

## APPENDIX A

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Luminaire Schedule

Luminaire Cutsheets

Lamp Schedule

Lamp Cutsheets

Ballast Schedule

Ballast Cutsheets

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## Complete Luminaire Schedule

Location: UCSB Student Resource Building

Type	Quantity	Catalog No.	Lamping / Ballast	Watts/ Fixture	Ballast/ fixture	Voltage
F1	 277	<b>Ambisol UK, SlabLight™</b> (0.5 x 1 FT) Surface-mounted LED panel w/ non transparent fascia	(L1) White Philips LumiLeds	1	-	277 V
F2	 22	<b>Color Kinetics, Colorblast</b> 123-000005-00	36 High intensity RGB LEDs	50	-	277 V
F3A	 10	<b>Zumtobel, "Spec-3": S3D4360-S2-4660TC</b> Recessed Adjustable Low Voltage Halogen Downlight	1 - (L3) GE Lighting 20843 Q50MR16/C/NFL25	71	-	12 V
F3B	 4	Zumtobel, "Spec-3": S3D4360-S2-4660TC	1- (L4) GE Lighting 20826 Q35MR16/C/SP20	35	-	12 V
F4	 16	<b>Zumtobel, "Synto T5": SY5U-14-2285-W-DE277</b> (1 x 4 FT) Recessed Fixture	2 - (L5) GE Lighting 39982 F28W/T5/830/ECO	66	1 - (B2) Lutron Eco-10: ECO-T528-277-2	277V
F5	 10	<b>Bega 8945MH</b> Linear Ceramic Metal Halide Luminaire	1- (L2) GE Lighting 20017 CMH/T/U/942/G12	173	1 - (B1) Advance Transformers: 71A5437BP	277V
F6	 177	<b>IO Lighting, Lux Rail</b> 0-06-SSS-1-PM-GL-45-5K-1-277-I	9 LEDs (6 warm white, 3 cool white)	8	-	277V
F7	 8	<b>Selux, "M100": M1RS-1T5HO-OD-RC-008-WH-277-DM</b> Thin Profile Recessed Fixture	1 - (L5) GE Lighting 39982 F28W/T5/830	33	1 - (B2) Lutron Eco-10: ECO-T528-277-2	277V
F8	 4	<b>Zumtobel, "Light Fields HE": LFHU-14-2545-MP-DH277</b> (1 x 4 FT) Recessed Fixture	2 - (L8) GE Lighting 90232 F54W/T5/830	125	1 - (B4) Lutron Eco-10: ECO-T554-277-2	277
F9	 9	<b>IO Lighting, Line Series 2.0</b> 0-04-I-3k-90-100-1-18-2-4	LEDs (warm white)	15	-	277
E1	 4	<b>Bega 8945MH</b> Linear Ceramic Metal Halide Luminaire	1- (L2) GE Lighting 20017 CMH/T/U/942/G12	173	1 - (B1) Advance Transformers: 71A5437BP	277V
E2	 15	<b>Bega 8083</b> Small scale drive over low voltage halogen uplight	1- (L6) GE Lighting 42959 Q5T3/CL	5	-	277V
E3	 4	<b>Bega 4096P</b> Linear fluorescent wall mount fixture	1 - (L7) Philips Lighting 347476 PL-L 50W/830/4P RS	54	1 - (B3) Advance Transformers: REL-1TTS50	277V

**An innovative and beautifully engineered solution with a completely even spread of light - our unique patented design means that light sources are totally invisible.**

**No more hot spots behind fascias.**

### **Applications**

Outdoor and indoor signage

Almost any size

Reception areas and foyers

Entertainment areas

Public areas

Point of sale signage



### **Features and Benefits**

- Beautiful clean white light
- Smooth transition on colour systems
- Multiple design possibilities
- Choice of transparent or non-transparent fascia
- Very thin robust lighting system
- Low maintenance costs
- Minimal environmental pollution
- Improved public and installer safety

Ambisol, UK

## **UCSB Student Resource Building**

Luminaire Cutsheet

**Type:** F1

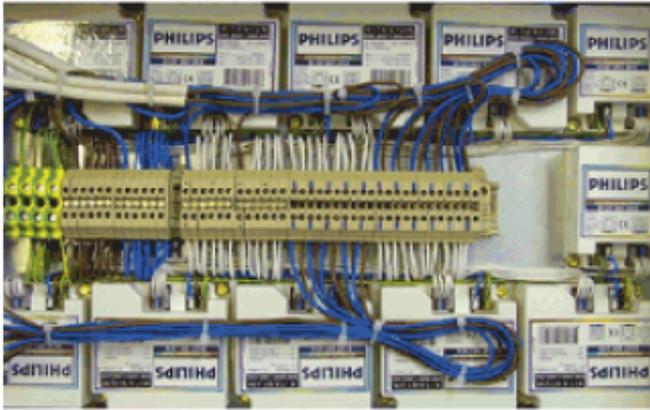
Issue: 4.12.07

1 of 2

Associated with: L1

**Our patented Slablight™ system is a high quality and large scale edge lit system giving a beautiful even illumination over areas several times that previously possible.**

**Designed to take advantage of the latest advances in LED technology Slablight™ is manufactured in-house using components from Tier 1 suppliers.**



LEDs are mounted on our own specially designed PCB's that are thermally efficient, resulting in the best output per watt possible from the LEDs. These high current PCB's are capable of being interlinked in many combinations so that the wiring may be minimized without compromising the efficiency of the system.

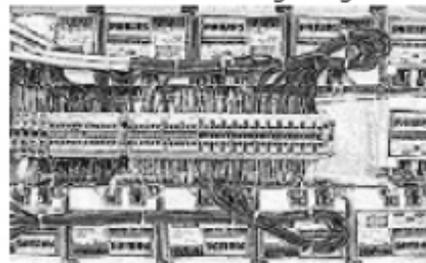
The LEDs are mated to the optical plane using our patented collimating optics to ensure best transfer of light.

The optical planes are also manufactured by us from a variety of acrylic or polycarbonate sheets dependant on application. These are available in industry standard sizes up to 3 metres tall and may be mounted side-by-side to achieve any width. Any non-standard sizes or larger projects can be manufactured to order.

Power supplies are installed to the LED manufacturers' specification.

#### **Technical details**

- **Sizes available**  
Height 3m max  
Any width, normally in 250mm or 333mm increments  
System thickness under 30mm including the LEDs
- **Indoor and outdoor versions**
- **Power consumption**  
Dependant on required brightness and colour  
Typically between 10W and 20W per square metre dependant on application
- **Colours available**  
Red, green, blue, cyan, royal blue, red-orange, amber and white
- **Cost savings**  
Major reductions on maintenance costs due to the long service life of LEDs
- **Energy saving**  
Possibly up to 90 percent compared with fluorescent lighting



Ambisol, UK

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## **UCSB Student Resource Building**

Luminaire Cutsheet

**Type:** F1

Issue: 4.12.07

2 of 2

Associated with: L1

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# COLORBLAST 12 POWERCORE



ColorBlast® 12 Powercore is a marriage of Color Kinetics' popular ColorBlast 12 fixture and Powercore® technology. This product combines rich, saturated wall washing color and color changing effects with high-performance, operational efficiency, and simplified installation.

Powercore technology is a digital power processing technology to drive LED systems, integrating power and data management directly into the fixture and eliminating the need for an external power supply. Powercore surpasses traditional power supply technology by streamlining multiple conversion and regulation stages into a single, flexible, microprocessor-controlled power stage that controls power output to LED systems directly from line voltage and significantly increases overall system efficiency. Built-in active power factor correction (PFC) yields higher system efficiencies and minimizes stress on building wiring, making the installation and system more cost effective.

Projecting a soft-edge beam of light, ColorBlast 12 Powercore is a sealed product designed for both indoor and outdoor installations. The fixture is fully enclosed in a stylish and rugged die-cast aluminum housing and meets or exceeds specifications for use in wet locations. ColorBlast 12 Powercore has a single 4 conductor cable and attaches to standard junction boxes with 3.5" center-to-center hole spacing. The pre-assembled mounting base provides smooth, friction-free rotation. The base is designed to simplify installation by minimizing parts and allowing for after-installation rotation, eliminating the need for precise junction box positioning. With up to 350° rotation, the locking base swivel, along with 110° locking fixture rotation, offers a versatile range of light positioning. Four mounting screws ensure a water-tight, maximum longevity seal.

ColorBlast 12 Powercore receives data via Color Kinetics' Data Enabler—a data formatting device that accepts DMX or Color Kinetics® Light System Manager (LSM) Ethernet protocol. A ColorBlast 12 Powercore Installation Tool is available to calculate the number of fixtures per Data Enabler for specific installations. The following is a sample: In an installation using a 60 foot (18.3 m), 12AWG leader cable with 12AWG, 5 feet of cable between fixtures, each Data Enabler can support to 25 fixtures at 120VAC (15A), 34 fixtures at 120VAC (20A), or 60 fixtures at 240VAC (20A). ColorBlast 12 Powercore can be controlled by Color Kinetics' line of controllers, including Light System Manager, or a third-party DMX controller.

## CHROMACORE<sup>®</sup>

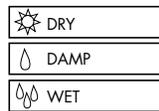
BY COLOR KINETICS

## POWERCORE<sup>®</sup>

BY COLOR KINETICS

## OPTIBIN<sup>®</sup>

BY COLOR KINETICS



## COLORBLAST 12 POWERCORE SPECIFICATIONS

<b>COLOR RANGE</b>	16.7 million (24bit) additive RGB colors; continuously variable intensity
<b>SOURCE</b>	36 High intensity RGB LEDs
<b>BEAM ANGLE</b>	10° clear lens, 23° ground lens
<b>HOUSING</b>	Die cast aluminum, powder coated
<b>LENS</b>	Soft-focus tempered glass or clear tempered glass
<b>CONNECTORS</b>	Unified power and data cable
<b>LISTINGS</b>	UL/cUL, CE

## COMMUNICATION SPECIFICATIONS

<b>DATA INTERFACE</b>	Color Kinetics Data Enabler
<b>CONTROL</b>	Color Kinetics full line of controllers including Light System Manager or other DMX512 (RS485) sources

## ELECTRICAL SPECIFICATIONS

<b>INPUT</b>	100-240VAC, 50-60 Hz
<b>POWER CONSUMPTION</b>	50W @ 110-240VAC (60W @ 100VAC)
<b>POWER FACTOR</b>	0.95 or greater @ 120VAC

## ENVIRONMENTAL SPECIFICATIONS

<b>TEMPERATURE RANGE</b>	-40°F to 122°F (-40°C to 50°C) operating temperature -4°F to 122°F (-20°C to 50°C) starting temperature
<b>PROTECTION RATING</b>	IP66 (Suitable for wet locations.)

## LED SOURCE LIFE

In traditional lamp sources, lifetime is defined as the point at which 50% of the lamps fail. This is also termed Mean Time Between Failure [MTBF]. LEDs are semiconductor devices and have a much longer MTBF than conventional sources. However, MTBF is not the only consideration in determining useful life. Color Kinetics uses the concept of useful light output for rating source lifetimes. Like traditional sources, LED output degrades over time (lumen depreciation) and this is the metric for SSL lifetime. LED lumen depreciation is affected by numerous environmental conditions such as ambient temperature, humidity, and ventilation. Lumen depreciation is also affected by means of control, thermal management, current levels, and a host of other electrical design considerations. Color Kinetics systems are expertly engineered to optimize LED life when used under normal operating conditions. Lumen depreciation information is based on LED manufacturers' source life data as well as other third party testing. Low temperatures and controlled effects have a beneficial effect on lumen depreciation. Overall system lifetime could vary substantially based on usage and the environment in which the system is installed. Temperature and effects will affect lifetime. Color Kinetics rates product lifetime using lumen depreciation to 50% of original light output. When the fixture is running at room temperature using a color wash effect, the range of lifetime is in the range of 80,000-100,000 hours. This is LED manufacturers' test data. High output is defined as any LED device that is 1/2 watt or above. For more detailed information on source life, please see [www.colorkinetics.com/lifetime](http://www.colorkinetics.com/lifetime).

- ITEM# 123-000005-00 (UL, White, Frosted Lens)
- 123-000005-01 (UL, Black, Frosted Lens)
- 123-000005-02 (EU, White, Frosted Lens)
- 123-000005-03 (EU, Black, Frosted Lens)
- 123-000005-04 (UL, White, Clear Lens)
- 123-000005-05 (UL, Black, Clear Lens)
- 123-000005-06 (EU, White, Clear Lens)
- 123-000005-07 (EU, Black, Clear Lens)

This product is protected by one or more of the following patents: U.S. Patent Nos. 6,016,038, 6,150,774 and other patents listed at <http://colorkinetics.com/patents/>. Other patents pending.

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BRO166 Rev 03

Specifications subject to change without notice. Refer to [www.colorkinetics.com](http://www.colorkinetics.com) for the most recent data sheet versions.

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UCSB Student Resource Building  
Luminaire Cutsheet

Type: F2

Issue: 4.12.07

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Associated with:

# COLORBLAST 12 POWERCORE - CLEAR LENS

## PHOTOMETRIC PERFORMANCE

Photometric data is based on test results from an independent testing lab.

### SOURCE SPECIFICATIONS

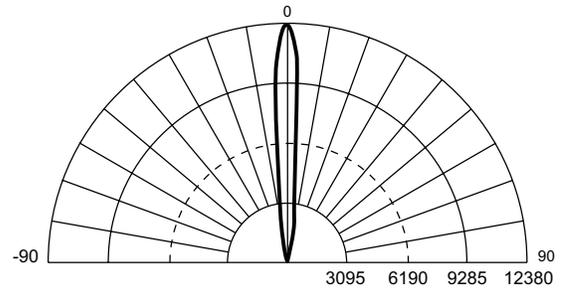
Optics: Clear tempered glass lens  
 Source: 36 LEDs (12 Red, 12 Green, 12 Blue)  
 Beam Angle: 10 degrees  
 Distribution: Symmetric direct illumination

### ILLUMINANCE DISTRIBUTION

2.1 22.6	3.4 36.6	4.2 45.2	3.8 40.9	2.7 29.1	1.8 19.4	6.0'/2.0m 5.0'/1.5m 4.0'/1.2m 3.0'/1.0m 2.0'/0.6m 1.0'/0.3m
2.8 30.1	8.3 89.3	13.3 143.2	9.8 105.5	4.4 47.4	2.3 24.8	
3.6 38.8	27.8 299.2	54.3 584.5	36.8 396.1	9.6 103.3	2.9 31.2	
3.7 39.8	29.8 320.8	75.9 817.0	74.7 804.1	28.6 307.9	3.6 38.8	
3.0 32.3	11.0 118.4	40.9 440.2	58.5 629.7	29.3 315.4	3.8 40.9	
2.6 28.0	4.7 50.6	11.7 125.9	16.5 177.6	9.9 106.6	3.0 32.3	
3.0'/1.0m		0'/0m		3.0'/1.0m		

Units: Footcandles (top)/Lux (bottom)  
 10.8 lux = 1 fc  
 Measured on: All, reflectance model 80/50/20%  
 Distance from surface: Bottom center of grid, 3' (1.0 m) from surface, light at a 45° angle off horizontal

### CANDLE POWER DISTRIBUTION



Measured on: White  
 Beam center: 12380 cd  
 Thin dashed lined: Indicates 50% of peak  
 Multipliers: 0.31 Red, 0.40 Green, 0.21 Blue

### ILLUMINANCE

COLOR	3'	6'	9'	15'
	1m	2m	3m	5m
WHITE	1369.0	341.0	151.0	54.6
	14735.9	3670.5	1625.4	587.7
RED	424.4	105.7	46.8	16.9
	4568.1	1137.9	503.9	182.2
GREEN	547.6	136.4	60.4	21.8
	5894.4	1468.2	650.1	235.1
BLUE	287.5	71.6	31.7	11.5
	3094.5	770.8	341.3	123.4

Measured in Footcandles (top)/Lux (bottom) on axis.  
 Measured on: All, reflectance 0.

### LIGHT OUTPUT

COLOR	TOTAL OUTPUT (lumens)	POWER (Watts)	EFFICACY (Lm/W)
WHITE	660	50.0	13.2
RED	204.6	15.6	13.1
GREEN	264.0	21.7	12.2
BLUE	138.6	21.7	6.4

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UCSB Student Resource Building  
 Luminaire Cutsheet

Type: F2

Issue: 4.12.07

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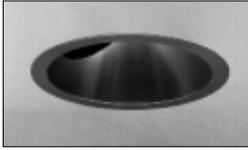
Associated with:

# SPEC-3

## Recessed Low Voltage Halogen (1) MR-16, 75W max.

## Open Aperture Adjustable Downlight

4"



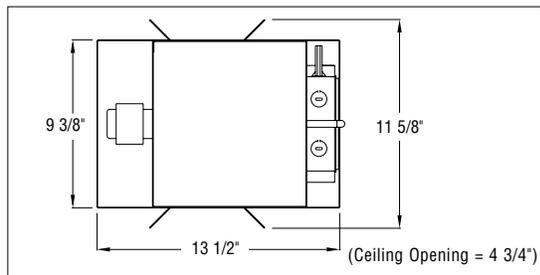
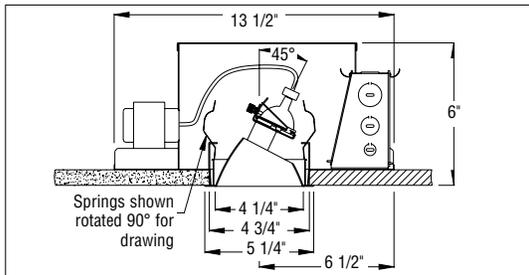
**Applications:** This low voltage luminaire offers excellent brightness control in a 4" aperture. Suitable for use in retail, hotel and office areas. This recessed adjustable downlight provides powerful illumination power with adjustable lamp position.

Type: \_\_\_\_\_

Project: \_\_\_\_\_

ORDERING NOTE: Complete unit consists of rough-in and trim section. Indicate ballast/voltage, trim and options.

▼ Rough-In	▼ Ballast/Voltage	▼ Trim	▼ Options
<b>S3D4360</b>		<b>4660T</b>	
<b>S3D4360</b> (1) MR-16 75W max.	<b>V</b> 120v/277v Dual Tap Magnetic <b>V3</b> 347v Magnetic <b>S1</b> 120v Electronic <b>S2</b> 277v Electronic	<b>4660TC</b> Clear Specular Reflector <b>4660TMC</b> Matte Clear Alzak® Reflector <b>4660TMG</b> Matte Champagne Gold Alzak® Reflector <b>4660TMP</b> Matte Pewter Alzak® Reflector <b>4660TMS</b> Matte Straw Alzak® Reflector <b>4660TMW</b> Matte Wheat Alzak® Reflector <b>4360TWB</b> White Ridged Baffle <b>4360TB</b> Black Ridged Baffle (for colors of specular reflectors, consult factory)	<b>F</b> Fusing <b>W</b> White painted reflector flange <b>9930</b> Set of two 27" C-channel mounting bars <b>9952</b> Set of two 52" C-channel mounting bars <b>9954</b> Set of two 28" universal mounting bars with ceiling grid mounting clips <b>9956</b> Set of two 28" 10 ga. one piece universal mounting bars <b>4960</b> Assorted Filters Specify: UV Filter ( <b>UV</b> ), Prismatic Spread Lens ( <b>PSL</b> ), Blue ( <b>BL</b> ), Green ( <b>GR</b> ), Red ( <b>RD</b> ), Yellow ( <b>YW</b> ), Pink ( <b>PK</b> ), Frosted ( <b>FT</b> )



IBEW Union Made

**1. Rough-In** - 20 ga. steel galvanized luminaire housing contains ventilation ports to cool the lamp. This rough-in will accept 4" downlight (page S3-1) and 4" lensed wallwasher (page S3-3).

**2. Plaster Frame** - 20 ga. galvanized plaster frame with a fixed throat depth of 3/4".

**3. Mounting Bracket** - Adjustable butterfly mounting brackets accept one piece universal or C-channel mounting bars (optional).

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Highland, NY 12528-2630  
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89 00173 10/03

**4. Junction Box** - 14 gauge galvanized junction box is U.L. listed for thru wiring (4 in and 4 out at 90°C) and has knock-outs at 7/8" and 1 1/8" with pry-out slots. Ground wire is supplied. Junction box is accessible from below ceiling. Stand-by battery pack option not offered.

**5. Thermal Protector** - Self resetting thermal protector is standard and is accessible from below ceiling.

**6. Lamp/Socket** - One MR-16 low voltage halogen lamp, 75W maximum. Luminaire is supplied with a porcelain bi-pin Gx5.3 socket. Lamp supplied by others.

**7. Transformer** - 120v/277v dual tap 12 volt magnetic transformer is standard. 347v magnetic, 120v and 277v electronic transformers are available.

**8. Trim** - A one piece .050" thick aluminum cone with a 1/2" flat flange is

finished using the Alzak® process and is available in the above finishes. A white or black ridged baffle is also available. Trim flange is supplied in the same finish as the trim. A white flange is optional. Cone is cut at 26° standard. Cones may be cut at 0°, 10°, 30° as an option. Consult factory.

**9. Leaf Springs** - The trim is held in place by two flat die-formed, steel leaf springs for ease of installation and prevention of light leaks.

**10. Lens Holder** - Top of trim cone has integral lens holder, supplied with safety glass as standard. Two of the above optional filters may be substituted.

**11. Adjustable Yoke Assembly** - Black powdercoat steel lockable yoke assembly. The yoke allows adjustments from 359° horizontal and 0° to 45° vertical. Both axes are lockable. A locking screw for horizontal rotation

and tilt is accessible by removing trim cone. Vertical tilt is easily adjusted through aperture.

**12. Weight** - Housing - 8.25 lbs.; trim - 0.5 lbs.

**NOTE:** National or municipal codes must be followed regarding fixture installation and set back of thermal insulating material from luminaire. As a guideline, any insulation material must be held away from the luminaire by a minimum of 3". **Fixtures are not designed for direct contact with thermal insulation.**

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. Technical specification sheets that appear on [www.zumtobelstaffusa.com](http://www.zumtobelstaffusa.com) are the most recent version and supersede all other versions that exist in any other printed or electronic form.

S3-2

ZUMTOBEL STAFF

## UCSB Student Resource Building

### Luminaire Cutsheet

Type: F3A

Issue: 4.12.07

1 of 2

Associated with: L3

# Photometric Data

## S3D4660 4660TC (1)Q71MR16/NFL25 4" ADJUSTABLE DOWNLIGHT, SPECULAR REFLECTOR

LTL 04574

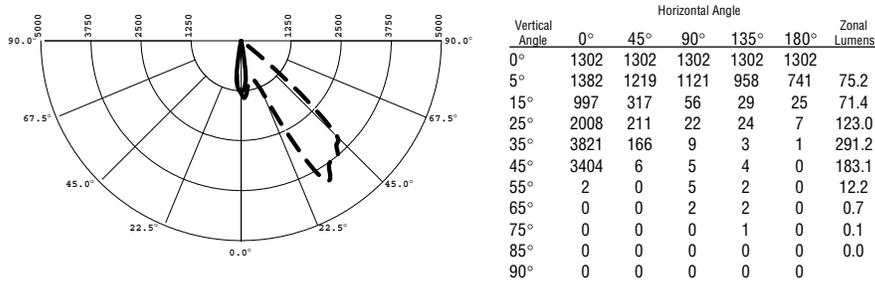
Total Luminaire Efficiency 65%

0% Uplight 100% Downlight

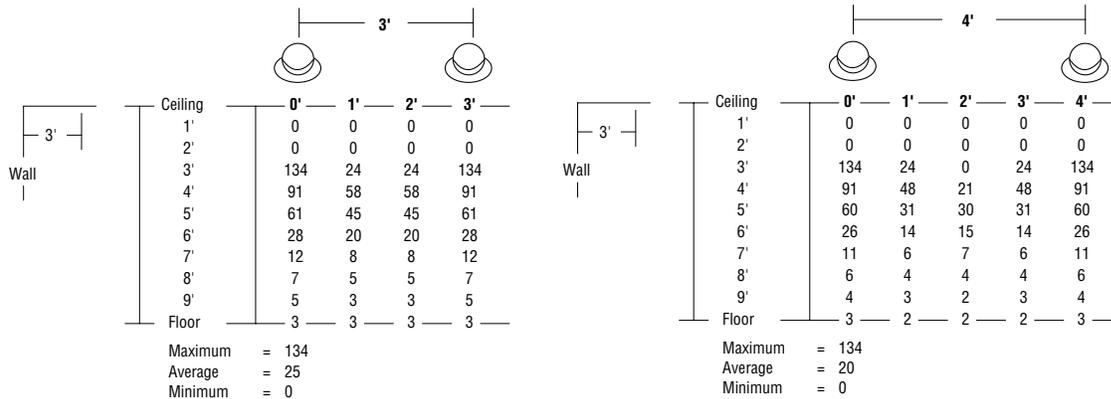
TOTAL LAMP LUMENS = 1175

INPUT WATTS = 71

### Candela Distribution



### Wallwash Lighting Data Chart



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S3-2A

ZUMTOBEL STAFF

UCSB Student Resource Building

Luminaire Cutsheet

Type: F3A

Issue: 4.12.07

2 of 2

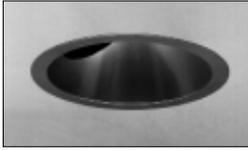
Associated with: L3

# SPEC-3

## Recessed Low Voltage Halogen (1) MR-16, 75W max.

## Open Aperture Adjustable Downlight

4"



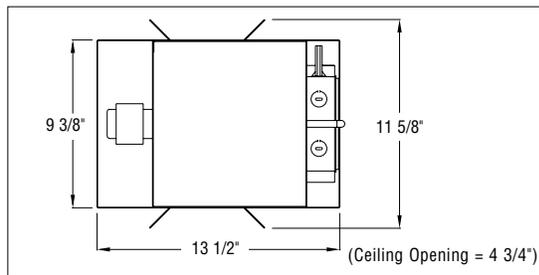
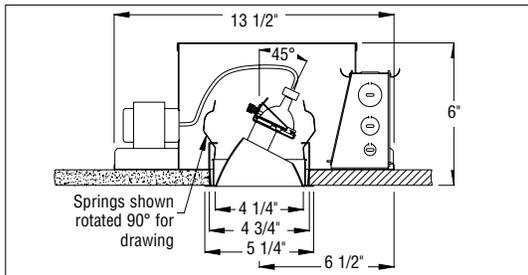
**Applications:** This low voltage luminaire offers excellent brightness control in a 4" aperture. Suitable for use in retail, hotel and office areas. This recessed adjustable downlight provides powerful illumination power with adjustable lamp position.

Type: \_\_\_\_\_

Project: \_\_\_\_\_

ORDERING NOTE: Complete unit consists of rough-in and trim section. Indicate ballast/voltage, trim and options.

▼ Rough-In	▼ Ballast/Voltage	▼ Trim	▼ Options
<b>S3D4360</b>		<b>4660T</b>	
<b>S3D4360</b> (1) MR-16 75W max.	<b>V</b> 120v/277v Dual Tap Magnetic <b>V3</b> 347v Magnetic <b>S1</b> 120v Electronic <b>S2</b> 277v Electronic	<b>4660TC</b> Clear Specular Reflector <b>4660TMC</b> Matte Clear Alzak® Reflector <b>4660TMG</b> Matte Champagne Gold Alzak® Reflector <b>4660TMP</b> Matte Pewter Alzak® Reflector <b>4660TMS</b> Matte Straw Alzak® Reflector <b>4660TMW</b> Matte Wheat Alzak® Reflector <b>4360TWB</b> White Ridged Baffle <b>4360TB</b> Black Ridged Baffle (for colors of specular reflectors, consult factory)	<b>F</b> Fusing <b>W</b> White painted reflector flange <b>9930</b> Set of two 27" C-channel mounting bars <b>9952</b> Set of two 52" C-channel mounting bars <b>9954</b> Set of two 28" universal mounting bars with ceiling grid mounting clips <b>9956</b> Set of two 28" 10 ga. one piece universal mounting bars <b>4960</b> Assorted Filters Specify: UV Filter ( <b>UV</b> ), Prismatic Spread Lens ( <b>PSL</b> ), Blue ( <b>BL</b> ), Green ( <b>GR</b> ), Red ( <b>RD</b> ), Yellow ( <b>YW</b> ), Pink ( <b>PK</b> ), Frosted ( <b>FT</b> )



IBEW Union Made

**1. Rough-In** - 20 ga. steel galvanized luminaire housing contains ventilation ports to cool the lamp. This rough-in will accept 4" downlight (page S3-1) and 4" lensed wallwasher (page S3-3).

**2. Plaster Frame** - 20 ga. galvanized plaster frame with a fixed throat depth of 3/4".

**3. Mounting Bracket** - Adjustable butterfly mounting brackets accept one piece universal or C-channel mounting bars (optional).

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89 00173 10/03

**4. Junction Box** - 14 gauge galvanized junction box is U.L. listed for thru wiring (4 in and 4 out at 90°C) and has knock-outs at 7/8" and 1 1/8" with pry-out slots. Ground wire is supplied. Junction box is accessible from below ceiling. Stand-by battery pack option not offered.

**5. Thermal Protector** - Self resetting thermal protector is standard and is accessible from below ceiling.

**6. Lamp/Socket** - One MR-16 low voltage halogen lamp, 75W maximum. Luminaire is supplied with a porcelain bi-pin Gx5.3 socket. Lamp supplied by others.

**7. Transformer** - 120v/277v dual tap 12 volt magnetic transformer is standard. 347v magnetic, 120v and 277v electronic transformers are available.

**8. Trim** - A one piece .050" thick aluminum cone with a 1/2" flat flange is

finished using the Alzak® process and is available in the above finishes. A white or black ridged baffle is also available. Trim flange is supplied in the same finish as the trim. A white flange is optional. Cone is cut at 26° standard. Cones may be cut at 0°, 10°, 30° as an option. Consult factory.

**9. Leaf Springs** - The trim is held in place by two flat die-formed, steel leaf springs for ease of installation and prevention of light leaks.

**10. Lens Holder** - Top of trim cone has integral lens holder, supplied with safety glass as standard. Two of the above optional filters may be substituted.

**11. Adjustable Yoke Assembly** - Black powdercoat steel lockable yoke assembly. The yoke allows adjustments from 359° horizontal and 0° to 45° vertical. Both axes are lockable. A locking screw for horizontal rotation

and tilt is accessible by removing trim cone. Vertical tilt is easily adjusted through aperture.

**12. Weight** - Housing - 8.25 lbs.; trim - 0.5 lbs.

**NOTE:** National or municipal codes must be followed regarding fixture installation and set back of thermal insulating material from luminaire. As a guideline, any insulation material must be held away from the luminaire by a minimum of 3". **Fixtures are not designed for direct contact with thermal insulation.**

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. Technical specification sheets that appear on [www.zumtobelstaffusa.com](http://www.zumtobelstaffusa.com) are the most recent version and supersede all other versions that exist in any other printed or electronic form.

S3-2

ZUMTOBEL STAFF

# Photometric Data

## S3D4660 4660TC (1)Q71MR16/NFL25 4" ADJUSTABLE DOWNLIGHT, SPECULAR REFLECTOR

LTL 04574

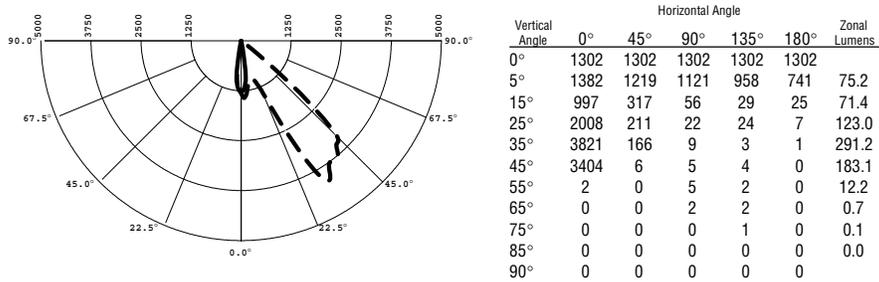
Total Luminaire Efficiency 65%

0% Uplight 100% Downlight

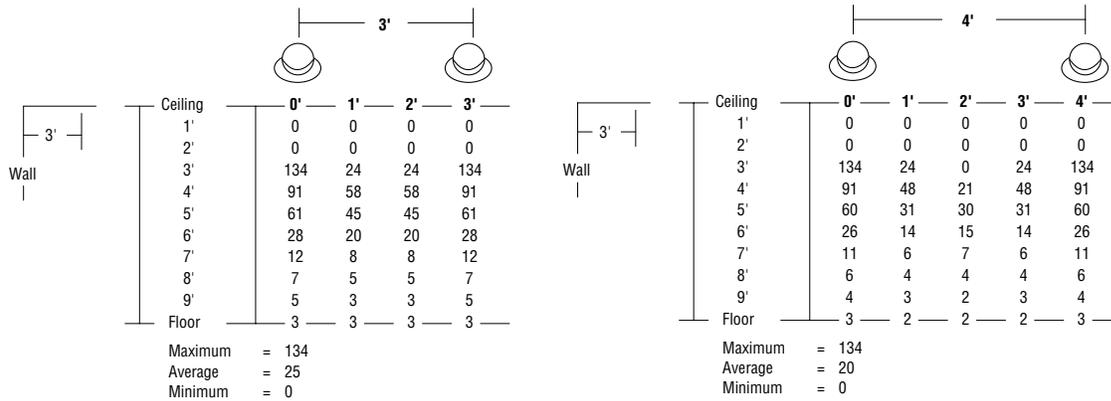
TOTAL LAMP LUMENS = 1175

INPUT WATTS = 71

### Candela Distribution



### Wallwash Lighting Data Chart



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89 00173 10/03

S3-2A

ZUMTOBEL STAFF

UCSB Student Resource Building

Luminaire Cutsheet

Type: F3B

Issue: 4.12.07

2 of 2

Associated with: L4

# SYNTO T5

Compact Fluorescent  
One or Two Lamp T5 or T5 HO

Recessed

1' x 4'

online  
Find it Fast 244



**Applications:** The SYNTO family of fixtures combines indirect illumination with a direct component controlled with a T5 louvre to minimize brightness. The Zumtobel Staff exclusive light chamber provides soft and diffuse general illumination; the louvre has been specifically developed to minimize glare when using T5 lamps. This solution is best for open offices, retail spaces and institutions.

Meets RP-1-04 guidelines for normal  
(2285 C/W, 1545 C/W, 2545 C) and intensive  
(1285 C/W) VDT-use environments

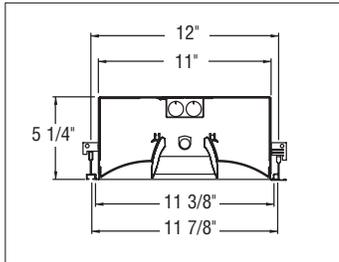
Type: \_\_\_\_\_  
Project: \_\_\_\_\_

ORDERING NOTE: Specify fixture/ceiling type, lamping, louvre, voltage/ballast and options.

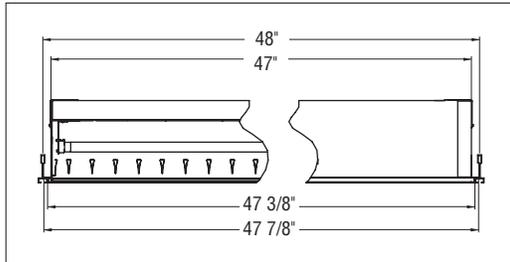
SY5	14	Lamping	Louvre	Voltage/Ballast	Options
<b>SY5U</b> SYNTO T5 Recessed 15/16" Lay-In, Flush 9/16" Slot-Grid, Flush 9/16" Lay-In, Tegular  <b>SY5F</b> SYNTO T5 Recessed 9/16" Lay-In, Flush  <b>SY5E</b> SYNTO T5 Recessed Concealed  <i>For flange details, see next page</i>	14 1' x 4'	<b>1285</b> (1) 28W T5 <b>2285</b> (2) 28W T5 <b>1545</b> (1) 54W T5 HO <b>2545</b> (2) 54W T5 HO	<b>C</b> Matte <b>W</b> White <b>CO</b> Matte with Opal Inlay <b>WO</b> White with Opal Inlay	<b>U</b> Universal 120/277V <b>347</b> 347V (consult factory for availability; not available with EM, dimming) <b>DA_*</b> Dimming, Analog (0-10V) <b>DD_*</b> Dimming, DALI <b>DE_*</b> Dimming, Lutron ECO-10 <b>DH_*</b> Dimming, Lutron HiLume (54W only)	<b>WF</b> Whip Flex 3/8" x 6' 14 AWG <b>WN_*</b> Whip Flex 3/8" x 6' 14 AWG (NYC) <b>EM1_*</b> Stand-by Battery Pack/1 lamp <b>SS</b> Separate Switching (2-lamp fixtures only) <b>AR</b> Air Return <b>CP</b> Chicago Plenum

\* Indicate 120V (1) or 277V (2)

Cross Section



Side View



IBEW Union Made

**1. Housing** - 20 gauge cold-rolled steel. Finish is powder-coated white. Right-angle access plate (two per fixture) allows feed from top or side of unit.

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5/31/05

**2. Light Chamber** - High reflectance white interior and shaped extruded acrylic diffusers.

**3. Louvre** - The 32-cell louvre has blades 7/8" high by 1 7/16" o.c. Available with white or matte finish. Louvre hinges for ease of maintenance. Opal inlay is white acrylic.

**4. Lamps/sockets** - One or two 28W T5 or 54W T5 HO fluorescent lamps with miniature bi-pin sockets. Lamps supplied by others.

**5. Ballast** - Universal voltage electronic 120/277V ballast. Consult factory for 347V. Ballasts are mounted in luminaire. Accessible from below.

**6. Mounting** - Integral bend-out tabs are provided in the universal (SY5U and SY5F) ceiling fixture types. Adjustable mounting brackets provided for concealed tee or gypsum board (SY5E) ceiling installations.

**7. Stand-by Battery Pack** - Integral stand-by battery pack with integral test switch. Will operate one T5 lamp with an initial output of up to 500 lumens (28W), 825 lumens (54W) for 90 minutes.

**8. Dimming** - Consult factory for specific dimming requirements other than those listed above.

**9. Weight** - 21.0 lbs.

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. Technical specification sheets that appear on www.zumtobelstaff.us are the most recent version and supersede all other versions that exist in any other printed or electronic form.

SY5-2

ZUMTOBEL STAFF

UCSB Student Resource Building

Luminaire Cutsheet

Type: F4

Issue: 4.12.07

1 of 2

Associated with: L5,B2

## Photometric Data

### SY5 14 2285 W (2) 28W T5

RECESSED, WHITE LOUVER, WHITE REFLECTOR

LTL 08455

Total Luminaire Efficiency 66%

0% Uplight 100% Downlight

Spacing Criteria

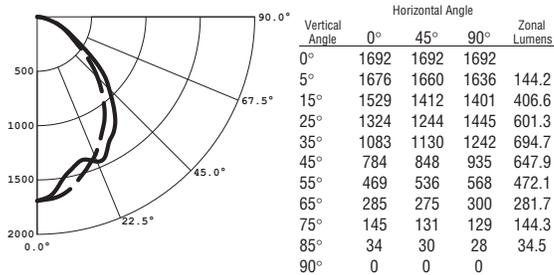
Lateral Plane 0° 90°

1.1 1.2

TOTAL LAMP LUMENS = 5220

INPUT WATTS = 62

### Candela Distribution



### Luminance Data in Candela / Sq. Meter

Angle in Vertical°	Average 0°	Average 45°	Average 90°
45°	3391	3668	4045
55°	2501	2858	3029
65°	2063	1990	2171
75°	1714	1548	1525
85°	1193	1053	983

### Coefficients of Utilization

Effective Floor Cavity Reflectance = 20%

pcc	0.8			0.7			0.5			0.3		
	0.7	0.5	0.3	0.7	0.5	0.3	0.5	0.3	0.1	0.5	0.3	0.1
0	79	79	79	77	77	77	74	74	74	70	70	70
1	73	70	68	66	66	64	66	64	62	63	62	61
2	67	62	58	55	65	61	57	54	59	56	53	52
3	62	55	51	47	60	54	50	46	53	49	45	45
4	57	50	44	40	56	49	44	40	47	43	39	39
5	53	45	39	35	51	44	39	35	43	38	35	34
6	49	41	35	31	48	40	35	31	39	34	31	31
7	46	37	32	28	44	37	31	28	36	31	28	27
8	42	34	29	25	42	34	28	25	33	28	25	25
9	40	31	26	23	39	31	26	23	30	26	23	22

### Air Return

SYNTO Return Air Volume, CFM:

Negative Static Pressure, in. H2O

0.04 0.05 0.07 0.08 0.1

Fixture Size

2 x 2 80 90 100 110 120

1 x 4 150 170 210 225 250

2 x 4 150 170 210 225 250

Test performed in accordance with ASHRAE-70-1991 by Intertek ETL SEMKO. Consult factory for full report.

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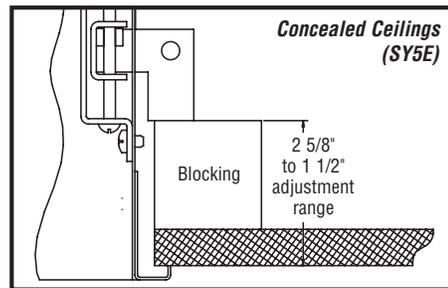
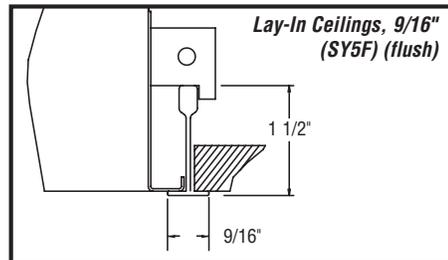
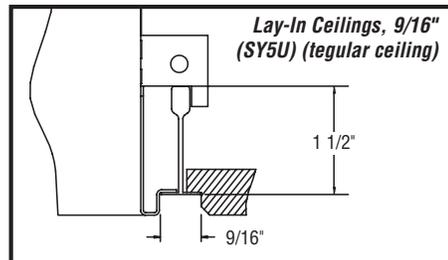
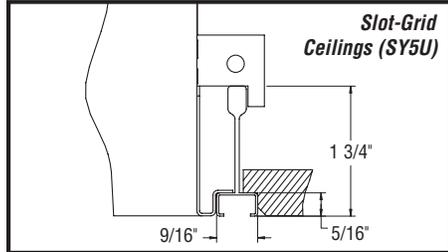
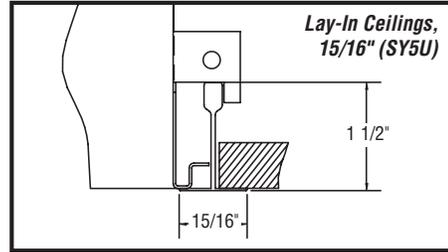
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5/31/05

### Mounting with common ceiling types



SY5-2A

ZUMTOBEL STAFF

UCSB Student Resource Building

Luminaire Cutsheet

Type: F4

Issue: 4.12.07

2 of 2

Associated with: L5,B2

**Linear luminaires  
for ceramic metal halide light sources**

**Post construction:** Made from four square aluminum extrusions, 1/8" wall thickness mechanically fastened to a square extruded lamp housing (top) and a wiring/ballast compartment (bottom).

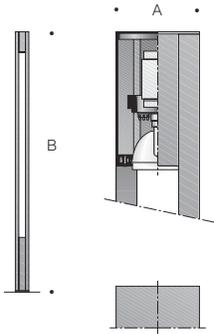
**Enclosure:** One piece die cast aluminum extruded housing (top). Clear, molded tempered glass, 3/4" thick extends below the lamp enclosure to increase the light spread. Lens is secured with a one piece die cast trim ring, secured to housing with four (4) stainless steel screws. Fully gasketed using a one piece molded high temperature silicone gasket for weather tight operation. Reflector made from pure anodized aluminum.

**Electrical:** Lampholders: HID; Single ended porcelain G12 bi-pin with nickel plated contacts supplied with 180°C high temperature leads, rated 600V pulse rated 5 KV. HID Ballast is magnetic 120V or 277 - specify. Ballast is located in the bottom of the luminaire - access door is provided.

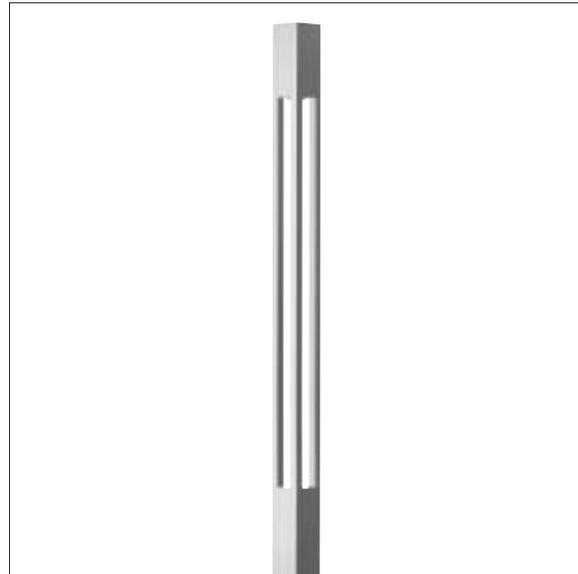
**Anchor base:** The #890B anchorage consists of a heavy gauge welded assembly of .157" thick galvanized steel. Luminaire slip fits over base and is secured by eight (8) stainless steel socket screws.

**Finish:** These luminaires are available in five standard BEGA colors: Black (BLK); White (WHT); Bronze (BRZ); Silver (SLV); Eurocoat™ (URO). To specify, add appropriate suffix to catalog number. For complete description of BEGA finishing process, refer to technical information section at end of catalog. 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:



Linear luminaire for ceramic metal halide lamps. Extruded aluminum post with extruded aluminum lamp enclosure and ballast/splice enclosure. Anchorage kit 890B fabricated of galvanized steel (included). U.L. listed, suitable for wet locations. IP 65. Colors: Standard BEGA finishes.



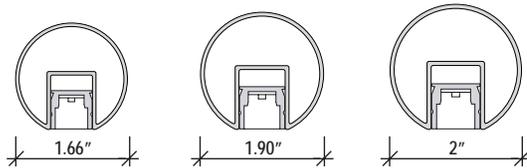
	Lamp	Lumen	A	B
<b>8945MH</b>	1 150W T6 G12 MH	14000	8 3/8"	177"
<b>890B</b>	Anchorage included			

BEGA/US 1000 BEGA Way, Carpinteria, CA 93013 [P] 805-684-0533 [F] 805-684-6682  
©Copyright BEGA/US 2002 updated 6/02

# luxrail



### Hand Rail Size Options



### Power Supply (Driver) Information

#### Standard Light Output

TYPE	SUPPLIES	REMOTE DISTANCE
24v20w	UP TO 78"	32'-0" (w/18AWG)
24v100w	UP TO 35'-0"	18'-0" (w/18AWG)
	(2) RUNS UP TO 49' WITH (1) RUN NTE 35'-0"	46'-0" (w/14AWG)
		71'-0" (w/12AWG)

#### High Output

TYPE	SUPPLIES	REMOTE DISTANCE
24v100w	UP TO 12'-0"	18'-0" (w/18AWG)
		46'-0" (w/14AWG)
		71'-0" (w/12AWG)

### Application

ANSI and ADA compliant **luxrail**, is an indoor/outdoor handrail that delivers functional illumination. Two intensities may be specified: "standard light output" & "high output". The standard lightoutput version delivers illuminance levels appropriate for exterior applications (3 to 4 footcandles at grade) as well as dark interior environments with low ambient illumination levels, (i.e. theatres, themed environments). The high output version delivers illuminance levels applicable to interior environments – providing in excess of 10 footcandles along the path of egress (ANSI required). Independent photometric test reports and IES Format data are available upon request from **io** Lighting.

**luxrail**'s standard handrail gripping surfaces are circular in cross section and meet ADAAG (Americans with Disability Act Accessibility Guidelines). Beam spread options include 10, 45, and 65 degrees. The 45 and 65 degree beam patterns are most suitable for illuminating pathways while the 10 degree beam spread offers accent lighting to optional glass or stainless steel cable railing infills. Reference page 8 for information regarding infill options. LED lumen depreciation at 50,000 hrs. is 30%.

### Light Output

**luxrail** is available with two luminous intensities:

#### Standard:

- Warm White: 38 lms/ft
- Cool White: 48 lms/ft

#### High Output:

- Warm White: 127 lms/ft
- Cool White: 145 lms/ft

### Construction

**luxrail** is available in stainless steel, aluminum or brass. **luxrail** may be post mounted or wall mounted. Mounting hardware (post or wall) is required up to 5' or 6' O.C., depending on the handrail alloy. 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.

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

### Electrical

**luxrail** houses a low voltage LED based light fixture which is integrated into the underside of the handrail. It comes complete with the linear light fixture installed in the handrail and required power supplies (aka "drivers"). Electrical "daisy chain" connections must be made on site. 120 or 277 volt drivers are available. The drivers must be remotely located. Refer to Driver Chart (shown on left) for additional information.

### Power Consumption

- standard: 2 w/ft
- high output: 8 w/ft

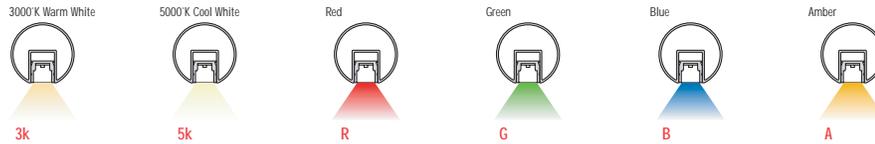
### Finish

**luxrail** is available in a variety of finishes: polished or brushed stainless steel (satin finish with brush grain along the longitudinal axis), clear anodized aluminum and polished brass. Custom finishes may be available upon request.

# luxrail

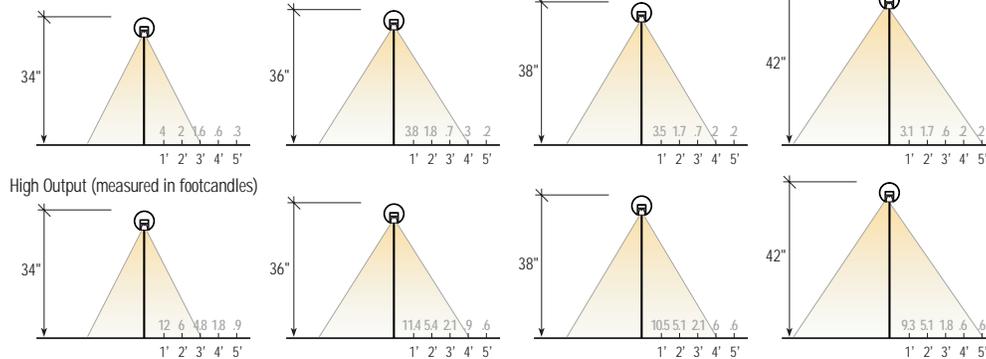


## Color Options

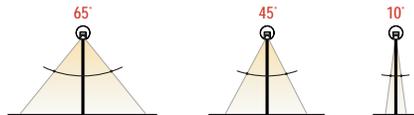


## Light Output

Standard Output (measured in footcandles)



## Distributions



## Mounting Options

PM post mounted



WM wall mounted



## Infill Options

Glass infill  
*(glass provided by others)*



Stainless steel cable infill



## Order Code

io	06						1			
luxrail		Alloy/Finish	Size	Mounting	Infill	Light Distribution	Light Color	Length	Voltage/Dimming	Driver Enclosure
		SSS Stainless	1 1.66" O.D.* (1 1/4" pipe size)	PM Post Mounted	AC Aircraft Cable	10 10 Degree	3k Warm	Provide overall length of each handrail section.	SIDE FEED STANDARD 1 120v	I Interior
		SSP Stainless Steel Polished	2 1.90" O.D.* (1 1/2" pipe size)	WM Wall Mounted	GL Glass <i>(provided by others)</i>	45 45 Degree 65 65 Degree NI Handrail only (not illuminated)	White Cool White	2 277v 3 120v w/dim 4 277v w/dim	2 277v	E Exterior
		CAA Clear Anodized Aluminum	3 2.0" O.D.* (available for SS & CAA)		C Custom NR Not Req'd		3kHO Warm White 5kHO Cool White	5 other	5 other	N Not Req'd by io <i>(provided by others)</i>
		BR Brass Polished	*see page 6 for alloy dimensions				R Red G Green B Blue A Amber	<i>Note: Each handrail application will be somewhat custom to accommodate varying field conditions and design requirements. Shop drawings will be required to manage specifics of each handrail section.</i>		

370 Corporate Woods Pkwy Vernon Hills, IL 60061-3107  
 T 847.735.7000 F 847.735.7001 E info@iolighting.com W iolighting.com

5

## UCSB Student Resource Building Luminaire Cutsheet

Type: F6

Issue: 4.12.07

2 of 2

Associated with:

# M100 Recessed Linear Fluorescent Flanged Extrusion - STAGGERED LAMPS



**Project:** UCSB Student Resource Bldg    **Type:** \_\_\_\_\_    **Qty:** \_\_\_\_\_

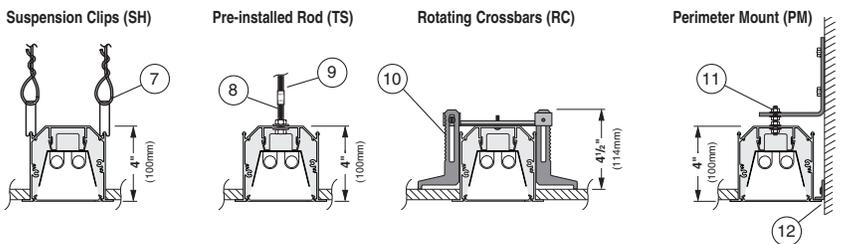
M1R1S	-	1T5HO	-	OD	-	RC	-	008	-	WH	-	277	-
<b>Fixture Series</b>		<b>Lamp Type</b>		<b>Shielding</b>		<b>Mounting</b>		<b>Mounting Option</b>		<b>Nominal Length</b>		<b>Finish</b>	<b>Voltage</b>
DM	-	-	-	-	-	-	-	-	-	-	-	-	-

**Options** (refer to separate data sheets for ordering codes and details)

Fixture Series	Lamp Type	Shielding	Mounting	Nominal Length	Finish	Voltage	Options
<b>M1R1S</b> M100 Recessed Continuous Flange (Flanged Extrusion/ Flanged Endcaps) Staggered Lamps	<b>1T5</b> F28T5	<b>SD</b> Satine Lens	<b>SH</b> Suspension Clips	<b>008</b> 8 foot	<b>WH</b> White	<b>120</b>	<b>TB</b> Lengths to Fit 2' Grid T-Bar Ceiling System <sup>1</sup> <b>(qty.)EM</b> Stand-by Battery Pack <sup>2</sup> (prefix quantity, i.e. - 5EM) <b>FS</b> Single Fusing <b>DM</b> Dimming <sup>2</sup> (specify system) <b>DMA</b> Digital Addressable Dimming <sup>2</sup> <b>FW</b> Flex Whip (standard) <b>FW1</b> Flex Whip (dimming) <b>Track</b> Eutrac Standard <sup>3</sup> <b>DL</b> Suitable for Damp Locations <b>CCEA</b> Chicago Plenum <b>Downlights</b> (See MR16 spec sheets, pp.98-99)
	<b>1T5HO</b> F54T5HO	<b>OD</b> Extra Diffuse Lens	<b>TS</b> 1" Studs (factory installed) <b>RC</b> Rotating Crossbars <b>PM</b> Perimeter Mount	<b>012</b> 12 foot	<b>BK</b> Black <b>SV</b> Silver <b>SP</b> Specify RAL#	<b>277</b> <b>347</b>	
<b>M1R2S</b> M100 Recessed Flush End (Flangeless Extrusion/ Flangeless Endcaps) Staggered Lamps	<b>2T5</b> (2x)F28T5			For actual lengths see following page. For other lengths, configurations indicate nominal length rounded to the next highest foot. Factory will supply layout drawings. Individual fixtures cannot be field joined.			

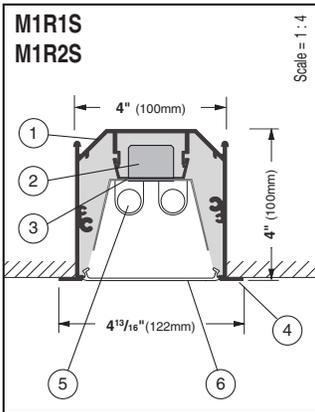
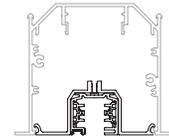
<sup>1</sup> Available with M1R1S only.    <sup>2</sup> Must be low profile ballasts (1 1/2" W x 1 1/8" H); consult factory for details.    <sup>3</sup> Consult factory for details.

## Mounting Diagrams



## Track

Track insert including track available for all configurations, consult factory for details.



**1. Housing** - Continuous, 6063-T5 extruded aluminum profile up to 16 feet long. Joined with Connector Plus Joining System for ease of installation and to assure a uniform appearance.

**2. Ballast** - Electronic, high power factor, class "P", type "A" sound rating. Specify 120v, 277v, or 347v. Ballast is factory pre-wired with leads to one end of fixture. Consult factory for ballast options.

**3. Gear Tray** - Die formed gear tray with integral factory preset sliding covers to fill extrusion with light, with a matt white finish for even illumination. Geartray installs as complete electrical unit and is held in place with knurled dress nuts. It is fully accessible from below ceiling.

**4. Flange** - 1/2" (12mm) wide flange runs full lengths of both sides and is part of the main extruded body. Specify continu-

ous flange (M1R1S) or flangeless endcaps (M1R2S).

**5. Lamps** - As noted (by others). Other lamp lengths or wattages available, consult factory.

**6. Shielding** - Choose between **OD** Extra Diffuse Lens and **SD** Satine Lens. See page 8 for more details.

**7. Spring Steel Suspension Clips** - Supplied two places, located nominally every 4 ft. Support wires supplied and installed by others.

**8. Pre-installed 1" 1/4-20 Stud** - Attached to fixture every nominal 4 feet.

**9. Coupling and Threaded Rod to Structure** - Supplied and installed by others.

**10. Rotating Crossbar** - For inaccessible ceilings, adjustable for ceiling thicknesses from 1/4" to 2". Support required nominally every 4'.

**11. Steel Wall Bracket and 1/4-20 Rod** - Supplied nominally every 4 ft. Fasteners to wall and wall anchors by others.

**12. Aluminum Wallbracket** - Secured to wall (fasteners and wall anchors by others) and runs entire length of fixture. Also supplied for width of fixtures when supplied with continuous flange. Allows for 1/8" gap between flange and wall to create shadow line allowing for unevenness of wall.

**Interior Luminaire Finish** - Standard interior colors are White (WH), Black (BK) and Silver (SV). RAL colors (SP) are available, please specify RAL#.

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TEL: (845) 691-7723  
FAX: (845) 691-6749  
www.selux.com/usa  
M1R1S-01 (v5.0)



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. Specification sheets found at [www.selux.com/usa](http://www.selux.com/usa) are the most recent versions and supercede all other printed or electronic versions.

## UCSB Student Resource Building Luminaire Cutsheet

**Type:** F7

# LIGHT FIELDS® HE Fluorescent Two Lamp T5 or T5 HO

Recessed **1' x 4'**

online Find it Fast **237**



**Applications:** LIGHT FIELDS offers flexibility in innovative office lighting. The micro-pyramidal optic produces an unusually brilliant lighting quality without glare or reflections on computer screens. Use not just in offices but for healthcare, retail, conference rooms, corridors and reception areas.

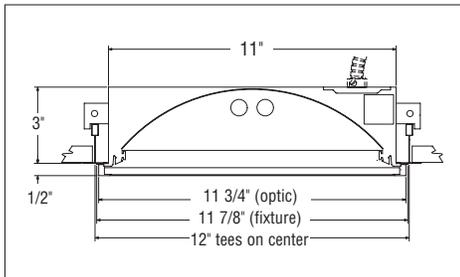
Meets RP-1-04 guidelines for normal VDT-use environments

Type: \_\_\_\_\_  
Project: \_\_\_\_\_

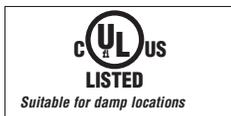
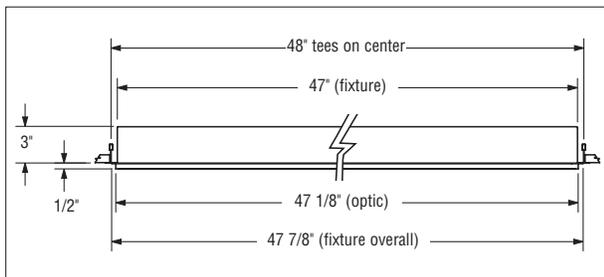
ORDERING NOTE: Specify fixture/ceiling type, lamping, voltage/ballast and options.

▼ Fixture/Ceiling Type	▼ Length	▼ Lamping	▼ Optic	▼ Voltage/Ballast	▼ Options
<b>LFH</b>	<b>14</b>		<b>MP</b>		
<b>LFHU</b> LIGHTFIELDS Recessed 15/16" Lay-In, Flush 9/16" Slot-Grid, Flush 9/16" Lay-In, Tegular  <b>LFHF</b> LIGHTFIELDS Recessed 9/16" Lay-In, Flush  <b>LFHE</b> LIGHTFIELDS Recessed Concealed  <i>For flange details, see next page</i>	14 1' x 4'	<b>2285</b> (2) 28W T5 <b>2545</b> (2) 54W T5 HO	<b>MP</b> Micro-pyramidal diffuser	<b>U</b> Universal 120/277V Consult factory <b>347</b> Consult factory <b>DA</b> * Dimming, Analog (0-10V) <b>DD</b> * Dimming, DALI <b>DE</b> * Dimming, Lutron ECO-10 <b>DH</b> * Dimming, Lutron HiLume, (54W only)  * Indicate 120V (1) or 277V (2)	<b>WF</b> Whip Flex 3/8" X 6' 14 AWG <b>WN</b> ** Whip Flex 3/8" X 6' 14 AWG  All standard fixtures include attached Whip Flex.  ** New York City shipments need clarification of voltage. Indicate 120V (1) or 277V (2)

Cross Section



Side View



IBEW Union Made

**1. Housing** - 20 gauge cold-rolled steel. Finish is powder-coated white. Access plate allows feed from top of unit.

**2. Reflector** - Designed to work in conjunction with micro-pyramidal structure for maximum efficiency.

**3. Optic** - Multi-layered micro-pyramidal structure. Frame is clear anodized aluminum.

**4. Lamps/sockets** - Two 28W T5 or 54W T5 HO fluorescent lamps with miniature bi-pin sockets. Lamps supplied by others.

**5. Ballast** - Universal voltage electronic 120/277V ballast. Consult factory for 347V.

**6. Mounting** - Integral bend-out tabs are provided in the universal (LFHU and LFHF) ceiling fixture types. For non-accessible/concealed ceilings, consult factory for coordination of mounting details.

**7. Dimming** - Consult factory for specific dimming requirements other than those listed above.

**8. Weight** - 28.0 lbs.

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. Technical specification sheets that appear on www.zumtobel.us are the most recent version and supersede all other versions that exist in any other printed or electronic form.

Zumtobel Lighting Inc. ©2006  
3300 Route 9W • Highland, NY 12528-2630  
www.zumtobel.us  
TEL (845) 691-6262 • (800) 932-0633 • FAX (845) 691-6289  
9/21/06

LF-6



## UCSB Student Resource Building Luminaire Cutsheet

Type: F8

Issue: 4.12.07

1 of 2

Associated with: L8,B4

# Photometric Data

## LFH 14 2285 MP (2) 28W T5 RECESSED 1X4, MICRO-PYRAMIDAL DIFFUSER

LTL 09349

Total Luminaire Efficiency 55%

0% Uplight 100% Downlight

Spacing Criteria

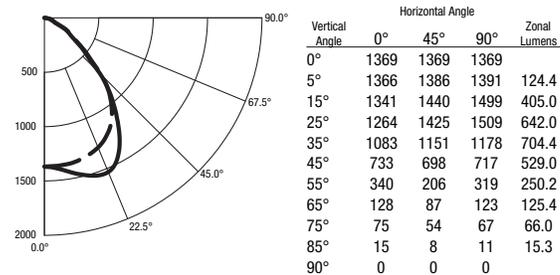
Lateral Plane 0° 90°

1.3 1.3

TOTAL LAMP LUMENS = 5220

INPUT WATTS = 64

### Candela Distribution



### Luminance Data in Candela / Sq. Meter

Angle in Vertical°	Average 0°	Average 45°	Average 90°
45°	3229	3074	3158
55°	1846	1119	1732
65°	943	641	906
75°	903	650	806
85°	536	286	393

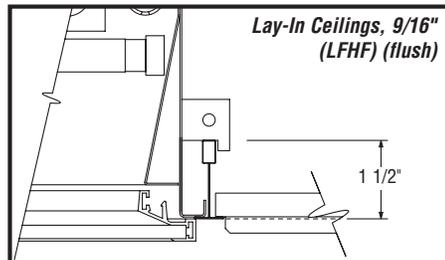
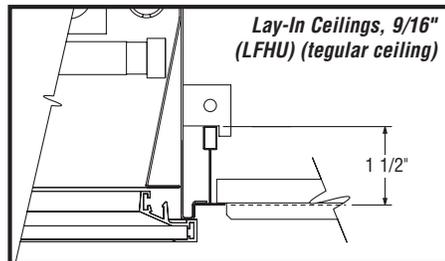
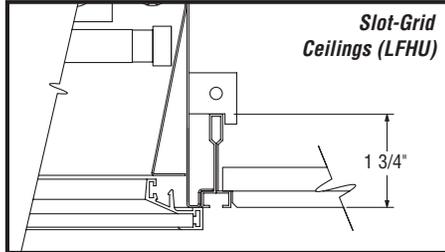
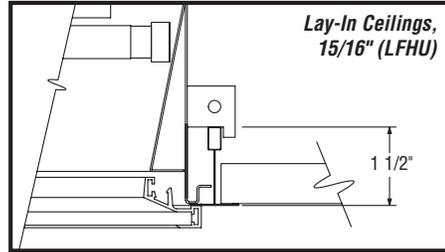
### Coefficients of Utilization

Effective Floor Cavity Reflectance = 20%

pcc	Effective Floor Cavity Reflectance = 20%														
	0.8				0.7				0.5				0.3		
pw	0.7	0.5	0.3	0.1	0.7	0.5	0.3	0.1	0.5	0.3	0.1	0.5	0.3	0.1	
0	66	66	66	66	64	64	64	64	61	61	61	59	59	59	
1	61	59	58	56	60	58	57	55	56	55	53	54	53	52	
2	57	54	51	48	56	53	50	48	51	48	46	49	47	45	
3	53	48	45	42	52	48	44	41	46	43	41	45	42	40	
4	49	44	40	37	48	43	39	37	42	39	36	41	38	36	
5	46	40	36	33	45	39	35	33	38	35	32	37	34	32	
6	43	37	32	29	42	36	32	29	35	32	29	34	31	29	
7	40	33	29	26	39	33	29	26	32	29	26	32	28	26	
8	37	31	27	24	37	30	27	24	30	26	24	29	26	24	
9	35	29	24	22	34	28	24	22	28	24	22	27	24	21	

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9/21/06

### Mounting with common ceiling types



LF-6A



# line<sup>™</sup>

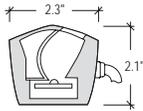
series 2.0



asymmetric  
PATENT PENDING



### Dimensions



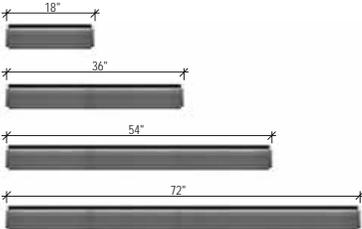
2.3" width  
2.1" height  
2.75" depth  
Dimension includes electrical feed and wire bending radius for interior applications.

3.25" depth  
Dimension includes electrical feed and wire bending radius for exterior applications.

### Asymmetric Beam Spread



### Individual Unit Lengths



### Application

io Lighting's **line series 2.0** is a low voltage linear floodlight luminaire that utilizes brightness LEDs. **series 2.0** may be specified for interior or exterior applications and may be ordered in nominal lengths of 18", 36", 54", and 72". The precise asymmetric beam spread along the perpendicular axis of the fixture is excellent for wall washing effects, sign lighting or cove applications. **series 2.0's** optical assembly is designed to practically eliminate stray light, making it perfect for applications where *light pollution* and/or *light trespass* are important design considerations.

**series 2.0's** low profile housing enables luminous accents to be integrated within "tight" architectural details. Similar to halogen light sources, LEDs are point sources that offer superior definition to three dimensional objects and sparkle to reflective surfaces. Average rated life for **series 2.0** is 50,000 hours. Lamp Lumen depreciation at 50,000 hrs is 30%.

### Light Output

Asymmetric **series 2.0's** superior optical assembly offers a fixture efficiency in excess of 95%. Refer to light output tables for foot candle values at various distances. IES format files may be obtained from the factory or downloaded from [iolighting.com](http://iolighting.com).

- Warm White (3000° K): 177 lms/ft
- Cool White (5000° K): 296 lms/ft

### Construction

Heavy-duty aluminum housing provides recommended heat sink requirements for LEDs. Precision optic is composed of a customized acrylic material offering excellent light transmission and UV stability. High strength adhesive bonds the housing and optical assembly. **series 2.0** is UL listed for wet locations.

### Mounting Options

**series 2.0** may be surface mounted, side surface mounted or surface mounted with field adjustability and lockable aiming.

### Electrical

All fixtures are pre-wired and pre-assembled for easy installation. 8'-0", 18 AWG electrical feed is side mounted to enable continuous row mounting. Universal 120v or 277v supply required for remote driver. Driver enclosures for interior or exterior applications may be provided by io. Drivers may be remotely located up to 18'-0" (w/18 AWG), 46'-0" (w/14 AWG) and 71'-0" (w/12 AWG). Dimming is available, consult factory for details.

Individual units *may* be daisy chained and fed from a high capacity driver. Consult factory for more information.

### Power Consumption

- standard: 10 w/ft

### Finish

Anodized aluminum finish is standard. Custom anodized finish available upon request.

370 Corporate Woods Pkwy Vernon Hills, IL 60061-3107  
T 847.735.7000 F 847.735.7001 E info@iolighting.com W iolighting.com



January 2008. io reserves the right to change specifications for product improvement without notification.

## UCSB Student Resource Building Luminaire Cutsheet

Type: F9

Issue: 4.12.07

1 of 3

Associated with:



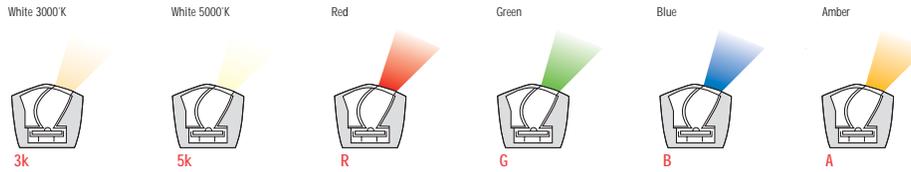
# line

series 2.0

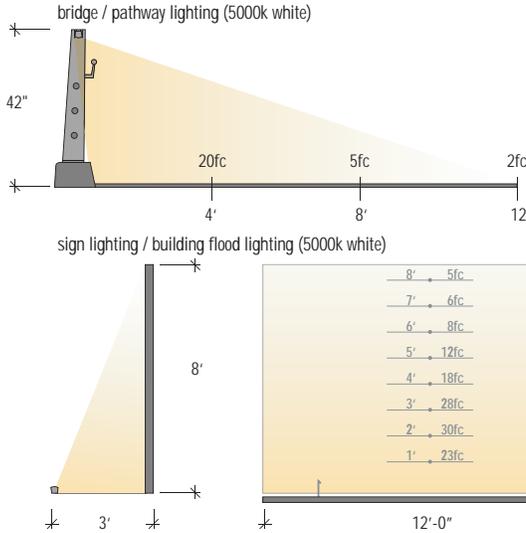
asymmetric  
PATENT PENDING

BEST IN SHOW  
LIGHTFAIR INTERNATIONAL  
2004

## Color Options



## Applications / Light Output



IES format photometrics may be downloaded from [www.iolighting.com](http://www.iolighting.com)

Multipliers for Alternate Light Source Colors as compared to 5500K white	.6	.43	.6	.19	.43
	3200K	RED	GREEN	BLUE	AMBER

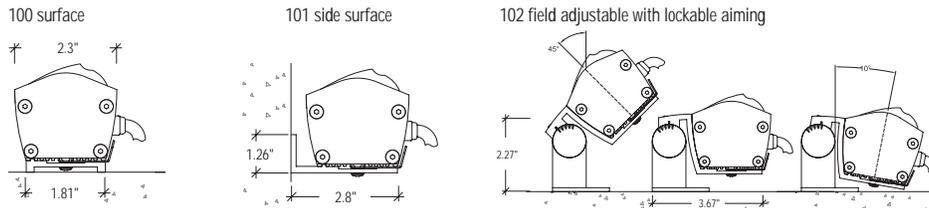


Asymmetric

line series 2.0 is UL listed for wet locations. It is not rated for submersible applications. line should not be mounted in conditions where there is any standing water whatsoever.

Series 2.0's optical assembly is designed to practically eliminate stray light, making it perfect for applications where light pollution and/or light trespass are important design considerations.

## Mounting Options



## Order Code

0	04			90					
io	2.0								
Location		Color		Distribution	Mounting	Finish	Length	Voltage Dimming	Driver Enclosure
I Interior	E Exterior	3k White 3000'K	5k White 5000'K	90 Asymmetric	100 Surface	1 Anodized Aluminum	UNITS (actual)	SIDE FEED STANDARD	I Interior
		*R Red	*G Green		101 Side surface	2 Custom	18 18" (17.71")	1 120v	E Exterior
		*B Blue	*A Amber		102 Field adjustable		36 36" (34.71")	2 277v	N Not Req'd
							54 54" (51.71")	3 120v w/dim	Supplied by electrical contractors
							72 72" (68.71")	4 277v w/dim	
							CONTINUOUS ROW	5 other	
							Specify Length		
							i.e. 60'-0"		

\*Note: Driver options and details vary from white light. Consult factory for details.

370 Corporate Woods Pkwy Vernon Hills, IL 60061-3107  
T 847.735.7000 F 847.735.7001 E info@iolighting.com W iolighting.com

## UCSB Student Resource Building Luminaire Cutsheet

Type: F9

Issue: 4.12.07

2 of 3

Associated with:

OPTOTRONIC® OTDIM Module

OT DIM

Item Number	Description	Nominal Input Voltage (VDC)	Nominal Input Current (A)	Control Voltage (VDC)	Output Power (W)	Max. Output Current (A)
51516	OTDIM	10.5	5.3	0-10VDC	0-52.5	5
		24	5.3	0-10VDC	0-120	5

Performance Guide

Dim module shall be an LED OPTOTRONIC electronic dimming module with 10 - 24 VDC input, with 0 - 10 VDC control voltage.

Specifications

**Dimensions:**

6.77" L x 1.65" W x 0.79" H  
(172mm L x 42mm W x 20mm H)

**Packaging:**

Quantity: 20 pieces/carton  
Weight: 0.165 lbs ea. (approx.)  
3.3 lbs/carton

**Lead Lengths:**

Non-lead

**Wiring Requirements:**

Input, load and control wires: 14AWG solid or stranded Cu only

**Dim Module**

**Input Voltage Range:** 9.5-25VDC

**Input Current:** 5.3 Amps max.

**Output Frequency:** 135 Hz

**Output Current:** 5 Amps max.

**Dimming Range:** 0 - 100%

**Control Voltage:** 0 - 10 VDC,

0.6 ma max.

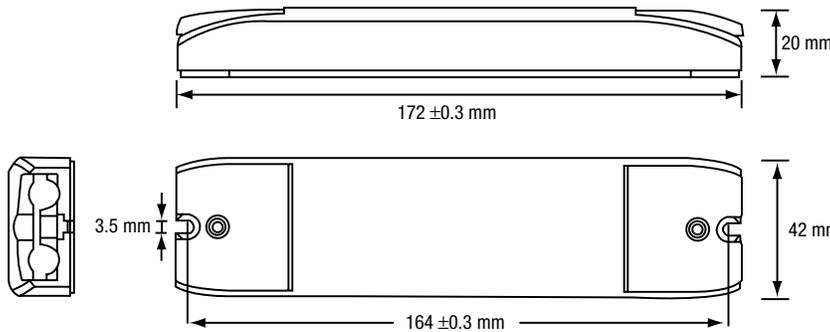
**Temp. Range:** -20°C through

+50°C

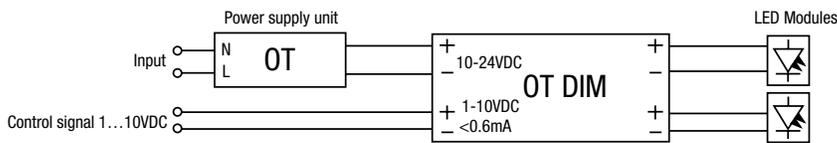
**Max. Case Temperature:** 70°C

**Color Mixing:** Yes\*

\* For compatibility information with color mixing protocols/1-10V dimming controls, contact OSRAM SYLVANIA.



**Wiring Diagram:**



System Life / Warranty

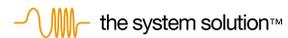
OPTOTRONIC OTDIM are warranted for 5 years. OPTOTRONIC and QUICKTRONIC Products are covered by our QUICK 60+ system warranty, a comprehensive light source, ballast and power supply system warranty. For additional details, refer to our latest version of the QUICK 60+ warranty bulletin.

Item Number \_\_\_\_\_ **51516 OT DIM**  
OPTOTRONIC \_\_\_\_\_  
Dimming Module \_\_\_\_\_

Ordering Guide

Specifications subject to change without notice.

OSRAM SYLVANIA National Customer Support Center  
1-800-LIGHTBULB (1-800-544-4828)  
www.sylvania.com



**Linear luminaires  
for ceramic metal halide light sources**

**Post construction:** Made from four square aluminum extrusions, 1/8" wall thickness mechanically fastened to a square extruded lamp housing (top) and a wiring/ballast compartment (bottom).

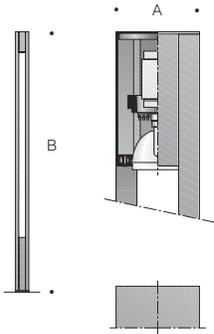
**Enclosure:** One piece die cast aluminum extruded housing (top). Clear, molded tempered glass, 3/4" thick extends below the lamp enclosure to increase the light spread. Lens is secured with a one piece die cast trim ring, secured to housing with four (4) stainless steel screws. Fully gasketed using a one piece molded high temperature silicone gasket for weather tight operation. Reflector made from pure anodized aluminum.

**Electrical:** Lampholders: HID; Single ended porcelain G12 bi-pin with nickel plated contacts supplied with 180°C high temperature leads, rated 600V pulse rated 5 KV. HID Ballast is magnetic 120V or 277 - specify. Ballast is located in the bottom of the luminaire - access door is provided.

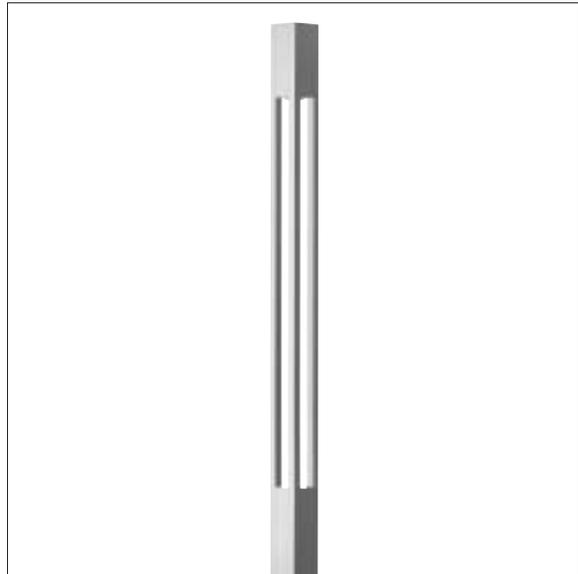
**Anchor base:** The #890B anchorage consists of a heavy gauge welded assembly of .157" thick galvanized steel. Luminaire slip fits over base and is secured by eight (8) stainless steel socket screws.

**Finish:** These luminaires are available in five standard BEGA colors: Black (BLK); White (WHT); Bronze (BRZ); Silver (SLV); Eurocoat™ (URO). To specify, add appropriate suffix to catalog number. For complete description of BEGA finishing process, refer to technical information section at end of catalog. 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:



Linear luminaire for ceramic metal halide lamps. Extruded aluminum post with extruded aluminum lamp enclosure and ballast/splice enclosure. Anchorage kit 890B fabricated of galvanized steel (included). U.L. listed, suitable for wet locations. IP 65. Colors: Standard BEGA finishes.



	Lamp	Lumen	A	B
<b>8945MH</b>	1 150W T6 G12 MH	14000	8 5/8"	177"
<b>890B</b>	Anchorage included			

BEGA/US 1000 BEGA Way, Carpinteria, CA 93013 [P] 805-684-0533 [F] 805-684-6682  
©Copyright BEGA/US 2002 updated 6/02

**Small scale drive over buried luminaires with low voltage halogen sources**

**Housing:** Constructed of .125" thick, machined stainless steel welded to a stainless steel bottom mounting plate. Trim/Clamping ring is heavy, machined bronze.

**Enclosure:** .250" thick tempered glass, machined to be flush with .125" thick machined stainless steel trim ring. Trim ring is secured by four (4) captive flat phillips head stainless steel screws. Trim may be rotated after installation for precise alignment. One piece molded U-channel, high temperature silicone rubber gasket. Clear glass projector uprights have a full spot distribution reflector and internal lamp shield for glare control.

**Electrical:** G4, bi-pin lampholder with ceramic insulator and high temperature leads. Luminaires are prewired with 10 feet of 12 AWG wire and a waterproof cable gland entry into the housing. The cable gland has 1/2" NPT threads for conduit connection. These luminaires require a remotely located 12V power transformer suitable for power supply to wet or underwater locations.

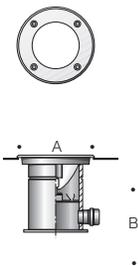
**Note:** lamps supplied with luminaire pre-lamped at factory. A separate waterproof wiring box for power supply must be provided (by contractor).

**Finish:** Machined stainless steel. Custom colors are not available.

U.L. listed, suitable for wet locations and vehicle drive over. Protection class: IP 67.

Luminaires are designed to withstand loads of up to 11,000 lbs. at speeds up to 30 mph when installed on a proper foundation. Proper drainage must be provided.

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



Stainless steel and bronze construction. Diffused tempered glass. 12V halogen lamp supplied. Remote 12V power source required.  
 U.L. listed, suitable for wet locations. IP 67.  
 Caution: The column "T" in this charts indicates the temperature in °C which is reached on the center of the glass surface during operation.



	Lamp		Lumen	A	B	T
<b>8083</b>	Diffused	1 5W T3 G4, 12V	60	3 9/16	3 7/8	50°

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**UCSB Student Resource Building**  
 Luminaire Cutsheet

**Type:** E2

Issue: 4.12.07

1 of 1

Associated with: L6

## Linear fluorescent luminaires - stainless steel

**Housing:** Fabricated from all stainless steel with all stainless steel fasteners. Provided with a stainless steel plate for attachment over a single gang vertical switch box.

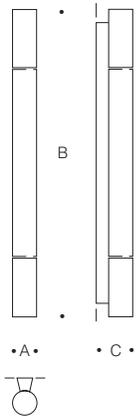
**Enclosure:** Hand blown three-ply opal glass diffuser with screw neck. Fully gasketed for weather tight operation with a molded silicone rubber o-ring. Wall mount only. Allow enough vertical space to slip diffuser up and out for relamping.

**Electrical:** Lampholders; Fluorescent are type 2G11 rated 75W, 250V. Ballasts are electronic universal voltage 120V through 277V.

**Finish:** #4 brushed stainless steel. Stainless steel requires regular cleaning and maintenance, much like household appliances, to maintain its luster and to prevent tarnishing or the appearance of rust like stains.

U.L. listed, suitable for wet locations. Protection class: IP 55.

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



Wall luminaires with all Stainless steel construction. Three-ply opal glass diffusers. Allow enough vertical space to slip diffuser up and out for relamping. U.L listed suitable for wet locations. IP 55. Finish #4 brushed stainless steel.



		Lamp	Lumen	A	B	C
<b>4096P</b>	Wall	1 50W CF twin-4p	4300	3 <sup>1</sup> / <sub>8</sub>	43 <sup>5</sup> / <sub>16</sub>	47 <sup>1</sup> / <sub>16</sub>

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## UCSB Student Resource Building Luminaire Cutsheet

**Type:** E3

Issue: 4.12.07

1 of 1

Associated with: L7,B3

**Complete Lamp Types Schedule**

Location: UCSB Student Resource Building

Type	Manuf.	Designation	Rated Wattage	Base	CRI / CCT	Rated Life (hrs)	Initial Lumens	Assoc. Fixture	Assoc. Ballast
L1	Philips Lighting	LumiLEDS	(see F1)	n/a	70 / 4500K	50000	120	F1	-
L2	General Electric	92584 CMH/T/U/942/G12	150	G12	82 / 3000K	12000	14000	F5	B1
L3	General Electric	20835 Q50MR16/C/NFL 25	50	GX5.3	100 / 3050K	6000	720	F3A	-
L4	General Electric	20826 Q35MR16/C/SP20	35	GX5.3	100 / 3000K	5000	625	F3B	-
L5	General Electric	46704 F28W/T5/830/EC O	28	G5	85 / 3000K	30000	2900	F4	B2
L6	General Electric	42959 Q5T3/CL	5	G4	80 / 3000K	2000	60	E2	-
L7	Philips Lighting	347476 PL-L 50W/830/4P RS	50	2G11	82 / 3000K	10000	4000	E3	B3
L8	General Electric	46759 F54W/T5/830	54	G5	85 / 3000K	20000	5000	F8	B4

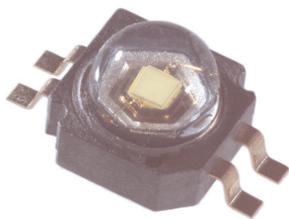
power light source

# LUXEON® K2 Emitter

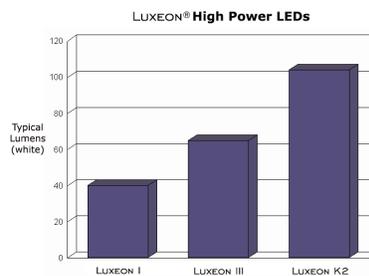
## Introduction

LUXEON® K2, the latest addition to the LUXEON high-power LED family, establishes elevated standards for light output, thermal management, and manufacturability. Offering industry-leading lumens per package and power handling capabilities, LUXEON K2 enables you to create never before possible lighting applications and:

- ♦ deliver more useable light
- ♦ optimize applications to reduce size and cost
- ♦ engineer more robust applications
- ♦ reduce thermal management engineering
- ♦ utilize standard FR4 PCB technology in addition to MCPCB solutions
- ♦ simplify manufacturing through the use of surface mount technology.



LUXEON® K2 is available in white, green, blue, royal blue, cyan, red, red-orange and amber.



## LUXEON K2 Technology Leadership

- ♦ Highest operating junction temperature available, 185°C
- ♦ Industry leading lumen performance, > 140 lumens in 6500K white
- ♦ Highest Drive Currents—1500 mA
- ♦ Lowest Thermal Resistance—9°C/W
- ♦ Industry Best Moisture Sensitivity level—JEDEC 2a  
4 week floor life without reconditioning
- ♦ Lead free reflow solder  
JEDEC 020c compatible
- ♦ RoHS Compliant
- ♦ Autoclave compliant—JESD22 A-102
- ♦ Industry Best Lumen Maintenance—50,000 hours life at 1000 mA with 70% lumen maintenance

**PHILIPS**

**LUMILEDS**  
LIGHT FROM SILICON VALLEY

**UCSB Student Resources Building**

Lamp Cutsheet

**Type:** L1

Issue: 4.12.07

1 of 2

Associated with: F1

## Flux Characteristics for LUXEON K2 Junction Temperature, $T_J = 25^\circ\text{C}$

Table 1.

Performance at Test Currents					Typical Performance at Indicated Current	
Color	Part Number	Minimum Luminous Flux (lm) or Radiometric Power (mW) $\Phi_V^{[1][3]}$	Typical Luminous Flux (lm) or Radiometric Power (mW) $\Phi_V^{[2][3]}$	Test Current (mA)	Typical Luminous Flux (lm) or Radiometric Power (mW) $\Phi_V^{[2][3]}$	Drive Current (mA)
White	LXK2-PW12-R00	39.8	45	350	75	700
	LXK2-PW12-S00	51.7	60	350	100	700
	LXK2-PW14-T00	80.0	85	1000	110	1500
	LXK2-PW14-U00	87.4	100	1000	130	1500
	LXK2-PW14-V00	113.6	120	1000	140	1500
Green	LXK2-PM12-R00	39.8	45	350	75	700
	LXK2-PM12-S00	51.7	60	350	100	700
	LXK2-PM14-U00	87.4	100	1000	130	1500
Cyan	LXK2-PE12-Q00	30.6	35	350	60	700
	LXK2-PE12-R00	39.8	45	350	75	700
	LXK2-PE12-S00	51.7	60	350	100	700
	LXK2-PE14-T00	67.2	80	1000	105	1500
	LXK2-PE14-U00	87.4	100	1000	130	1500
Blue	LXK2-PB12-K00	8.2	9.5	350	16	700
	LXK2-PB12-L00	10.7	12.5	350	21	700
	LXK2-PB12-M00	13.9	16	350	27	700
	LXK2-PB14-N00	18.1	21	1000	35	1500
	LXK2-PB14-P00	23.5	27	1000	35	1500
	LXK2-PB14-Q00	30.6	35	1000	46	1500
Royal Blue	LXK2-PR12-L00	175 mW	200 mW	350	330 mW	700
	LXK2-PR12-M00	225 mW	290 mW	350	480 mW	700
	LXK2-PR14-Q00	435 mW	475 mW	1000	620 mW	1500
	LXK2-PR14-R00	515 mW	575 mW	1000	750 mW	1500
Red	LXK2-PD12-Q00	30.6	35	350	60	700
	LXK2-PD12-R00	39.8	45	350	75	700
	LXK2-PD12-S00	51.7	60	350	100	700
Red-Orange	LXK2-PH12-R00	39.8	45	350	75	700
	LXK2-PH12-S00	51.7	60	350	100	700
Amber	LXK2-PL12-P00	23.5	27	350	46	700
	LXK2-PL12-Q00	30.6	35	350	60	700
	LXK2-PL12-R00	39.8	45	350	75	700

Notes for Table 1:

1. Minimum luminous flux or radiometric power performance guaranteed within published operating conditions. Philips Lumileds maintains a tolerance of  $\pm 10\%$  on flux and power measurements.
2. Typical luminous flux or radiometric power performance when device is operated within published operating conditions.
3. LUXEON K2 products with even higher luminous flux and radiometric power levels will become available in the future. Please consult Philips Lumileds or Future Electronics for more information.

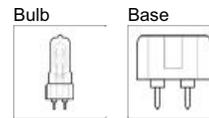
## 20017 – CMH150TU/830/G12

GE ConstantColor® CMH® Ceramic Metal Halide T6



### GENERAL CHARACTERISTICS

Lamp type	High Intensity Discharge - Ceramic Metal Halide
Bulb	T6
Base	Bi-Pin (G12)
Wattage	150
Rated Life	12000 hrs
Bulb Material	Quartz
Lamp Enclosure Type (LET)	Enclosed fixtures only
Additional Info	UV control



[View Larger](#)

### PHOTOMETRIC CHARACTERISTICS

Initial Lumens	14000
Mean Lumens	11000
Nominal Initial Lumens per Watt	93
Color Temperature	3000 K
Color Rendering Index (CRI)	82

### ELECTRICAL CHARACTERISTICS

Burn Position	Universal burning position
Warm Up Time to 90% (MAX)	2 min/3
Hot Restart Time to 90% (MIN)	10 min
Hot Restart Time to 90% (MAX)	15 min

### DIMENSIONS

Maximum Overall Length (MOL)	3.9300 in (99.8 mm)
Light Center Length (LCL)	2.180 in (55.3 mm)

### PRODUCT INFORMATION

Product Code	20017
--------------	-------

### ADDITIONAL RESOURCES

[Catalogs](#)

[Testimonials](#)

#### Brochures

- Product Brochures
  - [Ceramic Metal Halide](#)
  - Application/Segment Brochures
    - [Contractor Lighting](#)

[MSDS \(Material Safety Data Sheets\)](#)

[Disposal Policies & Recycling Information](#)

## UCSB Student Resources Building

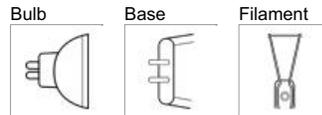
### Lamp Cutsheet

Type: L2

**20835 – Q50MR16/C/NFL25**  
 GE MR16

**GENERAL CHARACTERISTICS**

Lamp type	Halogen - MR
Bulb	MR16
Base	2-Pin (GX5.3)
Filament	C-6
Wattage	50
Voltage	12
Rated Life	6000 hrs
Lamp Enclosure Type (LET)	Open or enclosed fixtures


[View Larger](#)
**PHOTOMETRIC CHARACTERISTICS**

Center Beam Candlepower (CBCP)	3200
Color Temperature	3050 K

**DIMENSIONS**

Maximum Overall Length (MOL)	1.8750 in (47.6 mm)
Bulb Diameter (DIA)	2.000 in (50.8 mm)

**PRODUCT INFORMATION**

Product Code	20835
Description	Q50MR16/C/NFL25
ANSI Code	EXZ
Standard Package	BUNDLE
Standard Package GTIN	00043168208352
Standard Package Quantity	20
Sales Unit	Unit
No Of Items Per Sales Unit	1
No Of Items Per Standard Package	20
UPC	043168994279

**ADDITIONAL RESOURCES**
[Catalogs](#)
[Testimonials](#)
**Brochures**

Application/Segment Brochures

- [Beauty Salon Lighting](#)
- [Restaurant Lighting](#)
- [Specialty Store Lighting](#)

Product Brochures

- [Color](#)
- [XL Brochure](#)

**Sell Sheets**

- [GE ConstantColor® Precise™ MR16 Lamps](#)

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**UCSB Student Resources Building**  
 Lamp Cutsheet

**Type:** L3

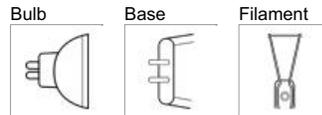
Issue: 4.12.07

1 of 1

Associated with: F3A

**20826 – Q35MR16/C/SP20**  
GE MR16**GENERAL CHARACTERISTICS**

Lamp type	Halogen - MR
Bulb	MR16
Base	2-Pin (GX5.3)
Filament	C-6
Wattage	35
Voltage	12
Rated Life	5000 hrs
Lamp Enclosure Type (LET)	Open or enclosed fixtures

[View Larger](#)**PHOTOMETRIC CHARACTERISTICS**

Center Beam Candlepower (CBCP)	3900
Color Temperature	3000 K

**DIMENSIONS**

Maximum Overall Length (MOL)	1.8750 in (47.6 mm)
Bulb Diameter (DIA)	2.000 in (50.8 mm)

**PRODUCT INFORMATION**

Product Code	20826
Description	Q35MR16/C/SP20
ANSI Code	FRA
Standard Package	BUNDLE
Standard Package GTIN	00043168208260
Standard Package Quantity	20
Sales Unit	Unit
No Of Items Per Sales Unit	1
No Of Items Per Standard Package	20
UPC	043168990530

**ADDITIONAL RESOURCES**[Catalogs](#)[Testimonials](#)**Brochures**

Product Brochures

- [Color](#)
- [XL Brochure](#)

**Sell Sheets**

- [GE ConstantColor® Precise™ MR16 Lamps](#)

[IES/Photometric Download](#)[MSDS \(Material Safety Data Sheets\)](#)[Disposal Policies & Recycling Information](#)**⚠ CAUTIONS & WARNINGS**[See list of cautions & warnings.](#)[Return To Top](#)

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**UCSB Student Resources Building**  
Lamp Cutsheet**Type:** L4

Issue: 4.12.07

1 of 1

Associated with: F3B



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Your selected product has been discontinued and replaced by the following product.

**46704 – F28W/T5/830/ECO**

GE Ecolux® Starcoat® T5

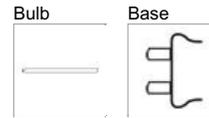


- Passes TCLP, which can lower disposal costs.

High Color Rendering

**GENERAL CHARACTERISTICS**

Lamp type	Linear Fluorescent - Straight Linear
Bulb	T5
Base	Miniature Bi-Pin (G5)
Wattage	28
Voltage	167
Rated Life	30000 hrs
Rated Life (rapid start) @ Time	36000 h @ 12 h 30000 h @ 3 h
Bulb Material	Soda lime
Starting Temperature (MIN)	-20 °C (-4 °F)
Additional Info	TCLP compliant



[View Larger](#)

**PHOTOMETRIC CHARACTERISTICS**

Initial Lumens	2900
Mean Lumens	2660
Nominal Initial Lumens per Watt	103
Color Temperature	3000 K
Color Rendering Index (CRI)	85
S/P Ratio (Scotopic/Photopic Ratio)	1.3

**ADDITIONAL RESOURCES**

[Catalogs](#)

[Testimonials](#)

**Brochures**

Application/Segment Brochures

- [Contractor Lighting](#)
- [Healthcare Lighting](#)

Product Brochures

- [Ecolux](#)
- [Ecolux \(Environmental\)](#)

[Disposal Policies & Recycling Information](#)

**ELECTRICAL CHARACTERISTICS**

Open Circuit Voltage (rapid start) Min @ Temperature	425 V @ 10 °C
Cathode Resistance Ratio - Rh/Rc (MIN)	4.25
Cathode Resistance Ratio - Rh/Rc (MAX)	6.5
Current Crest Factor (MAX)	1.7

**GRAPHS & CHARTS**

[Spectral Power Distribution](#)

**UCSB Student Resource Building**

Lamp Cutsheet

**Type:** L5

Issue: 4.12.07

1 of 1

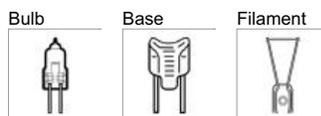
Associated with: F4,B2

**42959 – Q5T3/CL**  
GE T3



**GENERAL CHARACTERISTICS**

Lamp type	Halogen - Single-Ended
Bulb	T3
Base	2-Pin (G4)
Filament	C-6
Wattage	5
Voltage	12
Voltage (MIN)	5
Rated Life	2000 hrs
Rated Life (Vert)	2000 hrs



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**PHOTOMETRIC CHARACTERISTICS**

Initial Lumens	60
Initial Lumens (Hor)	12
Initial Lumens (Vert)	60
Nominal Initial Lumens per Watt	12

**ADDITIONAL RESOURCES**

- [Catalogs](#)
- [Testimonials](#)
- [MSDS \(Material Safety Data Sheets\)](#)
- [Disposal Policies & Recycling Information](#)

**DIMENSIONS**

Maximum Overall Length (MOL)	1.2500 in (31.7 mm)
Bulb Diameter (DIA)	0.375 in (9.5 mm)
Light Center Length (LCL)	0.750 in (19.0 mm)

**PRODUCT INFORMATION**

Product Code	42959
Description	Q5T3/CL
Standard Package	BUNDLE
Standard Package GTIN	30043168429598
Standard Package Quantity	100
Sales Unit	Unit
No Of Items Per Sales Unit	1
No Of Items Per Standard Package	100
UPC	043168429597



## PL-L 50W/830 2G11 /4P 1CT

Product family description  
PL-L Long 4pin Fluorescent Lamp.

### Features/Benefits

- High lumen Output in a slim, compact size.
- Broad range of available wattages: 18, 24, 36, 40, 50, 55, and 80W.
- Excellent Color Rendering – 82 Color Rendering Index (CRI); 55W available with 91 CRI.
- Available in 3000, 3500 and 4100K; 55W available as 5000K only.
- Dimmable – PL-L 4-pin lamps may be used with electronic dimming ballasts.
- Long life: 15,000 to 20,000 hours average life depending on wattage.

### Applications

- Ideal for commercial interior lighting applications in 2'x2' fixtures, 1'x2' fixtures, and indirect lighting.

### Notes

- Rated average life under specified test conditions with lamps turned off and restarted no more frequently than once every 3 operating hours. Lamp life is appreciably longer if lamps are started less frequently. (202)
- Approximate Initial Lumens. The lamp lumen output is based upon lamp performance after 100 hours of operating life, when the output is measured during operation on a reference ballast under standard laboratory conditions. (203)
- Design Lumens are the approximate lamp lumen output at 40% of the lamp's Rated Average Life. This output is based upon measurements obtained during lamp operation on a reference ballast under standard laboratory conditions. (208)

### Product data

Product Number	347476
Full product name	PL-L 50W/830 2G11 /4P 1CT
Ordering Code	PL-L 50W/830/4P RS
Pack type	1 Lamp in a Folding Carton
Pieces per Sku	1
Skus / Case	25
Pack UPC	046677112677
EAN2US	
Case Bar Code	50046677112672
Successor Product number	
Watts[W ]	50W
Color Code	830 [CCT of 3000K]
Base	2G11 [2G11]
Base Information	4P
Execution	/4P [4 Pins]
Packing Type	1CT [1 Lamp in a Folding Carton]

# DHILIDS

**UCSB Student Resource Building**  
Lamp Cutsheet

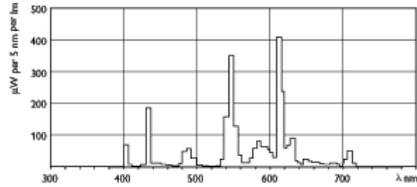
**Type:** L7

Issue: 4.12.07

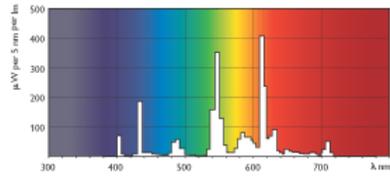
1 of 2

Associated with: E3,B3

Product data	
System Description	Rapid Start
Packing Configuration	25
Avg. Life[hr ]	10000
Avg. Hrs. Life[hr ]	-
Lamp Voltage[V ]	150
Dimmable	Yes
Color Rendering Index[Ra8 ]	82
Color Designation	Warm White
Color Description	830 Warm White
Color Temperature[K ]	3000
Initial Lumens[Lm ]	4000
Overall Length C[mm ]	572
Diameter D[mm ]	38
Diameter D1[mm ]	18



PL-L/830



PL-L/830

# DHILIDS

**UCSB Student Resource Building**  
Lamp Cutsheet

**Type:** L7

Issue: 4.12.07

2 of 2

Associated with: E3,B3



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**46759 – F54W/T5/830/ECO**

GE Ecolux® Starcoat® T5

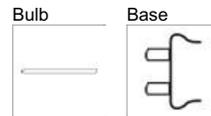


- Passes TCLP, which can lower disposal costs.

High Color Rendering

**GENERAL CHARACTERISTICS**

Lamp type	Linear Fluorescent - Straight Linear
Bulb	T5
Base	Miniature Bi-Pin (G5)
Wattage	54
Voltage	117
Rated Life	30000 hrs
Rated Life (rapid start) @ Time	30000 h @ 3 h 36000 h @ 12 h
Bulb Material	Soda lime
Starting Temperature (MIN)	-20 °C (-4 °F)
Additional Info	TCLP compliant



[View Larger](#)

**PHOTOMETRIC CHARACTERISTICS**

Initial Lumens	5000
Mean Lumens	4600
Nominal Initial Lumens per Watt	92
Color Temperature	3000 K
Color Rendering Index (CRI)	85
S/P Ratio (Scotopic/Photopic Ratio)	1.3

**ADDITIONAL RESOURCES**

- [Catalogs](#)
- [Testimonials](#)
- Brochures**
  - Application/Segment Brochures
    - [Contractor Lighting](#)
    - [Healthcare Lighting](#)
  - Product Brochures
    - [Ecolux](#)
    - [Ecolux \(Environmental\)](#)
- [Disposal Policies & Recycling Information](#)

**ELECTRICAL CHARACTERISTICS**

Open Circuit Voltage (rapid start) Min @ Temperature	520 V @ 10 °C
Cathode Resistance Ratio - Rh/Rc (MIN)	4.25
Cathode Resistance Ratio - Rh/Rc (MAX)	6.5
Current Crest Factor (MAX)	1.7

**GRAPHS & CHARTS**

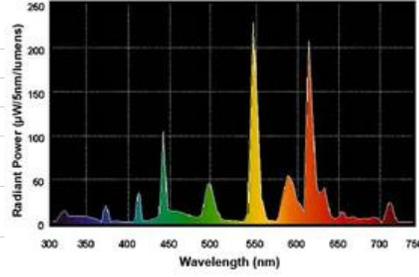
[Spectral Power Distribution](#)

**DIMENSIONS**

**UCSB Student Resource Building**  
Lamp Cutsheet

**Type:** L8

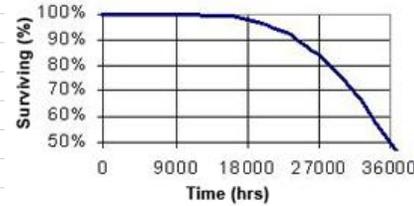
Maximum Overall Length (MOL)	45.8000 in (1163.3 mm)
Nominal Length	45.200 in (1148.0 mm)
Bulb Diameter (DIA)	0.625 in (15.8 mm)
Bulb Diameter (DIA) (MAX)	0.670 in (17.0 mm)
Max Base Face to Base Face (A)	45.240 in (1149.0 mm)
Face to End of Opposing Pin (B) (MIN)	45.420 in (1153.6 mm)
Face to End of Opposing Pin (B) (MAX)	45.520 in (1156.2 mm)



Lamp Mortality

**PRODUCT INFORMATION**

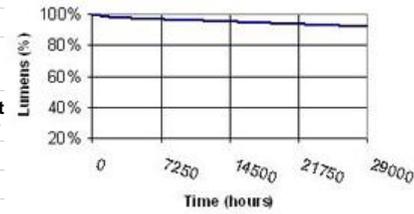
Product Code	46759
Description	F54W/T5/830/ECO
Standard Package	Case
Standard Package GTIN	10043168467596
Standard Package Quantity	40
Sales Unit	Unit
No Of Items Per Sales Unit	1
No Of Items Per Standard Package	40
UPC	043168467599



Lumen Maintenance

**COMPATIBLE GE BALLASTS**

Product Code	Description	# of Bulbs	Power Factor	Ballast Factor
<a href="#">29717</a>	GE454MVPSN1-B	1	99.0	1.0
<a href="#">87666</a>	GE-254-MV-PS-NLB	1	99.0	1.02
<a href="#">47542</a>	B254PUNV-DGE1C	1	99.0	1.02
<a href="#">87636</a>	B254PUNV-DL	1	98.0	1.1
<a href="#">87651</a>	GE-454-MV-PS-NLB	1	99.0	1.0
<a href="#">87621</a>	GE-454-MV-PS-NL	1	99.0	1.0
<a href="#">29726</a>	GE454MVPSN1	1	99.0	1.0



**CAUTIONS & WARNINGS**

[See list of cautions & warnings.](#)

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**Complete Ballasts Schedule**

Location: UCSB Student Resource Building

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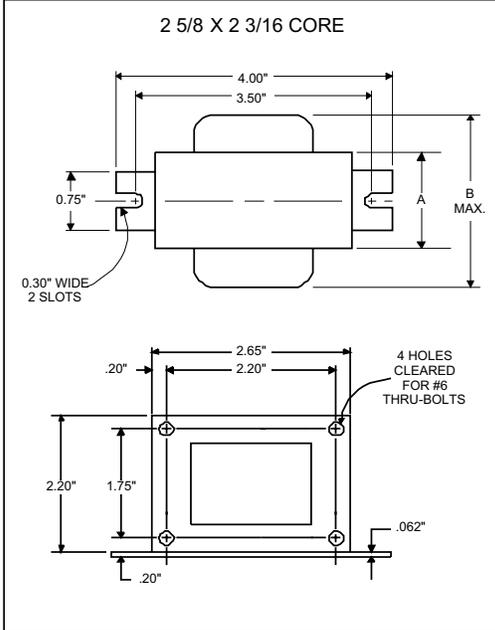
Type	Manuf.	Catalog Name	# Lamps	Ballast Type	Start Method	Input Watts	Ballast Factor	Power Factor	THD (%)	Assoc. Fixture
B1	Advance Transformer s	71A5437BP	1 - (L2)	Magnetic Standard	Ignitor	173	1.00	0.9	<10%	F5
B2	Lutron	Lutron Eco-10: ECO-T528-277- 2	2 - (L5)	Electronic Dimming (10%)	Programmed Rapid Start	66	1.00	>0.95	<10%	F4
B3	Advance Transformer s	REL-1TTS50	1 - (L7)	Electronic	Rapid Start	54	0.98	0.98	<20%	E3
B4	Lutron	Lutron Eco-10: ECO-T554-277- 2	2 - (L8)	Electronic Dimming (10%)	Programmed Rapid Start	54	1.00	>0.95	<10%	F8



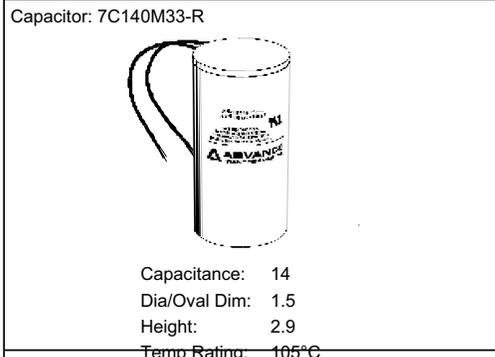
**Metal  
Halide  
Lamp Ballast**

**Catalog Number 71A5437BP  
For 150W M102  
60 Hz R-HPF  
Status: Active**

**DIMENSIONS AND DATA**



INPUT VOLTS	277				
CIRCUIT TYPE	R-HPF				
POWER FACTOR (min)	90%				
REGULATION					
Line Volts	±5%				
Lamp Watts	±10%				
LINE CURRENT (Amps)					
Operating.....	0.63				
Open Circuit.....	1.50				
Starting.....	0.70				
UL TEMPERATURE RATINGS					
Insulation Class	H(180°C)				
Coil Temperature Code	1029	B			
MIN. AMBIENT STARTING TEMP.	-20°F or -30°C				
NOM. OPEN CIRCUIT VOLTAGE	277				
INPUT VOLTAGE AT LAMP DROPOUT.....	170				
INPUT WATTS	173				
RECOMMENDED FUSE (Amps).....	5				
CORE and COIL					
Dimension (A)	2.50				
Dimension (B)	4.00				
Weight (lbs.)	4.2				
Lead Lengths	12"				
CAPACITOR REQUIREMENT					
Microfarads	14.0				
Volts (min.)	280				
Fault Current Withstand (amps)					
60 Hz TEST PROCEDURES (Refer to Advance Test Procedure for HID Ballasts - Form 1270)					
High Potential Test (Volts)					
1 minute	2000				
2 seconds	2500				
Open Circuit Voltage Test (Volts)	250-305				
Short-Circuit Current Test (Amps)					
Secondary Current	2.00-2.50				
Input Current.....	0.50				
	0.75				

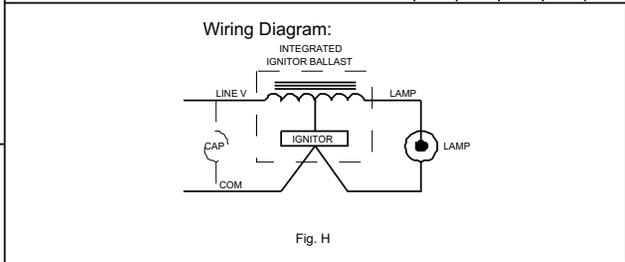


Ignitor: INTEGRAL

An ignitor integral to the core and coil assembly is used to start the lamp.

Ballast to Lamp Distance (BTL) = 2 feet  
Temp Rating: 125°C

Data is based upon tests performed by Advance Transformer in a controlled environment and representative of relative performance. Actual performance can vary depending on operating conditions. Specifications subject to change without notice.



**Typical Ordering Information**  
(please call Advance for suffix availability)

Order Suffix	Description
500DB	Ballast With Integral Igniter and Dry Film Capacitor
510DB	Ballast w/Welded Bracket, Integral Igniter & Dry Film Cap.
510B	Ballast and Integral Igniter, No Capacitor
610B	Ballast w/Welded Bracket and Integral Igniter, No Capacitor

**ADVANCE**

O'HARE INTERNATIONAL CENTER · 10275 WEST HIGGINS ROAD · ROSEMONT, IL 60018  
Customer Support/Technical Service: Phone: 800-372-3331 · Fax: 630-307-3071  
Corporate Offices: Phone: 800-322-2086

05/15/03

**UCSB Student Resource Building**  
Ballast Cutsheet

**Type: B1**

Issue: 4.12.07

1 of 1

Associated with: F5,L2

## Eco-10 Overview

Eco-10 lighting management electronic dimming ballasts are designed to maximize the benefits of a lighting management system. Eco-10 offers 100% to 10% dimming, and is ideal for use in any space where saving energy is the primary goal of the design.

### Features

- Continuous, flicker-free dimming from 100% to 10%
- Standard 3-wire line-voltage phase-control technology for consistent fixture-to-fixture dimming performance
- Models available for T5 and T5-HO linear, T8 linear and U-bent, and T5 twin-tube lamps
- Programmed rapid start design preheats lamp cathodes before applying full arc voltage
- Lamps turn on to any dimmed level without flashing to full brightness
- Low harmonic distortion throughout the entire dimming range maintains power quality
- Frequency of operation ensures that ballast does not interfere with infrared devices operating between 38 and 42 kHz
- Inrush current limiting circuitry eliminates circuit breaker tripping, switch arcing, and relay failure
- End-of-lamp-life protection circuitry (for T5 and T5-HO linear models) ensures safe operation throughout entire lamp life cycle
- For linear lamps, ballasts maintain consistent light output for different lamp lengths, ensuring uniformity
- Ultra-quiet operation
- Protected from miswires of any input power to control lead
- 100% compatible with all Lutron 3-wire fluorescent controls
- 100% performance tested at factory
- Designed and assembled in the USA
- 5-year limited warranty with Lutron field service commissioning (3-year standard warranty) from date of purchase



**Eco-10, case type C**

1.18”w (30mm) x 1.00”h (25mm) x 18.00”l (457mm)



**Eco-10, case type D**

1.58”w (40mm) x 1.00”h (25mm) x 9.50”l (241mm)



**Eco-10, case type F**

2.38”w (60mm) x 1.50”h (38mm) x 9.50”l (241mm)

<b>Job Name:</b> <input type="text"/>	<b>Model Numbers:</b> <input type="text"/>	
<b>Job Number:</b> <input type="text"/>	<input type="text"/>	<input type="text"/>

### Specifications

#### Performance

- Dimming Range: 100% to 10% measured relative light output
- Lamp Starting: programmed rapid start
- Minimum Lamp Starting Temperature: 10°C (50°F)
- Ambient Temperature Operating Range: 10°C (50°F) to 60°C (140°F)
- Relative Humidity: maximum 90% non-condensing
- Operating Voltage: 120V or 277V at 60Hz
- Lamp Current Crest Factor: less than 1.7
- Lamp Flicker: none visible
- Light Output Variation: constant ±2% light output for line voltage variations of ±10%
- Lamp Life: average lamp life meets or exceeds rating of lamp manufacturer
- Ballast Factor: greater than .85 for T8 and T5 twin-tube lamps, equal to 1.0 for T5 lamps
- Power Factor: greater than .95
- Total Harmonic Distortion (THD): less than 20%
- Maximum Inrush Current: 7 amps per ballast at 120V, 3 amps per ballast at 277V
- Sound Rating: Inaudible in a 27dBa ambient
- Maximum Ballast Case Temperature: 75°C (167°F)

#### Standards

- UL Listed (evaluated to the requirements of UL935)
- CSA certified (evaluated to the requirements of C22.2 No. 74)
- Class P thermally protected
- Meets ANSI C82.11 High Frequency Ballast Standard
- Meets FCC Part 18 Non-Consumer requirements for EMI/RFI emissions
- Meets ANSI C62.41 Category A surge protection standards up to and including 4kV
- Manufacturing facilities employ ESD reduction practices that comply with the requirements of ANSI/ESD S20.20
- Lutron Quality Systems registered to ISO 9001.2000

<b>Job Name:</b> <input type="text"/>	<b>Model Numbers:</b> <input type="text"/>	
<b>Job Number:</b> <input type="text"/>	<input type="text"/>	<input type="text"/>

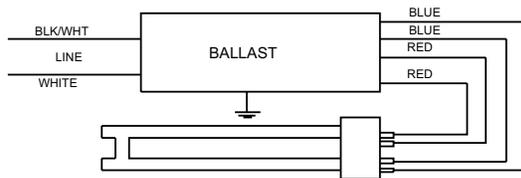


<b>REL-1TTS50</b>	
Brand Name	STANDARD ELEC
Ballast Type	Electronic
Starting Method	Rapid Start
Lamp Connection	Series
Input Voltage	120
Input Frequency	60 HZ
Status	Active

**Electrical Specifications**

Lamp Type	Num. of Lamps	Rated Lamp Watts	Min. Start Temp (°F/C)	Input Current (Amps)	Input Power (ANSI Watts)	Ballast Factor	MAX THD %	Power Factor	MAX Lamp Current Crest Factor	B.E.F.
* FT50W/2G11/RS	1	50	50/10	0.46	54	0.98	20	0.98	1.6	1.81
FT55W/2G11	1	55	50/10	0.43	51	0.85	20	0.99	1.6	1.67

**Wiring Diagram**



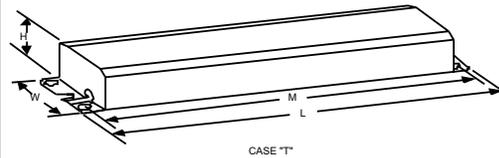
Diag. 93

The wiring diagram that appears above is for the lamp type denoted by the asterisk (\*)

**Standard Lead Length (inches)**

	in.	cm.		in.	cm.
Black			Yellow/Blue		
White	12		Blue/White		
Blue	24		Brown		
Red	24		Orange		
Yellow			Orange/Black		
Gray			Black/White	12	
Violet			Red/White		

**Enclosure**



**Enclosure Dimensions**

OverAll (L)	Width (W)	Height (H)	Mounting (M)
9.50 "	2.375 "	1.5 "	8.90625 "
9 1/2	2 3/8	1 1/2	8 29/32
24.1 cm	6 cm	3.8 cm	22.6 cm

Revised 11/03/1998



Data is based upon tests performed by Advance Transformer in a controlled environment and representative of relative performance. Actual performance can vary depending on operating conditions. Specifications are subject to change without notice. All specifications are nominal unless otherwise noted.

**ADVANCE**

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 Customer Support/Technical Service: Phone: 800-372-3331 · Fax: 630-307-3071  
 Corporate Offices: Phone: 800-322-2086

**UCSB Student Resource Building**

**Ballast Cutsheet**

**Type: B3**

Issue: 4.12.07

1 of 1

Associated with: E3,L7

## Eco-10 Overview

Eco-10 lighting management electronic dimming ballasts are designed to maximize the benefits of a lighting management system. Eco-10 offers 100% to 10% dimming, and is ideal for use in any space where saving energy is the primary goal of the design.

### Features

- Continuous, flicker-free dimming from 100% to 10%
- Standard 3-wire line-voltage phase-control technology for consistent fixture-to-fixture dimming performance
- Models available for T5 and T5-HO linear, T8 linear and U-bent, and T5 twin-tube lamps
- Programmed rapid start design preheats lamp cathodes before applying full arc voltage
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