



# SOLAR DECATHLON 2009

## LED and CFL Solutions for the Home

Knowing where to use what



**Mark R. Phillips**  
**Director of Affiliate Sales, Energy Efficiency**  
**Juno Lighting Group**



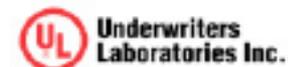
## Agenda

- LED standard and testing
- Undercabinet lighting
- Downlight
- Pendent lighting



# Standard Update

- Standards have been released to the public and have been adopted relatively quickly
- Less confusion exists in the marketplace but still needs to be emphasized by manufacturers
  - IESNA – Generally covers Efficacy and Quality of LED's
    - **LM-79-2008** – Applies to “fixture” electrical and photometric measurements
      - ANSI C78-377A - Chromaticity
    - **LM-80-2008** – Applies to “LED Manufacturer” Lifetime and lumen maintenance data
  - UL – Generally responsible for Life Safety of LED Fixtures and Power Supplies
    - UL-8750(OOI) - Proposed First Edition of the Standard for Light Emitting Diode (LED) Light Sources for Use in Lighting Products
    - UL-1310 – Class 2 Power Units
    - UL-1598 – Luminaires
    - UL-2108 – Low Voltage Lighting Systems





# Downlights and Light Bulbs

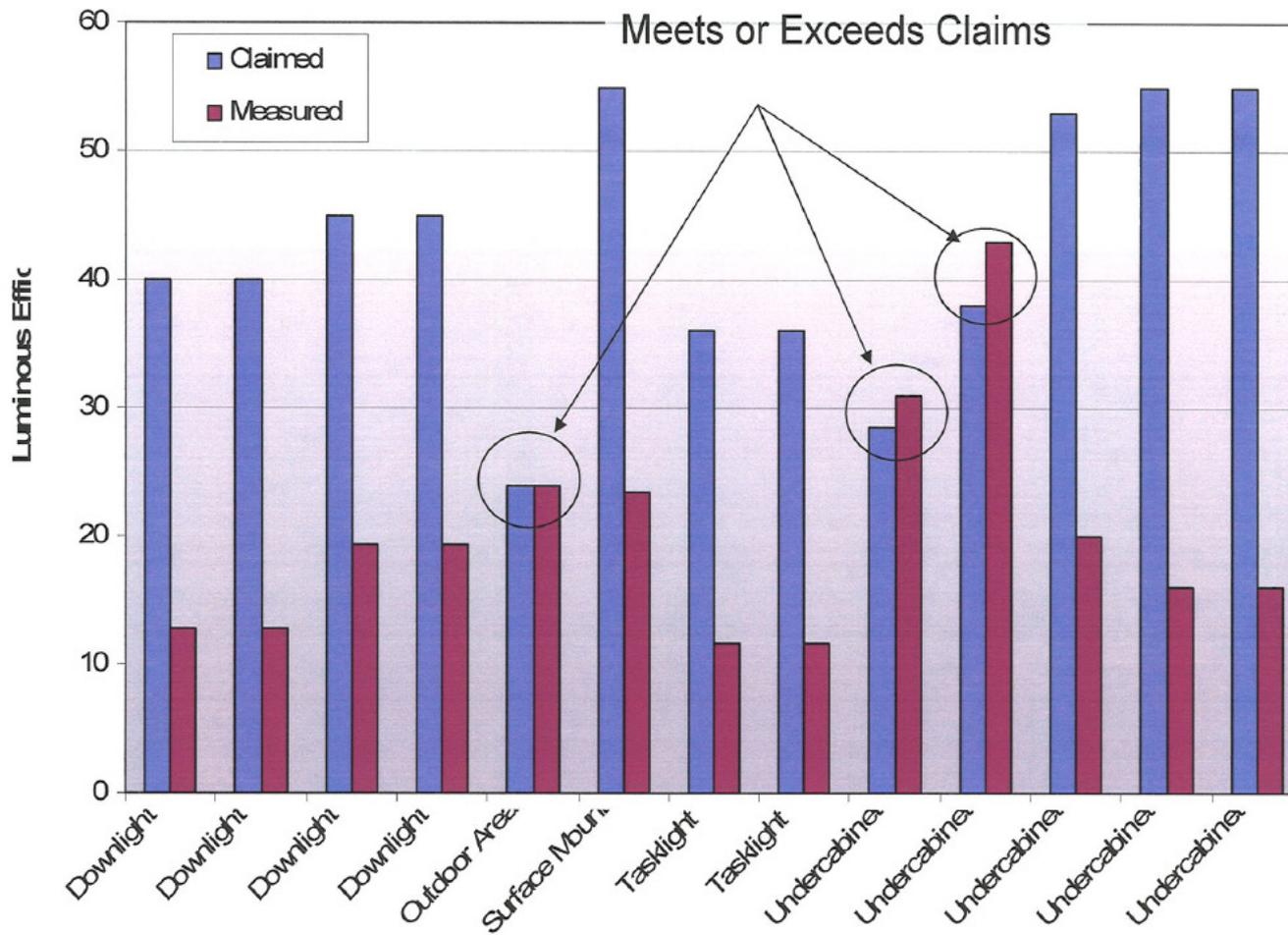
- Energy Star for
  - SSL fixtures
  - CFL fixtures
  - CFL Light Bulbs
  - LED Light Bulbs – Not yet available
- CALiPER Testing
  - Commercially Available LED Product Evaluation and Reporting (CALiPER)
  - Validates Energy Claims
  - Self certified w/data, policed from that point on



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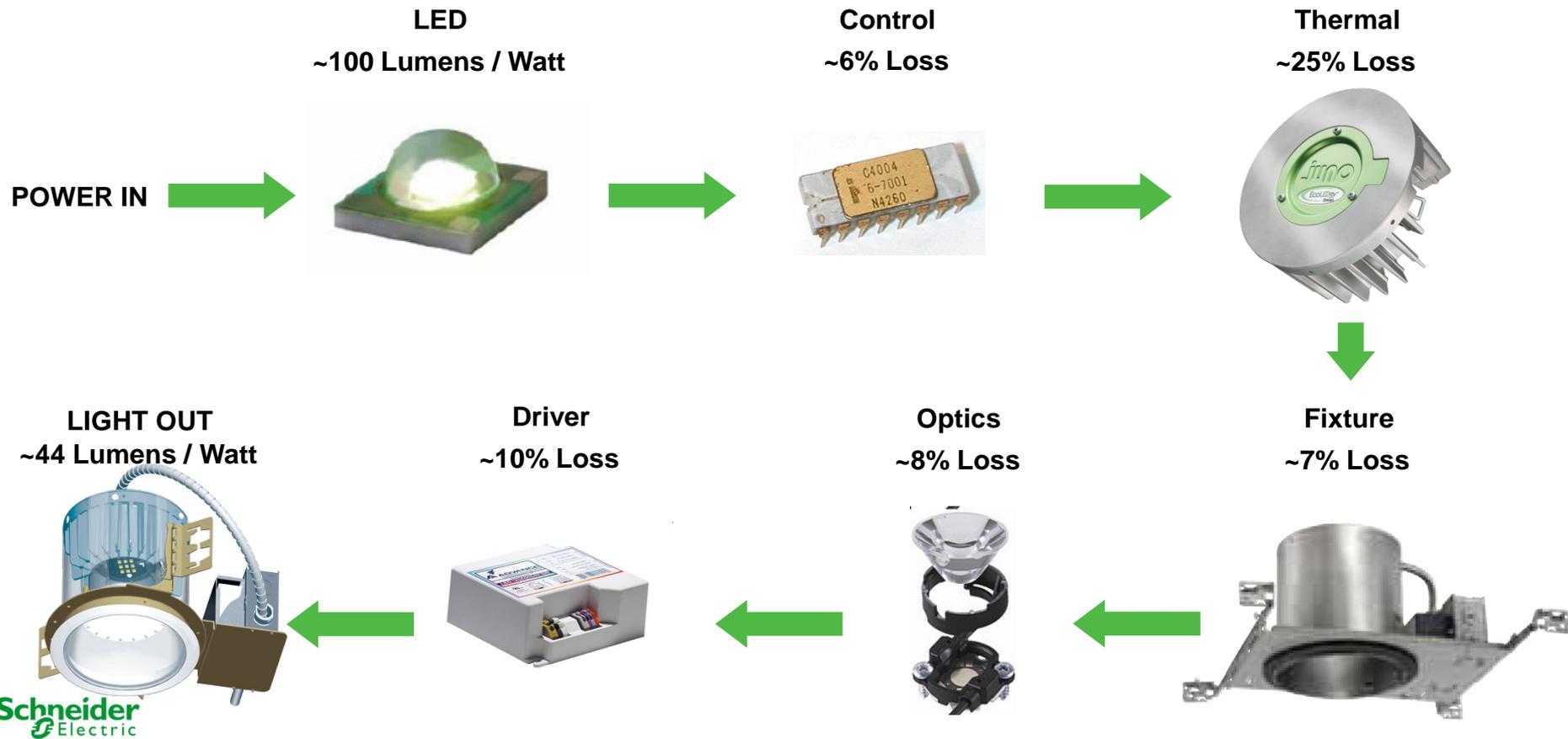
## Exaggerated Claims are being identified through CALiPER





## The True Measure of Light Output

- Total system determines overall Luminous Efficacy
  - Follow the “Efficiency Chain”





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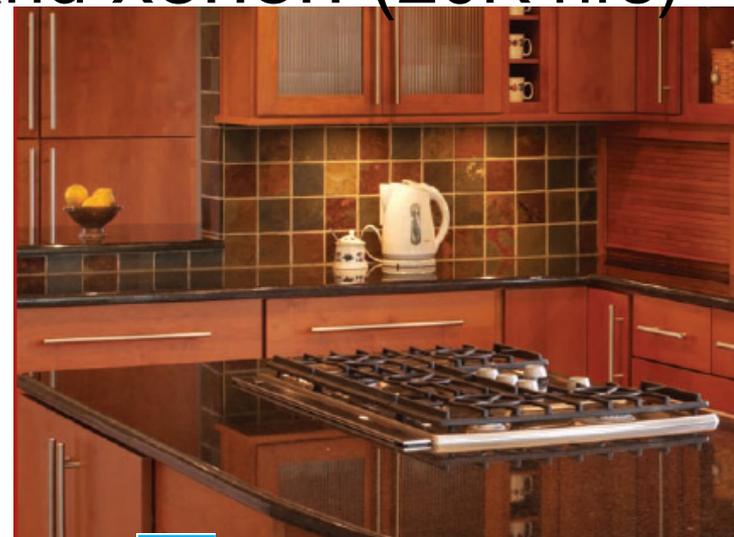
## Energy Efficiency solutions for the home





## Residential Undercabinet

- Replace halogen (6K hrs) and xenon (20K hrs)
  - Fluorescent (3,000K)
    - 10,000 hours
    - 74% and greater savings
  - LED (3,000K)
    - 50,000 hours
    - 85% and greater savings



### Pro-Series Energy Comparison

Fixture Length	Pro-Halogen/Xenon	Pro-Fluorescent	Pro-LED
9"	20-watts	3-watts <b>85%</b>	
14" (12" Fluorescent)	40-watts	8-watts <b>80%</b>	5-watts <b>88%</b>
22"	60-watts	14-watts <b>77%</b>	7.4-watts <b>88%</b>
30" (34" Fluorescent)	80-watts	21-watts <b>74%</b>	9.5-watts <b>88%</b>



# Residential Undercabinet and Cove

## Cabinet / Cove

- 5W LED modules: : 1" Wide x 1/2" Tall x 12" Long
- 3000K, 4100K & 5000K
- 50,000 hours life
- Efficacy ranging from 29 to 53 lm/W for system
- Long life, energy efficient and cool operation
- Clear or Frosted Lens



**DanaLite**  
Architectural Linear Lighting

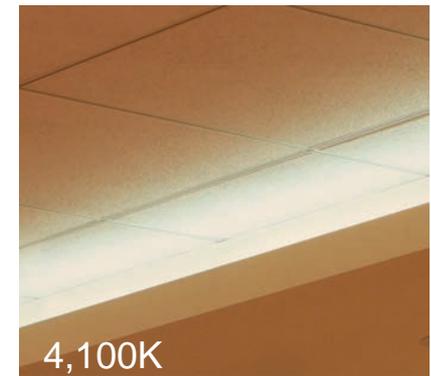
**Schneider**  
Electric

## Track / Cove

- 0.7W, 1.3W and 1.6W LED module
- Warm color – 3000K
- Cool color – 5000K
- 50,000 hours life
- Energy efficient and cool operation



3,000K



4,100K



### LED vs. Xenon



TL201LEDX1 3000K/4100K			TL201LEDX2 3000K/4100K			TL201LEDX3 3000K/4100K			Fixture/Lamp Data (Nominal Performance @12-Volts)		TL201+TL901	TL201+TL903
									<b>84% savings</b>			
0.7	1.3	1.6				Watts		4.3	8.5			
21/24	40/46	53/61				Lumens		22	44			
									<b>85% savings</b>			
30/34	31/35	33/38				Efficacy (lumens/watt)		5	5			
3000K/4100K	3000K/4100K	3000K/4100K				Color Temperature		2800K	2800K			
50,000	50,000	50,000				Rated Life (Hours)*		20,000	20,000			
85.5'	46'	37.5'				Total Maximum Trac Length** (Trac 12 with 3" OC Spacing)		14'	7'			
									<b>Economic Comparison for 30' Cove</b>			
120	120	120				# of fixtures (3" OC lamp spacing)		120	120			
1	1	1				# of 12V Transformer Runs		3	5			
									<b>84% savings</b>			
84	156	192				Total Wattage		516	1,020			
2.8	5.2	6.4				Watts per Foot		17.2	34.0			
									<b>85% savings</b>			
84/96	160/184	212/244				Lumens per Foot		88	176			
\$44.15	\$81.99	\$100.92				Total Annual Energy Cost***		\$271.21	\$536.11			
\$227.06	\$189.22	\$170.29				Annual Energy Savings vs. 5-Watt Xenon						
\$491.96	\$454.12	\$435.19				Annual Energy Savings vs. 10-Watt Xenon						

\*Note that Xenon life is based on 50% lamp failure. LED life is based on 0% failure with 70% lumen maintenance.

\*\*Total Maximum Trac Length is based on capacity of the trac (Trac 12 = 240W); to avoid voltage drop issues, a single transformer circuit may have to feed multiple runs, based on Maximum Trac Run Length chart on page 13, using separate feed points.

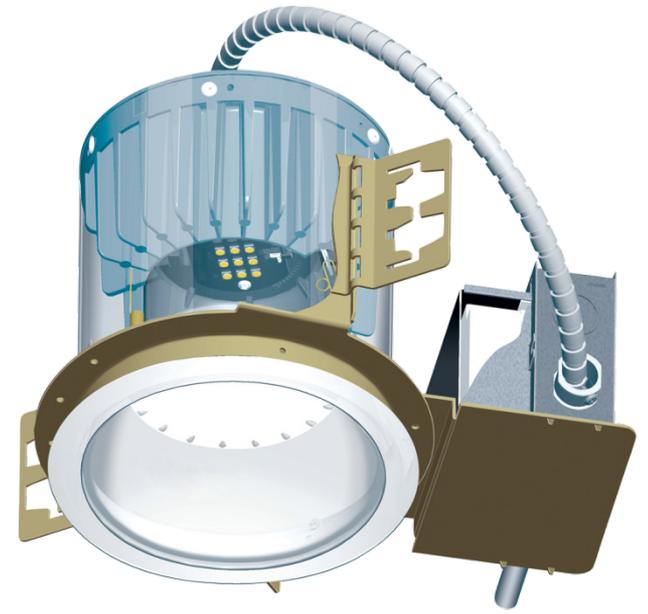
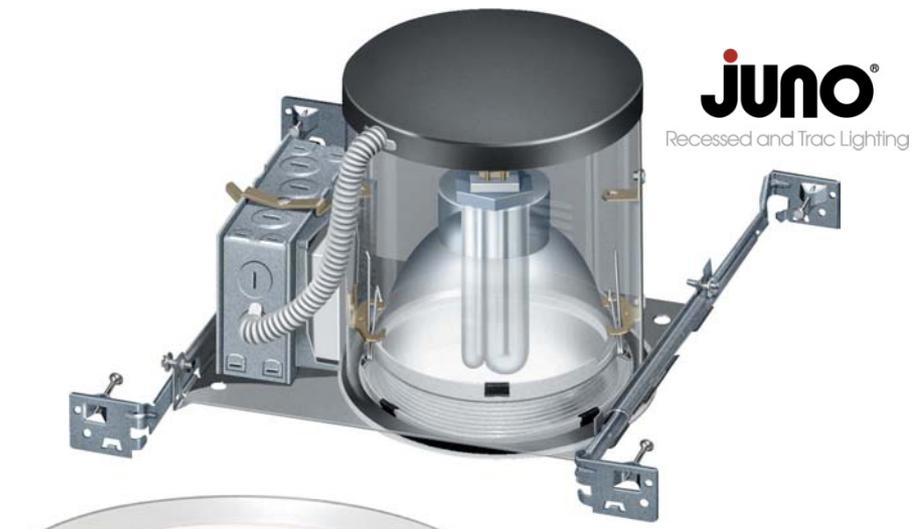
\*\*\*12 hours per day @ \$0.12 per kilowatt hour.



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## Energy Star Downlights





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## Energy Star Downlights

- Light output comparable to 65W BR30 or 18W CFL
- Less than 15W
- Dimmable with approved dimmers
- 5" and 6"
- IC and TC
- New Construction and Remodel
- 3000K, 3500K and 4100K



**Juno**<sup>®</sup>  
Recessed and Trac Lighting





## Energy Star Downlights

- Energy solution for 65W BR30 and 18W CFL
  - LED (78%) and CFL (72%) savings over inc.
  - LED savings over 20% CFL
- 7 plus year payback on LED
- Maintenance and “Green” solution
- Eco-friendly
  - No Mercury and RoHS compliant
- LED replacement impact on environment





## Energy Star CFL Light Bulbs

- Thermals impact life
- Application to max. life

### – Base down

- Table lamp
- Chandelier

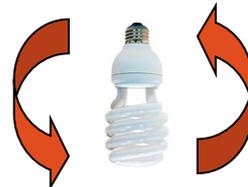


### – Base out

- Vanity  or 

### – Base up with airflow

- Outdoor lighting





## Self ballast vs. dedicated ballast

- Lamp life are the same
- Base up application
  - Thermals effect life
  - Lamp only vs self ballast



Hours  
12,000



Hours  
6,000 to  
12,000





# Life

- CFL compared to an incandescent
  - 3-4 times more efficient
  - Up to 10 times longer life
- LED compared to a CFL
  - Up to 4 times longer life
- CFL and LED
  - Less heat
  - Lower energy bills



# SOLAR DECATHLON

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## IC-Rated 600 Lumen LED Downlight

Application: 18' x 18' x 8' room, reflectances 80/50/20, light loss factor =1.0, 9 Fixtures Total: Mounted 6' on center



Fixture Performance Comparison				
IC LED 14W Open Trim	VS.	Incandescent 65W BR-30 Open Trim	CFL 18W Triple Tube Open Trim	CFL 26W Triple Tube Lensed Trim
<b>Fixture Summary</b>				
IC22LED-35K-24W-WH	Housing and Trim	IC2-24W-WH	ICPL618E-28W-WH	ICPL626E-2330W-WH
14W LED	Lamp Specification	65W BR-30	18W Triple Tube	26W Triple Tube
14W	Total Input Watts	65W <b>78%</b>	20.1W <b>30%</b>	25.3W <b>45%</b>
50,000	Lamp Life (hrs.)	2,000	12,000	12,000
0.39W/FT <sup>2</sup>	Watts Per Square Foot	1.81W/FT <sup>2</sup>	0.56W/FT <sup>2</sup>	0.70W/FT <sup>2</sup>
Yes	Energy Star Qualified	No	Yes	Yes
Yes	Meets Requirements of T24 2008	No	Yes	Yes
<b>Illuminance Summary</b>				
16.9fc	Average Illuminance	16.1fc	15.1fc	16.6fc
3:1	Uniformity Ratio (Max/Min)	4:1	3:1	3:1
<b>Operating Cost Summary</b>				
\$4.08	Annual Energy Cost Per Fixture*	\$18.98	\$5.87	\$7.39
\$0.00	Annual Relamping Cost Per Fixture**	\$4.70	\$3.20	\$3.20
\$4.08 Per Fixture x 9 Fixtures = <b>\$36.72</b>	Annual Operating Costs	\$23.68 Per Fixture x 9 Fixtures = <b>\$213.12</b>	\$9.07 Per Fixture x 9 Fixtures = <b>\$81.63</b>	\$10.59 Per Fixture x 9 Fixtures = <b>\$95.31</b>
Annual Savings for a 9 Fixture Layout		<b>\$176.40</b>	<b>\$44.91</b>	<b>\$58.59</b>



\*Total input watts x 8 hours/day x 365 days/year x \$0.10/KWH/1000  
\*\*Replacement cost per lamp x annual hrs. of operation/lamp life



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# Energy Efficiency never looked so good

### Junco 6" High Wattage Vertical Compact Fluorescent Down-Lites

Junco Energy Saving 5" CFL Down-Lites are designed to meet the Junco 6" aperture needs. A variety of housing and reflector trim are available to meet your energy savings goals.

32 Watt Compact Fluorescent Housing	High Wattage CFL Trim	Wall Wash
<p><b>KPL3435E</b> 120 VHF Electronic Ballast CFL Fluorescent Housing ENERGY STAR, Air-Loc, CFL Housing may be covered with insulation. Easy access ballast access. Ballast 120 V, 1.5" x 7.0" x 7.0" Casting weight: 0.57" 18W Apn Triple CFL</p> <p><b>KPL3435E-DB120</b> 120 VHF Electronic Ballast CFL Fluorescent Housing ENERGY STAR, Air-Loc, CFL Housing may be covered with insulation. Easy access ballast access. Ballast 120 V, 1.5" x 7.0" x 7.0" Casting weight: 0.57" 18W Apn Triple CFL</p>	<p><b>Downlight</b> Ultra Thin Bulbs 241W White Bulbs 241W Black Bulbs 5.5" Aperture</p> <p><b>Ultra Thin Cover</b> 290W White Cover 290W Black Cover 5.5" Aperture</p> <p><b>Refracted Flat Lens with Reflector</b> 242-ABZ 242-BC 242-WH</p> <p><b>Decorative Surface</b> Etched Opal Glass* 243-304</p>	<p><b>Downlight</b> Ultra Thin Bulbs 241W White Bulbs 241W Black Bulbs 5.5" Aperture</p> <p><b>Refracted Flat Lens with Reflector</b> 242-ABZ 242-BC 242-WH</p> <p><b>Decorative Surface</b> Etched Opal Glass* 243-304</p>
26 Watt Compact Fluorescent Housing	High Wattage CFL Trim	Wall Wash
<p><b>KPL3436E</b> 120 VHF Electronic Ballast CFL Fluorescent Housing ENERGY STAR, Air-Loc, CFL Housing may be covered with insulation. Easy access ballast access. Ballast 120 V, 1.5" x 7.0" x 7.0" Casting weight: 0.57" 15W Apn Triple CFL</p> <p><b>KPL3436E-DB120</b> 120 VHF Electronic Ballast CFL Fluorescent Housing ENERGY STAR, Air-Loc, CFL Housing may be covered with insulation. Easy access ballast access. Ballast 120 V, 1.5" x 7.0" x 7.0" Casting weight: 0.57" 15W Apn Triple CFL</p>	<p><b>Downlight</b> Ultra Thin Bulbs 210W White Bulbs 210W Black Bulbs 5.5" Aperture</p> <p><b>Ultra Thin Cover</b> 260W White Cover 260W Black Cover 5.5" Aperture</p> <p><b>Refracted Flat Lens with Reflector</b> 212-ABZ 212-BC 212-WH</p> <p><b>Decorative Surface</b> Etched Opal Glass* 213-304</p>	<p><b>Downlight</b> Ultra Thin Bulbs 210W White Bulbs 210W Black Bulbs 5.5" Aperture</p> <p><b>Refracted Flat Lens with Reflector</b> 212-ABZ 212-BC 212-WH</p> <p><b>Decorative Surface</b> Etched Opal Glass* 213-304</p>

### Junco 6" Vertical Compact Fluorescent Down-Lites

18 Watt Compact Fluorescent Housing	13/18 Watt CFL Trim	Wall Wash
<p><b>KPL3438E</b> 120 VHF Electronic Ballast CFL Fluorescent Housing ENERGY STAR, Air-Loc, CFL Housing may be covered with insulation. Easy access ballast access. Ballast 120 V, 1.5" x 7.0" x 7.0" Casting weight: 0.57" 18W Apn Triple CFL</p> <p><b>KPL3438E-DB120</b> 120 VHF Electronic Ballast CFL Fluorescent Housing ENERGY STAR, Air-Loc, CFL Housing may be covered with insulation. Easy access ballast access. Ballast 120 V, 1.5" x 7.0" x 7.0" Casting weight: 0.57" 18W Apn Triple CFL</p>	<p><b>Downlight</b> Ultra Thin Bulbs 200W White Bulbs 200W Black Bulbs 5.5" Aperture</p> <p><b>Ultra Thin Cover</b> 250W White Cover 250W Black Cover 5.5" Aperture</p> <p><b>Refracted Flat Lens with Reflector</b> 202-ABZ 202-BC 202-WH</p> <p><b>Decorative Surface</b> Etched Opal Glass* 203-304</p>	<p><b>Downlight</b> Ultra Thin Bulbs 200W White Bulbs 200W Black Bulbs 5.5" Aperture</p> <p><b>Refracted Flat Lens with Reflector</b> 202-ABZ 202-BC 202-WH</p> <p><b>Decorative Surface</b> Etched Opal Glass* 203-304</p>
13 Watt Compact Fluorescent Housing	13/18 Watt CFL Trim	Wall Wash
<p><b>KPL3439E</b> 120 VHF Electronic Ballast CFL Fluorescent Housing ENERGY STAR, Air-Loc, CFL Housing may be covered with insulation. Easy access ballast access. Ballast 120 V, 1.5" x 7.0" x 7.0" Casting weight: 0.57" 15W Apn Triple CFL</p> <p><b>KPL3439E-DB120</b> 120 VHF Electronic Ballast CFL Fluorescent Housing ENERGY STAR, Air-Loc, CFL Housing may be covered with insulation. Easy access ballast access. Ballast 120 V, 1.5" x 7.0" x 7.0" Casting weight: 0.57" 15W Apn Triple CFL</p>	<p><b>Downlight</b> Ultra Thin Bulbs 180W White Bulbs 180W Black Bulbs 5.5" Aperture</p> <p><b>Ultra Thin Cover</b> 230W White Cover 230W Black Cover 5.5" Aperture</p> <p><b>Refracted Flat Lens with Reflector</b> 182-ABZ 182-BC 182-WH</p> <p><b>Decorative Surface</b> Etched Opal Glass* 183-304</p>	<p><b>Downlight</b> Ultra Thin Bulbs 180W White Bulbs 180W Black Bulbs 5.5" Aperture</p> <p><b>Refracted Flat Lens with Reflector</b> 182-ABZ 182-BC 182-WH</p> <p><b>Decorative Surface</b> Etched Opal Glass* 183-304</p>

### Junco 5" Vertical Compact Fluorescent Down-Lites

Junco offers a complete line of energy saving 5" CFL Down-Lites in 13, 18 and 26 watt configurations for residential and commercial applications.

26 Watt CFL	18 Watt CFL	13 Watt CFL
<p><b>KPL3434E</b> 120 VHF Electronic Ballast CFL Fluorescent Housing ENERGY STAR, Air-Loc, CFL Housing may be covered with insulation. Easy access ballast access. Ballast 120 V, 1.5" x 7.0" x 7.0" Casting weight: 0.57" 18W Apn Triple CFL</p> <p><b>KPL3434E-DB120</b> 120 VHF Electronic Ballast CFL Fluorescent Housing ENERGY STAR, Air-Loc, CFL Housing may be covered with insulation. Easy access ballast access. Ballast 120 V, 1.5" x 7.0" x 7.0" Casting weight: 0.57" 18W Apn Triple CFL</p>	<p><b>KPL3435E</b> 120 VHF Electronic Ballast CFL Fluorescent Housing ENERGY STAR, Air-Loc, CFL Housing may be covered with insulation. Easy access ballast access. Ballast 120 V, 1.5" x 7.0" x 7.0" Casting weight: 0.57" 15W Apn Triple CFL</p> <p><b>KPL3435E-DB120</b> 120 VHF Electronic Ballast CFL Fluorescent Housing ENERGY STAR, Air-Loc, CFL Housing may be covered with insulation. Easy access ballast access. Ballast 120 V, 1.5" x 7.0" x 7.0" Casting weight: 0.57" 15W Apn Triple CFL</p>	<p><b>KPL3436E</b> 120 VHF Electronic Ballast CFL Fluorescent Housing ENERGY STAR, Air-Loc, CFL Housing may be covered with insulation. Easy access ballast access. Ballast 120 V, 1.5" x 7.0" x 7.0" Casting weight: 0.57" 12W Apn Triple CFL</p> <p><b>KPL3436E-DB120</b> 120 VHF Electronic Ballast CFL Fluorescent Housing ENERGY STAR, Air-Loc, CFL Housing may be covered with insulation. Easy access ballast access. Ballast 120 V, 1.5" x 7.0" x 7.0" Casting weight: 0.57" 12W Apn Triple CFL</p>

### Aculux 6" Aperture 26/32W Compact Fluorescent

Architectural grade recessed downlight for general and wall wash illumination for low to medium ceiling heights. Provides diffuse, uniform illumination from energy-efficient compact fluorescent lamps.

CFL Downlight/Wall Wash Housing	6" Aperture 26/32W CFL Trim
<p><b>KPL3437E</b> 120 VHF Electronic Ballast CFL Fluorescent Housing ENERGY STAR, Air-Loc, CFL Housing may be covered with insulation. Easy access ballast access. Ballast 120 V, 1.5" x 7.0" x 7.0" Casting weight: 0.57" 18W Apn Triple CFL</p> <p><b>KPL3437E-DB120</b> 120 VHF Electronic Ballast CFL Fluorescent Housing ENERGY STAR, Air-Loc, CFL Housing may be covered with insulation. Easy access ballast access. Ballast 120 V, 1.5" x 7.0" x 7.0" Casting weight: 0.57" 18W Apn Triple CFL</p>	<p><b>Downlight Trim</b> Single Wall Wash 260W White Cover 260W Black Cover 260W White Bulbs 260W Black Bulbs</p> <p><b>Double Wall Wash</b> 260W White Cover 260W Black Cover 260W White Bulbs 260W Black Bulbs</p> <p><b>Decorative Trim</b> Etched Opal Glass 213-304</p> <p><b>Corner Wall Wash</b> 260W White Cover 260W Black Cover 260W White Bulbs 260W Black Bulbs</p>





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# 2009

## Energy Efficiency never looked so good

### 5" IC-Rated 600 Lumen LED Downlight Ordering Information

For new construction or remodeling, you can add energy-efficient LED lighting from Juno. 5" housing is compatible with a variety of trims to complement virtually any design.



#### 5" New Construction



**IC20LED**  
Dedicated 5" LED new construction housing with integral 14W nominal light engine and universal 120V-277V driver. Air-Loc fully sealed housing does not require separate gasket. IC housing designed for use in IC or non-IC construction.  
16 1/8" L x 9 1/8" W x 7 1/2" H  
Ceiling Cutout: 5 5/8"



**IC20LED-3K**  
**IC20SLED-3K** (smaller footprint bar hanger Real Nail® 2)  
3000K LED color temperature

**IC20LED-35K**  
**IC20SLED-35K** (smaller footprint bar hanger Real Nail® 2)  
3500K LED color temperature

**IC20LED-41K**  
**IC20SLED-41K** (smaller footprint bar hanger Real Nail® 2)  
4100K LED color temperature

#### 5" Remodel



**IC20RLED**  
Dedicated 5" LED remodel housing with integral 14W nominal light engine and universal 120V-277V driver. Air-Loc gasket kit supplied with housing. IC housing designed for use in IC or non-IC construction.  
12 7/8" L x 5 7/8" W x 7 5/8" H  
Ceiling Cutout: 5 1/2"



**IC20RLED-3K**  
3000K LED color temperature

**IC20RLED-35K**  
3500K LED color temperature

**IC20RLED-41K**  
4100K LED color temperature

#### Qualified Dimmers - 120V

Juno IC LED downlights have been qualified for use with 120V electronic low voltage dimmers (requires a neutral wire in wall box). Consult Juno technical services for the most up to date list of qualified dimmers.

#### Regulatory Listings & Standards

- UL and C-UL Listed for Damp Location and Wet Location when used with lensed trims
- Listed for Direct Contact with Insulation
- UL and C-UL Listed for Feed-Thru Wiring
- ENERGY STAR® qualified to residential and commercial requirements for solid state recessed luminaires with baffle and cone trims
- Juno's sealed recessed IC LED housings meet IECC AirLoc® Code requirements per ASTM E283 for minimum leakage with IC housing
- RoHS Compliant



#### Trim Finishes

ABZ - Classic Aged Bronze  
SC - Satin Chrome  
WH - White

#### Downlights

##### Downlight Baffle

205W-WH White  
205B-BL Black  
205B-SC Black  
205B-ABZ Black

##### Downlight Cone

204C-WH Clear Alzak  
204G-WH Gold Alzak  
204B-WH Black Alzak  
204PT-SC Pewter Alzak  
204W-WH Gloss White  
204HZ-WH Haze  
204WHZ-WH Wheat Haze  
204WHZ-ABZ Wheat Haze

##### Wall Wash

213W-WH White Baffle  
213B-WH Black Baffle

#### Lensed

##### Flat Glass Shower Trim\*

210-ABZ  
210-SC  
210-WH

##### Frosted Lens with Clear Center\*

212-ABZ  
212-SC  
212-WH

##### White Baffle, Regressed Frosted Dome Lens\*

2130B-WH

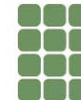
##### Beveled Frame, Frosted Dome Lens\*

5101-ABZ  
5101-SC  
5101-WH

\*Do not use reflector shipped with trim for LED housing. Discard or recycle reflector.

### 6" IC-Rated 600 Lumen LED Downlight Ordering Information

For new construction or remodeling, you can add energy-efficient LED lighting from Juno. 6" housing is compatible with a variety of trims to complement virtually any design.



#### 6" New Construction



**IC22LED**  
Dedicated 6" LED new construction housing with integral 14W nominal light engine and universal 120V-277V driver. Air-Loc fully sealed housing does not require separate gasket. IC housing designed for use in IC or non-IC construction.  
16 1/8" L x 9 1/8" W x 7 1/8" H  
Ceiling Cutout: 6 7/8"



**IC22LED-3K**  
**IC22SLED-3K** (smaller footprint bar hanger Real Nail® 2)  
3000K LED color temperature

**IC22LED-35K**  
**IC22SLED-35K** (smaller footprint bar hanger Real Nail® 2)  
3500K LED color temperature

**IC22LED-41K**  
**IC22SLED-41K** (smaller footprint bar hanger Real Nail® 2)  
4100K LED color temperature

#### 6" Remodel



**IC22RLED**  
Dedicated 6" LED remodel housing with integral 14W nominal light engine and universal 120V-277V driver. Air-Loc gasket kit supplied with housing. IC housing designed for use in IC or non-IC construction.  
14 3/16" L x 7 5/16" W x 7 3/16" H  
Ceiling Cutout: 6 3/4"



**IC22RLED-3K**  
3000K LED color temperature

**IC22RLED-35K**  
3500K LED color temperature

**IC22RLED-41K**  
4100K LED color temperature

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- RoHS Compliant



#### 6" LED Downlight Trims

##### Downlights

###### Downlight Baffle

24W-WH White  
24B-WH Black  
24B-SC Black  
24B-ABZ Black  
24B-BL Black

###### Downlight Cone

27C-WH Clear Alzak  
27G-WH Gold Alzak  
27B-WH Black Alzak  
27PT-SC Pewter Alzak  
27W-WH Gloss White  
27HZ-WH Haze  
27WHZ-WH Wheat Haze  
27WHZ-ABZ Wheat Haze

###### Wall Wash

262W-WH White Baffle  
262B-WH Black Baffle

###### Lensed

Albalite  
20-FW Shower/Closet Light  
20-WH

###### Drop Opal

21-FW Shower/Closet Light  
21-WH

###### Luminous Disc (Frosted)

9324-SC

###### Decorative, continued

Metal Band  
9524-SC

###### Lensed, continued

Frosted Lens\*  
239-WH

###### Frosted Lens with Clear Center

242-ABZ  
242-SC  
242-WH

###### Decorative Swirled Etched Opal Glass

243-WH

###### White Baffle, Regressed Frosted Dome Lens\*

2330W-WH  
2330B-WH

###### Beveled Frame, Frosted Dome Lens\*

6101-ABZ  
6101-SC  
6101-WH

\*Do not use reflector shipped with trim for LED housing. Discard or recycle reflector.

#### Trim Finishes

ABZ - Classic Aged Bronze  
PW - Plastic White  
(Polycarbonate material shower trim)  
SC - Satin Chrome  
WH - White  
BL - Black





# SOLAR DECATHLON

# 2009

## Energy Efficiency never looked so good

### 5" TC-Rated 900 Lumen LED Downlight Ordering Information

For new construction applications, you can add energy-efficient LED lighting from Juno. 5" housing is compatible with a variety of trims to complement virtually any design.



#### 5" New Construction



**TC920LED**  
Dedicated 5" LED new construction housing with integral 25W nominal light engine, dedicated 120V or 277V driver, and commercial mounting bracket. TC housing requires 3" spacing from insulation.  
10 1/2" L x 9 1/4" W x 8 1/2" H  
Ceiling Cutout: 5 5/8"

**Options**  
Dimmable Driver, 0-10V  
Lutron Hi-Lume® Dimmable Driver  
Emergency Battery Back Up with Remote Switch  
Chicago Plenum

#### Regulatory Listings & Standards

- UL and C-UL Listed for Damp Location and Wet Location when used with lensed trims
- Housings are thermally protected against improper use of insulation.
- UL and C-UL Listed for Feed-Thru Wiring
- ENERGY STAR® qualified to commercial requirements for solid state recessed luminaires with non-dimming fixtures and select baffle and cone trims
- RoHS Compliant

#### Trim Finishes

ABZ – Classic Aged Bronze  
SC – Satin Chrome  
WH – White

#### 5" LED Downlight Trims

##### Downlights



**Downlight Baffle**  
205W-WH White  
205B-WH Black  
205B-SC Black  
205B-ABZ Black



**Downlight Cone**  
204C-WH Clear Alzak  
204G-WH Gold Alzak  
204B-WH Black Alzak  
204PT-SC Pewter Alzak  
204W-WH Gloss White  
204HZ-WH Haze  
204WHZ-WH Wheat Haze  
204WHZ-ABZ Wheat Haze



**Wall Wash**  
213W-WH White Baffle  
213B-WH Black Baffle

##### Lensed



**Flat Glass Shower Trim\***  
210-ABZ  
210-SC  
210-WH



**Frosted Lens with Clear Center\***  
212-ABZ  
212-SC  
212-WH



**White Baffle, Regressed Frosted Dome Lens\***  
2130W-WH  
2130B-WH



**Beveled Frame, Frosted Dome Lens\***  
5101-ABZ  
5101-SC  
5101-WH

\*Do not use reflector shipped with trim for LED housing. Discard or recycle reflector.

#### Ordering Information

Housing, trim and accessories each ordered separately.

Example: TC920LED35K-1-DMBR

Catalog No.	Color Temp.	Voltage	Options
TC920LED	35K	1	DMBR
TC920LED	3K 3000K	1 120V	DM <sup>1</sup> Dimmable Driver, 0-10V
	35K 3500K	2 277V	L <sup>1,2</sup> Lutron Hi-Lume® Dimmable Driver
	41K 4100K		BR <sup>3</sup> Emergency Battery Back-up w/ Remote Switch
			CP <sup>3</sup> Chicago Plenum

#### Notes:

- Consult factory for a list of qualified dimmers.
- Listed for UL in the U.S. only
- Chicago Plenum not available with emergency option

### 6" TC-Rated 900 Lumen LED Downlight Ordering Information

For new construction applications, you can add energy-efficient LED lighting from Juno. 6" housing is compatible with a variety of trims to complement virtually any design.

#### 6" New Construction



**TC922LED**  
Dedicated 6" LED new construction housing with integral 25W nominal light engine, dedicated 120V or 277V driver, and commercial mounting bracket. TC housing requires 3" spacing from insulation.  
11 3/4" L x 10 1/2" W x 8 1/2" H  
Ceiling Cutout: 6 7/8"

**Options**  
Dimmable Driver, 0-10V  
Lutron Hi-Lume® Dimmable Driver  
Emergency Battery Back Up with Remote Switch  
Chicago Plenum

#### Regulatory Listings & Standards

- UL and C-UL Listed for Damp Location and Wet Location when used with lensed trims
- Housings are thermally protected against improper use of insulation.
- UL and C-UL Listed for Feed-Thru Wiring
- ENERGY STAR® qualified to commercial requirements for solid state recessed luminaires with non-dimming fixtures and select baffle and cone trims
- RoHS Compliant

#### Trim Finishes

ABZ – Classic Aged Bronze  
PW – Plastic White  
(Polycarbonate material shower trim)

SC – Satin Chrome  
WH – White  
BL – Black

#### Ordering Information

Housing, trim and accessories each ordered separately.

Example: TC922LED35K-1-DMBR

Catalog No.	Color Temp.	Voltage	Options
TC922LED	35K	1	DMBR
TC922LED	3K 3000K	1 120V	DM <sup>1</sup> Dimmable Driver, 0-10V
	35K 3500K	2 277V	L <sup>1,2</sup> Lutron Hi-Lume® Dimmable Driver
	41K 4100K		BR <sup>3</sup> Emergency Battery Back-up w/ Remote Switch
			CP <sup>3</sup> Chicago Plenum

#### Notes:

- Consult factory for a list of qualified dimmers.
- Listed for UL in the U.S. only
- Chicago Plenum not available with emergency option

#### 6" LED Downlight Trims

##### Downlights



**Downlight Baffle**  
24W-WH White  
24B-WH Black  
24B-SC Black  
24B-ABZ Black  
24B-BL Black



**Downlight Cone**  
27C-WH Clear Alzak®  
27G-WH Gold Alzak  
27B-WH Black Alzak  
27PT-SC Pewter Alzak  
27W-WH Gloss White  
27HZ-WH Haze  
27WHZ-WH Wheat Haze  
27WHZ-ABZ Wheat Haze

##### Decorative



Octagonal 9024W-WH



Luminous Disc (Frosted) 9324-SC

##### Decorative, continued



Metal Band 9524-SC



Luminous Collar (Frosted) 9702



**Wall Wash**  
262W-WH White Baffle  
262B-WH Black Baffle

##### Lensed



Albalite 20-PW Shower/Closet Light 20-WH



Drop Opal 21-PW Shower/Closet Light 21-WH



Fresnel 22-WH

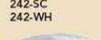
##### Lensed, continued



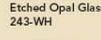
Frosted Lens\* 239-WH



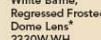
Frosted Lens with Clear Center 242-ABZ  
242-SC  
242-WH



Decorative Swirled Etched Opal Glass 243-WH



White Baffle, Regressed Frosted Dome Lens\* 2330W-WH  
2330B-WH



Beveled Frame, Frosted Dome Lens\* 6101-ABZ  
6101-SC  
6101-WH

\*Do not use reflector shipped with trim for LED housing. Discard or recycle reflector.

Example: HB-26

Accessories

- HB-1 Two 13 1/2" - 25" Real Nail® 3 bar hangers
- HB-26 Two 26" C-channel bar hangers
- HB-50 Two 50" C-channel bar hangers
- LB-27 Two 27" linear bar hangers





# SOLAR DECATHLON

# 2009



**Energy Efficiency never looked so good**



## Residential Pendant

### Pendant

- CFL
- Energy Star®
- GU24 CFL twist and lock bases with internal ballast
  - 13W
  - 18W
  - 24W
- 60% energy savings over halogen
- Lamp replacement costs are cut in half





# SOLAR DECATHLON

# 2009

## Energy Efficiency never looked so good



P38  
13WGU24 CFL  
18WGU24 CFL  
13W CFL 4Pin Remote  
18W CFL 4Pin Remote



P44  
13WGU24 CFL  
13W CFL 4Pin Remote  
18W CFL 4Pin Remote



P45  
13WGU24 CFL  
13W CFL 4Pin Remote  
18W CFL 4Pin Remote



P126  
13WGU24 CFL  
18WGU24 CFL  
13W CFL 4Pin Remote  
18W CFL 4Pin Remote



P58  
13WGU24 CFL  
18WGU24 CFL  
24WGU24 CFL  
13W CFL 4Pin Remote



P88  
13W CFL 4Pin Remote  
18W CFL 4Pin Remote



P121  
13WGU24 CFL  
18WGU24 CFL  
13W CFL 4Pin Remote  
18W CFL 4Pin Remote



P122  
13WGU24 CFL  
18WGU24 CFL  
13W CFL 4Pin Remote  
18W CFL 4Pin Remote



P123  
13WGU24 CFL  
18WGU24 CFL  
13W CFL 4Pin Remote  
18W CFL 4Pin Remote



P124  
13WGU24 CFL  
18WGU24 CFL



P68  
13WGU24 CFL  
18WGU24 CFL  
13W CFL 4Pin Remote  
18W CFL 4Pin Remote



P152  
13WGU24 CFL  
18WGU24 CFL  
13W CFL 4Pin Remote  
18W CFL 4Pin Remote



P156  
13WGU24 CFL  
13W CFL 4Pin Remote



P157  
13WGU24 CFL  
13W CFL 4Pin Remote



P158  
13WGU24 CFL  
13W CFL 4Pin Remote  
18W CFL 4Pin Remote



P159  
13WGU24 CFL  
13W CFL 4Pin Remote  
18W CFL 4Pin Remote



P56  
13WGU24 CFL  
18WGU24 CFL  
24WGU24 CFL  
13W CFL 4Pin Remote  
18W CFL 4Pin Remote  
26W CFL 4Pin Remote



P57  
13WGU24 CFL  
18WGU24 CFL  
24WGU24 CFL  
13W CFL 4Pin Remote  
18W CFL 4Pin Remote  
26W CFL 4Pin Remote



P134PM  
18W CFL 4Pin Remote  
26W CFL 4Pin Remote



P135PM  
18W CFL 4Pin Remote  
26W CFL 4Pin Remote



P136  
13WGU24 CFL  
18WGU24 CFL  
24WGU24 CFL  
13W CFL 4Pin Remote  
18W CFL 4Pin Remote  
26W CFL 4Pin Remote



P137PM  
18W CFL 4Pin Remote  
26W CFL 4Pin Remote



P150  
13WGU24 CFL  
18WGU24 CFL  
13W CFL 4Pin Remote  
18W CFL 4Pin Remote  
26W CFL 4Pin Remote



P93  
13WGU24 CFL  
18WGU24 CFL  
13W CFL 4Pin Remote  
18W CFL 4Pin Remote  
26W CFL 4Pin Remote



P95  
13W CFL 4Pin Remote  
18W CFL 4Pin Remote  
26W CFL 4Pin Remote



P100  
13WGU24 CFL  
13W CFL 4Pin Remote



P101  
13WGU24 CFL  
18WGU24 CFL  
24WGU24 CFL  
13W CFL 4Pin Remote  
18W CFL 4Pin Remote



P102  
13WGU24 CFL  
18WGU24 CFL  
13W CFL 4Pin Remote



P103  
13WGU24 CFL  
18WGU24 CFL  
13W CFL 4Pin Remote



P202  
13WGU24 CFL  
18WGU24 CFL  
13W CFL 4Pin Remote  
18W CFL 4Pin Remote  
26W CFL 4Pin Remote



P203  
13WGU24 CFL  
18WGU24 CFL  
24WGU24 CFL  
13W CFL 4Pin Remote  
18W CFL 4Pin Remote  
26W CFL 4Pin Remote



P170  
13WGU24 CFL  
18WGU24 CFL  
24WGU24 CFL  
13W CFL 4Pin Remote  
18W CFL 4Pin Remote  
26W CFL 4Pin Remote

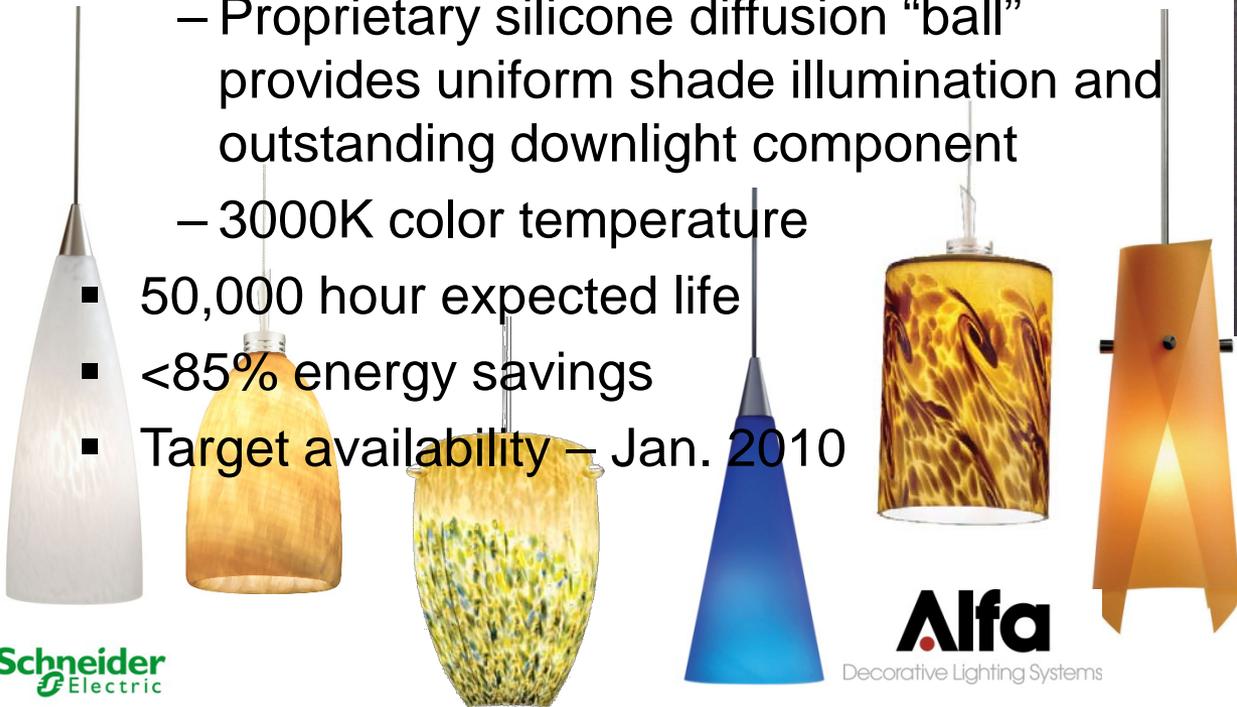
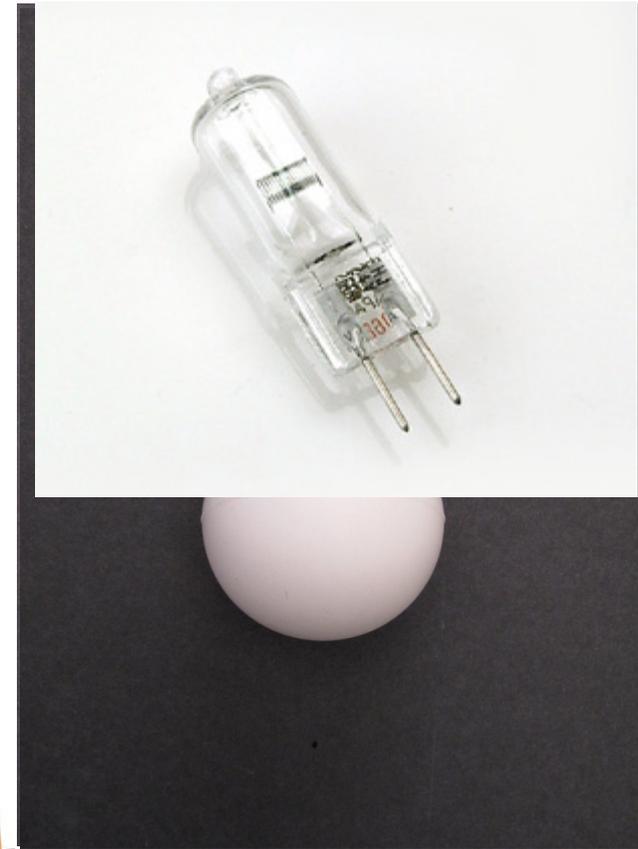


P175  
13WGU24 CFL  
18WGU24 CFL  
24WGU24 CFL  
13W CFL 4Pin Remote  
18W CFL 4Pin Remote  
26W CFL 4Pin Remote



## Residential Pendant LED Pendant

- Typically a 35W-50W halogen bi-pin
  - 2,000 Hours
- LED are available in a 4W
  - Proprietary silicone diffusion “ball” provides uniform shade illumination and outstanding downlight component
  - 3000K color temperature
- 50,000 hour expected life
- <85% energy savings
- Target availability – Jan. 2010





# Any questions?

Thank you  
For your  
Time