 yr warranty

SPECIFICATIONS BY LAMP & WATTAGE

Lamp	# of Lamps	Line Volts	System Watts	Nom. Line Current	System Ballast Factor	Ballast Efficacy Factor	Power Factor% (>=)(<=)	Crest Factor THD% (<=)	Min. Starting Temp (°F/°C)
FT55W/4P	1	120	67	0.56 A	1.04	1.55	99	1.6	5.0 / -15
FT55W/4P	2	120	106	0.89 A	0.86	0.81	99	1.7	5.0 / -15
FT55W/4P	1	277	67	0.25 A	1.04	1.55	97	1.6	5.0 / -15
FT55W/4P	2	277	105	0.39 A	0.86	0.82	98	1.7	5.0 / -15
FT50W/4P	1	120	72	0.61 A	1.21	1.68	99	1.6	5.0 / -15
FT50W/4P	1	277	72	0.27 A	1.21	1.68	97	1.6	5.0 / -15

For additional information, visit www.gelighting.com

FT50W/4P	2	120	117	0.99 A	1.05	0.90	99	1.7	10	5.0 /-15
FT50W/4P	2	277	115	0.43 A	1.05	0.91	98	1.7	8	5.0 /-15
FT39W/4P	1	120	51	0.43 A	1.29	2.53	99	1.6	4	5.0 /-15
FT39W/4P	1	277	51	0.19 A	1.28	2.51	96	1.6	7	5.0 /-15
FT39W/4P	2	120	85	0.71 A	1.17	1.38	99	1.6	4	5.0 /-15
FT39W/4P	2	277	84	0.31 A	1.17	1.39	98	1.6	8	5.0 /-15
FC12T5HO	1	120	69	0.58 A	1.04	1.51	99	1.6	6	5.0 /-15
FC12T5HO	1	277	69	0.26 A	1.04	1.51	97	1.6	7	5.0 /-15
FC12T5HO	2	120	111	0.92 A	0.90	0.81	99	1.7	7	5.0 /-15
FC12T5HO	2	277	109	0.4 A	0.90	0.83	98	1.7	7	5.0 /-15
F58T8	2	120	106	0.89 A	0.95	0.90	99	1.6	9	5.0 /-15
F58T8	1	120	65	0.55 A	1.09	1.68	99	1.6	5	5.0 /-15
F58T8	2	277	104	0.38 A	0.95	0.91	98	1.6	10	5.0 /-15
F58T8	1	277	65	0.24 A	1.09	1.68	97	1.6	7	5.0 /-15
F54T5/W/M	2	277	107	0.4 A	1.00	0.93	97	1.7	8	5.0 /-15
F54T5/W/M	1	277	66	0.25 A	1.12	1.70	97	1.6	7	5.0 /-15
F54T5/W/M	2	120	109	0.91 A	1.00	0.92	99	1.7	8	5.0 /-15
F54T5/W/M	1	120	66	0.56 A	1.12	1.70	99	1.6	5	5.0 /-15
F54T5/HO	1	120	71	0.6 A	1.11	1.56	99	1.6	4	5.0 /-15
F54T5/HO	1	277	71	0.26 A	1.11	1.56	97	1.6	7	5.0 /-15
F54T5/HO	2	120	116	0.98 A	1.00	0.86	99	1.7	10	5.0 /-15
F54T5/HO	2	277	114	0.43 A	1.00	0.88	98	1.7	8	5.0 /-15
F54T5/47W	1	120	64	0.54 A	1.10	NaN	99	1.7	8	32.0 /0
F54T5/47W	1	277	63	0.24 A	1.10	1.75	99	1.6	5	32.0 /0
F54T5/47W	2	120	105	0.9 A	1.00	0.95	97	1.7	8	32.0 /0
F54T5/47W	2	277	103	0.38 A	1.00	0.97	97	1.6	7	32.0 /0

WARRANTY INFORMATION

GE Lighting warrants to the purchaser that each ballast will be free from defects in material or workmanship for period as defined in the attached documents from the date of manufacture when properly installed and under normal conditions of use.

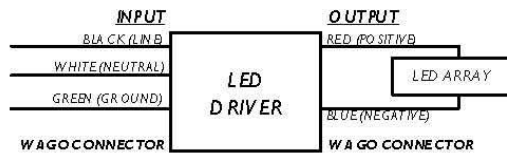


Electrical Specifications

LED-120A-0012V-21-F	
Brand Name	XITANIUM
Driver Type	Electronic
Input Voltage	120
Input Frequency	50/60Hz
RoHS	No
Status	Active

Max. Output Power (W)	Output Voltage (V)	Output Current (A)	Operating Temp. Range (°F/°C)	Input Current at 120V (A)	Max. Input Power (W)	Inrush Current (A _{pk} /μs)	Max. THD (%)	Min. Power Factor	Surge Protection (KV)	Weight (Lbs)	IP Rating
25	2.8-12.0	2.1	-40°~140°F (-40~60°C)	0.25	30.5	-	20	0.9	2.0	0.6/275	IP20

Wiring Diagram



Input is Wago 3-position wire trap connector – use 18AWG solid or tinned stranded.
 Output is Wago 4-pin wire trap connector – use 20AWG solid or tinned stranded.

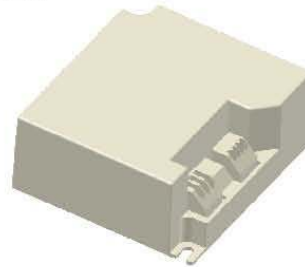
Standard Lead Length

	in.	cm.
Black		
White		
Blue		
Red		
Green		
Violet		

Maximum Wiring Distance (at full load)

Wire Size (AWG)	Distance (feet)
26	3
24	4
22	7
20	11
18	18
16	28
14	46
12	70
10	119

Enclosure



	in. (mm)
Case Length	3.30 (83)
Case Width	3.06 (77)
Case Height	1.34 (33.7)
Mounting Length	2.91 (73.4)
Mounting Width	2.67 (67.4)
Overall Length	3.29 (83)



UL Class 2
E220165



7310_S-000
3426-32

Revised 10/19/2009

PHILIPS LIGHTING ELECTRONICS N.A.
 10275 WEST HIGGINS ROAD · ROSEMONT, IL 60018
 Tel: 800-322-2086 · Fax: 888-423-1882 · www.philips.com/advance
 Customer Support/Technical Service: 800-372-3331 · OEM Support: 866-915-5886



LED-120A-0012V-21-F	
Brand Name	XITANIUM
Driver Type	Electronic
Input Voltage	120
Input Frequency	50/60Hz
RoHS	No
Status	Active

Installation & Application Notes:

Section I – Physical Characteristics

- 1.1 LED Driver shall be installed inside an electrical enclosure.
- 1.2 Wiring inside electrical enclosure shall comply with 600V/105°C rating or higher.
- 1.3 Housing is made of UL94-V0 flame retardant plastic. White color.

Section II – Performance

- 2.1 LED Driver is UL Class 2 power unit as per UL1310. It is also listed in the UL Sign Accessory Manual.
- 2.2 LED Driver is certified by UL for use in a dry location.
- 2.3 LED Driver has Class A sound rating.
- 2.4 LED Driver tolerates sustained open circuit and short circuit output conditions without damage.
- 2.5 LED Driver maximum allowable case temperature is 85°C – see product label for measurement location.
- 2.6 LED Driver complies with FCC rules and regulations, as per Title 47 CFR Part 15 Non-Consumer (Class A) for EMI/RFI (conducted and radiated) at full load.

Section III – UL Conditions of Acceptability (File E220165)

When installed in the end product, consideration shall be given to the following:

- 3.1 This component has been judged on the basis of the required spacings in the Standard for Class 2 Power Units, UL 1310, Fourth Edition, which would cover the component itself if submitted for Listing.
- 3.2 The supply terminals and connectors are suitable for factory wiring only of solid or tinned stranded No. 18 AWG conductors.
- 3.3 The equipment was submitted and tested for a maximum manufacturer's recommended ambient (Tmra) of 40°C.
- 3.4 Leakage current measurements shall be performed when more than four LED drivers are used in the equipment or when the LED driver is used in combination with other equipment in the end-use product.
- 3.5 The drivers are intended for installation inside an electrical enclosure.
- 3.6 The ground connection is not suitable as the equipment ground for a sign. Separate provision for sign grounding must be provided.
- 3.7 The driver is suitable for dry location use.

Revised 10/19/2009

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GE
Lighting

97608 - F26DBX/835/ECO

GE Ecolux® Biax® T4 - Facilities; Retail Display; Hospitality; Office; Restaurant; Warehouse

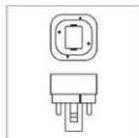
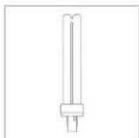


High Color Rendering

Photo
Not Available

Savings

Energy



GENERAL CHARACTERISTICS

Lamp Type	Compact Fluorescent - Plug-In
Bulb	T4
Base	G24d-3
Rated Life	10000 hrs
Starting Temperature	-9 °C (16 °F)
Cathode Resistance	2.7 Ohm
LEED-EB MR Credit	274 picograms Hg per mean lumen hour
Additional Info	TCLP compliant
Primary Application	Facilities;Retail Display;Hospitality;Office;Restaurant;W;

PHOTOMETRIC CHARACTERISTICS

Initial Lumens	1710
Mean Lumens	1460
Nominal Initial Lumens per Watt	65
Color Temperature	3500 K
Color Rendering Index (CRI)	82

ELECTRICAL CHARACTERISTICS

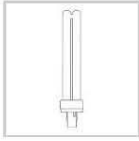
Wattage	26
Voltage	105
Open Circuit Voltage Across Starter	198 V
Lamp Current	0.325 A
Current Crest Factor	1.7
Supply Current Frequency	60 Hz

DIMENSIONS

Maximum Overall Length (MOL)	6.6700 in(169.4 mm)
Nominal Length	6.700 in(170.2 mm)
Base Face to Top of Lamp	5.790 in(147.1 mm)

PRODUCT INFORMATION

Product Code	97608
Description	F26DBX/835/ECO
ANSI Code	60901-IEC-0526-2
Standard Package	BUNDLE
Standard Package GTIN	
Standard Package Quantity	50
Sales Unit	Unit
No Of Items Per Sales Unit	1
No Of Items Per Standard Package	50
UPC	043168976084

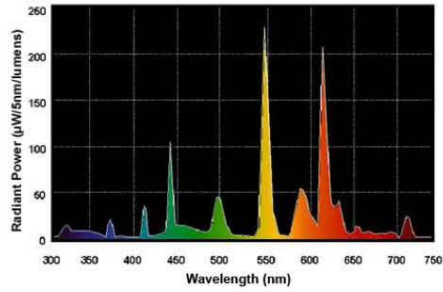


CAUTIONS & WARNINGS

Caution

GRAPHS & CHARTS

Spectral Power Distribution



NOTES

- Based on 60Hz reference circuit.
- Fluorescent lamp lumens decline during life

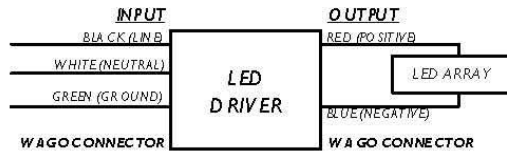


Electrical Specifications

LED-120A-1400C-24-F	
Brand Name	XITANIUM
Driver Type	Electronic
Input Voltage	120
Input Frequency	50/60Hz
RoHS	No
Status	Active

Max. Output Power (W)	Output Voltage (V)	Output Current (A)	Operating Temp. Range (°F/°C)	Input Current at 120V (A)	Max. Input Power (W)	Inrush Current (A _{pk} /μs)	Max. THD (%)	Min. Power Factor	Surge Protection (KV)	Weight (Lbs)	IP Rating
34	2.8-24.0	1.4	-40°~140°F (-40~60°C)	0.35	42	-	20	0.9	2.0	0.6/275	IP20

Wiring Diagram



Input is Wago 3-position wire trap connector – use 18AWG solid or tinned stranded.
 Output is Wago 4-pin wire trap connector – use 20AWG solid or tinned stranded.

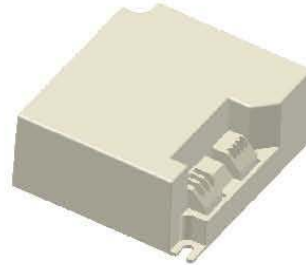
Standard Lead Length

	in.	cm.
Black		
White		
Blue		
Red		
Green		
Violet		

Maximum Wiring Distance (at full load)

Wire Size (AWG)	Distance (feet)
26	4
24	7
22	11
20	17
18	27
16	43
14	69
12	105
10	179

Enclosure



	in. (mm)
Case Length	3.30 (83)
Case Width	3.06 (77)
Case Height	1.34 (33.7)
Mounting Length	2.91 (73.4)
Mounting Width	2.67 (67.4)
Overall Length	3.29 (83)



UL Class 2
E220165



7310_S-000
3426-32

Revised 09/15/2009

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LED-120A-1400C-24-F	
Brand Name	XITANIUM
Driver Type	Electronic
Input Voltage	120
Input Frequency	50/60Hz
RoHS	No
Status	Active

Installation & Application Notes:

Section I – Physical Characteristics

- 1.1 LED Driver shall be installed inside an electrical enclosure.
- 1.2 Wiring inside electrical enclosure shall comply with 600V/105°C rating or higher.
- 1.3 Housing is made of UL94-V0 flame retardant plastic. White color.

Section II – Performance

- 2.1 LED Driver is UL Class 2 power unit as per UL1310. It is also listed in the UL Sign Accessory Manual.
- 2.2 LED Driver is certified by UL for use in a dry location.
- 2.3 LED Driver has Class A sound rating.
- 2.4 LED Driver tolerates sustained open circuit and short circuit output conditions without damage.
- 2.5 LED Driver maximum allowable case temperature is 85°C – see product label for measurement location.
- 2.6 LED Driver complies with FCC rules and regulations, as per Title 47 CFR Part 15 Non-Consumer (Class A) for EMI/RFI (conducted and radiated) at full load.

Section III – UL Conditions of Acceptability (File E220165)

When installed in the end product, consideration shall be given to the following:

- 3.1 This component has been judged on the basis of the required spacings in the Standard for Class 2 Power Units, UL 1310, Fourth Edition, which would cover the component itself if submitted for Listing.
- 3.2 The supply terminals and connectors are suitable for factory wiring only of solid or tinned stranded No. 18 AWG conductors.
- 3.3 The equipment was submitted and tested for a maximum manufacturer's recommended ambient (Tmra) of 40°C.
- 3.4 Leakage current measurements shall be performed when more than four LED drivers are used in the equipment or when the LED driver is used in combination with other equipment in the end-use product.
- 3.5 The drivers are intended for installation inside an electrical enclosure.
- 3.6 The ground connection is not suitable as the equipment ground for a sign. Separate provision for sign grounding must be provided.
- 3.7 The driver is suitable for dry location use.

Revised 09/15/2009

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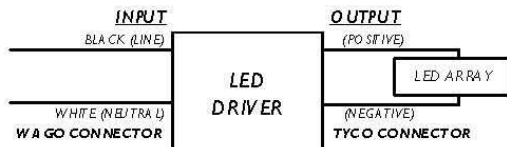


Electrical Specifications

LED-120A-0350C-33-F	
Brand Name	XITANIUM
Driver Type	Electronic
Input Voltage	120
Input Frequency	50/60Hz
RoHS	No
Status	Active

Max. Output Power (W)	Output Voltage (V)	Output Current (A)	Operating Temp. Range (°F/°C)	Input Current at 120V (A)	Max. Input Power (W)	Inrush Current (A _{pk} /μs)	Max. THD (%)	Min. Power Factor	Surge Protection (KV)	Weight (Lbs)	IP Rating
12	2.8-33.0	0.35	-40°~140°F (-40~60°C)	0.13	15.0	-	20	0.9	2.0	0.15/70	IP20

Wiring Diagram



Input is WAGO 2-position wire trap connector – use 18AWG solid or tinned stranded.
 Output is Tyco 2mm AMP CT connector (292132-2) – recommend harness 1365323-1 (supplied via Future Lighting Solutions, 1-888-589-3662)

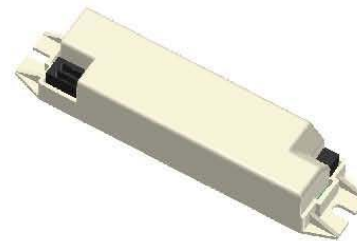
Standard Lead Length

	in.	cm.
Black		
White		
Blue		
Red		
Green		
Violet		

Maximum Wiring Distance (at full load)

Wire Size (AWG)	Distance (feet)
26	16
24	26
22	43
20	68
18	108
16	170
14	275
12	420
10	714

Enclosure



	in. (mm)
Case Length	4.33 (109)
Case Width	1.20 (30)
Case Height	0.87 (22)
Mounting Length	4.76 (120)
Mounting Width	0 (0)
Overall Length	5.24 (132)



**UL Class 2
E220165**



**7310_S-000
3426-32**

Revised 12/16/2010

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LED-120A-0350C-33-F	
Brand Name	XITANIUM
Driver Type	Electronic
Input Voltage	120
Input Frequency	50/60Hz
RoHS	No
Status	Active

Installation & Application Notes:

Section I – Physical Characteristics

- 1.1 LED Driver shall be installed inside an electrical enclosure.
- 1.2 Wiring inside electrical enclosure shall comply with 600V/105°C rating or higher.
- 1.3 Housing is made of UL94-V0 flame retardant plastic. White color.

Section II – Performance

- 2.1 LED Driver is UL Class 2 power unit as per UL1310. It is also listed in the UL Sign Accessory Manual.
- 2.2 LED Driver is certified by UL for use in a dry location.
- 2.3 LED Driver has Class A sound rating.
- 2.4 LED Driver tolerates sustained open circuit and short circuit output conditions without damage.
- 2.5 LED Driver maximum allowable case temperature is 85°C – see product label for measurement location.
- 2.6 LED Driver complies with FCC rules and regulations, as per Title 47 CFR Part 15 Non-Consumer (Class A) for EMI/RFI (conducted and radiated) at full load.

Section III – UL Conditions of Acceptability (File E220165)

When installed in the end product, consideration shall be given to the following:

- 3.1 This component has been judged on the basis of the required spacings in the Standard for Class 2 Power Units, UL 1310, Fourth Edition, which would cover the component itself if submitted for Listing.
- 3.2 The supply terminals and connectors are suitable for factory wiring only of solid or tinned stranded No. 18 AWG conductors.
- 3.3 The equipment was submitted and tested for a maximum manufacturer's recommended ambient (Tmra) of 25°C.
- 3.4 This unit is provided with a Class 105(A) insulation system. A temperature test is required when the unit is installed within an electrical enclosure or raceway.
- 3.5 Leakage current measurements shall be performed when more than four LED drivers are used in the equipment or when the LED driver is used in combination with other equipment in the end-use product.
- 3.6 The unit is intended for installation inside an electrical enclosure.

Revised 12/16/2010

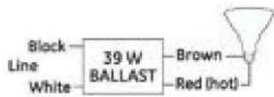
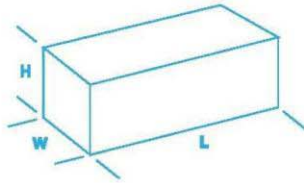
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74116 - GEMH39-MC-120

GE HID UltraMax™ eHID Electronic Low Frequency Ballast

- Light-weight, Low Profile Housing
- Superior low frequency square wave frequency design maximizes performance and life of ceramic metal halide lamps.
- Ultra slim can size for fixture design flexibility



GENERAL CHARACTERISTICS

Application	1- 39W M130 120V Micro Electronic HID
Category	High Intensity Discharge
Ballast Type	Electronic - Low Frequency
Line Voltage Regulation (+/-)	10 %
Ambient Temperature (MAX)	55 °C(13 °C)
Case Temperature	80 °C(176 °F)
Ballast Factor	Normal-High (1.0)
Sound Rating	A (20-24 decibels)
Enclosure Type	Plastic
Distance to Lamp	8 ft
Additional Info	End of Life Protection (EOL)/ Thermally protected

PRODUCT INFORMATION

Product Code	74116
Description	GEMH39-MC-120
Standard Package	Case
Standard Package GTIN	10043168741160
Standard Package Quantity	10
Sales Unit	Case
No Of Items Per Sales Unit	1
No Of Items Per Standard Package	10
UPC	043168741163

DIMENSIONS

Case dimensions			
Length (L)		3.0 in(75.95 mm)	
Width (W)		1.3 in(33.02 mm)	
Height (H)		1.1 in(27.94 mm)	
Mounting dimensions			
Weight		0.38 lb	
Exit Type		Side	
Remote Mounting Distance		8 ft	
Remote Mounting Wire Gauge		18 AWG	
Lead lengths	Qty	Exit	Length (± 1 in.)
White	1	Left	6 (152mm)
Red	1	Left	6 (152mm)
Brown	1	Left	6 (152mm)
Black	1	Left	6 (152mm)

ELECTRICAL CHARACTERISTICS

Lamp Operating Frequency	133 Hz
--------------------------	--------

SAFETY & PERFORMANCE

- cUL Listed
- UL Listed
- RoHS Compliant
- ANSI - C82.14-2006
- UL94V0 Flame Retardant
- Short Circuit Protection
- Inherent Thermal Protection

SPECIFICATIONS BY LAMP & LINE VOLTAGE

Lamp # of Lamps by Line	Specifications by Line Voltage	System Wattage	Nominal Current	Ballast Factor	Ballast Efficiency	Max.Input Current	Starting Current	Open Circuit Voltage	Drop Out Voltage	Power factor	Min.starting temperature	Fuse rating	UL bench top rise
M130	1 120	43.0		1	0.907	0.39A		4000V	96V	0.99	0.0°F	1 1/2	

CAUTIONS & WARNINGS

Caution

-
-

NOTES

- Not designed for recessed applications.
- 150C rated lead wires
- Short Circuit Protection
- Do not connect Brown or Red wires to ground

WARRANTY INFORMATION

GE Lighting warrants to the purchaser that each ballast will be free from defects in material or workmanship for period as defined in the attached documents from the date of manufacture when properly installed and under normal conditions of use.

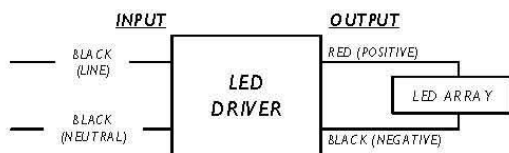


LED-UNIA-0700C-12-F	
Brand Name	XITANIUM
Driver Type	Electronic
Input Voltage	120~230V
Input Frequency	50/60 hZ
RoHS	Yes
Status	Active

Electrical Specifications

Max. Output Power (W)	Output Voltage (V)	Output Current (A)	Operating Temp. Range (°F/°C)	Input Current at 120V (A)	Max. Input Power (W)	Inrush Current (A _{pk} /μs)	Max. THD (%)	Min. Power Factor	Surge Protection (KV)	Weight (Lbs)	IP Rating
8.0	2.4~12	0.70	14°~104°F (-10~40°C)	0.25	15	-	20	0.5	-	0.13/60	IP20

Wiring Diagram



Input and Output use lead-wires.
Lead-wires are 20AWG 80C/300V stranded copper

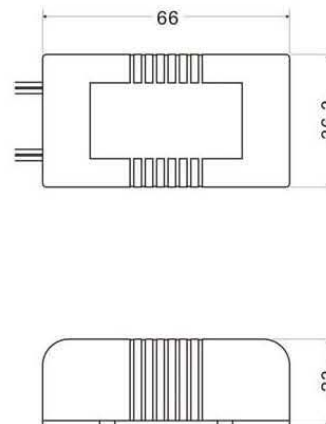
Standard Lead Length

	in.	cm.
Black	4	10
White		
Blue		
Red	4	10
Gray		
Violet		

Maximum Wiring Distance (at full load)

Wire Size (AWG)	Distance (feet)
26	8
24	13
22	21
20	34
18	54
16	85
14	137

Enclosure



**UL Class 2
E215167**

Revised 06/15/2009

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LED-UNIA-0700C-12-F	
Brand Name	XITANIUM
Driver Type	Electronic
Input Voltage	120~230V
Input Frequency	50/60 hZ
RoHS	Yes
Status	Active

Installation & Application Notes:

Section I – Physical Characteristics

- 1.1 LED Driver shall be installed inside an electrical enclosure.
- 1.2 Wiring inside electrical enclosure shall comply with 600V/105°C rating or higher.

Section II – Performance

- 2.1 LED Driver tolerates sustained open circuit and short circuit output conditions without damage.
- 2.2 LED Controller maximum allowable case temperature is 69°C.

Section III – UL Conditions of Acceptability (File E215167)

When installed in the end product, consideration shall be given to the following:

- 3.1 This component has been judged on the basis of the required spacings in the Standard for Class 2 Power Units, UL 1310, Par. 24.5 to Par. 24.9, UL840, Table 9.1 and the Canadian Standard for Power Supplies with Extra-Low-Voltage Class 2 outputs, CAN/CSA 22.2 No. 223-M91, Table 2 and Table 3.
- 3.2 This power supply was intended for use in indoor use equipment only.
- 3.3 This transformer employs Class 105(a) insulation.
- 3.4 These components shall be installed in compliance with the enclosure and mounting requirements of the ultimate application.
- 3.5 The input and output leads are minimum No. 20 AWG, rated 300V, 80°C. The suitability of input and output connections shall be determined in each end use application.
- 3.6 The strain relief, mold stress relief distortion and impact tests have not been investigated. The flammability of enclosure material under investigation is V-2. The suitability of the enclosure as ultimate enclosure shall be determined in the end-use application.
- 3.7 The maximum temperature measured on enclosure surface was 69°C during the Temperature test. The necessity of repeat Temperature Test shall be determined in each end-use application.
- 3.8 The necessity of repeated Leakage Current Test shall be determined in each end-use application.

Revised 06/15/2009

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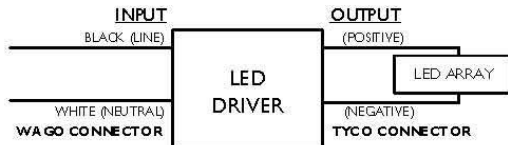


LED-I20A-0700C-24-F	
Brand Name	XITANIUM
Driver Type	Electronic
Input Voltage	120
Input Frequency	50/60Hz
RoHS	No
Status	Active

Electrical Specifications

Max. Output Power (W)	Output Voltage (V)	Output Current (A)	Operating Temp. Range (°F/°C)	Input Current at 120V (A)	Max. Input Power (W)	Inrush Current (A _{pk} /µs)	Max. THD (%)	Min. Power Factor	Surge Protection (KV)	Weight (Lbs)	IP Rating
17	2.8~24.0	0.7	-40°~140°F (-40~60°C)	0.18	21.5	-	20	0.9	2.0	0.15/70	IP20

Wiring Diagram



Input is WAGO 2-position wire trap connector – use 18AWG solid or tinned stranded.
 Output is Tyco 2mm AMP CT connector (292132-2) – recommend harness 1365323-1 (supplied via Future Lighting Solutions, 1-888-589-3662)

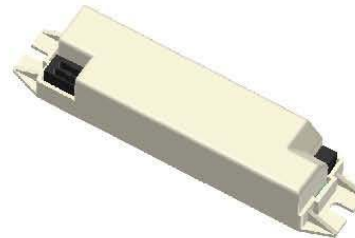
Standard Lead Length

	in.	cm.
Black		
White		
Blue		
Red		
Green		
Violet		

Maximum Wiring Distance (at full load)

Wire Size (AWG)	Distance (feet)
26	8
24	13
22	21
20	34
18	54
16	85
14	137
12	210
10	357

Enclosure



	in. (mm)
Case Length	4.33 (109)
Case Width	1.20 (30)
Case Height	0.87 (22)
Mounting Length	4.76 (120)
Mounting Width	0 (0)
Overall Length	5.24 (132)



UL Class 2
E220165



7310_S-000
3426-32

Revised 07/15/2009

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LED-I20A-0700C-24-F	
Brand Name	XITANIUM
Driver Type	Electronic
Input Voltage	120
Input Frequency	50/60Hz
RoHS	No
Status	Active

Installation & Application Notes:

Section I – Physical Characteristics

- 1.1 LED Driver shall be installed inside an electrical enclosure.
- 1.2 Wiring inside electrical enclosure shall comply with 600V/105°C rating or higher.
- 1.3 Housing is made of UL94-V0 flame retardant plastic. White color.

Section II – Performance

- 2.1 LED Driver is UL Class 2 power unit as per UL1310. It is also listed in the UL Sign Accessory Manual.
- 2.2 LED Driver is certified by UL for use in a dry location.
- 2.3 LED Driver has Class A sound rating.
- 2.4 LED Driver tolerates sustained open circuit and short circuit output conditions without damage.
- 2.5 LED Driver maximum allowable case temperature is 85°C – see product label for measurement location.
- 2.6 LED Driver complies with FCC rules and regulations, as per Title 47 CFR Part 15 Non-Consumer (Class A) for EMI/RFI (conducted and radiated) at full load.

Section III – UL Conditions of Acceptability (File E220165)

When installed in the end product, consideration shall be given to the following:

- 3.1 This component has been judged on the basis of the required spacings in the Standard for Class 2 Power Units, UL 1310, Fourth Edition, which would cover the component itself if submitted for Listing.
- 3.2 The supply terminals and connectors are suitable for factory wiring only of solid or tinned stranded No. 18 AWG conductors.
- 3.3 The equipment was submitted and tested for a maximum manufacturer's recommended ambient (T_{mra}) of 25°C.
- 3.4 This unit is provided with a Class 105(A) insulation system. A temperature test is required when the unit is installed within an electrical enclosure or raceway.
- 3.5 Leakage current measurements shall be performed when more than four LED drivers are used in the equipment or when the LED driver is used in combination with other equipment in the end-use product.
- 3.6 The unit is intended for installation inside an electrical enclosure.

Revised 07/15/2009

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For 55W FT5 Lamps

No. of Lamps	Input Volts	Starting Method	Ballast Family	Catalog Number	Max/Min		Full Light Output		Min. Starting Temp (F/C)	Dim.	Wiring Diagram
					Input Power ANSI (Watts)	Ballast Factor	THD %	Line Current (Amps)			
FT55W/2G11 - 55W Long Twin Tube Lamp (PL-L55W, F55BX, FT55DL)											
1	120-277	PS	ROVR	IDA-154	59/13	0.90/0.03	10	0.50-0.22	50/10	D	58B
2	120-277	PS	ROVR	IDA-2S54	114/24	0.90/0.03	10	0.96-0.42	50/10	D	59B

Ballasts utilizing poke-in connectors can accept wire gauge AWG 16-20.
 Some lamp manufacturers recommend burning in new lamps 100 hours at full light output prior to dimming. Consult lamp manufacturer.

For 14W - 28W T5 Lamps

No. of Lamps	Input Volts	Starting Method	Ballast Family	Catalog Number	Max/Min		Full Light Output		Min. Starting Temp (F/C)	Dim.	Wiring Diagram
					Input Power ANSI (Watts)	Ballast Factor	THD %	Line Current (Amps)			
F14T5 (14W)											
1	120-277	PS	ROVR	IDA-128-D*	19/6	1.00/0.03	10	0.15-0.07	50/10	D	55B
2	120-277	PS	ROVR	IDA-2S28-D*	34/9	1.00/0.03	10	0.29-0.12	50/10	D	56B
F21T5 (21W)											
1	120-277	PS	ROVR	IDA-128-D*	25/6	1.00/0.03	10	0.20-0.09	50/10	D	55B
2	120-277	PS	ROVR	IDA-2S28-D*	49/10	1.00/0.03	10	0.42-0.18	50/10	D	56B
F25T5 (28W/ES)											
1	120-277	PS	ROVR	IDA-128-D*	30/7	1.00/0.03	10	0.25-0.11	50/10	D	55B
2	120-277	PS	ROVR	IDA-2S28-D*	59/12	1.00/0.03	10	0.51-0.21	50/10	D	56B
F28T5 (28W)											
1	120-277	PS	ROVR	IDA-128-D*	32/7	1.00/0.03	10	0.27-0.12	50/10	D	55B
2	120-277	PS	ROVR	IDA-2S28-D*	63/12	1.00/0.03	10	0.57-0.22	50/10	D	56B

Ballasts utilizing poke-in connectors can accept wire gauge AWG 16-20.
 Some lamp manufacturers recommend burning in new lamps 100 hours at full light output prior to dimming. Consult lamp manufacturer.
 *Consult factory for availability. Current specifications are subject to change please contact your local sales representative for further details.

Dimensions

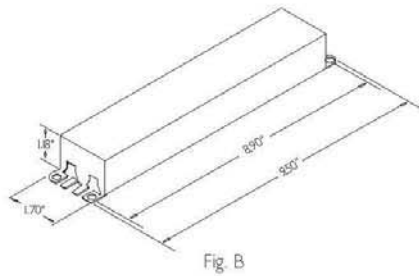


Fig. B

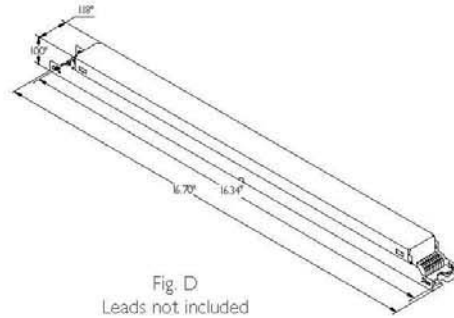


Fig. D
Leads not included

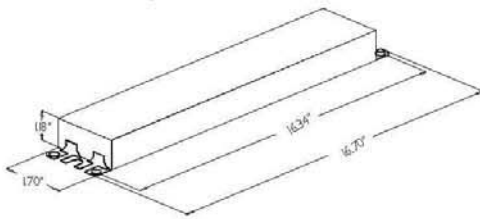


Fig. G

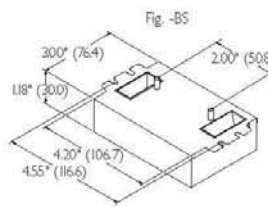


Fig.-BS

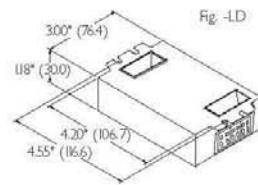
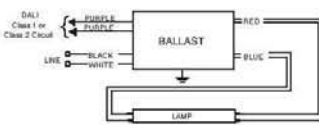


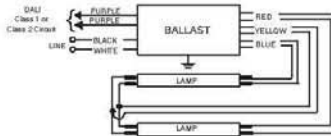
Fig.-LD

Size 5

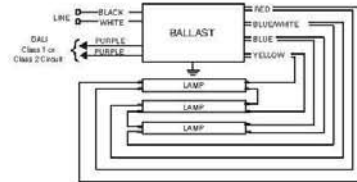
Wiring Diagrams



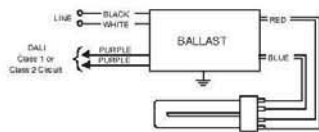
1-Lamp T8 & T5/HO Ballast - Fig. 55B



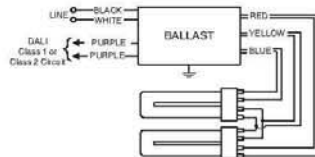
2-Lamp T8 & T5/HO Ballast - Fig. 56B



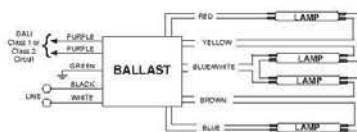
3-Lamp T8 Ballast - Fig. 57B



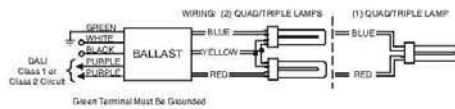
1-Lamp Long Twin Tube Ballast - Fig. 58B



2-Lamp Long Twin Tube Ballast - Fig. 59B



4-Lamp T8 Ballast - Fig. 167



1 & 2 -Lamp CFL Ballast - Fig. 165

Ballast Specification

Section I - Physical Characteristics

- 1.1 Ballast shall be physically interchangeable with standard electromagnetic or standard electronic ballasts, where applicable.
- 1.2 Ballast shall be available in a plastic/metal can or all metal can construction to meet all plenum requirements.
- 1.3 Ballast shall be provided with poke-in wire trap connectors or integral leads color coded per ANSI C82.11.

Section II - Performance Requirements

- 2.1 Ballast shall be Programmed Start.
- 2.2 Ballast shall be provided with integral protection circuitry to withstand connection of low voltage control leads to mains power supply. In this event, ballast shall default to maximum light output.
- 2.3 Ballast shall contain auto restart circuitry in order to restart lamps without resetting power.
- 2.4 Ballast shall operate from 50/60Hz input source of 120V or 277V with sustained variations of +/-10% (voltage and frequency) with no damage to the ballast. IntelliVolt models shall operate from 50/60Hz input source of 120V through 277V with sustained variations of +/-10% (voltage and frequency) with no damage to the ballast.
- 2.5 Ballast shall be high frequency electronic type and operate lamps at a frequency above 42kHz to avoid interference with infrared devices and eliminate visible flicker.
- 2.6 Ballast shall have a Power Factor greater than 0.98 at full light output and greater than 0.90 throughout the dimming range for primary lamp.
- 2.7 Ballast shall have a minimum ballast factor of 1.00 at maximum light output and 0.03 at minimum light output for primary lamp.
- 2.8 Ballast shall provide for a Lamp Current Crest Factor of 1.7 or less throughout the dimming range in accordance with lamp manufacturer recommendations.
- 2.9 Ballast input current shall have Total Harmonic Distortion (THD) of less than 10% when operated at nominal line voltage with primary lamp.
- 2.10 Ballast shall have a Class A sound rating.
- 2.11 Ballast shall have a minimum starting temperature of 10°C (50° F) for primary lamp.
- 2.12 Ballast shall provide Lamp EOL Protection Circuit for all T5, T5/HO, and CFL lamps.

- 2.13 Ballast shall control lamp light output from 100% - 3% relative light output for T8 and CFL lamps and 100% - 1% relative light output for T5/HO lamps.
- 2.14 Ballast shall ignite the lamps at any light output setting without first going to another output setting.
- 2.15 Ballast shall tolerate sustained open circuit and short circuit output conditions without damage.

Section III - Regulatory Requirements

- 3.1 Ballast shall not contain any Polychlorinated Biphenyl (PCB).
- 3.2 Ballast shall be Underwriters Laboratories (UL) listed, Class P and Type 1 Outdoor; and Canadian Standards Association (CSA) certified where applicable.
- 3.3 Ballast shall comply with ANSI C62.41 Category A for Transient protection.
- 3.4 Ballast shall comply with ANSI C82.11 where applicable.
- 3.5 Ballast shall comply with the requirements of the Federal Communications Commission (FCC) rules and regulations, Title 47 CFR part 18, Non-Consumer (Class A) for EMI/RFI (conducted and radiated).

Section IV - Other

- 4.1 Ballast shall be manufactured in a factory certified to ISO 9002 Quality System Standards.
- 4.2 Ballast shall carry a ___ limited warranty from date of manufacture against defects in material or workmanship. This warranty is conditioned upon operation at a maximum case temperature of _____, among other items. (Go to our website for up-to-date warranty information, www.philips.com/advancewarranty).
- 4.3 Manufacturer shall have a twenty-year history of producing electronic ballasts for the North American market.
- 4.4 Ballast shall be controlled by a Class 1 or Class 2 low voltage DALI controller.
- 4.5 Ballast shall be Philips Advance part # _____ or approved equal.



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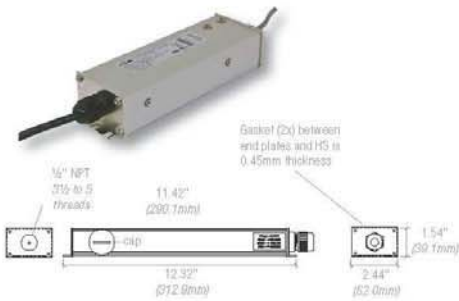
Form No. EL-2230-E

Philips Lighting Electronics N.A.
10275 West Higgins Road
Rosemont, IL 60018
Tel: 800-322-2086 Fax: 888-423-1882
Customer Support/Customer Care: 800-372-3331
OEM Support: 866-915-5886
www.philips.com/advance

60-Watt Driver

WITH DIMMING OPTION
IO PART#: DR60MGD

WITHOUT DIMMING OPTION
IO PART#: DR60MGND



Note: For higher IP enclosure alternatives contact io Lighting for availability.

REMOTE DISTANCE	
7'-0" (2.1m)	w/22AWG
18'-0" (5.5m)	w/18AWG
46'-0" (14m)	w/14AWG
71'-0" (21.6m)	w/12AWG

Key Features

- Integrated dimming available
- Requires separate enclosure
- Enclosure is 13"x 3"x 3"
- Built in wiring compartments for easy installation

Specifications

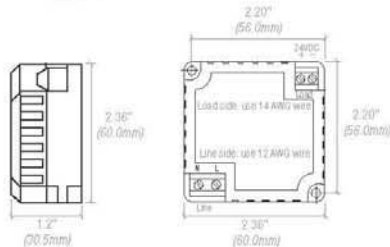
Location: **Wet IP66 w/ enclosure**
 Output Voltage: **24v DC**
 Output Power: **60w**
 Input Voltage: **90 to 264 VAC**
 Frequency: **47 to 63 HZ**
 Ambient Temp: **-30°C to +70°C**
 Dimming: **Integrated Available**

60W	Max Run Length in Series	Max Run Lengths in Parallel
line .75 - SO	16'	20.5'
line .75 - MO	9'	11'
line .75 - HO and color	6'	7.5'
line 1.5 - SO	16'	19.5'
line 1.5 - MO	7.5'	10.5'
line 1.5 - HO	6'	7.5'
LEDge - SO	9'	11'
LEDge - HO	6'	7.5'
luxrail - SO	33'	41.5'
luxrail - HO and color	6'	7.5'
line 2.0 - SO	10.5'	10.5'
line 2.0 - HO	7.5'	7.5'
line 2.0 - VHO	4.5'	4.5'

**277 NOT AVAILABLE
ENCLOSURE REQUIRED**

20-Watt Driver

IO PART#: DR20OS



Note: For higher IP enclosure alternatives contact io Lighting for availability.

REMOTE DISTANCE	
7'-0" (2.1m)	w/22AWG
18'-0" (5.5m)	w/18AWG
46'-0" (14m)	w/14AWG
71'-0" (21.6m)	w/12AWG

Key Features

- Small enclosure size
- Light weight, low profile
- Short circuit and overload protection
- Low power supply losses

Specifications

Location: **Dry**
 Output Voltage: **24v DC**
 Output Power: **20w**
 Input Voltage: **120 to 240 VAC**
 Frequency: **50 to 60 HZ**
 Ambient Temp: **-20°C to +50°C**
 Weight: **.21 lbs**
 Dimming: **Yes w/ 250IOXFDIM**

20W	Max Run Length in Series	Max Run Lengths in Parallel
line .75 - SO	6.5'	6.5'
line .75 - MO	3.5'	3.5'
line .75 - HO and color	2.5'	2.5'
line 1.5 - SO	6'	6'
line 1.5 - MO	3'	3'
line 1.5 - HO	3'	3'
LEDge - SO	3.5'	3.5'
LEDge - HO	2.5'	2.5'
luxrail - SO	13'	13'
luxrail - HO and color	2.5'	2.5'
line 2.0 - SO	3'	3'
line 2.0 - HO	1.5'	1.5'
line 2.0 - VHO	1.5'	1.5'

277 NOT AVAILABLE

