BID DOCUMENTS COVER SHEET

CONTRACT DOCUMENTS

FOR

LOS MEDANOS COLLEGE

L-630 New Brentwood Center

AT

1351 Pioneer Square
Brentwood, California, 94542

CONTRA COSTA COMMUNITY COLLEGE DISTRICT

Consist of the following:

DSA File #7-C1
DSA Application # 01-116287

Architect: RATCLIFF
5856 Doyle Street Emeryville, CA 94608

Volume 3

March 21, 2018

DSA Approval
Ratcliff Project 35003.01
APPENDIX A

Lighting Fixture Cut Sheets
**ET6A**

**LED Recessed Linear with Satin Lens**

**CONSTRUCTION**
Extruded aluminum trim with formed cold rolled 20 gauge steel back box housing. Highly reflective die-formed white painted steel reflector. 125° (3.2mm) white snap-in acrylic lens with matte finish, removable for maintenance.

**ELECTRICAL**
Electronic, 120 to 277 volt input and 36V output. 0-10 volt dimming standard. Must specify 1D in circuiting for dimming.

**LED**
All luminaire configurations tested in accordance with IES LM-79. Diodes tested in accordance with IES LM-80. R9:20, 27K is CRI:86, 30K, 35K, and 40K is CRI:82. Minimum lifetime greater than 70,000 hours.

**MOUNTING**
Edge Tech is designed for use with Armstrong® TechZone™ Integrated Ceiling System. Grid retention brackets are integral to housing. Each housing contains 4 grid retention brackets. Consult factory for detailed installation instructions or for use in conventional grid ceiling systems.

**FINISH**
Standard powder-coat textured white, metallic silver, textured black, graphite or bronze painted finish, consult factory for standard paint finishes. Contact factory for additional custom color and finish options.

**WARRANTY**
Edge LED offers a 5-year limited warranty. Covers LED, driver and fixture.

**LABELS**
IC Rated, UL and cUL Listed, approved for dry/damp location unless otherwise noted.

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**LUMINARE SPECIFICATION**

**ET6A-**

**HOUSING**

**COLOR/LUMENS**

**LENGTH**

**MOUNTING**

**VOLTAGE**

**CIRCUITING**

**FINISH**

**OPTIONS**

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**Housing Options**

**ET6A-**

**Color/Lumens**

**Length**

**Mounting**

**Voltage**

**Circuiting**

**Finish**

**Options**

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**Continuous Runs**

**Specifying row length to 1 increments**

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**Specifications and dimensions subject to change without notice. Specification sheets that appear on pinnacle-lighting.com are the most recent version and supersede all other previously printed or electronic versions.**

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**For use with Armstrong® TechZone™ Integrated Ceiling System**
- **INDIVIDUAL AND CONTINUOUS RUN MODULES**

  2' (598.4mm)  
  (1) lens per 2' unit  
  3' (988mm)  
  (1) lens per 3' unit  
  4' (1193.8mm) or 48" (1219.2mm)  
  (1) lens per 4' unit

  5' (1493.8mm)  
  (1) lens per 5' unit  
  6' (1803.4mm) or 72" (1828.9mm)  
  (1) lens per 6' unit  
  8' (2413mm) or 96" (1676.4mm)  
  (1) lens per 8' unit

  1' Acoustical Grid Ceiling available as individual units or continuous runs. Individual units and rows are available for on-grid installation with acoustical ceilings.

- **CONFIGURATION OPTIONS**

  **MR16 Standard Layouts**

  - M2M
  - M3M
  - M4M
  - M2M2M
  - M3M3M

  **Blanks Standard Layouts**

  - N2N
  - N3N
  - N4N
  - N2N2N
  - N3N3N

  **Daylight Sensor Standard Layouts**

  - D2N
  - D3N
  - D4N
  - D2N2N
  - D3N3N

- **MOUNTING DETAILS**

  **1" Grid Mounting Options**

  - Use G1 or G1G in part  
  - Use G1 or G1G in part

  **9/16" Grid Mounting Options**

  - Use G9 or G9G in part  
  - Use G9 or G9G in part  
  - Use GB or GGB in part  
  - Use GS or GSG in part  
  - Use GS or GSG in part

  **Screw Slot Mounting**

  - Use GS or GSG in part

- **MR16 LAMPS**

  **APPLICATION:** MR16's are ideal for conference rooms, corridors, wall washing, retail spaces and training facilities where accent lighting is required.

  **TECHNICAL:** MR16 fully enclosed compartment eliminates light from entering into other fixture areas. Available in 20, 35 and 50 watt halogen lamps, 4 and 8 watt LED lamps. (Lamps not included). Consult factory for other lamp types. Select from an adjustable or fixed unit.

  **ELECTRICAL:** Standard 50 watt max halogen lamp transformer (120v or 277v), 60 watt max LED electronic transformer (120v or 277v). MR16 installed as independent circuit. MR16 voltage to match LED voltage.

  **LABELS:** UL and cUL Listed, approved for dry/damp location unless otherwise noted.

  **ORDERING INFORMATION:** Specify MR16 layout and lens in the options section of the product number. Sample Catalog #: ETBA-30-4-120-1C-W-M4M. See MR16 Resource Guide for Layout and Lens Options.
GRID RETENTION: At every joint, the addition of grid retention brackets results in a sturdy connection between the fixtures and the grid. Insert screws through the bracket into the grid to secure.

JOINT ALIGNMENT: Incorporating biscuits and screws not only creates a secure joint but also aids in fixture alignment.
**DESCRIPTION**

High Performance 4" aperture wall mount indirect/direct (HP-4 WM-ID) is a linear LED luminaire for offices, schools, retail and healthcare facilities. Advanced optical designs and mid-powered LEDs deliver an efficient, long-lasting luminaire free of glare and socket shadows for single and continuous lighting applications. HP-4 WM-ID is RoHS compliant.

**DIMENSIONS & DIFFUSER**

A glare-free experience is attained with mid-powered LEDs properly distributed and paired with a precise diffuser to eliminate pixilation. Diffusers up to 12" in length.

**INDIRECT/DIRECT DIMMING**

Uplight and downlight can be dimmed together or individually for maximum control over your space. 0-10V controls; range 10%-100%.

**SEAMLESS ILLUMINATION**

The optical design features seamless lenses up to 12" in length and eliminates socket shadows at joints and corners.

**ORDERING GUIDE**

Sample Number: HP-4 WM-ID - 32" - SO - HO - 3500K - TG - 120V - SC - MB - OBO
CONSTRUCTION: Precision cut 6061-T6 extruded aluminum body. Internal joiner system, plug-together wiring standard.

ENDCAPS: Diecast aluminum endcap. Adds 0.25" to each end.

REFLECTORS: Die-formed 20-gauge cold-rolled steel reflectors are finished in 96 Lg high reflectance matte white powder coat paint.


DOWNLIGHT DIFFUSER: Flush frost white snap-in lens, 73% transmissive, 99% diffusion.

LIGHT ENGINE: HP-4 is available with a choice of four distributions. Both the Indirect and Direct distribution can be specified in Standard Output (SO) or High Output (HO). The chart below summarizes the lumen distribution and wattage. LM79 test reports are available for each distribution. Light engine is made up of high performance mid-powered LEDs and is designed to distribute heat properly to maximize the life of the LED.

LED COLOR TEMPERATURE: Available in 3000K, 3500K, and 4000K. See chart below.

**SPECIFICATIONS**

**DRIVER:** High Performance constant current reduction LED Driver. 120/277V. Power factor = (3000K) 98% - HO/HO, 96% - HO/SO, 96.6% - SO/HO, 99% - SO/SO, (3500K) 97.7% - HO/HO, 96.3% - HO/SO, 97% - SO/HO, 94% - SO/SO and (4000K) 97.4% - HO/HO, 96.4% - HO/SO, 96.7% - SO/HO, 95.1% - SO/SO. Total Harmonic Distortion <20%. Input Current (120v): 3000K: HO/HO = 0.631A, HO/SO = 0.474A, SO/HO = 0.478A, SO/SO = 0.315A, 3500K: HO/HO = 0.632A, HO/SO = 0.474A, SO/HO = 0.477A, SO/SO = 0.32A, 4000K: HO/HO = 0.636A, HO/SO = 0.473A, SO/HO = 0.475A, SO/SO = 0.325A. Lutron driver options: LuLSW - 3-wire driver, LuIES Ecosystem driver, LuLE2W - 2-wire driver.

**Driver** is wired for dimming or non-dimming. Dimming is compatible with 0-10V controls with a range of 100-10%. Separate dimming for upright and downlight.

**LUMEN MAINTENANCE:** HP-4 WM-ID is rated to deliver 90% lumen maintenance (L90) to 100,000 hours and 70% lumen maintenance (L70) to 160,000 hours.

**ELECTRICAL:** 120V or 277V prewired. Optional Adders: emergency circuits, emergency battery pack, step dimming drivers. Minimum of 3' fixture length for battery packs. Maximum of one battery pack per 3' of fixture. Contact factory.

**INTEGRATED SENSORS:** HP-4 LED can be specified with integrated PIR (Passive Infrared) occupancy sensors or daylight sensors. Refer to Occupancy Sensor and Daylight Sensor tech sheets for more info.

**MOUNTING:** Fixture hangs securely from mounting brackets fastened directly to the wall for easy installation. Fixture hangs 0.5" from wall. Mounting bracket is concealed behind fixture.

**FINISHES:** Fullite Signal White standard. Optional Adders: 185 colors available from Tiger Drylac's RAL color chart.

**SUPPORT CABLES:** Plated steel cable and hardware.

**FEED:** Standard with five(5) 18 gauge wires for single circuit operation that controls upright and downlight together (power and dimming). Optional independent control of upright and downlight is available.

**LENGTHS:** Standard 4', 8', and 12' section lengths can be combined to make longer runs. Contact factory for lengths in increments of 1' or down to 1/16 of an inch.

**WEIGHT:** Fixture weight = 3.4 lb/ft.

**LABELS:** Fixture and electrical components are cETL listed conforming to UL 1598 in the U.S.A. and Canada; ETL listed to certified CAN/CAS C22.2 No. 250.0. Fixtures will bear ETL labels.

**WARRANTY:** HP-4 WM-ID comes standard with a 10-year warranty on all standard components. Optional accessories such as emergency battery packs are covered by their individual manufacturer warranties.

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**LED Color Temperature (CRI & R9)**

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**Lumen Distribution**

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* Refer to Occupancy Sensor and Daylight Sensor tech sheets for more information.

Protected by one or more US patents: D702,391; D702,390; D700,732

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FINELITE

High Performance Recessed (HPR LED) 2x2, Standard Output (S), Boosted Standard Output (B)

TYPE F3, F3A

Date
Project
LOS MEDANOS COLLEGE BRENTWOOD
Type

Comments

Refer to page 2 for all door styles

DESCRIPTION

HPR LED is a highly efficient recessed luminaire delivering excellent visual comfort and outstanding performance. Advanced optical design makes HPR LED a powerful solution for low-ceiling applications and eliminates the shadows common to other LED recessed products.

DIMENSIONS

ANGLED NARROW RAIL OPTION
Available in angled door style with the same center optic choices. The optional narrow rails are approximately 5/16" wide. The standard center rails are approximately 9/16" wide.

100% SERVICEABLE FROM BELOW
The replaceable light engine and driver are easy to access from below the ceiling.

ORDERING GUIDE

Sample Number: HPR LED - A - 2x2 - DCO - S - 835 - 277V - SC - C1 - OBO

Finelite Series HPR LED
Door Styles (A - Angled, ANR - Angled Narrow Rail, F - Flat, CS - Curved Slotted¹, DD - Double Diffuse¹, WAV - Wave¹)

Size (2x2)
Center Optic (DCO - Diffuse Center, SCO - Slotted Center, RCO - Round Center)²
Light Output (S - Standard, B - Boosted Standard)
LED CRI/CT (830 - 80 CRI min, 3000K, 835 - 80 CRI min, 3500K, 840 - 80 CRI min, 4000K, 930 - 90 CRI min, 3000K, 935 - 90 CRI min, 3500K, 940 - 90 CRI min, 4000K)
Voltage (120V, 277V)
Circuiting (SC - Single Circuit)
Ceiling Type (C1 - 1" T-Bar, C2 - 9/16" T-Bar, C3 - screw slot, DW - Drywall Kit)³
Integrated Sensors (OBO - Daylight, OBO - Occupancy, OBB - Both)³

¹ Curved Slotted, Double Diffuse and Wave door not available with Center Optic options
² Only available with Angled (A), Angled Narrow Rail (ANR) and Flat (F) door options
³ Surface Mount available

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Due to continuing product improvements, Finelite reserves the right to change specifications without notice. Please visit www.finelite.com for most current data.
DOOR STYLES

A - Angled
ANR - Angled Narrow Rail

F - Flat

WAV - Wave

DOOR STYLES

CS - Curved Slotted

DD - Double Diffuse

CENTER OPTICS

DCO - Diffuse Center

SCO - Slotted Center

RCO - Round Center

DCO, SCO, and RCO are only available on Angled (A), Angled Narrow Rail (ANR), and Flat (F) doors.
# PHOTOMETRY

**LED-A-2x2-000-D**
- **Standard Output - Angled Rail**
  - Efficacy: 119 lumens per watt
  - Total luminaire output: 3397 lumens
  - Peak Candles Value: 2574 @ 0°
- **CCT: 3500K**
- **ITL LM79 Report 85142**

## CANDLEPOWER SUMMARY

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**CANDLEPOWER SUMMARY**

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## TYPE F3, F3A

### Angled (A) and Flat (F)

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### Efficacy, 3500K, 80 CRI (Lumens Per Watt)

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</table>

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Apply a lumen adjustment factor to calculate lumens for the desired CCT and CRI.

**SAMPLE LUMEN ADJUSTMENT CALCULATION**

- **Standard Output (S) Angled (A) & Flat (F)**
- **4000K, 90 CRI**

**Lumen Adjustment Factor = 0.789**

**Total Light Output =**

\[
3397 \text{ lm} \times 0.789 = 2680 \text{ lm}
\]

**Efficacy =** \[
\frac{2680 \text{ lm}}{28.4 \text{ W}} = 94 \text{ lm/W}
\]
# High Performance Recessed (HPR LED) 2x2, Standard Output (S), Boosted Standard Output (B)

## TYPE F3, F3A

### Wave (WAV)

<table>
<thead>
<tr>
<th>Wave (WAV)</th>
<th>Total Light Output, 3500K, 80 CRI (Lumens)</th>
</tr>
</thead>
<tbody>
<tr>
<td>S</td>
<td>B</td>
</tr>
<tr>
<td>3470</td>
<td>4461</td>
</tr>
</tbody>
</table>

**Power, 3500K, 80 CRI (Watts)**

| S          | B           |
| 28.5       | 37.2        |

**Efficacy, 3500K, 80 CRI (Lumens Per Watt)**

| S          | B           |
| 128        | 120         |

* Family Correlation based on 3500K Very High Output (V) test - 120V.

**Curve Slotted (CS)**

<table>
<thead>
<tr>
<th>Curve Slotted (CS)</th>
<th>Total Light Output, 3500K, 80 CRI (Lumens)</th>
</tr>
</thead>
<tbody>
<tr>
<td>S</td>
<td>B</td>
</tr>
<tr>
<td>3236</td>
<td>4161</td>
</tr>
</tbody>
</table>

**Power, 3500K, 80 CRI (Watts)**

| S          | B           |
| 28.5       | 37.2        |

**Efficacy, 3500K, 80 CRI (Lumens Per Watt)**

| S          | B           |
| 113.5      | 112.0       |

* Family Correlation based on 3500K Very High Output (V) test - 120V.

### Double Diffuse (DD)

<table>
<thead>
<tr>
<th>Double Diffuse (DD)</th>
<th>Total Light Output, 3500K, 80 CRI (Lumens)</th>
</tr>
</thead>
<tbody>
<tr>
<td>S</td>
<td>B</td>
</tr>
<tr>
<td>2720</td>
<td>3497</td>
</tr>
</tbody>
</table>

**Power, 3500K, 80 CRI (Watts)**

| S          | B           |
| 28.5       | 37.2        |

**Efficacy, 3500K, 80 CRI (Lumens Per Watt)**

| S          | B           |
| 95         | 94          |

* Family Correlation based on 3600K Very High Output (V) test - 120V.

### Lumen Adjustment Factors - 80 CRI

<table>
<thead>
<tr>
<th>Lumen Adjustment Factors - 80 CRI</th>
</tr>
</thead>
<tbody>
<tr>
<td>3000K</td>
</tr>
<tr>
<td>3500K</td>
</tr>
<tr>
<td>4000K</td>
</tr>
</tbody>
</table>

**Lumen Adjustment Factors - 90 CRI**

<table>
<thead>
<tr>
<th>Lumen Adjustment Factors - 90 CRI</th>
</tr>
</thead>
<tbody>
<tr>
<td>3000K</td>
</tr>
<tr>
<td>3500K</td>
</tr>
<tr>
<td>4000K</td>
</tr>
</tbody>
</table>

Apply a lumen adjustment factor to calculate lumens for the desired CCT and CRI.

---

*S - Standard Output, B - Boosted Standard Output*
FINELITE

High Performance Recessed (HPR LED) 2x2, Standard Output (S), Boosted Standard Output (B)

TYPE F3, F3A

SPECIFICATIONS

CONSTRUCTION: Die-formed 20-gauge cold-rolled steel housing. All components are hard-tooled to tolerances of +/- 0.010". UV stabilized weather-strip gasket with polypropylene backing. Hinged door frame assembly provides easy access to light arrays and driver compartment for servicing from below. Seismic brackets are integrated into the luminaire assembly. Additional wire entrances are positioned on the ends of the housing to allow easy wiring access for the installer.

REFLECTORS: Die-formed 20-gauge cold-rolled steel reflectors are finished in 96LG high reflectance matte white powder coat paint.

AIR RETURN: Refer to 2x2 Air Return Tech Sheet for more information.

OPTICAL SYSTEM: Components include diffuser panels and a central optic element held in place with a frame constructed from die-formed cold-rolled steel. The diffusers are UV-stabilized and impact-resistant frosted virgin acrylic, 0.120" thick. They are either angled toward the central optic or parallel to the ceiling plane. The center optical element is held in place by sleek steel rails. The standard center rails are approximately 9/16" wide. Optional narrower rails are approximately 5/16" wide. Optional wave door includes frosted acrylic panel that undulates from side to side.

DOUBLE DIFFUSE: Visible diffuser: UV-stabilized and impact-resistant frosted virgin acrylic, 0.120" thick. Inner diffuser: 0.120" thick with 60% round perforations white/white.

DOOR STYLE: Curved Slotted (CS) includes perforated rails that slope inward and a diffuse frosted acrylic center optic.

CENTER OPTIC OPTIONS: Only available with Angled (A), Angled Narrow Rail (ANR), and Flat (F) door styles.

Diffuse Center Optic (DCO): UV-stabilized and impact-resistant frosted virgin acrylic.

Slotted Center Optic (SCO): Die-formed cold-rolled steel panel with a 1/16" x 1/2" rectangular hole pattern. Virgin acrylic overlay.


LIGHT OUTPUT: Two lumen packages available, Standard (S), Boosted Standard (B). A separate chart summarizes lumen distribution and wattage. Light engines are replaceable.

LUMEN MAINTENANCE: 90% of initial light output (L90) at 100,000+ hours; 70% of initial light output (L70) at 200,000+ hours.

DRIVER: Replaceable 120V/277V Constant Current Reduced dimming driver standard. Can be wired dimming or non-dimming, 0-10V dimming controls with a range of 10% - 100%. Dimming to 1% available, consult factory. Driver is fully accessible from below the ceiling. Power Factor: ≥0.9. Total Harmonic Distortion (THD): ≤20%. Expected driver lifetime: 100,000 hours.


ELECTRICAL: Optional emergency to generator/inverter wiring, internal generator transfer switch, nightlight wiring, step-dimming driver, backup battery. Chicago Plenum option. Factory-choice low-profile backup battery available. Bodine SSL272 battery pack also available. Backup batteries deliver 1700 lumens. One quarter of the 2x2 will be illuminated in emergency mode.

INTEGRATED SENSORS: Integrated PIR (Passive Infrared) occupancy and/or daylight sensors. Refer to Occupancy Sensor and Daylight Sensor tech sheets for more info.

MOUNTING: Standard flange design works with most lay-in ceiling types. Integral dry-cut tabs secure the luminaire to the ceiling grid from above. Tie-in locations for tie-wire on all corners. Consult local code for appropriate tie-wire recommendations. Dwyer Kit available. Surface mount and air return versions available; refer to separate tech sheets.

FINISH: Housing and door assembly painted with 96LG high reflectance matte white powder coat paint. Optional ador: Anti-microbial paint. Contact factory.

FEED: Optional whips (with flex connectors) supplied in a maximum of 11' lengths. Lead Wires.

LABELS: Luminare and electrical components are ETL-listed conforming to UL 916, 1950, 3750, 924 in the U.S.A. and CAGCSCA C22.2 No. 225, 250, and 141 in Canada. In accordance with NEC Code 410.73 (G), this luminaire contains an internal driver disconnect. Damp Location. IC-rated. Finelite products use electronic components that are RoHS compliant, and the mechanical components of the luminaire have been verified to not knowingly contain any restricted substances listed per RoHS Directive 2002/95/EC.

WEIGHT: 16 lbs maximum.

WARRANTY: 10-year performance-based warranty on all standard components. Optional accessories such as emergency battery packs are covered by their individual manufacturer warranties.
FINELITE

High Performance Recessed (HPR LED) 2x4

TYPE F3B

Date

Project

Type

Comments

Refer to page 2 for all door styles

DESCRIPTION

HPR LED is a highly efficient recessed luminaire delivering excellent visual comfort and outstanding performance. Advanced optical design makes HPR LED a powerful solution for low-ceiling applications and eliminates the shadows common to other LED recessed products.

DIMENSIONS

NARROW RAIL OPTION

Available in angled door style with the same center optic choices. The optional narrow rails are approximately 5/16" wide. The standard rails are approximately 9/16" wide.

100% SERVICEABLE FROM BELOW

The replaceable light engine and driver are easy to access from below the ceiling.

ORDERING GUIDE

Sample Number: HPR LED - A - 2x4 - DCO - S - 835 - 277V - SC - C1 - OBO

Finelite Series HPR LED
Door Styles (A - Angled, ANR - Angled Narrow Rail, F - Flat, C5 - Curved Slotted, DD - Double Diffuse, WAV - Wave)
Size (2x4)
Center Optic (DCO - Diffuse Center, SCO - Slotted Center, RCO - Round Center)
Light Output (S - Standard, B - Boosted Standard, H - High, V - Very High)
LED CRI/CCT (830 - 80 CRI min, 3000K, 835 - 80 CRI min, 3500K, 840 - 80 CRI min, 4000K, 930 - 90 CRI min, 3000K, 935 - 90 CRI min, 3500K, 940 - 90 CRI min, 4000K)
Voltage (120V, 277V)
Circuiting (SC - Single Circuit)
Ceiling Type (C1 - 1" T-Bar, C2 - 9/16" T-Bar, C3 - screw slot, DW - Drywall Kit)*
Integrated Sensors (OBD - Daylight, OBO - Occupancy, OBB - Both)*

* Curved Slotted, Double Diffuse and Wave door not available with Center Optic options
* Only available with Angled (A), Angled Narrow Rail (ANR) and Flat (F) door options

Due to continuing product improvements, Finelite reserves the right to change specifications without notice. Please visit www.finelite.com for most current data.
DOOR STYLES

A - Angled
ANR - Angled Narrow Rail

F - Flat

WAV - Wave

DOOR STYLES

CS - Curved Slotted

DD - Double Diffuse

CENTER OPTICS

DCO - Diffuse Center

SCO - Slotted Center

RCO - Round Center

DCO, SCO, and RCO are only available on Angled (A), Angled Narrow Rail (ANR), and Flat (F) doors.
**Photometry**

HPR LED-A-2x4-DCC-V

- Very High Output - Angled Rail
- Efficacy: 127 lumens per watt
- Total luminous output: 6979 Lumens
- 55.1 Watts
- Peak Candela Value: 2741 @ 0°
- CCT: 3500K
- ITL LM79 Report 85145

<table>
<thead>
<tr>
<th>CANDLEPOWER SUMMARY</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.0 22.5 45 67.5 ACROSS Flux</td>
</tr>
<tr>
<td>0 2741 2741 2741 2741 2741</td>
</tr>
<tr>
<td>5 2730 2728 2728 2727 2727 129</td>
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<td>10 2685 2684 2683 2682 2682 67</td>
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<tr>
<td>15 2610 2607 2609 2603 2602 173</td>
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<td>20 2511 2506 2502 2498 2498 341</td>
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<td>25 2380 2374 2371 2366 2367 601</td>
</tr>
<tr>
<td>30 2223 2216 2213 2209 2211</td>
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<tr>
<td>35 2043 2036 2033 2030 2033 2033</td>
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<td>40 1845 1838 1836 1834 1837</td>
</tr>
<tr>
<td>45 1635 1628 1627 1626 1630 175</td>
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<tr>
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<tr>
<td>55 1200 1195 1196 1195 1197 1069</td>
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<tr>
<td>60 985 984 984 978 974</td>
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<tr>
<td>65 780 778 774 766 761 766</td>
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<tr>
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</tr>
<tr>
<td>85 103 100 97 91 89 111</td>
</tr>
<tr>
<td>90 0 0 0 0 0</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Lumen Adjustment Factors - 80 CRI</th>
</tr>
</thead>
<tbody>
<tr>
<td>3000K</td>
</tr>
<tr>
<td>3500K</td>
</tr>
<tr>
<td>4000K</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Lumen Adjustment Factors - 90 CRI</th>
</tr>
</thead>
<tbody>
<tr>
<td>3000K</td>
</tr>
<tr>
<td>3500K</td>
</tr>
<tr>
<td>4000K</td>
</tr>
</tbody>
</table>

Apply a lumen adjustment factor to calculate lumens for the desired CCT and CRI.

<table>
<thead>
<tr>
<th>SAMPLE LUMEN ADJUSTMENT CALCULATION</th>
</tr>
</thead>
</table>

**High Output (H) Angled (A) & Flat (F) 4000K, 90 CRI**

Lumen Adjustment Factor = 0.789

Total Light Output = 5416 lm x 0.789 = 4273 lm

Efficacy = \( \frac{4273 \text{ lm}}{40.5 \text{ W}} \) = 105 lm/W

* Family Correlation based on 3500K Very High Output (V) test - 120V.
* Correlation based on source ITL report: 85145

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Due to continuing product improvements, Finelite reserves the right to change specifications without notice. Please visit www.finelite.com for most current data.
## High Performance Recessed (HPR LED) 2x4

### Type F3B

#### Wave (WAV)

<table>
<thead>
<tr>
<th>Wave (WAV)</th>
<th>Total Light Output, 3500K, 80 CRI (Lumens)</th>
<th>Power, 3500K, 80 CRI (Watts)</th>
<th>Efficacy, 3500K, 80 CRI (Lumens Per Watt)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td><strong>S</strong></td>
<td><strong>B</strong></td>
<td><strong>H</strong></td>
</tr>
<tr>
<td><strong>S</strong></td>
<td>3821</td>
<td>4804</td>
<td>5486</td>
</tr>
<tr>
<td><strong>B</strong></td>
<td>3569</td>
<td>4486</td>
<td>5124</td>
</tr>
</tbody>
</table>

- *Family Correlation based on 3500K Very High Output (V) test - 120V.
- †Correlation based on source ITL report: 65507

#### Curve Slotted (CS)

<table>
<thead>
<tr>
<th>Curve Slotted (CS)</th>
<th>Total Light Output, 3500K, 80 CRI (Lumens)</th>
<th>Power, 3500K, 80 CRI (Watts)</th>
<th>Efficacy, 3500K, 80 CRI (Lumens Per Watt)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td><strong>S</strong></td>
<td><strong>B</strong></td>
<td><strong>H</strong></td>
</tr>
<tr>
<td><strong>S</strong></td>
<td>3076</td>
<td>3867</td>
<td>4417</td>
</tr>
<tr>
<td><strong>B</strong></td>
<td>3000K</td>
<td>3500K</td>
<td>4000K</td>
</tr>
</tbody>
</table>

- *Family Correlation based on 3500K Very High Output (V) test - 120V.
- †Correlation based on source ITL report: 95020

**Double Diffuse (DD)**

<table>
<thead>
<tr>
<th>Double Diffuse (DD)</th>
<th>Total Light Output, 3500K, 80 CRI (Lumens)</th>
<th>Power, 3500K, 80 CRI (Watts)</th>
<th>Efficacy, 3500K, 80 CRI (Lumens Per Watt)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td><strong>S</strong></td>
<td><strong>B</strong></td>
<td><strong>H</strong></td>
</tr>
<tr>
<td><strong>S</strong></td>
<td>3076</td>
<td>3867</td>
<td>4417</td>
</tr>
<tr>
<td><strong>B</strong></td>
<td>3000K</td>
<td>3500K</td>
<td>4000K</td>
</tr>
</tbody>
</table>

- *Family Correlation based on 3500K Very High Output (V) test - 120V.
- †Correlation based on source ITL report: 85169

### Lumen Adjustment Factors - 80 CRI

<table>
<thead>
<tr>
<th></th>
<th>3000K</th>
<th>3500K</th>
<th>4000K</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>S</strong></td>
<td>0.985</td>
<td>1.000</td>
<td>1.032</td>
</tr>
<tr>
<td><strong>B</strong></td>
<td>0.746</td>
<td>0.760</td>
<td>0.789</td>
</tr>
</tbody>
</table>

### Lumen Adjustment Factors - 90 CRI

<table>
<thead>
<tr>
<th></th>
<th>3000K</th>
<th>3500K</th>
<th>4000K</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>S</strong></td>
<td>0.872</td>
<td>0.882</td>
<td>0.911</td>
</tr>
<tr>
<td><strong>B</strong></td>
<td>0.846</td>
<td>0.860</td>
<td>0.885</td>
</tr>
</tbody>
</table>

Apply a lumen adjustment factor to calculate lumens for the desired CCT and CRI.

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**SPECIFICATIONS**

**CONSTRUCTION:** Die-formed 20-gauge cold-rolled steel housing. All components are hard-touched to tolerances of +/- 0.010". UV stabilized weather-strip pile gasket with polypropylene backing. Hinged door frame assembly provides easy access to light arrays and driver compartment for servicing from below. Seismic brackets are integrated into the luminaire assembly. Additional wire entrances are positioned on the ends of the housing to allow easy wiring access for the installer.

**REFLECTORS:** Die-formed 20-gauge cold-rolled steel reflectors are finished in 96LG high reflectance matte white powder coat paint.

**AIR RETURN:** Refer to 2x4 Air Return Tech Sheet for more information.

**OPTICAL SYSTEM:** Components include diffuser panels and a central optic element held in place with a frame constructed from die-formed cold-rolled steel. The diffusers are UV-stabilized and impact-resistant frosted virgin acrylic, 0.120" thick. They are either angled toward the central optic or parallel to the ceiling plane. The standard center flats are approximately 9/16" wide. Optional narrow flats are approximately 5/16" wide. Optional wave door includes frosted acrylic panel that undulates from side to side.

**DOUBLE DIFFUSE:** Visible diffuser: UV-stabilized and impact-resistant frosted virgin acrylic, 0.120" thick. Inner diffuser: 0.120" thick with 60% round perforations white/white.

**DOOR STYLE:** Curved Slotted (CS) includes perforated rails that slope inward and a diffuse frosted acrylic center optic.

**CENTER OPTIC OPTIONS:** Only available with Angled (A), Angled Narrow Rail (ARN), and Flat (F) door styles.

**Diffuse Center Optic (DCO):** UV-stabilized and impact-resistant frosted virgin acrylic.

**Slotted Center Optic (SCO):** Die-formed cold-rolled steel panel with a 1/16" x 1/2" rectangular hole pattern. Virgin acrylic overlay.

**Round Center Optic (RCO):** Die-formed cold-rolled steel panel with precision-punched 3/32" round hole pattern arranged in staggered formation. Virgin acrylic overlay.

**LIGHT OUTPUT:** Four lumen packages available: Standard (S), Boosted Standard (B), High (H), and Very High (V). A separate chart summarizes lumen distribution and wattage. Light engines are replaceable.

**LUMEN MAINTENANCE:** 90% of initial light output (180) at 100,000+ hours; 70% of initial light output (170) at 200,000+ hours.

**DRIVER:** Replaceable 120V/277V Constant Current Reduction dimming driver standard. Can be wired dimming or non-dimming, 0-10V dimming controls with a range of 10%-100%. Dimming to 1% available, consult factory. Driver is fully accessible from below the ceiling. Power Factor: >0.9. Total Harmonic Distortion (THD): <20%. Expected driver lifetime: 100,000 hours.

**LUTRON DRIVER OPTIONS:** Lut3W-3-wire, LutES - EcoSystem, Lut2W-2-wire.

**ELECTRICAL:** Optional emergency to generator/inverter wiring, internal generator transfer switch, right-lighting, step-dimming driver, backup battery. Chicago Penum option. Factory-choice low-profile backup battery available. Bodine BSL722 battery pack also available. Backup batteries deliver 1700 lumens. One quarter of the 2x4 will be illuminated in emergency mode.

**INTEGRATED SENSORS:** Integrated PIR (Passive Infrared) occupancy and/or daylight sensors available. Refer to Occupancy Sensor and Daylight Sensor tech sheets for more info.

**MOUNTING:** Standard flange design works with most lay-in ceiling types. Integral pty-out tabs secure the luminaire to the ceiling grid from above. Tie-In locations for tie-wire on all corners. Consult local code for appropriate tie-wire recommendations. Drywall Kit available. Surface mount and air return versions available; refer to separate tech sheets.

**FINISH:** Housing and door assembly painted with 96 LG high reflectance matte white powder coat paint. Optional adder: Anti-microbial paint. Contact factory.

**FEED:** Optional wholes (with flex connectors) supplied in a maximum of 11' lengths. Lead Wires.

**LABELS:** Luminaire and electrical components are ETL-listed conforming to UL 916, 1598, 8750, 924 in the U.S.A. and CAN/CSA C22.2 No. 205, 250, and 141 in Canada. In accordance with NEC Code 410.73 (G), this luminaire contains an internal driver disconnect. Damp Location, IG-rated. Finelite products use electronic components that are RoHS compliant, and the mechanical components of the luminaire have been verified to not knowingly contain any restricted substances listed per RoHS Directive 2002/95/EC.

**WEIGHT:** 33 lbs. maximum.

**WARRANTY:** 10-year performance-based warranty on all standard components. Optional accessories such as emergency battery packs are covered by their individual manufacturer warranties.
**DESCRIPTION**

HPR LED is a highly efficient recessed luminaire delivering excellent visual comfort and outstanding performance. Advanced optical design makes HPR LED a powerful solution for low-ceiling applications and eliminates the shadows common to other LED recessed products.

**DIMENSIONS**

**ANGLED NARROW RAIL OPTION**
Available in angled door style with the same center optic choices. The optional narrow rails are approximately 5/16" wide. The standard center rails are approximately 9/16" wide.

**100% SERVICEABLE FROM BELOW**
The replaceable light engine and driver are easy to access from below the ceiling.

**ORDERING GUIDE**
Sample Number: HPR LED - A - 2x2 - DCO - S - 835 - 277V - SC - C1 - OBO

FineLife Series HPR LED
- Door Styles (A - Angled, ANR - Angled Narrow Rail, F - Flat, CS - Curved Slotted\(^1\), DD - Double Diffuse\(^1\), WAV - Wave\(^1\))
- Size (2x2)
- Center Optic (DCO - Diffuse Center, SCO - Slotted Center, RCO - Round Center\(^2\))
- Light Output (S - Standard, B - Boosted Standard)
- LED CRI/CCT (830 - 80 CRI min, 3000K, 835 - 80 CRI min, 3500K, 840 - 80 CRI min, 4000K, 930 - 90 CRI min, 3000K, 935 - 90 CRI min, 3500K, 940 - 90 CRI min, 4000K)
- Voltage (120V, 277V)
- Circuiting (SC - Single Circuit)
- Ceiling Type (C1 - 1" T-Bar, C2 - 9/16" T-Bar, C3 - screw slot, DW - Drywall Kit\(^3\))
- Integrated Sensors (OBO - Daylight, OBO - Occupancy, OBB - Both\(^3\))

\(^1\) Curved Slotted, Double Diffuse and Wave door not available with Center Optic options
\(^2\) Only available with Angled (A), Angled Narrow Rail (ANR) and Flat (F) door options
\(^3\) Surface Mount available
DOOR STYLES

A - Angled
ANR - Angled Narrow Rail

F - Flat

WAV - Wave

DOOR STYLES

CS - Curved Slotted

DD - Double Diffuse

CENTER OPTICS

DCO - Diffuse Center

SCO - Slotted Center

RCO - Round Center

DCO, SCO, and RCO are only available on Angled (A), Angled Narrow Rail (ANR), and Flat (F) doors.
**High Performance Recessed (HPR LED) 2x2, Standard Output (S), Boosted Standard Output (B)**

**Photometry**
- 3R LED-A-2x2-DDC-V
- Standard Output - Angled Rail
- Efficacy: 119 lumens per watt
- Total luminaire output: 3397 lumens
- 28.3 Watts
- Peak Candelas Value: 2574 @ 0°
- CCT: 3500K
- ITL LM79 Report 85142

**Modified Lumen Output:** Reduce to 1700 lumens/fixture

<table>
<thead>
<tr>
<th>Angled (A) and Flat (F)</th>
<th>Total Light Output, 3500K, 80 CRI (Lumens)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td><strong>S</strong></td>
</tr>
<tr>
<td></td>
<td>3397</td>
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</tr>
</thead>
<tbody>
<tr>
<td><strong>S</strong></td>
</tr>
<tr>
<td>119</td>
</tr>
</tbody>
</table>

* Family Correlation based on 3500K Very High Output (V) test - 120V.
** Correlation based on source ITL report 85142.

<table>
<thead>
<tr>
<th>Angled Narrow Rail (ANR)</th>
<th>Total Light Output, 3500K, 80 CRI (Lumens)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td><strong>S</strong></td>
</tr>
<tr>
<td></td>
<td>3276</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Power, 3500K, 80 CRI (Watts)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>S</strong></td>
</tr>
<tr>
<td>28.6</td>
</tr>
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</table>

<table>
<thead>
<tr>
<th>Efficacy, 3500K, 80 CRI (Lumens Per Watt)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>S</strong></td>
</tr>
<tr>
<td>115</td>
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</table>

*Family Correlation based on 3500K Very High Output (V) test - 120V.
Correlation based on source ITL report 85148

<table>
<thead>
<tr>
<th>Lumen Adjustment Factors - 80 CRI</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>3000K</strong></td>
</tr>
<tr>
<td><strong>3500K</strong></td>
</tr>
<tr>
<td><strong>4000K</strong></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Lumen Adjustment Factors - 90 CRI</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>3000K</strong></td>
</tr>
<tr>
<td><strong>3500K</strong></td>
</tr>
<tr>
<td><strong>4000K</strong></td>
</tr>
</tbody>
</table>

Apply a lumen adjustment factor to calculate lumens for the desired CCT and CRI.

**Sample Lumen Adjustment Calculation**

**Standard Output (S) Angled (A) & Flat (F)**

**4000K, 90 CRI**

Lumen Adjustment Factor = 0.789

Total Light Output = 3397 lm x 0.789 = 2680 lm

Efficacy = \( \frac{2680 \text{ lm}}{29.4 \text{ W}} = 94 \text{ lm/W} \)

---

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Due to continuing product improvements, FineLite reserves the right to change specifications without notice. Please visit www.finelite.com for most current data.
<table>
<thead>
<tr>
<th>Wave (WAV)</th>
<th>Total Light Output, 3500K, 80 CRI (Lumens)</th>
</tr>
</thead>
<tbody>
<tr>
<td>S</td>
<td>B</td>
</tr>
<tr>
<td>3470</td>
<td>4461</td>
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<table>
<thead>
<tr>
<th>Power, 3500K, 80 CRI (Watts)</th>
</tr>
</thead>
<tbody>
<tr>
<td>S</td>
</tr>
<tr>
<td>28.5</td>
</tr>
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<table>
<thead>
<tr>
<th>Efficacy, 3500K, 80 CRI (Lumens Per Watt)</th>
</tr>
</thead>
<tbody>
<tr>
<td>S</td>
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<td>128</td>
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<table>
<thead>
<tr>
<th>Curve Slotted (CS)</th>
<th>Total Light Output, 3500K, 80 CRI (Lumens)</th>
</tr>
</thead>
<tbody>
<tr>
<td>S</td>
<td>B</td>
</tr>
<tr>
<td>3236</td>
<td>4161</td>
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<table>
<thead>
<tr>
<th>Power, 3500K, 80 CRI (Watts)</th>
</tr>
</thead>
<tbody>
<tr>
<td>S</td>
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<tr>
<td>28.5</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Efficacy, 3500K, 80 CRI (Lumens Per Watt)</th>
</tr>
</thead>
<tbody>
<tr>
<td>S</td>
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<td>113.5</td>
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<table>
<thead>
<tr>
<th>Double Diffuse (DD)</th>
<th>Total Light Output, 3500K, 80 CRI (Lumens)</th>
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<tbody>
<tr>
<td>S</td>
<td>B</td>
</tr>
<tr>
<td>2720</td>
<td>3497</td>
</tr>
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<table>
<thead>
<tr>
<th>Power, 3500K, 80 CRI (Watts)</th>
</tr>
</thead>
<tbody>
<tr>
<td>S</td>
</tr>
<tr>
<td>28.5</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Efficacy, 3500K, 80 CRI (Lumens Per Watt)</th>
</tr>
</thead>
<tbody>
<tr>
<td>S</td>
</tr>
<tr>
<td>95</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Lumen Adjustment Factors - 80 CRI</th>
</tr>
</thead>
<tbody>
<tr>
<td>3000K</td>
</tr>
<tr>
<td>3500K</td>
</tr>
<tr>
<td>4000K</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Lumen Adjustment Factors - 90 CRI</th>
</tr>
</thead>
<tbody>
<tr>
<td>3000K</td>
</tr>
<tr>
<td>3500K</td>
</tr>
<tr>
<td>4000K</td>
</tr>
</tbody>
</table>

* Family Correlation based on 3500K Very High Output (V) test - 120V.
* Correlation based on source ITL report: 858835

S - Standard Output, B - Boosted Standard Output

Apply a lumen adjustment factor to calculate lumens for the desired CCT and CRI.
CONSTRUCTION: Die-formed 20-gauge cold-rolled steel housing. All components are hard-tooled to tolerances of +/- 0.010". UV stabilized weather-strip pile gasket with polypropylene backing. Hinged door frame assembly provides easy access to light arrays and driver compartment for servicing from below. Seismic brackets are integrated into the luminaire assembly. Additional wire entrances are positioned on the ends of the housing to allow easy wiring access for the installer.

REFLECTORS: Die-formed 20-gauge cold-rolled steel reflectors are finished in 96LG high reflectance matte white powder coat paint.

AIR RETURN: Refer to 2x2 Air Return Tech Sheet for more information.

OPTICAL SYSTEM: Components include diffuser panels and a central optic element held in place with a frame constructed from die-formed cold-rolled steel. The diffusers are UV-stabilized and impact-resistant frosted virgin acrylic, 0.120" thick. They are either angled toward the central optic or parallel to the ceiling plane. The central optical element is held in place by sleek steel rails. The standard center rail is approximately 9/16" wide. Optional narrow rails have a 5/16" width. Optional wave door includes frosted acrylic panel that undulates from side to side.

DOUBLE DIFFUSE: Visible diffuser: UV-stabilized and impact-resistant frosted virgin acrylic, 0.120" thick. Inner diffuser: 0.120" thick with 60% round perforations white/white.

DOOR STYLE: Curved Slotted (CS) includes perforated rails that slope inward and a diffuse frosted acrylic center optic.

CENTER OPTIC OPTIONS: Only available with Angled (A), Angled Narrow Rail (ANR), and Flat (F) door styles.

Diffuse Center Optic (DCO): UV-stabilized and impact-resistant frosted virgin acrylic.

Slotted Center Optic (SCO): Die-formed cold-rolled steel panel with a 1/16" x 1/2" rectangular hole pattern. Virgin acrylic overlay.


LIGHT OUTPUT: Two lumen packages available, Standard (S), Boosted Standard (B). A separate chart summarizes lumen distribution and wattage. Light engines are replaceable.

LUMEN MAINTENANCE: 90% of initial light output (L90) at 100,000+ hours; 70% of initial light output (L70) at 200,000+ hours.

DRIVER: Replaceable 120V/277V Constant Current Reduction dimming driver standard. Can be wired dimming or non-dimming. 0-10V dimming controls with a range of 10%-100%. Dimming to 1% available, consult factory. Driver is fully accessible from below the ceiling. Power Factor: ≥0.9. Total Harmonic Distortion (THD): <20%. Expected driver lifetime: 100,000 hours.

LUTRON DRIVER OPTIONS: LUT3W-3-wire, LUTES-EcoSystem, LUT2W-2wire.

ELECTRICAL: Optional emergency to generator/inverter wiring. Internal generator transfer switch, nightlight wiring, step-dimming driver, backup battery. Chicago Pileum option. Factory-choice low-profile backup battery available. Bodine BSL722 battery pack also available. Backup batteries deliver 1700 lumens. One quarter of the 2x2 will be illuminated in emergency mode.

INTEGRATED SENSORS: Integrated PIR (Passive Infrared) occupancy and/or daylight sensors available. Refer to Occupancy Sensor and Daylight Sensor tech sheets for more info.

MOUNTING: Standard flange design works with most lay-in ceiling types. Integral pty-out tabs secure the luminaire to the ceiling grid from above. Tie-in locations for tie-wire on all corners. Consult local code for appropriate tie-wire recommendations. Drywall Kit available. Surface mount and air return versions available. Refer to separate tech sheets.

FINISH: Housing and door assembly painted with 96 LG high reflectance matte white powder coat paint. Optional adder: Anti-microbial paint. Contact factory.

FEED: Optional whips (with flex connectors) supplied in a maximum of 11' lengths. Lead Wires.

LABELS: Luminaire and electrical components are ETL-listed conforming to UL 916, 598, 6730, 924 in the U.S.A. and CAn/CSA C22.2 No. 206, 250, and 141 in Canada. In accordance with NEC Code 410.72 (G), this luminaire contains an internal driver disconnect. Damp Location. IC-rated. Finelite products use electronic components that are RoHS compliant, and the mechanical components of the luminaire have been verified to not knowingly contain any restricted substances listed per RoHS Directive 2002/95/EC.

WEIGHT: 16 lbs maximum.

WARRANTY: 10-year performance-based warranty on all standard components. Optional accessories such as emergency battery packs are covered by their individual manufacturer warranties.
## Frame-in kit

<table>
<thead>
<tr>
<th>Series</th>
<th>Lumens</th>
<th>Installation</th>
<th>Input voltage</th>
<th>Version</th>
<th>Dimming</th>
<th>Options</th>
</tr>
</thead>
<tbody>
<tr>
<td>C4X4L</td>
<td></td>
<td>N</td>
<td>Universal (120/277V)</td>
<td>VB</td>
<td>Z10V</td>
<td>EM</td>
</tr>
<tr>
<td></td>
<td>500lm</td>
<td>New construction</td>
<td></td>
<td></td>
<td>0-10V dimming</td>
<td>Lutron driver</td>
</tr>
<tr>
<td>1000lm</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>LC</td>
</tr>
<tr>
<td>1500lm</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>EM</td>
</tr>
<tr>
<td>2250lm</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>LC</td>
</tr>
<tr>
<td>C4X4L</td>
<td>10</td>
<td>N</td>
<td>120V</td>
<td>VB</td>
<td>Z10V</td>
<td>EM</td>
</tr>
<tr>
<td></td>
<td>1600lm</td>
<td>New construction</td>
<td></td>
<td></td>
<td>0-10V dimming</td>
<td>Lutron driver</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>277V</td>
<td></td>
<td></td>
<td>LC</td>
</tr>
<tr>
<td></td>
<td>2250lm</td>
<td>New construction</td>
<td></td>
<td></td>
<td></td>
<td>EM</td>
</tr>
</tbody>
</table>

## Trim kit

<table>
<thead>
<tr>
<th>Series</th>
<th>Lumens</th>
<th>Style</th>
<th>CCT</th>
<th>Reflector</th>
<th>Flange</th>
<th>Version</th>
</tr>
</thead>
<tbody>
<tr>
<td>C4X4L</td>
<td></td>
<td>DL</td>
<td>2700K</td>
<td>Clear</td>
<td>W</td>
<td>VB Version B</td>
</tr>
<tr>
<td></td>
<td>500lm</td>
<td>Downlight</td>
<td></td>
<td>CCL Comfort clear</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1000lm</td>
<td>1500lm</td>
<td></td>
<td>3000K</td>
<td>CDD Comfort clear diffuse</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2250lm</td>
<td></td>
<td></td>
<td>3500K</td>
<td>CCZ Champagne bronze</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>4000K</td>
<td>WH White (painted)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

2. Consult factory for availability of other 347V (-347) option configurations.
3. Consult factory for availability for other Chicago Plenum (LC) option configurations.

Note: See page 3 for Energy Star compatibility.

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Calculite LED 4x4 Downlight - C4X4L0DLV

09/15 page 1 of 5
C4X4L-DL-VB  Calculite LED

4x4" Square Aperture, Downlight, Wide Beam 500/1000/1500/2250lm

New Construction

Frame-in kits
New construction
Mounting frame: Galvanized stamped steel for dry or plaster ceilings.
Vertical adjustment: Light engine adjusts in frame below ceilings up to 1/16" max.
Horizontal adjustment: Rotating plate allows for 360° of adjustment prior to connection of power supply. Adjusts and locks via two wing nuts accessible through aperture.
Mounting brackets: Galvanized Steel. Adjustable through aperture. Pre-Installed telescoping mounting bars extend to 30" long and lock into position. Attach to steel or wood joists without accessories.

Options and accessories
Dimming capability:
0-10V or Lutron dimming (see LED-DIM spec sheet).
Emergency capability:
Inverter (see CP-60150 spec sheet - ZI series). Integral (see LED-EM spec sheet - add "EM" suffix).

Quick-ship
Philips is committed to providing customers with the products they need when they need them. For Service Smart (2 day) and Spec Smart (2 week) availability please reference the Philips Luminaire Smart Service Guide or contact your Philips Lighting representative. Quick-ship SKUs apply to the United States only.
C4X4L-DL-VB  Calculite LED
4x4" Square Aperture, Downlight, Wide Beam 500/1000/1500/2250lm

Trim kits
1. Heatsink cast aluminum
2. Thermal pad
3. LED board
4. Upper housing 0.048" powder coated aluminum
5. Mixing chamber injection molded polycarbonate
6. Diffusion film
7. Glass 0.09" clear borosilicate
8. Lower housing 0.030" pre-finished black steel
9. Reflector 0.020" pre-finished aluminum

Calculite LED 4"
C4X4L10DL35KCCDVPB
Calculite LED 4" Trim kits are backwards compatible with all Calculite LED 4" Frame-In Kits.

Features
Ceiling cutout: 4" aperture: 5 1/2" (130mm) cutout.
Depth: 5 1/2" (143mm) including light engine.
Power connection: Attaches to light engine via push-in connector (on frame). Removable cover provides access.
Junction box: Allows inspection from below.
Thermal protector: Meets NEC & UL requirements. Do not install insulation above or within 3" of luminaire.
Thermal Management: Heat sink and thermal design along with the clean room assembly process ensures specified performance levels are maintained.

Rated life: Offers 60,000 hour rated life (2250lm offers 50,000 hour rated life) at 70% lumen maintenance (L70). Tested in accordance with IES LM-80-08 and TM-21-11.

Energy Star
All new construction (N) frame-in and trim kit configurations are ENERGY STAR® certified except for the following:
- Frame-In Kits: Universal voltage options used in 277V configurations.
- Trim Kits: Champagne bronze (CCZ) reflector finishes.
- All emergency (EM) configurations.
- All 347V configurations.

Electrical
Electronic power supply: 120 or 277V, 50/60Hz, encased, overload and short circuit protected, thermal regulation to protect against overheat, sound rating: "A", -20°C minimum starting temperature.

Frame-in kit Electrical specifications

<table>
<thead>
<tr>
<th>Input volts</th>
<th>Input freq.</th>
<th>Input current</th>
<th>LED drive current</th>
<th>Input power</th>
<th>LED power</th>
<th>THD factor</th>
<th>Power factor</th>
</tr>
</thead>
<tbody>
<tr>
<td>120V</td>
<td>50/60Hz</td>
<td>0.06A</td>
<td>300mA</td>
<td>7W</td>
<td>5W</td>
<td>&lt;15%</td>
<td>&gt;0.95</td>
</tr>
<tr>
<td>277V</td>
<td>50/60Hz</td>
<td>0.03A</td>
<td>300mA</td>
<td>7W</td>
<td>5W</td>
<td>&lt;20%</td>
<td>&gt;0.80</td>
</tr>
<tr>
<td>120V</td>
<td>50/60Hz</td>
<td>0.1A</td>
<td>300mA</td>
<td>13W</td>
<td>10W</td>
<td>&lt;10%</td>
<td>&gt;0.95</td>
</tr>
<tr>
<td>277V</td>
<td>50/60Hz</td>
<td>0.05A</td>
<td>300mA</td>
<td>13W</td>
<td>10W</td>
<td>&lt;15%</td>
<td>&gt;0.85</td>
</tr>
<tr>
<td>120V</td>
<td>50/60Hz</td>
<td>0.17A</td>
<td>450mA</td>
<td>27W</td>
<td>16W</td>
<td>&lt;10%</td>
<td>&gt;0.95</td>
</tr>
<tr>
<td>277V</td>
<td>50/60Hz</td>
<td>0.08A</td>
<td>450mA</td>
<td>27W</td>
<td>16W</td>
<td>&lt;15%</td>
<td>&gt;0.90</td>
</tr>
<tr>
<td>120V</td>
<td>50/60Hz</td>
<td>0.25A</td>
<td>675mA</td>
<td>30W</td>
<td>24W</td>
<td>&lt;10%</td>
<td>&gt;0.95</td>
</tr>
<tr>
<td>277V</td>
<td>50/60Hz</td>
<td>0.11A</td>
<td>675mA</td>
<td>30W</td>
<td>24W</td>
<td>&lt;15%</td>
<td>&gt;0.95</td>
</tr>
</tbody>
</table>

* V yields 5%.
\_\_ = Applies to both 120V (1) and 277V (2) input voltages.

Labels
cULus, I.B.E.W.
Suitable for wet locations.
5 year warranty.
ENERGY STAR® certified (see exclusions to the left).
C4X4L-DL-VB  Calculite LED
4x4" Square Aperture, Downlight, Wide Beam 500/1000/1500/2250lm

7W LED, 3500K, 500 lumen

<table>
<thead>
<tr>
<th>Candela Curve</th>
<th>Zonal summary</th>
<th>Single unit data</th>
<th>Finish Adjust. factors</th>
<th>CCT Adjust. factors</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Zone Luman Luminaire</td>
<td>Height to lighted plane</td>
<td>Initial center beam foot-candies</td>
<td>Beam diameter (de)</td>
</tr>
<tr>
<td></td>
<td>0-30 371 63.2%</td>
<td>5' 15 6.0'</td>
<td>15 7.2'</td>
<td>CL = 100%</td>
</tr>
<tr>
<td></td>
<td>0-60 596 99.9%</td>
<td>7' 7 8.4'</td>
<td>7 9.5'</td>
<td>CCL = 95%</td>
</tr>
<tr>
<td></td>
<td>0-90 587 100.0%</td>
<td>9' 5 10.3'</td>
<td>5 10.9'</td>
<td>CDD = 87%</td>
</tr>
<tr>
<td>Angle 0° 45° Lumens</td>
<td>0 367 367 37</td>
<td></td>
<td></td>
<td>CZZ = 63%</td>
</tr>
<tr>
<td></td>
<td>10 405 413 128</td>
<td>6</td>
<td></td>
<td>WH = 87%</td>
</tr>
<tr>
<td></td>
<td>15 435 471</td>
<td>7</td>
<td></td>
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</tr>
<tr>
<td></td>
<td>20 435 505</td>
<td>8</td>
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</tr>
<tr>
<td></td>
<td>25 414 504</td>
<td>9</td>
<td></td>
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</tr>
<tr>
<td></td>
<td>30 315 438</td>
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<td></td>
<td>35 224 318 163</td>
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<td></td>
<td>40 119 168 49</td>
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<td></td>
<td>50 8 20 4</td>
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<td></td>
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<td></td>
<td>75 0 0</td>
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<tr>
<td></td>
<td>80 0 0</td>
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<tr>
<td></td>
<td>85 0 0</td>
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<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>90 0 0</td>
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</tr>
<tr>
<td>Frame: C4X4LDSKU2V10V</td>
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<td>15</td>
<td></td>
<td>0</td>
</tr>
<tr>
<td>CCT: 3500K</td>
<td>586.9 lm</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Output lumens: 71 W</td>
<td>1199 1199</td>
<td>15</td>
<td></td>
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</tr>
<tr>
<td>CRI: 80 min</td>
<td>1199 1199</td>
<td>15</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Spacing CRI: 12</td>
<td>1199 1199</td>
<td>15</td>
<td></td>
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<tr>
<td>Report no: 0716GFR</td>
<td>1199 1199</td>
<td>15</td>
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<td></td>
</tr>
</tbody>
</table>

13W LED, 3500K, 1000 lumen

<table>
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<td>Beam diameter (de)</td>
</tr>
<tr>
<td></td>
<td>0-30 723 63.2%</td>
<td>5' 30 5.5'</td>
<td>30 6.6'</td>
<td>CL = 100%</td>
</tr>
<tr>
<td></td>
<td>0-60 1143 99.9%</td>
<td>7' 16 7.7'</td>
<td>16 8.8'</td>
<td>CCL = 95%</td>
</tr>
<tr>
<td></td>
<td>0-90 1144 100.0%</td>
<td>9' 9 9.9'</td>
<td>9 9.9'</td>
<td>CDD = 87%</td>
</tr>
<tr>
<td>Angle 0° 45° Lumens</td>
<td>0 761 761 75</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>5 774 775 251</td>
<td>6</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>10 816 829</td>
<td>7</td>
<td></td>
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</tr>
<tr>
<td></td>
<td>15 864 903</td>
<td>8</td>
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<tr>
<td></td>
<td>20 876 946</td>
<td>9</td>
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<td></td>
<td>25 802 946</td>
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<tr>
<td></td>
<td>30 644 833</td>
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<tr>
<td></td>
<td>35 440 604 321</td>
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<tr>
<td></td>
<td>40 230 333</td>
<td></td>
<td></td>
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<tr>
<td></td>
<td>45 79 146 94</td>
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<td></td>
<td>50 14 37</td>
<td></td>
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<tr>
<td></td>
<td>55 3 8</td>
<td></td>
<td></td>
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</tr>
<tr>
<td></td>
<td>60 1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>65 0</td>
<td></td>
<td></td>
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</tr>
<tr>
<td></td>
<td>70 0 0</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>75 0 0</td>
<td></td>
<td></td>
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</tr>
<tr>
<td></td>
<td>80 0 0</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>85 0 0</td>
<td></td>
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<td></td>
</tr>
<tr>
<td></td>
<td>90 0 0</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Frame: C4X4LDSKU2V10V</td>
<td>1199 1199</td>
<td>15</td>
<td></td>
<td>0</td>
</tr>
<tr>
<td>CCT: 3500K</td>
<td>586.9 lm</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Output lumens: 13 W</td>
<td>1199 1199</td>
<td>15</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Efficacy: 87.4 lm/w</td>
<td>1199 1199</td>
<td>15</td>
<td></td>
<td></td>
</tr>
<tr>
<td>CRI: 80 min</td>
<td>1199 1199</td>
<td>15</td>
<td></td>
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<tr>
<td>Spacing CRI: 11</td>
<td>1199 1199</td>
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<td>Report no: 0716GFR</td>
<td>1199 1199</td>
<td>15</td>
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2. Wattage controlled to within ±3%.
## C4X4L-DL-VB Calculite LED

### 4x4" Square Aperture, Downlight, Wide Beam 500/1000/1500/2250lm

#### 21W LED, 3500K, 1500 lumen

<table>
<thead>
<tr>
<th>Candela Curve</th>
<th>Zonal summary</th>
<th>Single unit data</th>
<th>Finish Adjust. factors</th>
<th>CCT Adjust. factors</th>
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<tbody>
<tr>
<td>Zone</td>
<td>Lumens</td>
<td>Luminaire</td>
<td>0-30</td>
<td>1058</td>
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<td>0-40</td>
<td>1597</td>
<td>91.2%</td>
<td>CCL</td>
<td>95%</td>
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<tr>
<td>0-60</td>
<td>1673</td>
<td>99.9%</td>
<td>CCD</td>
<td>87%</td>
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<tr>
<td>0-90</td>
<td>1675</td>
<td>100.0%</td>
<td>CCZ</td>
<td>63%</td>
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<table>
<thead>
<tr>
<th>Angle (°)</th>
<th>0°</th>
<th>45°</th>
<th>Lumens</th>
<th>0°</th>
<th>114</th>
<th>1144</th>
<th>111</th>
<th>CL</th>
<th>100%</th>
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</thead>
<tbody>
<tr>
<td>0</td>
<td>114</td>
<td>1144</td>
<td>111</td>
<td>5</td>
<td>1135</td>
<td>1137</td>
<td>111</td>
<td>CCL</td>
<td>95%</td>
</tr>
<tr>
<td>10</td>
<td>1196</td>
<td>1215</td>
<td>120</td>
<td>20</td>
<td>1264</td>
<td>1321</td>
<td>127</td>
<td>CCD</td>
<td>87%</td>
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<tr>
<td>20</td>
<td>1293</td>
<td>1386</td>
<td>126</td>
<td>25</td>
<td>1373</td>
<td>1385</td>
<td>127</td>
<td>CCZ</td>
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<td>1539</td>
<td>129</td>
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<td>40</td>
<td>1599</td>
<td>1688</td>
<td>130</td>
<td>0%</td>
<td>0%</td>
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<td>50</td>
<td>1534</td>
<td>1557</td>
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<td>2270</td>
<td>100</td>
<td>0%</td>
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**Frame: C4X4L15UNVZ20V**

**Trim: C4X4L10DL35KCLWVB**

<table>
<thead>
<tr>
<th>CCT</th>
<th>3500K</th>
<th>60</th>
<th>0°</th>
<th>114</th>
<th>1144</th>
<th>111</th>
<th>CL</th>
<th>100%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Efficiency:</td>
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<td>65</td>
<td>1°</td>
<td>1135</td>
<td>1137</td>
<td>111</td>
<td>5°</td>
<td>1215</td>
</tr>
<tr>
<td>80 min Spacing:</td>
<td>111</td>
<td>85</td>
<td>1°</td>
<td>1215</td>
<td>1215</td>
<td>1215</td>
<td>5°</td>
<td>1215</td>
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<tr>
<td>Report no:</td>
<td>679GFR</td>
<td>85</td>
<td>0°</td>
<td>114</td>
<td>1144</td>
<td>111</td>
<td>0°</td>
<td>0°</td>
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#### 29W LED, 3500K, 2250 lumen

<table>
<thead>
<tr>
<th>Candela Curve</th>
<th>Zonal summary</th>
<th>Single unit data</th>
<th>Finish Adjust. factors</th>
<th>CCT Adjust. factors</th>
</tr>
</thead>
<tbody>
<tr>
<td>Zone</td>
<td>Lumens</td>
<td>Luminaire</td>
<td>0-30</td>
<td>1439</td>
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<tr>
<td>0-40</td>
<td>2077</td>
<td>91.3%</td>
<td>CCL</td>
<td>95%</td>
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<td>0-60</td>
<td>2270</td>
<td>99.9%</td>
<td>CCD</td>
<td>87%</td>
</tr>
<tr>
<td>0-90</td>
<td>2270</td>
<td>100.0%</td>
<td>CCZ</td>
<td>63%</td>
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</table>

<table>
<thead>
<tr>
<th>Angle (°)</th>
<th>0°</th>
<th>45°</th>
<th>Lumens</th>
<th>0°</th>
<th>1514</th>
<th>1543</th>
<th>150</th>
<th>CL</th>
<th>100%</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>1514</td>
<td>1543</td>
<td>150</td>
<td>5</td>
<td>1625</td>
<td>1651</td>
<td>155</td>
<td>CCL</td>
<td>95%</td>
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<tr>
<td>10</td>
<td>1572</td>
<td>1601</td>
<td>146</td>
<td>20</td>
<td>1599</td>
<td>1688</td>
<td>130</td>
<td>CCD</td>
<td>87%</td>
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<tr>
<td>20</td>
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<td>63%</td>
</tr>
<tr>
<td>30</td>
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<td>134</td>
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<td>1599</td>
<td>1688</td>
<td>130</td>
<td>WH</td>
<td>57%</td>
</tr>
<tr>
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<td>1599</td>
<td>1688</td>
<td>130</td>
<td>0%</td>
<td>0%</td>
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<td>1606</td>
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<td>2270</td>
<td>2270</td>
<td>100</td>
<td>0%</td>
<td>0%</td>
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</table>

**Frame: C4X4L20NIVBZ210V**

**Trim: C4X4L10DL35KCLWVB**

<table>
<thead>
<tr>
<th>CCT</th>
<th>3500K</th>
<th>60</th>
<th>0°</th>
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<th>1543</th>
<th>150</th>
<th>CL</th>
<th>100%</th>
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</thead>
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<td>1651</td>
</tr>
<tr>
<td>80 min Spacing:</td>
<td>1514</td>
<td>85</td>
<td>1°</td>
<td>1625</td>
<td>1651</td>
<td>155</td>
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<td>1514</td>
<td>1543</td>
<td>150</td>
<td>0°</td>
<td>0°</td>
</tr>
</tbody>
</table>

---

2. Wattage controlled to within ± 5%.

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Philips Lighting, North America Corporation
200 Franklin Square Drive, Somerset, NJ 08873
Tel. 855-466-2216

Imported by Philips Lighting,
A division of Philips Electronics Ltd.
281 Hillmount Rd. Markham, ON, Canada L6C 2S3
Tel. 800-668-9008
F4SFAT STANDARD FLANGE
RECESSED LED DOWNLIGHT (IC, NON-IC, REMODEL)
4" SQUARE FLANGE ADJUSTABLE TRANSITIONAL

SPECIAL FEATURES
Hot-arm adjustment from below up to 40° tilt and 360° rotation. Unique sliding pivot optimizes center beam maintenance, ensuring undraped center beam at 15° beam at 40° tilt and 25° beam at 30° tilt.

Lucifer proprietary optics; optimal design integrates reflection, refraction and TR principals for maximum delivered lumens, increased center beam candle power and efficacy.

Baffle
Die-cast baffle transitions from square aperture at ceiling plane to round aperture at light source and maximizes aperture glare, while concealing fixture into housing. Features ball plunger retention and effects lens holder.

HOUSING/MOUNTING

NCM HC HOUSING - MEDIUM
- Accommodates max 3000 lumens.
- Minimum 0.5" [13mm] setback from combustible materials on all sides and top of housing.
- Minimum 3" [76mm] setback from insulation material having R-Value 30 on all sides and top of housing and downlight fixture assembly; minimum 6" [152mm] from polycarb spray foam insulation having max R-Value 60.

ICT HC HOUSING - TALL
- Accommodates max 2250 lumens.
- For IC, Airtight, CCEA ceilings.
- Chicago Plenum & ASTM E84 Air tight rated.
- Title 24 Listed
- No setback from polycarb spray foam insulation having max R-Value 60 on all sides and top of housing.

ADJUSTABLE HOUSING COLLAR
- Provides for easy alignment of square aperture housings, Must be aligned prior to installation of ceiling substrate.
- Rotates 45° and locks from below.

TECHNICAL

CONSTRUCTION
Trim: Aluminum and steel. Extruded aluminum heat-sink. Painted finishes are granulated powder coat.
Housing: 22 Gauge galvanized steel.
LED: Utilizes Citizen LED.

DIMMING PROTOCOL
Triac (TRI) dims to nominal 10%. Lutron's (L1) and eldoLED ECODrive 0-10V [LAN3 & LN1] dims to 1%. Lutron H Series (LH) dims to 1% and features: Fade-to-Black™, eldoLED SoloDrive [EA1 & LA1 0-10V analog and ED1 & DL1 DALI] dims to 1/10th of 1%. eldoLED POWERDriver DMX (EX1) dims to 0%. For eldoLED drivers consult chart on page 4 to confirm appropriate dimming curve for compatibility with selected control.

LISTING
UL1598 listed for dry, damp and wet locations. Title 24 Listed. Patent pending.

WARRANTY
Five year warranty on LED lamp module and driver. Ten year Lutron Advantage limited warranty available on Lutron equipped systems. One year warranty on all other Lucifer Lighting provided system components. Consult website for full warranty terms and conditions.
**For remodel only. Allow for additional 3/4" (19mm) clearance above the fixture. NOTE: For total mounting depth, deduct ceiling thickness from trim height + the 3/4" (19mm) required clearance.

*Snap-on spacer clips (4X) supplied used for ceiling thickness below .5" (13mm) only

**Standard height for NC and remodel applications**

NCM NON-IC HOUSING - MEDIUM PROFILE

ICT IC HOUSING - TALL PROFILE - Title 24 Listed

Housing Lumen Packages

REM ODEL w/ NON-IC TETHERED POWER SUPPLY

REMOTE POWER SUPPLY

[DLA-F4RMT-AK] - Supplied with install type "M" only

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As part of its policy of continuous research and product development, the company reserves the right to change or withdraw specifications without prior notice.
**F4SFAT STANDARD FLANGE**

**RECESSED LED DOWNLIGHT (IC, NON-IC, REMODEL)**

4" SQUARE FLANGE ADJUSTABLE TRANSITIONAL

**ORDERING INFORMATION**

**POWER SUPPLY**
- TR1: Triac, Reverse Phase (ELV) *
- L21: Lutron 2 Wire Forward Phase

**INSTALL TYPE**
- N: Niche
- R: Remote
- T: Remote Niche

**OPTIC**
- 1: 2700K
- 2: 3000K
- 3: 3500K
- 4: 4000K
- 5: 5000K
- 6: 6500K

**CEILING THICKNESS**
- 1: 0.75"
- 2: 1.25"

**NOTES**
- Leave blank unless specifying optional configuration.

**HOUSING**
- Medium (NCM)
- Tall (ICT)

**ACCESSORIES**
- ALTERNATE EFFECTS DEVICES:
  - FGL-F4S (Frosted Glass Lens)
  - FSFL-F4S (Frosted Soft Focus Lens)
  - SPL-F4S (Soft Focus Lens)

**REPLACEMENT OPTICS**
- RO-70-15-1: 15° 70mm optic
- RO-70-40-1: 40° 70mm optic
- RO-70-60-1: 60° 70mm optic

**EMERGENCY LIGHTING**

During disruption of main power, emergency battery inverter provides temporary power supply to fixture. Select based on system power of specified fixture, or voltage needs.

- EMB-S-20-25/120-277-LEDX: 20/25 watt max capacity, 120 or 277 VAC 60Hz
- EMB-S-100-277-LEDX: 100 watt max capacity, 277 VAC 60Hz
- EMB-S-100-250-277-LEDX: 100 watt max capacity, 120 or 277 VAC 60Hz
- EMB-S-250-120-277-LEDX: 250 watt max capacity, 120 or 277 VAC 60Hz

**FOOTNOTES**

*Custom finishes will be assigned a unique custom 2 digit suffix model # upon receipt of order

*Available for non-IC NCM housing and Remodel applications only

**SPECIFICATIONS**

<table>
<thead>
<tr>
<th>NCM</th>
<th>Insulation Contact, medium</th>
</tr>
</thead>
<tbody>
<tr>
<td>ICT</td>
<td>Insulation Contact,cold (UL)</td>
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**Housing Option**
- F4S-01: Fraxion 4" Square w/ housing option
### LUTRON DRIVER COMPATIBILITY

<table>
<thead>
<tr>
<th>Power supply L21</th>
<th>Part No.</th>
<th>Fixtures Per Control (120V only)</th>
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<tbody>
<tr>
<td>Maestro Wireless® 600 W dimmer</td>
<td>MRF2-6ND-120-</td>
<td>1-8</td>
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<tr>
<td>Maestro Wireless® 1000 W dimmer</td>
<td>MRF2-10ND-120-</td>
<td>1-13</td>
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<tr>
<td>Caséta® Wireless Pro 1000 W dimmer</td>
<td>PD-10ND-</td>
<td>1-13</td>
</tr>
<tr>
<td>GRAFIK TM CL® dimmer</td>
<td>GT-260m-, G1-260m-</td>
<td>1-10</td>
</tr>
<tr>
<td>HomeWorks® QS adaptive dimmer</td>
<td>HRGD-6NA-</td>
<td>1-8</td>
</tr>
<tr>
<td>HomeWorks® QS 400 W dimmer</td>
<td>HRGD-4ND-</td>
<td>1-8</td>
</tr>
<tr>
<td>HomeWorks® QS 1000 W dimmer</td>
<td>HRGD-10ND-</td>
<td>1-13</td>
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<tr>
<td>RadioRA2® 2 adaptive dimmer</td>
<td>RRD-6NA-</td>
<td>1-8</td>
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<td>RadioRA2® 2 1000 W dimmer</td>
<td>RRD-10ND-</td>
<td>1-13</td>
</tr>
<tr>
<td>myRoom® DIN power module</td>
<td>MQSE-4A1-D</td>
<td>1-6 (per output), 1A max driver input current</td>
</tr>
<tr>
<td>HomeWorks® QS DIN power module</td>
<td>LDSE-4A1-D</td>
<td>1-6 (per output), 1A max driver input current</td>
</tr>
<tr>
<td>HomeWorks® QS wallbox power module</td>
<td>HRU-WPM-6D-120</td>
<td>2-10 (per output), 25 total per module</td>
</tr>
<tr>
<td>HomeWorks® wallbox power module</td>
<td>HWI-WPM-6D-120</td>
<td>2-10 (per output), 25 total per module</td>
</tr>
<tr>
<td>GRAFIK Eye® QS control unit</td>
<td>G56R-, G56RJ-</td>
<td>2-10 (per output), 25 total per module</td>
</tr>
<tr>
<td>GRAFIK Eye® 3000 control unit</td>
<td>G5X-3100-, G5X-3500-</td>
<td>2-10 (per output), 25 total per module</td>
</tr>
<tr>
<td>RPM-4U module (LCP, HomeWorks® QS, GRAFIK Systemsm, Quantum®)</td>
<td>HW-RPM-4U-120, LP-RPM-4U-120</td>
<td>2-26 (per output), 25 total per module</td>
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<tr>
<td>RPM-4A module (LCP, HomeWorks® QS, GRAFIK Systemsm, Quantum®)</td>
<td>HW-RPM-4A-120, LP-RPM-4A-120</td>
<td>1-13 (per output), 25 total per module</td>
</tr>
<tr>
<td>GP dimming panels</td>
<td>Various</td>
<td>1-26</td>
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</table>

### LUTRON ELECTRONICS COMPATIBILITY

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<tr>
<th>Power supply</th>
<th>Family/Model #</th>
<th>Recommended Curve</th>
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<tr>
<td>Busch-Jaeger</td>
<td>2111U-101</td>
<td>Logarithmic</td>
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<tr>
<td>Juno</td>
<td>260-10</td>
<td>Logarithmic</td>
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<td>Leviton Lighting Controls</td>
<td>IP70-DLX</td>
<td>Logarithmic</td>
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<td>Lightolier Controls</td>
<td>ZP600FAM120</td>
<td>Logarithmic</td>
</tr>
<tr>
<td>Lutron Electronics</td>
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### LIGHTING CONTROL SYSTEMS

- Lutron Electronics: GrafXEye® GRX-TV1 w GRX3503, Linear
- Lutron Electronics: TVM2 Module, Linear
- Crestron®: GLX-DIMFL8, Logarithmic
- Crestron®: GLXP-DIMFL8, Logarithmic
- Crestron®: GLPP-DIMFL4-*+, Logarithmic
- Crestron®: GLPP-DIMFL8-*+, Logarithmic
- Crestron®: GLPP-DIMFLV4EX-PM, Logarithmic
- Crestron®: GLPP-DIMFL2EX-PM, Logarithmic
- Crestron®: DIN-A08, Logarithmic
- Crestron®: DIN-4DIMFLV4, Logarithmic
- Crestron®: CLS-EXP-DIMFLV, Logarithmic
- Crestron®: CLG1-DIMFLV2EX, Logarithmic
- ABB: SDLS 2.16.1, Logarithmic
Clean, radiant, celestial, at times almost invisible.

P9000 - a slimmer, refined version of P8900 - minimal 1/8" trim or trimless with flush lens that melts into its environment. Optional drop down lens creates a playful 'bubble-like' effect.

Perfect partner to our P4000 Sky Oculus pendant.
**PHOTOMETRICS**

Low Output:
P9000-LED5/LG-FWA
7017 Delivered Lumens
88 Watts
80 lm/W
3500 CCT
Light Labs Test: L04141865

Zonal Lumen Summary:
0-90 = 100%

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**LUMEN MAINTENANCE**

Designed to last with cool running mid-power LEDs projected to maintain 90% (L90) of their initial output for 100,000 hours at 80%, and L70 exceeding 150,000 hours.

**LED SYSTEM**

LED modules and drivers are field replaceable.

**PROG**

Programmable light output. Specify desired lumens or watts per fixture.

**BINNING**

Standard binning (all Prudential LED boards) includes testing at the chip level and board integration to provide consistent color temperature within a 3-step MacAdams ellipse, with +/- 5% lumen output range and +/- .004 Duv.

**PRUBIN**

Prudential Ltg's exclusive 'job binning' method that ensures color temperature consistency across all luminaires on a project. Meticulously testing and labeling EVERY LED BOARD to +/- 25 lumens, +/- 50k CCT and +/- .004 Duv — while also separating positive from negative — allows us to match color, hue and intensity throughout a project and provides a consistent color temperature within a 2-step MacAdams ellipse.

**LABELS**

ETL damp labeled and I.B.E.W. manufactured

**ELECTRICAL**

Must specify LED dimming controls. LED fixtures have constant current driver(s) with less than 20% THD when loaded to a minimum of 60%. Drivers sink a maximum of 6mA per driver. DM10 LED drivers are 0-10V dimmable and are compatible with most 0-10V wall slide dimmers and direct 0-10V analog signal dimmers. Max driver size 1.25" w x 1" h.

**CONSTRUCTION**

- Housing: Die-formed 20-gauge USA steel, >20% PC recycled, 100% recyclable
- Lens: Thermoformed acrylic, 100% recyclable
- MOUNTING: Recessed mounted into exposed T-bar or hard ceiling application
- WARRANTY: Single-source, 5 year limited warranty covers standard components and construction
MOUNTING LOCATIONS

Fixture must be installed prior to ceiling installation

- 15" Mounting hole

CEILING SYSTEMS

X1

X3

X7

P9000 FWA detail

P9000 DWA detail

P9000 detail
LENSED LED STRIP

CROSS SECTION

ORDERING INFORMATION

SERIES
75L  Lensed Strip

NOMINAL LENGTH
2  2' (Actual length 22-1/2")
4  4' (Actual length 44-5/8")
8  8' (Actual length 89-1/4")

LED PACKAGE

<table>
<thead>
<tr>
<th>LUMEN PACKAGE</th>
<th>NOMINAL LUMENS</th>
<th>MINIMUM CRI &amp; CCT</th>
<th>AVERAGE SYSTEM WATTAGE</th>
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<td>1,500</td>
<td>835 = 80CRI, 3500K</td>
<td>17</td>
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<td>33</td>
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<td>2,000</td>
<td>830 = 80CRI, 3000K</td>
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<td>L38</td>
<td>3,800</td>
<td>835 = 80CRI, 3500K</td>
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<tr>
<td>L150</td>
<td>15,000</td>
<td>850 = 80CRI, 5000K</td>
<td>135</td>
</tr>
</tbody>
</table>

Nominal lumen output based on 3500 CCT. Actual lumens may vary +/-5%. See specific photometric tests. Additional LED lumen packages available, see options.

FEATURES
- Small fixture profile allows inconspicuous placement in coves or confined spaces.
- Frosted or prismatic lens protects LEDs and improves appearance.
- Low applications produce continuous light with minimal interruption between fixtures.
- LED technology provides high efficacy and energy efficiency.
- Power and light levels can be custom set to meet energy and design needs in applications ranging from coves to high-ceiling common areas.
- Multiple dimming protocols available.
- Minimum 80 CRI, 3000K, 3500K, 4000K, or 5000K CCT.
- This fixture is proudly made in the USA.

SHIELDMING
A1212S  Acrylic, pattern #12, 1/2" thick
DMA  Diffused matte acrylic, .080" thick

OPTIONS
- EM/10WLP  Low-profile 10-watt emergency driver (Must specify 120V or 277V; not available with L32, L65, and L130 lumen packages)
- Additional lumen packages available. Specify in increments of 100 nominal lumens. Option must be specified with next higher lumen package.
- Example: 5,500 nominal lumens = 75L-4-L65/835-L55.

ACCESSORIES
- WG-7511-LED  11-gauge white powder coat wireguard
- WG-7514-LED  14-gauge white powder coat wireguard
- VBY  1-1/2" ceiling spacer
- VBY-2  (2) Y-hangers
- (2) Y-hangers and (2) 2" chains

DRIVER
Additional dimming drivers available, see Technical Info.
- DRY  Driver prewired for non-dimming applications
- DIM  Driver prewired for 0-10V low voltage dimming applications

VOLTAGE
- 120  120V
- 277  277V
- UNV  120-277V
- 347  347V (not available with EM drivers)
SPECIFICATIONS

**Housing** — 22-gauge die-formed C.R.S.
**Finish** — 92% minimum average reflective white polyester powder coat bonded to phosphate-free, multi-stage pretreated metal. All parts painted after fabrication to facilitate installation, increase efficiency, and inhibit corrosion.

**Shielding** — Acrylic, pattern #12, .125” thick.

**Electrical** — High quality mid-power LED board, rated for 50,000 hours at 70% lumen maintenance (L70). 25°C maximum ambient operating temperature.

**Mounting** — Surface or suspended.

**Labels** — cETLus conforms to UL STD 1588.

**Certified** — CAN/CSA STD C22.2 No. 250.0.

Suitable for damp locations.

**Warranty** — 5-year limited warranty, see hew.com/warranty.

**IMPORTANT:**
Electrostatic sensitive unit. Observe precautions when handling.

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**PHOTOMETRY**

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<th>VERTICAL ANGLE</th>
<th>ZONAL LUMENS</th>
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<td>2035</td>
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<td>65°</td>
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**FIXTURE DETAILS**

**ACCESSORIES DETAILS**

- **WG-7511-LED**
  - Wireguard shown installed

- **VBY**
  - Y-hanger shown installed

- **315**
  - Ceiling spacer shown installed
**DESCRIPTION**

The High Performance Perimeter Slot (HP-WS) creates a wash of ambient and vertical illumination at the transition between the wall and the ceiling plane. Available in 2', 3', 4', & 6' sections that can be combined to make longer runs, and 2', 4', and 6' regressed optic options.

**DIMENSIONS & LIGHT ENGINE**

Asymmetric distribution is attained with mid-power LEDs distributed evenly and paired with a precise regressed diffuser.

**STRAIGHT RUN ADJUSTABILITY**

Optional telescoping section adds up to 12" to either end of a run and ensures an accurate fit with uniform illumination.

**90° CORNERS AND TELESCOPING**

Standard with telescoping sections and tapered optics.

**ORDERING GUIDE**

Sample Number: HP-WS - 4W - 4D - 8' - S - B - 35 - 120V - SC - SW - TP - WE-L - TXL-R - C1

- **Optic Width** (4W - 4' width, 6W - 6' width)
- **Regressed Optic Depth** (2D - 2' depth, 4D - 4' depth, 6D - 6' depth)
- **Length** (2', 3', 4', 8', Multiples Standard)
- **Light Output** (S - Standard, B - Boosted Standard, H - High, V - Very High)
- **LED CRI** (8 - 80 CRI Min (standard), 9 - 90 CRI Min (optional))
- **LED Color Temperature** (30K - 3000K, 35K - 3500K, 40K - 4000K)
- **Voltage** (120V, 277V)
- **Circuiting** (SC - Single Circuit)
- **Reflector** (SW - Signal White)
- **Optic** (TP - Tapered)
- **End Condition Left** (WE-L - Wall-to-Wall Endcap (standard), PE-L - Pocket Slot Endcap, TXL-L - Telescoping)
- **End Condition Right** (WE-R - Wall-to-Wall Endcap (standard), PE-R - Pocket Slot Endcap, TXL-R - Telescoping)
- **Ceiling Type** (C1 - 1' T-Bar, C2 - 9/16' T-Bar, C3 - screw slot, SF - Spackle Flange)

* Contact factory for switching options.
** Tapered optic ships standard with corners and is optional with straight runs.
*** The end condition on each side can be specified with different hardware options to accommodate various installation features. See page 2 for more information.

---

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Due to continuing product improvements, FineLite reserves the right to change specifications without notice. Please visit www.finelite.com for most current data.
MOUNTING TYPES: Luminaire must be installed prior to ceiling

(C1, C2, C3)

(SF)
**STRAIGHT RUN LENGTHS**

Standard endcap adds 0.15" to the length. Pocket endcap adds 1.26" to the length.

**90° INSIDE AND OUTSIDE CORNER MEASURING DETAILS**

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<th>Inside Corner</th>
<th>Outside Corner</th>
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<tr>
<td>6W</td>
<td>10'</td>
<td>16'</td>
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* Telescoping sections are available for either end of the 2' and 3' luminaire.
** Telescoping sections are available for either or both ends of the 4' and 5' luminaire.
FINELITE

High Performance Perimeter Slot (HP-WS)

LED OPTIONS

- **Top:** Feed Plate (Standard)
- **End:** Endcap Feed (Optional)
- **Back:** Wall Feed (Optional)

Refer to installation instructions for feed hole measurement.

---

**TAPERED OPTIC**

**With Tapered Optic**

**Without Tapered Optic**

---

**ENDCAP OPTIONS**

- Standard Wall-to-Wall Endcap (WE-L or WE-R)
- Pocket Slot Endcap (PE-L or PE-R)

---

**TELESCOPING**

- Telescoping (TXL-L or TXL-R)

---

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FINELITE

PHOTOMETRY
4"W x 2"D - 4' Luminaire
Very High Output - 120V
Efficacy: 83.7 lumens per watt
Total luminaire output: 3097 lumens (774.25 lumens/foot)
37 watts (9.25 watts/foot)
CCT: 3500K
ITL LM79 Report: 86712

HIGH PERFORMANCE PERIMETER SLOT (HP-WS)

CANDLEPOWER SUMMARY

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WALL

Apply a lumen adjustment factor to calculate lumens for the desired CCT and CRI.

SAMPLE LUMEN ADJUSTMENT CALCULATION
High Output (H), 4000K, 90 CRI
Lumen Adjustment Factor = 0.789

Total Light Output =
2409 lm x 0.789 = 1901 lm

Total Light Output per Foot =
602.2 lm/ft x 0.789 = 475 lm/ft

watts/foot = 7.1 W/ft

Efficacy = \( \frac{475 \text{ lm}}{7.1 \text{ W/ft}} \) = 66.9 lm/W

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**CONSTRUCTION:** Precision cut 6061-T6 extruded aluminum visible flange. Internal joiner system, plug-together wiring standard. Steel sheet metal galvanized and powder coated body.

**ENDCAPS:** Endcaps are made of 20-gaue die-formed powder-coated steel. Standard Endcap adds 0.15" and Pocket Endcap adds 1.25" to the length of the fixture.

**90° CORNER:** Illuminated 90° inside and outside corners. Standard with telescoping sections and tapered optics.

**REFLECTORS:** Standard white low gloss powder coat reflectors.

**END CONDITION:** The luminaire can end in three different ways to accommodate the project needs. Standard wall-to-wall endcap (WE-L or WE-R) is used to mount to a wall. The Telescoping section (TXL-L or TXL-R) provides up to 12' of additional illuminated section to accommodate variances in the built-in wall slot. Telescoping on both ends of a luminaire can be done on 4' or 8' luminaire section lengths. A minimum of 1' is added. Pocket Slot Endcap (PE-L or PE-R) includes the necessary hardware to accommodate ceiling materials when the luminaire doesn't terminate at a wall.

**DIFFUSER:** Frosted lenses are standard. All lenses are UV-stabilized and impact resistant virgin acrylic. Coated lenses are 0.060" thick.

**LIGHT OUTPUT:** Four lumen packages available: Standard Output (S), Boosted Standard Output (B), High Output (H), and Very High Output (V). A separate chart summarizes lumen distribution and wattage. Light engines are replaceable.

**LUMEN MAINTENANCE:** 90% of initial light output (L90) at 100,000+ hours; 70% of initial light output (L70) at 200,000+ hours.

**DRIVER:** Replaceable 120V/277V Constant Current Reduction dimming driver standard. Can be wired dimming or non-dimming. 0-10V dimming controls with a range of 10%-100%. Dimming to 1% available; consult factory. Driver is fully accessible from below the ceiling. Power Factor: 0.9. Total Harmonic Distortion (THD) <20%, Step-dimming driver (limited programmable outputs). Contact Factory. Expected driver lifetime: 100,000 hours.

**LUTRON DRIVER OPTIONS:** Lut3W-3-wire, LutES-EcoSystem, Lut2W-2-wire.

**ELECTRICAL:** Optional emergency to generator/inverter wiring, internal generator transfer switch, nightlight wiring, backup battery. Factory-choice low-profile backup battery available. 8' minimum fixture length for low profile backup battery pack. Backup batteries deliver 1000 lumens. Half of a 4' section will be illuminated in emergency mode. Optional tusion is available.

**CIRCUITING:** 3' with telescoping and 4' sections can be specified with up to 2 circuits. 8' sections can be specified with up to 4 circuits. All others are available with a single circuit. Contact factory for more information.

**MOUNTING:** Wall rail mounted and secured with screws. Secures to structure using tie-wire or tie-rod by others. Consult local code for appropriate tie-wire recommendations. Wall rail accommodates wall inconsistencies in wall surfaces up to 1/4".

**FINISH:** Finelite Signal White powder coat finish standard. Optional adder: 185 colors available using Tiger Drylac's RAL color chart. Custom color applies to the visible T-bar flange.

**FEED:** Standard with one 18-gauge/5-conductor single-circuit feed. 14-gauge feed used when fixture current exceeds 5 amps. Optional 6' flex conduit with covers available. Dual knockouts (for dual flex conduit) are available at the top and rear feed locations. Endcaps have a single knockout and support a single flex conduit only.

**LENGTHS:** Standard 2', 3', 4', and 8' section lengths can be combined to make longer runs. Optional telescoping sections on stright runs add a minimum of 1' up to 12' at the end of the luminaire. Contact factory for corner details and availability. Telecoping sections are available on either or both ends of the luminaire.

**LABELS:** Fixture and electrical components are ETL-listed conforming to UL 1598 in the U.S.A. and CAN/CSA C22.2 No. 250.0 in Canada. In accordance with NEC Code 410.73 (G), this luminaire contains an internal driver disconnect. Damp Location. Finelite products use electronic components that are RoHS compliant, and the mechanical components of the luminaire have not been verified to not knowingly contain any restricted substances listed per RoHS Directive 2002/95/EC.

**WEIGHT:** 5.6 lb/t.

**WARRANTY:** 10-year performance-based warranty on all standard components. Optional accessories such as emergency battery packs are covered by their individual manufacturer warranties.
**DESCRIPTION**

High Performance 2" Aperture Surface Mount Direct (HP-2 SM-D) is a patented, linear LED luminaire with Flush and Bottom Glow™ options for the downlight. The micro shape delivers excellent performance using an advanced optical design and mid-power LEDs to achieve 90% of initial light output at 100,000 hours.

**DIMENSIONS & BOTTOM GLOW**

The optional Bottom Glow diffuser adds a clean line of light along the downlight element.

**CEILING SURFACE MOUNT**

**HORIZONTAL MOUNT, VERTICAL MOUNT**

**TAILORED LIGHTING**

Any length greater than 2 feet, in increments down to 1/16" (± 1/32") and 90-degree mitered corners in a single plane.

**ORDERING GUIDE**

Sample Number: HP-2 SM - 32' - H - 835 - F - 120V - C1 - SC - OBO

Finelite Series HP-2 SM

Length (Minimum 2', increments accurate to 1/16" (± 1/32"), standard)

Light Output (S - Standard, B - Boosted Standard, H - High, V - Very High)

LED CRI/CCT

- 830 - 80 CRI min, 3000K
- 835 - 80 CRI min, 3500K
- 840 - 80 CRI min, 4000K
- 930 - 90 CRI min, 3000K
- 935 - 90 CRI min, 3500K
- 940 - 90 CRI min, 4000K

Downlight Diffuser Option (F - Flush (standard), BG - Bottom Glow)

Voltage (120V, 277V)

Mounting (C1 - 1" T-Bar, C2 - 9/16" T-Bar, C3 - screw slot, C4 - hard ceiling/wall)

Circuiting (SC - Single Circuit)*

Integrated Sensor (OBO - Occupancy Sensor, OBD - Daylight)

* Contact factory for switching options.

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PHOTOMETRY
Very High Output - 4' Luminaire
Efficacy: 87 lumens per watt
Total luminaire output: 3215 lumens (804 lumens/foot)
36.9 watts (9.2 watts/foot)
Peak Candela Value: 1334 @ 0°
CCT: 3500K
ITL LM/9 Report 85136

<table>
<thead>
<tr>
<th>CANDELA DISTRIBUTION</th>
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<tbody>
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<tr>
<th>Total Light Output, 3500K, 80 CRI (Lumens)</th>
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<tr>
<td>S*  B*  H*  V</td>
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<tr>
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<thead>
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<th>Light Output, 3500K, 80 CRI (Lumens Per Foot)</th>
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<tbody>
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<td>S*  B*  H*  V</td>
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<td>329  414  625  804</td>
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<table>
<thead>
<tr>
<th>Power, 3500K, 80 CRI (Watts Per Foot)</th>
</tr>
</thead>
<tbody>
<tr>
<td>S*  B*  H*  V*</td>
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<tr>
<td>3.6  4.6  7.1  9.2</td>
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<table>
<thead>
<tr>
<th>Efficacy, 3500K, 80 CRI (Lumens Per Watt)</th>
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<tbody>
<tr>
<td>S*  B*  H*  V*</td>
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<td>91.1  90.2  86.3  87.1</td>
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Lumen Adjustment Factors - 80 CRI

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<thead>
<tr>
<th>Temperature</th>
<th>Adjustment Factor</th>
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</thead>
<tbody>
<tr>
<td>3000K</td>
<td>0.985</td>
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<tr>
<td>3500K</td>
<td>1.000</td>
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<tr>
<td>4000K</td>
<td>1.032</td>
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Lumen Adjustment Factors - 90 CRI

<table>
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<th>Temperature</th>
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<tbody>
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<tr>
<td>3500K</td>
<td>0.760</td>
</tr>
<tr>
<td>4000K</td>
<td>0.789</td>
</tr>
</tbody>
</table>

Apply a lumen adjustment factor to calculate lumens for the desired CCT and CRI.

SAMPLE LUMEN ADJUSTMENT CALCULATION

Standard Output (S), 4000K, 90 CRI
Lumen Adjustment Factor = 0.789

Total Light Output =
1318 lm x 0.789 = 1038 lm

Total Light Output per Foot =
329 lm/ft x 0.789 = 260 lm/ft

Watts/foot = 3.6 W/ft

Efficacy = \( \frac{260 \text{ lm}}{3.6 \text{ W}} \) = 72.2 lm/W

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**CONSTRUCTION:** Precision-cut 6061-T6 extruded aluminum body, Internal joiner system, plug-together wiring, standard.

**ENDCAPS:** Flat diecast aluminum endcaps add 1/4” to each end of luminaire.

**MITERED CORNER:** Illuminated 90° corners in a single plane, with flush downlight diffuser, standard. Custom angles are available (60° minimum on inside corners), contact factory.

**REFLECTORS:** Die-formed 24-gauge cold-rolled steel reflectors are finished in 9C LG High reflectance matte white powder coat paint.

**DOWNLIGHT DIFFUSER:** 12” maximum diffuser length. Flush frost white snap-in diffuser standard, 73% transmissive, 99% diffusion. Internal secondary diffusers at corners ensure visually seamless, uniform, continuous illumination. Optional: Bottom Glow™ frost white snap-in diffuser option, 73% transmissive, 99% diffusion.

**LIGHT OUTPUT:** Four lumen packages available, Standard (S), Boosted Standard (B), High (H), and Very High (V). A separate chart summarizes lumen distribution and wattage. Light engines are replaceable.

**LUMEN MAINTENANCE:** 90% of initial light output (L90) at 100,000+ hours; 70% of initial light output (L70) at 200,000+ hours.

**DRIVER:** Replaceable 120V/277V Constant Current Reduction dimming driver standard. Can be wired dimming or non-dimming, 0-10V dimming controls with a range of 10%-100%. Dimming to 1% available; consult factory. Driver is fully accessible from below the ceiling. Power Factor: ≥0.9. Total Harmonic Distortion (THD)<20%. Expected driver lifetime: 100,000 hours.

**LUTRON DRIVER OPTIONS:** Lut3W-3-wire, LutES-EcoSystem, Lut2W-2-wire.

**ELECTRICAL:** Optional emergency to generator/inverter wiring, nightlight wiring, step-dimming driver, backup battery. Factory-choice low-profile backup battery available. 6” minimum luminaire length for low profile battery pack. Backup batteries deliver 1000 lumens. Half of a 4 section will be illuminated in emergency mode.

- **INTEGRATED SENSORS:** Integrated PIR (Passive Infrared) occupancy and/or daylight sensors available with Flush and Bottom Glow downlight diffusers. Refer to Occupancy Sensor and Daylighting tech sheets for more info.

**MOUNTING:** Lay-in ceiling types: caddy clip with 1/4” - 20 stud and nut. Drywall or concrete surfaces (walls or ceilings): 1/4” - 20 stud and nut (provided by others).

**FINISHES:** Finelite Signal White powder coat standard. Optional Adder: 185 Tiger Dyelec’s P&F colors.

**FEED:** Standard with one 18-gauge/5-conductor single-circuit feed. 14-gauge feed used when luminaire current exceeds 5 amps. Optional 6’ flex conduit whips available.

**LENGTHS:** Any length, 2-foot minimum, in increments down to 1/16’ (∼1/32’). 12-foot maximum section length.

**LABELS:** Luminaire and electrical components are ETL listed conforming to UL 1598 in the U.S.A. and CAN/CSA C22.2 No. 250.0 in Canada. In accordance with NEC Code 410.73 (G), this luminaire contains an internal driver disconnect. Dam Location. Finelite products use electronic components that are RoHS compliant, and the mechanical components of the luminaire have been verified not to knowingly contain any restricted substances listed per RoHS Directive 2002/95/EC.

**WEIGHT:** 2.3 lb/ft.

**WARRANTY:** 10-year performance-based warranty on all standard components. Optional accessories such as emergency battery packs are covered by their individual manufacturer warranties.

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DESCRIPTION

High Performance 2" Aperture Recessed (HP-2 R) is a patented, linear recessed LED luminaire. The micro shape delivers excellent performance in a 2" aperture using an advanced optical design and mid-power LEDs. This long-life luminaire is free of socket shadows and can be specified in rows or configurations.

DIMENSIONS & LIGHT ENGINE
A glare-free experience is attained with mid-power LEDs properly distributed and paired with a precise diffuser to eliminate pixelation. Aperture: 2.25"

MITERED ANGLES
Illuminated 90° corners and wall-to-ceiling configuration are seamless without socket shadows. Custom angles are available (90° minimum on inside corners). Contact factory.

TAILORED LIGHTING
Any length greater than 2 feet, in increments down to 1/16th-inch (± 1/32") and 90-degree mitered corners in a single plane.

ORDERING GUIDE
Sample Number: HP-2 R - 32' - S - 8 - 35 - F - 120V - SC - C1 - OBO

Finelite Series HP-2 R
Length (Minimum 2', increments accurate to 1/16th' (± 1/32"), standard)
Light Output (S - Standard, B - Boosted Standard, H - High, V - Very High Output)
LED CRI (8 - 80 CRI min (standard), 9 - 90 CRI min)
LED Color Temperature (30 - 3000K, 35 - 3500K, 40 - 4000K)
Downlight Diffuser (F - Flush (standard))
Voltage (120V, 277V)
Circuiting (SC - Single Circuit)*
Ceiling Type (C1 - 1' T-Bar, C2 - 9/16' T-Bar, C3 - screw slot, C3F - flush screw slot, VF - Visible Flange, C2T - 9/16' tegular, C1T - 1' tegular, SF - Spackle Flange, TZ4 (C1, C2, C2T, C3, C3F) - tech zone 4')
Integrated Sensor (OBD - Occupancy Sensor, OBD - Daylight, OBB - Both)

* Contact factory for switching options.

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**PHOTOMETRY**

Very High Output - 4' Luminaire  
Efficacy: 89.1 lumens per watt  
Total luminaire output: 3287 lumens (822 lumens/foot)  
36.9 watts (9.2 watts/foot)  
Peak Candela Value: 1335 @ 0°  
CCT: 3500K  
ITL LM79 Report 85135

---

### CANDLEPOWER SUMMARY

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<th>67.5</th>
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### Total Light Output, 3500K, 80 CRI (Lumens) - 4' Luminaire

<table>
<thead>
<tr>
<th>S*</th>
<th>B*</th>
<th>H*</th>
<th>V**</th>
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<td>3287</td>
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### Light Output, 3500K, 80 CRI (Lumens Per Foot)

<table>
<thead>
<tr>
<th>S*</th>
<th>B*</th>
<th>H*</th>
<th>V**</th>
</tr>
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<tbody>
<tr>
<td>336</td>
<td>423</td>
<td>639</td>
<td>822</td>
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### Power (Watts Per Foot)

<table>
<thead>
<tr>
<th>S*</th>
<th>B*</th>
<th>H*</th>
<th>V**</th>
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</thead>
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<tr>
<td>3.6</td>
<td>4.6</td>
<td>7.1</td>
<td>9.2</td>
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</table>

### Efficacy, 3500K, 80 CRI (Lumens Per Watt)

<table>
<thead>
<tr>
<th>S*</th>
<th>B*</th>
<th>H*</th>
<th>V**</th>
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<td>93.1</td>
<td>92.2</td>
<td>90.4</td>
<td>89.1</td>
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### Lumen Adjustment Factors - 80 CRI

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<th>Factor</th>
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<tbody>
<tr>
<td>3000K</td>
<td>0.985</td>
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<td>1.000</td>
</tr>
<tr>
<td>4000K</td>
<td>1.032</td>
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### Lumen Adjustment Factors - 90 CRI

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<th>CCT</th>
<th>Factor</th>
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<td>3000K</td>
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<tr>
<td>3500K</td>
<td>0.760</td>
</tr>
<tr>
<td>4000K</td>
<td>0.789</td>
</tr>
</tbody>
</table>

---

Apply a lumen adjustment factor to calculate lumens for the desired CCT and CRI.

---

**SAMPLE LUMEN ADJUSTMENT CALCULATION**

High Output (H), 4000K, 90 CRI  
Lumen Adjustment Factor = 0.789

\[ \text{Total Light Output} = 2557 \text{ lm} \times 0.789 = 2017 \text{ lm} \]

\[ \text{Total Light Output per Foot} = 639 \text{ lm/ft} \times 0.789 = 504 \text{ lm/ft} \]

\[ \text{Watts/foot} = 7.1 \text{ W/ft} \]

\[ \text{Efficacy} = \frac{504 \text{ lm}}{71 \text{ W}} = 71 \text{ lm/W} \]

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**FINELITE**

**High Performance 2" Aperture (HP-2) - Recessed**

**All-Thread location for securing to structure**

**Sheet Rock Installation:**
Flex conduit is secured at the end cap. Support to structure using All-Thread. All-Thread support holes are located on each end of the luminaire.

**T-Bar Installation:**
HP-2 R for T-Bar installations comes standard with a splice plate at the end of the luminaire. Mounting brackets (supplied) secure the luminaire to T-Bar and provide support to structure location. All starter/indirect luminaire are 1 1/8' shorter than nominal. All joiner/render luminaire are normal length.

---

**Grid Length Detail - 4 ft. Example**

**1" T-Bar**
- Recessed Flange Housing
- 4 ft. Grid
- Independent Body & Diffuser = 48 7/8" (without Endcap)
- T-Bar End Flange
- 48" Center to Center

**9/16" T-Bar**
- Recessed Flange Housing
- 4 ft. Grid
- Independent Body & Diffuser = 48 7/8" (without Endcap)
- T-Bar End Flange
- 48" Center to Center

**9/16" Screw Slot**
- Recessed Flange Housing
- 4 ft. Grid
- Independent Body & Diffuser = 48 7/8" (without Endcap)
- T-Bar End Flange
- 48" Center to Center

---

**Hard Ceiling Length Detail - 4 ft. Example**

**Spackle Flange**
- Recessed Flange Housing
- 4 ft. Grid
- Independent Body & Diffuser = 48" (without Endcap)
- Ceiling Cutout

**Visible Flange**
- Recessed Flange Housing
- 4 ft. Grid
- Independent Body & Diffuser = 48" (without Endcap)
- Ceiling Cutout

---

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MOUNTING TYPES: T-BAR
Rough-in Dimensions

3 5/16" 1' T-Bar (C1)
2 7/8" 9/16' T-Bar (C2)
3 5/16" 1' Tegular (C1T)
2 7/8" 9/16' Tegular (C2T)
2 7/8" Standard Screw Slot (C3)

2 7/8" Flush Screw Slot (C3F)
2 1/4" Tech Zone 4" (TZ4 - C1, C2, C2T, C3, C3F)

MOUNTING TYPES: CUTOUT DIMENSIONS

2 3/4" Visible Flange (VF)
3" Spackle Flange (SF)

0.060" For mudding and taping

Dimensions shown are for use in flangeless installation.

* Note: +/- 1/16"
**CONSTRUCTION:** Precision-cut 6061-T6 extruded aluminum body. Internal joiner system, plug-together wiring, standard. Housing is powder coated.

**ENDCAPS:** Flat endcaps at each end of run add 0.1" to overall length.

**MITERED CORNERS:** Illuminated 90° corners in a single plane, with flush downlight diffuser, standard. Custom angles are available (90° minimum on inside corners), contact factory.

**REFLECTORS:** Die-formed 24-gauge cold-rolled steel reflectors are finished in 96 LG high reflectance matte white powder coat paint.

**DOWNLIGHT DIFFUSER:** 12" maximum diffuser length. Flush frost white snap-in diffuser standard, 73% transmissive, 99% diffusion. Internal secondary diffusers at corners ensure visually seamless, uniform, continuous illumination. Optional: Frost white snap-in diffuser option, 73% transmissive, 99% diffusion.

**LIGHT OUTPUT:** Four lumen packages available. Standard Output (S), Boosted Standard Output (B), High Output (H), and Very High Output (V). A separate chart summarizes lumen distribution and wattage. Light engines are replaceable.

**LUMEN MAINTENANCE:** 90% of initial light output (90) at 100,000+ hours; 70% of initial light output (70) at 200,000+ hours.

**DRIVER:** Replaceable 120V/277V Constant Current Reduction dimming driver standard. Can be wired dimming or non-dimming, 0-10V dimming controls with a range of 10% - 100%. Dimming to 1% available; consult factory. Driver is fully accessible from below the ceiling. Power Factor: 0.9. Total Harmonic Distortion (THD) <20%. Expected driver lifetime: 100,000 hours.

**LUTRON DRIVER OPTIONS:** Lut3W- 3-wire, LutES - EcoSystem, Lut2W - 2-wire.

**ELECTRICAL:** Optional emergency to generator/inverter wiring, internal generator transfer switch, nightlight wiring, step-dimming driver, backup battery. Chicago Plenum Option. Factory-choice low-profile backup battery available. 8' minimum luminaire length for low profile battery pack. Backup batteries deliver 1000 lumens. Half of a 4' section will be illuminated in emergency mode.

**INTEGRATED SENSORS:** Integrated PIR (Passive Infrared) occupancy and/or daylight sensors available with Flush downlight diffusers. Refer to Occupancy Sensor and Daylight Sensor tech sheets for more info.

**MOUNTING:** Standard bracket design works with most lay-in ceiling types. Brackets secure luminaire to the ceiling grid from above. Tie-in T-Bar brackets. Connect luminaire to T-Bar for securing to structure. Consult local codes for tie-wire recommendations.

**FINISHES:** Finelite Signal White powder coat standard.

**FEED:** Standard with one 18-gauge/5-conductor single-circuit feed. 14-gauge feed used when luminaire current exceeds 5 amps. Optional 6' flex conduit whips available.

**LENGTHS:** Any length, 2-foot minimum, in increments down to 1/16th-inch (± 1/32"), 12-foot maximum section length.

**LABELS:** Luminaire and electrical components are ETL-listed conforming to UL 1598 in the U.S.A. and CAN/CSA C22.2 No. 250.0 in Canada. In accordance with NEC Code 410.73 (G), this luminaire contains an internal driver disconnect. IC-rated. Damp Location. Finelite products use electronic components that are RoHS compliant, and the mechanical components of the luminaire have been verified to not knowingly contain any restricted substances listed per RoHS Directive 2002/95/EC.

**WEIGHT:** 2.3 lb/ft.

**WARRANTY:** 10-year performance-based warranty on all standard components. Optional accessories such as emergency battery packs are covered by their individual manufacturer warranties.
**EDGE EX3BWET**

*3" Suspended Bidirectional Linear WET*

**Key Features**
- Approved for wet location unless otherwise noted. IP65 and IK10 rated
- Fixture is built using corrosion resistant materials
- 6063 T5 Extruded aluminum housing
- Highly reflective die-formed white painted reflector
- All inclusive module houses all LED system components in one compact unit
- Unit easily releases from the housing for room-side maintenance
- 5-year limited warranty covers LED, driver and fixture
- UL and cUL listed
- Buy American Act compliant

---

**EX3B - WET - O**

<table>
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<tr>
<th></th>
<th>DIRECT SHIELDING</th>
<th>INDIRECT SHIELDING</th>
<th>DIRECT OUTPUT</th>
<th>INDIRECT OUTPUT</th>
<th>LENGTH</th>
<th>POSITION</th>
<th>MOUNTING</th>
<th>VOLTAGE</th>
<th>DRIVER</th>
<th>CIRCUITING</th>
<th>BATTERY &amp; EMERGENCY</th>
<th>FINISH</th>
<th>FIXTURE OPTIONS</th>
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<th>INDIRECT CRL, CCT &amp; OUTPUT</th>
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<tr>
<td></td>
<td>30 - 3500K</td>
</tr>
<tr>
<td></td>
<td>35 - 3500K</td>
</tr>
<tr>
<td></td>
<td>CL - Custom Lumens,</td>
</tr>
<tr>
<td></td>
<td>CW - Custom Watts Lumen</td>
</tr>
<tr>
<td></td>
<td>Output pg. 2</td>
</tr>
</tbody>
</table>

---

**LENGTH**

- Individual Fixture Length pg. 2

**POSITION**

- IND - Individual Fixture
- SOR - Beginning of Row
- MOR - Middle of Row
- EOR - End of Row

**MOUNTING**

- PP - Pendant to J Box
- PT - Pendant to Structure

**VOLTAGE**

- U - Universal (120v to 277v)
  - 1 - 120V
  - 2 - 277V
  - 3 - 347V
  - Voltage pg. 3

**DRIVER**

- OL1 - Osram (10%, 0-10v, standard)
- OL2 - Osram (0-10v, 1kHz)
- OL3 - Osram 3kHz (10%, 0-10v)
- EE1 - edlLED ECO drive (1%, 0-10v)
- EE2 - edlLED ECO drive (1%, 0-24v)
- PL2 - Philips Titanium (1%, 0-10v)
- PS1 - Philips Titanium (50%/100%)
- LH1 - Lutron Hi-lume 1% (EcoSystem)
- LH3 - Lutron Hi-lume 1% (2-way)
- LS1 - Lutron Hi-lume 5% (EcoSystem)
- ND - Non-Dimming

**CIRCUITING**

- O - None
- P - Philips Bodine 10W
- J - iota 10W Integral
- C - iota 10W Integral CEC Listed
- E - Emergency Section
- N - Night Light Section
- L - Life Safety Section
- G - Philips Bodine GTO Battery and Emergency pg. 4

**BATTERY & EMERGENCY**

- W - White
- S - Metallic Silver
- BL - Textured Black
- BR - Bronze
- GR - Graphite
- CC - Custom Color

**FINISH**

- CC - Custom Color Finish pg. 4

**FIXTURE OPTIONS**

- GLR - Internal Fast Blow Fuse
- AM - Antimicrobial Paint
- EPF - End Power Feed
- CC-P - Custom Color Pendant Fixture Options pg. 5

**CONTROLS**

- Pinacle is able to accommodate different control solutions from different manufacturers. Consult Factory for more information.

---

*Individual fixtures come in nominal 2", 3", 4", 5", 6", 7", & 8" lengths, see pg. 2 for actual lengths.*

*Specify position of fixture. Use IND for an individual fixture, use SOR, MOR, or EOR to build connected rows.*

*Specify pendant length of either 12", 18", or 24". Enter quantity for Battery and Emergency. Example 2P.*

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---

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**Direct Shielding**

![Satine Wet Lens](image)

**Indirect Shielding**

![Open, clear lens](image)

## Output

* Specify either 80 or 90 CRI
* Longer lead time may apply for 90 CRI. Consult factory

### Custom Output: Lumens OR Wattage

<table>
<thead>
<tr>
<th>Color</th>
<th>Output</th>
<th>Watts</th>
<th>Shielding</th>
<th>Direct</th>
<th>Indirect</th>
</tr>
</thead>
<tbody>
<tr>
<td>CL</td>
<td>3000K</td>
<td>Standard 4.3</td>
<td>309</td>
<td>71.4</td>
<td>523</td>
</tr>
<tr>
<td>CW</td>
<td>3000K</td>
<td>High 8.7</td>
<td>573</td>
<td>65.7</td>
<td>986</td>
</tr>
<tr>
<td>CL</td>
<td>3500K</td>
<td>Standard 4.3</td>
<td>318</td>
<td>73.5</td>
<td>538</td>
</tr>
<tr>
<td>CW</td>
<td>3500K</td>
<td>High 8.7</td>
<td>589</td>
<td>67.5</td>
<td>1014</td>
</tr>
<tr>
<td>CL</td>
<td>4000K</td>
<td>Standard 4.3</td>
<td>324</td>
<td>74.9</td>
<td>548</td>
</tr>
<tr>
<td>CW</td>
<td>4000K</td>
<td>High 8.7</td>
<td>601</td>
<td>68.9</td>
<td>1034</td>
</tr>
</tbody>
</table>

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**EX3B_WET_LED_SPEC_AUGUST2017**

pg. 2
Position

- When making rows with EDGE Wet, the rows must be ordered as individual units with a position specified.
- Positions can either be "BOR" - Beginning of Row, "MOR" - Middle of Row, or "EOR" - End of Row.
- The connection between fixtures is less than 1/8".
- For single, non-connected units, specify as "IND" for individual.

<table>
<thead>
<tr>
<th>IND</th>
<th>BOR</th>
<th>MOR</th>
<th>EOR</th>
</tr>
</thead>
<tbody>
<tr>
<td>Individual Fixture</td>
<td>Beginning of Row</td>
<td>Middle of Row</td>
<td>End of Row</td>
</tr>
</tbody>
</table>

Mounting

- 1/2" diameter rigid stem pendant and wall mount available.
- Specify overall pendant length of 12", 18" or 24".
- Specify pendant length in ordering code (PP12,18B).
- End trims and power cord attached at factory.
- Canopies and pendants are painted white unless otherwise specified.
- Canopy and pendant color specified on Fixture Options page.
- Approved for wet location unless otherwise noted.
- Refer to installation instructions during installation at the jobsite.

PP...JB Pendant Pipe to J-Box
PP...ST Pendant Pipe to Structure
WA Wall Mount

Voltage

- Some EDGE Wet configurations will not accommodate all voltage options; consult with factory.

<table>
<thead>
<tr>
<th>U</th>
<th>120 volt</th>
<th>277 volt</th>
<th>347 volt</th>
</tr>
</thead>
</table>

Driver

- Standard Driver Option = OL1.
- Driver Lifetime 50,000 hours at 25°C ambient operating conditions.
- For more driver options see Pinnacle Resource Guide.
- Some EDGE Wet configurations will not accommodate all driver options; consult with factory.

| OL1 | Osram Optronic 10%, 0-10v |
| OL2 | Osram Optronic 1%, 0-10v, nominal 1% dimming range |
| OL3 | Osram Optronic 347v 10%, 0-10v, requires 347v option |
| EE1 | EldoLED ECOdrive 1%, 0-10v Logarithmic |
| EE3 | EldoLED ECOdrive 1%, DALI Logarithmic |
| PL2 | Philips Advance Xitanium 1%, 0-10v |
| PS1 | Philips Advance Xitanium Step Dimming 50%/100% |
| LH1 | Lutron Hi-lume Soft-on, Fade-to-black 1%, EcoSystem, LDE1 |
| LH3 | Lutron Hi-lume 1%, 3-wire, Lutron-L3DA3W |
| LS1 | Lutron 5-Series 5%, EcoSystem, LDE5 |
| ND | Non-Dimming |
How to specify CircuIting, Battery and Emergency

- Select fixture circuiting from options below
- Some EDGE Wet configurations will not accommodate all circuiting options, consult with factory

<table>
<thead>
<tr>
<th>1</th>
<th>Single Circuit</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>Dual Circuit</td>
</tr>
<tr>
<td>M</td>
<td>Multi Circuit</td>
</tr>
<tr>
<td>E</td>
<td>Emergency Circuit only</td>
</tr>
<tr>
<td>N</td>
<td>Night Light Circuit only</td>
</tr>
</tbody>
</table>

Battery and/or Emergency if required

- No battery or specific emergency section required

Battery

- Select battery section type if required, indicate total QTY. Example 2P
- 90 minute battery runtime; test button is integral
- No battery option available for 2' lengths
- Entire direct fixture housing is on battery for lengths up to 5'
- Half of direct fixture is on battery for 6', 7' or 8' housing lengths
- For more battery options available, see Pinnacle Resource Guide

<table>
<thead>
<tr>
<th>0</th>
<th>No battery</th>
</tr>
</thead>
<tbody>
<tr>
<td>.P</td>
<td>Philips Bodine 10w Integral</td>
</tr>
<tr>
<td>.I</td>
<td>iota 10w Integral</td>
</tr>
<tr>
<td>.IC</td>
<td>iota 10w Integral CEC Listed</td>
</tr>
</tbody>
</table>

Emergency

- Select emergency section type if required, indicate total QTY. Example 1E
- Combine battery and emergency section ordering codes if both options are selected

<table>
<thead>
<tr>
<th>.E</th>
<th>Emergency circuit section</th>
</tr>
</thead>
<tbody>
<tr>
<td>.N</td>
<td>Night Light circuit section</td>
</tr>
<tr>
<td>.L</td>
<td>Life Safety circuit section NOT THROUGH WIRE</td>
</tr>
<tr>
<td>.G</td>
<td>Philips Bodine GTD, Generator Transfer Device section</td>
</tr>
</tbody>
</table>

Finish

- Standard powder-coat textured white, metallic silver, textured black, graphite or bronze painted finish; consult factory for chip of standard paint finishes
- Selecting a fixture finish other than white may impact lumen output; consult factory for more information

<table>
<thead>
<tr>
<th>W</th>
<th>White</th>
</tr>
</thead>
<tbody>
<tr>
<td>S</td>
<td>Metallic Silver</td>
</tr>
<tr>
<td>BL</td>
<td>Textured Black</td>
</tr>
<tr>
<td>GR</td>
<td>Graphite</td>
</tr>
<tr>
<td>BR</td>
<td>Bronze</td>
</tr>
<tr>
<td>C</td>
<td>Custom Color</td>
</tr>
</tbody>
</table>

For Approximate Battery Lumen Output

- Multiply battery wattage X fixture LPW shown on Lumen Table
- 92.3 (LPW) x 10 (watts) = 923 battery lumen output

Battery OR Emergency Ordering Examples

- Single circuit, 10w integral battery Ordering Code: 1-1P
- Emergency only, 10w integral battery Ordering Code: E-1P
- Single circuit, GTD required Ordering Code: 1-1G

Combination Section Ordering Examples

- Single circuit, (1) 10w battery, (1) emergency section Ordering Code: 1-1P1E
- Multi circuit, (2) 10w battery, (2) emergency sections Ordering Code: M-2P2E
- Single circuit, (1) night light section Ordering Code: 1-1N

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Fixture Options

* Specify CC-C or CC-P to match housing. If not specified, canopy will be standard matte white.

<table>
<thead>
<tr>
<th>GLR</th>
<th>Internal Fast Blow Fuse</th>
</tr>
</thead>
<tbody>
<tr>
<td>EPF</td>
<td>End Power Feed</td>
</tr>
<tr>
<td>CC-C</td>
<td>Custom Color Canopy</td>
</tr>
<tr>
<td>CC-P</td>
<td>Custom Color Pendant</td>
</tr>
</tbody>
</table>

Controls

* Pinnacle is able to accommodate different control solutions from different manufacturers. Consult factory for more information.

Photometrics

<table>
<thead>
<tr>
<th>Satine Wet - Open</th>
<th>Candela Distribution</th>
<th>Luminance Data (cd/sq.m)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Test #</td>
<td>ITL56597</td>
<td>Angle in Degrees</td>
</tr>
<tr>
<td>Catalog #</td>
<td>EX3B-WET-0-804-804-4</td>
<td>0</td>
</tr>
<tr>
<td>Lumen</td>
<td>3400 m</td>
<td></td>
</tr>
<tr>
<td>Watts</td>
<td>34.4 W</td>
<td></td>
</tr>
<tr>
<td>Efficacy</td>
<td>101 LPW</td>
<td></td>
</tr>
</tbody>
</table>

Applications & Certificates

Construction: 6063-T5 extruded aluminum housing with welded ends. Internal lens gaskets seal housing to prevent moisture and debris from entering the fixture. Pressure equalizing vent allows fixture to "breathe" preventing condensation.

Shielding: Solid acrylic diffuse snap-in lens with matte finish with an EPDM gasketed for complete wet seal.

Mounting: Fixtures can be installed individually or connected for a continuous run appearance. IND fixtures are individual fixtures and have no joining holes. IND fixtures cannot be joined. BOR fixtures are used for beginning of row and have joining holes on non-power end of fixture. MOR fixtures are used for middle of row and have joining holes on both ends of fixture. EOR fixtures are used for the end of a row and have no joining holes on power end of fixture. Consult factory for detailed installation instructions.

LED 25°C test environment. Lumen output/wattage has a margin of +/- 5%. All luminaire configurations tested in accordance with IES LM-79. Diodes tested in accordance with IES LM-80. Minimum lifetime greater than 60,000 hours. Lifetime Projection L70 = 136,200 hours and L90 = 41,100 hours. MacAdam 3-Step Ellipses. Not all products are Lighting Facts listed. For all available IES files, please visit our website at pinnacle-led.com.

CRI, CCT & Lumen Output: Two lumen packages available. Standard and High (HO). Custom outputs are available. Specify custom lumens or watts between standard offering listed on CRI, CCT & Output page. 80 CRI is available for 3000K, 3500K, and 4000K. 90 CRI is available for 2700K, 3000K, 3500K, and 4000K. 80 CRI = I≥92 and 90 CRI = I≥96.

Voltage: Universal (U), 120 volt (1), 277 volt (2) and 347 volt (3) options available. Must specify OL3 in Driver section when 347 volt (3) is selected. Some EDGE Wet configurations will not accommodate all voltage options; consult with factory.

Driver: Standard Driver Option is Osram 0-10V, 10% - OL1. Electronic driver. Power factor is >0.9 with a THD <20%. Driver Lifetime: 50,000 hours at 25°C ambient operating conditions. Ambient operating range: -20°F/-30°C to 97°F/36°C. For more driver options, see Pinnacle Resource Guide. Some EDGE Wet configurations will not accommodate all driver options.

Circuiting: Select from single circuit (1), dual circuit (2), Multi circuit - For multiple circuiting and zone control, requires factory shop drawing (M). Emergency circuit (E) or Night Light circuit (N). For emergency circuiting situations that require no through wire or circuit separation, Life Safety Circuit should be selected. This will provide a separate power feed and only the Life Safety Circuit in that section. Some EX configurations will not accommodate all circuiting options; consult with factory.

Battery & Emergency: Select battery or emergency options if required. If battery or emergency option is not required, enter 0. Battery duration is 90 minutes as standard. Test button is integral to fixture. For more Battery options, see Pinnacle Resource Guide.

Finish: Standard powder-coat textured white, metallic silver, textured black, graphite or bronze painted finish; consult factory for chip of standard paint finishes or for additional custom color and finish options.

Controls: Consult Factory

Labels: UL and cUL Listed, approved for wet location unless otherwise noted. IP65 and IK10 rated.

Buy American Act Compliant

Warranty: EDGE Wet LED offered with a 5-year limited warranty. Covers LED, driver and fixture.
## EX3_WET-EX3WET

**3" Suspended Direct Linear WET**

### Key Features
- Approved for wet location unless otherwise noted. IP65 and IK10 rated
- 6063-T5 Extruded aluminum housing
- Highly reflective die-formed white painted reflector
- All-inclusive module houses all LED system components in one compact unit
- Unit easily releases from the housing for room-side maintenance
- Wiring access available through bottom of housing
- 5-year limited warranty covers LED, driver and fixture
- UL and cUL listed
- Buy American Act compliant

### EX3 - WET - N

<table>
<thead>
<tr>
<th>WET</th>
<th>N</th>
<th>---</th>
<th>---</th>
</tr>
</thead>
<tbody>
<tr>
<td>DIRECT SHIELDING</td>
<td>INDIRECT SHIELDING</td>
<td></td>
<td></td>
</tr>
<tr>
<td>WET - Satin Wet Lens</td>
<td>N - None</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Shielding pg. 2</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>POSITION1</td>
<td>MOUNTING1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>IND - Individual Fixture</td>
<td>PP- JB - Pendant to J Box</td>
<td></td>
<td></td>
</tr>
<tr>
<td>BOR - Beginning of Row</td>
<td>PP- ST - Pendant to Structure</td>
<td></td>
<td></td>
</tr>
<tr>
<td>MOR - Middle of Row</td>
<td>WA - Wall Mount</td>
<td></td>
<td></td>
</tr>
<tr>
<td>EOR - End of Row</td>
<td>S - Surface Mount</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Mounting pg. 3</td>
<td></td>
<td></td>
</tr>
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<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CIRCUITING</td>
<td>BATTERY &amp; EMERGENCY*</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1 - Single Circuit</td>
<td>0 - None</td>
<td></td>
<td></td>
</tr>
<tr>
<td>M - Multi Circuit</td>
<td>_P - Philips Bodine 10W</td>
<td></td>
<td></td>
</tr>
<tr>
<td>E - Emergency</td>
<td>_L - lora 10W Integral</td>
<td></td>
<td></td>
</tr>
<tr>
<td>N - Night Light</td>
<td>_HC - lora 10W Integral (CEC Listed)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>_E - Emergency Section</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>_N - Night Light Section</td>
<td></td>
<td></td>
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<tr>
<td></td>
<td>_L - Life Safety Section</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>_G - Philips Bodine GTD Battery and</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Emergency pg. 4</td>
<td></td>
<td></td>
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<tr>
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</tr>
<tr>
<td>FINISH</td>
<td>CONTROLs</td>
<td></td>
<td></td>
</tr>
<tr>
<td>W - White</td>
<td>GLR - Internal Fast Blow Fuse</td>
<td></td>
<td></td>
</tr>
<tr>
<td>S - Metallic Silver</td>
<td>EPP - End Power Feed</td>
<td></td>
<td></td>
</tr>
<tr>
<td>BL - Textured Black</td>
<td>CC-C - Custom Color Canopy</td>
<td></td>
<td></td>
</tr>
<tr>
<td>BR - Bronze</td>
<td>CC-P - Custom Color Pendant</td>
<td></td>
<td></td>
</tr>
<tr>
<td>GR - Graphite</td>
<td>Fixtures Options pg. 5</td>
<td></td>
<td></td>
</tr>
<tr>
<td>CC - Custom Color</td>
<td></td>
<td></td>
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<tr>
<td>FIXTURE OPTIONS</td>
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<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

---

1 Individual fixtures come in nominal 2", 3", 4", 5", 6", 7", & 8" lengths, see pg. 2 for actual lengths.
2 Specify position of fixture. Use IND for an individual fixture, use BOR, MOR, or EOR for building connected rows.
3 Specify pendant length of either 12", 18" or 24". Enter quantity for Battery and Emergency, Example 2P.

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*EX3_WET_LED_SPEC_AUGUST2017*
# Direct Shielding

| WET | Satin Wet Lens |

## Output
- Specify either 80 or 90 CRI
- Longer lead-time may apply for 90 CRI. Consult factory

### Custom Output - Lumens OR Wattage

| CL. | Specify CRI, CCT and desired lumens (i.e. CL835500) |
| CW. | Specify CRI, CCT and desired wattage (i.e. CW9407) |

#### 80 CRI

<table>
<thead>
<tr>
<th>Color</th>
<th>Output</th>
<th>Watts per foot</th>
<th>Shielding</th>
</tr>
</thead>
<tbody>
<tr>
<td>830</td>
<td>Standard</td>
<td>4.7</td>
<td>WET</td>
</tr>
<tr>
<td>830HO</td>
<td>High</td>
<td>8.7</td>
<td>Satin Wet</td>
</tr>
<tr>
<td>835</td>
<td>Standard</td>
<td>4.7</td>
<td>Lumens/ft</td>
</tr>
<tr>
<td>835HO</td>
<td>High</td>
<td>8.7</td>
<td>LPW</td>
</tr>
<tr>
<td>840</td>
<td>Standard</td>
<td>4.7</td>
<td>319</td>
</tr>
<tr>
<td>840HO</td>
<td>High</td>
<td>8.7</td>
<td>67.9</td>
</tr>
</tbody>
</table>

#### 90 CRI

<table>
<thead>
<tr>
<th>Color</th>
<th>Output</th>
<th>Watts per foot</th>
<th>Shielding</th>
</tr>
</thead>
<tbody>
<tr>
<td>927</td>
<td>Standard</td>
<td>4.7</td>
<td>252</td>
</tr>
<tr>
<td>927HO</td>
<td>High</td>
<td>8.7</td>
<td>53.6</td>
</tr>
<tr>
<td>930</td>
<td>Standard</td>
<td>4.7</td>
<td>294</td>
</tr>
<tr>
<td>930HO</td>
<td>High</td>
<td>8.7</td>
<td>547</td>
</tr>
<tr>
<td>935</td>
<td>Standard</td>
<td>4.7</td>
<td>295</td>
</tr>
<tr>
<td>935HO</td>
<td>High</td>
<td>8.7</td>
<td>549</td>
</tr>
<tr>
<td>940</td>
<td>Standard</td>
<td>4.7</td>
<td>299</td>
</tr>
<tr>
<td>940HO</td>
<td>High</td>
<td>8.7</td>
<td>63.6</td>
</tr>
</tbody>
</table>

## Length

<table>
<thead>
<tr>
<th>Individual Fixture</th>
<th>27-1/8&quot; (689mm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>39&quot; (991mm)</td>
<td>50-3/4&quot; (1289mm)</td>
</tr>
<tr>
<td>62-5/8&quot; (1591mm)</td>
<td>74-5/8&quot; (1895mm)</td>
</tr>
<tr>
<td>86-1/2&quot; (2197mm)</td>
<td>98-3/8&quot; (2499mm)</td>
</tr>
</tbody>
</table>

Specifications and dimensions subject to change without notice. Specification sheets that appear on pinnacle-led.com are the most recent version and supersede all other previously printed or electronic versions.

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EX3_WET_LED_SPEC_AUGUST2017
Position

When making rows with EDGE Wet, the rows must be ordered as individual units with a position specified:

- Positions can either be "BOR" - Beginning of Row, "MOR" - Middle of Row, or "EOR" - End of Row
- The connection between fixtures is less than 1/8"
- For single, non-connected units, specify as "IND" for individual

<table>
<thead>
<tr>
<th>IND</th>
<th>BOR</th>
<th>MOR</th>
<th>EOR</th>
</tr>
</thead>
<tbody>
<tr>
<td>Individual Fixture</td>
<td>Beginning of Row</td>
<td>Middle of Row</td>
<td>End of Row</td>
</tr>
</tbody>
</table>

Mounting

- 1/2" diameter rigid stem pendant and wall mount available
- Specify overall pendant length of 12", 18" or 24"
- Specify pendant length in ordering code (PP12JB)
- Utilize Surface Mount for in-wall application. Building surface waterproofing by others
- End trim and power cord attached at factory
- Canopies and pendants are painted white unless otherwise specified
- Canopy and pendant color specified on Fixture Options page
- Approved for wet location unless otherwise noted
- Refer to installation instructions during installation at the jobsite

PP JB Pendant Pipe to J-Box
PP ST Pendant Pipe to Structure
WA Wall Mount
S Surface

Voltage

- Some EDGE Wet configurations will not accommodate all voltage options; consult with factory

<table>
<thead>
<tr>
<th>U</th>
<th>Universal</th>
<th>120 volt</th>
<th>277 volt</th>
<th>347 volt</th>
</tr>
</thead>
</table>

Driver

- Standard Driver Option = OL1
- Driver Lifetime: 50,000 hours at 25°C ambient operating conditions
- For more driver options see Pinnacle Resource Guide
- Some EDGE Wet configurations will not accommodate all driver options; consult with factory

<table>
<thead>
<tr>
<th>OL1</th>
<th>Osram Optronic 10%, 0-10v</th>
</tr>
</thead>
<tbody>
<tr>
<td>OL2</td>
<td>Osram Optronic 1%, 0-10v, nominal 1% dimming range</td>
</tr>
<tr>
<td>OL3</td>
<td>Osram Optronic 347v 10%, 0-10v, requires 347v option</td>
</tr>
<tr>
<td>EE1</td>
<td>eldoLED ECOdrive 1%, 0-10v Logarithmic</td>
</tr>
<tr>
<td>EE3</td>
<td>eldoLED ECOdrive 1%, DALI Logarithmic</td>
</tr>
<tr>
<td>PL2</td>
<td>Philips Advance Xitanium 1%, 0-10v</td>
</tr>
<tr>
<td>PS1</td>
<td>Philips Advance Xitanium Step Dimming 50%/100%</td>
</tr>
<tr>
<td>LH1</td>
<td>Lutron Hi-lume Soft-on, Fade-to-black 1%, EcoSystem, LDE1</td>
</tr>
<tr>
<td>LH3</td>
<td>Lutron Hi-lume 1%, 3-wire, Lutron-L3DA3W</td>
</tr>
<tr>
<td>LS1</td>
<td>Lutron S-Series 5%, EcoSystem, LDES</td>
</tr>
<tr>
<td>ND</td>
<td>Non-Dimming</td>
</tr>
</tbody>
</table>
How to specify Circuiting, Battery and Emergency

1. Select fixture circuiting from options below
   - Some EDGE Wet configurations will not accommodate all circuiting options, consult with factory

Circuiting

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Single Circuit</td>
</tr>
<tr>
<td>M</td>
<td>Multi Circuit</td>
</tr>
<tr>
<td>E</td>
<td>Emergency Circuit only</td>
</tr>
<tr>
<td>N</td>
<td>Night Light Circuit only</td>
</tr>
</tbody>
</table>

2. Battery and emergency section options are available in addition to fixture circuit
   - Select battery and emergency section options below; factory shop drawing required
   - Some EDGE Wet configurations will not accommodate all circuiting options, consult with factory

Battery and/or Emergency (if Required)

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>No battery or specific emergency section required</td>
</tr>
</tbody>
</table>

Battery

- Select battery section type if required, indicate total QTY. Example 2P
- 90 minute battery runtime; test button is integral to fixture
- No battery option available for 2' lengths
- Entire direct fixture housing is on battery for lengths up to 5'
- Half of direct fixture is on battery for 6', 7' or 8' housing lengths
- For more battery options available, see Pinnacle Resource Guide

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>No battery</td>
</tr>
<tr>
<td>_P</td>
<td>Philips Bodine 10w Integral</td>
</tr>
<tr>
<td>_L</td>
<td>Iota 10w Integral</td>
</tr>
<tr>
<td>_LC</td>
<td>Iota 10w Integral CEC Listed</td>
</tr>
</tbody>
</table>

Emergency

- Select emergency section type if required, indicate total QTY. Example 1E
- Combine battery and emergency section ordering codes if both options are selected

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>_E</td>
<td>Emergency circuit section</td>
</tr>
<tr>
<td>_N</td>
<td>Night Light circuit section</td>
</tr>
<tr>
<td>_L</td>
<td>Life Safety circuit section NO THROUGH WIRE</td>
</tr>
<tr>
<td>_G</td>
<td>Philips Bodine GTD, Generator Transfer Device section</td>
</tr>
</tbody>
</table>

Finish

- Standard powder-coat textured white, metallic silver, textured black, graphite or bronze painted finish; consult factory for chip of standard paint finishes
- Selecting a fixture finish other than white may impact lumen output; consult factory for more information

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>W</td>
<td>White</td>
</tr>
<tr>
<td>S</td>
<td>Metallic Silver</td>
</tr>
<tr>
<td>BL</td>
<td>Textured Black</td>
</tr>
<tr>
<td>GR</td>
<td>Graphite</td>
</tr>
<tr>
<td>BR</td>
<td>Bronze</td>
</tr>
<tr>
<td>CC</td>
<td>Custom Color</td>
</tr>
</tbody>
</table>

For Approximate Battery Lumen Output

- Multiply battery wattage X fixture LPW shown on Lumen Table
- 92.3 (LPW) x 10 (watts) = 923 battery lumen output

Battery OR Emergency Ordering Examples

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Single circuit, 10w integral battery</td>
<td>Ordering Code: 1-1P</td>
</tr>
<tr>
<td>Emergency only, 10w integral battery</td>
<td>Ordering Code: E-1P</td>
</tr>
<tr>
<td>Single circuit, GTD required</td>
<td>Ordering Code: 1-1G</td>
</tr>
</tbody>
</table>

Combination Section Ordering Examples

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Single circuit, (1) 10w battery, (1) emergency section</td>
<td>Ordering Code: 1-3P1E</td>
</tr>
<tr>
<td>Multi circuit, (2) 10w battery, (2) emergency sections</td>
<td>Ordering Code: M-2P2E</td>
</tr>
<tr>
<td>Single circuit, (1) night light section</td>
<td>Ordering Code: 1-1N</td>
</tr>
</tbody>
</table>
Fixture Options
- CC-C or CC-P to match housing. If not specified, canopy will be standard matte white.

GLR  Internal Fast Blow Fuse
EPF  End Power Feed
CC-C  Custom Color Canopy
CC-P  Custom Color Pendant

Controls
- Pinnacle is able to accommodate different control solutions from different manufacturers. Consult Factory for more information.

Photometrics

<table>
<thead>
<tr>
<th>Satine Wet Lens</th>
<th>Candela Distribution</th>
<th>Luminance Data (cd/sq.m)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Test #</td>
<td>1032-6499</td>
<td></td>
</tr>
<tr>
<td>Catalog #</td>
<td>EX-3-WETN-840-4</td>
<td></td>
</tr>
<tr>
<td>Lumens</td>
<td>1338 in</td>
<td></td>
</tr>
<tr>
<td>Watts</td>
<td>10.8 W</td>
<td></td>
</tr>
<tr>
<td>Efficency</td>
<td>71 LPW</td>
<td></td>
</tr>
<tr>
<td>Angle</td>
<td>Vertical Horizontal</td>
<td>Angle in Degrees</td>
</tr>
<tr>
<td>Angle (Degrees)</td>
<td>0</td>
<td>25.5</td>
</tr>
<tr>
<td>Candela</td>
<td>0</td>
<td>562</td>
</tr>
<tr>
<td>Candela</td>
<td>5</td>
<td>559</td>
</tr>
<tr>
<td>Candela</td>
<td>10</td>
<td>547</td>
</tr>
<tr>
<td>Candela</td>
<td>15</td>
<td>537</td>
</tr>
<tr>
<td>Candela</td>
<td>20</td>
<td>529</td>
</tr>
<tr>
<td>Candela</td>
<td>25</td>
<td>521</td>
</tr>
<tr>
<td>Candela</td>
<td>30</td>
<td>516</td>
</tr>
<tr>
<td>Candela</td>
<td>35</td>
<td>512</td>
</tr>
<tr>
<td>Candela</td>
<td>40</td>
<td>509</td>
</tr>
<tr>
<td>Candela</td>
<td>45</td>
<td>507</td>
</tr>
<tr>
<td>Candela</td>
<td>50</td>
<td>504</td>
</tr>
<tr>
<td>Candela</td>
<td>55</td>
<td>501</td>
</tr>
<tr>
<td>Candela</td>
<td>60</td>
<td>497</td>
</tr>
<tr>
<td>Candela</td>
<td>65</td>
<td>493</td>
</tr>
<tr>
<td>Candela</td>
<td>70</td>
<td>489</td>
</tr>
<tr>
<td>Candela</td>
<td>75</td>
<td>485</td>
</tr>
<tr>
<td>Candela</td>
<td>80</td>
<td>482</td>
</tr>
<tr>
<td>Candela</td>
<td>85</td>
<td>479</td>
</tr>
<tr>
<td>Candela</td>
<td>90</td>
<td>476</td>
</tr>
</tbody>
</table>

Applications & Certificates

Construction 5063-T5 extruded aluminum housing with welded ends. Internal lens guards seal housing to prevent moisture and debris from entering the fixture. Pressure equalizing vent allows fixture to "breathe" preventing condensation.

Shielding Solid acrylic diffuse snap-in lens with matte finish with an EPDM gasketed for complete wet seal.

Mounting Fixtures can be installed individually or connected for a continuous run appearance. IND fixtures are individual fixtures and have no joining holes. IND fixtures cannot be joined. BDR fixtures are used for beginning of row and have joining holes on non-power end of fixtures. MOR fixtures are used for middle of row and have joining holes on both ends of fixture. EOR fixtures are used for the end of a row and have no joining holes on power end of fixture. Consult factory for detailed installation instructions.

LED 25°C test environment. Lumen output/wattage has a margin of +/- 5%. All luminaire configurations tested in accordance with IES LM-79. Diodes tested in accordance with IES LM-80. Minimum lifetime greater than 69,000 hours. Lifetime Projection L70 = 136,200 hours and L90 = 41,100 hours. MacAdam 3-Step Ellipses. Not all products are Lighting Facts listed. For all available IES files, please visit our website at pinnacle-ltg.com.

CRI, CCT & Lumen Output Two lumen packages available. Standard and High (HO). Custom outputs are available. Specify custom lumens or watts between standard offering listed on CRI, CCT & Output page. 80 CRI is available for 3000K, 3500K, and 4000K. 90 CRI is available for 2700K, 3000K, 3500K, and 4000K. 80 CRI = R9 = 19 and 90 CRI = R9 = 26.1.

Voltage Universal (U), 120 volt (1), 277 volt (2) and 347 volt (3) options available. Must specify OL3 in Driver section when 347 volt (3) is selected. Some EDGE Wet configurations will not accommodate all voltage options; consult with factory.

Driver Standard Driver Option is Osram 0-10V, 10% = OL1. Electronic driver. Power factor is >.9 with a THD <20%. Driver Lifetime: 50,000 hours at 25°C ambient operating conditions. Ambient operating range: -20°F/-30°C to 122°F/55°C. For more driver options, see Pinnacle Resource Guide. Some EDGE Wet configurations will not accommodate all driver options.

Circuiting Select from single circuit (1), Multi-circuit - For multiple circuiting and zone control, requires factory shop drawing (N). Emergency circuit (E) or Night Light circuit (N). For emergency circuiting situations that require no through wire or circuit separation, Life Safety Circuit should be selected. This will provide a separate power feed and only the Life Safety Circuit in that section. Some EDGE Wet configurations will not accommodate all circuiting options; consult with factory.

Battery & Emergency Select battery or emergency options if required. If battery or emergency option is not required, enter 0. Battery duration is 90 minutes as standard. Test button is integral to fixture. For more Battery options, see Pinnacle Resource Guide.

Finish Standard powder-coat textured white, metallic silver, textured black, graphite or bronze painted finish; consult factory for chip of standard paint finishes or for additional custom color and finish options.

Controls Consult Factory

Labels UL and CUL Listed, approved for wet location unless otherwise noted. IP65 and IK10 rated.

Buy American Act Compliant

Warranty EDGE Wet LED offered with a 5-year limited warranty. Covers LED, driver and fixture.

Specifications and dimensions subject to change without notice. Specification sheets that appear on pinnacle-ltg.com are the most recent version and supersede all other previously printed or electronic versions.

Designed and Fabricated in Denver, CO USA | pinnacle-ltg.com | 800-322-5570 F: 303-322-5568
EX3_WET_LED_SPEC_AUGUST2017
INDI ROUND

The INDI Round family luminaries is available in 3 sizes and boast a minimalistic, simple design. They consist of an aluminum profile and are fitted with LED boards with a high efficiency. Finished in a powder polyester finish. There is a built-in suspension system in the luminare. The luminaire is distinguished by a soft direct and indirect light - the intensity of which can be adjusted by 0-10v dimming. Suitable for business and administrative premises, corridors, hotels, cultural facilities and households.
## INDI ROUND

**Direct - Indirect Light Fixture**

### SMALL
- **Dimensions:** ø59.06"x4.17"
- **Material:** Aluminum
- **Finish:** Black, Silver, White
- **Installation:** Suspended
- **Optic:** Opal diffuser
- **Color Temp:** 3000K (warm white), 4000K (cool white)
- **Output:** 10070lm / 10550lm
- **Power:** 120vAC: 151W LED

### MEDIUM
- **Dimensions:** ø79.13"x4.17"
- **Material:** Aluminum
- **Finish:** Black, Silver, White
- **Installation:** Suspended
- **Optic:** Opal diffuser
- **Color Temp:** 3000K (warm white), 4000K (cool white)
- **Output:** 13410lm / 14050lm
- **Power:** 120vAC: 187W LED

### LARGE
- **Dimensions:** ø97.09"x4.17"
- **Material:** Aluminum
- **Finish:** Black, Silver, White
- **Installation:** Suspended
- **Optic:** Opal diffuser
- **Color Temp:** 3000K (warm white), 4000K (cool white)
- **Output:** 16470lm / 17250lm
- **Power:** 120-277vAC: 240W LED

### LED Options

<table>
<thead>
<tr>
<th>Type</th>
<th>Model</th>
<th>Output</th>
<th>Color</th>
<th>Temp</th>
<th>Material</th>
</tr>
</thead>
<tbody>
<tr>
<td>Small</td>
<td>108-511K-47FSD/830_</td>
<td>10070lm</td>
<td>S W B</td>
<td>aluminum</td>
<td>ø59.06&quot;x4.17&quot;</td>
</tr>
<tr>
<td></td>
<td>108-511K-47FSD/840_</td>
<td>10550lm</td>
<td>S W B</td>
<td>aluminum</td>
<td>ø59.06&quot;x4.17&quot;</td>
</tr>
<tr>
<td>Medium</td>
<td>108-521K-63FVD/830_</td>
<td>13410lm</td>
<td>S W B</td>
<td>aluminum</td>
<td>ø79.13&quot;x4.17&quot;</td>
</tr>
<tr>
<td></td>
<td>108-521K-63FVD/840_</td>
<td>14050lm</td>
<td>S W B</td>
<td>aluminum</td>
<td>ø79.13&quot;x4.17&quot;</td>
</tr>
<tr>
<td>Large</td>
<td>108-531K-77FZD/830_</td>
<td>16470lm</td>
<td>S W B</td>
<td>aluminum</td>
<td>ø97.09&quot;x4.17&quot;</td>
</tr>
<tr>
<td></td>
<td>108-531K-77FZD/840_</td>
<td>17250lm</td>
<td>S W B</td>
<td>aluminum</td>
<td>ø97.09&quot;x4.17&quot;</td>
</tr>
</tbody>
</table>
FINO®
ASYMMETRIC WALL MOUNT INDIRECT LED

APPLICATIONS:
Commercial and hospitality wall mounted indirect lighting for washing ceiling or floor

CONSTRUCTION:
2 pc construction: 5/8" deep extruded aluminum mud-in frame with gear and snap-in extruded aluminum optical assembly
Fixture lengths available in 6" increments (minimum 1')
Extruded latching system for hairline seams
Field replaceable LED board

OPTICS:
6W/ft or 12W/ft LED boards
Color Temp: 2700K, 3000K, 3500K, 4000K
CRI: 80 typ
Life: 50,000 hrs
Lumen Maintenance: >70% of initial lumens @ 50,000 hrs
Lumen Output (3500K): 533 lm/ft (6W), 1013 lm/ft (12W)
Engineered optical performance lens with internal asymmetric high reflectance white reflector (standard)
Optional Amerlux® exclusive designer lens for softer beam edges

ELECTRICAL:
Electronic constant current LED driver, 36” min., 8”-0” max. per driver. Must daisy chain min. 36” of fixture for short runs (driver on 1st fixture, daisy chain to others), 120v or 277v input
0-10v dimming to 10%, driver is accessible by removing LED module
This product complies with IEEE C62.41 for surge endurance up to 2.5KV. Amerlux recommends using additional surge protection with this unit (supplied by others), surge damage is not covered by warranty.

MOUNTING:
For use in sheet rock walls
Extruded latching system for hairline seams

LABELING:
For indoor use only
IC rated
Damp location
Not for use in fire rated walls

Driver Compartment, fits between studs, sliding lateral adjustment (14 1/2" long)

Cut Out Dimension:
4’ fixture = 3 1/8” x 4’
Continuous runs = 3 1/8” x fixture length + 1”

ELECTRICAL
Electronic driver

<table>
<thead>
<tr>
<th>Wattage per foot</th>
<th>4’ System</th>
<th>Amps</th>
<th>8’ System</th>
<th>Amps</th>
</tr>
</thead>
<tbody>
<tr>
<td>6</td>
<td>277v</td>
<td>24</td>
<td>48</td>
<td>0.20</td>
</tr>
<tr>
<td>12</td>
<td>277v</td>
<td>24</td>
<td>48</td>
<td>0.40</td>
</tr>
</tbody>
</table>

ORDERING INFORMATION:

<table>
<thead>
<tr>
<th>Model</th>
<th>Wattage per Foot</th>
<th>Lamp Type</th>
<th>Color Temp</th>
<th>Finish</th>
<th>Voltage</th>
<th>Length</th>
<th>Configuration</th>
<th>Options/Accessories</th>
</tr>
</thead>
<tbody>
<tr>
<td>FINO</td>
<td>6</td>
<td>LED</td>
<td>2700</td>
<td>HW - high reflectance</td>
<td>120/277</td>
<td>1’</td>
<td>IND - individual</td>
<td>DL - Amerlux® designer lens</td>
</tr>
<tr>
<td></td>
<td>12</td>
<td>LED</td>
<td>3000</td>
<td>white</td>
<td></td>
<td>2’</td>
<td>CON - continuous</td>
<td>HILUME - Lufron Hi-lume® dimming driver</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>3500</td>
<td></td>
<td></td>
<td>3’</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>4000</td>
<td></td>
<td></td>
<td>4’</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Note - For 12W fixtures - Due to driver limitations, not all output & length configurations are possible. Please consult factory.

Example: FINO-6-LED-3500-HW-120-4-IND

Cat #: 

Amerlux reserves the right to change details that do not affect overall function and performance.

Amerlux, LLC • 178 Bauer Drive, Oakland, NJ 07436 • P: 973-882-5010 F: 973-882-2605 • www.amerlux.com
FINO®
ASYMMETRIC WALL MOUNT INDIRECT LED

FIXTURE DATA: For 12 data, multiply by 1.9

FINO 6W/FT LED 4" IND
SOURCE: 120 WHITE LEDs LUMENS/FT: 533 (3500K)
RECESSED

FINO 6W/FT LED 4" IND WITH DESIGNER LENS
SOURCE: 120 WHITE LEDs LUMENS/FT: 442 (3500K)
RECESSED

ZONAL LUMEN SUMMARY
Zone Lumens %Lamp %Fixt
0-30 2 N/A 0.11
0-40 9 N/A 0.44
0-60 56 N/A 2.63
0-90 265 N/A 11.97
40-90 246 N/A 11.52
60-90 199 N/A 9.34
90-180 1877 N/A 88.03
0-180 2132 N/A 100.0

Total Luminaire Efficacy = 82.6 lumens/watt

COEFFICIENTS OF UTILIZATION
Effective Floor Cavity Reflectance 20%
RC 80
RW 70 50 30 10
RCR 0 0.98 0.98 0.98 0.98
1 0.87 0.82 0.78 0.74
2 0.79 0.71 0.64 0.59
3 0.71 0.62 0.54 0.48
4 0.65 0.54 0.46 0.40
5 0.59 0.47 0.40 0.34
6 0.54 0.42 0.34 0.29
7 0.50 0.38 0.30 0.24
8 0.46 0.34 0.26 0.21
9 0.42 0.31 0.23 0.18
10 0.39 0.28 0.21 0.16

FINO LED

TYPE F13

Complete photometric data (Les format) available upon request.
LED pole-top luminaires with symmetrical light distribution

**Housing/Fixture:** Die-cast aluminum construction. The luminaire slip fits a 3" O.D. pole top or tenon and is secured by six (6) socket head stainless steel screws threaded into stainless steel insets. Die castings are marine grade, copper free (<0.3% copper content) A356.0 aluminum alloy.

**Enclosure:** Clear acrylic diffuser held in place by die-cast aluminum frame. Fully gasketed for weather tight operation using a molded silicone gasket.

**Electrical:** 32.0W LED luminaire, 38.5 total system watts, -30°C start temperature. Integral 120V through 277V electronic LED driver, 0-10V dimming. LED module(s) are available from factory for easy replacement. Standard LED color temperature is 4000K with a >80 CRI. Available in 3000K (>80 CRI); add suffix K3 to order.

**Note:** LEDs supplied with luminaire. Due to the dynamic nature of LED technology, LED luminaire data on this sheet is subject to change at the discretion of BEGA-US. For the most current technical data, please refer to www.bega-us.com.

**Finish:** All BEGA standard finishes are polyester powder coat with minimum 3 mil thickness. Available in four standard BEGA colors: Black (BLK); White (WHT); Bronze (BRZ); Silver (SLV). To specify, add appropriate suffix to catalog number. Custom colors supplied on special order.

**CSA certified to U.S. and Canadian standards, suitable for wet locations. Protection class IP65**

**Weight:** 21.4 lbs

**Luminaire Lumens:** 2238 lumens
LED Bollards with rotationally symmetrical distribution

**Post construction:** One piece extruded aluminum, with a one piece aluminum top housing and base, internally welded into an assembly. Die castings are marine grade, copper free (<0.3% copper content) A360.0 aluminum alloy.

**Enclosure:** Heavy walled, die-cast aluminum cap. Clear 1/4" thick borosilicate glass with pure anodized aluminum cone reflector. Fully gasketed using high temperature silicone rubber O-ring gaskets.

**Electrical:** 18.4W LED luminaire, 21.5 total system watts, -20°C start temperature. Integral 120V through 277V electronic LED driver, 0-10V dimming. LED module(s) are available from factory for easy replacement. Standard LED color temperature is 3000K with a >80 CRI. Available in 4000K (>80 CRI); add suffix K4 to order.

**Note:** Due to the dynamic nature of LED technology, LED luminaire data on this sheet is subject to change at the discretion of BEGA-US. For the most current technical data, please refer to www.bega-us.com.

**Anchor base:** Heavy cast aluminum, slotted for precise alignment. Mounts to BEGA 79817 anchorage kit (supplied).

**Finish:** All BEGA standard finishes are polyester powder coat with minimum 3 mil thickness. Available in four standard BEGA colors: Black (BLK), White (WH1), Bronze (BR2), Silver (SLV). To specify, add appropriate suffix to catalog number. Custom colors supplied on special order.

**UL** listed for US and Canadian Standards, suitable for wet locations. Protection class IP65.

**Luminaire Lumens:** 881
Shallow Profile LED Fixture

Dimmable solid color line voltage fixture for use as a task light.

The Boca Task is a shallow profile fixture specifically designed for task areas where space and energy consumption are constrained. Boca's patented CleanDim® technology ensures even dimming from 0-100%. The Task features a diffused lens that widens the light distribution across work surfaces in all directions and softens the overlapping shadows that can be a problem with other fixtures. It is offered with vacancy / occupancy sensors to ensure energy is not unnecessarily wasted. It can be fabricated with a range of color temperature choices, affording a multitude of options. The housing is anodized aluminum with a durable finish making it weather and abrasion resistant.

Key Features

- "C" bracket or magnetic mounting makes installation easy.
- Individual fixtures can dim separately to suit end users, and dimmed setting remains fixed even if fixture turns off.
- Vacancy / occupancy sensors ensure fixture is energized when energy efficient. User can select either vacancy or occupancy sensor.
- Sensor comes in two optics for a variety of sensitivity: -85°, 120°
- Many options in color temperature to suit a range of projects.

- Fixture comes with diffused lens standard, call factory for more options.
- Uses standard Edison base plug, other options available upon request.
- Clean Light option allows temporary light output boost.
- Interior installations only
- Maximum of 30 LED boards per power feed

Technical Specifications

<table>
<thead>
<tr>
<th>Wattage</th>
<th>Input Voltage</th>
<th>Input Current</th>
<th>Control</th>
<th>Power Cable</th>
<th>LED Spacing</th>
<th>Mounting</th>
<th>Color Options</th>
<th>Optics Available</th>
<th>Rating</th>
<th>Length</th>
</tr>
</thead>
<tbody>
<tr>
<td>7.5 watts per linear ft</td>
<td>90-120VAC</td>
<td>model dependent</td>
<td>Integral dimmer/Vacancy / Occupancy sensor standard</td>
<td>UL standard lift</td>
<td>1&quot; on center</td>
<td>L-Bracket or Magnetic Bar</td>
<td>2700K, 3000K, 3500K, 4000K, 5000K</td>
<td>120°</td>
<td>Master fixture 16&quot; - 36&quot;: satellite fixtures 15&quot; - 91&quot;: 6 increments allow 1&quot; for each L-Bracket and 2&quot; for power feed cable</td>
<td></td>
</tr>
</tbody>
</table>

| Project Specifications |

Task - Master: M Satellite = 5
Color Option: 2700K, 3000K, 3500K, 4000K, 5000K
Input Voltage: 90-120VAC = 120V
Finish: White
Occupancy / Vacancy Sensor: No Sensor = NS
85° X 75° = 85°
120° X 90° = 120°
Mounting: Magnetic Bar = MB*
L-shaped Bracket = LB

Wiring: Three prong plug = EP
Hardwired = HW

Options

We are constantly improving our fixtures and reserve the right to change options and specifications. Additional information & details at www.bocaflasher.com. For specific requirements, contact your Boca Flasher sales representative. Boca Flasher, Inc. 508 South Military Trail, Deerfield Beach, Florida 33442 USA Phone: 561-989-5338 Fax: 561-982-8323 ©2016 Boca Flasher, Inc. All rights reserved. All names and trademarks are property of their respective owners. REV 05112016_r.
**Task**

*Shallow Profile LED Fixture*

Dimmable solid color line voltage fixture for use as a task light.

### Task Light Lengths - in inches

<table>
<thead>
<tr>
<th>TASK LIGHT-MASTER</th>
<th>LENGTH</th>
<th>A</th>
<th>B</th>
<th>TASK LIGHT-SATELLITE</th>
<th>C</th>
<th>EQUIVALENT IN FEET</th>
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<tbody>
<tr>
<td>BF-TASK-M-16</td>
<td>16&quot;</td>
<td>15.5</td>
<td>12.5</td>
<td>BF-TASK-S-13</td>
<td>13&quot;</td>
<td>1 FT</td>
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<tr>
<td>BF-TASK-M-22</td>
<td>22&quot;</td>
<td>21.5</td>
<td>18.5</td>
<td>BF-TASK-S-19</td>
<td>19&quot;</td>
<td>1.5 FT</td>
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<tr>
<td>BF-TASK-M-28</td>
<td>28&quot;</td>
<td>27.5</td>
<td>24.5</td>
<td>BF-TASK-S-25</td>
<td>25&quot;</td>
<td>2 FT</td>
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<td>BF-TASK-M-34</td>
<td>34&quot;</td>
<td>33.5</td>
<td>30.5</td>
<td>BF-TASK-S-31</td>
<td>31&quot;</td>
<td>2.5 FT</td>
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<td>42.5</td>
<td>BF-TASK-S-43</td>
<td>43&quot;</td>
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<td>BF-TASK-M-52</td>
<td>52&quot;</td>
<td>51.5</td>
<td>48.5</td>
<td>BF-TASK-S-49</td>
<td>49&quot;</td>
<td>4 FT</td>
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<tr>
<td>BF-TASK-M-58</td>
<td>58&quot;</td>
<td>57.5</td>
<td>54.5</td>
<td>BF-TASK-S-55</td>
<td>55&quot;</td>
<td>4.5 FT</td>
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<tr>
<td>BF-TASK-M-64</td>
<td>64&quot;</td>
<td>63.5</td>
<td>60.5</td>
<td>BF-TASK-S-61</td>
<td>61&quot;</td>
<td>5 FT</td>
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<tr>
<td>BF-TASK-M-70</td>
<td>70&quot;</td>
<td>69.5</td>
<td>66.5</td>
<td>BF-TASK-S-67</td>
<td>67&quot;</td>
<td>5.5 FT</td>
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<tr>
<td>BF-TASK-M-76</td>
<td>76&quot;</td>
<td>75.5</td>
<td>72.5</td>
<td>BF-TASK-S-73</td>
<td>73&quot;</td>
<td>6 FT</td>
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<tr>
<td>BF-TASK-M-82</td>
<td>82&quot;</td>
<td>81.5</td>
<td>78.5</td>
<td>BF-TASK-S-79</td>
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<td>87.5</td>
<td>84.5</td>
<td>BF-TASK-S-91</td>
<td>91&quot;</td>
<td>7.5 FT</td>
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</tbody>
</table>

**TASK LIGHT-MASTER:** Length "A" is in reference to the overall length of the fixture. This measurement includes the 3" sensor and the actual light output. Length "B" is in reference to the actual light output.

**TASK LIGHT-SATELLITE:** Length "C" is in reference to the overall length of the fixture which is the actual light output. Satellite fixtures do not come with a sensor.

*Please allow an additional 2" for the fixed mount brackets to be mounted to the surface.*

### Occupancy/Vacancy Sensor Distribution Pattern

**120° x 90° Distribution**

**85° x 75° Distribution**
Product Code:  
Type: LT2  

LED TRACK LIGHT  
TYPE F20  

PRODUCT SPECIFICATIONS

Track Light
LED: Tightly binned, high performing white Cree® LED.
LUMEN OUTPUT (POWER): 900 lm (16.6W).
CRI: 90+.
CCT: 2700K, 3000K, 3500K, 4000K.
BINNING: Color variation within 2-step MacAdam ellipse (SDCM).
OPTICS: Spot (22°), Narrow Flood (27°), Flood (33°).
DRIVER: Integral electronic driver for 120V operation only.
DIMMING: TRIAC/ELV for 120V only with flicker-free dimming down to 5% of total lumen output standard.
LIFETIME: 50,000 hours at 70% lumen maintenance.
PHOTOMETRIC TESTING: Tested in accordance to IESNA LM-79-2008.
FINISH: White, black.
LISTINGS: cULus Listed. ENERGY STAR® qualified. Title 24 2013 compliant. UL Listed for Damp Location. CEC listed.
WARRANTY: 5 year limited warranty.

Installation
TRACK: Compatible with one or two circuit track systems.

- Minimalistic design complements any aesthetic
- Flexible installation in many track and mono point systems
- 900 lumen output
- 90+ CRI
- White and black finishes
- Numerous lens, filter and snoot accessories
- Flicker-free TRIAC/ELV dimming

---

dmf Lighting®  1118 E. 223rd St. Carson, CA 90745  T: 1.800.441.4422  
www.dmflighting.com  
© 2016 DMF Lighting, All Rights Reserved. Specifications subject to change without notice.
# LT2 LED TRACK LIGHT

**TYPE F20**

## PRODUCT SELECTION GUIDE

### TRACK LIGHT

<table>
<thead>
<tr>
<th>PRODUCT CODE</th>
<th>LUMENS (W)</th>
<th>CRI</th>
<th>CCT</th>
<th>INSTALLATION</th>
<th>OPTIC</th>
<th>FINISH</th>
</tr>
</thead>
<tbody>
<tr>
<td>LT2 Track Light</td>
<td>9 900 lm (16.6W)</td>
<td>90+ CRI</td>
<td>27 2700K</td>
<td>D DMF Lighting, Halo Compatible Track Adapter</td>
<td>SP Spot</td>
<td>W White</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>30 3000K</td>
<td></td>
<td>NF Narrow Flood</td>
<td>B Black</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>35 3500K</td>
<td>J Juno Compatible Track Adapter</td>
<td>FL Flood</td>
<td></td>
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<tr>
<td></td>
<td></td>
<td></td>
<td>40 4000K</td>
<td>L Lightoller Compatible Track Adapter</td>
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### ACCESSORIES

<table>
<thead>
<tr>
<th>LSL</th>
<th>Linear Spread Lens</th>
<th>HF</th>
<th>Honeycomb Filter</th>
<th>YF Yellow Filter</th>
<th>SNW White Snoot</th>
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<tbody>
<tr>
<td>SPL</td>
<td>Spread Lens</td>
<td>BF</td>
<td>Blue Filter</td>
<td>GF Green Filter</td>
<td>SNB Black Snoot</td>
</tr>
<tr>
<td>FL</td>
<td>Frosted Lens</td>
<td>RF</td>
<td>Red Filter</td>
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</table>
**LT2 LED TRACK LIGHT**

**TYPE F20**

**TRACK LIGHT DIMENSIONS**

**LT2 LED Track**

<table>
<thead>
<tr>
<th>Specification</th>
<th>LT2</th>
</tr>
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<tbody>
<tr>
<td>Total Module Lumen Output (lm)</td>
<td>900</td>
</tr>
<tr>
<td>Total Rated Power (W)</td>
<td>16.6</td>
</tr>
<tr>
<td>Efficacy (lm/W)</td>
<td>54</td>
</tr>
<tr>
<td>Color Rendering Index</td>
<td>90+</td>
</tr>
<tr>
<td>CCT Options</td>
<td>2700K, 3000K, 3500K, 4000K</td>
</tr>
<tr>
<td>Optics</td>
<td>Spot (22°), Narrow Flood (27°), Flood (33°)</td>
</tr>
<tr>
<td>Binning</td>
<td>2-step SDCM</td>
</tr>
<tr>
<td>Lifetime (L70)</td>
<td>50,000 hours</td>
</tr>
<tr>
<td>Max Ambient Operating Temperature</td>
<td>40°C</td>
</tr>
<tr>
<td>Input Voltage (V)</td>
<td>120V</td>
</tr>
<tr>
<td>Input Current at 120V (Max)</td>
<td>0.143</td>
</tr>
<tr>
<td>Power Factor</td>
<td>&gt;0.9</td>
</tr>
<tr>
<td>Total Harmonic Distortion</td>
<td>&lt;20%</td>
</tr>
<tr>
<td>Dimming</td>
<td>100% - 5%</td>
</tr>
</tbody>
</table>
Track Light: LT29930D42W (LT2 Track Light, 900 lm, 90 CRI, 3000K, Flood)

<table>
<thead>
<tr>
<th>Gamma</th>
<th>0°</th>
<th>5°</th>
<th>10°</th>
<th>15°</th>
<th>20°</th>
<th>25°</th>
<th>30°</th>
<th>35°</th>
<th>40°</th>
<th>45°</th>
<th>50°</th>
<th>55°</th>
<th>60°</th>
<th>65°</th>
<th>70°</th>
<th>75°</th>
<th>80°</th>
<th>85°</th>
<th>90°</th>
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<tbody>
<tr>
<td>Lumens</td>
<td>2740</td>
<td>2493</td>
<td>1988</td>
<td>1420</td>
<td>900</td>
<td>480</td>
<td>230</td>
<td>91</td>
<td>42</td>
<td>26</td>
<td>21</td>
<td>16</td>
<td>13</td>
<td>12</td>
<td>7</td>
<td>5</td>
<td>2</td>
<td>1</td>
<td>0</td>
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</table>

Zonal Lumen Summary

<table>
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<tr>
<th>Zone</th>
<th>Lumens</th>
<th>Luminaire %</th>
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</thead>
<tbody>
<tr>
<td>0-30</td>
<td>853</td>
<td>87</td>
</tr>
<tr>
<td>0-40</td>
<td>922</td>
<td>94</td>
</tr>
<tr>
<td>0-60</td>
<td>960</td>
<td>98</td>
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<tr>
<td>0-90</td>
<td>977</td>
<td>100</td>
</tr>
<tr>
<td>0-180</td>
<td>977</td>
<td>100</td>
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Illuminance Chart

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<thead>
<tr>
<th>Distance from LED</th>
<th>Foot Candles</th>
<th>Diameter</th>
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</thead>
<tbody>
<tr>
<td>3.0'</td>
<td>304</td>
<td>1.7'</td>
</tr>
<tr>
<td>6.0'</td>
<td>76</td>
<td>3.3'</td>
</tr>
<tr>
<td>9.0'</td>
<td>34</td>
<td>5.0'</td>
</tr>
<tr>
<td>12.0'</td>
<td>19</td>
<td>6.6'</td>
</tr>
</tbody>
</table>

Beam Angle: 33°

CCT Scaling

<table>
<thead>
<tr>
<th>CCT (°K)</th>
<th>LT29927</th>
<th>LT29930</th>
<th>LT29935</th>
<th>LT29940</th>
</tr>
</thead>
<tbody>
<tr>
<td>(2700K)</td>
<td>0.93</td>
<td>1.00</td>
<td>1.00</td>
<td>1.07</td>
</tr>
<tr>
<td>(3000K)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(3500K)</td>
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<tr>
<td>(4000K)</td>
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**LT2 LED TRACK LIGHT**

**TYPE F20**

**DIMMER COMPATIBILITY**

**Recommended Phase-control Dimmers** (Dims down to 5% nominal measured light output)

<table>
<thead>
<tr>
<th>Brand</th>
<th>Series</th>
<th>Model Number</th>
<th>Max Load</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cooper</td>
<td>Decorator</td>
<td>DLC03P</td>
<td>6</td>
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<tr>
<td></td>
<td>Decorator</td>
<td>DAL06P</td>
<td>5</td>
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<tr>
<td>Legrand</td>
<td>Adorne</td>
<td>ADTP703TU</td>
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<tr>
<td>Lutron</td>
<td>CL Series</td>
<td>DVCL-153</td>
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<td>CL Series</td>
<td>DVCL-253</td>
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<td></td>
<td>Maestro Wireless</td>
<td>MRF2-6ND</td>
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<td></td>
<td>Radio RA</td>
<td>RRD-6NA</td>
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<tr>
<td></td>
<td>Grafik Sys / Homeworks</td>
<td>RPM-4A</td>
<td>5</td>
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<td>Grafik Sys / Homeworks</td>
<td>RPM-4U</td>
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<td></td>
<td>Grafik Eye: 3000</td>
<td>GSRG-3P</td>
<td>14</td>
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<tr>
<td>Watt Stopper</td>
<td>Dimming Sensor</td>
<td>PW-100D</td>
<td>15</td>
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</table>
## DIMMER COMPATIBILITY

Compatible Phase-control Dimmers¹ (Dims down to 20% nominal measured light output)

<table>
<thead>
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<th>Brand</th>
<th>Series</th>
<th>Model Number</th>
<th>Max Load</th>
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</thead>
<tbody>
<tr>
<td>Cooper</td>
<td>Aspire</td>
<td>9573</td>
<td>5</td>
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<tr>
<td></td>
<td>IlumaTech Slide</td>
<td>1PE04</td>
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<td>IlumaTech Slide</td>
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<td>SureSlide</td>
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<td>Viza</td>
<td>VPE04</td>
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<td>Caseta</td>
<td>PD-6WCL</td>
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<td>Diva</td>
<td>DV-600</td>
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<td>Diva ELV</td>
<td>DVELV-300</td>
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<td>Maestro</td>
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<td>Maestro CL</td>
<td>MA-CL-153M, MSCL-OP153M</td>
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<td>Maestro ELV</td>
<td>MAELV-600</td>
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<td>Lutron</td>
<td>Radio RA</td>
<td>RDP-6CL</td>
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<td>Skylark</td>
<td>S-600P</td>
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<td>Skylark</td>
<td>S-1000</td>
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<td></td>
<td>Skylark Contour</td>
<td>CT-103P</td>
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<td>Skylark ELV</td>
<td>SELV-300</td>
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<td></td>
<td>Sunrise</td>
<td>SR400WP120</td>
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<td>Philips</td>
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<td></td>
<td>Digital Light Management</td>
<td>LMRC-221</td>
<td>142</td>
</tr>
</tbody>
</table>

¹ Dimmer compatibility reflects performance compatibility only. Please reference your local codes for application.
LED TRACK LIGHT
TYPE F20

ACK ACCESSORIES

All accessories are single circuit, 120V and available in white (W) or black (B)

<table>
<thead>
<tr>
<th>LE1W, LE1B</th>
<th>CLEW, CLEB</th>
<th>LECW, LECB</th>
<th>TCW, TCB</th>
</tr>
</thead>
<tbody>
<tr>
<td>Live End Connector</td>
<td>Conduit Fitting Live End</td>
<td>Live End with Canopy</td>
<td>Track Connector</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>LCW, LCB</th>
<th>CPCW, CPCB</th>
<th>TRCW, TRCB</th>
<th>TBJW, TBJB</th>
</tr>
</thead>
<tbody>
<tr>
<td>L Connector</td>
<td>Cord and Outlet Plug Connector</td>
<td>Mini Track Connector</td>
<td>T-Bar Ceiling Junction Box</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>FCW, FCB</th>
<th>MPW, MPB</th>
<th>TACW, TACB</th>
</tr>
</thead>
<tbody>
<tr>
<td>Floating Canopy</td>
<td>Monopoint Adapter</td>
<td>T-Bar Attachment Clip</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Extension Rod (18&quot;, 24&quot;, 36&quot;, 48&quot;)</td>
<td>End Feed Current Limiters</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>XXX</th>
<th>Circuit Breaker</th>
</tr>
</thead>
<tbody>
<tr>
<td>120</td>
<td>120W (1amp @ 120V)</td>
</tr>
<tr>
<td>300</td>
<td>300W (2.5amp @ 120V)</td>
</tr>
<tr>
<td>600</td>
<td>600W (5amp @ 120V)</td>
</tr>
<tr>
<td>960</td>
<td>960W (8amp @120V)</td>
</tr>
<tr>
<td>1200</td>
<td>1200W (10amp @ 120V)</td>
</tr>
<tr>
<td>1800</td>
<td>1800W (15amp @ 120V)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>DT2W, DT2B, DT4W, DT4B, DT6W, DT6B, DT8W, DT8B, DT12W, DT12B</th>
<th>Circuit Track (2', 4', 6', 8', 12')</th>
</tr>
</thead>
</table>
Recessed wall luminaires with directed light

Housing: Constructed of die-cast aluminum with integral wiring compartment. Mounting tabs provided. Die castings are marine grade, copper free (<0.3% copper content) A360.0 aluminum alloy.

Enclosure: One piece die-cast aluminum faceplate. Clear tempered glass; 1/2" thick, machined flush to faceplate surface. Faceplate is secured by two (2) flush, socket head, stainless steel captive screws threaded into stainless steel inserts in the housing casting. Continuous high temperature, molded silicone rubber gasket for weather tight operation.

Electrical: 5.6W LED luminaire, 7.5 total system watts, 
-25°C start temperature. Integral 120V through 277V electronic LED driver, 0 - 10V dimming. The LED and driver are mounted on a removable plate for easy replacement.
Standard LED color temperature is 3000K (available in 4000K; add suffix K4).

Note: Due to the dynamic nature of LED technology, LED luminaire data on this sheet is subject to change at the discretion of BEGA-US. For the most current technical data, please refer to www.bega-us.com.

Finish: All BEGA standard finishes are polyester powder coat with minimum 3 mil thickness. Available in four standard BEGA colors: Black (BLK); White (WHT); Bronze (BRZ); Silver (SLV). To specify, add appropriate suffix to catalog number. Custom colors supplied on special order.

UL listed for US and Canadian Standards, suitable for wet locations and for installation within 3 feet of ground. IC rated. Protection class: IP65.

Luminaire Lumens: 155
Tested in accordance with LM-79-08

Type: F21
BEGA Product:

Project:

Voltage:

Color:

Options:

Modified:
**CATALOG NUMBER LOGIC**

<table>
<thead>
<tr>
<th>Example</th>
<th>B</th>
<th>CO2</th>
<th>LED</th>
<th>TR</th>
<th>e65</th>
<th>MFL</th>
<th>A9</th>
<th>WHP</th>
<th>12</th>
<th>11</th>
<th>MT</th>
<th>AH</th>
</tr>
</thead>
</table>

- **Material**
  - Blank: Aluminum, Brass, Stainless Steel
- **Faceplate**
  - CO2: Flange
- **OptiLock**
  - LED: 'e' Technology with Integral Driver
- **Housing**
  - TR: Integral Transformer Housing
- **LED Type**
  - e64: 7W LED/2.7K
  - e65: 7W LED/3K
  - e74: 7W LED/Amber
- **Optics**
  - NSP: Narrow Spot (Red Indicator)
  - SP: Spot (Green Indicator)
- **Adjust-e-Lume Output Intensity**
  - A9 (Standard), A8, A7, A6, A5, A4, A3, A2, A1
- **Finish**
  - **Aluminum & Brass Faceplates**
    - Powder Coat Color: BZP, BZW, BLP, BLW, WHP, WHW, SAP, VER
  - Satin, Wrinkle, Machined, Polished, MIT, MAC
  - **Brass Faceplates**
    - Satin, Wrinkle, Machined, Polished, Brushed, MAC, MIT
  - **Premium Finish**
    - Antique Brass Powder, Cascade Mountain Granite, Rocky Mountain Granite
    - Antique Mountain Granite, Criqueted Ice, Sierra Mountain Granite
    - Black Chrome, Hunter Green, Teased Forest
    - Beige, Mogul Desert Sandstone, Weathered Copper
    - Brown Patina Powder, Natural Brass Powder, Weathered Iron
    - Clear Anodized Powder, Old Copper

- **Lens Type**
  - 12: Soft Focus Lens
  - 13: Rectilinear Lens
- **Shielding**
  - 11: Honeycomb Baffle
- **Input Voltage**
  - MT: 120-277 VAC Input
- **Option**
  - AH: Accessory Holder (Accommodates up to 2 Media Included as Standard)
  - DG: Dome Glass Lens (Replaces Flat Glass. Not Driveover Rated)
  - GM-R: Round Grount Mask
  - GM-S: Square Grount Mask

### DRIVER DATA

<table>
<thead>
<tr>
<th>Input Volts</th>
<th>InRush Current</th>
<th>Operating Current</th>
<th>Operation Ambient Temperature</th>
</tr>
</thead>
<tbody>
<tr>
<td>12VAC/DC 50/60Hz</td>
<td>&lt;250mA (non-dimmed)</td>
<td>700mA</td>
<td>-22°F-194°F (-30°C - 90°C)</td>
</tr>
</tbody>
</table>

### LM79 DATA

<table>
<thead>
<tr>
<th>BK No.</th>
<th>CCT (Typ.)</th>
<th>Input Watts (Typ.)</th>
<th>CRI (Typ.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>e64</td>
<td>2700K</td>
<td>7.0</td>
<td>80</td>
</tr>
<tr>
<td>e65</td>
<td>3000K</td>
<td>7.0</td>
<td>80</td>
</tr>
<tr>
<td>e66</td>
<td>4000K</td>
<td>7.0</td>
<td>80</td>
</tr>
<tr>
<td>e74</td>
<td>Amber (590nm)</td>
<td>7.0</td>
<td>~</td>
</tr>
</tbody>
</table>

### L70 DATA

**Minimum Rated Life (hrs.)**

- 50,000, 50,000, 50,000, 50,000

**70% of Initial Lumen (L70)**

- Narrow Spot: 13" 6889 Red Dot
- Spot: 15" 5225 Green Dot
- Medium Flood: 23" 1984 Yellow Dot
- Wide Flood: 31" 1300 Blue Dot

### OPTICAL DATA

<table>
<thead>
<tr>
<th>Beam Type</th>
<th>Angle</th>
<th>e66</th>
<th>CBCP</th>
<th>Visual Indicator</th>
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</thead>
<tbody>
<tr>
<td>Narrow Spot</td>
<td>13&quot;</td>
<td>6889</td>
<td>Red Dot</td>
<td></td>
</tr>
<tr>
<td>Spot</td>
<td>15&quot;</td>
<td>5225</td>
<td>Green Dot</td>
<td></td>
</tr>
<tr>
<td>Medium Flood</td>
<td>23&quot;</td>
<td>1984</td>
<td>Yellow Dot</td>
<td></td>
</tr>
<tr>
<td>Wide Flood</td>
<td>31&quot;</td>
<td>1300</td>
<td>Blue Dot</td>
<td></td>
</tr>
</tbody>
</table>

**B-K LIGHTING**

40429 Brickyard Drive • Medora, CA 93646 • USA
559-438-5000 • FAX: 559-438-5000
www.bklighting.com • info@bklighting.com

RELEASED: 03-01-16
DRAWING NUMBER: SUB-2374-00
SPECIFICATION

GreenSource Initiative™
Metal and packaging components are made from recycled materials. Manufactured using renewable solar energy, produced on-site. Retractable to manufacturer and end of life to ensure cradle-to-cradle handling. Packaging contains no chlorofluorocarbons (CFCs). Use of this product may qualify for GreenSource efficacy and recycling rebate(s). Consult www.bklighting.com/greensources for program requirements.

Fixture Housing
Corrosion-free composite, made from high strength thermoset, sheet molded composite compound. Glass reinforced, flame retardant and UV stabilized. (2) bottom-entry, 3/4" NPT female conduit entries with knockout plugs and (6) side feeds for 1/2" or 3/4" conduit adapters.

Patented Stability Flange
Corrosion-free composite flange projects into installation substrate to reinforce housing stability. Integral REBAR adds simplify installation onto concrete form. (4) Orthogonal bosses permit use of 1/2" FVC conduit or EMT to simplify vertical position and leveling of housing. Prevent self-tapping screws anchor housing at proper elevation.

Aiming
Dual axis OptiLock® stainless steel aiming bracket rotates 360° and provides vertical adjustment up to 35° from nadir. Positive lock action ensures optical orientation.

BKSSL™
Integrated solid state system w/ technology is scalable for field upgrade. Modular design with electrical quick disconnects permits field maintenance. High power, forward throw source complies with ANSI C78.377 binning requirements. Exceeds ENERGY STAR® lumen maintenance requirements.

Optics

Adjust-a-Lume® (Pat. Pending)
Integral electronics allows dynamic lumen response at the individual fixture. Fixed LED (0% to 25% dimm.) lumen output. Maintaining output at desired level or may be changed as conditions require. Specify factory preset output intensity.

Installation
For direct burial installation in soil or concrete. Consult Drainage Installation Guide for In-Ground Fixtures (DGIF) for compliance with proper soil preparation and drainage requirements prior to installation.

Transformer
Integral, 12VSSL electronic transformer, 145-380VAC primary voltage. 50/60Hz. Non-dimming. 20A maximum load.

Wiring / Connectors
Teflon® coated wire, 18 gauge, 600V, 225°C rated and certified to UL1659 standard. Features OptiLock® and gear tray quick disconnects. Patented HydroLock® with anti-siphon valve (ASV™) connection. (1) Water-Tight connectors supplied for line connection. Maximum (3) 1/4" & (1) #8. Minimum (1) #12 & (1) #18.

Water Management
Self-Extinguishing Insulation Module (SEAM™). IP-68 rated, vacuum sealed enclosure. Patented Anti-Condensation Valve (ACV™) eliminates condensation from optical chamber. High temperature silicone "O" ring at fixturestem. Patented HydroLock™ technology provides fail safe water barrier between junction box and interior components. Anti-siphon valve (ASV™) prevents "wicking" through conduit insulation.

Lens
High heat shock resistant, tempered 1/4" bentosilicate flat glass lens. Suitable for walk-over and drive-over applications to 15,000 lbs. Specify soft focus (#12) or rectilinear (#13) lens.

Faceplate
Solid, 1/2" machined aluminum with (5) black oxide, captive, stainless steel mounting screws. Faceplate options include solid, 1/2" machined brass and solid, 1/2" machined stainless steel.

Finish
StartGuard™, our exclusive Roline compliant, 15 stage chrome-free process cleans and conversion coats aluminum components prior to application of Class "A" TGC polymer powder coating. Stainless components are available in powder coat or phosphated metal finish. Stainless steel components are available in handrubbed metal finish. (Brushed finish for interior use only).

Listings
UL Listed. Certified to CAN/ULC Standards. Roline compliant. IP68 Rated. Made in the USA.

**Roline is a registered trademark of Roline Corporation. **Energy Star® is a registered trademark of the United States Environmental Protection Agency.

B-K LIGHTING
Precision® and its features are covered in whole or in part by U.S. Patent Nos. 7,081,136; 6,254,258 B1; 7,249,867 B2; 7,310,688 B2; 7,553,042 B2; 7,560,148 B2; and 7,600,488 B2.

40429 Brickyard Drive • Madera, CA 93636 • USA
559.438.5800 • FAX 559.438.5900
www.bklighting.com • info@bklighting.com

RELEASED
03-01-16
DRAWING NUMBER
SUB-2374-00
### Optical Data (deg)

<table>
<thead>
<tr>
<th>Distance (ft)</th>
<th>Narrow Spot</th>
<th>4K</th>
<th>3K</th>
<th>2.7K</th>
</tr>
</thead>
<tbody>
<tr>
<td>20</td>
<td>17.2</td>
<td>15.3</td>
<td>15.0</td>
<td></td>
</tr>
<tr>
<td>16</td>
<td>26.9</td>
<td>23.9</td>
<td>23.4</td>
<td></td>
</tr>
<tr>
<td>12</td>
<td>47.8</td>
<td>42.6</td>
<td>41.6</td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>107.6</td>
<td>96.8</td>
<td>93.6</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>430.6</td>
<td>383.2</td>
<td>374.5</td>
<td></td>
</tr>
</tbody>
</table>

Note: If using No. 11 honeycomb, multiply footcandle values by 1.4

### Distance (ft)

<table>
<thead>
<tr>
<th>Spot</th>
<th>4K</th>
<th>3K</th>
<th>2.7K</th>
</tr>
</thead>
<tbody>
<tr>
<td>20</td>
<td>13.1</td>
<td>11.6</td>
<td>11.4</td>
</tr>
<tr>
<td>16</td>
<td>20.4</td>
<td>18.2</td>
<td>17.8</td>
</tr>
<tr>
<td>12</td>
<td>36.3</td>
<td>32.0</td>
<td>31.6</td>
</tr>
<tr>
<td>8</td>
<td>81.6</td>
<td>72.7</td>
<td>71.0</td>
</tr>
<tr>
<td>4</td>
<td>288.6</td>
<td>250.6</td>
<td>244.1</td>
</tr>
</tbody>
</table>

Note: If using No. 11 honeycomb, multiply footcandle values by 1.4

### Distance (ft)

<table>
<thead>
<tr>
<th>Medium Flood</th>
<th>4K</th>
<th>3K</th>
<th>2.7K</th>
</tr>
</thead>
<tbody>
<tr>
<td>20</td>
<td>5.9</td>
<td>4.4</td>
<td>4.3</td>
</tr>
<tr>
<td>16</td>
<td>7.8</td>
<td>6.9</td>
<td>6.7</td>
</tr>
<tr>
<td>12</td>
<td>13.8</td>
<td>12.3</td>
<td>12.0</td>
</tr>
<tr>
<td>8</td>
<td>31.0</td>
<td>27.8</td>
<td>27.0</td>
</tr>
<tr>
<td>4</td>
<td>124.0</td>
<td>110.4</td>
<td>107.9</td>
</tr>
</tbody>
</table>

Note: If using No. 11 honeycomb, multiply footcandle values by 1.4

### Distance (ft)

<table>
<thead>
<tr>
<th>Wide Flood</th>
<th>4K</th>
<th>3K</th>
<th>2.7K</th>
</tr>
</thead>
<tbody>
<tr>
<td>20</td>
<td>3.3</td>
<td>2.8</td>
<td>2.5</td>
</tr>
<tr>
<td>16</td>
<td>5.1</td>
<td>4.5</td>
<td>4.4</td>
</tr>
<tr>
<td>12</td>
<td>9.0</td>
<td>8.0</td>
<td>7.9</td>
</tr>
<tr>
<td>8</td>
<td>20.3</td>
<td>18.1</td>
<td>17.7</td>
</tr>
<tr>
<td>4</td>
<td>61.3</td>
<td>72.3</td>
<td>73.7</td>
</tr>
</tbody>
</table>

Note: If using No. 11 honeycomb, multiply footcandle values by 1.4

---

**Select OptiLume® for desired distribution**

- **RED** - Narrow Spot (NSP)
- **GREEN** - Spot (SP)
- **YELLOW** - Medium Flood (MFL)
- **BLUE** - Wide Flood (WFL)

Set adjust-e-lume® Dial to desired output.
SQ610 SERIES
SYRIOS SQUARE - LED
Surface ceiling down light

SQ610-L1W18R1-120V-XXX-K35-LSL

1. Cast aluminum ventilated top cover with ceiling mounting plate.
2. Seamless extruded aluminum housing.
3. Fully sealed cast aluminum down light assembly.
5. Clear tempered glass lens.
6. Faceted specular aluminum reflector.

All stainless steel hardware.

Syrios Square LED light module is designed with a tilting mechanism allowing forward and back light adjustability. The ±30° directional module allows to aim the light beam in the desired direction, without disturbing the luminaire mounting. The module can be secured using the built in locking mechanism.

MATERIALS
Syrios Square LED is made of corrosion resistant 356 aluminum alloy with a copper (CU) content of less than 0.1%.
The main housing is made of seamless extruded aluminum, with an integrally sealed LED light module designed for optimal heat dissipation, and lighting performance.
Syrios Square LED is designed with a unique proprietary design allowing the sealed LED module to tilt within the housing.
The top cast aluminum cover includes ventilation slots allowing air circulation and cooling of assembly.
Syrios Square LED SQ610 series is offered standard with 20° optic. See options section for alternate selection.

ELECTRICAL
DRIVER
Standard driver is 0-10V dimming-ready (dims to 10%) with:
120-277 multi-volt compatibility (50-60Hz), operating temperature range of -30°C/-22°F to 60°C/140°F, output over voltage protection, output over current protection and output short circuit protection with auto-recovery.

LED
Standard 4000K /80CRI. Optional 2700K, 3000K, 3500K & 5000K.
Removable modular LED platform.
Optional Amber LED for turtle sensitive areas.
Wavelengths: 594.5nm to 597nm.

LIFE
60,000hrs L95B5 (based on IESNA TM-21 Test Method and LM-80 data).
100,000hrs L10B50 (calculated projection from LM-80 data).

FINISH
Five-stage preparation process includes preheating of cast aluminum parts for air extraction. Polyester powder coating is applied through an electrostatic process, and oven cured for long term finish.

MOUNTING
Maximum weight: 8.5lbs (3.9kg)
The mounting plate is designed to fit on a 4" (102) octagonal electrical box using 3 1/2" (89) C/C mounting holes.

CERTIFICATION
Tested to UL1598 and CSA 22.2 #250. ETL listed wet location.
Rated IP66. CE Certification on request.

* For low wattage models (L1W12/L1W18) luminaire height is 8.37" (213)
**TYPICAL PHOTOMETRY SUMMARY**

**Descriptive Information**
SQ610-LIW30r1
Total Lms: 3230 Lumens
Total Input Watts: 34.74 W
Source: LED
Efficiency: 92.03 Lumens/Watt
BUG: 03-U0-00
CCT/CRI: 4000K/80
Maximum Candelas: 13228 @ 0 deg

Please visit our web site www.luminis.com for complete I.E.S. formatted download data.

**LUMINAIRE SELECTION**

<table>
<thead>
<tr>
<th>MODEL#</th>
<th>LED LIGHT SELECTION</th>
<th>VOLTAGE</th>
<th>FINISH</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>SUFIX</td>
<td>INPUT WATTS</td>
<td>DELIVERED LUMENS</td>
</tr>
<tr>
<td></td>
<td>SUFIX</td>
<td>INPUT WATTS</td>
<td>DELIVERED LUMENS</td>
</tr>
<tr>
<td></td>
<td>L19W2K2A</td>
<td>17W</td>
<td>388</td>
</tr>
</tbody>
</table>

**OPTIONS**

**ELECTRICAL**
- F5: Fuse
- 347L: Step down transformer for 347V input

**COLOR FILTER**
- R6: Red color filter
- G6: Green color filter
- B6: Blue color filter

**LIGHT & OPTICS**
- Alternate CCT 4K LED (LCP: Lumen conversion factor)
  - K27: 2700K CCT 80 CRI (LCP: 0.91)
  - K3: 3000K CCT 80 CRI (LCP: 0.94)
  - K35: 3500K CCT 80 CRI (LCP: 0.983)
  - K5: 5000K CCT 80 CRI (LCP: 1.01)
- Alternate reflector optics (20° Standard reflector)
  - R45: 45° flood optic
  - R60: 60° wide flood optic
  - LSL: Linear spread lens (Asymmetric lens distribution is achieved when light module is tilted)

**NOTES**

1. For low wattage models luminaire height is 8.37” (213).
**SQ610 SERIES**

**SYRIOS SQUARE - LED**
Surface ceiling down light

**SQ610-L1W12R1-120V-XXX-K35--**MOD ANGLED COLLAR

1. Cast aluminum ventilated top cover with ceiling mounting plate.
2. Seamless extruded aluminum housing.
3. Fully sealed cast aluminum down light assembly.
5. Clear tempered glass lens.
6. Faceted specular aluminum reflector.

All stainless steel hardware.

Syrios Square LED light module is designed with a tilting mechanism allowing forward and back light adjustability. The ±30° directional module allows to aim the light beam in the desired direction, without disturbing the luminaire mounting. The module can be secured using the built in locking mechanism.

**MATERIALS**

Syrios Square LED is made of corrosion resistant 356 aluminum alloy with a copper (Cu) content of less than 0.1%.

The main housing is made of seamless extruded aluminum, with an integrally sealed LED light module designed for optimal heat dissipation, and lighting performance.

Syrios Square LED is standard with a unique proprietary design allowing the sealed LED module to tilt within the housing.

The top cast aluminum cover includes ventilation slots allowing air circulation and cooling of assembly.

Syrios Square LED SQ610 series is offered standard with a 20° optic. See options section for alternate selection.

**ELECTRICAL**

**DRIVER**
Standard driver is 0-10V dimming-ready (dines to 10%) with 120-277 multi-volt compatibility (50-60Hz), operating temperature range of -30°C/-22ºF to 60°C/140ºF. Output over voltage protection, output over current protection and output short circuit protection with auto-recovery.

**LED**
Optional Amber LED for turtle sensitive areas.
Wavelengths: 584.5nm to 597nm.

**LIFE**
60,000hrs $L_{50B_{50}}$ (based on IESNA TM-21 Test Method and LM-80 data).
130,000hrs $L_{10B_{50}}$ (calculated projection from LM-80 data).

**FINISH**
Five-stage preparation process includes preheating of cast aluminum parts for air extraction. Polyester powder coating is applied through an electrostatic process, and oven cured for long term finish.

**MOUNTING**

Maximum weight: 8.5lbs (3.9kg)
The mounting plate is designed to fit on a 4" (102) octagonal electrical box using 3 1/2" (89) C/C mounting holes.

**CERTIFICATION**
Tested to UL1598 and CSA 22.2 #250. ETL listed wet location.
Rated IP66. CE Certification on request.

* For low wattage models (L1W12/L1W18) luminaire height is 8.37" (213)
TYPICAL PHOTOMETRY SUMMARY

Descriptive Information
SQ610-LW30r1
Total Lms: 3230 Lumens
Total Input Watts: 34.74 W
Source: LED
Efficacy: 92.03 Lumens/Watt
BUG: B3-U0-G0
CCT/CRI: 4000K/80
Maximum Candela: 13228 @ 0 deg

Please visit our web site www.luminis.com for complete I.E.S. formatted download data.

LUMINAIRE SELECTION

<table>
<thead>
<tr>
<th>MODEL#</th>
<th>LED LIGHT SELECTION</th>
<th>DELIVERED LUMENS</th>
<th>CRI</th>
<th>CCT K</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>SUFFIX</td>
<td>INPUT WATS</td>
<td>L12W</td>
<td>139</td>
</tr>
<tr>
<td></td>
<td>L1W12r1</td>
<td>12W</td>
<td>139</td>
<td>80</td>
</tr>
<tr>
<td></td>
<td>L1W18r2</td>
<td>18W</td>
<td>1686</td>
<td>80</td>
</tr>
<tr>
<td></td>
<td>L1W30r1</td>
<td>35W</td>
<td>3230</td>
<td>80</td>
</tr>
</tbody>
</table>

AMBER LED LIGHT SELECTION

<table>
<thead>
<tr>
<th>SUFFIX</th>
<th>INPUT WATS</th>
<th>DELIVERED LUMENS</th>
</tr>
</thead>
<tbody>
<tr>
<td>L1W18K2A</td>
<td>17W</td>
<td>388</td>
</tr>
</tbody>
</table>

VOLTAGE

- 120V
- 277V
- Optional
- 347V

FINISH

STANDARD COLORS
- WHT Snow white
- BKT Jet black
- BZT Bronze
- MST Matte silver
- GRT Titanium gray
- DCT Gun metal
- CHT Champagne

(Refer to color chart)

OPTIONAL COLORS
- CS Custom color
- RAL RAL# color

OPTIONS

ELECTRICAL
- FS Fuse
- 347L Step down transformer for 347V input

LIGHT & OPTICS
- Alternate CCT % LED (LCF: Lumen conversion factor)
  - K27 2700K CCT 80 CRI (LCF: 0.91)
  - K3 3000K CCT 80 CRI (LCF: 0.94)
  - K35 3500K CCT 80 CRI (LCF: 0.983)
  - K5 5000K CCT 80 CRI (LCF: 1.01)
- Alternate reflector optics (20° Standard reflector)
  - R65 45° flood optic
  - R60 60° wide flood optic
  - LSL Linear spread lens (Asymmetric lens distribution is achieved when light module is tilted)

COLOR FILTER
- R6 Red color filter
- G6 Green color filter
- B6 Blue color filter

NOTES

1. For low wattage models luminaire height is 8.37" (213).

LUMINIS

Toll free: 866.586.4647 Fax: 514.683.8972 Email: info@luminis.com
260 Labrosse, Pointe-Claire (QC) Canada H9R 5L5

LUMINIS.COM

Luminares may be alterred for design improvement or discontinued without prior notice.
**SYRIOS SQUARE - LED**

**TYPE:**

<table>
<thead>
<tr>
<th>FIXTURE</th>
<th>WATTAGE</th>
<th>VOLTAGE</th>
<th>FINISH</th>
<th>OPTION</th>
<th>OPTION</th>
<th>OPTION</th>
<th>OPTION</th>
<th>OPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>SQ610-L1W12R1-120V-XXX-K35--<strong>MOD ANGLED COLLAR</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

1. Cast aluminum ventilated top cover with ceiling mounting plate.
2. Seamless extruded aluminum housing.
3. Fully sealed cast aluminum down light assembly.
5. Clear tempered glass lens.
6. Faceted specular aluminum reflector.

All stainless steel hardware.

**Syrios Square LED** light module is designed with a tilting mechanism allowing forward and back light adjustability. The ±30° directional module allows to aim the light beam in the desired direction, without disturbing the luminaire mounting. The module can be secured using the built-in locking mechanism.

**MATERIALS**

Syrios Square LED is made of corrosion resistant 356 aluminum alloy with a copper (Cu) content of less than 0.1%.
The main housing is made of seamless extruded aluminum, with an integrally sealed LED light module designed for optimal heat dissipation, and lighting performance.

Syrios Square LED is standard with a unique proprietary design allowing the sealed LED module to tilt within the housing.
The top cast aluminum cover includes ventilation slots allowing air circulation and cooling of assembly.

Syrios Square LED SQ90 series is offered standard with 20° optic. See options section for alternate selection.

**ELECTRICAL**

**DRIVER** Standard driver is 0-10V dimming-ready (dim to 1%) with:
- 120-277 volt compatibility (50-60Hz), operating temperature range of -30°C/22°F to 60°C/140°F, output over voltage protection, output over current protection and output short circuit protection with auto-recovery.

**LED** Standard 4000K /80CRI. Optional 2700K, 3000K, 3500K & 5000K.
Removable modular LED platform.
Optional Amber LED for turtle sensitive areas.
Wavelengths: 584.5mm to 597nm.

**LIFE**

60,000hrs $L_{80}$ (based on IESNA TM-21 Test Method and LM-80 data).
130,000hrs $L_{100}$ (calculated projection from LM-80 data).

**FINISH**

Five-stage preparation process includes preheating of cast aluminum parts for air extraction. Polyester powder coating is applied through an electrostatic process, and oven cured for long term finish.

**MOUNTING**

Maximum weight: 8.5lbs (3.9kg)
The mounting plate is designed to fit on a 4" (102) octagonal electrical box using 3 1/2" (90) C/C mounting holes.

**CERTIFICATION**

Tested to UL1598 and CSA 22.2 #250. ETL listed wet location.
Rated IP66. CE Certification on request.

---

*LUMINIS* | Toll free: 866.586.4647 Fax: 514.683.8872 Email: info@luminis.com
260 Labrosse, Pointe-Claire (QC) Canada H9R 5L5

Luminaires may be altered for design improvement or discontinued without prior notice.
**SQ610 SERIES**

**SYRIOUS SQUARE - LED**

### TYPICAL PHOTOMETRY SUMMARY

**Descriptive Information**

SQ610-LW30r1
Total Lms: 3230 Lumens
Total Input Watts: 34.74 W
Source: LED
Efficacy: 92.03 Lumens/Watt
BUG: B3-U0-60
CCT/CRI: 4000K/80
Maximum Candela: 13228 @ 0 deg

Please visit our web site www.luminis.com for complete I.E.S. formatted downloadable data.

### LUMINAIRE SELECTION

<table>
<thead>
<tr>
<th>MODEL#</th>
<th>LED LIGHT SELECTION</th>
<th>VOLTAGE</th>
<th>FINISH</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>SUFFIX</td>
<td>INPUT WATTS</td>
<td>DELIVERED LUMENS</td>
</tr>
<tr>
<td></td>
<td>LW12W</td>
<td>12W</td>
<td>1139</td>
</tr>
<tr>
<td></td>
<td>LW18r1</td>
<td>18W</td>
<td>1686</td>
</tr>
<tr>
<td></td>
<td>LW30r1</td>
<td>35W</td>
<td>3230</td>
</tr>
</tbody>
</table>

**AMBER LED LIGHT SELECTION**

<table>
<thead>
<tr>
<th>SUFFIX</th>
<th>INPUT WATTS</th>
<th>DELIVERED LUMENS</th>
</tr>
</thead>
<tbody>
<tr>
<td>LW18K2A</td>
<td>17W</td>
<td>388</td>
</tr>
</tbody>
</table>

### OPTIONS

**ELECTRICAL**

- **FS** Fuse
- **347L** Step down transformer for 347V input

**COLOR FILTER**

- **R6** Red color filter
- **G6** Green color filter
- **B6** Blue color filter

### LIGHT & OPTICS

Alternate CCT K LED (LCF: Lumen conversion factor)

- **K27** 2700K CCT 80 CRI (LCF: 0.91)
- **K3** 3000K CCT 80 CRI (LCF: 0.94)
- **K35** 3500K CCT 80 CRI (LCF: 0.983)
- **K5** 5000K CCT 80 CRI (LCF: 1.01)

Alternate reflector optics (20° Standard reflector)

- **R45** 45° flood optic
- **R60** 60° wide flood optic
- **LSL** Linear spread lens (Asymmetric lens distribution is achieved when light module is tilted)

### NOTES

1. For low wattage models luminaire height is 8.37" (213).

### LUMINIS

Luminaires may be altered for design improvement or discontinued without prior notice.
LED drive-over in-grade floodlights - asymmetrical light distribution

Enclosure: Outer housing: Constructed of high tensile strength, copper-free die-cast aluminum alloy. Die castings are marine grade, copper-free (≤ 0.3% copper content) A360.0 aluminum alloy.

Inner housing: One piece, copper-free, die-cast aluminum housing with welded end caps. Trim/faceplate is heavy gauge, machined stainless steel secured to inner housing by stainless steel threaded studs. Lightly diffused, tempered glass is 1/2" thick and machined flush to faceplate. Reflector of pure anodized aluminum. Weather tight operation achieved through the use of a one piece, high temperature silicon gasket.

Electrical: 42.2W LED luminaire, 48 total system watts. -30°C start temperature. Integral 120V through 277V electronic LED driver, 0-10V dimming. LED module(s) are available from factory for easy replacement. Standard LED color temperature is 4000K with an >80 CRI. Available in 3000K (>80 CRI); add suffix K3 to order. Inner housing pre-wired with nine (9) feet of 18/3 waterproof cable, cable clamp, and waterproof cable gland entry into housing. A separate waterproof wiring box for power supply must be provided (by contractor).

Note: LEDs supplied with luminaire. Due to the dynamic nature of LED technology, LED luminaire data on this sheet is subject to change at the discretion of BEGA-US. For the most current technical data, please refer to www.bega-us.com.

Finish: Machined #4 stainless steel. Custom colors are not available.

Temperature caution: The column "T" in this chart indicates the temperature in degrees Celsius which is reached on the center of the glass surface during operation. Surface temperatures are for exterior applications. For interior applications add 10°C to temperatures shown.

Note: A foundation and proper drainage must be supplied by the contractor. These luminaires are designed to bear pressure loads up to 11,000 lbs. from vehicles with pneumatic tires. The luminaires must not be used for traffic lanes where they are subject to horizontal pressure from vehicles braking, accelerating and changing direction.

CSA certified to U.S. and Canadian standards, suitable for wet locations. Protection class IP67.

Weight: 35.3 lbs.

Luminaire Lumens: 3214
Tested in accordance with LM-79-08

<table>
<thead>
<tr>
<th>Asymmetrical floodlights - clear safety glass</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lamp</td>
</tr>
<tr>
<td>77646</td>
</tr>
</tbody>
</table>

P = Beam angle

BEGA-US 1000 BEGA Way, Carpinteria, CA 93013 (805) 684-0533 FAX (805) 586-9474 www.bega-us.com
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BEGA LED system bollard - luminaire head
with shielded light - 360°

Enclosure: Housing constructed of die-cast aluminum. Die-castings are marine grade, copper free (≤ 0.3% copper content) A360.0 aluminum alloy. Glass diffuser, inside white. Fully gasketed for weather tight operation using molded silicone gasket.

Installation: BEGA LED system bollards are designed for easy attachment to system bollard tubes using an interlocking stainless steel mechanism and stainless steel set screw threaded into stainless steel insert. An accompanying bollard tube must be selected for proper installation, see below chart for compatible tube options.

Electrical: 29.4W LED luminaire, 33.8 total system watts, -30°C start temperature. Integral 120V through 277V electronic LED driver, 0-10V dimming. LED module(s) are available from factory for easy replacement. Standard LED color temperature is 3000K with a >80 CRI. Available in 4000K (or CR). Add suffix K to order.

Note: LEDs supplied with luminaire. Due to the dynamic nature of LED technology, LED luminaire data on this sheet is subject to change at the discretion of BEGA-US. For the most current technical data, please refer to www.bega-us.com.

Finish: All BEGA standard finishes are polyester powder coat with minimum 3 mil thickness. Available in four standard BEGA colors: Black (BLK); White (WHT); Bronze (BRZ); Silver (SLV). To specify, add appropriate suffix to catalog number. Custom colors supplied on special order.

CSA certified to U.S. and Canadian standards, suitable for wet locations.

Protection class IP65

---

Bollard heads - shielded - 360°

<table>
<thead>
<tr>
<th>Lamp</th>
<th>A</th>
<th>B</th>
</tr>
</thead>
<tbody>
<tr>
<td>99 865</td>
<td>29.4W LED</td>
<td>10 1/2</td>
</tr>
</tbody>
</table>

Bollard tubes for luminaire heights 19 1/4-22 1/2

<table>
<thead>
<tr>
<th>A</th>
<th>B</th>
<th>Anch. unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>99 619</td>
<td>10 1/2</td>
<td>14 1/2</td>
</tr>
</tbody>
</table>

Bollard tubes for luminaire heights 37 1/2-42 1/2

<table>
<thead>
<tr>
<th>Integrated components</th>
<th>Door</th>
<th>A</th>
<th>B</th>
<th>Anch. unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>99 624</td>
<td></td>
<td>10 1/2</td>
<td>32</td>
<td>79 818</td>
</tr>
<tr>
<td>99 627</td>
<td></td>
<td>10 1/2</td>
<td>34 1/2</td>
<td>79 818</td>
</tr>
<tr>
<td>99 659</td>
<td></td>
<td>10 1/2</td>
<td>34 1/2</td>
<td>79 818</td>
</tr>
<tr>
<td>99 636</td>
<td></td>
<td>10 1/2</td>
<td>34 1/2</td>
<td>79 818</td>
</tr>
</tbody>
</table>
BEGA LED system bollard - Impact bollard tube for vehicular drive-through protection

Post construction: One piece extruded aluminum, 3/16" wall thickness with a one piece base, internally welded into an assembly. Die castings are marine grade, copper free (≤ 0.3% copper content); A360.0 aluminum alloy. Designed to accept BEGA LED system bollard heads of 10.1/2" in diameter.

Anchor base: The anchorage unit is constructed of Grade-no. 1.4301 steel and is provided with openings for conduit entry. Bollard and anchor posts must be using in conjunction in order to uphold the impact load ratings.

Impact protection: Impact protection for a vehicular impact load of up to 1.8 tons traveling at 6 mph. Drive-through protection for a maximum vehicular load of 1.8 tons traveling at 30 mph. Statics calculation and design based on PA68: 2013 British Standard and Europe IWA 14-1: 2013.

Finish: All BEGA standard finishes are polyester powder coat with minimum 3 mill thickness. Available in four standard BEGA colors: Black (BLK); White (WHT); Bronze (BRZ); Silver (SLV). To specify, add appropriate suffix to catalog number. Custom colors supplied on special order.

CSA certified to U.S. and Canadian standards, suitable for wet locations.

Weight: 140.7 lbs.
line™ .75 INTERIOR APPLICATIONS
ASYMMETRIC

Application
io Lighting's line series .75 is approximately .75" x .75" in cross section. UL listed for dry locations, its low profile housing allows functional luminous intensities from "tight" architectural details such as niches, coves and casework. Similar to halogen light sources, LEDs are point sources that offer superior definition to three-dimensional objects and sparkle to reflective surfaces. line .75 asymmetric is also suitable for close-set applications.

series .75 is a low voltage linear accent luminaire that may be ordered in incremental lengths that range from 6" to 72" nominal. The asymmetric beam spread is optimized for a forward throw distribution. For details on the symmetric beam spread, see dedicated specification sheet. Projected loading rate is 50,000 hours at 70% of lamp lumen output. To ensure proper performance, architectural details should allow for ventilation and air flow around the fixture. Ambient temperature surrounding the fixture shall not exceed 40°F (50°C).

Light Output
line series .75 is available with three lumen outputs for white light only. All values below represent the initial raw lumens of the LED. IES format photometry of Lighting Facts labels represent actual light output measured in lumens and candlepower. Light Output losses include optical, thermal and power supply inefficiencies. IES LM-79 format files may be obtained from the factory or downloaded from www.iolighting.com. All products have a CRI greater than 80. Results are typical measurements.

> 3-step MacAdam Binning:

<table>
<thead>
<tr>
<th>Initial Lumens</th>
<th>Standard Output</th>
<th>High Output</th>
<th>Very High Output</th>
</tr>
</thead>
<tbody>
<tr>
<td>2700K White</td>
<td>72 lms/ft</td>
<td>253 lms/ft</td>
<td>362 lms/ft</td>
</tr>
<tr>
<td>3000K White</td>
<td>81 lms/ft</td>
<td>204 lms/ft</td>
<td>406 lms/ft</td>
</tr>
<tr>
<td>3500K White</td>
<td>83 lms/ft</td>
<td>269 lms/ft</td>
<td>413 lms/ft</td>
</tr>
<tr>
<td>4000K White</td>
<td>88 lms/ft</td>
<td>307 lms/ft</td>
<td>438 lms/ft</td>
</tr>
</tbody>
</table>

Power Consumption

Non-standard color temperatures available as a custom offering at additional cost and lead-time.
* Power Consumption does not include power supply losses.

Construction
Extruded aluminum housing coupled with a patented optical assembly may not be dis-assembled for re-lamping. Customized acrylic optics offer very high transmissivity, UV stability and excellent longevity. Three mounting bracket options include: surface, side surface and field adjustable. Bracket material is composed of stainless steel for ease of installation and removal as required.

Electrical
4'-0" 22 AWG, 300 volt rated power cords are supplied on one or both ends of the fixture as specified. Field configurable electrical feed guards against unforeseen field conditions. For detailed information regarding daisy chain limitations, remote distance limitations, power supply options, and dimming options consult the io website (www.iolighting.com) or an io representative.

DRIVER REMOTE DISTANCE

7'-0" (2.1m) w/22 AWG
18'-0" (5.5m) w/16 AWG
40'-0" (14.0m) w/14 AWG
71'-0" (21.6m) w/12 AWG

Finish
Anodized aluminum finish is standard. Custom finishes may be available upon request.
TYPE F26

30° 3KHO 90 DEGREE

SHELF LIGHTING - 3000K High Output

LIGHT OUTPUT CONVERSION TABLE

<table>
<thead>
<tr>
<th>Light Output</th>
<th>Standard Output</th>
<th>High Output</th>
<th>Very High Output</th>
</tr>
</thead>
<tbody>
<tr>
<td>2700K White</td>
<td>0.29†</td>
<td>0.94†</td>
<td>1.93†</td>
</tr>
<tr>
<td>3000K White</td>
<td>0.27†</td>
<td>1.00†</td>
<td>1.39†</td>
</tr>
<tr>
<td>3500K White</td>
<td>0.29†</td>
<td>1.06†</td>
<td>1.54†</td>
</tr>
<tr>
<td>4000K White</td>
<td>0.29†</td>
<td>1.08†</td>
<td>1.49†</td>
</tr>
</tbody>
</table>

Note: Visit www.foilighting.com or contact an lo representative for 3D format photospecs.

NEW FIELD CONFIGURABLE ELECTRICAL FEED

Electrical Feed Options

RIGHT END FEED  LEFT END FEED  RIGHT BACK FEED  LEFT BACK FEED  RIGHT FRONT FEED  LEFT FRONT FEED  SECONDARY END CAP

Note: Electrical contractor may adjust orientation of electrical feed in the field.

Mounting Options

100 Surface (to part #: SA.BK.SURF)
101 Side surface (to part #: SA.BK.WALL)
102 Field adjustable (to part #: SA.BK.ADJMT)

Order Code

1  03  91  **  1  **  **  **

10 SPECIFY DRIVER / DIMMING

Note: If not specified otherwise, lo will supply 100 watt dimmers.

Footnotes

1. White light version utilizes LEDS is equal to or better than 3-step MacAdam Breaking.
2. Non-standard color temperatures and GCR are available. Consult factory for availability.
OPTOTRONIC® Power Supply
OT96W/24V/UNV/DIM

ENIRONMENTAL SPECIFICATIONS
Ambient Operating Temp  -25 to 40 °C
Max. Case Temp. Tc         75°C
Storage Temp.             -25 to 50 °C
Max. Relative Humidity (%) 96% non-condensing
Surge Protection (KV)    ANSI C62.41 Cat A (2.5KV)
Vibration Rating          3G
Overvoltage Protection    Yes
Short Circuit Protection   Yes
Over-temperature Protection Yes
UL Environmental Rating   Damp
IP Rating                 IP64
EMI Compliance            FCC Part 15 Class A

WIRING DIAGRAM

MECHANICAL DIAGRAM
Wiring                        Leads Only
Wire Gauge                    18AWG
Input Wire                    6" (black & White)
Output                        6" (red, blue & yellow)
Dimming Input                 6" (purple & gray)

* When using the additional OTDIM unit, wire the 96W driver as in the NON-DIMMABLE diagram
TYPICAL EFFICIENCY

TYPICAL POWER FACTOR

TYPICAL THD

WARRANTY

OPTOTRONIC® TYPE F26
covered by our LED Module,
OPTOTRONIC Power Supply
or Control Warranty. For
additional details, refer to the
latest version of the warranty

United States
OSRAM SYLVANIA
100 Endicott Street
Danvers, MA 01923
Trade
Phone: 1-800-255-5042
Fax: 1-800-255-5043
National Accounts
Phone: 1-800-582-4671
Fax: 1-800-582-4674
OEM/Special Markets
Phone: 1-800-762-7191
Fax: 1-800-762-7192
Display Optic
Phone: 1-888-677-2627
Fax: 1-800-762-7192
SYLVANIA Lighting Service
Phone: 1-800-323-0572
Fax: 1-800-537-0784

Canada
OSRAM SYLVANIA LTD./LTÉE
2001 Drew Road
Mississauga, ON L5S 1S4
Trade
Phone: 1-800-263-2852
Fax: 1-800-667-6772
OEM/Special Markets
Phone: 1-800-263-2852
Fax: 1-800-667-6772
SYLVANIA Lighting Service
Phone: 1-800-863-4268
Fax: 1-888-239-1278

Mexico
OSRAM Mexico
Headquarters
Tultitlan/Edo de Mexico

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## Remote Distance

<table>
<thead>
<tr>
<th>Distance</th>
<th>Diameter</th>
</tr>
</thead>
<tbody>
<tr>
<td>7'-0&quot;</td>
<td>w/22 AWG (.644mm)</td>
</tr>
<tr>
<td>18'-0&quot;</td>
<td>w/18 AWG (1.02mm)</td>
</tr>
<tr>
<td>46'-0&quot;</td>
<td>w/14 AWG (1.63mm)</td>
</tr>
<tr>
<td>71'-0&quot;</td>
<td>w/12 AWG (2.05 mm)</td>
</tr>
</tbody>
</table>

## 100W

<table>
<thead>
<tr>
<th>Line</th>
<th>Max Run Length in Series</th>
<th>Max Run Lengths in Parallel</th>
</tr>
</thead>
<tbody>
<tr>
<td>line .75 - SO / ledge / luxrail</td>
<td>47' (14.33m)</td>
<td>87' (26.52m)</td>
</tr>
<tr>
<td>line .75 - HO / ledge / luxrail</td>
<td>12' (3.66m)</td>
<td>23' (7.018m)</td>
</tr>
<tr>
<td>line .75 - VHO (and color) / ledge</td>
<td>9' (2.74m)</td>
<td>17' (5.18m)</td>
</tr>
<tr>
<td>line 1.5 - SO</td>
<td>30' (9.14m)</td>
<td>60' (18.23m)</td>
</tr>
<tr>
<td>line 1.5 - HO</td>
<td>8' (2.44m)</td>
<td>16' (4.88m)</td>
</tr>
<tr>
<td>line 1.5 - VHO (and color)</td>
<td>6' (1.82m)</td>
<td>12' (3.66m)</td>
</tr>
<tr>
<td>line 2.0 - SO</td>
<td>26' (7.92m)</td>
<td>26' (7.92m)</td>
</tr>
<tr>
<td>line 2.0 - HO</td>
<td>17' (5.18m)</td>
<td>17' (5.18m)</td>
</tr>
<tr>
<td>line 2.0 - VHO</td>
<td>12' (3.66m)</td>
<td>12' (3.66m)</td>
</tr>
<tr>
<td>line 2.0 - V2HO / B / G / A</td>
<td>8' (2.44m)</td>
<td>8' (2.44m)</td>
</tr>
<tr>
<td>line 2.0 - R</td>
<td>6' (1.82m)</td>
<td>6' (1.82m)</td>
</tr>
</tbody>
</table>
12x6x4 Enclosure

Enclosure Construction
Enclosure and cover are fabricated from code 16 gauge steel. Enclosure body has mounting holes on the back and are available with or without knock outs on the sides, top and bottom ends. Cover is secured to the body with plated hex head combo screws, and has keyhole slots for easy removal without removing screws.

Enclosure Industry Standards
- UL 50 Listed, Type 1
- CSA C22.2 No. 40 certified, Type 1
- Conforms to NEMA standard for Type 1
- IEC 60529, IP30

*One driver enclosure can hold one 20W or 96W driver and one dimming module.

Left End With Cover

Right View Without Cover

Conduit Sizes

Note: Dimensions are in inches. Millimeters are for reference only. Data subject to change without notice.
Dimming Module

Key Features
- Utilizes pulse width modulation (PWM), to control LED performance
- Options available for analog or DMX protocols
- Dimming range: 0-100%
- Short circuit, overload and overheating protection

Specifications
Location: Dry
Input Voltage: 24v DC
Max Input Current: 5.3A
Control Voltage: 0-10v DC
Frequency: 135 HZ
Ambient Temp: -20°C to +50°C
Weight: 1.165 lbs
Power Consumption: Up to 3W

DMX Compatibility
A DMX to 0-10V converter will typically be required to interface with DMX control systems. ETC has tested the dimming module with the Unison Series Dimming Rack. The Unison Fluorescent Option Module will provide up to (24) 0-10 signals from a single unit. The dimming module has also been tested with a 0-10 converter from Northlight Systems.

Tested by OSRAM

<table>
<thead>
<tr>
<th>Manufacturer</th>
<th>Type</th>
<th>Model</th>
</tr>
</thead>
<tbody>
<tr>
<td>HUNT</td>
<td>0-10 wall mount</td>
<td>PS-010</td>
</tr>
<tr>
<td>Leviton</td>
<td>0-10 wall mount</td>
<td>IP710-DLW</td>
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<tr>
<td>Lightronic</td>
<td>0-10 wall mount</td>
<td>ZP600F-AM 120W</td>
</tr>
<tr>
<td>Lutron</td>
<td>0-10 wall mount</td>
<td>NTFTV/AM 150W</td>
</tr>
<tr>
<td>Control Panel</td>
<td>GrafiK Eye</td>
<td>GFXT-VI, GFXT-VTV</td>
</tr>
<tr>
<td>Converter to 0-10v dc</td>
<td>GFXT-VI, GFXT-VTV</td>
<td></td>
</tr>
<tr>
<td>NorthLight Systems</td>
<td>DMX to 0-10V Converter</td>
<td>8 channels, 24 channels</td>
</tr>
</tbody>
</table>

Source: OSRAM’s "Controllers for LED Modules" PowerPoint

Lutron Products

Entire Room Controls
- Radio Touch™ Included
- microWatt™ Included
- GrafiK Eye
  - 3000/2000: GRX-TVI
  - 4000*: TVM Module
  - GXI: Included

Building Controls
- LCP128™ TVM Module
- G5000*/6000/7000™ TVM Module

Whole Home Controls
- Radio RA* RA-6ND + GRX-TVI
- Homeworks*: GRX-TVI, TVM

Wallbox
- NovaT™ NTFTV
- Nova*: NFTV
- Vareo® 2: VF10 + GRX-TVI
- Diva® 2: DVF103P + GRX-TVI
- Skylark® 2: SF103P + GRX-TVI

Source: Lutron Application Note #136:
*Please contact specific manufacturers for details on specific dimming control
WT402
High Efficacy Exterior Rated Narrow Profile Fixture

Custom Lengths
Pre-assembled: ≤ 8 ft. (96 in)
Max Length is 8 ft. (96 in)

Made in the USA
Fabricated with high quality American aluminum and premium UV stable optics

IP66*
Wet Location, Sealed with gaskets
Not meant to be submerged, adequate drainage required

CAUTIONS FOR WET TRACK

Attempted Field Modifications Void Warranty.

IP66 rating includes high pressure spray, but fixture is not meant to ever become submerged under any circumstances. Adequate drainage provisions must be installed in every installation. Aion LED will not be held responsible for product failure from liquid ingress due to installation error. Bent sections may not be water tight, if a fixture is damaged in transit, please bring it to the attention of the distributor immediately for replacement.

Preliminary Specification, Subject to Change Without Notice

Component of a complete custom fixture. Aion LED A-Track Light Engine, Aion LED A-Track housing with driver box, & Aion LED fixture (power supply, driver, etc.) are not included. Approved drivers, control, power supplies, cable & other components only. Contact Aion LED for questions regarding compatibility. This fixture is only to be used in applications that comply with code and installation requirements. Products are intended for professional use only. Installer assumes all liability with respect to property & safety. Product in US. Listed. See separate "Aion LED Warranty Terms" & additional instructional materials for more information. Authorized installers only. System tested prior to shipping.

Tested as suitable for use within clothing closet spaces by ETL/Intertek

Must be installed in accordance with NEC 410.16 for use in clothing closet spaces

See separate installation instructions
Patent Pending - Made in the USA
Customization Options
WT-Series fixtures are semi custom and made to order. If an additional option or feature is needed, please contact Aion LED to discuss.

Profile
Narrow

Lens
Frosted

Finish
Anodized Silver
Anodized Dark Bronze
Custom Color -
Additional Lead Time

Length
Pre-assembled:
≤ 8 ft. (96 in)

Max Length is 8 ft.
Attempted Field Modifications Void Warranty.

Mounting
Standard Mounting Clips
HD Adhesive backing
Pivot Mounting Clip

Wiring
24” Leads
48” Leads
Custom length leads
M/F Disconnect Plugs
Color: White/ Black

Wet Track fixtures ship assembled and Include:
WT Series housing, lens, end caps, end cap screws, wire grommets, mounting clips, seals & gaskets

Tested as suitable for use within clothing closet spaces by ETL/ Intertek

Must be installed in accordance with NEC 410.16 for use in clothing closet spaces.

See separate installation instructions
Patent Pending · Made in the USA
WT402
IP66 Narrow Profile

Dimensions

Compatiblity

DIRECT VIEW
9524-FR
6524-LE
4000-LE

INDIRECT VIEW
9524-FR
6524-LE
4000-LE
3000-LE
7000-RGB
5000-RGB

PRELIMINARY SPECIFICATION, SUBJECT TO CHANGE WITHOUT NOTICE

Component of a complete system including Aion LED A-Track Light Engine. Aion LED A-Track housing with diffuser cover, & Aion LED driver (power supply) unit not included. Approved dimmers, controls, power supplies, cables, & other components only. Contact Aion LED for questions regarding compatibility. Electrical installation: strictly adheres to NEC & local building codes. Limited 5-year warranty against manufacturing defects only. does not cover labor; seeded by transformer warranty. Field modifications, installation by unqualified personnel, unapproved parts, shrink-wrapping, other damage, not following installation guidelines & protocol; general negligence. Installer assumes all liability & responsibility. This product is L.T. listed. See separate Aion LED Warranty Terms & additional instructional materials for more information. Authorized installers only. Systems tested prior to shipping.
ION LED OPTICS
UV stabilized and won’t yellow in direct sunlight

Frosted
Widest Angle
Mid-Transmittance
100% Diffusion

See direct view for compatible light engines
Ultra Bright
1,100+ Lumens per foot. Bright enough for primary applications

Field Configurable, Break to Fit
Rigid Board with 4" increment
A-Cord Poke-in Connector System compatible*

Made in the USA
Designed, Engineered & Assembled in the USA

Requires
Heat Sink, Aion LED Driver, Approved Controller, AT, WT or ST Series Housing. Sold Separately, Not Included

Tested as suitable for use within clothing closet spaces by ETL/Intertek
Must be installed in accordance with NEC 410.16 for use in clothing closet spaces

* See included instructions for a clean break that doesn't damage circuit board
## TYPE F27

**Light Engine | FR Type**

### 5+ CRI White

<table>
<thead>
<tr>
<th>BIN</th>
<th>Temps</th>
<th>2150K</th>
<th>2350K</th>
<th>2650K</th>
<th>2950K</th>
</tr>
</thead>
<tbody>
<tr>
<td>22</td>
<td>2150K</td>
<td>95+ CRI</td>
<td>35</td>
<td>3450K</td>
<td>95+ CRI</td>
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<tr>
<td>24</td>
<td>2350K</td>
<td>95+ CRI</td>
<td>40</td>
<td>3950K</td>
<td>95+ CRI</td>
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<tr>
<td>27</td>
<td>2650K</td>
<td>95+ CRI</td>
<td>55</td>
<td>5500K</td>
<td>85+ CRI</td>
</tr>
</tbody>
</table>

### Zero Dim Version

- 10.7W/ft.
- ≤1,100 Lumens/ft.

**Rated lifetime:**

- 50,000 hours min.

**Available in**

- 12” & 48”
- Connectible end to end

**Minimum Increment:** 4”

**Scored Rigid Board Option**

**Available**

**SKU:** 9524-FRS

---

**Requires**

- Heat Sink
- Aion LED Driver
- Approved Controller
- AT, WT or ST Series
- Housing, Sold Separately, Not Included

---

**Tented as suitable for use within clothing closet spaces by ETL/Intertek**

**Must be installed in accordance with NEC 410.16 for use in clothing closet spaces**

---

**Preliminary Specification, Subject to Change Without Notice**

Component of a complete system including: Aion LED A-Track Light Engine, Aion LED A-Track housing with driver lens, & Aion LED driver (power supply). Domain not included. Approved drivers, controls, power supplies, controls, & other components only. Contact Aion LED for questions regarding compatibility. Electrical installed. Strictly adheres to NEC & local building codes. Limited 5-year warranty against manufacturing defects only, does not cover labor, cost to, installation, field modifications, installation by unqualified personnel, unsecured controls, drivers, lighting, other devices, not following installation guidelines & practices, general negligence. Installer assumes all liability with regard to property & safety. This product is UL Listed. See separate Aion LED Warranty Terms & Additional Instructions material for more information. Authorized resellers only. Systems tested prior to shipping.
# 9524-FR

Ultra High Output Luminaire with Rigid Board

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
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<tr>
<td>Total Lumens</td>
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<td>1047.29</td>
<td>1094.83</td>
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<tr>
<td>Input Power (W)</td>
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<td>10.67</td>
<td>10.75</td>
<td>10.69</td>
<td>10.7</td>
<td></td>
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<tr>
<td>Efficacy</td>
<td>79</td>
<td>94</td>
<td>97</td>
<td>102</td>
<td>105</td>
<td></td>
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<tr>
<td>Color Rendering Index (CRI)</td>
<td>95</td>
<td>97</td>
<td>98</td>
<td>97</td>
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<td>R9</td>
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<td>89.68</td>
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<tr>
<td>Input Voltage (VDC)</td>
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<td>24</td>
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<tr>
<td>Input Current (AMP)</td>
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<td>0.45</td>
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<tr>
<td>Correlated Color Temperature</td>
<td>2150K</td>
<td>2350K</td>
<td>2650K</td>
<td>2950K</td>
<td>3450K</td>
<td>3950K</td>
<td>5500K</td>
</tr>
</tbody>
</table>

- **Rated lifetime:** 50,000 hours min.
- **Available in 12" & 48" connectible end to end**
- **Minimum Increment:** 4"
- **Requires Heat Sink**
- **Also available:** 9524-FRS Scored Rigid Board

---

Component of a complete system including: Aion LED A-Track Light Engine, Aion LED A-Track housing with diffuser lens, & Aion LED driver (power supply). Driver not included. Approved drivers, controls, power supplies, cables, & other components only. Contact Aion LED for recommendations regarding compatibility. Electrical installation: Strictly adhere to NEC & local building codes. Limited 5-year warranty against manufacturing defects only, does not cover labor. Stated by industry standards. This product is U.L. Listed. See separate “Aion LED Warranty Terms” for additional information. Authorized installers only. Systems tested prior to shipping.

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AIONLED.COM | (818) 265-AION
Modified: September 12, 2017
R-S Type

Break to Fit Instructions

1. Grasp the FR Type light engine on either side of the scored mark.
2. Gently apply firm pressure to bend the light engine away from you.
3. Bring the light engine back to a straight position.
4. Gently reapply firm pressure to bend the light engine away from you until it snaps in two pieces.

FR & FRS Type

Poke-In Connector Instructions

1. Line up Aion LED Solid Core A-Cord with FR Series Poke-In Connectors.
2. Insert Solid Core A-Cord into FR Series Poke-In Connectors.
3. Gently snap into place for a secure fit.
Z2 BLUE
0-10V

0-10V Wall Box Dimmer
Universal Input:
110VAC-277VAC 50-60 Hz
Lutron DIVA DV TV Compatible
Dimming range: Dims to 1%
Varies by dimmer model
IP66 enclosure for wet location applications

MODEL
D100-Z2-24

INPUT FREQUENCY
50-60 Hz

INRUSH CURRENT
220 VAC: 40A

MAX OUTPUT CURRENT
4.2 A

INPUT VOLTAGE
110 - 277 VAC
0.88 - 0.32

DIMMER TYPE
0-10V

MAX OUTPUT POWER
100W

LOAD REGULATION
±5%

SHORT CIRCUIT PROTECTION
YES

LOAD RANGE
60% - 100%

RATED LIFETIME
65,000 Hours

CASE
IP66 WET LOCATION

Max Lengths

<table>
<thead>
<tr>
<th>Series</th>
<th>Length</th>
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</thead>
<tbody>
<tr>
<td>3000</td>
<td>60 (2x30)</td>
</tr>
<tr>
<td>4000</td>
<td>30</td>
</tr>
<tr>
<td>8000</td>
<td>15</td>
</tr>
</tbody>
</table>

Approved Dimmers

- Lutron DVSTV
- Lutron NTSTV
- Forbes & Lomax RPS

All other 0-10V sinking and sourcing dimmers.
WIRING DIAGRAM
Z2 BLUE

Installation Instructions

1. Install per NEC and Local code by qualified personnel
2. Shut off power at the breaker
3. AC Input (Primary) Requires 100-277 VAC Power and ground
4. Connect AC within wiring compartment
5. This unit requires 4" space in all directions
6. Refer to the product labelling for detailed line and load wiring procedure.

- Purple/Gray/Yellow connect to 0-10V Dimmer
- Maximum Current Output: 6mA
- Red/Black connect to class 2 fixture
- Load 90% MAX
Semi-Custom
Offered in a variety of shapes and sizes and endless customizable options

End to End Connectivity
Using our patent pending coupling mounting clips, A-Track offers an elegant solution no matter how short or long your fixture needs to be

Made in the USA
Fabricated of high quality American aluminum and premium optic diffuser lenses

Custom Lengths
Pre-assembled: ≤ 8 ft. (96 in)  
Assembly Required: > 8 ft. (96 in)

Tested as suitable for use within clothing closet spaces by ETL/Intertek

Must be installed in accordance with NEC 410.16 for use in clothing closet spaces

See separate installation instructions
Patent Pending - Made in the USA
Customization Options

AT-Series A-Track fixtures are semi custom and made to order. If an additional option or feature is needed, please contact Aion LED to discuss.

Profile
Narrow

Lens
- Frosted
- Clear
- Prismatic
- Grazer

Finish
- Anodized Silver
- Anodized Dark Bronze
- Custom Color

Mounting

Mounting Clips
- Pivot Mounting Clips
- HD Adhesive backing

Feed
- End
- Rear
- Side

Length
- Custom pre-cut
- Field Cuttable

Wiring

24" Leads
48" Leads
Custom length leads
M/F Disconnect Plugs
Color: White/ Black

AT Series A-Track orders include: A - Track housing, lens, end caps, end cap screws, wire grommets & mounting clips

Tested as suitable for use within clothing closet spaces by ETL/ Intertek

Must be installed in accordance with NEC 410.16 for use in clothing closet spaces
### Dimensions

<table>
<thead>
<tr>
<th>Not to Scale</th>
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</thead>
<tbody>
<tr>
<td>0.65&quot; x 0.96&quot;</td>
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</table>

### Accessories

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<th>Scale 1:1</th>
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</thead>
<tbody>
<tr>
<td>0.72&quot; x 0.80&quot;</td>
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</tbody>
</table>

### Compatibility

<table>
<thead>
<tr>
<th>DIRECT VIEW</th>
<th>INDIRECT VIEW</th>
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</thead>
<tbody>
<tr>
<td>9524-FR</td>
<td>9524-FR</td>
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<tr>
<td>6524-LE</td>
<td>6524-LE</td>
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<tr>
<td>4000-LE</td>
<td>4000-LE</td>
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<td>3000-LE</td>
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<tr>
<td>7000-RGB</td>
<td>7000-RGB</td>
</tr>
<tr>
<td>5000-RGB</td>
<td>5000-RGB</td>
</tr>
</tbody>
</table>
AION LED OPTICS
UV stabilized and won’t yellow in direct sunlight

**Frosted**
- Widest Angle
- Mid-Transmittance
- 100% Diffusion

See direct view for compatible light engines

**Prismatic**
- Wider Angle
- High Transmittance
- Mid Range Diffusion

**Clear**
- Wide Angle
- Maximum Transmittance
- Zero Diffusion
- Clear lens is recommended for indirect applications.

**Grazer**
- Narrow Angle
- 15° Collimation Optic
- Compatible with AT402

PRELIMINARY SPECIFICATION, SUBJECT TO CHANGE WITHOUT NOTICE

Component of a complete system including: Aion LED A-Track Light Engine, Aion LED A-Track housing with diffuser lens, & Aion LED driver (power supply). Driver not included. Approved dimmers, controls, power supplies, cables, & other components only. Contact Aion LED for questions regarding compatibility. Electrics installed: Strictly adhere to NEC & local building code. Limited 5-year warranty against manufacturing defects only, does not cover labor, erected by inadequate ventilation, field modifications, installation by unauthorized personnel, unapproved controls, drives, cables, other dealers, or following installation guidelines & procedures. General negligence. Installer assumes all liability with regard to property & safety. This product is UL listed. See separate "Aion LED Warranty Information & Additional Instructional Materials" for more information. Authorized installers only. Systems tested prior to shipping.
FR Type
Ultra Bright Rigid Board Luminaire
with Scored Option

Ultra Bright
1,100+ Lumens per foot. Bright enough for primary applications

Field Configurable, Break to Fit
Rigid Board with 4" increment
A-Cord Poke-in Connector System compatible*

Made in the USA
Designed, Engineered & Assembled in the USA

Requires
Heat Sink, Aion LED Driver, Approved Controller, AT, WT or ST Series Housing. Sold Separately, Not Included

* See included instructions for a clean break that doesn’t damage circuit board

Tested as suitable for use within clothing closet spaces by ETL/ Intertek
Must be installed in accordance with NEC 410.16 for use in clothing closet spaces

Component of a complete system including: Aion LED A-Track Light Engine, Aion LED A-Track housing with different lens, & Aion LED driver/ power supply. Driver not included. Approved drivers, controls, power supplies, cable, & other components only. Contact Aion LED for questions regarding compatibility. Electronically tested. Directly affected by NEC & local building codes. Limited 5-year warranty against manufacturing defects only, does not cover labor; voided by inadequate ventilation, field modifications, installation by unqualified personnel, unapproved controls, drivers, wiring, other devices, not following installation guidelines & protocol, general negligence. Installer assumes all liability with regard to property & liability. This product in UL listed. See separate “Aion LED Warranty Terms” & additional instructional materials for more information. Authorized installers only. Systems tested prior to shipping.
5+ CRI White
Single Bin

22 2150K • 95+ CRI

24 2350K • 95+ CRI

27 2650K • 95+ CRI

30 2950K • 95+ CRI

35 3450K • 95+ CRI

10.7W /ft.*
≤ 1,100 Lumens /ft.*

Rated lifetime:
50,000 hours min.

Available in 12" & 48"
connectible end to end

Minimum Increment: 4"

Scored Rigid Board Option
Available
SKU: 9524-FRS

Requires
Heat Sink, Aion LED Driver, Approved Controller, AT, WT or ST Series Housing. Sold Separately, Not Included

Tested as suitable for use within clothing closet spaces by ETL/ Intertek

Must be installed in accordance with NEC 410.16 for use in clothing closet spaces

Component of a complete system including: Aion LED A-Track Light Engine, Aion LED A-Track housing with deferent lens & Aion LED power supply. Dimmer not included. Approved dimmer, controls, power supplies, cables, & other components only. Contact Aion LED for questions regarding compatibility. Electrician installed. Strictly adheres to NEC & local building codes. Limited 5-year warranty against manufacturing defects only, does not cover labor,宗教 by unauthorized installation, field modifications, installation by unqualified personnel, unrepaired controls, drivers, or other systems, not following installation guidelines & protocol, general negligence. Installer assumes all liability with regard to property & safety. This product is UL listed. See separate "Aion LED Warranty Form" & additional instructional materials for more information. Authorized Installers only. Systems tested prior to shipping.
9524-FR
Ultra High Output Luminaire with Rigid Board

10.7 W/ft.*
≤ 1,100 Lumens/ft.*

Rated lifetime:
50,000 hours min.

Available in 12" & 48"
connectible end to end

Minimum Increment: 4"

 Requires Heat Sink

Also available:
9524-FRS Scored Rigid Board

<table>
<thead>
<tr>
<th></th>
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<tbody>
<tr>
<td>Total Lumens</td>
<td>640.13</td>
<td>1004.98</td>
<td>1047.29</td>
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<tr>
<td>Input Power (W)</td>
<td>10.70</td>
<td>10.87</td>
<td>10.75</td>
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<td></td>
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<tr>
<td>Efficacy</td>
<td>79</td>
<td>94</td>
<td>97</td>
<td>102</td>
<td>105</td>
<td></td>
</tr>
<tr>
<td>Color Rendering Index (CRI)</td>
<td>95</td>
<td>97</td>
<td>98</td>
<td>97</td>
<td>96</td>
<td></td>
</tr>
<tr>
<td>R9</td>
<td>82.02</td>
<td>92.62</td>
<td>89.68</td>
<td>97.92</td>
<td>94.96</td>
<td></td>
</tr>
<tr>
<td>Input Voltage (VDC)</td>
<td>24</td>
<td>24</td>
<td>24</td>
<td>24</td>
<td>24</td>
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<tr>
<td>Input Current (AMP)</td>
<td>0.45</td>
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<tr>
<td>Correlated Color Temperature</td>
<td>2150K</td>
<td>2350K</td>
<td>2650K</td>
<td>2950K</td>
<td>3450K</td>
<td>3950K</td>
</tr>
</tbody>
</table>
R-S Type
Break to Fit Instructions

Grasp the FR Type light engine on either side of the scored mark
Gently apply firm pressure to bend the light engine away from you
Bring the light engine back to a straight position
Gently reapply firm pressure to bend the light engine away from you until it snaps in two pieces

FR & FRS Type
Poke-In Connector Instructions

Line up Aion LED Solid Core A-Cord with FR Series Poke-In Connectors
Insert Solid Core A-Cord into FR Series Poke-In Connectors
Gently snap into place for a secure fit.
## Z2 BLUE

**0-10V Wall Box Dimmer**

Universal Input:

110VAC - 277VAC 50-60 Hz

Lutron DIVA DV TV Compatible

Dimming range: Dims to 1%

Varies by dimmer model

IP66 enclosure for wet location applications

### Specifications

<table>
<thead>
<tr>
<th>Feature</th>
<th>Specification</th>
</tr>
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<tbody>
<tr>
<td>Model</td>
<td>D100-Z2-24</td>
</tr>
<tr>
<td>Input Frequency</td>
<td>50-60 Hz</td>
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<tr>
<td>Inrush Current</td>
<td>220 VAC: 40A</td>
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<tr>
<td>Max Output Current</td>
<td>4.2 A</td>
</tr>
<tr>
<td>Input Voltage</td>
<td>110 - 277 VAC</td>
</tr>
<tr>
<td>Dimmer Type</td>
<td>0-10V</td>
</tr>
<tr>
<td>Max Output Power</td>
<td>100W</td>
</tr>
<tr>
<td>Load Regulation</td>
<td>± 5%</td>
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<tr>
<td>Short Circuit Protection</td>
<td>YES</td>
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<tr>
<td>Load Range</td>
<td>60% - 100%</td>
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<tr>
<td>Rated Lifetime</td>
<td>65,000 Hours</td>
</tr>
<tr>
<td>Case</td>
<td>IP66 WET LOCATION</td>
</tr>
</tbody>
</table>

### Max Lengths

- **3000 Series**: 60 (2x30)
- **4000 Series**: 30
- **8000 Series**: 15

### Approved Dimmers

- Lutron DVSTV
- Lutron NTSTV
- Forbes & Lomax RPS

All other 0-10V sinking and sourcing dimmers.
Installation Instructions

1. Install per NEC and Local code by qualified personnel
2. Shut off power at the breaker
3. AC Input (Primary) Requires 100-277 VAC Power and ground
4. Connect AC within wiring compartment
5. This unit requires 4" space in all directions
6. Refer to the product labeling for detailed line and load wiring procedure

- Purple/Gray/Yellow connect to 0-10V Dimmer
  Maximum Current Output: 6mA
- Red/Black connect to class 2 fixture
- Load 90% MAX
CATALOG NUMBER LOGIC

Example:

Series
DE - Denali Series™ Floodlight

Source
LED - "X" Module with Cold Phosphor Technology

LED Type
x58 - 12W LED/2.7K
x59 - 12W LED/3K
x60 - 12W LED/4K

x51 - 20W LED/2.7K
x52 - 20W LED/3K
x53 - 20W LED/4K

x64 - 27W LED/2.7K
x65 - 27W LED/3K
x66 - 27W LED/4K

Typically, these numbers are followed by an "S" for Spot, an "F" for Flood, or a "W" for Wide Flood optics.

Finish
Aluminum Finish
Powder Coat Color  Satin  Wrinkle

Bronze  B2P  BZW
Black  BLP  BLW
White (Gloss)  WHP  WHW
Aluminum  SAP  —
Vanile  —  VER

Premium Finish

ABP  Antique Brass Powder
AMG  Aged American Granite
ACQ  Antique Copper
BCC  Black Chrome
BGE  Beige
BPP  Brown Patina Powder
CAP  Clear Anodized Powder

CMG  Cascade Mountain Granite
CRI  Cracked Ice
CIM  Cream
HUG  Hunter Green
MD5  Mojave Desert Sandstone
MHP  Natural Brass Powder
OCP  Old Copper

RMG  Rocky Mountain Granite
SDS  Sonoran Desert Sandstone
SMG  Sierra Mountain Granite
TFF  Textured Forest
WCP  Weathered Copper
WRP  Weathered Iron

Lenses

Lens Type
9  -  Clear (Standard)
10  -  Spread Lens*
12  -  Soft Focus Lens*
13  -  Rectilinear Lens*

Shielding

11  -  Honeycomb Baffle*

*Accommodates up to 2 Lens/Shielding media

Cap Style

A  -  45°
B  -  90°
C  -  Flash
D  -  45° less Weep Hole
E  -  90° less Weep Hole

(Interior Use Only)

INTEGRAL DRIVER HOUSINGS:

HP2 - HP2 Housing
PM2 - Universal Power Module 2
PM3D - Universal Power Module 2 Dual
PC - Power Canopy
PP - Power Pipe II
TMB - Pole Mount or Tenon Mount

REMOTE DRIVER HOUSINGS:

HP2RM - HP2 Remote Housing
PM2RM - Universal Power Module 2 Remote
PM3DRM - Universal Power Module 2 Dual Remote
RM - Remote Wall Mount
DRM - Dual Remote Wall Mount

TYPE F28

DENALI SERIES™ FLOODLIGHT

PROJECT:

TYPE:

CATALOG NUMBER:

SOURCE:

NOTES:

B-K LIGHTING
40420 Brickyard Drive  •  Madera, CA 93638  •  USA
550-438-5800  •  FAX 550-438-5900
www.bklighting.com  •  info@bklighting.com

RELEASED
11-7-17

DRAWING NUMBER
SUB001113

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DENALI SERIES™ FLOODLIGHT

12-27W LED

"A/D" CAP

3" Dia. (76mm)

2 11/16" (68mm)

10" (254mm)

"B/E" CAP

3" Dia. (76mm)

2 11/16" (68mm)

8" (203mm)

"C" CAP

3" Dia. (76mm)

2 11/16" (68mm)

7" (178mm)

360HD™

Patented 360HD™ Mounting System

All dimensions indicated on this submittal are nominal. Contact Technical Sales if you require more stringent specifications.

Accessories (Configure separately)

Mounting:
- Power Pipe™
- Canopy
- Power Canopy™
- Power Pipe™
- PMCD & PA2
- HF2
- TM8
- HF2RM
- PM2010M & PA2010M
- RM & DRM

Drivers (Configure separately)

Drivers:

SPECIFICATIONS

GreenSource initiative™

Metal and packaging components are made from recycled materials, manufactured using renewable solar energy, produced on-site, returnable to manufacturer at end of life to ensure cradle-to-cradle handling. Packaging contains no chlorofluorocarbons (CFCs). Use of this product may qualify for GreenSource efficacy and recycling rebate(s). Consult www.blighting.com/greensource for program requirements.

Materials

Furnished in Copper-Free Aluminum (Type 6061-T6).

Body

Fully machined from solid billet. Unibody design provides enclosed, water-proof wireway and integral heat sink for maximum component life. Integral knuckle for maximum mechanical strength. High temperature, silicone O'Ring provides water-tight seal.

Knuckle

Patented 360HD™ Mounting System features a mechanical taper-lock, which allows a full 180° vertical adjustment without the use of serrated teeth, which inherently limit aiming. High temperature, silicone O'Ring provides water-tight seal and compressive resistance to maintain fixture position. Design withstands 72 lb. static load prior to movement to ensure decades of optical alignment. 1/4" pipe thread for mounting. Rail-based control additionally provides 360° horizontal rotation in addition to vertical adjustment. "Air-And-Lock" Technology allows precise adjustment without the redundant tightening and loosening of knuckle screw.

Cap

Fully machined. Accommodates [2] lens or louver media. Choose from 65° cutoff (A' or D'), 11° deep bezel with 90° cutoff (B' or E') or flood lens (C') cap styles. A' and B' caps include weep-holes for water and debris drainage. D' and E' caps exclude weep-holes and are for interior use only.

Lens

Shock resistant, tempered, glass lens is factory adhered to fixture cap and provides hermetically sealed optical compartment.

BKSSL™

Integrated solid state system with Y technology is scalable for field upgrade. Modular design with electrical quick disconnects permit field accessibility.

LM-80 certified. Minimum 50,000 hour rated life at 70% of initial luminous (L70). BKSSL technology provides long life, significant energy reduction and exceptional thermal management.

Color Management

Corrected color phosphor technology delivers near-perfect natural white light. Long term phosphor maintenance over product life. Spectral color point conformity exceeds ANSI C78.377 standard. Provides uniform beam with no color variation over angle. Module exceeds 80 CRI (Ra-80, Rg-16).

Remote Driver

For use with remote LED driver. See remote driver submittal to determine remote distance and wiring requirements prior to detailing field installation of any remote wiring.

Optics

Interchangeable OPTIKIT™ modules permit field changes to optical distribution.

Wiring

TEFлон® coated, 18AWG, 600V, 259°C rated and certified to UL 1659 standard.

Hardware

Tamper-resistant, stainless steel hardware. 360HD™ hardware is additionally black oxide treated for additional corrosion resistance.

Finish

SteelGuard™, our exclusive Rohs compliant, 15 stage chromate-free process cleans and conversion coats aluminum components prior to application of Class A TGIC polyester powder coating.

Warranty

5 year limited warranty.

Certification and Listing

UL tested to IESNA LM-79. UL Listed. Certified to CANS/ANSI Standards. Rohs compliant. Suitable for indoor or outdoor use. Suitable for use in wet locations. Additionally suitable for installation within 4' of the ground. IP44 Rated. Made in USA.

B-K LIGHTING

40429 Brickyard Drive • Madera, CA 93636 • USA
0559-438-5800 • PAX 0559-438-5900
www.blighting.com • info@blighting.com

RELEASED
11-7-17

DRAWING NUMBER
SUB001113

360HD Patent is covered in whole or in part by U.S. Patent No. 6,561,948

*As an authorized trademark of Dupont Corporation.© Energy Star is a registered trademark of the United States Environmental Protection Agency.
## LAMP DATA

### LM79 DATA

<table>
<thead>
<tr>
<th>BK No.</th>
<th>CCT (Typ.)</th>
<th>CRI (Typ.)</th>
<th>Input Watts (Typ.)</th>
<th>Minimum Rated Life (hrs.)</th>
<th>70% of Initial Luminous (L70)</th>
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<tr>
<td>x58</td>
<td>2700K</td>
<td>80</td>
<td>12W</td>
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<td>20W</td>
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<td>20W</td>
<td>50,000</td>
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<tr>
<td></td>
<td>4000K</td>
<td>80</td>
<td>27W</td>
<td>50,000</td>
<td></td>
</tr>
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### L70 DATA

- **Angle**: 15°, 35°, 60°
- **CBCP**: 3877, 1498, 629
- **Delivered Lumens**: 724, 663, 625
- **Angle**: 15°, 35°, 60°
- **CBCP**: 4059, 1568, 659
- **Delivered Lumens**: 758, 694, 655
- **Angle**: 15°, 35°, 60°
- **CBCP**: 4561, 1762, 740
- **Delivered Lumens**: 851, 780, 736
- **Angle**: 15°, 35°, 60°
- **CBCP**: 7098, 2621, 1048
- **Delivered Lumens**: 1306, 1124, 1063
- **Angle**: 15°, 35°, 60°
- **CBCP**: 7488, 2765, 1106
- **Delivered Lumens**: 1378, 1186, 1121
- **Angle**: 15°, 35°, 60°
- **CBCP**: 7800, 2880, 1152
- **Delivered Lumens**: 1435, 1235, 1168
- **Angle**: 15°, 35°, 60°
- **CBCP**: 15679, 4656, 1517
- **Delivered Lumens**: 1769, 1588, 1386
- **Angle**: 15°, 35°, 60°
- **CBCP**: 16190, 4808, 1567
- **Delivered Lumens**: 1827, 1640, 1431
- **Angle**: 15°, 35°, 60°
- **CBCP**: 17042, 5061, 1649
- **Delivered Lumens**: 1923, 1726, 1506

### OPTICAL DATA

<table>
<thead>
<tr>
<th>Optic</th>
<th>Angle</th>
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<tbody>
<tr>
<td>Spot</td>
<td>15°</td>
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<tr>
<td>Flood</td>
<td>35°</td>
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<tr>
<td>Wide Flood</td>
<td>60°</td>
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</table>
PM2RM SURFACE MOUNT

Constant Current Driver

CATALOG NUMBER LOGIC

Example

<table>
<thead>
<tr>
<th>Series</th>
<th>PM2RM - Universal Power Module™ 2 Remote</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mounting</td>
<td>SM - Surface Mount (requires side conduit entry)</td>
</tr>
<tr>
<td>Driver Type</td>
<td>D12INC - 12W Dimming Driver, D20INC - 20W Dimming Driver, D27INC - 27W Dimming Driver</td>
</tr>
</tbody>
</table>

Finish

<table>
<thead>
<tr>
<th>Standard Finish</th>
<th>Premium Finish</th>
</tr>
</thead>
<tbody>
<tr>
<td>Powder Coat Color</td>
<td>Satin Wrinkle</td>
</tr>
<tr>
<td>Bronze</td>
<td>BZP BZW</td>
</tr>
<tr>
<td>Black</td>
<td>BLP BLW</td>
</tr>
<tr>
<td>White (Gloss)</td>
<td>WHP WHW</td>
</tr>
<tr>
<td>Aluminum</td>
<td>SAP VER</td>
</tr>
<tr>
<td>Verde</td>
<td>VER</td>
</tr>
<tr>
<td>ABP Antique Brass Powder</td>
<td>CMG Cascade Mountain Granite</td>
</tr>
<tr>
<td>AMG Avenlan Mountain Granite</td>
<td>CRI Cracked Ice</td>
</tr>
<tr>
<td>AQW Antique White</td>
<td>CRM Cream</td>
</tr>
<tr>
<td>BCM Black Chrome</td>
<td>HUG Hunter Green</td>
</tr>
<tr>
<td>BGE Beige</td>
<td>MDS Mojave Desert Sandstone</td>
</tr>
<tr>
<td>BPP Brown Patina Powder</td>
<td>NBP Natural Brass Powder</td>
</tr>
<tr>
<td>CAP Clear Anodized Powder</td>
<td>OCP Old Copper</td>
</tr>
<tr>
<td>RMG Rocky Mountain Granite</td>
<td>SDR Sonoran Desert Sandstone</td>
</tr>
<tr>
<td>SMG Sierra Mountain Granite</td>
<td>TKF Textured Forest</td>
</tr>
<tr>
<td>WIR Weathered Iron</td>
<td>WCP Weathered Copper</td>
</tr>
</tbody>
</table>

REMOTE WIRING

LED Driver
Remote driver installations require inter-connected wiring between the LED and driver (by others). Drivers have specific wiring requirements between these components. Driver manufacturers regularly recommend the following wiring details for such installations:

- Do not exceed 50 foot overall wiring distance using 12 gauge copper wire.

Failure to comply with specific wiring requirements will void product warranty.

Input Voltage

MT - 120-277 VAC Input

DRIVER ELECTRICAL DATA

<table>
<thead>
<tr>
<th>TYPE</th>
<th>AC INPUT RANGE</th>
<th>FREQUENCY HZ</th>
<th>DIMMING</th>
<th>POWER FACTOR AT FULL LOAD</th>
<th>THD</th>
<th>OPERATING AMBIENT TEMPERATURE</th>
<th>DIMMER TYPE</th>
<th>DIMMER RANGE</th>
<th>IN RUSH CURRENT</th>
</tr>
</thead>
<tbody>
<tr>
<td>D12INC</td>
<td>105-305</td>
<td>50/60</td>
<td>YES</td>
<td>&gt;0.94</td>
<td>≤5%</td>
<td>-30°C to 50°C (-22°F to 122°F)</td>
<td>Incandescent</td>
<td>10-100%</td>
<td>&lt;250mA</td>
</tr>
<tr>
<td>D20INC</td>
<td>105-305</td>
<td>50/60</td>
<td>YES</td>
<td>&gt;0.94</td>
<td>≤5%</td>
<td>-30°C to 50°C (-22°F to 122°F)</td>
<td>Incandescent</td>
<td>10-100%</td>
<td>&lt;250mA</td>
</tr>
<tr>
<td>D27INC</td>
<td>100-277</td>
<td>50/60</td>
<td>YES</td>
<td>&gt;0.90</td>
<td>≤20%</td>
<td>-30°C to 60°C (-22°F to 140°F)</td>
<td>Incandescent</td>
<td>10-100%</td>
<td>&lt;10A</td>
</tr>
</tbody>
</table>

B-K LIGHTING

40429 Brickyard Drive • Madera, CA 93636 • USA
559.438.6000 • FAX 559.438.5900
www.bklighting.com • info@bklighting.com

RELEASED 11-20-2017 DRAWING NUMBER SUB-2600-00

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SPECIFICATIONS

GreenSource Initiative™
Metal and packaging components are made from recycled materials. Manufactured using renewable solar energy, produced on site. Returnable to manufacturer at end of life to ensure cradle-to-cradle handling. Packaging contains no chlorofluorocarbons (CFCs). Use of this product may qualify for GreenSource efficacy and recycling rebate(s). Consult www.bklighting.com/greensource for program requirements.

Surface Mount
For use with side entry, surface conduits. Stainless steel mounting brackets provide for direct anchor to architectural surfaces in any orientation.

Housing
Copper free, aluminum extrusion with die cast end caps. Surface mounted with flow through back channel to prevent water and debris collection. Machined aluminum cover with countersunk holes for flush hardware installation. Tamper-resistant, captive, black oxide stainless steel mounting screws. Front access for ease of installation and inspection. [2] 1/2" NPT female conduit entries per end cap for through wiring.

Installation Tether
Stainless steel cable with integral loop allows cover to temporarily suspend from housing during installation to simplify wire connection and component attachment.

Patented Knockouts
[4] 1/2" NPT, machined aluminum knockouts. High temperature, silicone 'O' ring for water-tight seal. Patented design allows knockout to be reinserted without compromising seal integrity.

Driver (12-27V)
For use with 700mA (D12, D20, D27), Class A, constant current drivers. 120-277VAC (nominal) primary input voltage. 50/60Hz. >0.94 Power Factor, <10.0A Inrush current, 0.25A input current, ±5% THD (nominal at 120VAC full load). Output overscanage, over-current, and short circuit protection with auto recovery. EMC: FCC/IC/CSA Part 15 Class B compliant. Driver wattage must match Fixture wattage.

Dimming driver for use with standard incandescent dimmers, 10-100% range.

Finish
StarGuard®, our exclusive RoHS compliant, 15 stage chromate-free process cleans and conversion coats aluminum components prior to application of Class 'A' Tgic polyteter powder coating.

Warranty
5 year limited warranty.

Listings
Made in USA.
CATALOG NUMBER LOGIC

Example

Series

PM2DRM - Universal Power Module™ 2 Dual Remote

Mounting

SM - Surface Mount (requires side conduit entry)

Driver Type (Driver Wattage must match Fixture Wattage)

For use with Incandescent Dimmer, 120V only for Dimming:

D12INC - (2) 12W Dimming Driver

D20INC - (2) 20W Dimming Driver

D27INC - (2) 27W Dimming Driver

Finish

Standard Finish

<table>
<thead>
<tr>
<th>Powder Coat Color</th>
<th>Satin</th>
<th>Wrinkle</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bronze</td>
<td>BZP</td>
<td>BZW</td>
</tr>
<tr>
<td>Black</td>
<td>BLP</td>
<td>BLW</td>
</tr>
<tr>
<td>White (Gloss)</td>
<td>WHP</td>
<td>WHW</td>
</tr>
<tr>
<td>Aluminum</td>
<td>SAP</td>
<td>—</td>
</tr>
<tr>
<td>Verde</td>
<td>—</td>
<td>VER</td>
</tr>
</tbody>
</table>

Premium Finish

<table>
<thead>
<tr>
<th>Powder Coat Color</th>
<th>Satin</th>
<th>Wrinkle</th>
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</thead>
<tbody>
<tr>
<td>ABP Antique Brass Powder</td>
<td>CMG Cascade Mountain Granite</td>
<td>RMG Rocky Mountain Granite</td>
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<tr>
<td>AMG Alumina Mountain Granite</td>
<td>CRI Cracked Ice</td>
<td>SDS Sonoran Desert Sandstone</td>
</tr>
<tr>
<td>AQW Antique White</td>
<td>CRM Cream</td>
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<tr>
<td>BCM Bleck Chrome</td>
<td>HUG Hunter Green</td>
<td>TIF Textured Forest</td>
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<tr>
<td>BGE Beige</td>
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<tr>
<td>BPP Brown Patina Powder</td>
<td>NBP Natural Brass Powder</td>
<td>WIR Weathered Iron</td>
</tr>
<tr>
<td>CAP Clear Anodized Powder</td>
<td>DCP Old Copper</td>
<td>ALSO AVAILABLE IN ALL FINISHES See submit Ref. SUB-1439-00</td>
</tr>
</tbody>
</table>

Input Voltage

MT - 120-277 VAC Input

REMOTE WIRING

LED Driver

Remote driver installations require inter-connected wiring between the LED and driver (by others). Drivers have specific wiring requirements between these components. Driver manufacturers regularly recommend the following wiring details for such installations:

• Do not exceed 50 foot overall wiring distance using 12 gauge copper wire.

Failure to comply with specific wiring requirements will void product warranty.

DRIVER ELECTRICAL DATA

<table>
<thead>
<tr>
<th>TYPE</th>
<th>AC INPUT RANGE</th>
<th>FREQUENCY</th>
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<th>DIMMER RANGE</th>
<th>IN RUSH CURRENT</th>
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<td>50/60</td>
<td>YES</td>
<td>&gt;0.94</td>
<td>≤5%</td>
<td>-30°C to 50°C (-22°F to 122°F)</td>
<td>Incandescent</td>
<td>10-100%</td>
<td>&lt;250mA</td>
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<td>≤5%</td>
<td>-30°C to 50°C (-22°F to 122°F)</td>
<td>Incandescent</td>
<td>10-100%</td>
<td>&lt;250mA</td>
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</table>

B-K LIGHTING

40429 Brickyard Drive • Madera, CA 93638 • USA
660-438-5600 • FAX 660-438-5600
www.bklighting.com • info@bklighting.com

RELEASED DRAWING NUMBER
11-20-2017 SUB-2606-00

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TOP VIEW

SIDE VIEW

END VIEW

SPECIFICATIONS

GreenSource Initiative™
Metal and packaging components are made from recycled materials. Manufactured using renewable solar energy, produced on site. Returnable to manufacturer at end of life to ensure cradle-to-cradle handling. Packaging contains no chlorofluorocarbons (CFCs). Use of this product may qualify for GreenSource efficacy and recycling rebate(s). Consult www.bklighting.com/greensource for program requirements.

Surface Mount
For use with side entry, surface conduits. Stainless steel mounting brackets provide for direct anchor to architectural surfaces in any orientation.

Housing
Copper free, aluminum extrusion with die cast end caps. Surface mounted with flow through back channel to prevent water and debris collection. Machined aluminum cover with countersunk holes for flush hardware installation. Tamper-resistant, captive, black oxide stainless steel mounting screws. Front access for ease of installation and inspection. [2] 1/2" NPT female conduit entries per end cap for through wiring.

Installation Tether
Stainless steel cable with integral loop allows cover to temporarily suspend from housing during installation to simplify wire connection and component attachment.

Patented Knockouts
[4] 1/2" NPT, machined aluminum knockouts. High temperature, silicone 'O' ring for water-tight seal. Patented design allows knockout to be reinserted without compromising seal integrity.

Driver (12-27V)
For use with [2] 700mA (D12, D20, D27), Class A, constant current drivers. 120-277VAC (nominal) primary input voltage. 50/60Hz, >0.94 Power Factor, <0.05A in-rush current, 0.25A Input current, ≤3% TD (nominal at 120VAC full load). Output over-voltage, over-current, and short circuit protection with auto recovery. EMC: FCC Class B compliant. Driver wattage must match fixture wattage.

Finish
StarGuard®, our exclusive RoHS compliant, 15 stage chromate-free process cleans and conversion coats aluminum components prior to application of Class A TGO polyester powder coating.

Warranty
5 year limited warranty.

Listings
NEMA 4X / IP-66 Rated Enclosure, UL Listed, Certified to CAN/CSA/ANSI Standards. RoHS compliant. Made in USA.

RoHS

B-K LIGHTING
40429 Brickyard Drive • Madera, CA 93636 • USA
550.438.5800 • FAX 550.438.5800
www.bklighting.com • info@bklighting.com

RELEASED
11-20-2017
SUB-2606-00
Tesis In-ground luminaire
Directional luminaire

35177.023
LED 8W 11000lm 4000K neutral white
0-10V dimmable
Version 8
Flush mounting detail
Spheroid lens, narrow spot

Product description
Housing: polymer, black.
Control gear 120V/277V, 60Hz.
Dimmable: Longitudinally watertight
cable 2xAWG14, L 31 1/2" / 800mm.
LED module: high-power LEDs on
metal-core PCB. Collimating lens made
of optical polymer, 0-30° tiltable, rotatable
through ±45°.
Optical cut-off 40° from horizontal.
Screw-fastened cover frame with flush
safety glass; stainless-steel Safety glass:
9/16" / 15mm, clear.
Installation with separate connection
sleeve.
Mounting in recessed housing: can be
driven over in vehicles with pneumatic
tyres. Load 11240lbs wt. / 50kN.
Dimming with external dimmers possible
(0-10V).
Suitable for wet location (IP68); dust-
proof.
Weight 15.22lbs / 7.13kg
Available from 2nd quarter 2017

Technical data
Luminous flux of the luminaire 8000lm
Connected load 11W
Luminaire efficacy 73lm/W
Color deviation 2SDCM
Color rendition index CRI>80
Lumen maintenance L90/B10 ≥50000h
LED failure rate 0.1%/50000h
LMF E
Temperature on the cover glass 86°F / 30°C

For your regional contact in the
ERCO Sales network click here
www.erco.com/contact

©ERCO GmbH 2017
### Planning data

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**Technical data based on international standards and directives**

- IEC 60598: Luminaires - Parts 1 + 2: General requirements, particular requirements and tests
- IEC 62031: LED modules for general lighting - Safety specifications
- IEC 62471: Photobiological safety of lamps and lamp systems
- UL 1598: Luminaires
- UL 1574: Standard for Track Lighting Systems
- UL 8750: Standard for Light Emitting Diode (LED) Equipment for Use in Lighting Products
- IES LM-79-08: Electrical and Photometric Measurements of Solid-State Lighting Products
- IES LM-80-08: Measuring Lumen Maintenance of LED Light Sources
- CIE 13: Method of measuring and specifying color rendering properties of light sources

*All technical data are subject to industry standard tolerances.*

See also [www.erco.com/erco-led](http://www.erco.com/erco-led)
Tesis In-ground luminaire

Accessories

33858.023
Connection sleeve
for cable diameters of 0.25" - 0.80".
Polymer conduit, two-part PUR cast
resin.
Length 5 15/16" / 150mm.
Width 1 1/4" / 32mm.
Height 2 3/8" / 59mm.
Weight 0.99lbs / 0.45kg

33987.000
Recessed housing
Polymer, black.
4 cable entries.
Load 11240lbwtr / 50kN.

![Diagram with dimensions]
LED ceiling mounted downlights - wide beam distribution

Housing: One piece die-cast aluminum housing for attachment to a 3 1/2" or 4" octagonal wiring box using a BEGA mounting plate (provided). Die castings are marine grade, copper free (≤ 0.3% copper content) A360.0 aluminum alloy.

Enclosure: Tempered 1/8" thick etched glass. One piece die-cast aluminum enclosure secured by two (2) stainless steel, captive set screws threaded into stainless steel inserts. One piece pure anodized aluminum reflector. Fully gasketed for weather tight operation using a molded silicone gasket.

Optical assembly: The patent pending 'vortex reflector' rotates a parabolic reflector around the vertical axis to form a complex vortex shape. This vortex balances maximum efficacy with optimal glare control while eliminating shadows and artifacts in a uniquely sharp square light distribution.

Electrical: 18.3W LED luminaire, 21.5 total system watts, -30°C start temperature. Integral 120V through 277V electronic LED driver, 0-10V dimming. LED module(s) are available from factory for easy replacement. Standard LED color temperature is 3000K with an 85 CRI. Available in 4000K (85 CRI); add suffix K4 to order.

Note: LEDs supplied with luminaire. Due to the dynamic nature of LED technology, LED luminaire data on this sheet is subject to change at the discretion of BEGA-US. For the most current technical data, please refer to www.bega-us.com.

Finish: All BEGA standard finishes are polyester powder coat with minimum 3 mil thickness. Available in four standard BEGA colors: Black (BLK); White (WHI); Bronze (BRZ); Silver (SLV). To specify, add appropriate suffix to catalog number. Custom colors supplied on special order.

CSA certified to U.S. and Canadian standards, suitable for wet locations. Protection class IP65.

Weight: 3.5 lbs

Luminaire Lumens: 1672
APPENDIX B

Plumbing Fixture Cut Sheets
Z5615 HET Series
- Zurn High Efficiency Toilets and paired performance flush valve systems are designed to exceed industry standards, while using as little as 1.1 gallons of water per flush.
- Universal high efficiency toilet can be specified with 1.1 gpf [4.2 Lpf], 1.28 gpf [4.8 Lpf], 1.6 gpf [6.0 Lpf] or dual flush valves.
- Vitreous china
- Elongated front rim
- 2-1/8" fully glazed trapway
- High efficiency siphon jet flush action
- Shipping Weight: 40 lbs.
- System MaP score of 1,000 grams at 1.28 gpf with Zurn Flush Valve
- Static weight load of 1,000 lbs*

Engineering Specification

☐ Z5615-BWL
**EcoVantage High Efficiency Toilet System**
- Vitreous China, 1.1 gpf [4.2 Lpf] or greater high efficiency wall hung toilet with siphon jet flushing action and elongated front rim with 1-1/2" top spud. Universal high efficiency toilet is designed to exceed industry standards with flush volumes of 1.1 gallons per flush or higher.
Replaces Zurn Z5610

☐ Z5616-BWL
**EcoVantage High Efficiency Toilet System**
- Vitreous China, 1.1 gpf [4.2 Lpf] or greater high efficiency wall hung toilet with siphon jet flushing action and elongated front rim with integral bedpan lugs, antimicrobial ceramic glaze, and 1-1/2" top spud. Universal high efficiency toilet is designed to exceed industry standards with flush volumes of 1.1 gallons per flush or higher.
Replaces Zurn Z5611

*Not intended for bariatric use

See Zurn One Systems for suggested packages.
Rough-in dimensions for Z5615 Series
• Z5615-BWL with top spud, shown with Z6000AV manual valve

These dimensions and specifications are subject to change without notice.

Fixture dimensions meet ANSI/ASME standard A112.19.2 and CAN/CSA B45 requirements.

Note: For ADA compliance, rim height should be installed 17" from finished floor.

Meets the American Disabilities Guidelines and ANSI A117.1 requirements when installed according to these requirements.
Zurn Commercial Heavy Duty Toilet Seat

Engineering Specification:

- **Z5955SS-EL** Elongated, standard white, open front toilet seat, less cover, with stainless steel check hinge.

- **Z5955SS-AM** Elongated, standard white, open front toilet seat, less cover, with stainless steel check hinge and antimicrobial protection.

- **Z5956SS-EL** Elongated, premium white, open front toilet seat, less cover, with stainless steel check hinge.

- **Z5956SS-AM** Elongated, premium white, open front toilet seat, less cover, with stainless steel check hinge and antimicrobial protection.

- **Z5957SS-EL** Elongated, white, open front toilet seat, with cover and stainless steel check hinge.

- **Z5957SS-RD** Round, white, open front toilet seat, with cover and stainless steel check hinge.

- **Z5958SS-EL** Elongated, white, closed front toilet seat, with cover and stainless steel check hinge.

- **Z5958SS-RD** Round, white, closed front toilet seat, with cover and stainless steel check hinge.

- **Z5959SS-JUV** White, open front child's toilet seat, less cover, with stainless steel check hinge.

These dimensions and specifications are subject to change without notice.

Fixture dimensions meet ANSI/ASME standard A112.19.2 and CAN/CSA B48 requirements.

Distributed by:
WaterWise Technologies International
P.O. Box 18959  -  Asheville, NC 28804

www.waterwisetech.net  828.252.8144

REV. A  DWG. NO. 80642  DATE: 8/11/06  C.N. NO. 95429  PRODUCT NO. Z5950
ZER6000AV-ONE-CPM
1.1 gpf Exposed Sensor Operated Battery Powered Flush Valve for High Efficiency Water Closets

This product should be used with a WaterSense labeled counterpart with a compatible flush volume to ensure that the entire system meets the requirements for water efficiency and performance.

Suffix Options (Check/Specify Appropriate Options)
- OB Less Over-ride Button
- YJ Split Ring Pipe Support
- YK Solid Ring Pipe Support
- YO Bumper On Angle Stop
- Other

ENGINEERING SPECIFICATION: ZURN ZER6000AV-ONE-CPM AquaVantage® AV Exposed Closet Flush Valve
Exposed, quiet diaphragm-type, chrome plated flushometer valve with a polished exterior. Complete with Zurn’s 1.1 gpf AquaVantage® TPE, chloramine resistant, dual seal diaphragm with a clog resistant by-pass. The valve incorporates a 6VDC motor actuator, a battery powered automatic sensor, high impact resistant polycarbonate housing and chrome plated plastic cover and 10 degree angled sensor, high back pressure vacuum breaker, one piece hex coupling nut, adjustable tailpiece, spud coupling and flange for top spud connection. Control stop has internal siphon-guard protection, vandal resistant stop cap, sweat solder kit, and a cast wall flange with set screw. Internal seals are made of chloramine resistant materials.

This space is for Architectural/Engineering Approval

The information contained in this document is subject to change without notice. Please contact Zurn for most up to date information.

ZURN INDUSTRIES, LLC • COMMERCIAL BRASS OPERATION • 5900 ELWIN BUCHANAN DRIVE • SANFORD NC 27330
Phone: 1-800-997-3876 • Fax: 919-775-3541 • World Wide Web: www.zurn.com
In Canada: ZURN INDUSTRIES LIMITED • 7900 Gowerway Drive Unit 10 • Brampton, Ontario L6T5W6 • Phone: 905-405-8272 Fax: 905-405-1292

AquaVantage® and AV are trademarks of Zurn Industries, LLC. AquaSense® is a registered trademark of Zurn Industries, LLC.
ZTR Series Sensor Flush Valve

Water Closets

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<tr>
<th>ZTR Series</th>
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<td>ZTR6200-WS1 - 1.6 GPF</td>
<td>ZTR6200-WS1-LL - 1.6 GPF</td>
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<tr>
<td>ZTR6200EV-LL - 1.28 GPF</td>
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<td>ZTR6200-ONE - 1.1 GPF*</td>
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Urinals

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<td>ZTR6203-ULF - 0.125 GPF</td>
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ZTR-LL Long Life Sensor Flush Valve Series for water closets and urinals is a sustainable, advanced-technology expansion of the ZTR product line, delivering an extended 10-year battery life for advanced performance. The ZTR Long Life Series flush valve is equipped with a low-powered sensor platform featuring software and electronics capable of accepting long life battery technology. The ZTR-LL Series results in a reduced number of battery changes over the life of the valve by two-thirds, compared with traditional battery powered valves. When matched with Zurn fixtures, the ZTR-LL paired performance results in a repeatable flushing system with unsurpassed water savings, lower life-cycle cost, and lower costs of ownership.

ZTR Options

Engineering Specifications

- Exposed chrome-plated flushometer valve with a polished exterior
- Clog-Resistant, Filtered Bypass Piston
- True manual override button
- Proprietary dezincification resistant brass alloy
- Power source
  - Sensor powered by 4 "AA" batteries
  - 10-year battery, long life - LL
- Control stop
  - Internal siphon-guard protection
  - Vandal-resistant stop cap
  - Sweat solder kit
  - Cast wall flange with set screw
- High pressure vacuum breaker
- One piece hex coupling nut
- Internal seats and gaskets
  - Chloramine resistant
- Adjustable tailpiece
- Spud coupling and flange for top spud connection 3-year Warranty

Accessories

- LL 10-year long life battery
- HW Hardwired
- YY Split Ring Pipe Support
- YK Solid Ring Pipe Support
- YO Bumper on Angle Stop
- Other

NOTE: Performance guaranteed with Zurn EcoVentage™ fixtures. Please consult Zurn Technical Services at 1-800-997-3576 to discuss the paired performance of this valve with other manufacturers' fixtures.

Recommended Vitreous

- Wall Bowl Z5615-BWL
- Floor Bowl Z655-BWL
- ADA Floor Bowl Z655-BWL
- Omni-Flo™ Urinal Z5755-U

ZURN INDUSTRIES, LLC COMMERCIAL BRASS OPERATION
5900 ELWIN BUCHANAN DRIVE, SANFORD NC 27330,
PHONE: 855-ONE ZURN (855-663-9876), FAX: 919-775-3541
www.zurn.com

In Canada: ZURN INDUSTRIES LIMITED
3544 NASHUA DRIVE, MISSISSAUGA, ONTARIO L4V 1L2,
PHONE: 905/405-8272, FAX: 905/405-1292

Form No. ZMKTG240-75, Rev. 03/15
Features
- Single center hole.
- With overflow.
- 20" (508 mm) x 18" (457 mm)

Material
- Vitreous china.

Installation
- Wall-mount
- Drilled for concealed arm carrier.

Recommended Accessories
K-8998 P-Trap

Components
Additional included component/s: Hanger (2 Required).

ADA | CSA B651 | OBC

Codes/Standards
ASME A112.19.2/CSA B45.1
All applicable US Federal and State material regulations
ADA
ICC/ANSI A117.1
CSA B651
OBC

KOHLER® One-Year Limited Warranty
See website for detailed warranty information.

Available Color/Finishes
Color tiles intended for reference only.

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KOHLER®

LV-1H
Soho®
Wall-Mount Bathroom Sink
K-2084

Technical Information
All product dimensions are nominal.

Bowl configuration: Single
Installation: Wall-mount

Bowl area (Only)
Length: 18" (457 mm)
Width: 13" (330 mm)
With overflow: Yes
Water depth: 4-7/8" (124 mm)

Bowl area
With overflow: Yes

Number of deck holes: 1
Faucet hole(s): 1-3/8" (35 mm)
Drain hole: 1-3/4" (44 mm)

Notes
Install this product according to the installation instructions.
ADA, OBC, CSA B651 compliant when installed to the specific requirements of these regulations.

USA/Canada: 1-800-4KOHLER (1-800-456-4537)
Kohler Co. reserves the right to make revisions without notice to product specifications.
For the most current Specification Sheet, go to www.kohler.com.
3-18-2017 06:23
GENERAL DESCRIPTION:
Electronic faucet with proximity operation. Vandal-resistant solid brass construction with single post mounting. Operates on DC (battery) or AC permanent power. Water pressure range from 20 to 125 psi. Single inlet 15" flexible stainless steel hose with 3/8" compression fitting for spout connection.

PRODUCT FEATURES:
Vandal-Resistant Brass Body: Durable - Excellent in high use applications.

Power Options:
- Battery - Lithium CR-P2 battery. Battery Life - Approx. 200,000 cycles (4 years @ 4,000 cycles per month).
- Plug-In - Plug-In - Universal low voltage transformer (80 - 250 VAC, 50 - 60 Hz) with 6 foot long cord. One power supply can run up to 15 faucets and/or flush valves in series.

Easy and Flexible Installation:
Single post mounting with optional 4" and 8" Deck plate.
Water resistant solenoid enclosure mounts to wall.

Integrated: Easy Service Strainer:
Patented integrated strainer enclosed in removable debris cup protects the solenoid valve and aerator from debris. Perforated stainless steel strainer is low maintenance and can be easily accessed.

Temperature Mixing:
Optional thermostatic mixing valve. Mixing valve will connect directly to solenoid inlet and is housed in matching enclosure.

Lead Free: Faucet contains ≤ 0.25% total lead content by weighted average.

MODEL NUMBER:
- DC POWERED: single inlet
  - 6055.104 with cast spout, 0.35 GPM pressure compensating, vandal-resistant non-aerated spray. CR-P2 Lithium Battery included. Faucet is factory set for 7.5 seconds running time to deliver 0.044 gallons per cycle.

- AC POWERED: single inlet
  - 6056.104 with cast spout, 0.35 GPM pressure compensating, vandal-resistant non-aerated spray. Includes AC power supply (M950169-0070A). Faucet is factory set for 7.5 second running time to deliver 0.044 gallons per cycle.

- OPTIONAL 4" or 8" Deck plates
  - 605P.400 4" brass deck plate with 1/4" fixation studs and quick spin nuts (6-1/8" x 2-1/8" x 1/2")
  - 605P.800 8" brass deck plate with 1/4" fixation studs and quick spin nuts (10-1/8" x 2-3/8" x 1/2")

- OPTIONAL Mixing Valve
  - 605XTMV1070 Thermostatic mixing valve, flex hoses 3/8" compression 20" hose length. ASSE 1070 certified down to 0.35 gpm.
SPECIFICATION

3.23 Capacity Matters
Max ID sizing with straight sided bowl configuration (non tapered sides). Tight corner radius design.

*Capacity is based on 5-1/2" Depths

To Be Specified:
DRAIN LOCATION:
☐ CENTER (SHOWN) ☐ LEFT REAR
☐ RIGHT REAR ☐ CENTER REAR
LOCATIONS MUST BE A MINIMUM OF 4 1/2" FROM THE BOWL WALL.

DEPTH - MUST BE SPECIFIED:
☐ 4 1/2" DEEP ☐ 6" DEEP ☐ 5-1/2" DEEP
**AXOR Citterio**  
**Axor Citterio 1-Spray Kitchen Faucet**  
**Finishes:** Chrome  
**Part no.:** 39850001

### Description

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<td>- Aerated spray</td>
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<td>- Flow: 1.5 GPM</td>
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<td>- Ceramic cartridge</td>
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### Technology

- Quick Clean

### Design awards

- Design Week
- Reddot Design Award

### Compliance

- ADA
- UPC
- MAP

### Product image

![Product Image](image)

### Scale drawing

![Scale Drawing](image)
Exploded drawing

Year of production: >06/06
### Spare parts list

Year of production: >06/06

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</tbody>
</table>
a    | spout cpl.                          | 98604000   | -     | 1  |
FEATURES

- Compact urinal with concealed integral trap
- Washout flush action with 3/4" top or back spud inlet
- Complete with low profile dome strainer
- Optional CeFiONtect™ ceramic glaze - CeFiONtect glaze prevents debris and mold from sticking to ceramic surfaces, leading to fewer chemicals.

MODELS

- UT105U
  Urinal with 3/4" top spud inlet
- UT105UG
  Urinal with 3/4" top spud inlet and CeFiONtect
- UT105UV
  Urinal with 3/4" back spud inlet
- UT105UVG
  Urinal with 3/4" back spud inlet and CeFiONtect

ADDITIONAL ITEMS

- THU3017
  Stainless Steel Urinal Drain Cover

<table>
<thead>
<tr>
<th>FLUSH VALVES</th>
<th>EcoPower®</th>
<th>0.125GPF</th>
</tr>
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<tr>
<td>TEU1UA12#CP</td>
<td></td>
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<tr>
<td>TEU2UA11#SS</td>
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<tr>
<td>TEU3UA11#SS</td>
<td></td>
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</table>

COLORS/FINISHES

- #01 Cotton (CeFiONtect optional)

PRODUCT SPECIFICATION

The wall-mounted, ADA compliant, high-efficiency washout urinal shall be 0.125GPF/0.47LPF when paired with a 0.125GPF flushometer valve. Urinal shall have optional CeFiONtect ceramic glaze. Urinal specified shall be model UT105U___.

CODES/STANDARDS

- Meets and exceeds ASME A112.19.2/CSA B45.1,
- Certifications: IAPMO(cUPC), State of Massachusetts, City of Los Angeles
- Code compliance: UPC, IPC, NSPC, NPC Canada, and others
- Legislative Compliance: California AB715, CALGreen Title 24, California Energy Commission Standards
- ADA compliant
0.125GPF High-Efficiency Washout Urinal

SPECIFICATIONS
- Water Use: 0.125GPF/0.47LPF
- Flush System: Washout flush action
- Warranty: One Year Limited Warranty
- Material: Vitreous china
- Min. Water Pressure: 15 psi (flowing)
- Height (Urinal Only): 21-3/4"
- Width: 12-1/4"
- Rim: 14"
- Shipping Weight: UT105U(V)(G) - 37.5lbs
- Shipping Dimensions: UT105U(V)(G) 24" L x 13-3/4" W x 17" H

INSTALLATION NOTES
- Install this product according to the installation guide.
- Refer to manufacturer's instructions and local codes for flushometer requirements.
- Will comply with ADA when installed per Section 605 - Urinals of the ADA 2010 Accessible Design Standard with maximum rim height of 17" and minimum depth of 13-1/2".
- Will comply with CSA B651 when installed per Clause 6.2.8 Urinals of the CSA 2012 Accessible Design Standard with maximum rim height of 17" and minimum depth of 13-1/2".
- Ultra-low high efficiency urinals require a system with a minimum 2% slope. Maximum drainage capacity rated at 6.6 gal/min (25 L/min). Adjust angle stop accordingly to prevent overflow. Confirm with local codes and standards for floor drain requirement.
TEU1UA
EcoPower® Ultra High-Efficiency Urinal Flush Valve 0.125 gpf

FEATURES

- 0.125 GPF
- Self-powered hydroelectric flush valve system
- No minimum daily usage requirement
- Durable chrome plated body with tamper-proof screws and solid bronze valve body
- Neutral rough-in and adjustable tail piece connection
- True mechanical flush override
- Smart sensor with self-adjusting detection range
- 6-second detection time to prevent ghost flushing
- ADA compliant

MODELS

☐ TEU1UA12#CP
  - TEU1UA#CP (0.125 gpf flush valve)
  - VB9CP-12 (3/4" vacuum breaker tube, 3/4" angle stop)

COLORS/FINISHES

- #CP Polished Chrome

OPTIONAL ACCESSORIES

- Z-4000-J - Adapter for ground joint angle stops

CODES/STANDARDS

- Meets or exceeds ASSE 1037, CSA B125.3
- Certifications: IAPMO(cUPC), EPA WaterSense, ASSE, State of Massachusetts, and others
- Code Compliance: UPC, IPC, NSPC, NPC Canada, and others
- Complies with CA Title 20 regulations and CalGreen when used with a 0.125 gpf wall mount urinal
- ADA compliant

PRODUCT SPECIFICATION

TOTO® Model No.__________________________
Product shall be 0.125 GPF. Product shall be an automatic infrared sensor-activated, urinal flush valve. Product shall use hydropower, EcoPower flush valve system. Product shall have durable chrome plated body with tamper-proof screws and solid bronze valve body. Product shall have neutral rough-in and adjustable tail piece connection. Product shall have smart sensor with self-adjusting detection range. Product shall have true mechanical flush override. Product shall have 6-second detection time to prevent ghost flushing. Product shall have solenoid with self-cleaning mechanism. Product shall be ADA compliant.
TEU1UA

EcoPower® Ultra High-Efficiency Urinal Flush Valve, 0.125 gpf

SPECIFICATIONS

- Material: Bronze casting
- Power supply: EcoPower
- Sensor detection time: Factory setting at six (6) seconds minimum
- Sensor detection range: Self-adjusting to environment
- Discharge quantity: Preset to 0.125 gpf/0.47 lpf
- Operating temperature: 32°-104°F (0°-40°C)
- Water supply pressure: 15 psi - 125 psi*
- Water supply connection: 3/4" NPT
- Warranty: Three year limited

*Water pressures over 80 psi are not recommended for most plumbing fixtures. Check your local plumbing code for details.

INSTALLATION NOTES

For commercial applications only.
Warning: Failure to properly adjust angle stop to the appropriate level can potentially cause property damage.

For detailed installation instructions, please refer to the installation manual.

Max flow rate to be used with TEU1UA: 0.125 gpf

Confirm with local codes and standards for floor drain requirement. Adjust control stop for proper flow rate to the fixture.

DIAGRAM

* Check local codes

These dimensions and specifications are subject to change without notice.
Molded-Stone® Mop Service Basin

FEATURES

- **MSB 2424**

  The MSB 2424 shall have overall outside dimensions of 24" x 24" x 10". The molding shall be done in matched metal dies under heat and pressure resulting in a one-piece homogeneous product. The unit shall have 10" high walls with not less than 1" wide.

  The stainless steel drain body is designed to provide for a caulk connection or QDC-3 joint to a 3" drain pipe. A combination dome strainer and lint basket made from stainless steel shall be included with factory installed stainless steel drain body for caulked joint to accept a 3" pipe.

- **MSB 3624**

  The MSB 3624 shall have overall outside dimensions of 36" x 24" x 10". The molding shall be done in matched metal dies under heat and pressure resulting in a one-piece homogeneous product. The unit shall have 10" high walls with not less than 1" wide shoulders and an integrally molded shelf 10 3/8" wide where indicated.

  The stainless steel drain body is designed to provide for a caulk connection or QDC-3 joint to a 3" drain pipe. A combination dome strainer and lint basket made from stainless steel shall be included with factory installed stainless steel drain body for caulked joint to accept a 3" pipe.

NOTES

OPTIONS

- Hose and Hose Bracket (832-AA)
- Mop Hanger (889-CC)
- Alternate Strainer (1453-BB) - For residential use (EFS-3624 and EFS-2424)
- 3" Quick Drain Connector (QDC-3XH): Neoprene connecting gasket suitable for attaching extra heavy cast iron soil pipe and Schedule 40 steel pipe to the drain body. Neoprene connecting gasket (QDC-3SN) suitable for attaching hubless cast iron pipe (no hub, nominal O.D. of 3.31") and service weight cast iron soil pipe (nominal O.D. of 3.38") to the drain body.
- Silicone Sealant (833-AA)
- Vinyl Bumperguard (E-77-AA)
- Stainless Steel Bumperguard (E-88-AA)
- Stainless Steel Wall Guard (MSG2424, MSG2828, MG3232, MSG3636, and MSG3624)
MOLDED-STONE®
MOP SERVICE BASIN

MSB 2424
MSB 3624

Molded-Stone® Mop Service Basin

IMPORTANT: Roughing-in dimensions may vary 1/8" and are subject to change or cancellation without prior notice.
Engineering Specification: Zurn AquaSpec® Z842D6-LSI-2XT
Polished chrome-plated cast brass 8" [203mm] clinical service sink faucet with quarter-turn ceramic disc cartridges, 3" [76mm] long swivel inlets (with integral stops) providing adjustable centers from 2 3/4" [70mm] to 13" [330mm] and a 6" [152mm] centerline cast brass vacuum breaker spout with an integral 3/4" hose threaded outlet, a pail hook and a forked bottom brace. Unit is furnished with 6" [152mm] vandal-resistant color-coded metal wrist blade handles. (Note: Atmospheric vacuum breaker not intended for continuous pressure applications.)

Note: All dimensions are for reference only. Do not use for pre-plumbing.

OPTIONAL ACCESSORIES

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<thead>
<tr>
<th>Suffix</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>-CS</td>
<td>Check Stop</td>
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<tr>
<td>-HCT</td>
<td>Hot/Cold Text Indexes</td>
</tr>
<tr>
<td>-RC</td>
<td>Rough Chrome Plated</td>
</tr>
<tr>
<td>-WHK</td>
<td>Wall Hook</td>
</tr>
<tr>
<td>-5H</td>
<td>5' [152cm] Vinyl Hose</td>
</tr>
</tbody>
</table>

ZURN INDUSTRIES, LLC • COMMERCIAL BRASS OPERATION • 2640 SOUTH WORK STREET • FALCONER NY 14733
Phone: 1-800-997-3876 • Fax: 1-919-776-3541 • www.zurn.com
In Canada: ZURN INDUSTRIES LIMITED • 3544 Nashua Drive • Mississauga, Ontario L4V1L2 • Phone: 905/405-8272 Fax: 905/405-1292

Rev. K Date: 10/18/11 C.N. No. 128232
Dwg. No. 61439 Product No. Z842D6-LSI-2XT
No Lead Two-Level Sw
Filtered Wall Mount, Barrier-Free
Drinking Fountain with EZH2O® Bottle Filling Station
Model LZWS-EDFPBM117K

RATED FOR INDOOR USE ONLY

PRODUCT SPECIFICATION
Architectural fountains with integral bottle filling station. LZWS-EDFPBM117K shall deliver non-chilled drinking water unless connected to a remote water chiller. Units shall be stainless steel construction with plastic ABS above. Sensor-activation with an auto 20-second shut-off timer. Shall include Green Ticker™ displaying count of plastic bottles saved from waste. Bottle filler shall provide 1.5 gpm flow rate with laminar flow to minimize splashing and 1.1 gpm flow rate when connected to a remote water chiller. Shall include the WaterSentry® Plus 3000-gallon capacity filter, certified to NSF/ANSI 42 and 53, with visual monitor to indicate when replacement is necessary. Shall include integrated silver ion anti-microbial protection in key areas. Unit shall meet ADA guidelines. Unit shall be lead-free design which is certified to NSF/ANSI 61 and 372 and meets Federal and State low-lead requirements. Unit shall be certified to UL399 and CAN/CSA 22.2 No. 120.

FOUNTAINS GENERAL
Fully exposed two-level fountain basins are #18 gauge, 300 series stainless steel polished to a lustrous satin finish with high shine outer edge. #16 gauge, 300 series tubular stainless steel support arms incorporate unique recess to be integrated with basin. One fountain positioned lower on the right for wheel-chair use. The other positioned on the left at standing height. Fountains have contoured basin that minimizes splashing. Flexi-Guard® Safety bubblers are keyed in location to prevent rotation. Fully functional, vandal-resistant front push buttons on the fountain. Flow regulator provides constant stream from 20 to 105 psi water pressure.

BOTTLE FILLER FEATURES
- No-touch, sensor-activated bottle filler.
- Auto 20-second shut-off.
- WaterSentry® Plus 3000-gallon capacity Filtration System, certified to NSF/ANSI 42 & 53 (Lead, Class 1 Particulate, Chlorine, Taste & Odor).
- Integrated Silver Ion Anti-Microbial Protection in key areas.
- Quick Fill Rate: 1.5 gpm.
- Laminar Flow provides minimal splash.
- Real Drain System eliminates standing water.
- Visual User Interface display includes:
  - Innovative Green Ticker™ counts bottles saved from waste.
  - LED Visual Filter Monitor shows when replacement is necessary.

OPTIONAL FEATURES (Additional Cost)
- For front access to bottle filler electricals or drain, use access panel (Item #ACCESS12X38-5)

Shown with two optional access panels installed

CONSTRUCTION
LZWS-EDFPBM117K two-level fountain furnished complete with Flexi-Guard® Safety bubblers, fully assembled with front push buttons on the fountain, flow regulator (20 to 105 psi), stainless steel back panel. No traps are furnished.
- Stainless Steel bottle filler construction with ABS plastic above.
- Furnished with wall mounting frame constructed of galvanized steel.
- Mounting can be ordered separately for pre-install.

Replacement Filters: Available as Singles and Multi-packs.
Order part numbers:
- 51300C (single)
- 51300C_3PK (three)
- 51300C_12PK (twelve)
- 51300C_24PK (twenty-four)
- 51300C_48PK (forty-eight)

Warranty: Electrical components and water system are warranted for 12 months from date of installation or 18 months from factory shipment, whichever date falls first.

CERTIFICATIONS / STANDARDS
- ADA Compliant
- UL399 and CAN/CSA 22.2 No. 120 Certified
- NSF/ANSI 42 and 53 Certified (Filter Only)
- NSF/ANSI 61 and 372 Certified
- GreenSpec Listed

This specification describes an Elkay product with design, quality and functional benefits to the user. When making a comparison of other producer's offerings, be certain these features are not overlooked.

In keeping with our policy of continuing product improvement, Elkay reserves the right to change specification without notice. Please visit elkay.com for the most current version.
No Lead Two-Level  SwirlFlo®
Filtered Wall Mount, Barrier-Free
Drinking Fountain with EZH2O® Bottle Filling Station
Model LZWS-EDFPBM117K

INSTALLER NOTE:
THIS DRINKING FOUNTAIN IS FURNISHED WITH A BUBBLER AND VALVE INCLUDING ALL CONNECTING FITTINGS WHICH ARE MANUFACTURED OF COMPLETELY LEAD FREE MATERIAL. SHUTOFF VALVE (NOT FURNISHED) TO ACCEPT 3/8" O.D. UNPLATED COPPER TUBE.

WALL OPENING
IMPORTANT: It is necessary to create a wall opening 37 ½" W x 31 ½" H and 25" above the floor line.

ELECTRICAL DATA
Electrical outlet, three (3) conductor grounded. Locate within safe reach of power cord.

MOUNTING INSTRUCTIONS
Refer to rough-in for location of plumbing and electrical sources. The support frame is to be installed first. Hang upper panel to hanger on frame. Fountains are to be attached to panel and wall frame. Water service lines, waste lines and electrical are assembled as required. Perform a final check for leaks and correct functions of fountains and chillers. (For details see the installation instructions.) Installation requires trap to be installed in wall. Trap and service stop not included.

Job Name: 
Date: 
Qty: 
Contact Info (Name, Phone, Email): 
Approval: 

Printed in U.S.A. 
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ecocirc® XL
High Efficiency Large Wet Rotor Circulator with Electronically Commutated Motor (ECM)

DESCRIPTION
The ecocirc® XL circulator is designed with a highly efficient electronically commutated permanent magnet motor (ECM/PM Technology). Cast Iron Body designed for closed loop hydronic heating and cooling systems pumping water or water/glycol mix. Lead Free Bronze body designed for plumbing systems or open loop heating and cooling systems.

CONSTRUCTION MATERIALS
Pump Body: Cast Iron or Lead-Free Bronze
Impeller: Poly-phenylene Sulfide or Stainless Steel
Shaft: AISI 420 Stainless Steel
Rotor: Permanent Magnet
Bearings: Carbon Sleeve
Gasket/O-Ring: EPDM
All Other Wetted Parts: AISI 304 Stainless Steel
Motor Type: Electronically Commutated Motor/Permanent Magnet
Motor Insulation Class: F

SPECIFICATIONS
<table>
<thead>
<tr>
<th>MODEL NO.</th>
<th>FLOW</th>
<th>HEAD</th>
<th>RPM</th>
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<tr>
<th>VOLTAGE</th>
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<th>PHASE</th>
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<tbody>
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</tbody>
</table>

SPECIALS

OPERATING DATA
Maximum Working Pressure: 175 psi (12 Bar)
Minimum Working Temperature: 14°F (-10°C)
Maximum Working Temperature: 230°F (110°C)
Ambient Temperature Range: 32°F - 104°F (0°C - 40°C)

SCHEDULE

<table>
<thead>
<tr>
<th>CAST IRON BODY</th>
<th>LEAD-FREE BRONZE BODY†</th>
<th>RATED MOTOR CHARACTERISTICS</th>
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<tbody>
<tr>
<td>MODEL NUMBER</td>
<td>PART NUMBER</td>
<td>MODEL NUMBER</td>
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<tr>
<td>ecocirc XL 20-35</td>
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<tr>
<td>ecocirc XL 40-275</td>
<td>104318</td>
<td>ecocirc XL B 40-275</td>
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Note: Where potable water is pumped, use a lead-free bronze booster. ecocirc XL pumps are recommended for indoor use only.
† = Lead-Free as described in the Reduction of Lead in Drinking Water Act (RLDWA) - certified to NSF 372.
* = Nominal HP
### Dimensions and Weights

<table>
<thead>
<tr>
<th>Model No</th>
<th>Nominal Motor HP</th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
<th>E</th>
<th>F</th>
<th>Approx. Shipping Weight LBS. (kg)</th>
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<td>9.94 (252)</td>
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<td>8.20 (208)</td>
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<td>6.38 (162)</td>
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<td>5.77 (146)</td>
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<td>11.80 (299)</td>
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<td>5.77 (146)</td>
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<td>10.07 (256)</td>
<td>5.77 (146)</td>
<td>49.6 (22.5)</td>
</tr>
</tbody>
</table>

*Part numbers represent a Master Carton of 12 flanges with fasteners pack.
1-1/2" is the diameter of the suction and discharge for the 2-bolt models.

### Safety Standards and Protection
- Enclosure: Class 2, IP44 (equivalent to NEMA Type 2)
- UL Listed to UL 778, UL 1004-1, 1004-7, and UL 60730-1
- cUL Listed to C22.2 #108
- Electronically Thermally Protected (Integrated Motor Protection)
- Motor Insulation Class: F
- NSF 372 – ≤ 0.25% lead content by weight on wetted surfaces for Bronze pump models
STANDARD OPERATING MODES

**CONSTANT SPEED**

The pump maintains a constant speed at any flow rate. The desired speed is set on the interface panel of the pump.

**CONSTANT PRESSURE (Δp-c)**

The pump maintains a constant differential pressure at any flow demand until the maximum speed is reached. The desired head of the pump can be set via user interface. Recommended for use in systems with small or constant pressure losses.

**PROPORTIONAL PRESSURE (Δp-v)**

The differential pressure continuously increases or decreases based on the flow demand. The set point head can be set on the pump user interface. Use for systems with large pressure losses.

**NIGHT MODE**

The pump will automatically reduce speed when there is an abrupt change in fluid temperature. The change in fluid temperature is from a boiler operating in night time setback mode. The built-in temperature sensor is used. (Fixed Speed, Constant Pressure, Proportional Pressure)

TEMPERATURE INFLUENCED OPERATING MODES

**SET POINT TEMPERATURE (Δp-T)**

The nominal differential pressure set point is modified based on the fluid temperature. Uses the built-in temperature sensor.

**SET POINT TEMPERATURE (T)**

The pump maintains a constant temperature in a system, such as a domestic hot water system or a single temperature heating system. Uses the built-in temperature sensor.

**DIFFERENTIAL TEMPERATURE (ΔT)**

The pump maintains a constant differential temperature between the built-in and external temperature sensors.

INPUT SIGNALS

- One 0-10V (Analog): Speed Control by external controller
- One 4-20mA (Analog): Connection with an external pressure sensor for the pressure control mode (two different pressure sensor ranges: 0-15 PSI and 0-30 PSI)
- One external temperature sensor input for Differential ATemp operating mode. Sensor Type KTY38 PN: 104592
- One built-in temperature sensor for Set Point Temp and Differential-Temp operating mode.

REMOTE BUILDING MANAGEMENT SYSTEM CAPABILITIES

- The pump can be monitored or controlled by a signal from BMS (Building Management System). Built-in protocols are BACnet and Modbus. Direct connection to a PC is available.
- An optional Wi-Fi module can be added to create a short range Wi-Fi field for remote connection to the pump. An internet browser or an App can be used to program the advanced settings. Module PN: 104590

INPUT RELAY: Normally Open Contact Relay for Pump Start/Stop function which can be used with any thermostat.

OUTPUT RELAY: Normally Open Dry Contact Relay for Fault Mode indication.

ONBOARD USER INTERFACE

1. Control mode button
2. Control mode indicators
3. Parameter button
4. Parameter indicators
5. Setting buttons
6. Numeric display
7. Power indicator
8. Status / Fault indicator
9. Remote control indicator

<table>
<thead>
<tr>
<th>CONTROL MODE</th>
<th>ONBOARD USER INTERFACE</th>
<th>EXTERNAL USER INTERFACE</th>
<th>SETPOINT UNITS</th>
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<tbody>
<tr>
<td>CONSTANT SPEED</td>
<td>-</td>
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<tr>
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</tr>
<tr>
<td>(Δp-v)</td>
<td>-</td>
<td>-</td>
<td>SETPOINT HEAD (ftm)</td>
</tr>
<tr>
<td>NIGHT MODE</td>
<td>-</td>
<td>-</td>
<td>SETPOINT HEAD and T</td>
</tr>
<tr>
<td>(Δp-T)</td>
<td>-</td>
<td>-</td>
<td>SETPOINT T</td>
</tr>
<tr>
<td>T</td>
<td>-</td>
<td>-</td>
<td>SETPOINT ΔT</td>
</tr>
</tbody>
</table>

The numeric display will show the parameter indicated when running and will display any error and alarm codes.

Xylem Inc.
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Morton Grove, IL 60053
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Product Description/Equipment Specifications

Vantage™ PTC Series Twin Alternating Softeners
Model PTCT

General Description:
PTC Series twin water softeners reduce the hardness in feed water using ion exchange resin. The twin softeners provide a continuous supply of softened water to downstream equipment. Regeneration is performed with softened water, ensuring the highest quality water is maintained. When sizing, ensure regeneration plus operational flows are considered.

These units contain high quality cation resin in the sodium form that removes hardness. Hardness will create scale on reverse osmosis membranes, water heaters, boilers and other equipment if not removed. Calcium, magnesium, and other cations removed by the resin are replaced with sodium ions. The resin has a fixed capacity based on the pounds of salt used per cubic foot of resin during regeneration. Flow rate, TDS and other factors will dictate the actual capacity of the resin. When the capacity is exceeded, the resin will allow the hardness ions to pass through the unit. Before the capacity is exceeded, one tank is removed from service and regenerated with a solution of sodium chloride (brine). Completion of the regeneration steps allows the water softener to be returned to the service mode.

Two trim packages are available: Economy and Deluxe.

Mechanical Description:
The vessel is a corrosion resistant composite, constructed of a polyethylene shell wound with continuous fiberglass fibers. The shell height is designed to allow for expansion of the resin during the regeneration cycle. The top vessel opening is used for resin loading and connection for the multiport control valve.

Two softener vessels are supplied with high capacity cation exchange resin and a gravel support bed (14” diameter tank and larger). The inlet diffuser evenly distributes influent water, collects backwash water and introduces the brine regenerant solution. The lower hub and lateral or single point distributor (depending upon tank size) collects effluent and regeneration water and distributes the backwash water.

One vessel is fitted with a top-mounted, five-cycle multiport control valve to accomplish the operational steps of service, backwash, brine, slow rinse, fast rinse and refill cycles for both vessels. The control valve includes fixed and self-adjusting flow regulators to control flow rates during each operational cycle. The cycles of regeneration are accomplished with the movement of a hydraulically balanced, Teflon coated piston.

A salt storage tank (brine tank) is supplied as part of the softener system, which is constructed of corrosion resistant polyethylene. The brine tank is equipped with an automatic air-eliminator safety valve. The brine line and the safety valve are housed within a protective chamber inside the brine tank to prevent damage during salt loading. The brine valve will automatically open to educt the brine into the softener tank, closes to prevent suction of air, and allow for refilling the brine tank with the proper amount of water, regardless of the salt level in the tank.
Due to the nature of the twin system (continuously provides softened water), the system is a "no hard water bypass" unit. The system consists of one control valve, two mineral tanks, one brine tank, resin and a gravel support bed (14" diameter vessels and larger).

The Economy trim package has a Series 9100 Fleck valve (composite valve) with an SXT controller. The Deluxe trim package has either a Series 9000 Fleck valve (1" brass valve) or a Series 9500 Fleck valve (1.5" brass valve) with an SXT controller.

Flow meters are automatically included with all twin softeners.

**Electrical Description:**

The control is performed by an SXT programmable controller. This controller features a power backup system that continues to keep time for a minimum of 48 hours in the event of a power failure. The system configuration is stored in a non-volatile memory, so it will be maintained with or without power, indefinitely.

Regeneration can be initiated by three methods. The first is via totalized volume (immediate or delayed). The second is by programming (time clock or day of week). The third method is via the operator manually initiating the regeneration.

**Operational Description:**
The twin water softeners have two modes of operation, service and regeneration. The service mode delivers softened water to equipment downstream. During regeneration, softened water is continuously supplied to downstream equipment, while softened water is also used for regeneration. Regeneration is comprised of five steps; backwash, brine introduction, slow rinse, fast rinse and brine tank refill. The backwash step removes trapped material and reclassifies the bed. The brine introduction step strips hardness from the resin and converts the resin into the sodium form. The rinse steps displace the brine with water and prepares the bed for the service mode. The brine tank refill step adds the proper amount of water back into the brine tank to dissolve the precise amount of salt for the next regeneration cycle.

These softeners operate in an alternating fashion. Only one softener will be in the service mode or regeneration mode at any given time. When the preset volume of water has been treated or the programmed date/time has been reached, the first softener will begin the regeneration mode and the second softener will begin the service mode to supply softened water to the unit being regenerated and will remain in service at the completion of the regeneration of the first softener. The totalizing water meter is reset to zero when each softener begins its regeneration mode.
## Product Offering Overview:

<table>
<thead>
<tr>
<th>Model Number</th>
<th>Tank Dia. (Inches)</th>
<th>Media Volume (cuft)</th>
<th>Minimum Flow (min)*</th>
<th>Nominal Flow (GPM)**</th>
<th>Maximum Flow ***</th>
<th>Capacity (Kgkains) ****</th>
</tr>
</thead>
<tbody>
<tr>
<td>PTCTE09X40</td>
<td>9</td>
<td>0.8</td>
<td>0.9</td>
<td>2.4</td>
<td>4.8</td>
<td>24</td>
</tr>
<tr>
<td>PTCTE10X54</td>
<td>10</td>
<td>1.4</td>
<td>1.1</td>
<td>4.2</td>
<td>8.4</td>
<td>42</td>
</tr>
<tr>
<td>PTCTE12X52</td>
<td>12</td>
<td>2</td>
<td>1.6</td>
<td>6.0</td>
<td>12.0</td>
<td>60</td>
</tr>
<tr>
<td>PTCTE14X65</td>
<td>14</td>
<td>3</td>
<td>2.1</td>
<td>9.0</td>
<td>18.0</td>
<td>90</td>
</tr>
<tr>
<td>PTCTE16X65</td>
<td>16</td>
<td>4</td>
<td>2.8</td>
<td>12.0</td>
<td>24.0</td>
<td>120</td>
</tr>
<tr>
<td>PTCTD09X40</td>
<td>9</td>
<td>0.8</td>
<td>0.9</td>
<td>2.4</td>
<td>4.8</td>
<td>24</td>
</tr>
<tr>
<td>PTCTD10X54</td>
<td>10</td>
<td>1.4</td>
<td>1.1</td>
<td>4.2</td>
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<td>PTCTD12X52</td>
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<td>1.6</td>
<td>6.0</td>
<td>12.0</td>
<td>60</td>
</tr>
<tr>
<td>PTCTD14X65</td>
<td>14</td>
<td>3</td>
<td>2.1</td>
<td>9.0</td>
<td>18.0</td>
<td>90</td>
</tr>
<tr>
<td>PTCTD16X65</td>
<td>16</td>
<td>4</td>
<td>2.8</td>
<td>12.0</td>
<td>24.0</td>
<td>120</td>
</tr>
<tr>
<td>PTCTD18X65</td>
<td>18</td>
<td>5</td>
<td>3.5</td>
<td>15.0</td>
<td>30.0</td>
<td>150</td>
</tr>
<tr>
<td>PTCTD21X62</td>
<td>21</td>
<td>6.5</td>
<td>4.8</td>
<td>19.5</td>
<td>39.0</td>
<td>195</td>
</tr>
<tr>
<td>PTCTD24X72</td>
<td>24</td>
<td>9</td>
<td>6.3</td>
<td>27.0</td>
<td>54.0</td>
<td>270</td>
</tr>
</tbody>
</table>

*Min Design Flow/cuft of media based on 2.0 gpm/sqft.

**Flow based on 3 gpm/cuft of resin. Recommended maximum for RO pretreatment service.

***Flow based on 6 gpm/cuft of resin.

****Based on 30 Kgrain/cuft of resin (regenerated @ 15#/ ft³ NaCl dosage).

## Nominal Design Parameters:

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Configuration</strong></td>
<td>Twin Alternating</td>
</tr>
<tr>
<td><strong>Inlet Pressure</strong></td>
<td>30 psig minimum</td>
</tr>
<tr>
<td><strong>Inlet Temperature</strong></td>
<td>65°F</td>
</tr>
<tr>
<td><strong>Sizing</strong></td>
<td>3 gpm / ft²</td>
</tr>
<tr>
<td><strong>Bed Depth</strong></td>
<td>27 to 38 inches of Evoqua Water Technologies C-211 strong acid cation resin.</td>
</tr>
<tr>
<td><strong>Freeboard</strong></td>
<td>32 to 45% of tank volume</td>
</tr>
<tr>
<td><strong>Capacities</strong></td>
<td>30 Kgrains / ft³</td>
</tr>
<tr>
<td><strong>Free Chlorine</strong></td>
<td>0.5 ppm</td>
</tr>
<tr>
<td><strong>Regeneration</strong></td>
<td>15 lb. NaCl / ft³</td>
</tr>
</tbody>
</table>

* 9" diameter units have a reduced freeboard.

## Recommended Operating Limits:

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Feed Pressure</strong></td>
<td>30 – 100 psig</td>
</tr>
<tr>
<td><strong>Feed Temperature</strong></td>
<td>40 – 85°F</td>
</tr>
<tr>
<td><strong>Sizing (gpm/ft²)</strong></td>
<td>2 to 5 gpm / ft²</td>
</tr>
</tbody>
</table>
Parameters Not to Exceed*:

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Limit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Feed Pressure</td>
<td>110 psig</td>
</tr>
<tr>
<td>Feed Temperature*</td>
<td>&lt;35°F and &gt;100°F</td>
</tr>
<tr>
<td>Maximum Inlet Turbidity</td>
<td>6 NTU</td>
</tr>
<tr>
<td>Sizing (gpm/ft²)</td>
<td>&lt;2 gpm / ft², &gt;20 gpm / ft²</td>
</tr>
<tr>
<td>Sizing (gpm/ft³)</td>
<td>6 gpm / ft³</td>
</tr>
<tr>
<td>Free Chlorine</td>
<td>0-3 ppm (Shorter resin life from 1 to 3 ppm)</td>
</tr>
<tr>
<td>Iron</td>
<td>0.2 ppm</td>
</tr>
<tr>
<td>Manganese</td>
<td>0.1 ppm</td>
</tr>
<tr>
<td>Influent Solids</td>
<td>500 ppm as CaCO₃</td>
</tr>
</tbody>
</table>

* If any of the operating conditions are not within the limits given, consult technical support for the appropriate recommendation and application assistance.

General Specifications:

Pressure Vessels:

<table>
<thead>
<tr>
<th>Material</th>
<th>Composite polyethylene and fiberglass</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rating</td>
<td>150 psig</td>
</tr>
<tr>
<td>Support</td>
<td>Free standing</td>
</tr>
<tr>
<td>Access Openings</td>
<td>(1) 2½&quot; Threaded</td>
</tr>
<tr>
<td>For 1&quot; Valve Units</td>
<td>(1) 4&quot; Threaded</td>
</tr>
<tr>
<td>For 1½&quot; Valve Units</td>
<td></td>
</tr>
<tr>
<td>Vessel Connections</td>
<td>Threaded</td>
</tr>
</tbody>
</table>

Distribution Systems:

<table>
<thead>
<tr>
<th>Upper</th>
<th>Basket diffuser on 1.5&quot; valves and greater</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lower (underdrain)</td>
<td>PVC basket strainer</td>
</tr>
<tr>
<td>7&quot; through 16&quot; diameter</td>
<td>Single row PVC hub and Schedule 80 PVC slotted radials</td>
</tr>
<tr>
<td>18&quot; through 24&quot; diameter</td>
<td></td>
</tr>
</tbody>
</table>

Top Mount Valve:

<table>
<thead>
<tr>
<th>Size</th>
<th>Feature</th>
</tr>
</thead>
<tbody>
<tr>
<td>1&quot;</td>
<td>Economy – Fleck model 9100 fiber reinforced polymer construction</td>
</tr>
<tr>
<td></td>
<td>Deluxe - Fleck model 9000 brass construction</td>
</tr>
<tr>
<td>1½&quot;</td>
<td>Deluxe - Fleck model 9500 brass construction</td>
</tr>
</tbody>
</table>

Controls Specifications:

<table>
<thead>
<tr>
<th>Feature</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Power</td>
<td>110 volt, 60 Hz, 10 Watts</td>
</tr>
<tr>
<td>Enclosure</td>
<td>NEMA 1 (Indoor Installation Only)</td>
</tr>
<tr>
<td>Controller</td>
<td>SXT</td>
</tr>
<tr>
<td>Output – 1 (&quot;Pretreat Lockout&quot;)</td>
<td>Contact closure indicates unit is in regeneration</td>
</tr>
</tbody>
</table>

Regulations and Standards:

<table>
<thead>
<tr>
<th>Regulation</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>PTC System</td>
<td>FDA 510(k) Cleared</td>
</tr>
<tr>
<td>Pressure Vessels</td>
<td>NSF and WQA</td>
</tr>
<tr>
<td>Electrical</td>
<td>NEMA 1 (Indoor Installation Only)</td>
</tr>
<tr>
<td>Valves</td>
<td>NSF and WQA</td>
</tr>
<tr>
<td>C-211 Resin</td>
<td>Not NSF</td>
</tr>
</tbody>
</table>
### Documentation Package:

<table>
<thead>
<tr>
<th>Documents</th>
<th>Operations and Maintenance manual with storage, installation and operating instructions, spare parts list; Control valve Service Manual</th>
</tr>
</thead>
<tbody>
<tr>
<td>Quality Documents</td>
<td>Inspection Data Report check list / pick list</td>
</tr>
</tbody>
</table>

### Detailed Specifications:

<table>
<thead>
<tr>
<th>Model Number</th>
<th>Connections (Inches)</th>
<th>Brine System</th>
<th>Media Quantities (ft³)</th>
<th>Utility Requirements</th>
<th>Dimension Specifications (Inches)</th>
<th>Weight (lbs)***</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Inlet/Outlet</td>
<td>Backwash / Drain Line</td>
<td>Injector Size/Color ***</td>
<td>Brine Tank Refill Flow Controller (gpm)</td>
<td>Brine Tank Size D x H (in)</td>
<td>NaCl per Regen (lbs)</td>
</tr>
<tr>
<td>PTCTE09X40</td>
<td>1&quot; mpt</td>
<td>5&quot; HB</td>
<td>2/Blue</td>
<td>0.5</td>
<td>18 x 40</td>
<td>12</td>
</tr>
<tr>
<td>PTCTE10X54</td>
<td>1&quot; mpt</td>
<td>5&quot; HB</td>
<td>2/Blue</td>
<td>0.5</td>
<td>18 x 40</td>
<td>21</td>
</tr>
<tr>
<td>PTCTE12X52</td>
<td>1&quot; mpt</td>
<td>5&quot; HB</td>
<td>2/Blue</td>
<td>0.5</td>
<td>18 x 40</td>
<td>30</td>
</tr>
<tr>
<td>PTCTE14X65</td>
<td>1&quot; mpt</td>
<td>5&quot; HB</td>
<td>3/Yellow</td>
<td>0.5</td>
<td>24 x 40</td>
<td>45</td>
</tr>
<tr>
<td>PTCTE16X65</td>
<td>1&quot; mpt</td>
<td>5&quot; HB</td>
<td>3/Yellow</td>
<td>0.5</td>
<td>24 x 40</td>
<td>60</td>
</tr>
<tr>
<td>PTCTD09X40</td>
<td>1&quot; fpt</td>
<td>5&quot; HB</td>
<td>2/Blue</td>
<td>0.5</td>
<td>18 x 40</td>
<td>12</td>
</tr>
<tr>
<td>PTCTD10X54</td>
<td>1&quot; fpt</td>
<td>5&quot; HB</td>
<td>2/Blue</td>
<td>0.5</td>
<td>18 x 40</td>
<td>21</td>
</tr>
<tr>
<td>PTCTD12X52</td>
<td>1&quot; fpt</td>
<td>5&quot; HB</td>
<td>2/Blue</td>
<td>0.5</td>
<td>18 x 40</td>
<td>30</td>
</tr>
<tr>
<td>PTCTD14X65</td>
<td>1&quot; fpt</td>
<td>5&quot; HB</td>
<td>2/Blue</td>
<td>0.5</td>
<td>24 x 40</td>
<td>45</td>
</tr>
<tr>
<td>PTCTD16X65</td>
<td>1.5&quot; mpt</td>
<td>7.5&quot; fpt</td>
<td>3/Yellow</td>
<td>2</td>
<td>24 x 40</td>
<td>60</td>
</tr>
<tr>
<td>PTCTD18X65</td>
<td>1.5&quot; mpt</td>
<td>7.5&quot; fpt</td>
<td>3/Yellow</td>
<td>2</td>
<td>24 x 40</td>
<td>75</td>
</tr>
<tr>
<td>PTCTD21X82</td>
<td>1.5&quot; mpt</td>
<td>7.5&quot; fpt</td>
<td>4/Green</td>
<td>2</td>
<td>24 x 40</td>
<td>105</td>
</tr>
<tr>
<td>PTCTD24X72</td>
<td>1.5&quot; mpt</td>
<td>7.5&quot; fpt</td>
<td>5/White</td>
<td>2</td>
<td>30 x 48</td>
<td>135</td>
</tr>
</tbody>
</table>

* Based on attainable backwash flow at 85°F.
** See the following sheet for details. Dimensions are approximate and do not include maintenance access, field installed piping or operating
*** Weight based on heaviest option.
**** Injector selection based on 30psig supply pressure. Greater pressures may require a reduction in brine intro time.
NOTES:

1. PIPING SHOWN HERE IS FOR REFERENCE ONLY. REFER TO CONTROL VALVE SERVICE MANUAL FOR PROPER INSTALLATION GUIDELINES.

2. ALL PIPING, FITTINGS, AND ISOLATION/BYPASS VALVES SHOWN ARE NOT SUPPLIED BY FACTORY.
### Approximate Pressure Losses*

<table>
<thead>
<tr>
<th>Model</th>
<th>Flow</th>
<th>Valve</th>
<th>Approximate Unit Clean Bed Pressure Loss (psi)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Econo</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PTCTE09X40</td>
<td>2.4</td>
<td>9100</td>
<td>3.5</td>
</tr>
<tr>
<td>PTCTE10X54</td>
<td>4.2</td>
<td>9100</td>
<td>4.6</td>
</tr>
<tr>
<td>PTCTE12X52</td>
<td>6.0</td>
<td>9100</td>
<td>5.5</td>
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<tr>
<td>PTCTE14X65</td>
<td>9.0</td>
<td>9100</td>
<td>7.8</td>
</tr>
<tr>
<td>PTCTE16X65</td>
<td>12.0</td>
<td>9100</td>
<td>10.9</td>
</tr>
<tr>
<td><strong>Deluxe</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PTCTD09X40</td>
<td>2.4</td>
<td>9000</td>
<td>3.5</td>
</tr>
<tr>
<td>PTCTD10X54</td>
<td>4.2</td>
<td>9000</td>
<td>4.6</td>
</tr>
<tr>
<td>PTCTD12X52</td>
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<td>PTCTD14X65</td>
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<td>9000</td>
<td>7.8</td>
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<td>PTCTD16X65</td>
<td>12.0</td>
<td>9500</td>
<td>5.5</td>
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<tr>
<td>PTCTD21X62</td>
<td>19.5</td>
<td>9500</td>
<td>7.9</td>
</tr>
<tr>
<td>PTCTD24X72</td>
<td>27.0</td>
<td>9500</td>
<td>11.7</td>
</tr>
</tbody>
</table>

* Based on Nominal Flow, 2 psi losses in distributors, negligible elevation losses and interconnection piping not included.
## Regeneration Sequence and Flows:

<table>
<thead>
<tr>
<th>Step</th>
<th>Trim Package-Tank Size</th>
<th>Duration (min)</th>
<th>Flow Rate (gpm)</th>
<th>Time (min)</th>
<th>Flow Rate (gpm)</th>
<th>Conc. Brine (gal)</th>
<th>Time (min)</th>
<th>Flow Rate (gpm)</th>
<th>Slow Rinse (gal)</th>
<th>Brine In/Slow Rinse</th>
</tr>
</thead>
<tbody>
<tr>
<td>BACKWASH</td>
<td></td>
<td></td>
<td>&lt;40°F</td>
<td>40°F to 50°F</td>
<td>50°F to 60°F</td>
<td>60°F to 70°F</td>
<td>70°F to 80°F</td>
<td>80°F to 90°F</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ECON0-09X40</td>
<td></td>
<td>10</td>
<td>2.0</td>
<td>2.0</td>
<td>2.4</td>
<td>2.4</td>
<td>2.4</td>
<td>3.5</td>
<td></td>
<td></td>
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<tr>
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<td>2.0</td>
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### Brine In/Slow Rinse

<table>
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<tr>
<th>Trim Package-Tank Size</th>
<th>Time (min)</th>
<th>Flow Rate (gpm)</th>
<th>Conc. Brine (gal)</th>
<th>Time (min)</th>
<th>Flow Rate (gpm)</th>
<th>Slow Rinse (gal)</th>
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<tbody>
<tr>
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<td>ECON0-14X65</td>
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### Fast Rinse

- All: Same Flow Rate As Backwash

### Brine Refill

<table>
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<tr>
<th>Trim Package-Tank Size</th>
<th>Flow Rate (gpm)</th>
<th>Time (min)</th>
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<tr>
<td>ECON0-09X40</td>
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### Vantage PTC Twin Softeners

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<th>PTCT</th>
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<td>PTC Twin Softener</td>
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<tr>
<td>TRIM PACKAGE</td>
<td>E</td>
<td></td>
<td>ECONOMY - 9100 COMPOSITE, SXT CONTROLLER - NHWB</td>
</tr>
<tr>
<td></td>
<td>D</td>
<td></td>
<td>DELUXE - 6000 &amp; 9500 BRASS, SXT CONTROLLER - NHWB</td>
</tr>
<tr>
<td>VESSEL (Diameter x Shell Height)</td>
<td>08X40</td>
<td>Both Trim Packages</td>
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<tr>
<td></td>
<td>10X54</td>
<td>Both Trim Packages</td>
<td></td>
</tr>
<tr>
<td></td>
<td>12X52</td>
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<tr>
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<td>16X65</td>
<td>Both Trim Packages</td>
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</tr>
<tr>
<td></td>
<td>18X65</td>
<td>Deluxe Trim Package Only</td>
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<tr>
<td></td>
<td>21X62</td>
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<tr>
<td></td>
<td>24X72</td>
<td>Deluxe Trim Package Only</td>
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</tr>
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CYCLONE® Mxi MODULATING
MODULATING BURNER ADVANCES THE CYCLONE TO HIGHER LEVELS OF EFFICIENCY

The full line of A. O. Smith Cyclone Mxi condensing water heaters has been designed to provide years of dependable service and feature industry leading technology. Models are available from 120,000 to 500,000 Btu/h and all deliver thermal efficiencies of 95% and higher. The unique helical coil heat exchanger limits weld joints for optimal service life while maximizing heat transfer.

Cyclone is the industry leader in high efficiency commercial water heating with over a quarter million Cyclones sold since 1996. The current Mxi modulating models adjust firing rate to the specific demand further increasing efficiency and money savings.

INTELLIGENT CONTROL SYSTEM WITH LCD DISPLAY
- Exclusive A. O. Smith designed control system
- Provides detailed water heater status information
- Precise temperature control adjustable from 90 to 180 degrees
- Built-in diagnostics
- Run history information
- Cyclone® Mxi Modulating water heaters are compatible with the iCOMM™ remote monitoring system. Call 1.888.928.3702 for information.

SUBMERGED COMBUSTION CHAMBER, WITH HELICAL HEAT EXCHANGER COIL
- Positioned in center of tank, surrounded by water to virtually eliminate radiant heat loss from chamber
- Direct spark ignition
- Spiral heat exchanger keeps hot burner gases swirling, uses centrifugal force to maximize efficiency of heat transfer to water in tank
- Spiral heat exchanger reduces lime scale from forming on water-side surfaces, which maintains energy efficiency over time

PERMAGLAS® ULTRA COAT™ GLASS LINING
- Glass coating is applied using a liquid slush coating technique to ensure uniform coating
- Heat exchanger coil is glassed both externally and internally for optimum protection

MECHANICAL VENTING VERSATILITY
- Conventional power venting or direct venting
- Vents vertically or through a sidewall
- Front located exhaust and condensate connections allow for easy install and access
- Vents with low cost PVC Schedule 40 intake and exhaust pipe. Approved for optional CPVC Schedule 40, Polypropylene and AL29-4C stainless steel vent materials
- Direct-vent intake and exhaust pipe can terminate separately outside building or through single opening, using concentric vent assembly
- Canadian installations require ULC S636 PVC/CPVC, ULC S636 Polypropylene and AL29-4C stainless steel pipe for intake and exhaust

HIGH EFFICIENCY MODULATING PRE-MIX POWERED BURNER
- Down-fired pre-mix burner provides optimum efficiency and quiet operation
- Top-mounted burner position prevents condensation from affecting burner operation

3-YEAR LIMITED TANK / 1-YEAR LIMITED PARTS WARRANTY
- For complete warranty information, consult written warranty or go to hotwater.com.

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www.hotwater.com | 800-527-1953 Toll-Free USA | A. O. Smith Corporation | 500 Tennessee Waltz Parkway | Ashland City, TN 37015

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COMMERCIAL GAS WATER HEATERS

OTHER FEATURES:
SPACE-SAVING DESIGN FOR INSTALLATION FLEXIBILITY
- Easy-to-remove top cover for convenient access to serviceable parts
- 0° installation clearances on sides and rear, 1-1/2° installation clearance on top
- Handhole cleanout allows easy access to tank interior for cleaning
- 0° clearance to combustibles, approved for installation on combustible floors

CODES AND STANDARDS
- CSA certified and ASME rated T&P relief valve
- Maximum hydrostatic working pressure: 160 psi
- All models are design certified by Underwriters Laboratories (UL), Inc., to ANSI Z21.10.3 - CSA 4.3 Standards
- Meets the thermal efficiency and standby loss requirements of the U.S. Department of Energy and current edition ASHRAE/IES 90.1
- Design Certified by Underwriters Laboratories to NSF standard 5 for 180°F (62°C) water
- Complies with SCAQMD Rule 1146.2 and other Air Quality Management Districts with similar requirements for low-NOx emissions
- ASME tank construction optional on 120-500 model sizes

VENT REQUIREMENTS FOR BTH 120(A) - 250(A)

<table>
<thead>
<tr>
<th>Number of 90° Elbows Installed</th>
<th>3 Inch Pipe Maximum Feet (Meters)</th>
<th>4 Inch Pipe Maximum Feet (Meters)</th>
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<tbody>
<tr>
<td>One (1)</td>
<td>45 feet (13.7 meters)</td>
<td>115 feet (35 meters)</td>
</tr>
<tr>
<td>Two (2)</td>
<td>40 feet (12.2 meters)</td>
<td>110 feet (33.5 meters)</td>
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<tr>
<td>Three (3)</td>
<td>35 feet (10.7 meters)</td>
<td>105 feet (32 meters)</td>
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<tr>
<td>Four (4)</td>
<td>30 feet (9.1 meters)</td>
<td>100 feet (30.5 meters)</td>
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<td>Five (5)</td>
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<td>95 feet (29 meters)</td>
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<tr>
<td>Six (6)</td>
<td>N/A</td>
<td>90 feet (27.4 meters)</td>
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VENT REQUIREMENTS FOR BTH 300(A) - 500(A)

<table>
<thead>
<tr>
<th>Number of 90° Elbows Installed</th>
<th>4 Inch Pipe Maximum Feet (Meters)</th>
<th>6 Inch Pipe Maximum Feet (Meters)</th>
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<tbody>
<tr>
<td>One (1)</td>
<td>65 feet (19.8 meters)</td>
<td>115 feet (35 meters)</td>
</tr>
<tr>
<td>Two (2)</td>
<td>60 feet (18.2 meters)</td>
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<tr>
<td>Three (3)</td>
<td>55 feet (16.8 meters)</td>
<td>105 feet (32 meters)</td>
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<tr>
<td>Four (4)</td>
<td>50 feet (15.2 meters)</td>
<td>100 feet (30.5 meters)</td>
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<tr>
<td>Five (5)</td>
<td>45 feet (13.7 meters)</td>
<td>95 feet (29 meters)</td>
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<td>Six (6)</td>
<td>40 feet (12.2 meters)</td>
<td>90 feet (27.4 meters)</td>
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GAS PRESSURE REQUIREMENTS

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<th>Model Number</th>
<th>Natural Gas</th>
<th>Propane Gas</th>
<th>Natural Gas</th>
<th>Propane Gas</th>
<th>Natural Gas</th>
<th>Propane Gas</th>
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<tr>
<td>BTH-120(A)</td>
<td>0&quot; W.C. (0 kPa)</td>
<td>0&quot; W.C. (0 kPa)</td>
<td>4.4&quot; W.C. (1.10 kPa)</td>
<td>8.5&quot; W.C. (2.12 kPa)</td>
<td>14&quot; W.C. (3.49 kPa)</td>
<td>14&quot; W.C. (3.49 kPa)</td>
</tr>
<tr>
<td>BTH-150(A)</td>
<td>0&quot; W.C. (0 kPa)</td>
<td>0&quot; W.C. (0 kPa)</td>
<td>4.4&quot; W.C. (1.10 kPa)</td>
<td>8.5&quot; W.C. (2.12 kPa)</td>
<td>14&quot; W.C. (3.49 kPa)</td>
<td>14&quot; W.C. (3.49 kPa)</td>
</tr>
<tr>
<td>BTH-199(A)</td>
<td>0&quot; W.C. (0 kPa)</td>
<td>0&quot; W.C. (0 kPa)</td>
<td>4.4&quot; W.C. (1.10 kPa)</td>
<td>8.5&quot; W.C. (2.12 kPa)</td>
<td>14&quot; W.C. (3.49 kPa)</td>
<td>14&quot; W.C. (3.49 kPa)</td>
</tr>
<tr>
<td>BTH-250(A)</td>
<td>0&quot; W.C. (0 kPa)</td>
<td>0&quot; W.C. (0 kPa)</td>
<td>4.4&quot; W.C. (1.10 kPa)</td>
<td>8.5&quot; W.C. (2.12 kPa)</td>
<td>14&quot; W.C. (3.49 kPa)</td>
<td>14&quot; W.C. (3.49 kPa)</td>
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<tr>
<td>BTH-300(A)</td>
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<td>0&quot; W.C. (0 kPa)</td>
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<td>8.5&quot; W.C. (2.12 kPa)</td>
<td>14&quot; W.C. (3.49 kPa)</td>
<td>14&quot; W.C. (3.49 kPa)</td>
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<tr>
<td>BTH-400(A)</td>
<td>0&quot; W.C. (0 kPa)</td>
<td>0&quot; W.C. (0 kPa)</td>
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<td>8.5&quot; W.C. (2.12 kPa)</td>
<td>14&quot; W.C. (3.49 kPa)</td>
<td>14&quot; W.C. (3.49 kPa)</td>
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<tr>
<td>BTH-500(A)</td>
<td>0&quot; W.C. (0 kPa)</td>
<td>0&quot; W.C. (0 kPa)</td>
<td>4.8&quot; W.C. (1.19 kPa)</td>
<td>8.5&quot; W.C. (2.12 kPa)</td>
<td>14&quot; W.C. (3.49 kPa)</td>
<td>14&quot; W.C. (3.49 kPa)</td>
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Depending on the installed equivalent length, and/or the number of appliances connected, the supply gas line size may need to be increased beyond the minimum required size.
## BTH 120-250

### Dimensions

<table>
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<tr>
<th>Model Number</th>
<th>Approx. Capacity</th>
<th>Dimensions</th>
<th>Shipping Weight Std</th>
<th>Shipping Weight ASME</th>
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<tr>
<td>BTH-120(A)</td>
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<td>A: 3</td>
<td>B: 27 3/4</td>
<td>C: 6 5/16</td>
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<td></td>
<td></td>
<td>D: 35</td>
<td>E: 55 1/2</td>
<td>F: 53 1/2</td>
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<tr>
<td></td>
<td></td>
<td>G: 11 1/4</td>
<td>H: 42 1/4</td>
<td>I: 48 1/2</td>
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<tr>
<td></td>
<td></td>
<td>J: 18 1/4</td>
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<tr>
<td>LPH 227</td>
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<tr>
<td>BTH-150(A)</td>
<td>GPH 100</td>
<td>A: 3</td>
<td>B: 27 3/4</td>
<td>C: 6 5/16</td>
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<td>D: 56 3/8</td>
<td>E: 76 1/2</td>
<td>F: 75 1/2</td>
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<td></td>
<td></td>
<td>G: 64</td>
<td>H: 70 1/4</td>
<td>I: 11 1/4</td>
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<td>BTH-199(A)</td>
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<td>B: 27 3/4</td>
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<tr>
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<td>D: 56 3/8</td>
<td>E: 76 1/2</td>
<td>F: 75 1/2</td>
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<tr>
<td></td>
<td></td>
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<td>I: 11 1/4</td>
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<tr>
<td>LPH 379</td>
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<tr>
<td>BTH-250(A)</td>
<td>GPH 100</td>
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<td>B: 27 3/4</td>
<td>C: 6 5/16</td>
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<tr>
<td></td>
<td></td>
<td>D: 56 3/8</td>
<td>E: 76 1/2</td>
<td>F: 75 1/2</td>
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<tr>
<td></td>
<td></td>
<td>G: 64</td>
<td>H: 70 1/4</td>
<td>I: 11 1/4</td>
</tr>
<tr>
<td>LPH 379</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Electrical characteristics: 120V-60Hz A.C., 5.0 A
*A* in model represents ASME construction
Propane gas models available
Dimensions and specifications subject to change without notice in accordance with our policy of continuous product improvement.
# Commercial Gas Water Heaters

## Recovery Capacity

<table>
<thead>
<tr>
<th>Model Number</th>
<th>Type of Gas</th>
<th>Input</th>
<th>Thermal Efficiency</th>
</tr>
</thead>
<tbody>
<tr>
<td>BTH-120(A)</td>
<td>Natural/Propane</td>
<td>120,000</td>
<td>35</td>
</tr>
<tr>
<td>BTH-150(A)</td>
<td>Natural/Propane</td>
<td>150,000</td>
<td>44</td>
</tr>
<tr>
<td>BTH-199(A)</td>
<td>Natural/Propane</td>
<td>199,900</td>
<td>58</td>
</tr>
<tr>
<td>BTH-250(A)</td>
<td>Natural/Propane</td>
<td>250,000</td>
<td>73</td>
</tr>
<tr>
<td>BTH-300(A)</td>
<td>Natural/Propane</td>
<td>300,000</td>
<td>88</td>
</tr>
<tr>
<td>BTH-400(A)</td>
<td>Natural/Propane</td>
<td>399,900</td>
<td>117</td>
</tr>
<tr>
<td>BTH-500(A)</td>
<td>Natural/Propane</td>
<td>499,900</td>
<td>146</td>
</tr>
</tbody>
</table>

## U.S. Gallons/hr and Litres/hr at Temperature Rise Indicated

| Model Number | Approx. Capacity | °F | 30°F | 40°F | 50°F | 60°F | 70°F | 80°F | 90°F | 100°F | 110°F | 120°F | 130°F | 140°F |
|--------------|-----------------|----|------|------|------|------|------|------|------|-------|-------|-------|-------|-------|-------|
| BTH-120(A)   | 60 U.S. Gals.   | GPH | 461  | 345  | 276  | 230  | 197  | 173  | 154  | 138   | 126   | 115   | 106   | 99    |
|              | 227 Litres      | LPH | 1743 | 1308 | 1046 | 872  | 747  | 654  | 581  | 523   | 475   | 436   | 402   | 374   |
| BTH-150(A)   | 100 U.S. Gals.  | GPH | 594  | 445  | 356  | 297  | 255  | 223  | 198  | 178   | 162   | 148   | 137   | 127   |
|              | 379 Litres      | LPH | 2248 | 1686 | 1349 | 1124 | 963  | 843  | 749  | 674   | 613   | 562   | 519   | 482   |
| BTH-199(A)   | 100 U.S. Gals.  | GPH | 783  | 588  | 470  | 392  | 336  | 294  | 261  | 235   | 214   | 196   | 181   | 168   |
|              | 379 Litres      | LPH | 2965 | 2224 | 1779 | 1483 | 1271 | 1112 | 988  | 890   | 809   | 741   | 684   | 635   |
| BTH-250(A)   | 100 U.S. Gals.  | GPH | 970  | 727  | 582  | 485  | 416  | 364  | 323  | 291   | 264   | 242   | 224   | 208   |
|              | 379 Litres      | LPH | 3670 | 2753 | 2202 | 1835 | 1573 | 1376 | 1223 | 1101  | 1001  | 918   | 847   | 786   |
| BTH-300(A)   | 119 U.S. Gals.  | GPH | 1164 | 873  | 698  | 582  | 499  | 436  | 388  | 349   | 317   | 291   | 269   | 249   |
|              | 450.96 Litres   | LPH | 4405 | 3304 | 2643 | 2202 | 1888 | 1652 | 1468 | 1321  | 1201  | 1101  | 1017  | 944   |
| BTH-400(A)   | 119 U.S. Gals.  | GPH | 1535 | 1151 | 921  | 767  | 658  | 576  | 512  | 460   | 419   | 384   | 354   | 329   |
|              | 450.96 Litres   | LPH | 5810 | 4358 | 3486 | 2905 | 2490 | 2179 | 1937 | 1743  | 1585  | 1453  | 1341  | 1245  |
| BTH-500(A)   | 119 U.S. Gals.  | GPH | 1919 | 1439 | 1151 | 959  | 822  | 720  | 640  | 576   | 523   | 480   | 443   | 411   |
|              | 450.96 Litres   | LPH | 7263 | 5448 | 4358 | 3632 | 3113 | 2724 | 2421 | 2179  | 1981  | 1816  | 1676  | 1556  |

Recovery capacities are based on ASHRAE rated thermal efficiencies.
For ASME Construction, add an "A" to the end of the model number: e.g. BTH-120A.

## Storage Capacity

<table>
<thead>
<tr>
<th>Model Number</th>
<th>U.S. Gallons</th>
<th>Liters</th>
</tr>
</thead>
<tbody>
<tr>
<td>BTH 120</td>
<td>60</td>
<td>227</td>
</tr>
<tr>
<td>BTH 150</td>
<td>100</td>
<td>379</td>
</tr>
<tr>
<td>BTH 199</td>
<td>100</td>
<td>379</td>
</tr>
<tr>
<td>BTH 250</td>
<td>100</td>
<td>379</td>
</tr>
<tr>
<td>BTH 300</td>
<td>119</td>
<td>450.96</td>
</tr>
<tr>
<td>BTH 400</td>
<td>119</td>
<td>450.96</td>
</tr>
<tr>
<td>BTH 500</td>
<td>119</td>
<td>450.96</td>
</tr>
</tbody>
</table>

## Gas Line Connection Size

<table>
<thead>
<tr>
<th>Model Number</th>
<th>Series</th>
<th>Natural Gas</th>
<th>Propane Gas</th>
</tr>
</thead>
<tbody>
<tr>
<td>BTH 120</td>
<td>200/201</td>
<td>3/4&quot; NPT</td>
<td>3/4&quot; NPT</td>
</tr>
<tr>
<td>BTH 150</td>
<td>200/201</td>
<td>3/4&quot; NPT</td>
<td>3/4&quot; NPT</td>
</tr>
<tr>
<td>BTH 199</td>
<td>200/201</td>
<td>3/4&quot; NPT</td>
<td>3/4&quot; NPT</td>
</tr>
<tr>
<td>BTH 250</td>
<td>200/201</td>
<td>3/4&quot; NPT</td>
<td>3/4&quot; NPT</td>
</tr>
<tr>
<td>BTH 300</td>
<td>200/201</td>
<td>1-1/2&quot; NPT</td>
<td>1-1/2&quot; NPT</td>
</tr>
<tr>
<td>BTH 400</td>
<td>200/201</td>
<td>1-1/2&quot; NPT</td>
<td>1-1/2&quot; NPT</td>
</tr>
<tr>
<td>BTH 500</td>
<td>200/201</td>
<td>1-1/2&quot; NPT</td>
<td>1-1/2&quot; NPT</td>
</tr>
</tbody>
</table>
OPTIONAL KITS

OPTIONAL CONCENTRIC VENT KITS
- BTH-120 - 250 vent kit p/n 9006328005
- BTH-300 - 500 vent kit p/n 9008841005

OPTIONAL LOW PROFILE TERMINATION VENT KITS
- 3" Flush Mount Vent Kit p/n 9008933005
- 4" Flush Mount Vent Kit p/n 9008934005
- 6" Flush Mount Vent Kit p/n 9008935005

OPTIONAL CONDENSATE NEUTRALIZATION KITS
- BTH-120-199 kit p/n 9007950005
- BTH-250-500 kit p/n 9007960005

COMMON VENTING KITS FOR UP TO 2 WATER HEATERS
 ONE KIT PER WATER HEATER REQUIRED

<table>
<thead>
<tr>
<th>Kit</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>9009152005</td>
<td>PVC Common Vent Kit, 120 - 250 Models</td>
</tr>
<tr>
<td>9009227005</td>
<td>PVC Common Vent Kit, 300 - 500 Models</td>
</tr>
<tr>
<td>9009132005</td>
<td>Polypropylene Common Vent Kit, 120-250 Models</td>
</tr>
<tr>
<td>9009226005</td>
<td>Polypropylene Common Vent Kit, 300 - 500 Models</td>
</tr>
</tbody>
</table>

Installations must comply with all national, state, and local codes. See kit instructions and corresponding water heater manual for detailed installation instructions and additional information. 50 foot maximum equivalent length of straight pipe connects vent and elbows. NOTE: Order 2 kits for every 2 heater installation. See the Common Vent Kit manual or spec sheet for detailed information.

SPECIFICATION
(Natural or Propane) gas water heater(s) shall be A. O. Smith Cyclone Mxi model # __________ or equal, minimum 95% thermal efficiency, a storage capacity of _____ gallons, an input rating of _____ BTUs per hour, a recovery rating of _____ gallons per hour (gph) at 100°F rise and a maximum hydrostatic working pressure of 160 psi. Water heater(s) shall: 1. Modulating gas burner that automatically adjusts the input based on demand; 2. Powered anodes that are not sacrificial and maintenance free; 3. Have seamless glass-lined steel tank construction, with glass lining applied to all water-side surfaces after the tank has been assembled and welded; 4. Meet the thermal efficiency and/or standby loss requirements of the U.S. Department of Energy and current edition of ASHRAE/IES 90.1; 5. Have foam insulation and a CSA Certified and ASME rated T&P relief valve; 6. Have a clamp-fired power burner designed for precise mixing of air and gas for optimum efficiency, requiring no special calibration on start-up; 7. Be approved for 0° clearance to combustibles.

The control shall be an integrated solid-state temperature and ignition control device with integral diagnostics, graphic user interface, fault history display, and shall have digital temperature readout. 1. All models are design certified by Underwriters Laboratories (UL), Inc., according to ANSI Z21.10.3 - CSA 4.3 standards governing storage type water heaters; 2. Meet the thermal efficiency and standby loss requirements of the U.S. Department of Energy and current edition ASHRAE/IES 90.1. Complies with SCAQMD Rule 1146.2 and other air quality management districts with similar requirements for low NOx emissions.

120K-250K BTU Input: For Standard Power Venting: Water heater shall be suitable for power venting using a (3" or 4") _____ diameter PVC pipe for a total distance of (50 ft or 120 ft.) _____ equivalent feet of vent piping. For Power Direct Venting: Water heater(s) shall be suitable for power direct venting using a (3" or 4") _____ diameter PVC pipe for a total distance of (50 ft or 120 ft.) _____ equivalent feet of vent piping and (50 ft. or 120 ft.) _____ equivalent feet of intake air piping.

300K - 500K BTU Input: For Standard Power Venting: Water heater shall be suitable for standard power venting using a (4" or 6") _____ diameter PVC pipe for a total distance of (70 ft. or 120 ft.) _____ equivalent feet of vent piping. For Power Direct Venting: Water heater(s) shall be suitable for power direct venting using a (4" or 6") _____ diameter PVC pipe for a total distance of (70 ft or 120 ft.) _____ equivalent feet of vent piping and (70 ft. or 120 ft.) _____ equivalent feet of intake air piping.

Operation of the water heater(s) in a closed system where thermal expansion has not been compensated for (with a properly sized thermal expansion tank) will void the warranty.

Water heater should incorporate the iCOMM™ system for remote monitoring, leak detection and fault alert.

For technical information, call 800-527-1953. A. O. Smith Corporation reserves the right to make product changes or improvements without prior notice.
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www.hotwater.com | 800-527-1953 Toll-Free USA
CENTRA®-R 200

The CENTRA has revolutionised the way that large volumes of pure water are produced, stored and distributed. Instead of a central lab system, comprising of an untidy grouping of components and pipework, you can now have just one integrated system box. The CENTRA-R 200 is a complete water purification, storage, control and distribution systems featuring a 200 liter per hour reverse osmosis module and 0.2 μm filter.

- The compact design provides more flexible installation options for new buildings and refurbishments. The CENTRA's small footprint means that it can be placed closer to the laboratory, avoiding the negative cost and design implications of long pipe work loops
- Reliable, continual supply of pure water using unique access controls, leak detection systems and full AV alarms with optional building management system (BMS) connectivity
- Optimized inorganic water quality through use of in-line purification technologies. Recirculated water is UV treated, filtered and (if fitted) can be improved through deionization
- 200 l/hr of purified water available at up to 30 l/min from a distribution loop. A wide range of water purities are possible from RO permeate up to 18.2 MΩ-cm Type I purity

Process Flow CENTRA-R 200
Treated Water Specifications

<table>
<thead>
<tr>
<th>Model</th>
<th>R 200</th>
<th>R 200 HFV</th>
<th>R 200 HFR</th>
</tr>
</thead>
<tbody>
<tr>
<td>Flowrate (exit from unit) - l/min (USG/min)</td>
<td>18 (48)</td>
<td>38 (100)</td>
<td>38 (10)</td>
</tr>
<tr>
<td>Daily usage - typical</td>
<td>Up to 5000 liters (1321 USG)</td>
<td>Up to 5000 liters (1321 USG)</td>
<td>Up to 5000 liters (1321 USG)</td>
</tr>
<tr>
<td>Daily usage - maximum</td>
<td>Up to 6000 liters (1585 USG)</td>
<td>Up to 6000 liters (1585 USG)</td>
<td>Up to 6000 liters (1585 USG)</td>
</tr>
<tr>
<td>Inorganics</td>
<td>Up to 18.2MΩ-cm⁻¹</td>
<td>Up to 18.2MΩ-cm⁻¹</td>
<td>Up to 18.2MΩ-cm⁻¹</td>
</tr>
<tr>
<td>TOC - typical</td>
<td>&lt;10 ppb²</td>
<td>&lt;10 ppb²</td>
<td>&lt;10 ppb²</td>
</tr>
<tr>
<td>Bacteria - typical</td>
<td>&lt;5 CFU/ml²</td>
<td>&lt;5 CFU/ml²</td>
<td>&lt;5 CFU/ml²</td>
</tr>
<tr>
<td>Particles</td>
<td>0.2 µm filtration</td>
<td>0.2 µm filtration</td>
<td>0.2 µm filtration</td>
</tr>
</tbody>
</table>

¹ Ion-exchange cylinder installed (Nuclear or Hypex grade). ² System to be installed following ELGA LabWater installation guidelines and regularly sanitized.

Dimensions and weights

Dimensions

Height 1820mm (71.7in), Width 730mm (28.75in), Depth 890mm (35in)

Shipping weight | 178kg (392lb)

Operational weight | 527kg (1162lb)

Feedwater Requirements

Source

Potable tap water as detailed below.

Note: It is essential that the feedwater be suitably conditioned. Please refer to the contaminants listed below and ensure that suitable pretreatment is included in the installation.

<table>
<thead>
<tr>
<th>Contaminant</th>
<th>Measure</th>
<th>Range</th>
<th>Pretreatment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Calcium</td>
<td>Ca ppm as CaCO₃</td>
<td>&lt;250</td>
<td>Softener or use very low RO recovery ³</td>
</tr>
<tr>
<td></td>
<td></td>
<td>&gt;250</td>
<td></td>
</tr>
<tr>
<td>Total chlorine</td>
<td>Cl ppm</td>
<td>0.1 to 0.5</td>
<td>20 inch carbon block</td>
</tr>
<tr>
<td></td>
<td></td>
<td>&gt;0.5</td>
<td>Cylinder of carbon sized correctly to obtain &lt;0.1ppm</td>
</tr>
<tr>
<td>Silica</td>
<td>SiO₂ ppm</td>
<td>&lt;30</td>
<td>None</td>
</tr>
<tr>
<td></td>
<td></td>
<td>&gt;30</td>
<td>20 inch cartridge depth filter</td>
</tr>
<tr>
<td></td>
<td></td>
<td>&lt;10</td>
<td>None</td>
</tr>
<tr>
<td>Fouling Index</td>
<td>Fi</td>
<td>10 - 20</td>
<td>20 inch cartridge depth filter</td>
</tr>
<tr>
<td></td>
<td></td>
<td>&gt;20</td>
<td>Back washable media filter with a minimum flow rate of 20 l/min</td>
</tr>
<tr>
<td>Iron/manganese</td>
<td>Fe/Mn ppm</td>
<td>&lt;0.05</td>
<td>None</td>
</tr>
<tr>
<td></td>
<td></td>
<td>&gt;0.05</td>
<td>20 inch cartridge depth filter ³</td>
</tr>
<tr>
<td></td>
<td></td>
<td>&gt;0.1</td>
<td>Back-washable pre-filter ¹</td>
</tr>
<tr>
<td>Organics</td>
<td>TOC ppm C</td>
<td>&lt;2</td>
<td>None</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2 - 3</td>
<td>20 inch carbon block ⁴</td>
</tr>
<tr>
<td></td>
<td></td>
<td>&gt;3</td>
<td>Cylinder of carbon sized correctly for TOC demand ⁴</td>
</tr>
</tbody>
</table>

³ Check 151, increase frequency of acid cleaning. ⁴ Increase frequency of alkaline cleaning. ⁵ Increase frequency of acid cleaning.

Temperature

1 - 40°C (Recommended 15 - 25°C)

Flowrate

(maximum requirement @15°C) 20 l/min (5.3 GPM)

Drain requirements

(gravity fall with air gap) 45 l/min (12 GPM)

Feedwater Pressure

4 bar (60 psi) maximum, 2 bar (30 psi) minimum.

Electrical Requirements

Mains input

115V ac, 60Hz

System control voltage

24V dc

Power consumption during recirculation

2000VA

Electrical protection rating

20 amps

Reservoir level connection for control of additional ELGA products

Jack plug 3.5mm DIN plug 6 way

Noise level during recirculation

<70dB A

ELGA LabWater

Tel: 630 343 5251 • Fax: 630 910 4798 • Email: elga.usa@veolia.com • Website: www.elgalabwater.com

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LITR38763-02US

OPTIONS (Check/specify appropriate options)

SUFFIXES
- RK  Hydrant Parts Repair Kit
- 34EL  3/4 [19] IP 90° Inlet Elbow Adapter
- 34FS  3/4 [19] Solder Female Inlet Adapter

**NOTE:** The adjustable sleeve on the stainless steel box is provided with a gasket as standard, but additional caulking of all inside joints is required (by others) after the hydrant box has been properly set. Caulking should be performed on all open seams, including the seams where the gasket is present.

---

REV. J  DATE: 10/22/10  C.N. NO. 111945

ZURN INDUSTRIES, LLC.  SPECIFICATION DRAINAGE OPERATION  1801 Pittsburgh Ave.  Erie, PA 16514
Phone: 814/455-0921  Fax: 814/455-7929  World Wide Web: www.zurn.com

In Canada: ZURN INDUSTRIES LIMITED  3544 Nashua Drive  Mississauga, Ontario L4V1L2  Phone: 905/405-8272 Fax: 905/405-1292
IVS/IVD Models—Industrial Vacuum Systems

FEATURES AND BENEFITS
- Lubricated Rotary Vane Vacuum Pumps
- 29.3" Hg End Vacuum
- Vapor Removal Gas Ballast
- Integrated Coalescing Filter
- Spin-on Oil Filter
- ASME Air Receivers
- UL-listed NEMA 1 Control Panel
- Low annual maintenance cost
- Easy Installation
- Low operating temperatures

IVS System

<table>
<thead>
<tr>
<th>Model</th>
<th>SCFM @ 19&quot; Hg</th>
<th>HP</th>
<th>Tank (Gal.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>IVS015</td>
<td>7</td>
<td>1.5</td>
<td>30 V/60 V</td>
</tr>
<tr>
<td>IVS020</td>
<td>11</td>
<td>2</td>
<td>60 V</td>
</tr>
<tr>
<td>IVS030</td>
<td>17</td>
<td>3</td>
<td>80 V</td>
</tr>
<tr>
<td>IVS040</td>
<td>26</td>
<td>5</td>
<td>80 H</td>
</tr>
<tr>
<td>IVS050</td>
<td>37.9</td>
<td>5</td>
<td>80 H</td>
</tr>
<tr>
<td>IVS075</td>
<td>52</td>
<td>7.5</td>
<td>120 H</td>
</tr>
<tr>
<td>IVS100</td>
<td>77</td>
<td>10</td>
<td>200 H</td>
</tr>
</tbody>
</table>

IVD System

<table>
<thead>
<tr>
<th>Model</th>
<th>SCFM @ 19&quot; Hg</th>
<th>HP</th>
<th>Tank (Gal.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>IVD015</td>
<td>14</td>
<td>1.5 (2)</td>
<td>80 H</td>
</tr>
<tr>
<td>IVD020</td>
<td>22</td>
<td>2 (2)</td>
<td>80 H</td>
</tr>
<tr>
<td>IVD030</td>
<td>34</td>
<td>3 (3)</td>
<td>120 H</td>
</tr>
<tr>
<td>IVD040</td>
<td>52</td>
<td>5 (2)</td>
<td>120 H</td>
</tr>
<tr>
<td>IVD050</td>
<td>75.8</td>
<td>5 (2)</td>
<td>120 H/200 H</td>
</tr>
<tr>
<td>IVD075</td>
<td>104</td>
<td>7.5 (2)</td>
<td>200 H</td>
</tr>
<tr>
<td>IVD100</td>
<td>154</td>
<td>10 (2)</td>
<td>240 H</td>
</tr>
</tbody>
</table>

OPTIONS FOR ALL MODELS
- Premium warranty
- High Temperature alarm
- Vacuum Regulator
- Carbon filters

Our industrial vacuum tank mount systems feature a lubricated rotary vane pump, one of the simplest and most reliable pump types available. The use of oil in the pump produces higher efficiencies, lower operating temperatures, and lower sound levels. These pumps are also the most suitable to high ambient temperatures, which makes them ideal for manufacturing or process applications where environmental temperatures tend to be higher. (Consult factory for applications where ambient temperatures are above 104°F.) These pumps also have the lowest initial cost and high ultimate vacuum levels (29.3 Hg in end vacuum).

By tank mounting the pumps on an ASME air receiver and adding a UL-listed NEMA 1 control panel, Powerex has designed systems that are perfect for manufacturing processes like material handling, packing, food processing, and printing.

www.powerexinc.com - Telephone: (888) 769-7979 - Fax: (513) 367-3125
# THERM-X-TROL®
## Thermal Expansion Absorbers, ST-C Series (ASME)

### In-Line Models

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>ST-5-C</td>
<td>8</td>
<td>4.0</td>
<td>3.44</td>
<td>.9</td>
<td>264</td>
<td>10%</td>
</tr>
<tr>
<td>ST-12-C</td>
<td>24</td>
<td>6.4</td>
<td>12.0</td>
<td>3.2</td>
<td>340</td>
<td>13%</td>
</tr>
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</table>

### Stand Models

<table>
<thead>
<tr>
<th></th>
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<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>ST-20V-C</td>
<td>30</td>
<td>8.0</td>
<td>12.0</td>
<td>3.2</td>
<td>510</td>
<td>20%</td>
<td>12</td>
</tr>
<tr>
<td>ST-30V-C</td>
<td>53</td>
<td>14.0</td>
<td>33.9</td>
<td>8.56</td>
<td>491</td>
<td>19%</td>
<td>419</td>
</tr>
<tr>
<td>ST-42V-C</td>
<td>66</td>
<td>17.5</td>
<td>42.9</td>
<td>11.4</td>
<td>640</td>
<td>25%</td>
<td>419</td>
</tr>
<tr>
<td>ST-60V-C</td>
<td>95</td>
<td>25.0</td>
<td>42.9</td>
<td>11.4</td>
<td>864</td>
<td>34</td>
<td>419</td>
</tr>
<tr>
<td>ST-70V-C</td>
<td>129</td>
<td>34.0</td>
<td>42.9</td>
<td>11.4</td>
<td>1076</td>
<td>42%</td>
<td>419</td>
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<tr>
<td>ST-80V-C</td>
<td>200</td>
<td>53.0</td>
<td>130</td>
<td>34</td>
<td>1029</td>
<td>40%</td>
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<tr>
<td>ST-120V-C</td>
<td>250</td>
<td>65.0</td>
<td>130</td>
<td>34</td>
<td>1213</td>
<td>47%</td>
<td>610</td>
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<tr>
<td>ST-180V-C</td>
<td>292</td>
<td>77.0</td>
<td>130</td>
<td>34</td>
<td>1337</td>
<td>52%</td>
<td>610</td>
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<tr>
<td>ST-210V-C</td>
<td>341</td>
<td>90.0</td>
<td>130</td>
<td>34</td>
<td>1524</td>
<td>60</td>
<td>610</td>
</tr>
</tbody>
</table>

### Maximum Operating Conditions
- Operating Temperature: 200°F (93°C)
- Working Pressure: 150 PSIG (10.5 bar)

### Specifications

<table>
<thead>
<tr>
<th>Description</th>
<th>Standard Construction</th>
</tr>
</thead>
<tbody>
<tr>
<td>Standard Factory Pre-charge</td>
<td>55 PSIG (3.9 bar)</td>
</tr>
<tr>
<td>System Connection</td>
<td>Stainless Steel</td>
</tr>
<tr>
<td>Diaphragm</td>
<td>Heavy Duty Butyl/EPDM ANSI/NSF61</td>
</tr>
<tr>
<td>Liner Material</td>
<td>Polypropylene</td>
</tr>
<tr>
<td>Shell</td>
<td>Steel</td>
</tr>
</tbody>
</table>

*Constructed per ASME Code Section VIII, Division 1. All dimensions and weights are approximate.*

---

Rev. 02/05

Submittal data sheets can ONLY be ordered as a "Submittal Data Sheet Pack", using M# 4400. They are not available to order on an individual basis, however each data sheet is available on the Amtral Web Site and can be downloaded and printed for use as needed.
Model 975XL
Reduced Pressure Principle Assembly
Backflow Prevention Assembly

Application
Designed for installation on water lines to protect against both backspillmage and backpressure of contaminated water into the potable water supply. The Model 975XL provides protection where a potential health hazard exists.

Standards Compliance
- ASSE® Listed 1013
- IAPMO® Listed
- CSA® B64.4
- Approved by the Foundation for Cross Connection Control and Hydraulic Research at the University of Southern California

Materials
- Main valve body: Cast bronze ASTM B 564
- Access covers: Cast bronze ASTM B 564
- Internals: Stainless steel, 300 Series
- Elastomers: Silicone (FDA approved)
- Polymeric: Noryl™, NSF Listed
- Springs: Stainless steel, 300 series

Features
- Sizes: 1/4", 3/8", 1/2"
- Maximum working water pressure: 175 psi
- Maximum working water temperature: 180°F
- Threaded connections (FNPT): ANSI B1.20.1
- Hydrostatic test pressure: 350 PSI

Options
(Suffixes can be combined)
- L - with full port QT ball valves (standard)
- S - with bronze "Y" type strainer (1/2" only)
- TCU - with test cocks up
- FT - with integral male 45° flare SAE test fitting

Accessories
- Air gap (Model AG)
- Repair kits (rubber only)
- Thermal expansion tank (Mdl. XT)
- Soft seated check valve (Model 40XL)
- Shock arrester (Model 1250XL)
- QT-SET Quick Test Fitting Set

Dimensions & Weights (do not include pkg.)

<table>
<thead>
<tr>
<th>MODEL SIZE</th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
<th>E</th>
<th>F</th>
<th>G</th>
<th>WITH BALL VALVES</th>
<th>LESS BALL VALVES</th>
</tr>
</thead>
<tbody>
<tr>
<td>1/4</td>
<td>8</td>
<td>9/12</td>
<td>241</td>
<td>5 3/4</td>
<td>146</td>
<td>1 1/2</td>
<td>38</td>
<td>2 3/4</td>
<td>70</td>
</tr>
<tr>
<td>3/8</td>
<td>10</td>
<td>9/12</td>
<td>241</td>
<td>5 3/4</td>
<td>146</td>
<td>1 1/2</td>
<td>38</td>
<td>2 3/4</td>
<td>70</td>
</tr>
<tr>
<td>1/2</td>
<td>15</td>
<td>10</td>
<td>254</td>
<td>5 3/4</td>
<td>146</td>
<td>1 1/2</td>
<td>38</td>
<td>2 3/4</td>
<td>70</td>
</tr>
</tbody>
</table>

Zurn Industries, LLC | Wilkins
1747 Commerce Way, Paso Robles, CA U.S.A. 93446 Ph. 855-663-9676, Fax 805-236-5766
In Canada | Zurn Industries Limited
3544 Nashua Drive, Mississauga, Ontario L4V 1L2 Ph. 905-405-8272, Fax 905-405-1292

Rev. B
Date: 12/13
Document No. BF-975XL(SM)
Product No. Model 975XL(SM)
www.zurn.com
Page 1 of 2
Flow Characteristics

MODEL 975XL 1/4", 3/8" & 1/2" (STANDARD & METRIC)

FLOW RATES (l/s)

FLOW RATES (GPM)

PRESSURE LOSS (PSIG)

PRESSURE LOSS (KPA)

Typical Installation
Local codes shall govern installation requirements. To be installed in accordance with the manufacturers' instructions and the latest edition of the Uniform Plumbing Code. Unless otherwise specified, the assembly shall be mounted at a minimum of 12" (305mm) and a maximum of 30" (762mm) above adequate drains with sufficient side clearance for testing and maintenance. The installation shall be made so that no part of the unit can be submerged or where relief valve discharge could cause damage.

<table>
<thead>
<tr>
<th>Pipe size</th>
<th>5 ft/sec</th>
<th>7.5 ft/sec</th>
<th>10 ft/sec</th>
<th>15 ft/sec</th>
</tr>
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<tbody>
<tr>
<td>1/8&quot;</td>
<td>1</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>1/4&quot;</td>
<td>2</td>
<td>2</td>
<td>3</td>
<td>5</td>
</tr>
<tr>
<td>3/8&quot;</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
</tr>
<tr>
<td>1/2&quot;</td>
<td>5</td>
<td>7</td>
<td>9</td>
<td>14</td>
</tr>
<tr>
<td>3/4&quot;</td>
<td>8</td>
<td>12</td>
<td>17</td>
<td>25</td>
</tr>
<tr>
<td>1&quot;</td>
<td>13</td>
<td>20</td>
<td>27</td>
<td>40</td>
</tr>
<tr>
<td>1 1/4&quot;</td>
<td>23</td>
<td>35</td>
<td>47</td>
<td>70</td>
</tr>
<tr>
<td>1 1/2&quot;</td>
<td>32</td>
<td>48</td>
<td>63</td>
<td>95</td>
</tr>
<tr>
<td>2&quot;</td>
<td>52</td>
<td>78</td>
<td>105</td>
<td>167</td>
</tr>
</tbody>
</table>

Capacity thru Schedule 40 Pipe

INDOOR INSTALLATION

Specifications
The Reduced Pressure Principle Backflow Preventer shall be ASSE® Listed 1013, rated to 180° F, and supplied with full port ball valves. The main body and access covers shall be low lead bronze (ASTM B 584), the seat ring and all internal polymers shall be NSF® Listed Noryl™ and the seat disc elastomers shall be silicone. The checks shall be oriented at a 45° angle upward and accessible for maintenance without removing the relief valve or the entire device from the line. If installed indoors, the installation shall be supplied with an air gap and "Y" type strainer. The Reduced Pressure Principle Backflow Preventer shall be a ZURN WILKINS Model 975XL.
MINI-PRIME ELECTRONIC TRAP PRIMING MANIFOLD

MP-500

MINI-PRIME
MP-500-115V
MP-500-24V
MP-500-240V

1/2" MALE NPT
(includes integral stainless steel screen)

SOLENOID VALVE

1" AIR GAP

OPTIONAL DISTRIBUTION UNIT
(DU SERIES) PURCHASED SEPARATELY

6" SOLENOID CORD

PLEASE NOTE:

Designed for use with 1 to 4 floor drains.
The trap primer valve make up line to floor drain is recommended
to be a minimum of 1/2" off the finished floor before a 90° elbow
can be installed. The furthest recommended distance of makeup
line is approximately 20' to floor drain. Trap primer make up line
must have a continuous slope to the floor drain (consult local code
requirements).

RECYCLE TIMER BOX:

Pre-set timer opens once for 6 seconds every 24 hrs.
Dimensions - (L) 7 5/8" x (W) 4 5/8" x (D) 2 3/8"
OUTLET: 1/2" NPT Female. ANSI/ASME B1.20.1

PROJECT SUBMITTAL MODEL # ______________________

Project: _______________________________________
Contractor: _____________________________________
Engineer: ________________________________________
Date Submitted: _________________________________
Prepared By: ____________________________________

MINI-PRIME W/BOX
MPB-500-115V
MPB-500-24V
MPB-500-220V

NEMA Type 1, UL 50, 12" x 12" x 4" - 16 gauge steel w/screw
on cover ANSI 61 gray polyester powder paint.

120 Volt MP/MPB
120 vac solenoid coil
1 Phase
2 wire + ground
60Hz Frequency
Hold current: .11 Amps
In Rush: .23 Amps
Largest Load Ampere: .23 Amps

240 Volt MP/MPB
240 vac solenoid coil
1 Phase
2 wire + ground
60Hz Frequency
Hold current: .05 Amps
In Rush: .12 Amps
Largest Load Ampere: .12 Amps

ROUGH-IN DIMENSIONS
A. 12 INCHES
B. 12 INCHES
C. 4 INCHES

DISTRIBUTION UNITS:
(DU Series) Drain Outlet: 5/8" and 1/2"
Compression Fittings SAEJ512 -1/2" female NPT ANSI/ASME B1.20.1

SOLDER JOINTS:
95-5 lead free. Containing lead not in the
excess of 0.2%

ELECTRICAL COMPONENTS:
Circuit Breaker, Test Switch, Timer, Solenoid
Valve UL Listed.
Electrical assembly listed per UL #.73.

TEMPERATURE/PRESSURE:
32°F-125°F, 20 PSI-150 PSI. Minimum
2oz. water at 20 PSI per drain served.

ACCESS DOOR FOR MP-500
Model:
D-814PC, D-814SS, F-814PC,
F-814SS.

Precision Plumbing Products
Division of JL Industries, Inc.
802 SE 199th Ave
Portland, Oregon 97233

T (503) 256-4010
F (503) 256-8165
www.pppinc.net

US PATENT NUMBER 5,767,419 CANADIAN PATENT NUMBER 2,174,578
Rev 05/15
**Vacuum Breaker Trap Primer**

**"TP" VARIATION**

**Description**

VBF-72-A Vacuum Breaker Trap Primer. The Sloan® VBF-72-A Vacuum Breaker Trap Primer provides for a constant water seal in floor drains. Maintaining a trap seal prevents objectionable sewer gases from escaping into the air. Each time the Sloan® Flushometer is activated, a small amount of water is diverted to the floor drain (piping from Trap Primer to floor drain not supplied by Sloan). The VBF-72-A uses a patented Water Deflector that carefully regulates the amount of water diverted to the drain. This makes the VBF-72-A specially suited for use with 1.28 gpf (4.8 Lpf) High Efficiency, 1.6 gpf (6.0 Lpf) Low Consumption and 3.5 gpf (13.2 Lpf) Water Saver Flushometers.

**Models**

- VBF-72-A1 Supplied with Royal® Flushometers
- VBF-72-A2 Supplied with Regal®, Gem® and Naval® Flushometers

**Specifications**

Vacuum Breaker Trap Primer for use with exposed Flushometers. The VBF-72-A1 and VBF-72-A2 Trap Primers include:

- One Piece, Chrome Plated Flush Connection
- Water Deflector to control the amount of water diverted from the flush
- 1/2" Elbow and Flex-bend Tube connection from Vacuum Breaker to wall
- Diverter Wall Flange and Fittings
- Chrome Plated Wall Flange and Fitting to connect 1/2" NPT pipe

VBF-72-A1 Trap Primer also includes:

- High Back Pressure Vacuum Breaker
- One-piece Bottom Hex Coupling Nut

The VBF-72-A can be supplied with the following Flushometer Models:

<table>
<thead>
<tr>
<th>Model Number</th>
<th>Flush Connection Length</th>
<th>Centerline of Supply to Top of Bowl &quot;A&quot;</th>
<th>Centerline of Supply to Trap Primer Outlet &quot;B&quot;</th>
<th>Critical Line to Trap Primer Outlet &quot;C&quot;</th>
</tr>
</thead>
<tbody>
<tr>
<td>110/111</td>
<td>115&quot; (292 mm)</td>
<td>115&quot; (292 mm)</td>
<td>7&quot; (178 mm)</td>
<td>2½&quot; (57 mm)</td>
</tr>
<tr>
<td>113</td>
<td>13&quot; (330 mm)</td>
<td>16&quot; (406 mm)</td>
<td>11&quot; (289 mm)</td>
<td>6½&quot; (165 mm)</td>
</tr>
<tr>
<td>115</td>
<td>21&quot; (533 mm)</td>
<td>24&quot; (610 mm)</td>
<td>11&quot; (289 mm)</td>
<td>6½&quot; (165 mm)</td>
</tr>
<tr>
<td>116</td>
<td>24&quot; (610 mm)</td>
<td>27&quot; (696 mm)</td>
<td>11&quot; (289 mm)</td>
<td>6½&quot; (165 mm)</td>
</tr>
</tbody>
</table>

† Check with local codes for approval to use VBF-72-A1 Trap Primer with Model Numbers 110 and 111 Flushometers. Some codes require a minimum distance of 5" (127 mm) between the Critical Line of the Vacuum Breaker and the Trap Primer and the Trap Primer Outlet. In these cases specify the Model Numbers 113, 115 or 116.

When ordering a Sloan Flushometer with a Trap Primer, please specify the "TP" Variation; e.g., Model Number 110 TP.

This space for Architect/Engineer approval

SLOAN® VALVE COMPANY • 10500 SEYMOUR AVE. • FRANKLIN PARK, IL 60131
Ph: 1-800-9-VALVE-9 or 1-847-671-4300 • Fax: 1-800-447-8329 or 1-847-671-4360
http://www.sloanvalve.com

The information contained in this document is subject to change without notice.
Specifications:
Furnish and install fire rated recessed washing machine outlet box. Washing machine outlet box shall have brass quarter turn valves with integral hammer arresters. Unit shall be Guy Gray product code checked below as manufactured by IPS Corporation.

Box Material:
PVC Resin & Intumescent Pad attached

Valve & Drain Options:
Qtr. Turn Arrester Valve with 1/2" Sweat, CPVC, PEX or Wirsbo connection. Valves comply with ASSE 1010.

<table>
<thead>
<tr>
<th>Item #</th>
<th>Product Description</th>
<th>Model #</th>
<th>Quantity</th>
</tr>
</thead>
<tbody>
<tr>
<td>82371</td>
<td>Qtr Turn Arrester Valve, 1/2&quot; Sweat Connection</td>
<td>FR12SHA</td>
<td>5</td>
</tr>
<tr>
<td>82372</td>
<td>Qtr Turn Arrester Valve, 1/2&quot; Sweat Connection, Contractor Pack</td>
<td>FR12SHACP</td>
<td>10</td>
</tr>
<tr>
<td>82373</td>
<td>Qtr Turn Arrester Valve, 1/2&quot; CPVC Connection</td>
<td>FR12CHA</td>
<td>5</td>
</tr>
<tr>
<td>82374</td>
<td>Qtr Turn Arrester Valve, 1/2&quot; CPVC Connection, Contractor Pack</td>
<td>FR12CHACP</td>
<td>10</td>
</tr>
<tr>
<td>82375</td>
<td>Qtr Turn Arrester Valve, 1/2&quot; Pex Connection</td>
<td>FR12PHA</td>
<td>5</td>
</tr>
<tr>
<td>82376</td>
<td>Qtr Turn Arrester Valve, 1/2&quot; Pex Connection, Contractor Pack</td>
<td>FR12PHACP</td>
<td>10</td>
</tr>
<tr>
<td>82377</td>
<td>Qtr Turn Arrester Valve, 1/2&quot; Wirsbo® ProPex® Connection</td>
<td>FR12WHA</td>
<td>5</td>
</tr>
<tr>
<td>82378</td>
<td>Qtr Turn Arrester Valve, 1/2&quot; Wirsbo® ProPex® Connection, Contractor Pack</td>
<td>FR12WHACP</td>
<td>10</td>
</tr>
</tbody>
</table>
**Specifications:**
Furnish and install Guy Gray fire rated recessed ice maker outlet box. Unit shall have a lead free brass plated quarter-turn ball valve. Unit shall be Guy Gray product code checked below as manufactured by IPS Corporation.

**Box Material:**
PVC Resin with Intumescent Pad attached

**Valve & Drain Options:**
Lead free Qtr Turn Valve with 1/2" MIP/Sweat, CPVC, Pex or Wirsbo connection. Valves comply with ASSE 1010 and NSF61-NSF/ANSI 372.
<table>
<thead>
<tr>
<th>Item #</th>
<th>Product Description</th>
<th>Model #</th>
<th>Quantity</th>
</tr>
</thead>
<tbody>
<tr>
<td>82408</td>
<td>Lead Free Qtr Turn Valve, 1/2&quot; Sweat Connection</td>
<td>FRIB12ABS</td>
<td>5</td>
</tr>
<tr>
<td>82409</td>
<td>Lead Free Qtr Turn Valve, 1/2&quot; Sweat Connection, Contractor Pack</td>
<td>FRIB12ABSCP</td>
<td>10</td>
</tr>
<tr>
<td>82411</td>
<td>Lead Free Qtr Turn Valve, 1/2&quot; CPVC Connection</td>
<td>FRIB12ABC</td>
<td>5</td>
</tr>
<tr>
<td>82412</td>
<td>Lead Free Qtr Turn Valve, 1/2&quot; CPVC Connection, Contractor Pack</td>
<td>FRIB12ABCP</td>
<td>10</td>
</tr>
<tr>
<td>82413</td>
<td>Lead Free Qtr Turn Valve, 1/2&quot; PEX® Connection</td>
<td>FRIB12ABP</td>
<td>5</td>
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<tr>
<td>82414</td>
<td>Lead Free Qtr Turn Valve, 1/2&quot; PEX® Connection, Contractor Pack</td>
<td>FRIB12ABPCP</td>
<td>10</td>
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<tr>
<td>82415</td>
<td>Lead Free Qtr Turn Valve, 1/2&quot; Wirsbo® Connection</td>
<td>FRIB12ABW</td>
<td>5</td>
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<tr>
<td>82416</td>
<td>Lead Free Qtr Turn Valve, 1/2&quot; Wirsbo® Connection, Contractor Pack</td>
<td>FRIB12ABWCP</td>
<td>10</td>
</tr>
</tbody>
</table>
APPENDIX C

Fire Alarm Listings and Cut Sheets

Ratcliff Project 35003.01

DSA Approval

March 21, 2018
SIEMENS
XLS-500-INT
FireFinder XLS Fire Alarm Control Panel for Mid-Sized Applications

ENGINEER AND ARCHITECT SPECIFICATIONS

- Standard 504 addressable point capacity system
- Networkable to other FireFinder XLS systems
- Powerful, easy-to-use programming capabilities
- 6\" Backlit LCD display
- User-friendly system interface
- Touch screen for maintenance operations and function keys
- Universal AC power input – 120/240VAC, 50/60Hz
- 12 amps of system power, expandable to 48 amps
- Relays – alarm, trouble, programmable (2)
- SureWire addressable loop technology
- Polarity insensitive detection circuits (Patented)
- Diagnostic LEDs on loop cards
- Supports FirePrint application specific detection
- Four notification appliance circuits (expandable)
- Up to 4.0 amps (24VDC) per NAC
- Built-in strobe synchronization protocol
- Supports Pre-Action, Deluge and agent releasing
- Voice evacuation system optional
- Modular assembly

UL, UL, ULC Listed, FM, CSFM, & NYMEA Approved

Introduction

The XLS-500-INT is a fire alarm system provided by Siemens Building Technologies Fire Safety Division for use in mid-sized (up to 504 addressable points) fire alarm applications. It uses FireFinder XLS components and modules assembled in a convenient cost-effective package that meets the requirements of these applications. The XLS-500-INT consists of one Model PMI-INT Person/Machine Interface, one Model PSC-12 Power Supply/Charger, one Model CC-5 Card Cage, two Model DLC Device Loop Cards, one Model ZIC-4A Zone Indicating Card, one Model CAB1 small system enclosure, and one Model ID-SP Inner Door Single Module mounting plate.

The PMI-INT with multilingual overlay is used to operate, control, and display the status of the FireFinder XLS system. The PMI-INT contains a large 6\" monochrome LCD display and LEDs for displaying system status. A local sounnder alerts users to changes in system status. Push button keys surround the display, and are used to control system operation and toggle between system information screens. A “More Information” screen allows users to view screens with detailed information about an event, or map screens showing basic graphical layouts of the facility and the location of an event.

The PSC-12 powers the FireFinder XLS system. It provides the power necessary to run the system modules as well as powering both the addressable devices and notification appliance circuits. It is rated at 12 amps for alarm usage and five amps of standby usage. The PSC-12 also provides common alarm and trouble Form C relays, and two additional programmable Form C relays, all rated at 2.0 amps each. The PSC-12 also has a built-in battery charger capable of monitoring and charging up to 100 amp-hour battery sets. Diagnostic LEDs on the PSC-12 indicate power, communication, and module operation.

CATALOG NUMBER 6344C
The DLC communicates with the addressable detectors and devices on the system. Each DLC supports two isolated circuits with a total of 252 addressable devices per card. The XLS-500-INT comes with two DLC cards, offering a base system capacity of four circuits and 504 addressable devices. If additional addressable devices are needed the XLS-500-INT can be networked to other FireFinder XLS systems by just adding a NIC-C. The device wiring is polarity insensitive, aiding in system installation. Diagnostic LEDs on the DLC indicate power, communication, alarm and trouble conditions per circuit, and module operation.

The ZIC-4A provides four supervised programmable output circuits for the FireFinder XLS system. Each output can be programmed independently for use with audible or visual notification appliances, emergency audio speakers, municipal tie connections, leased line connections, or releasing systems. Each output is rated at 4.0 amps (96W for speakers) and contains diagnostic LEDs for power, communication, activation and trouble conditions per circuit, and module operation. All circuits can be configured Class A or Class B.

The CC-5 cardcage provides a means of mounting DLC, ZIC-4A, and other FireFinder XLS cards. It also provides a means of mounting field wiring, and supports serial communication and operating power to the cards. The CC-5 supports five FireFinder XLS modules. In the XLS-500-INT, there are two open slots in the CC-5 for expansion modules, such as additional output cards, network cards, relay cards, or voice evacuation equipment cards.

The CAB1 is a small FireFinder XLS system enclosure that supports both system expansion cards inside the enclosure and user interface/operation modules on the inner door of the enclosure. The enclosure supports the PSC-12 and the CC-5. The enclosure for the XLS-500-INT comes with room for one additional power supply or small (2-card) cardcage. The inner door supports the PMI-INT and two ID-SP inner door single plates. The XLS-500-INT has room for Switch Control modules, Fan Control modules, or LED Control modules on the inner door, mounted in place of the ID-SP A locked outer door with a clear lens plate is included in the CAB1.

### Ordering Information

<table>
<thead>
<tr>
<th>Model Number</th>
<th>Description</th>
<th>Part Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>XLS-500-INT</td>
<td>Complete 504-point FireFinder XLS system</td>
<td>599-849957</td>
</tr>
<tr>
<td>PSC-12</td>
<td>Power Supply/Charger for FireFinder XLS</td>
<td>500-033940</td>
</tr>
<tr>
<td>ZIC-4A</td>
<td>Zone Indicating Card for FireFinder XLS</td>
<td>500-033350</td>
</tr>
<tr>
<td>CC-5</td>
<td>5-slot card cage for FireFinder XLS</td>
<td>500-633377</td>
</tr>
<tr>
<td>ID-SP</td>
<td>Inner door blank single plate for FireFinder XLS</td>
<td>500-633302</td>
</tr>
<tr>
<td>CAB1</td>
<td>1 row system enclosure (black) for FireFinder XLS</td>
<td>500-633307</td>
</tr>
</tbody>
</table>
LISTING No. 7165-1521:129

CATEGORY: Control Units (Non High-Rise)

LISTEE: Siemens Building Technologies, Inc., 1000 Deerfield Parkway, Buffalo Grove, IL 60089
Contact: Fred Orpato (847) 941-6176 FAX (866) 699-0238

DESIGN: Model Insight Life Safety System fire alarm control unit. Proprietary and smoke control service. Refer to listee's data sheet for additional detailed product description and operational considerations. System Components:

- Insight Database Server/Client
- CPU
- MXL, MXL-IQ, XLS
- Control Units
- 571-572 thru 579
- Work Stations
- 571-587, -588, -589
- Monitors
- PAL-1 P/N 571-583
- Printer
- 571-586, -581
- Ethernet Switch

INSTALLATION: In accordance with listee's printed installation instructions, applicable codes & ordinances, and in a manner acceptable to the authority having jurisdiction.

MARKING: Listee's name, model number, electrical rating and UL label.

APPROVAL: Listed as a fire alarm control unit for use with Edwards Systems Technology Model EST3 Control Unit (CSFM Listing No. 7165-1591:188 and 7170-1591:187), Siemens Model ALS3 Control Unit (CSFM Listing No. 7165-1521:114 and 7170-1521:118 and *Siemens Model Firefinder XLS (via RS-232 and RS-485 isolator modules), (CSFM Listing No. 7165-0067:222 and 7170-0067:236).

This control unit does not generate a temporal pattern signal. If the distinctive three-pulse Temporal Pattern Fire Alarm Evacuation Signal (for total evacuation) in accordance with NFPA 72, 2002 Edition is required, the control unit must be used with appliances that can generate the temporal pattern signal. Refer to manufacturer's Installation Manual for details.

*Rev. 06-23-04

This listing is based upon technical data submitted by the applicant. CSFM Fire Engineering staff has reviewed the test results and other data but does not make an independent verification of any claims. This listing is not an endorsement or recommendation of the item listed. This listing should not be used to verify correct operational requirements or installation criteria. Refer to listee's data sheet, installation instructions and other suitable information sources.

Date Issued: JUNE 26, 2009
Listing Expires June 30, 2010

Authorized By: FRANCIS MATEO, Program Coordinator
Fire Engineering Division
FireFinder XLS

Fire-Alarm Enclosures & Equipment
Models: CAB1, CAB2-BB, CAB2-BD, CAB3-BB, CAB3-BD, CAB-MP, ID-MP, ID-SP,
ID-FP, BCM, OD-LP, OD-BP, OD-GP, REMBOX2 and REMBOX4

ARCHITECT AND ENGINEER SPECIFICATIONS

- 1, 2, and 3-row enclosures for the FireFinder XLS system
- Blank plates for inner and outer doors
- Lens and grill plates for outer door
- @UL 864 9th Edition Listed and @ULC Listed; FM, CSFM & NYMEA Approved

Product Overview
The Models CAB1, CAB2, and CAB3 enclosures and their accessories provide a complete set of hardware for mounting all FireFinder XLS main system and remote transponder cards and modules. The hardware allows the FireFinder XLS system to be configured for a wide variety of applications, and also allows for future system upgrades. Included in the enclosure series are backbox and door sets, removable mounting plates and clear lenses, louvered ventilation grill plates, and blank plates for use with the enclosure doors. All enclosures come with ground straps for the inner and outer doors, shield termination lugs, grounding lugs, and tie wrap lances for securing wire. All enclosures can also mount system backup batteries up to 31 amps. hour in capacity.

All equipment is approved for operation over the temperature range of 32° - 120°F (0° - 49°C).

CAB1 Single Row Enclosure
The Model CAB1, the smallest of the FireFinder XLS enclosures, can house a single CAB-MP cabinet mounting plate for mounting card cages, power supplies and bulk amplifiers. The CAB1 also has four mounting slots on the inner door for mounting a PMI interface and Model ID-MP switch module brackets. The CAB1 comes complete with a black back box, with black inner and outer doors, a single lock and key set on the outer door, and a single OD-LP outer door lens plate (installed). A red version called the CAB1-R is also available. Approximate size is 27" (68.6cm.) high, 26" (66cm.) wide, and 8" (20.3cm.) deep.
CAB2 Two Row Enclosure

The Model CAB2 is the mid-sized FireFinder XLS enclosure capable of housing a maximum two CAB-MP cabinet mounting plates. The inner door has two rows of four mounting slots. The outer door has space for mounting two outer door plates (Models OD-LP, OD-BP or OD-GP). The outer door can be configured to open from either side. The CAB2 consists of the CAB2-BB back box, the CAB2-BD black inner and outer door package, and one OD-LP lens plate. The outer door has a single lock and key set installed. Red doors are available in the CAB2-RD. Additional door mounting plates must be ordered separately. Approximate size is 45" (114.3cm.) high, 26" (66cm.) wide, and 8" (20.3cm.) deep.

CAB3 Three Row Enclosure

The Model CAB3, the largest single FireFinder XLS enclosure available, can house a maximum three CAB-MP cabinet mounting plates in the enclosure, and three rows of inner door mounting slots. The outer door can be configured to open from either side. The CAB3 consists of the CAB3-BB back box, the CAB3-BD black inner and outer door package, and one OD-LP lens plate. The outer door has two locks and key sets installed. Red doors are available in the CAB3-RD. Additional door mounting plates must be ordered separately. Approximate size is 63" (160cm.) high, 26" (66cm.) wide, and 8" (20.3cm.) deep.

Enclosure Trim Kits

Trim kits are available for all system enclosures for semi-flush mounting applications. The Model CAB1-TK (for black enclosures) and the Model CAB1 R-TK (for red enclosures) fit the CAB1 and CAB1-R enclosures. Similarly, the CAB2-TK and CAB2R-TK fit the CAB2 enclosure, and the CAB3-TK and CAB3R-TK fit the CAB3 enclosure.

Door Remote Transponders

The FireFinder XLS system can use remote transponders for mounting additional modules such as amplifiers without requiring a PM1 or any control switches. Special doors are available for systems using CAB2 or CAB3 remote transponders. These doors, Models CAB2-XBD and CAB3-XBD, omit the unused inner door and come complete with ventilation louvers built into the door. The CAB2-XBD fits on a CAB2-BB and the CAB3-XBD fits on a CAB3-BB. The transponder doors are supplied in black. Complete box and door kits are available as Model CAB2-X and Model CAB3-X.
However, modules such as the RNI remote network interface module, the OCM-16 Output-Control Module, and the SIM-16 Supervised Input Module can be mounted in a REMBOX. Due to the depth of the live-voice module and the firefighters' master telephone, no OCM-16s or SIM-16s can be used simultaneously with the LVM or the FMT. Both the REMBOX2 and the REMBOX4 are designed for flush mounting with no trim kit required. Both enclosures also come with a clear lens plate on the cover.

**REMBOX2 Two Module Remote Enclosure**

The REMBOX2 has two inner door module spaces, and can hold a single PMI, up to two switch module brackets, one LVM live voice module. Combinations are also allowed. The REMBOX2 can also mount a single RNI remote network interface on a bracket included in the backbox. A bracket called the REMBOX2-SP can be used to mount up to four OCM-16 output control modules or SIM-16 supervised input modules. The REMBOX2-SP must be purchased separately. Approximate size of the REMBOX2 is 14-1/2" (36.8 cm) wide, 18-1/2" (47 cm) high and 5" (12.7 cm) deep.

---

**Remote System Enclosures**

The Models REMBOX2 and REMBOX4 are FireFinder XLS system enclosures that are used for remotely mounting inner-door modules, such as the PMI interface, switch modules, Model LVM live-voice modules, and Model FMT Firefighters' Master Telephone modules. They are thinner than the regular CAB enclosures (just 5" deep overall), and are perfect for mounting in places where space is limited (such as lobbies or behind a receptionist's desk). Due to their smaller depth, no card cages, power supplies or bulk amplifiers can be mounted in a REMBOX.

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**REMBOX4 Four Module Remote Enclosures**

The REMBOX4 has space for mounting four inner door modules. Any combination of PMIs (two module spaces), switch module brackets, LVMs or FMTs (one module space each) can be used. Unused module spaces can be covered with Model ID-SP blank plates. The REMBOX4 can also mount a single RNI remote network interface on a bracket included in the backbox. A bracket called the REMBOX4-SP can be used to mount a maximum eight OCM-16 output control modules or SIM-16 supervised input modules. The REMBOX4-SP must be purchased separately. Approximate size of the REMBOX4 is 24" (61 cm) wide, 18-1/2" (47 cm) high and 5" (12.7 cm) deep.
CAB-MP Cabinet Mounting Plate
The Model CAB-MP cabinet mounting plate provides mounting for a single row of modules in a FireFinder XLS cabinet. Four module spaces are available on the CAB-MP. The CAB-MP is used to mount the CC-5 card cage, the CC-2 card cage, the PSC-12 power supply, the PSX-12 power supply extender, and the ZAM-80 / 180 zone amplifiers.

ID-MP Inner Door Mounting Plate
The Model ID-MP inner door mounting plate is mounted on the inner door of a CAB enclosure. ID-MPs are used to mount Model SCM-8 switch control modules, Model LCM-8 LED control modules, or Model FCM-6 fan control modules.

Four mounting plates are included in each Model ID-MP. Each mounting plate has four spaces for control modules, and can hold either four SCM-8s (one control module space each), four LCM-8s (one control module space each), or two FCM-6s (two module spaces each).

Combinations are also allowed. Blank spaces in the ID-MP can be covered using the Model BCM blank control module plate. A maximum four ID-MPs can be mounted in a single row on the inner door.

ID-SP Inner Door Blank Single Plate
The Model ID-SP is used to cover any single module blank spaces on the inner door not used to mount the PMI or an ID-MP. Up to four ID-SPs can be mounted in a single row on the inner door. Two blank plates are included in each Model ID-SP.

ID-FP Inner Door Full Blank Plate
The Model ID-FP is a blank plate that covers the full opening of the row on an inner door. It is used for applications requiring full dead front protection. A single full blank plate is included in the ID-FP.
BCM Blank Control Module plate

The Model BCM is used on the ID-MP to cover any blank areas where control modules are not used. A maximum four BCMs can be mounted on a single ID-MP. Four, blank module plates are included in each Model BCM.

OD-LP Outer Door Lens Plate

The Model OD-LP is a clear plastic lens plate mounted on the outer door of a system cabinet. It is used to allow operators to see the system interface and controls mounted on the inner door, but restricts access to unauthorized users. It covers an entire row on the outer door. A single lens plate is included with each OD-LP.

OD-BP Outer Door Blank Plate

The Model OD-BP is used to cover an entire row on the outer door of a system cabinet. It is used when there is no PMI or control modules mounted on the adjacent row of the inner door. A single blank plate is included in each OD-BP.

Temperature and Humidity Range

Products are @UL 864 9th Edition listed for indoor / dry locations within a temperature range of 120+/-3°F (49+/-2°C) to 32+/-3°F (0+/-2°C) and at a relative humidity of 93+/-2% at a temperature of 90+/-3°F (32+/-2°C).

Details for Ordering

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<tr>
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<th>Part Number</th>
<th>Description</th>
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<tr>
<td>C129</td>
<td>6980140202</td>
<td>Complete single row blank cabinet</td>
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<tr>
<td>C129 R</td>
<td>6980140208</td>
<td>Complete double row blank cabinet</td>
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<tr>
<td>C22</td>
<td>5980130202</td>
<td>Complete two row blank cabinet</td>
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<tr>
<td>C22 R</td>
<td>5980130208</td>
<td>Complete double row blank cabinet</td>
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<tr>
<td>C2244-BP</td>
<td>5980130252</td>
<td>Two row blank back box</td>
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<tr>
<td>C2244-BP-1</td>
<td>5980130241</td>
<td>Two row blank back box</td>
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<tr>
<td>C2244-BP-10</td>
<td>5980130239</td>
<td>Two row blank inner &amp; outer door nest</td>
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<td>5980130236</td>
<td>Two row blank inner &amp; outer door nest</td>
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</table>

Notice: This marketing catalog sheet is not intended to be used for system design or installation purposes. For the most up-to-date information, refer to each product's installation instructions.
FireFinder XLS
Card Cage-5 Slots
Model CC-5

ARCHITECT AND ENGINEER SPECIFICATIONS

- Common Cardcage for all FireFinder XLS Fire & Voice option cards
- (5) slots to mount any option cards – with no restrictions
- Mounts on back box or CAB-MP (two-module spaces)
- Removable terminal blocks
- Numbered terminal blocks
- All field-wiring terminations on top (power limited)
- All internal-wiring terminations on bottom (non-power limited)
- Molded card guides for card mounting
- Card-position-locator label on card guide
- All cards communicate via common 60-pin power / data bus
- Screw terminals wire sizes supported: 12 AWG – 24AWG
- DIN connectors
- @UL 864 9th Edition Listed and @ULC Listed; FM, CSFM & NYMEA Approved

Product Overview
The CC-5 card cage provides the physical mounting location and all wiring connection points for all fire and voice system options cards for the FireFinder XLS system.

Specifications
All cards plugged into the CC-5 card cage communicate with other FireFinder-XLS modules, via a common, 60-pin data bus. This 60-pin bus runs through the card cage; making all communication data buses and signals available to all cards. Connectors are provided on the left and right side of the CC-5 to connect a 60-pin cable for communications with the FireFinder XLS operator interface, power supplies and amplifiers modules. There are no active components on the CC-5.

Field wiring to all devices and circuits terminates on the CC-5 card cage.

All cards designed for use with the CC-5 route their field wiring terminations to the 'top' of the CC-5 – these connections are all power limited. Internal wiring connections distribute 24VDC to cards or high level audio signals (depending on application used) connect to the "bottom" of the CC-5 – these connections are all non-power limited.

All wiring connections to the CC-5 are made to removable terminal blocks. Terminal blocks are rated for use with wire-sized 12AWG to 24AWG. Each terminal block comes with a protective cover that also serves as a handle to allow easy terminal-block removal when wires are connected.

FireFinder XLS 6320

Building Technologies
Fire Safety & Security Products
Specifications — (continued)
Each connector is numbered to make wiring terminations to the correct position on the terminal block simple and reduce the potential for wiring errors.
The CC-5 is shipped with two card guides (top and bottom) that mount to the CC-5 PCB. The ‘top’ card guide contains a blank label for use by the installer to indicate the location or card-slot position. This label serves as a reminder to the installer to ensure the proper card goes in the correct card slot — this is important during commissioning when cards may be installed after the field-wiring terminations have been made — also when cards are removed for service. All field-wiring terminations are typically made to the CC-5 terminal blocks before the card guides are mounted and the option cards are installed. The CC-5 mounts in two of the four available module spaces directly on the back box or optional CAB-MP for installation in the CAB-1, CAB-2 or CAB-3 enclosures.

Compatible FireFinder XLS Cards
Any combination of the following (5) option cards can be installed in the CC-5:

<table>
<thead>
<tr>
<th>Model No.</th>
<th>Part No.</th>
<th>Description</th>
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</thead>
<tbody>
<tr>
<td>DLC</td>
<td>500-033090</td>
<td>Device Loop Card</td>
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<tr>
<td>ZIC-4A</td>
<td>500-033066</td>
<td>Zone Indicating Card 4 Circuits</td>
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<tr>
<td>CRC-6</td>
<td>500-033250</td>
<td>Controllable Relay Card</td>
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<tr>
<td>NIC-C</td>
<td>500-033240</td>
<td>Network Interface Card</td>
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<td>CDC-4</td>
<td>500-034200</td>
<td>Conventional Detector Card</td>
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Voice System Cards:

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<th>Model No.</th>
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<td>DAC-NET</td>
<td>500-035100</td>
<td>Digital Audio Card-Network</td>
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<tr>
<td>AIC</td>
<td>500-035200</td>
<td>Audio Input Card</td>
</tr>
<tr>
<td>ZAC-40</td>
<td>500-035400</td>
<td>40-Watt Zone Amplifier Card</td>
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<tr>
<td>ZAC-20</td>
<td>500-034110</td>
<td>Telephone Zone Card</td>
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Details for Ordering

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<tr>
<td>CC-5</td>
<td>500-033037</td>
<td>Card Cage 5 Slots</td>
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</table>

Refer to Installation instruction: 315-033035

Temperature and Humidity Range
Products are UL 864 9th Edition listed for indoor dry locations within a temperature range of 120°F/-3°F (49°C/-2°C) to 32°F/-3°C (0°C/-2°C) and at a relative humidity of 93±2% at a temperature of 90°F/-3°F (32°C/-2°C).

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For the most up-to-date information, refer to each product's installation instructions.
FireFinder XLS
Person Machine Interface
Model PMI

ARCHITECT AND ENGINEER SPECIFICATIONS

- Large 6" display
- Main-operator interface
- User-prompted large, lighted buttons for system control operating sequence
- Alarm, Supervisory, Security, and Trouble system-status LEDs
- Global annunciation and control capability
- Audible Status LEDs (On and Silenced)
- Partial system disable LED
- Navigation buttons and "More Info"
- Context-sensitive Help
- Touch-screen driven, system-control menus
- (40) software-programmable "User Macro" switches
- @UL 864 9th Edition Listed & @ULC Listed; FM, CSFM and NYMEA Approved

Product Overview
The Person Machine Interface is the heart of the FireFinder-XLS system. The PMI serves as both operator interface and central microprocessor for the system. The PMI is the primary user interface for the FireFinder system. From the PMI or PM-H NT (International Version) the user can acknowledge events, control the system notification appliance circuits and reset the system. Detailed information about the nature and location of the events can also be displayed.

The PMI contains the site-specific program configuration — created in the Zeus tool. The controller in the PMI provides all system logic and supervision.

Specifications
The PMI contains a large 6" display (1/4 VGA) monochrome LCD display, touch screen and LED's for displaying system status. An audible sounds when there are unacknowledged events on the PMI. The display is surrounded by keys that are used to control the displayed information and to navigate through these screens. Keys are also provided to obtain "Help" and to enter into the menu features of the PMI.

The FireFinder system is controlled and operated from the PMI. The intuitive person machine interface uses large lighted buttons to prompt users as to the next correct system operation that is available (Acknowledge, Silence, Unsilence Audible or Reset).
Specifications – (continued)

With the use of the GPMI-UK software upgrade kit the PMI can provide global functionality by annunciation and controlling multiple FireFinder XLS and MXL systems.

The display of the PMI categorizes events by type, providing a separate "event tab" for Alarm, Supervisory, Security and Trouble events. The quantity of active events of each type is listed in each event tab. The display provides two full lines of text message for each event. Each event can have a 32-character custom message describing the events location. In addition to the text message, the system displays the category of the active event (Smoke, Heat, Water flow, Manual, etc.) – the category means more to responding officials than model numbers.

Up to 5 events can be displayed at one time. For Canadian operation, ten events are shown. When more than 5 events are present, the up and down arrow keys allow the user to scroll up and down the list of events. A progress bar on the side of the list indicates the size of the list of events and the location in the list. New unacknowledged events are indicated by a flashing exclamation point '!'. Once acknowledged the '!' changes to a check mark.

To the right of the display is a button that is labeled 'More Info'. When an event occurs in the system, if additional information has been configured for this event, the 'More Info' button will light green – prompting the user to press it. Once 'More Info' is pressed the user is presented with a full screen of detailed information about that event – including over 200 characters of additional text to describe the event, standard NFPA 170 Fire Safety symbols, Hazmat and other critical information concerning the event. This information can be invaluable to a fire official responding to alarm.

The detail screen also provides the user with a summary of the events – by type active in this area. A building contact name and phone number are also available.

In addition to the detail screen, the user can view a graphics map, which can show a simple building floor plan. On the map the user will see an icon indicating the location of the event in the building in addition to a 'You Are Here' symbol to tell the responding person exactly where they are in the building in relation to the event.

The PMI also provides a completed menu for running system status reports (with print preview feature right on the screen – before sending the report to the printer). The menu system is designed to allow the user to scroll through the entire system in either the Physical or Geographic views to locate the area of the system desired – all without having to know module or device addresses. All navigation is possible using custom messages.

The Maintenance menu is accessed by password. When a user enters this mode, the touch screen of the PMI will be enabled prompting the user to enter a password. System control within the maintenance menu uses large easy to read touch buttons to all system control.

The PMI also provides the user with 40 programmable macro or function buttons, which can be programmed for a variety of usages.

The PMI mounts to the inner door in one of the four available module spaces in the CAB1, CAB2 or CAB3 enclosures.

The PMI communicates with the rest of the FireFinder-XLS system via the internal 60-pin data bus – which contains all power and data communications for the PMI.

The back of the PMI contains a contrast adjustment for the LCD display as well as several ports for system configuration programming and diagnostics.
### Electrical Ratings

<table>
<thead>
<tr>
<th>Component</th>
<th>Current</th>
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<tbody>
<tr>
<td>24V Back Plane Current</td>
<td>230mA</td>
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<tr>
<td>Screw Terminal 24V Current</td>
<td>0</td>
</tr>
<tr>
<td>6.2V Back Plane Current</td>
<td>0</td>
</tr>
<tr>
<td>24V Standby Current</td>
<td>230mA</td>
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</tbody>
</table>

### Temperature and Humidity Range

Products are UL 864 9th Edition listed for indoor dry locations within a temperature range of 120+/-3°F (49+/-2°C) to 32+/-3°F (0+/-2°C) and at a relative humidity of 93+/-2% at a temperature of 90+/-3°F (32+/-2°C).

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<tr>
<th>Model Number</th>
<th>Part Number</th>
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<tr>
<td>PMI</td>
<td>500-033070</td>
<td>Operator Interface/System CPU</td>
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<tr>
<td>GPMI-UK</td>
<td>500-650066</td>
<td>Software Upgrade Kit for PMI to Allow Global Functionality</td>
</tr>
<tr>
<td></td>
<td>599-050092</td>
<td>PMI and GPMI-UK</td>
</tr>
<tr>
<td>PMI-INT</td>
<td>500-034160</td>
<td>Operator Interface/System CPU with Multilingual Overlays</td>
</tr>
</tbody>
</table>

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FireFinder XLS
Zone-Indicating Card
Model ZIC-4A

ARCHITECT AND ENGINEER SPECIFICATIONS

- Operates Audible or Visual Notification Appliances
- Three unique signals from each circuit
- Operates Audio Speakers (25V, 70V or 100V RMS)
- One or Two-Channel voice operation
- Four Class-A or Class-B Circuits
- 24 VDC 4.0 Amps per circuit
- City-Tie or Leased-Line Output
- Releasing Service
- Fully Programmable
- Coded Audibles available
- Built-In Strobe Synchronization
- Bell-Follower Application Available
- March Time / Uniform Code 3
- Selectable Degradate Operation
- Silenceable / Non-Silenceable Option
- Automatic / Manual Control
- On-Board Microprocessor
- Built-In, Ground-Fault Detection
- Circuits Power Limited Per NEC 760
- NFPA 13, Pre-Action and Deluge
- NFPA 2001, FM-200 Releasing
- NFPA 12A, Halon Releasing
- ©UL 864 9th Edition Listed & ©ULC Listed;
  FM, CSFM, & NYMFA Approved

Product Overview

The Zone-Indicating Card (ZIC-4A) provides four, fully-supervised and programmable output circuits for use on the FireFinder XLS Fire Alarm Control Panel. The ZIC-4A supplies (4) Class B or Class A-type output circuits; power limited to 4.0 amps maximum per circuit. Each circuit can be independently programmed for use with listed audible-or-visual notification appliances, listed emergency-audio speakers, municipal tie boxes, leased lines, or as releasing circuits. The ZIC-4A plugs into one slot in the CC-5 or CC-2 Card Cage, and has on-board LEDs for system status and troubleshooting. Indication of power, communication, internal operation, and ground-fault conditions are provided, as well as indication of circuit activation or trouble conditions.

All system status conditions are also reported to the system Person-Machine Interface (PMI). Each circuit or output may be controlled automatically with system-logic programming, via the ZEUS programming tool or manually, using the FireFinder XLS keypad on the PMI. Automatic control may also be time based. Each circuit or output can be manually 'Armed' or 'Disarmed' through the PMI keypad. When any circuit or output has been "Disarmed," the PMI display will indicate the affected circuit or output, and the 'Partial System Disable' LED will illuminate, until the circuit or output has been returned to the 'Armed' condition. The ZIC-4A circuits can also be manually energized or de-energized when in the 'Disarmed' state using the PMI.
Product Overview – (continued)

The ZIC-4A contains a microprocessor which allows notification-circuit outputs to function in a degrade mode – even if the main FireFinder XLS processor or the local-network communication link has failed. In a degrade mode, a ZIC-4A will respond to an alarm or trouble from any intelligent-addressable initiating device or conventional-zone initiating device connected in the same local enclosure.

**Standard NAC zone** – Each of the four circuits on the ZIC-4A can be configured for use as a standard Notification Appliance Circuit. The NAC output can be used as a steady, strobe-synchronized, or zone-coded output. Available coding includes ANSI Temporal, March Time 120 pulse per minute (PPM), March Time 60 PPM, March Time 30 PPM, Canadian Two-stage 30 PPM, Canadian Two-stage 120 PPM and custom coding. Outputs may be programmed through logic to transmit up to three different signal types, depending on event priority. For instance, the same circuit can be programmed to transmit the ANSI Temporal pattern for evacuation, March Time 120 PPM for tornado notification, and a custom code for recall.

**Standard speaker zone** – Each of the four circuits on the ZIC-4A can be configured for use as a standard speaker circuit in single or dual-channel systems. The ZIC-4A can be used with the ZAM-180 bulk amplifier, or the ZAC-40 amplifier card. Each circuit on the ZIC-4A is limited to 96 Watts per zone.

**Releasing zone** – Each of the four circuits on the ZIC-4A can be configured for use as a releasing circuit. This circuit can be used to release FM-20, Halon, Pre-action or Deluge sprinkler systems. For proper supervision of a releasing circuit, the REL-EOL module must be used. The releasing circuit can use power directly from the FireFinder XLS system. No external, regulated power supply is required.

**Municipal Tie** – Each of the four circuits on the ZIC-4A can be configured so that it can be connected to and activate a municipal city tie box. The circuit meets the requirement of some jurisdictions to allow the box to be reset before the fire-alarm control panel. A Model LLM-1 Leased Line Module is required for this feature.

**Leased Line** – Each of the four circuits on the ZIC-4A can be configured for connection to a leased line. The circuits can be programmed to transmit alarm, supervisory, or trouble signals. A Model LLM-1 Leased Line Module is required for this feature.

**Bell Follower** – Each of the four circuits on the ZIC-4A can be configured as a NAC that can follow the input from another NAC in an external fire-alarm control panel. Circuit 1 on a ZIC-4A within a FireFinder XLS system enclosure can be configured as the Bell Follower – Master and is connected to the external NAC.

Any other ZIC-4A circuit in that enclosure can be configured to follow the state of the Master. This feature can be used to synchronize coded or ANSI Temporal patterns for audible sounds with another fire-alarm control panel.

**Controls and Indicators**

<table>
<thead>
<tr>
<th><strong>RESET switch</strong></th>
<th>Re-initializes the ZIC-4A card only</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>POWER LED</strong></td>
<td>Indicates that power is applied to the ZIC-4A</td>
</tr>
<tr>
<td><strong>CARD-FAIL LED</strong></td>
<td>Illuminates when the card microprocessor has failed</td>
</tr>
<tr>
<td><strong>CAN-FAIL LED</strong></td>
<td>Illuminates when the CAN communication fails and the ZIC-4A is in degrade mode</td>
</tr>
<tr>
<td><strong>HNET-FAIL LED</strong></td>
<td>Illuminates when the HNET communication fails and the ZIC-4A is in degrade mode</td>
</tr>
<tr>
<td><strong>GND-FAULT LED</strong></td>
<td>Indicates the detection of a ground-fault condition (either negative or positive) on the ZIC-4A field wiring</td>
</tr>
<tr>
<td><strong>ZONE-ACTIVE LEDs</strong></td>
<td>Illuminates to indicate that the zone has been activated either automatically or manually. There is one LED for each zone.</td>
</tr>
<tr>
<td><strong>TROUBLE LEDs</strong></td>
<td>Indicates the presence of a trouble condition (either an open circuit or a short circuit) on the zone. There is one LED for each zone.</td>
</tr>
</tbody>
</table>
Temperature and Humidity Range

Products are UL 864 9th Edition listed for indoor dry locations within a temperature range of 120+/-3°F (49+/-2°C) to 32+/-3°F (0+/-2°C) and at a relative humidity of 93+/-2% at a temperature of 90+/-3°F (32+/-2°C).

Details for Ordering

<table>
<thead>
<tr>
<th>Model Number</th>
<th>Part Number</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>ZIC-4A</td>
<td>500-033050</td>
<td>Zone Indicating Card</td>
</tr>
<tr>
<td>REL-EOL</td>
<td>500-696359</td>
<td>Releasing End-of-Line Module</td>
</tr>
</tbody>
</table>

Electrical Ratings

<table>
<thead>
<tr>
<th>2IC-4A Current Requirement</th>
<th>Zone Usage</th>
<th>Output Current Requirement</th>
<th>Class A Current Requirement</th>
</tr>
</thead>
<tbody>
<tr>
<td>Not Used</td>
<td>0</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>NAC</td>
<td>17mA</td>
<td>6mA</td>
<td></td>
</tr>
<tr>
<td>Strobe - Sys</td>
<td>17mA</td>
<td>6mA</td>
<td></td>
</tr>
<tr>
<td>Strobe - Unsnc</td>
<td>17mA</td>
<td>6mA</td>
<td></td>
</tr>
<tr>
<td>Municipal Tie - USA</td>
<td>34mA</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>Municipal Tie - Canada</td>
<td>17mA</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>Releasing Zone</td>
<td>17mA</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>Leased Line - Alarm</td>
<td>17mA</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>Leased Line - Trouble</td>
<td>17mA</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>Leased Line - Supv</td>
<td>17mA</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>Bell Follow - Master</td>
<td>0</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>Bell Follow - Slave</td>
<td>17mA</td>
<td>6mA</td>
<td></td>
</tr>
<tr>
<td>Speaker Zone</td>
<td>34mA</td>
<td>6mA</td>
<td></td>
</tr>
<tr>
<td>NAC - Coded</td>
<td>17mA</td>
<td>6mA</td>
<td></td>
</tr>
</tbody>
</table>

NOTE: The 24V current is dependent on the usage and wiring type of each 2IC-4A. Listed below are the required current draws for each zone's usage and wiring type.

2IC-4A Standby Current = 8mA

Notice: This marketing catalog sheet is not intended to be used for system design or installation purposes. For the most up-to-date information, refer to each product's installation instructions.
FireFinder XLS
Power-Supply Charger, Power-Termination Board Module & Power-Supply Extender Models PSC-12, PTB and PSX-12

ARCHITECT AND ENGINEER SPECIFICATIONS

- Main-system power supply
- Total power output 12 Amp @ 24VDC
- Built-in charger for up to 100AH batteries
- Universal AC power input 120VAC @ 50 / 60Hz
- Off-line, switch-mode power converter
- Filtered & regulated 24VDC
- Mounts on back box or optional CAB-MP in (1) module space
- Common alarm & common trouble relays (Form 'C' rated @ 2A)
- Two Programmable relays (Form 'C' rated @ 2A)
- Provides 12-Amp, non-power-limited 24 VDC output (internal use)
- Provides 24VDC and 6.2VDC power to all modules connected to 60-pin bus
- 4-Amp, power-limited 24VDC output (external use)
- Supervised Intelligent Module with plain, decimal addressing
- Communicates with PMI / CPC, via common 60-pin power / data bus
- Downloadable module firmware
- Ground-fault detection circuitry
- Optional enclosure tamper switch connection point (HTSW-1)
- Includes PTB Power Termination Board for AC field connections
- Optional 24VDC system power expansion with PSX-12 Power Supply extender
- PSC-12 and PSX-12 share common batteries
- Up to (3) PSX-12's connected to PSC-12
- @UL 864 9th Edition Listed & @ ULC listed; FM, CSFM, NYMEA Approved

PSC-12 − Product Overview
The PSC-12 Power-Supply Charger is a high-current power supply that provides FireFinder XLS with primary, regulated 24VDC power to operate − 12 Amps (Alarm) / 5 Amps (Standby.) PSC-12 has a built-in battery charger, capable of charging up to 100AH batteries.

PSC-12 is an addressable-intelligent, microprocessor-controlled module that communicates its status to the system-operator interface (PMI).
The PMI is able to query the status of the power supply to obtain information regarding system charging current, terminal loading information, ground fault-conditions and more.
The PSC-12 is a universal power supply; accepting AC-power input levels from 120VAC @ 50Hz or 60Hz. No special configuration is required – the PSC-12 is designed to operate across all AC input ranges.

The PSC-12 has an off-line, switch-mode power converter and a power-factor-correction circuit to improve conductive RF emissions at low frequency. Due to its efficient off-line switch mode design, the PSC-12 draws an AC-input power maximum of 4 amps @ 120VAC.

The PSC-12 communicates with the H-Net protocol with other system cards and modules, via the PSC-12's common 60-pin power/data bus. The PSC-12 provides the system with 6.2VDC (2Amps) and 24VDC (2Amps) – via the 60-pin bus – to provide basic power to cards and modules. This 24VDC and 6.2VDC power is also referred to as "back-plane current".

Combined with the "back-plane current", the PSC-12 provides 12Amps of power @ 24VDC. Two separate power-output terminals are available: one power limited with 4A max @ 24VDC capacity and one non-power limited with 12A max @24VDC capacity (the total not to exceed 12A). The PSC-12 also provides two connection points for the 60-pin power/data bus.

The PSC-12's 24 VDC outputs provide auto-resettable current protection circuits for overload and short-circuit conditions.

The battery sizes installed are entered in the software configuration tool. The PSC-12 can charge 15AH, 31AH, 75AH or 100AH batteries. The charger monitors and maintains the battery. The charger has three charge modes, depending on the state of the batteries: Bulk (full) Charge State, Trickle Charge State and Float (maintenance) State. The charger monitors the batteries and automatically determines which of the charging modes to activate.

The PSC-12 can charge lead-acid batteries only. An optional thermistor (HTHERM) is available for use with the PSC-12 to connect to the battery set to monitor battery temperature, which will adjust the battery-charge rate in the event that the batteries begin to overheat.

The PSC-12 mounts on one of the four available module spaces directly on the back box or optional CAB-MP module mounting plate, which then mounts inside of the CAB-1, CAB-2 or CAB-3 system enclosures.

The PSC-12 has (4) Form 'C' relays rated at 2 Amps each. One relay is dedicated to automatically operate on "Any System Alarm" – this is the Common Alarm Relay. Another is dedicated to automatically operate on "Any System Trouble" - this is the Common Trouble Relay. Two additional relays are available to be programmed for activation based on system control logic.

When a door-tamper switch is required in any of the CAB enclosures, the HTSW-1 tamper switch can be optionally connected to the PSC-12 to provide this functionality.

The PSC-12 has diagnostics LEDs to indicate Power On, Module Failure (internal module failure), H-NET Failure (network-communication failure), Ground Fault (internal to enclosure or on any 24VDC output circuits), 24VDC 12A fail and 24VDC 4A fail. The PSC-12 module is addressed using plain, decimal address switches which clearly state the address of the module.

PTB – Product Overview

The PSC-12 Power-Termination Board comes packaged with a module called the PTB. The PTB is the Power-Termination Board and is required for operation with the PSC-12. The PTB must be mounted in the lower right corner of the CAB enclosures. Mounting studs are provided in all enclosures to mount the PTB.

The PTB contains screw terminals for AC input power to be connected. The PTB contains an AC line filter and AC line power breaker rated at 5A. From another connector on the PTB, AC power is connected directly to the PSC-12, via a keyed-cable harness. Each PTB supports building AC power connection circuits for two power supplies – either one for the PSC-12 and one, optionally, for the PSX-12 Power Supply extender – or for two PSX-12s. When more than one PSX-12 Power Supply extender is used, a second PTB is required, and must be ordered separately.

The PTB has an optional connector that can be used during system installation, commissioning & service to provide the technician with a place to plug in their laptop computer if required. The AC-ADPT is an optional accessory cable that allows connection on one side to the PTB, via a keyed connector, and on the other end directly into to the laptop's transformer. Most laptop computer external power transformers have removable AC power cords which can be replaced by the AC-ADPT to temporarily provide an AC power source for laptop computer used during system installation, service and maintenance calls when needed.
PSX-12 Power-Supply Extender

- Auxiliary 24VDC Power Supply
- Total power output 12 Amp @ 24VDC
- Universal AC Power input 120VAC
- Off-line Switch Mode Power Converter
- Filtered & Regulated @ 24VDC
  - Provides 1 2A non-power limited @ 24 VDC output (internal use)
  - Provides 4-Amp, power-limited @ 24VDC output (external use)
- Mounts on CAB-MP (1) module space
- Supervised Intelligent Module – plain, decimal addressing
- Communicates with PMI/CPC, via common 60-pin power / data bus
- Downloadable module firmware
- Ground-fault detection circuit
- PTB Power Termination Board for AC field connections
- PSC-12 and PSX-12 share common back-up batteries
  - Up to (3) PSX-12s connected to a PSC-12 charger
- ©UL 864 9th Edition Listed & @ ULC listed; FM, CSFM, NYMEA Approved

PSX-12 – Product Overview

The PSX-12 Power-Supply Extender is a high-current, auxiliary-power supply that expands the FireFinder-XLS system's main PSC-12 power supply and battery charger with an additional 24VDC power. It is rated at 12Amps.

The PSX-12 is an addressable intelligent microprocessor-controlled module that communicates its status to the system-operator interface (PMI) to report fault conditions. The PMI is able to query the status of the power supply to obtain information regarding terminal-loading information, ground-fault conditions and more.

The PSX-12 is a universal power supply; accepting AC power input levels from 120VAC, and has an off-line, switch-mode power converter and power-factor-correction circuit to improve conductive RF emissions at low frequency. No special configuration is required.

Due to its efficient off-line switch mode design, the PSX-12 draws an AC input power maximum of 4A@120VAC.

The PSX-12 communicates via H-Net protocol with other system cards and modules via the systems common 60-pin power/data bus. The PSX-12 provides a full 12Amps of power @ 24VDC.

Two separate power-output terminals are available; one that is power limited with 4A max @24VDC capacity and one non-power limited with 12A max @24VDC capacity (total is not to exceed 12A). The PSX-12 also provides two connection points for the 60-pin power / data bus.

The PSX-12 mounts on one of the four, available module spaces directly on the back box or optional CAB-MP module mounting plate, which then mounts inside of the CAB1, CAB2 or CAB3 system enclosures.

The PSX-12 has diagnostics LEDs to indicate Power On, Module Failure (internal module failure), H-Net Failure (network communication failure), Ground Fault (internal to enclosure or on any 24VDC output circuits), 24VDC 12A fail and 24VDC 4A fail. The PSX-12 module is addressed using plain, decimal address switches which clearly state the address of the module.
## Details for Ordering

<table>
<thead>
<tr>
<th>Model Number</th>
<th>Part Number</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>PSC-12</td>
<td>560-033340</td>
<td>Power Supply &amp; Battery Charger 12A @ 24VDC</td>
</tr>
<tr>
<td>PSX-12</td>
<td>500-034120</td>
<td>Power Supply Extender 12A @ 24VDC</td>
</tr>
<tr>
<td>FTB</td>
<td>500-033350</td>
<td>Power Termination Board (only required for applications with more than 12 PSX-12s)</td>
</tr>
<tr>
<td>HTSW-1</td>
<td>500-033350</td>
<td>Door Temper Switch</td>
</tr>
<tr>
<td>AC-ADPT</td>
<td>560-633992</td>
<td>Technician Laptop Power Connector</td>
</tr>
<tr>
<td>BP-61</td>
<td>175-387194</td>
<td>24VDC, 3AH Battery</td>
</tr>
<tr>
<td>BIX-1</td>
<td>175-083897</td>
<td>Set of 12V, 31AH Batteries</td>
</tr>
<tr>
<td>BIX-2</td>
<td>175-083898</td>
<td>Set of 12V, 55AH Batteries</td>
</tr>
<tr>
<td>BIX-5</td>
<td>599-034220</td>
<td>Set of 12V, 100AH Batteries</td>
</tr>
<tr>
<td>CAB-BATT</td>
<td>560-633917</td>
<td>Battery Enclosure for 75AH or 100AH Batteries</td>
</tr>
</tbody>
</table>

## Electrical Ratings

<table>
<thead>
<tr>
<th></th>
<th>PSC-12</th>
<th>PSC-18</th>
</tr>
</thead>
<tbody>
<tr>
<td>Input Voltage</td>
<td>125VAC @ 0%</td>
<td>125VAC @ 0%</td>
</tr>
<tr>
<td>Input Current</td>
<td>3.5A Max. @ 120VAC</td>
<td>5.5A Max. @ 120VAC</td>
</tr>
<tr>
<td>24VDC Back-Plane Current</td>
<td>2A Max.</td>
<td>Not Applicable</td>
</tr>
<tr>
<td>Input Current</td>
<td>0% Power Limited 4A Max.</td>
<td>0% Power Limited 4A Max.</td>
</tr>
<tr>
<td>24VDC Back-Plane Current</td>
<td>2A Max.</td>
<td>Not Applicable</td>
</tr>
<tr>
<td>Output Power</td>
<td>0% Peak to peak max.</td>
<td>0% Peak to peak max.</td>
</tr>
<tr>
<td>Each INET</td>
<td>750mA max. /diaging msg (transmission)</td>
<td>750mA max. /diaging msg (transmission)</td>
</tr>
</tbody>
</table>

## Temperature and Humidity Range

Products are UL 864 9th Edition listed for indoor dry locations within a temperature range of 120±1-3°F (49±1-2°C) to 32±1-3°F (0±1-2°C) and at a relative humidity of 93±2% at a temperature of 90±1-3°F (32±1-2°C).

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FireFinder XLS
Device Loop Card
Model DLC

ARCHITECT AND ENGINEER SPECIFICATIONS

- Provides (2) intelligent addressable circuits
- 252 addresses per DLC card
- Compatible with H-series detectors and devices
- Polarity insensitive utilizing SureWire™ technology
- (12) diagnostic LEDs for easy circuit diagnosis
- Supports T-Tapping
- On-board, ground-fault detection and short-circuit isolation
- On-board microprocessor for dependable and efficient device communication
- Degrade Mode
- Class B or Class A wiring supported
- ©UL 864 9th Edition Listed & ©ULC Listed; FM, CSFM, & NYMEA Approved

Product Overview
The Device Loop Card (DLC) is the interface for connection with FireFinder XLS detectors and initiating devices; including manual stations, control and input devices. The DLC plugs into one slot of the CC-2 or CC-5 card cage. Programming the DLC is accomplished using the FireFinder XLS Zeus configuration tool. The DLC takes one address on the network, and can communicate up to a total of 252 detectors and devices. The DLC has (12) LEDs for diagnostic purposes, and provides ground-fault detection and zone-isolation circuitry.

Specifications
The DLC initializes, operates and maintains all devices residing on its two circuits. The DLC communicates all relevant device and event information, such as Alarm and Trouble alerts to the FireFinder XLS Control Panel, as well as supervising the circuit.

The DLC is polarity insensitive, which greatly reduces commissioning time normally spent tracing down crossed-field wiring. The DLC communicates detector information, such as sensitivity of intelligent fire detectors and logic function information, to the PMI located at the control panel.

The DLC supports two, isolated circuits up to a total of 252 devices - as well as relay and audible bases, remote lamps and duct-detector housings in any combination. The microprocessor controls the onboard isolation to isolate the circuits if one is shorted, allowing the other circuit to continue operating. The onboard microprocessor continues to operate even in the event of a CPU failure at the control panel for continued protection of life and property.
Temperature and Humidity Range
Products are UL 864 9th Edition listed for indoor dry locations within a temperature range of 120+/-3°F (49+/-2°C) to 32+/-3°F (0+/-2°C) and at a relative humidity of 93+/-2% at a temperature of 90+/-3°F (32+/-2°C).

Details for Ordering

<table>
<thead>
<tr>
<th>Model Number</th>
<th>Part Number</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>DI-C</td>
<td>590-033850</td>
<td>Device Loop Card</td>
</tr>
<tr>
<td>RFP-11</td>
<td>590-033280</td>
<td>Firepoint Detector</td>
</tr>
<tr>
<td>HFP-11</td>
<td>590-033380</td>
<td>Thermal Detector</td>
</tr>
<tr>
<td>HTIM-6</td>
<td>590-033370</td>
<td>Single Input Module</td>
</tr>
<tr>
<td>HTIM-8</td>
<td>590-033380</td>
<td>Dual Input Modules</td>
</tr>
<tr>
<td>HTIR-6</td>
<td>590-033360</td>
<td>Single Input with Relay</td>
</tr>
<tr>
<td>HTIR-8</td>
<td>590-034080</td>
<td>Single Input Module</td>
</tr>
<tr>
<td>HMS-S</td>
<td>590-033290</td>
<td>Manual Station (Single Action)</td>
</tr>
<tr>
<td>HMS-R</td>
<td>590-033490</td>
<td>Manual Station (Dual Action)</td>
</tr>
<tr>
<td>HMS-M</td>
<td>590-033450</td>
<td>Manual Station (Metal)</td>
</tr>
<tr>
<td>HMS-2S</td>
<td>590-033460</td>
<td>Manual Station (2 Stage)</td>
</tr>
<tr>
<td>HMS-SA</td>
<td>590-034150</td>
<td>Manual Station (Single Action, Auxiliary Contact)</td>
</tr>
<tr>
<td>LED-JC</td>
<td>599-048927</td>
<td>Tiled Remote Lamp (Ceiling Field Mount)</td>
</tr>
<tr>
<td>LED-JW</td>
<td>590-048800</td>
<td>Tiled Remote Lamp (Wall Field Mount)</td>
</tr>
</tbody>
</table>

Electrical Ratings

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>24V Back Plane Current</td>
<td>0</td>
</tr>
<tr>
<td>Screw Terminal</td>
<td>100mA + 1.4mA per device</td>
</tr>
<tr>
<td>24V Current</td>
<td>200mA</td>
</tr>
<tr>
<td>6.2V Back Plane Current</td>
<td>145mA + 1.9mA per device</td>
</tr>
<tr>
<td>24V Stand by Current</td>
<td>Device Loop: 30VDC Max 375mA max (power limited)</td>
</tr>
</tbody>
</table>

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FireFinder XLS
System-Display Status Series
Models SSD, SSD-C, SSD-INT, SSD-C-INT and SSD-C-REM

ARCHITECT AND ENGINEER SPECIFICATIONS

- 4 x 40 Backlit LCD display
- Event and audible status LEDs
- Scroll buttons to view additional events
- Local sounder
- Supports Style 4 or Style 7 wiring
- Built-in transient protection
- Mounts in its own enclosure or REMBOX
- Optional local-system control
- Downloadable firmware
- UL 864 9th Edition Listed and ULC Listed; FM, CSFM & NYMEA Approved

Product Overview

The SSD Series System Status Display is a remote LED / LCD display that shows the local status of a FireFinder XLS system. A LED will illuminate when Alarm, Supervisory, Trouble and Security events occur on the system. A four-line LCD will give details of the event in alphanumeric form. The display can be toggled to display additional events. Optional remote-system control capabilities are available.

Specifications

The SSD Series display has separate LEDs for Alarm, Supervisory, Trouble and Security events on the FireFinder XLS system. Each LED will flash when unacknowledged events of that type are present on the system. The LED will change to steady, upon acknowledgment of the event. Also, there are two LEDs that indicate the state of audible circuits on the system: one LED to indicate that the circuits are active, and one to indicate that the circuits have been silenced.

The LCD display on the SSD Series display has four rows - 40 characters for each row. When the FireFinder XLS system is in its normal supervisory state with no events present, the display will annunciate the system ID information, along with the date and time.

When an event occurs on the system, the LCD display will show the event type and address, the time of the event, the custom message for that address, the usage of the device, and whether the event is acknowledged or not. Additionally, the display will show the total number of all types of events present on the system.

The display has a backlight feature that operates upon receiving any event information or when any operator buttons are pressed.

A local sounder is included with the SSD Series display that operates when any events are displayed on the system. The sounder can be optionally disabled through software programming. Pressing any operator buttons will silence the local sounder when an event is present.

Building Technologies
Fire Safety & Security Products
Specifications – (continued)

The SSD Series display has two display control buttons that are used to display the next or the previous event information in the sequence, and a local sounder silence button. Programming for the SSD display is done with the Zeus programming tool.

Models SSD-C, SSD-C-INT, and Model SSD-C-REM have three additional control buttons for acknowledging events, silencing audible circuits, and resetting the system. The SSD-C and SSD-C-INT have an integral key switch that enables these control buttons to operate. The SSD-C-REM is located within a locked cabinet, so no additional key switch is required for enabling the control buttons.

The SSD Series display is remotely connected to the H-Net communication bus from any NIC-C interface in a FireFinder XLS system enclosure using Class B, Style 4 or Class A, Style 7 wiring. 24VDC is required to run the SSD Series display, and it can be provided from a Model PSC-12 Power Supply or PSX-12 Power Supply Extender in the FireFinder XLS system enclosure. Power from other UL Listed 24VDC power sources is also acceptable.

The SSD Series display has screw terminals capable of supporting 12-to-22-gage wires. The H-Net communication from the FireFinder XLS system can be terminated on the SSD Series display, or may pass through for communication with other modules. Diagnostic LEDs on the SSD Series display indicate power and communication status.

Models SSD, SSD-C, and SSD-C-INT can be mounted in a 2-gang electrical box or a 4-inch square electrical box. No flush-trim kit is required. The unit is approximately 10-1/2" (26.7 cm.) wide, 6-1/8" (15.2 cm.) high, and 1-1/2" (3.8 cm.) deep.

The Model SSD-C-REM is mounted in a Model REMBOX2 or REMBOX4 Remote Lobby Enclosure, or any CAB enclosure inner door. The SSD-C-REM requires two module spaces in the remote lobby enclosure, and its bracket supports the mounting of four inner door modules (such as SCM-8s or LCM-8s) below the display. The inner door module spaces are arranged in two rows of two module spaces.

Products are @UL 864 9th Edition listed for indoor dry locations within a temperature range of 120°F (49-+-2°C) to 32°F (0-+-2°C) and at a relative humidity of 93+-2% at a temperature of 90°F (32+-2°C).

Notice: This marketing catalog sheet is not intended to be used for system design or installation purposes.
For the most up-to-date information, refer to each product's installation instructions.

Details for Ordering

<table>
<thead>
<tr>
<th>Model Number</th>
<th>Part Number</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>SSD</td>
<td>560-034170</td>
<td>System Status Display</td>
</tr>
<tr>
<td>SSD-C</td>
<td>560-846823</td>
<td>System Status Display w/control</td>
</tr>
<tr>
<td>SSD-INT</td>
<td>560-034740</td>
<td>System Status Display w/international language overlays</td>
</tr>
<tr>
<td>SSD-C-INT</td>
<td>560-034780</td>
<td>System Status Display w/international language overlays</td>
</tr>
<tr>
<td>SSD-C-REM</td>
<td>560-846773</td>
<td>System Status Display w/control &amp; international language overlays</td>
</tr>
<tr>
<td>REMBOX2</td>
<td>560-833772</td>
<td>Small remote lobby enclosure</td>
</tr>
<tr>
<td>REMBOX4</td>
<td>560-833914</td>
<td>Large remote lobby enclosure</td>
</tr>
<tr>
<td>BCM</td>
<td>560-033220</td>
<td>Blank control module plate</td>
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</tbody>
</table>

Electrical Ratings

<table>
<thead>
<tr>
<th>Model</th>
<th>Typical</th>
<th>Input Voltage</th>
</tr>
</thead>
<tbody>
<tr>
<td>SSD-C</td>
<td>200mA (max) at 24 VDC</td>
<td>24 VDC (Nominal)</td>
</tr>
<tr>
<td>Input Voltage</td>
<td></td>
<td></td>
</tr>
<tr>
<td>(31VDC max) filtered</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Notes: An auxiliary-regulated, power-limited power supply may be used to provide power to the SSD. The power supply must be UL approved for Fire Protection Signaling Application. Be sure to also include the SSD-C in the battery calculations.

<table>
<thead>
<tr>
<th>Model</th>
<th>Typical</th>
<th>Input Voltage</th>
</tr>
</thead>
<tbody>
<tr>
<td>SSD-INT</td>
<td>200mA (max) at 24 VDC</td>
<td>24 VDC (Nominal)</td>
</tr>
<tr>
<td>Input Voltage</td>
<td></td>
<td></td>
</tr>
<tr>
<td>(31VDC max) filtered</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Notes: An auxiliary-regulated, power-limited power supply may be used to provide power to the SSD. The power supply must be UL approved for Fire Protection Signaling Application.

<table>
<thead>
<tr>
<th>Model</th>
<th>Typical</th>
<th>Input Voltage</th>
</tr>
</thead>
<tbody>
<tr>
<td>SSD-C-REM</td>
<td>200mA (max) at 24 VDC</td>
<td>24 VDC (Nominal)</td>
</tr>
<tr>
<td>Input Voltage</td>
<td></td>
<td></td>
</tr>
<tr>
<td>(31VDC max) filtered</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Notes: An auxiliary-regulated, power-limited power supply may be used to provide power to the SSD-C-REM. The power supply must be UL / ULC approved for Fire Protection Signaling Application. Be sure to also include the SSD-C-REM in the battery calculations.

Building Technologies
Fire Safety & Security
500-5540 Water Street
Fort Lamy, ND 58207-1000
Tel: (701) 792-9283
Fax: (701) 792-9283
URL: www.BT.Secures.com/Fire

Notice: This marketing catalog sheet is not intended to be used for system design or installation purposes.
For the most up-to-date information, refer to each product's installation instructions.

Fire Safety & Security
2 Kenview Boulevard
Brampton, Ontario
L6T 5E4 / Canada
Tel: (905) 938-8637
Fax: (905) 938-8636

Printed in U.S.A.
July 2009
Supersedes Sheet dated 8/08
(Rev: 1)
SIEMENS

HTRI Series

FireFinder XLS and FS-250 Intelligent Initiating Devices Interface Modules

ENGINEER AND ARCHITECT SPECIFICATIONS

Intelligent Interface Modules for FireFinder XLS and FS-250 Series
Fire Alarm Control Panels HTRI-S, HTRI-D, HTRI-R

- Interfaces and Supervises Normally Open or Normally Closed Contacts
- Integral SPDT Relay (up to 4 amps) on HTRI-R Model
- Dual Input on HTRI-D Model using a single address
- Polarity Insensitive with SureWire™ Technology
- Multi-color L.E.D. indicators status (green, amber, red)
- Easy front access to programming port and wiring terminals
- Mounts 4 inch square 2 1/4 deep box, or double gang box
- Dynamic Supervision
- Comes with 6x6 inch faceplate
- Two wire operation
- DPU Device Program/Test Unit programs and Verifies Device's Address and Tests Devices functionality
- Electronic Address Programming is Easy and Dependable
- ULC Listed
- CFSM, FM, NYMEA Approved

Introduction
The HTRI Series intelligent interface modules are designed to provide the means of interfacing direct shorting devices to the FireFinder XLS and FS-250 Fire Alarm Control Panel loop circuit.

The HTRI Series Intelligent interface modules provide the market's most advanced method of address programming and supervision, combined with sophisticated control panel communication. Each HTRI Series interface module incorporates a microcomputer chip. The HTRI Series microcomputer chip technology and its sophisticated bi-directional communication capabilities with the control panel, achieve the state of an "Intelligence Device."

Description
The HTRI Series intelligent interface modules are available in three models. The HTRI-S and HTRI-R are designed to monitor a normally open or closed dry contact. The interface module reports the contact's status to the control panel. The HTRI-S model can only monitor and report the status of the contact, while the HTRI-R incorporates an addressable Form C relay. The HTRI-R relay and contact device input are controlled at the same address. For the control panel system, the relay and input contact can be controlled as a separate function. The relay is typically used where control or shunting of external equipment is required.

The HTRI-D is a dual input module and is designed to supervise and monitor two sets of dry contacts. The Dual Input Module only requires one address but responds independently to each input. The HTRI-D is ideal for monitoring a water flow switch and its respective valve tamper switch.

The HTRI has a multi-color Light Emitting Diode that flashes green when operating normally, amber if unit is in trouble condition, and red to indicate a change of state. The HTRI-D flashes twice, once for each address, the HTRI-R red L.E.D. indicates a change of state in the relay.

CATALOG NUMBER 6304
The device's microcomputer chip has the capacity of storing, in memory, identification information as well as important operating status information.

Siemens Building Technologies, Inc., Fire Safety Division innovative technology allows all HTTRI Series intelligent interface modules to be programmed by using the DPU Device Programming/Test Unit. The DPU is a compact, portable, menu driven accessory that makes programming and testing an interface device faster, easier and more dependable than previous methods. The DPU eliminates the need for mechanical addressing mechanisms, such as program jumpers, DIP switches or rotary dials, because the DPU electronically sets the HTTRI interface's address into the interface's microcomputer chip nonvolatile memory. Vibration, corrosion and other conditions that deteriorate mechanical addressing mechanisms are no longer a cause for concern.

The HTTRI Series is fitted with screw terminals for connection to an addressable circuit.

The HTTRI Series is fully compatible on the same FireFinder XLS and FS-250 circuits with all intelligent H Series detectors, HMS Series addressable manual stations or any other addressable intelligent modules, such as the HZM or HCP.

All HTTRI Series intelligent interface modules are UL listed.

Environmental operating conditions for all HTTRI Series modules are 32°F (0°C) to 120°F (49°C) with a relative humidity of not greater than 93% non-condensating.

### Ordering Information

<table>
<thead>
<tr>
<th>Model</th>
<th>Description</th>
<th>Shipping Wt.</th>
<th>Part Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>HTRI-S</td>
<td>Single Input</td>
<td>7 oz.</td>
<td>500-033370</td>
</tr>
<tr>
<td>HTRI-R</td>
<td>Single Input w/Relay</td>
<td>7 oz.</td>
<td>500-033300</td>
</tr>
<tr>
<td>HTRI-D</td>
<td>Dual Input</td>
<td>7 oz.</td>
<td>500-033360</td>
</tr>
</tbody>
</table>

### Mounting Data

Addressable Interface Model HTRI-S, HTRI-D, HTRI-R mounts directly into a 4 inch square 2 1/4 deep box or a double gang box (user supplied). A 5 inch square off-white faceplate is included with each HTRI.

### Electrical Ratings

Current Draw (Active or Standby): 1mA

HTRI-R Relay Ratings
- Resistive: 4A, 125 VAC
- 4A, 30 VDC

Inductive: 3.5A, 120 VAC (0.6PF), 3.0A, 30 VDC (0.6PF), 2.0A, 120 VAC (0.4PF), 2.0A, 120 VAC (0.35PF), 2.0A, 30 VDC (0.35PF)
LISTING No. 7165-0067:222

CATEGORY: Control Unit (Commercial)*

LISTEE: Siemens Building Technologies Inc., Fire Safety Div., 8 Fernwood Rd, Florham Park NJ 07932
Contact: Peter Pawchak (973) 593-2662 Fax (973) 593-8652
peter.pawchak@siemens.com

DESIGN: Model "Firefinder" XLS fire alarm control unit. Local, auxiliary, remote station (protected premises), proprietary, central station (protected premises), workflow and sprinkler supervisory service. Refer to listee's data sheet and control unit's installation instructions for additional detailed product description and operational considerations. System components:

- PMI
- PSC-12
- PTB
- RPM
- CRC-6
- CC-2, -5
- ZIC-4A
- DLC
- HTSW-1
- NIC-C
- 5128, 5129
- LLM-1
- FCM-6
- SCM-8
- LCM-8
- CSB
- PSX-12
- SIM-16
- OCM-16
- RNI
- HTRI-M, -S, -D, -R
- CAB2-BB, CAB3-BB
- CAB-MP
- CAB2-BD, -RD, -XBD
- CAB3-BD, -RD, -XBD
- CAB1-TK, CAB1R-TK, CAB2-TK,
- CAB2R-TK, CAB3-TK, CAB3R-TK
- CAB-BATT
- REMBOX2, -4
- REMBOX2-MP
- REMBOX4-MP
- PMI-REM
- PMI-IN TL
- SSD, SSD-C, SSD-C-REM
- ZIC-2C
- ZIC-8B
- ZIC-SPC

Person Machine Interface
Power Supply
Power Termination Board
Remote Printer Interface
Relay Card
Card Cage
Zone Indicating Card
Device Loop Card
Tamper Switch
Network Interface Card
Silent Knight Dialer/DACT
Line Module
Fan Control Module
Switch Control Module
LED Control Module
CAN Sounder Board
Extender Power Supply
Supervised Input Module
Output Control Module
Remote Network Interface
Addressable Monitor Module
Enclosure
Mounting Plate
Enclosure Door
Enclosure Door
Enclosure Trim Kit
Enclosure Trim Kit
Battery Box
Remote System Enclosure
Mounting Plate
Mounting Plate
Remote PMI
PMI International
System Status Display
Dual Channel Audio Card
NAC Card
Strobe Power Conditioner

*Rev. 06-24-09 fm
HZM
OD-LP, -BP, -GP
ID-SP, -FP
CAB1, CAB1R
BP-61, BTX-1, BTX-2, BTX-3
HLIM
REL-EOL, EL-33
ILED-HC, ILED-HW
CDC-4
XLS-RK19
MPF-RK
MPR-RK, PTB-RK
BP-RK

Conventional Zone module
Door plate
Door Plate
Cabinet
Battery Sets
Loop Isolator Module
Resistor Kits
Remote Alarm Lamp
Conventional Detector Card
Rack
Front Panel
Back Panels
Blank Plate

RATING:
24 VDC

INSTALLATION:
In accordance with listee's printed installation instructions, applicable codes and ordinances, and in a manner acceptable to the authority having jurisdiction.

MARKING:
Listee's name, model number, electrical rating, and UL label.

APPROVAL:
Listed as fire alarm control unit for use with optional Voice Communication Accessories (CSFM Listing No. 6912-0067-237) and separately listed compatible initiating and indicating devices. *Also suitable for high-rise applications. Refer to manufacturer's Installation Manual for details.

This control unit can generate a distinctive three-pulse Temporal Pattern Fire Alarm Evacuation Signal (for total evacuation) in accordance with NFPA 72, 2002 Edition. Strobe devices can be controlled by the ZIC-4A for (synchronized or unsynchronized) operation.

This control unit meets the requirements of UL-864, 9th Edition Standard.

NOTE:
1. For Fire Alarm Verification Feature (Delay of fire alarm), the maximum Retard/Reset/Restart period must be adjusted to 30 seconds or less.

2. Combined with 7170-0067:236

*Rev. 06-24-09 fm

This listing is based upon technical data submitted by the applicant. CSFM Fire Engineering staff has reviewed the test results and/or other data but does not make an independent verification of any claims. This listing is not an endorsement or recommendation of the item listed. This listing should not be used to verify correct operational requirements or installation criteria. Refer to listee's data sheet, installation instructions and/or other suitable information sources.

Date Issued:  JUNE 30, 2009  
Listing Expires June 30, 2010

Authorized By:  FRANCIS MATEO, Program Coordinator 
Fire Engineering Division
SIEMENS
HMS Series Intelligent Initiating Devices
Manual Fire Alarm Boxes

ENGINEER AND ARCHITECT SPECIFICATIONS

HMS-S and HMS-D Intelligent Manual Fire Alarm Boxes for FireFinder XLS
Control Panels

- Durable Design
- Shock and Vibration Resistant
- Pull Down Lever Remains Down Until Reset
- Custom Microcomputer Chip Technology
- Dynamic Supervision
- Polarity Insensitive with SureWire™ Technology
- Reset with Allen Key
- No Break Rods Necessary
- Two Wire Operation
- Surface or Semiflush Installation
- DPU Programs and Verifies Device's Address and Tests Device's Functionality
- Electronic Address Programming is Easier and More Dependable
- Single and Double Action Models Available
- UL Listed, CSFM, FM and NYMEA Submitted

Introduction
HMS-S and HMS-D intelligent manual fire alarm boxes provide the market's most advanced method of address programming and supervision, combined with sophisticated control panel communication. Each HMS manual fire alarm box incorporates custom microcomputer chip technology, and its sophisticated bi-directional communication capabilities with the control panel, achieves the state of an "Intelligent Initiating Device."

Description
The HMS-S and HMS-D are constructed of durable molded polycarbonate material which is matte finished in red with raised white lettering. The housing accommodates a "pull-down" lever which, when operated, locks in position indicating the manual fire alarm box has been activated. The pull down lever remains down and locked until the manual fire alarm box is reset. The manual fire alarm box is reset only by opening the hinged housing cover with an allen key and then closing and locking the cover.

The HMS-S and HMS-D manual fire alarm boxes operate with FireFinder XLS Series control panels.

The manual fire alarm box's microcomputer chip has the capacity of storing, in memory, identification information as well as important operating status information.

Siemens Building Technologies Inc., Fire Safety Division innovative technology also allows all HMS Series Intelligent manual fire alarm boxes to be programmed by using the Model DPU Programmer/Tester. The Programmer/Tester is a compact, portable, menu driven accessory which makes programming and testing a manual fire alarm box device faster, easier and more dependable than previous methods. The DPU eliminates the need for the device's mechanical addressing mechanisms, such as program jumpers, dip switches or rotary dials because the DPU electronically sets the manual fire alarm box's address into its microcomputer chip, nonvolatile memory. Vibration, corrosion and other conditions which deteriorate mechanical addressing mechanisms are no longer a cause for concern.

CATALOG NUMBER 6306
The HMS-S and HMS-D are fitted with screw terminals for connection to an addressable circuit. They can be either surface or semiflush mounted.

The HMS Series manual fire alarm boxes derive their power, communicate information and receive commands over a single pair of wires.

The HMS Series is compatible on the same circuit with all H Series detectors, interfaces or addressable conventional zone modules.

### Ordering Information

<table>
<thead>
<tr>
<th>Model</th>
<th>Description</th>
<th>Shipping Lbs.</th>
<th>Weight kg.</th>
<th>Part Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>HMS-S</td>
<td>Addressable Manual Fire Alarm Box Single Action</td>
<td>2.0</td>
<td>.90</td>
<td>508-03320D</td>
</tr>
<tr>
<td>HMS-D</td>
<td>Addressable Manual Fire Alarm Box, Double Action</td>
<td>2.5</td>
<td>1.13</td>
<td>508-03390D</td>
</tr>
<tr>
<td>SB-5R</td>
<td>Surface Mounting Box</td>
<td>1.5</td>
<td>.68</td>
<td>310-019690</td>
</tr>
<tr>
<td>LTP</td>
<td>Reset Tool Package</td>
<td>.5</td>
<td>.33</td>
<td>508-62049D</td>
</tr>
</tbody>
</table>

### Mounting Data

**Surface Mounting Enclosure**

- **Housing Hinged to Backplate**
- **Nameplate**
- **Locking Screw**
- **Backplate**

3½ in DEEP SWITCH BOX (USER SUPPLIED)

### Electrical Ratings

Current Draw (Active or Standby): 1.5mA

**NOTICE:** The use of other than Fire Safety detectors and boxes with Fire Safety equipment will be considered a misapplication of Fire Safety equipment and as such void all warranties either expressed or implied with regard to fires, damages, liabilities and/or service problems.

---

Siemens Building Technologies

**Fire Safety**

8 Fernwood Road

Florham Park, NJ 07932

Tel: (973) 593-2600

Fax: (973) 655-6670

www.sbt.siemens.com/fis

Printed in U.S.A.

Fire Safety

2 Kentview Boulevard

Brampton, Ontario

Canada L6T 5E4

Tel: (905) 799-9637

Fax: (905) 799-9888

August 2005

Supersedes sheet dated 1/03
LISTING No. 7150-0067:036

CATEGORY: Boxes/Pull Stations

LISTEE: Siemens Building Technologies Inc., Fire Safety Div., 8 Fernwood Rd, Florham Park NJ 07932
Contact: Peter Pawchak (973) 593-2662 FAX (973) 593-8652

DESIGN: Models MS-5, -51, -52, -52C, -53 through -57, -60, -60DAP, -60DP, -60KS, -151, -157, -
500 through -507, -511, -512, -512C, -513, -513C, -514, -514C, -515, -516, -517, -517C, -
518, and MS-MI; MH-51, -57, -501, -507, -511, -517, -517C, -518; MSX-1, -2, -2D, -100;
MHX-1, -100; MSI-1, -2, -10, -10B, -20, -20B, -60, -60DA; MSI-MB6; HMS-S, -D, -M
noncoded manual pull stations. Single action, double action, and double action distinct
type. Refer to listee’s data sheet for additional detailed product description and
operational considerations.

INSTALLATION: In accordance with listee’s printed installation instructions, applicable codes & ordinances
and in a manner acceptable to the authority having jurisdiction.

MARKING: Listee’s name or Cerberus Pyrotronics, model number, electrical rating and UL label.

APPROVAL: Listed as manual pull stations for use with separately listed electrically compatible fire
alarm control units. Models with prefix MH are suitable for use with Halon extinguishing
system. Models HMS-S, -D, -M are addressable.

* These manual pull boxes do not meet the requirements of UL Standard 38, 1999 Edition
and California amendments.

*Updated 08-22-2009 fm

Date Issued: JUNE 30, 2009
Listing Expires June 30, 2010

Authorized By: FRANCIS MATEO, Program Coordinator
Fire Engineering Division
SIEMENS

HFP-11 FireFinder™ Detector
Intelligent Fire Detector for FireFinder XLS and FS-250 Control Panels

ENGINEER AND ARCHITECT SPECIFICATIONS

Model HFP-11
- Most Sophisticated “Detector Intelligence” available today
- Multi-Criteria fire detection for the price of a photoelectric detector
- FirePrint™ Technology to discriminate between deceptive phenomena and an actual fire
- Easily programmed to match specific hazard profiles from the control panel
- Polarity Insensitive with SureWire™ Technology
- Pre-Alarm reporting based on fire profile selected
- Remote sensitivity measurement capability
- System logic activation based on any of three inputs from detector (smoke, heat or neural network)
- Detectors are self-testing, completing diagnostics every 4 seconds
- Field cleanable chamber with replaceable chamber parts available
- Multi-color detector status LED
- Two-wire operation
- Compatible Model DPU field device programmer/tester unit
- Supports software based automatic environmental compensation
- Optional fully programmable relay base, audible base, and duct housing

ULC Listed, CSFM, FM, NYMEA Approved

Introduction
The Siemens Building Technologies, Fire Safety Division HFP-11 Intelligent Fire Detector provides the life safety industry with the most highly evolved detection system available today. The HFP-11 utilizes advanced detection technology that allows the detector to distinguish non-threatening deceptive phenomena, such as cigarette smoke, from actual fire hazards, while optimizing detection for the area in which it is installed. No other detection system available today offers a higher level of protection or nuisance alarm immunity. The HFP-11 uses state-of-the-art microprocessor circuitry with error check, detector self-diagnos- tics and supervision programs.

The HFP-11 intelligent fire detector is compatible with the Fire Safety Model DPU field device programmer/tester unit, which is a compact, portable, menu-driven accessory for electronically programming and testing detectors, easily and reliably. The DPU eliminates the need for cumbersome, unreliable mechanical programming methods, such as dials or switches and reduces installation and service costs by electronically pro- gramming and testing the detector prior to installation. The HFP-11 fire detector is compatible with the Fire Finder XLS series of control panels.

CATALOG NUMBER 6301
Description

The HFP-11 is a plug-in, two-wire, multi-sensor detector with both photoelectric and thermal inputs and is compatible with Fire Finder XLS and FS-250 series of control panel systems. Each detector consists of a dust resistant, field-cleanable photoelectric chamber, a solid state non-mechanical thermal sensor, and microprocessor based electronics with a low-profile plastic housing. The HFP-11 utilizes state-of-the-art ASIC circuitry and surface mount technology for maximum reliability. Every HFP-11 fire detector is shipped with a protective dust cover. The HFP-11 fire detector utilizes an infrared light emitting diode (IRLED), and light sensing photodiode. Under normal conditions, light transmitted by the LED is directed away from the photodiode and scattered through the smoke chamber in a controlled pattern. The smoke chamber is designed to manage light dissipation and extraneous reflections from dust particles or other non-smoke airborne contaminants in such a way as to maintain stable, consistent detector operation. When smoke enters the detector chamber, light emitted from the IRLED is scattered by the smoke particles and is received by the photodiode.

The HFP-11 also utilizes a modern, accurate, shock-resistant thermistor to sense temperature changes. The "on-board" FirePrint technology allows the detector to gather smoke and thermal data, and to analyze this information in the detector's "neural network." By comparing data received with the common characteristics of fires, or fire fingerprints, the HFP-11 can compare these "Fire Prints" to those of deceptive phenomena that cause other detectors to false alarm. The advanced FirePrint technology allows the HFP-11 to accurately determine a true fire hazard from a non-threatening deceptive phenomena without needing to use alarm delaying verification and confirmation techniques, which can increase the probability of false alarms due to fire. The HFP-11 provides the highest level of detector intelligence available today with a detector/control panel link that allows the user to program the detector for the specific hazard profile using a simple software menu selection. Detectors are optimized by selecting one of the following eleven applications:

- Office/Retail
- Lobby
- Computer Room
- Dormitory
- Healthcare
- Parking Garage
- Utility/Transformer Room
- Hostile Environment
- Precious Storage
- Air Duct
- Warehouse/Light Manufacturing

The software does the rest; no guessing on detector sensitivities or alarm verification; the control panel programs the HFP-11 detector for the protected area without hassle and without confirmation delays. Once optimized for the hazards in the protected area, the HFP-11 provides the best detection you can buy.

Should the operator or installer forget to program the detector, the HFP-11 will revert to a default setting that allows it to operate as an office environment detector.

The HFP-11's FirePrint technology monitors input from both the photo chamber and the thermal sensor, evaluating this information with sophisticated mathematical formulas, or algorithms, comparing this input to characteristics of both threatening fires and deceptive phenomena that would "fool" any ordinary detector. This technology was developed over years of research and reviewing the results of over 20 years of fire test data in one of the world's most advanced fire research centers.

The results of this research are the mathematical models that form the algorithms used in FirePrint. No other fire detector has this level of intelligence or this amount of research and development supporting it's design. The microprocessor's software can identify and disregard false input caused by radio frequency (RFI) and electromagnetic (EMI) interferences, and validates all trouble conditions before annuncing or reporting to the control panel. The HFP-11 detector's microprocessor uses an integral EEPROM to store the detector's address and other critical operating parameters which include the assigned program values for alarm and trouble thresholds.

Communications within the detector itself and between the HFP-11 and the control panel, or with the DPU field device programmer/tester unit, are supervised and safe-guarded against disruption by reliable, microprocessor based error checking routines. Additionally, the micro-processor supervises all EEPROM memory locations and provides a high degree of EEPROM failure fault tolerance.

The HFP-11 determines its operating status to be normal, in alarm, or in trouble depending on the difference between the alarm threshold values stored in the detector's memory and the detector's latest analog measurement. The detector then communicates changes in its status to the control panel. In addition, the FireFinder XLS control panel will sample the value of the HFP-11's analog signal over a period of time in order to determine if those values indicate excessive buildup in the photo chamber; if so, the FireFinder XLS control panel will indicate that the particular detector requires maintenance.

The HFP-11 is listed as a self-testing device. The HFP-11's visible light emitting diode (LED) flashes green every 4 seconds to indicate it is communicating with the control panel and that it has passed its internal self-test. Should the detector sense a fault or failure within its systems, the LED will flash amber and the detector will transmit that information to the control panel. A quick visual inspection is sufficient to indicate the condition of the detector at any time. If more detailed information is required, a printed report can be provided from the Fire Finder XLS panel indicating the status and settings assigned to each individual detector. When the HFP-11 moves to the alarm mode, it will flash red and continue until the system is reset at the control panel. At that
same time, any user-defined system alarm functions programmed into the system are activated. Detector sensitivity, calibration, and identification are dynamically supervised by the control panel. Detector sensitivity and pre-alarm levels are a function of the application chosen at the control panel and are controlled by the panel. If an alternate, non-FirePrint mode is selected, then the sensitivity can be changed from the control panel.

The DPU Device Program/Test Unit accessory is used to program and verify the detector's address. The technician selects the accessory's program mode to enter the desired address. The DPU automatically sets and verifies the address and tests the detector. The DPU operates on AC power or rechargeable batteries, providing flexibility and convenience in programming and testing equipment almost anywhere.

When in the test mode, the DPU will perform a series of diagnostic tests without altering the address or other stored data, allowing technicians to determine if the detector is operating properly. The HFP-11 fire detector may be installed on the same initiating circuit with HMS series manual stations, HTIR series interfaces, HCP output control devices, or HZM series of addressable, conventional zone modules. All HFP-11 detectors can be cleaned in the field, when required, by simply removing the detector cover and unsnapping the photo chamber. There is also the option of cleaning the interior of the detector with a clean, soft cloth or brush, or replacing the labyrinth and bug screen included in the detector maintenance kit, model DMK-11.

The HFP-11 uses the low-profile surface mounting base, model DB-11. This base mounts on a 4-inch octagon, square, or a single gang electrical box. The base utilizes screw clamp contacts for electrical connections and self-wiping contacts for increased reliability. The base can be used with the optional LK-11 detector locking kit which contains 50 detector locks and an installation tool, to prevent unauthorized removal of the detector head. The DB-11 base has integral decorative plugs to cover the outer mounting screw holes. All HFP-11 detectors are approved for operation within the UL specified temperature range of 32 to 100 degrees F (0 to 38 degrees C).

Application Data

Installation of the HFP-11 series of fire detectors requires a two-wire circuit. In many retrofit cases, existing wiring may be used. "Tapping" is permitted only for Style 4 (Class B) wiring. The HFP-11 is polarity insensitive. This feature can greatly reduce installation an debugging time. HFP-11 fire detectors can be applied within the maximum 30 foot center spacing (900 sq. ft. areas) as referenced in NFPA 72. This applications guideline is based on ideal conditions, specifically, smooth ceiling surfaces, minimal air movement, and no physical obstructions between potential fire sources and the detector. Do not mount detectors in close proximity to ventilation or heating and air conditioning outlets. Exposed joints or beamed

ceilings may also affect safe spacing limitations for detectors. Should questions arise regarding detector placement, observe NFPA 72 guidelines. Good fire protection system engineering and common sense dictate how and when fire detectors are installed and used. Contact your local Fire Safety distributor or sales office whenever you need assistance applying FirePrint in unusual applications. Be sure to follow NFPA guidelines and UL/ULC approved installation instructions, which are included with every Fire Safety detector, and local codes as for all fire protection equipment.

**Dimensions**

![Diagram of dimensions](image)

**Technical Specifications**

**Operating Temperature:** +32°F (0°C) to 100°F (38°C)
per UL 268/268A

**Humidity:** 0-93% Relative Humidity
Non-Condensing

**Maximum spacing:** 30 feet centers (900 sq. ft.)

**In Canada Only:**

<table>
<thead>
<tr>
<th>Model</th>
<th>Description</th>
<th>Part Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>HFP-11</td>
<td>Addressable FirePrint Fire Detector</td>
<td>500-001222</td>
</tr>
<tr>
<td>DB-11</td>
<td>Detector Mounting Base for Series II</td>
<td>500-001616</td>
</tr>
<tr>
<td>DB-31E</td>
<td>Detector Base (Aluminum)</td>
<td>500-001611</td>
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<tr>
<td>AD-11P</td>
<td>Air Duct Housing for Series I</td>
<td>500-000366</td>
</tr>
<tr>
<td>AD-11H</td>
<td>Air Duct Housing w/ Relay for H-Series</td>
<td>500-003328</td>
</tr>
<tr>
<td>DB-11R</td>
<td>Relay Base for Series I Intelligent Detectors</td>
<td>500-003211</td>
</tr>
<tr>
<td>ADB-11D</td>
<td>Available base</td>
<td>500-003216</td>
</tr>
<tr>
<td>RJ-11</td>
<td>Remote Tapped Smoke Indicator-4 octagon box mount</td>
<td>500-003321</td>
</tr>
<tr>
<td>RJ-11W</td>
<td>Remote Tapped Smoke Indicator- Single gang box mount</td>
<td>500-003316</td>
</tr>
<tr>
<td>LK-11</td>
<td>Base Locking Kit for Series II detectors</td>
<td>500-003538</td>
</tr>
<tr>
<td>DMK-11</td>
<td>Series I Main Kit (replacement labyrinth and bug cover)</td>
<td>500-003538</td>
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**Canadian Models:**

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<th>Description</th>
<th>Part Number</th>
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</thead>
<tbody>
<tr>
<td>HFP-11C</td>
<td>Addressable FirePrint Fire Detector (ULC)</td>
<td>500-005122</td>
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<tr>
<td>DB-11C</td>
<td>Detector Mounting Base for Series II (ULC)</td>
<td>500-006696</td>
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<tr>
<td>AD-11PC</td>
<td>Air Duct Housing (ULC)</td>
<td>500-006944</td>
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<tr>
<td>RDB-11C</td>
<td>Relay Base for Series II Intelligent Detectors (ULC)</td>
<td>500-003328</td>
</tr>
<tr>
<td>ADB-11C</td>
<td>Available Base for Series II Intelligent Detector (ULC)</td>
<td>500-003210</td>
</tr>
</tbody>
</table>
LISTING No. 7272-0067:203

CATEGORY: Photoelectric Smoke Detector

LISTEE: Siemens Building Technologies Inc., Fire Safety Div., 8 Fernwood Rd, Florham Park NJ 07932
Contact: Peter Pawchak (973) 593-2662 FAX (973) 593-8652

DESIGN: Models FP-11, HFP-11, and *HFPO-11 analog and FPO-11 photoelectric type smoke detectors. Models FP-1, and HFP-11 also have a supplemental 135°F heat sensor. Model DGH-11 detector guard housing suitable for use with Models HFP-11, *HFPO-11 and FP-11 smoke detectors. Refer to listee's data sheet for additional detailed product description and operational considerations.

INSTALLATION: In accordance with listee's printed installation instructions, applicable codes & ordinances and in a manner acceptable to the authority having jurisdiction. These detectors are intended for installation on a vertical wall surface or the ceiling. They are also acceptable for duct application with an air velocity of 0-4000 ft/min. when used with Models DB-11, DB-HR or DB-X11RS bases.

MARKING: Listee's name, model number, and UL label.

APPROVAL: Listed as photoelectric type smoke detectors for use with listee's separately listed base Model DB-11, DB-HR or DB-X11RS (CSFM Listing No. 7300-0067:134) and separately listed compatible fire alarm control units. Model DGH-11 detector guard housing is listed for use only with FP-11 and HFP-11. Refer to listee's Installation Instruction Manual for details.

*Rev. 09-27-2004

This listing is based upon technical data submitted by the applicant. CSFM Fire Engineering staff has reviewed the test results and/or other data but does not make an independent verification of any claims. This listing is not an endorsement or recommendation of the item listed. This listing should not be used to verify correct operational requirements or installation criteria. Refer to listee's data sheet, installation instructions and/or other suitable information sources.

Date Issued: JUNE 15, 2009

Listing Expires June 30, 2010

Authorized By: FRANCIS MATEO, Program Coordinator
Fire Engineering Division
LISTING No.  7300-0067:134

CATEGORY: Misc. Devices/Control Unit Accessories

Contact: Peter Pawchak (973) 593-2662 FAX (973) 593-6652

DESIGN: Models DB4T, DB4TS, DB4F, DB4TF, DB4FS, DB3S, ADB3, ADBX3, DB-HR, DBX3RS, DB-11, DB-X11RS, ADB60, ADB-11, ADBH-11, ADBX-11 and 8637 detector bases and Model DB-ADPT detectorbase adapter. Suitable for use with Models RR2 or RR3 auxiliary relays. Model DB-11 is suitable for use only with Model RR-11 or RR-11F auxiliary relay. Models DB-11 base, ADBH-11 audible base, and DB-HR relay base are intended to be used with Models HFP-11 and HFPT-11 Intelligent Series smoke and heat detectors (CSFM Listing No. 7272-0067:223 and 7270-0067:224). Refer to listee's data sheet for additional detailed product description and operational considerations.

INSTALLATION: In accordance with listee's printed installation instructions, applicable codes & ordinances and in a manner acceptable to the authority having jurisdiction. Model DB-11, ADBH-11 and DB-HR may be installed on the ceiling or on the wall.

MARKING: Listee’s name or Cerberus Pyrotronics, model number, electrical rating and UL label.

APPROVAL: Listed as detector bases for use with separately listed compatible smoke detector heads and fire alarm control units.

*Rev. 10-28-2002 JW

This listing is based upon technical data submitted by the applicant. CSFM Fire Engineering staff has reviewed the test results and/or other data but does not make an independent verification of any claims. This listing is not an endorsement or recommendation of the item listed. This listing should not be used to verify correct operational requirements or installation criteria. Refer to listee’s data sheet, Installation instructions and/or other suitable information sources.

Date Issued: JUNE 15, 2009

Listing Expires June 30, 2010

Authorized By: FRANCIS MATEO, Program Coordinator
Fire Engineering Division
Air-Duct Housings and Detectors
Air-Duct Housings — AD2 Series
Models AD2-P, AD2-PR, AD2-XHR, AD2-4W, ST(s): 10, 25, 50 and 100

ARCHITECT AND ENGINEER SPECIFICATIONS
- For Series 11 detectors
- Relay models available
- Design for air-velocity range of 100 to 4000 fpm
- Alarm LED visible from front
- Self-contained model available with 'on-board' power supply
- Clear housing cover for quick identification of detector-type removable with only (4) captive screws
- @UL and @ULC Listed; CSFM & NYMEA Approved

Product Overview
The Siemens Building Technologies, Fire Safety Division Air-Duct Detector Housings are designed to be used with the 11-Series detectors. Designed for installation directly to heating, ventilating and air-conditioning duct systems, they comply with National Fire Protection Association Standard No. 90A. When equipped with photoelectric detectors, these units will signal the presence of hazardous quantities of products of combustion or smoke being carried through the duct system. Air-duct detectors are not intended to be substituted for open-area detection.

Air-duct housings can be equipped with optional relays. These relays are utilized to operate any supplementary equipment when smoke or particles of combustion are detected.

Notes: Most conventional time control equipment guarantee only 1 detector per zone when the detector operated relay function is critical. The connection of a remote lamp and a remote relay per detector is allowed with PXL or System 3 only; other conventional systems may use either a remote lamp or a relay.

Notes - (cont'd): With the MXL series of control panels, up to 60 detectors (per circuit) having relays may be used. The connection of a remote lamp or a remote relay is allowed for each detector but not for both detectors.

With the FireFinder XLS series of control panels, up to 252 detectors (per circuit) having relays may be used. The connection of an intelligent remote lamp and a remote Relay (RLED) is also allowed.

Air-duct housings (see: Details for Ordering) are @Underwriters' Laboratories, Inc. listed.

Specifications
The air-duct housing is uniquely designed to use the photoelectric detector. Sensitivity of PE-11 detectors can be checked by viewing the LED or an RSAW-11 or RSAC-11 multicolor remote lamp. A green flash indicates the detector has passed its self test.

Amber indicates a trouble condition, and red indicates an alarm state. HFP-11, HFPO-11 and FP-11 sensitivity may be viewed from the multi-color LED on the detector or, preferably, may be printed by command on an optional printer from the MXL control panel.
Specifications — (continued)

The detector unit employs a cross-sectional sampling principle of operation. Inlet sampling tubes are available in four lengths (see: Sampling Tube Selection Table). Outlet sampling tubes are one common length. A continuous, cross-sectional sample of air moving through the duct stratification or skin affect phenomena occurring in the duct that could prevent combustion product or smoke (especially in large ducts) from reaching a spot-type detector.

In addition, the unique design of the sampling chamber insures uniform sensitivity in air velocities, ranging from a low of 100 feet per minute to as high as 4,000 feet per minute. The housing comes with 3 wiring entry ports: (2) 1/2" conduit knockouts and (1) 1/2" conduit opening.

The inlet sampling tube length is determined by the width of the air duct being protected. The inlet tube greater than and nearest to the duct width should be used (see: Sampling Tube Selection Table). The inlet tube can then be trimmed at the job site to the exact width of the duct. The outlet sampling tube for all ducts, irrespective of width, has a fixed length of approximately 5.5 inches and is supplied with the air-duct housing.

Note: When the use of a remote relay is required, order model AD2-PR for conventional systems; AD2-XHR for addressable systems. When required the WP-2000 weatherproof enclosure for duct housing is available. (For full details, refer to installation instructions part number 315-049708.)

Note: When a self-contained duct detector with power supply is required, order model AD2-4W. (For full details, refer to installation instructions part number 315-049708.)

Sampling Tube Selection Table

<table>
<thead>
<tr>
<th>Duct Width</th>
<th>Sampling Tube (Model No.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>For duct widths 6&quot; to 1&quot;</td>
<td>ST-10</td>
</tr>
<tr>
<td>For duct widths 1&quot; to 3'</td>
<td>ST-25</td>
</tr>
<tr>
<td>For duct widths 3&quot; to 5&quot; (requires support)</td>
<td>ST-50</td>
</tr>
<tr>
<td>For duct widths 5&quot; to 10&quot; (requires support)</td>
<td>ST-100</td>
</tr>
</tbody>
</table>

Maintenance of the detector is easily accomplished by the removal of the Series 11 duct-housing sampling chamber cover. The detector, which plugs into the housing, is easily removed for cleaning by a trained technician.

All that is necessary for installation of the air-duct detector is the cutting of three small holes for the sampling tube installation (template included), and the drilling of four holes for mounting the air-duct housing. The unit is then easily mounted in place, and connection made to the existing wires or terminals, if optional accessories are utilized. ST-50 and ST-100 require support. ST-100 is shipped in two, five-foot pieces with a coupling for field assembly.

Technical Data

| Temperature Range: 32°F (0°C) -100°F (38°C) |
| Altitude Range: No Altitude Limitations |
| Relative Humidity: 10% - 85% (non-condensing / non-freezing) |
| Air-Duct Velocity Range: 100 - 4000 Ft./Min. |
| Sampling Tube Pressure Range of Differences: Greater than 0.01 amps, less than 1.2 inches of water column |

Note to Architect: When building codes regulate the location of detectors within ventilating systems, make sure the number and locations of detectors is in accordance with the code regulations.

Details for Ordering

<table>
<thead>
<tr>
<th>Model Number</th>
<th>Part Number</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>AD2-P</td>
<td>500-649706</td>
<td>Air-Duct Housing for use with FF-11, HFP-11, HPFO-11 and PE-11</td>
</tr>
<tr>
<td>AD2-PR</td>
<td>500-649707</td>
<td>Air-Duct Housing for use with FF-11, HFP-11, HPFO-11 and PE-11</td>
</tr>
<tr>
<td>AD2-XHR</td>
<td>500-649708</td>
<td>Air-Duct Housing for use with PE-11 relay</td>
</tr>
<tr>
<td>AD2-4W</td>
<td>500-649709</td>
<td>Air-Duct Housing for use with FF-11, HFP-11 and HPFO-11 (with relay)</td>
</tr>
<tr>
<td>ST-10</td>
<td>500-649710</td>
<td>Sampling tube for Ducts 6&quot; to 1'</td>
</tr>
<tr>
<td>ST-25</td>
<td>500-649711</td>
<td>Sampling tube for Ducts over 1' to 3'</td>
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<tr>
<td>ST-50</td>
<td>500-649712</td>
<td>Sampling tube for Ducts 3&quot; to 5'</td>
</tr>
<tr>
<td>ST-100</td>
<td>500-649713</td>
<td>Sampling tube for Ducts 5&quot; to 10'</td>
</tr>
</tbody>
</table>

Product Includes:
- (1) short-return (outlet) tube
- (1) stopper
- (2) #12 + 3/4" sheet-metal screws
- (1) mounting template

Note: Detector and sampling tube to be purchased separately. Minimum hardware required is: (1) air-duct housing assembly; (1) sampling tube and (1) detector.

Notice: This marketing catalog sheet is not intended to be used for system design or installation purposes. For the most up-to-date information, refer to each product's installation instructions.
LISTING No. 3240-0067:245

CATEGORY: Duct Smoke Detector Housing/Base

LISTEE: Siemens Building Technologies Inc., Fire Safety Div., 8 Fernwood Rd, Florham Park NJ 07932 Contact: Peter Pawchak (973) 593-2662 FAX (973) 593-6652

DESIGN: Models AD2-P, AD2-PR, AD2-XHR and *AD2-4W duct smoke detectors. Units consist of a housing, power supply, listed smoke detector, detector cover, sampling and exhaust sampling tubes. Model AD2-PR has an interface circuit board model DA-PR and model AD2-XHR has an interface circuit board model DA-XHR. *Model AD2-4W as an interface circuit board model DA-4W. Refer to listee's data sheet for detailed product description and operational considerations.

RATING: 16 - 27 VDC

INSTALLATION: In accordance with listee's printed installation instructions, applicable codes & ordinances, NFPA 72 and in a manner acceptable to the authority having jurisdiction.

MARKING: Listee's name or Siemens, model number, electrical rating and UL label.

APPROVAL: Listed as duct smoke detectors for use with HVAC systems having air velocities between 100 to 4000 fpm when used with separately listed compatible fire alarm control units. Refer to manufacturers installation manual for details.

This listing is based upon technical data submitted by the applicant. CSFM Fire Engineering staff has reviewed the test results and/or other data but does not make an independent verification of any claims. This listing is not an endorsement or recommendation of the item listed. This listing should not be used to verify correct operational requirements or installation criteria. Refer to listee's data sheet, installation instructions and/or other suitable information sources.

Date Issued: JUNE 15, 2009

Authorized By: FRANCIS MATEO, Program Coordinator Fire Engineering Division

Listing Expires June 30, 2010
**FireFinder XLS & FS-250 Control Panels**

**Intelligent Thermal Detector**

**Model HFPT-11**

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**ARCHITECT AND ENGINEER SPECIFICATIONS**

- Microprocessor-based design
- Rate compensated
- Innovative technology provides high-speed, fault-tolerant system / detector communications
- Multi-color detector status LED
- Polarity insensitive utilizing SureWire™ technology
- Detectors are self-testing: Complete diagnostics every four seconds
- Two-wire operation
- Compatible with DPU device programmer / tester unit
- @UL and @ULC Listed;
  FM, CSFM & NYMEA Approved

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**Product Overview**

The HFPT-11 Intelligent Thermal Detector provides an advanced method of detection, address programming and supervision — combined with sophisticated control-panel communication. The HFPT-11 detector uses a state-of-the-art thermistor that provides up to 135°F (57.2°C) rate-compensated temperature.

The HFPT-11 Intelligent Thermal Detector is compatible with the Device Program / Test Unit (DPU). The DPU is a compact, portable and menu-driven accessory that makes programming and testing detectors faster, easier and more reliable than other methods.

The DPU eliminates the need for cumbersome, unreliable mechanical-programming methods, and reduces installation and service costs, via electronically programming addresses and functionally testing the PFT-11’s performance before the detector is installed.

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The HFPT-11 thermal detector is Underwriters’ Laboratory and Underwriters’ Laboratory of Canada listed.

**Specifications**

The model HFPT-11 is a plug-in, two-wire thermal detector, compatible with the FireFinder XLS and FS-250 families of control panels. Each HFPT-11 detector has microcomputer-chip technology and highly stable, solid-state electronic circuitry.

HFPT-11 detectors utilize a modern, accurate and shock-resistant thermistor to sense temperature changes. This electronic sensing method virtually eliminates thermal lag associated with mechanical temperaturesensing devices, and provides almost instantaneous temperature information to the control panel. The HFPT-11, in its default mode, provides up to 135°F (57.2°C) rate-compensated temperature.
Specifications – (continued)

The HFPT-11 can be programmed from the control panel as a fixed temperature detector without rate-of-rise, at the user's option.

The HFPT-11 detector’s microprocessor uses an integral EEPROM to store the detector's address. Communications within the detector itself and between the HFPT-11 and the control panel, or with the DPU, are supervised and safeguarded against disruption by reliable, microprocessor based error checking routines. Additionally, the microprocessor supervises all EEPROM memory locations and provides a high degree of EEPROM failure fault tolerance.

The HFPT-11 is listed as a self-testing device. The HFPT-11’s visible light emitting diode (LED) flashes green every 4 seconds to indicate it is communicating with the control panel and that it has passed its internal self-test. Should the detector sense a fault or failure within its systems, the LED will flash amber and the detector will transmit that information to the control panel.

A quick visual inspection is sufficient to indicate the condition of the detector at any time. If more detailed information is required, a printed report can be provided from the FireFinder XLS panel indicating the status and settings assigned to each individual detector.

When the HFPT-11 moves to the alarm mode, it will flash red and continue flashing until the control panel is reset. At that same time, any user defined system alarm functions programmed into the system are activated.

A Device Program/Test Unit (DPU) is used to program and verify the detector's address. The user selects the Program Mode to enter the desired address. The DPU Programmer/Tester then automatically sets and verifies the address as well as tests the detector.

The DPU has rechargeable batteries, so a detector’s address can be programmed by the user from the most convenient location. The user can also separately test the detector for functionality.

When the user selects the Test Mode, a series of tests are automatically conducted and the user is informed whether the detector has passed or failed.

The HFPT-11 detector is compatible on the same FireFinder XLS or FS-250 initiating circuit with other H-series detectors, HMS manual stations, HTTRI-series addressable interfaces, or HZM-series addressable, conventional zone modules.

The HFPT-11 detectors use a surface mounting base, Model DB-11, which mounts on a 4-inch octagonal, square or single gang electrical box. Relay base Model DB-HR mounts to a 4-inch square deep electrical box.

Audible base Model ADBH-11 also mounts to a 4-inch square deep electrical box. The DB-11, and the DB-HR and ADBH-11 use screw-clamp terminals for all electrical connections and self-wiping contacts for reliability. The bases also contain a provision for an optional concealed locking mechanism to prevent unauthorized removal of the detector head, Model LK-11.

Application Data

The FireFinder XLS and FS-250 control panels use loop circuits with each circuit capable of supporting up to (252) HFPT-11 intelligent detectors.

Locate the HFPT-11 on the ceiling, at least 4 inches from the side walls. For an ideal, smooth ceiling condition, place the detectors at a maximum center spacing of 50 feet (2,500 square feet), 25 feet from side walls or room partitions. For FM-approved installations, the HFPT-11 has a RTI rating of 'FAST.' Use a maximum center spacing of 25 feet (6.25 square feet), 12.5 feet from side walls or room partitions.

Actual job conditions and sound engineering judgment must determine detector spacing. Consider environmental factors including ambient temperature fluctuation, and the nature of the fire hazard. Room or area configuration and ceiling type (sloped or flat, smooth or beamed) also dictates placement.

Should questions arise regarding detector placement, follow the drawings provided and/or approved by Siemens Building Technologies — Fire Safety Division or by its authorized distributors.
Mounting Diagram

Technical Data

Operative Temperatures: +32°F (0°C) to 100°F (38°C)
Humidity: 0-93% Relative Humidity
Non-condensing
Maximum Spacing: 50 Foot Centers (2500 Square Feet)
FM-approved Spacing: 25 Foot Centers (625 Square Feet)
Current Draw: 1 mA in alarm or supervisory mode

Details for Ordering

<table>
<thead>
<tr>
<th>Model Number</th>
<th>Part Number</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>HFPT-11</td>
<td>500-033380</td>
<td>Addressable Thermal Fire Detector</td>
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<tr>
<td>DB-11</td>
<td>500-094151</td>
<td>Detector Mounting Base</td>
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<td>DB-HR</td>
<td>500-033220</td>
<td>Relay Base</td>
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<td>ADBH-11</td>
<td>500-033210</td>
<td>Audible Base</td>
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<tr>
<td>RL-HC</td>
<td>500-033230</td>
<td>Remote (red) alarm indicator-octagon box mount</td>
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<tr>
<td>RL-HW</td>
<td>500-033310</td>
<td>Remote (red) alarm indicator-single gang box mount</td>
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<tr>
<td>LK-11</td>
<td>500-695350</td>
<td>Base Locking Kit for Series 11 detectors</td>
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In Canada Order:

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<tr>
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<th>Part Number</th>
<th>Description</th>
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<tr>
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<td>Audible Base (ULC)</td>
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<td>DB-HR-C</td>
<td>500-033220C</td>
<td>Relay Base (ULC)</td>
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</table>

Notice: This marketing catalog sheet is not intended to be used for system design or installation purposes. For the most up-to-date information, refer to each product's installation instructions.
LISTING No.: 7270-0067:224

CATEGORY: Heat Detector

LISTEE: Siemens Building Technologies Inc.,*Fire Safety Div., 8 Fernwood Rd, Florham Park, NJ 07932
Contact: Peter Pawchak (973) 593-2662 FAX (973) 593-6652

DESIGN: Model HFPT-11 electronic fixed temperature/rate-of-rise heat detector. Refer to listee’s data sheet for additional detailed product description and operational considerations.

RATING: 135°F fixed temperature/rate-of-rise

INSTALLATION: In accordance with listee’s printed installation instructions, applicable codes & ordinances and in a manner acceptable to the authority having jurisdiction.

MARKING: Listee’s name or Cerberus Pyrotronics, model number, temperature rating and UL label.

APPROVAL: Listed as heat detector for use with separately listed compatible fire alarm control units. Intended for use with listee’s Model DB-11 and DB-HR bases (CSFM Listing No. 7300-0067:134).

This listing is based upon technical data submitted by the applicant. CSFM Fire Engineering staff has reviewed the test results and/or other data but does not make an independent verification of any claims. This listing is not an endorsement or recommendation of the item listed. This listing should not be used to verify correct operational requirements or installation criteria. Refer to listee’s data sheet, installation instructions and/or other suitable information sources.

Date Issued: JUNE 15, 2009
Listing Expires June 30, 2010

Authorized By: FRANCIS MATEO, Program Coordinator
Fire Engineering Division
LISTING No.: 7300-0067:134

CATEGORY: Misc. Devices/Control Unit Accessories

Contact: Peter Pawchak (973) 593-2662 FAX (973) 593-6652

DESIGN: Models DB4T, DB4TS, DB4F, DB4TF, DB4FS, DB3S, ADB3, ADBX3, DB-HR, DBX3RS,
DB-11, DB-X11RS, ADBI60, ADB-11, ADBH-11, ADBX-11 and 8837 detector bases and
Model DB-ADPT detector/base adapter. Suitable for use with Models RR2 or RR3
auxiliary relays. Model DB-11 is suitable for use only with Model RR-11 or RR-11F
auxiliary relay. Models DB-11 base, ADBH-11 audible base, and DB-HR relay base are
intended to be used with Models HFP-11 and HFPT-11 Intelligent Series smoke and heat
detectors (CSFM Listing No. 7272-0067:223 and 7270-0067:224). Refer to listee's data
sheet for additional detailed product description and operational considerations.

INSTALLATION: In accordance with listee's printed installation instructions, applicable codes & ordinances
and in a manner acceptable to the authority having jurisdiction. Model DB-11, ADBH-11
and DB-HR may be installed on the ceiling or on the wall.

MARKING: Listee's name or Cerberus Pyrotronics, model number, electrical rating and UL label.

APPROVAL: Listed as detector bases for use with separately listed compatible smoke detector heads and
fire alarm control units.

*Rev. 10-26-2002 JW

This listing is based upon technical data submitted by the applicant. CSFM Fire Engineering staff has reviewed the test results
and/or other data but does not make an independent verification of any claims. This listing is not an endorsement or
recommendation of the item listed. This listing should not be used to verify correct operational requirements or installation
criteria. Refer to listee's data sheet, installation instructions and/or other suitable information sources.

Date Issued: JUNE 15, 2009  Listing Expires June 30, 2010

Authorized By: FRANCIS MATEO, Program Coordinator
Fire Engineering Division
Series SM and DSM Sync Modules

Description
The Wheelock Series SM and DSM Sync Modules are utilized with the Series AS/AH, Series NS/NS4/NH, Series RSS, Series RSSP, Series SLM and selected strobe applications with other Wheelock combination appliances.

When used with Series AS Audible Strobes and/or Series NS Horn Strobes, the SM and DSM Sync Modules provide independent operation of synchronized temporal pattern (code 3) horn and synchronized strobe flash, as well as the ability to silence the horn while maintaining the strobe flash, while using only a single pair of wires. The sync modules are available in two versions; the SM-12/24 for control of a Class B NAC circuit; and a dual output version, the DSM-12/24 for control of either a Class A or two (2) Class B NAC circuits.

Features
- Approvals include: UL Standard 1971, ULC, New York City (MEA), California State Fire Marshal (CSFM) and Chicago (BFP)
- Uniquely designed to accept an independent strobe and audible input from the FACP and convert to a single output that connects to Wheelock's Series AS or Series NS family of audible strobes
- Series SM and DSM Sync Modules can also be used to synchronize Wheelock's Series RSS, RSSP and SLM Sync Strobes
- 3 ampere per circuit current handling at 12 or 24 VDC
- Low operating current draw
- Compatible with all standard fire alarm control panels
- Meets the NFPA-72 requirement for Temporal Pattern when used with the Series AS/AH and/or Series NS/NS4/NH
- 3 year warranty

SM or DSM Connection Diagram with Power Booster
### Table 1: Sync Module (SM) Current Requirements (AMPS)

<table>
<thead>
<tr>
<th>UL Voltage</th>
<th>ULC Voltage</th>
<th>Rated Average Current</th>
<th>Rated Peak Current</th>
<th>Rated Inrush Current</th>
</tr>
</thead>
<tbody>
<tr>
<td>8.0 VDC</td>
<td>10.5 VDC</td>
<td>0.017</td>
<td>0.044</td>
<td>0.055</td>
</tr>
<tr>
<td>12.0 VDC</td>
<td>12.0 VDC</td>
<td>0.017</td>
<td>0.044</td>
<td>0.055</td>
</tr>
<tr>
<td>24.0 VDC</td>
<td>24.0 VDC</td>
<td>0.028</td>
<td>0.070</td>
<td>0.082</td>
</tr>
<tr>
<td>33.0 VDC</td>
<td>33.0 VDC</td>
<td>0.036</td>
<td>0.080</td>
<td>0.094</td>
</tr>
</tbody>
</table>

### Table 2: Sync Module (DSM) Current Requirements (AMPS)

<table>
<thead>
<tr>
<th>UL Voltage</th>
<th>ULC Voltage</th>
<th>Rated Average Current</th>
<th>Rated Peak Current</th>
<th>Rated Inrush Current</th>
</tr>
</thead>
<tbody>
<tr>
<td>8.0 VDC</td>
<td>10.5 VDC</td>
<td>0.019</td>
<td>0.040</td>
<td>0.055</td>
</tr>
<tr>
<td>12.0 VDC</td>
<td>12.0 VDC</td>
<td>0.020</td>
<td>0.040</td>
<td>0.055</td>
</tr>
<tr>
<td>24.0 VDC</td>
<td>24.0 VDC</td>
<td>0.035</td>
<td>0.070</td>
<td>0.082</td>
</tr>
<tr>
<td>33.0 VDC</td>
<td>33.0 VDC</td>
<td>0.045</td>
<td>0.080</td>
<td>0.094</td>
</tr>
</tbody>
</table>

**NOTE:** All CAUTIONS and WARNINGS are identified by the symbol ▲. All warnings are printed in bold capital letters.

▲ **WARNING:** PLEASE READ THESE SPECIFICATIONS AND INSTALLATION INSTRUCTIONS CAREFULLY BEFORE USING, SPECIFYING OR APPLYING THIS PRODUCT. FAILURE TO COMPLY WITH ANY OF THESE INSTRUCTIONS, CAUTIONS AND WARNINGS COULD RESULT IN IMPROPER APPLICATION, INSTALLATION AND/OR OPERATION OF THESE PRODUCTS IN AN EMERGENCY SITUATION, WHICH COULD RESULT IN PROPERTY DAMAGE, AND SERIOUS INJURY OR DEATH TO YOU AND/OR OTHERS.

▲ **WARNING:** MAKE SURE THAT THE TOTAL CURRENT REQUIRED BY ALL APPLIANCES THAT ARE CONNECTED TO A SM OR DSM DOES NOT EXCEED 3.0A OR EXCEED THE RATING OF THE FIRE ALARM CONTROL PANEL'S PRIMARY AND SECONDARY POWER SOURCES AND NAC CIRCUITS. OVERLOADING THESE SOURCES COULD RESULT IN LOSS OF POWER AND FAILURE TO ALERT OCCUPANTS DURING AN EMERGENCY, WHICH COULD RESULT IN PROPERTY DAMAGE AND SERIOUS INJURY OR DEATH TO YOU AND/OR OTHERS.

When calculating the total current, use Tables 1 & 2 to determine the highest value of "Rated Average Current" for the SM or DSM (across the listed voltage range), then add this value to the total current for any other appliances powered by the same source and include any required safety factors. Refer to Instruction Sheet for additional information.

▲ **WARNING:** MAKE SURE THAT ALL FUSES USED ON NAC CIRCUITS ARE RATED TO HANDLE THE MAXIMUM INRUSH OR PEAK CURRENT FROM ALL APPLIANCES ON THOSE CIRCUITS. FAILURE TO DO THIS MAY RESULT IN LOSS OF POWER TO THE NAC CIRCUIT AND THE FAILURE OF ALL APPLIANCES ON THAT CIRCUIT TO OPERATE, WHICH COULD RESULT IN PROPERTY DAMAGE AND SERIOUS INJURY OR DEATH TO YOU AND/OR OTHERS.

### Table 3: Current Consumption of the SM and DSM Modules

<table>
<thead>
<tr>
<th>Output Circuit Description of SM/DSM Module</th>
<th>SM Module</th>
<th>DSM Module</th>
<th>Ref. Fig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Class &quot;B&quot; with Audible Silence</td>
<td>(single circuit)</td>
<td>Y</td>
<td>1</td>
</tr>
<tr>
<td>Class &quot;B&quot; with No Audible Silence</td>
<td>(single circuit)</td>
<td>Y</td>
<td>2</td>
</tr>
<tr>
<td>Class &quot;B&quot; with Audible Silence</td>
<td>(dual circuit)</td>
<td>Y</td>
<td>3</td>
</tr>
<tr>
<td>Class &quot;B&quot; with No Audible Silence</td>
<td>(dual circuit)</td>
<td>Y</td>
<td>4</td>
</tr>
<tr>
<td>Class &quot;A&quot; with Audible Silence</td>
<td>(single circuit)</td>
<td>Y</td>
<td>5</td>
</tr>
<tr>
<td>Class &quot;A&quot; with No Audible Silence</td>
<td>(single circuit)</td>
<td>Y</td>
<td>6</td>
</tr>
</tbody>
</table>

**Note:** SM Sync Modules are rated for 3.0 amperes at 12/24 VDC; DSM Dual Sync Modules are rated for 3.0 amperes per circuit. The maximum number of interconnected DSM modules is twenty (20).

▲ **CAUTION:** Use SM or DSM Sync Modules only on NAC circuits with continuously applied voltage. Do not use SM or DSM Sync Modules on coded or interrupted NAC circuits in which the applied voltage is cycled on and off.

▲ **CAUTION:** Power Boosters may be used in conjunction with the SM or DSM Sync Modules only in the order shown below. Only one SM or DSM Sync Module shall be allowed on a NAC circuit. Do not connect Power Booster to the NAC circuit after the one SM or DSM Sync Module. **Exception:** The Wheelock PS-24-SMC Power Booster can be connected either before or after the SM or DSM Sync Module. Refer to Power Booster Instruction manual for proper application and installation.
Notes
1. Non-Sync Appliances can be installed before or after a SM or DSM. If the Non-Sync appliance requires audible silence, four wire connection is necessary with the strobe circuit connected before the SM or DSM NAC circuit, and the audible leads connected to a silenceable NAC circuit from the FACP.
2. The audible appliance produces a momentary interruption (approximately 25ms) each time the strobes flash.
3. Circuit #2 may be omitted if only 1 circuit is required when using the DSM.
4. Non-Sync Audible Appliances can be installed on the audible NAC. Be aware of the current requirement for the SM or DSM module. See table 3.

Specifications and Ordering Information

<table>
<thead>
<tr>
<th>Model</th>
<th>Order Code</th>
<th>Input Voltage VDC</th>
<th>Average Current @ 12 or 24 VDC</th>
<th>UL Max*</th>
<th>Mounting Options**</th>
</tr>
</thead>
<tbody>
<tr>
<td>SM-12/24-R</td>
<td></td>
<td>6369</td>
<td>0.017</td>
<td>0.023</td>
<td>W</td>
</tr>
<tr>
<td>DSM-12/24-R***</td>
<td></td>
<td>6374</td>
<td>0.020</td>
<td>0.026</td>
<td>W</td>
</tr>
</tbody>
</table>

* RMS current ratings are per UL average RMS method. UL max current rating is the maximum RMS current within the listed voltage range (16-33v for 24v units). For strobes the UL max current is usually at the minimum listed voltage (16v for 24v units). For audibles the max current is usually at the maximum listed voltage (33v for 24v units). For unfiltered FWR ratings, see installation instructions.
** Refer to Data sheet # S7000 for Mounting Options.
*** The maximum number of interconnected DSM modules is twenty (20). The total distance from the first to the last DSM shall not exceed 1,000 feet of #18 AWG wire. Use only #18 AWG wire.
WARNING: THESE APPLIANCES WERE TESTED TO THE OPERATING VOLTAGE LIMITS OF 8-33 VOLTS USING FILTERED DC OR UNFILTERED FULL-WAVE RECTIFIED (FWR). DO NOT APPLY 80% AND 110% OF THESE VOLTAGE VALUES FOR SYSTEM OPERATION. THE APPLICATION OF IMPROPER VOLTAGE MAY RESULT IN DEGRADED OPERATION OR DAMAGE TO THESE PRODUCTS, WHICH COULD RESULT IN PROPERTY DAMAGE AND SERIOUS INJURY OR DEATH TO YOU AND/OR OTHERS.

Wheelock products must be used within their published specifications and must be PROPERLY specified, applied, installed, operated, maintained and operationally tested in accordance with their installation instructions at the time of installation and at least twice a year or more often and in accordance with local, state and federal codes, regulations and laws. Specification, application, installation, operation, maintenance and testing must be performed by qualified personnel for proper operation in accordance with all of the National Fire Protection Association (NFPA), Underwriters’ Laboratories (UL), National Electrical Code (NEC), Occupational Safety and Health Administration (OSHA), local, state, county, province, district, federal and other applicable building and fire standards, guidelines, regulations, laws and codes including, but not limited to, all appendices and amendments and the requirements of the local authority having jurisdiction (AHJ).

WARNING: CONTACT WHEELOCK FOR “INSTALLATION INSTRUCTIONS” (P83123-SM & P83177-DSM) AND “GENERAL INFORMATION” SHEET ON THESE PRODUCTS. These documents do undergo periodic changes. It is important that you have current information on these products. These materials contain important information that should be read prior to specifying or installing these products including:
- TOTAL CURRENT REQUIRED BY ALL APPLIANCES CONNECTED TO SYSTEM SECONDARY POWER SOURCES.
- Fuse ratings on NAC circuits to handle maximum inrush or peak currents from all appliances on those NAC circuits.
- Composite flash rate from multiple strobes within a person’s field of view.
- The voltage applied to these products must be within their rated in put voltage range.
- Installation in office areas and other specification and installation issues.
- Use strobes only on NAC circuits with continuously applied operating voltage. Do not use strobe on coded or interrupted NAC circuits in which the applied voltage is cycled on and off as the strobe may not flash.

Architects and Engineers Specifications

The sync modules shall be Wheelock Series SM or DSM Sync Modules. Series SM or DSM Sync Modules shall be the master controllers for Wheelock Series AS/AH, NS/NS4/NH, RSS, RSSP and appliances where a synchronized audible/visual audible or visual only appliance is specified. All modules shall be UL listed under Standard 464. Series SM and DSM modules shall be designed to interface with Series AS Audible Strobe Appliances and NS Horn Strobe Appliances to produce a synchronized temporal (Code 3) horn as well as synchronized strobe flash on a two-wire alarm circuit. Other synchronized products are the Wheelock Series RSS, RSSP, SLM visual only appliances and Series AH and NH Horn Appliances.

SM Sync Module shall incorporate two input NAC circuits for power connection from the Fire Alarm Control Panel; one for the strobe NAC circuit and one for the audible NAC circuit. DSM modules shall provide an additional strobe circuit input/output for control of either one Class “B” NAC circuits or a single Class “A” NAC circuit. Upon activation of the audible silence function at the Fire Alarm Control Panel, the audible signal component of Series AS Audible Strobe and/or the Series NS Horn Strobe may be silenced while maintaining strobe activation.

Series SM or DSM module shall be designed and available in two versions; the SM-12/24 for control of a single Class B NAC circuit and a dual output version, the DSM-12/24 for control of either Class A two (2) Class B NAC circuits. The DSM dual circuit version shall provide the additional capability of “daisy-chaining”, that is, the ability to interconnect multiple DSM’s for synchronous horn and strobe operation on multiple NAC circuits. Interconnection capability shall be for a maximum of 40 NAC circuits. All modules shall operate on either 12 or 24 VDC. Rated average current requirement for the SM-12/24 shall be .017 amperes @ 12 VDC and .026 amperes @ 24 VDC. The DSM-12/24 shall be .020 amperes @ 12 VDC and .035 amperes @ 24 VDC. A single circuit SM Sync Module shall be capable of handling a 3 ampere load at 12 or 24 VDC and the dual circuit DSM Sync Module shall be capable of handling a load of 3 amperes per NAC circuit at 12 or 24 VDC.

All versions shall be polarized for DC supervision and shall incorporate screw terminals for in/out field wiring of #18 to #12 AWG wire size. The SM and DSM Sync modules shall mount to a 4-11/16” x 2-1/8” deep backbox.

NOTE: Due to continuous development of our products, specifications and offerings are subject to change without notice in accordance with Wheelock Inc. standard terms and conditions.

MEWA

WE ENCOURAGE AND SUPPORT NICET CERTIFICATION

3 YEAR WARRANTY

Made in USA

S3000 SM/DSM 0208
LISTING No. 7300-0785:132

CATEGORY: Misc. Devices/Control Unit Accessories

LISTEE: Wheelock Inc., 273 Branchport Ave., Long Branch NJ 07740
Contact: Deborah Pisarchia (732) 433-6001 Fax (732) 222-5607

DESIGN: Models SM-12/24, SMX-12/24, DSM-12/24 and DSMX-12/24 Synchronized Control Modules. Models SM-12/24 and DSM-12/24 may be followed by -R, -W, -X or -S. Refer to listee's data sheet for additional detailed product description and operational considerations.

RATING: 10.5 - 31 VDC

INSTALLATION: In accordance with listee's printed installation instructions, applicable codes & ordinances and in a manner acceptable to the authority having jurisdiction.

MARKING: Listee's name, model number, electrical rating and UL label.

APPROVAL: Listed as signaling appliances accessory for use with separately listed synchronized strobe lights. For indoor use only.

*Rev. 06-13-2006

This listing is based upon technical data submitted by the applicant. CSFM Fire Engineering staff has reviewed the test results and/or other data but does not make an independent verification of any claims. This listing is not an endorsement or recommendation of the item listed. This listing should not be used to verify correct operational requirements or installation criteria. Refer to listee's data sheet, installation instructions and/or other suitable information sources.

Date Issued: JUNE 18, 2009

Authorized By: FRANCIS MATEO, Program Coordinator
Fire Engineering Division

Listing Expires June 30, 2010
**Description**

POWERPATH™ Series PS-24-8MC is an 8 Amp, 24VDC, filtered and regulated, supervised remote power supply/charger used for supervision and expanded power driving capability for Fire Alarm Notification Appliance Circuits. The PS-24-8MC may be connected to any 12V or 24V (FWR or DC) Fire Alarm Control Panel (FACP) by using a Notification Appliance Circuit (NAC) or a "Dry Contact". Primary applications include NAC expansion (supports ADA requirements) and auxiliary power to support system accessories. This unit provides filtered and regulated 24VDC, 8 Amp up to four (4) Class "B", two (2) Class "A", or two (2) Class "B" and one (1) Class "A" Notification Appliance Circuits. With the optional plug-in PS-4CA module the unit supports (4) Class "A" Notification Appliance Circuits. Additionally, an auxiliary power output of 3.5 Amps (disconnected upon AC power loss or an alarm condition) or 200 mAmps (constant) is provided, which can be manually reset. The PS-24-8MC also contains a battery charger capable of charging either 7 or 12 Amp/Hour (AH) of battery backup.

Two FACP NAC circuits or two "Dry" contact initiating circuits can be connected to the POWERPATH inputs. These inputs can then be directed to control supervision and power delivery to any combination of the four (4) outputs.

Each output is rated at 3.0 Amps (Class "B") or (Class "A") and can be programmed to generate a steady or Code 3 Temporal Horn sound and a strobe output under alarm condition. Total load for the PS-24-8MC NAC circuits must not exceed 8.0 Amps.

The PS-24-8MC under non-alarm condition provides independent supervision for Class "A" and Class "B" FACP NAC circuits. In the event of circuit trouble, the FACP will be notified via the POWERPATH steered input (IN1 or IN2). In addition there are two sets of trouble reporting terminals, one used for AC power loss reporting and the other for all troubles. The AC power loss reporting, on the common trouble terminals and on IN1 or IN2, can be delayed for either 30 seconds or 170 minutes. The AC power loss terminals will always report the trouble 30 seconds after loss of AC power.

The PS-24-8MC POWERPATH is UL Listed under UL Standard 864, to be used with any 24 volt Listed Regulated notification appliances. It includes the capability to synchronize Wheelock strobes and horns and to silence the horn signal when horns/strobes are operating on two wires.

**Features**

**Approvals**
- Approvals Include: UL Standard 864 California State Fire Marshal (CSFM), New York City (MEA), Factory Mutual (FM), Chicago (BFP). See Approvals by model in Specification and Ordering Information
- Compliant with NFPA 72

**Inputs**
- 120VAC, 50/60Hz, 5.0 Amps Operating Power in Alarm
- 24VDC Battery Backup Connection
- Two (2), 12V or 24V NAC Initiating Circuits (9-33V at 5mA) FWR or DC
- Two (2) "Dry" Contact Initiating Circuits
- Accepts two (2) Class "A" or two (2) Class "B" circuit inputs
- Built in battery charger for sealed lead acid or gel type batteries

...Features continued on next page
Outputs
- NAC outputs are 24VDC, 3.0 Amps each, power limited
- 8 Amps total alarm current
- Capable of four (4), Class "B" circuits
- Capable of two (2) Class "A" circuits
- Capable of four (4) Class "A" circuits with optional PS-4CA module
- Capable of one (1) Class "A" circuit and two (2) Class "B" circuits
- Temporal (Code 3) or constant voltage output
- Built-in Wheelock synchronization mode that can be fed to any or all of the output circuits
- Input and output can be synchronized with "IN>OUT SYNC" mode (SM, DSM or 2nd PS-24-8MC is required)
- Audible silence capability
- Filtered and electronically regulated output
- 3.5 Amp auxiliary power limited output with reset capability. (Removed upon AC loss or alarm. Automatic reset 30 seconds after AC power returns or the alarm condition is over) or 200 mAmmps auxiliary power limited output which remains on during AC loss or an alarm condition

Supervision
- Compatible with 12V or 24V (FWR or DC) FACP
- Signaling appliance circuits are supervised and steered to either IN1 or IN2
- 2.2K Ohm, 1 Watt (Wheelock Model #PMEOL) End of Line Resistor (EOLR) for supervision of all outputs
- AC loss trouble reported over a separate set of contacts (delay of 30 seconds)
- All troubles are reported over the common trouble contacts (AC loss can have a delay of 30 seconds or 170 minutes)
- Automatic switchover to standby battery when AC fails
- Thermal and short circuit protection with auto reset
- Input and output status LED indicators
- AC fail supervision
- Battery presence and low battery supervision
- Ground Fault Detection (60K ohms)
- 4 latching LED's for NAC trouble annunciation

Power
- Not Battery Dependent - Full 8A even if battery is degraded
- Automatic switch over to standby batteries when AC fails
- Supports sealed lead acid or gel type batteries
- Fused battery protection
- Thermal and short circuit protection with auto reset
- Supports both 7AH or 12AH batteries in the same cabinet (Cabinet Size: 16.70" H x 12.83" W x 5" D)
POWERPATH™ Operating Modes (refer to Installation Manual):

Normal Mode: Provides constant 24 VDC output upon initiation by a voltage to input IN1 or IN2 or by a contact opening on DRY1 or DRY2. The unit returns to standby mode when the input is deactivated.

Wheelock Sync Mode: Provides signals for synchronization of patented Wheelock audible and strobe notification appliances. Audibles can also be silenced in this mode while the strobes continue to flash.

In-Out Sync Mode: Accepts a coded signal or synchronization signal on the input to provide a coded output or synchronized output. This signal may come from a FACP, another POWERPATH or a Wheelock SM or DSM synchronization module. Caution: Do not use strobes on coded output circuits.

Temporal Mode: Codes the output voltage in a code-3 temporal pattern to drive audible appliances such as horns, bells or chimes. Caution: Do not use strobes on coded output circuits.

Specifications and Ordering Information

<table>
<thead>
<tr>
<th>Model Number</th>
<th>Order Code</th>
<th>Input Voltage/Current</th>
<th>Approvals</th>
</tr>
</thead>
<tbody>
<tr>
<td>PS-24-8MC</td>
<td>0237</td>
<td>120 VAC @ 50/60 Hz; 5.0 amps max.</td>
<td>X X X X *</td>
</tr>
<tr>
<td>PS-4CA</td>
<td>1646</td>
<td>Four class &quot;A&quot; plug-in module for PS-24-8MC</td>
<td>X X X X *</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Output NAC Circuit</th>
<th>Output Voltage/Current</th>
<th>Approvals</th>
</tr>
</thead>
<tbody>
<tr>
<td>Four (4) Class &quot;B&quot; or</td>
<td>24 VDC @ 3 amps per Circuit</td>
<td>X= Approved</td>
</tr>
<tr>
<td>Two (2) Class &quot;A&quot; or</td>
<td>24 VDC @ 3 amps per Circuit</td>
<td>*= Pending</td>
</tr>
<tr>
<td>One (1) Class &quot;A&quot; and Two (2) Class &quot;B&quot; or</td>
<td>24 VDC @ 3 amps per Circuit (Class &quot;A&quot;)</td>
<td></td>
</tr>
<tr>
<td>Four (4) Class &quot;A&quot; (optional PS-4CA module)</td>
<td>24 VDC @ 3 amps per Circuit (Class &quot;A&quot;)</td>
<td></td>
</tr>
</tbody>
</table>

| Standby Current | 0.080 Amps |
| Alarm Current   | 0.240 Amps |
| Total NAC Current | 8 Amps Max. |

<table>
<thead>
<tr>
<th>Standby Batteries</th>
<th>Standby Time</th>
<th>Alarm Output Total Amps/Minutes</th>
<th>Aux Output</th>
</tr>
</thead>
<tbody>
<tr>
<td>24 VDC/12 AH</td>
<td>24 Hours</td>
<td>8 Amps/15 Minutes</td>
<td>CP Mode</td>
</tr>
<tr>
<td></td>
<td>(uses two (2) 12 VDC batteries in series)</td>
<td>8 Amps/15 Minutes</td>
<td>MP Mode</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th></th>
<th>200 mA</th>
<th>3.5A during nonalarm</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>60 mA</td>
<td></td>
</tr>
</tbody>
</table>
Architects and Engineers Specifications

The power supply shall be Wheelock POWERPATH™ Series PS-24-8MC, or equivalent. The unit shall be stand alone power supply intended for powering fire alarm notification appliances via its own Notification Appliance Circuit(s) (NAC). The unit shall be UL 864 Listed for power limited operation of outputs and comply with NFPA 70 (NEC), article 760.

The power supply shall support a full 8A of notification power even if the battery is in a degraded mode and only AC power is connected.

The power supply shall be activated by a standard Notification Appliance Circuit (NAC) from any Fire Alarm Control Panel (FACP) or a "Dry contact" opening. The units shall be 8 amperes, 24 VDC, regulated and filtered, supervised remote power supply/charger. It shall operate over the voltage range of 8 to 33 VDC or FWR. The primary application of the unit shall be the expand fire alarm system capabilities for additional NAC circuits to support ADA requirements and to provide auxiliary power to support system accessories or functions. The power supply shall provide four Class "B", two Class "A", or two Class "B" and one Class "A" NAC circuit(s). Four Class "A" circuits shall be available with an optional PS-4CA module. The PS-24-8MC unit shall supply up to 200 mA of auxiliary power that is available during both nonalarm and alarm or auxiliary power of not less than 3.5A at 24 VDC during nonalarm. The power supply shall be capable of charging batteries of up to 12 amperes hours per NFPA 72. The input activation options shall be from not less than two NAC circuits or Dry Contact closures. These inputs shall have the capability of being directed to any combination of the four NAC circuit outputs. Each NAC circuit output shall be rated at 3 amperes for Class "B" applications or 3 amperes each for Class "A". The outputs shall be programmable to generate a steady or Temporal (Code 3) output and or a synchronized strobe or horn output. The power supply shall provide independent loop supervision for either Class "A" or Class "B" FACP NAC circuits and shall have the capability to "steer" all alarm or trouble conditions to either incoming NAC circuit. The units shall have common trouble terminals. The power supply shall be powered from a 120 VAC source with a current consumption of 5 amperes max. The unit shall incorporate short circuit protection with auto reset. The power supply shall incorporate a built in battery charger for lead acid or gel type batteries with automatic switch over to battery back up in the event of AC power failure. The charger shall incorporate fused protection for the batteries and have the ability to report low battery and/or no battery condition(s). Standby current for battery back up shall be 80 mA max. The power supply shall have the ability to latch trouble LED's so the circuit in trouble can be identified. The cabinet dimensions shall be 16.70" H x 12.83" W x 5" D.

WARNING: PLEASE READ THESE SPECIFICATIONS AND INSTALLATION INSTRUCTIONS CAREFULLY BEFORE USING, SPECIFYING OR APPLYING THIS PRODUCT. FAILURE TO COMPLY WITH ANY OF THESE INSTRUCTIONS, CAUTIONS AND WARNINGS COULD RESULT IN IMPROPER APPLICATION, INSTALLATION AND/OR OPERATION OF THESE PRODUCTS IN AN EMERGENCY SITUATION, WHICH COULD RESULT IN PROPERTY DAMAGE, AND SERIOUS INJURY OR DEATH TO YOU AND/OR OTHERS.

NOTE: Due to continuous development of our products, specifications and offerings are subject to change without notice in accordance with Wheelock Inc. standard terms and conditions.

WE ENCOUARCE AND SUPPORT NICET CERTIFICATION
3 YEAR WARRANTY
Made in USA

S9800 PS-24-8MC 08/08

NJ Location
273 Branchport Ave.
Long Branch, NJ 07740
P: 800-831-2146
F: 732-222-6707
www.coopernotification.com

FL Location
7565 Commerce Ct.
Sarasota, FL 34243
P: 941-487-3200
F: 941-487-3289

VA Location
P: 877-439-7726
F: 703-294-6550

Cooper Notification is Wheelock™ SAFEPATH™ WAVES

Support: 877-WVDCS (983-3777)
LISTING No. 7315-0786:162

CATEGORY: Power Units

LISTEE: Cooper Wheelock Inc., 273 Branchport Ave., Long Branch NJ 07740
Contact: Deborah Pisichia (732) 443-6001 Fax (732) 222-5607
Deborah.Pisichia@CooperIndustries.com

DESIGN: Model PS-24-8MC Indicating Circuit Power Supply*. Unit is a regulated 12 or 24 VDC power supply/charger used for supervision and expanded power driving capability of up to four notification appliance circuits (NAC). Units may be connected to any 12VDC or 24VDC fire alarm control panel. The unit is intended for use with listee’s Model MPEQOL end-of-line resistor. Replacement printed circuit board assembly part number PSX-24-8MC. Model PS-4CA Class A Card for use with Model PS-24-8MC*. Refer to listee’s data sheet for additional detailed product description and operational considerations.

RATING: 120/240 VAC, 50/60Hz input; 12 or 24 VDC output

INSTALLATION: In accordance with listee’s printed installation instructions, applicable codes & ordinances and in a manner acceptable to the authority having jurisdiction

MARKING: Listee’s name, model number, electrical rating, and UL label.

APPROVAL: Listed as a power supply unit for use with separately listed compatible fire alarm control units. Refer to listee’s Installation Instruction Manual for details.

NOTE: For fire alarm use, the secondary (standby) power supply shall supply energy during power loss to operate a protected premises, central station, or proprietary system for 24 hours or an auxiliary or remote station system for 60 hours in the normal condition, followed by not less than 5 minutes of alarm as required by code. Two 12V batteries are required for 24V operation, one 12V battery is required for 12V operation.

*Rev. 07-16-2009 fm

This listing is based upon technical data submitted by the applicant. CSFM Fire Engineering staff has reviewed the test results and/or other data but does not make an independent verification of any claims. This listing is not an endorsement or recommendation of the item listed. This listing should not be used to verify correct operational requirements or installation criteria. Refer to listee’s data sheet, installation instructions and/or other suitable information sources.

Date Issued: JULY 23, 2009
Listing Expires June 30, 2010

Authorized By: FRANCIS MATEO, Program Coordinator
Fire Engineering Division
Cooper Wheelock
Series ZRS Strobes, ZNS Horn Strobes and Series ZNH Horns

SNAP The EZ Mount

Series ZNS
Series ZNH
Series ZRS
Series ZRS

Features
- Approvals include: UL Standard 1971, UL Standard 464, New York City (MEA), California State Fire Marshal (CSFM), Factory Mutual (FM) and Chicago (BFP). See approvals by model number in Specifications and Ordering Information
- ADA/NFA/UFC/ANSI and OSHA 29, Part 1910, 165 compliant
- EZ Mount SNAP design, with separate base plate, provides ability to pre-wire the base and test the circuit wiring before the walls are covered
- The base plate is protected by a disposable cover and the appliances can quickly snap onto the base after the walls are painted.
- Patented EZ Mount Universal Mounting Plate — uses single plate for ceiling and wall mount installations
- Wall Mount models feature field selectable candelas settings of 1500/75/110cd and 135/165cd
- Ceiling Mount models feature field selectable candelas settings of 1500/75/95cd and 115/177cd
- Strobes can be synchronized using the Wheelock sync modules or power supplies with built-in sync protocol
- 12 and 24 VDC models with UL "Regulated Voltage" using filtered DC or unfiltered VRMS input voltage
- Strobes produce 1 flash per second over the "Regulated Voltage" range (ZNS, ZRS models)
- Selectable Continuous Horn or Temporal (Code-3) Tones with selectable 90 or 95 dBA setting (ZNH, ZNS models)
- Selectable 12 or 24VDC in 1 appliance (ZNH model)

Description
The Wheelock Series Z notification appliances feature an easy snap on base that is designed to simplify the installation and testing of horns, strobes, and horn/strobes. The separate Series Z snap on base can be pre-wired so circuit wiring can be fully tested before the appliance is installed and before the walls are covered. Once all surrounding work is complete, the appliance can be simply installed by snapping it on the base. Shorting contacts in the base, which provide continuity for circuit testing, are permanently opened when the appliance is installed so any subsequent removal of the appliance will indicate a trouble condition on that circuit at the control panel when circuit supervision is enabled. The same base is used for all Series Z horns, strobes and horn/strobes to provide consistent installation and easy replacement of appliances if required. A locking screw is also included for the appliance to provide extra secure installation.

The Wheelock Series Z appliances incorporate the same dependable circuitry and high efficiency optics that are used in Wheelock RSS strobes, NS horn/strobes and NH horns and have the same high performance ratings. The Series Z appliances are compatible with all UL listed "Regulated" panels and all panels that are compatibility listed with Wheelock RSS, NS and NH appliances.

ZNS, ZNH and ZRS appliances go onto the base plate in a SNAP.
General Notes:
- Strobes are designed to flash at a flash per second minimum over their "Regulated Voltage Range".
- All candela ratings represent minimum effective strobe intensity based on UL Standard 1971.
- Series ZNS Strobe products are listed under UL Standards 1971 and 464 for indoor use with a temperature range of 32°F to 120°F (0°C to 49°C) and maximum humidity of 93% (± 2%).
- Series ZNH horns are listed under UL Standard 464 for audible signal appliances (indoor use only).
- "Regulated Voltage Range" is the newest terminology used by UL to identify the voltage range. Prior to this change, UL used the terminology "Listed Voltage Range".

Table 1: Series ZNS Ratings Per UL Standard 1971

<table>
<thead>
<tr>
<th>Model</th>
<th>Input Voltage VDC</th>
<th>Regulated Voltage Range VDC/FWR</th>
<th>Strobe Candela (CD)</th>
</tr>
</thead>
<tbody>
<tr>
<td>ZNS-MCW</td>
<td>24</td>
<td>16.0 - 33.0</td>
<td>15/30/75/110</td>
</tr>
<tr>
<td>ZNS-MCWH</td>
<td>24</td>
<td>16.0 - 33.0</td>
<td>135/185</td>
</tr>
<tr>
<td>ZNS-MCC</td>
<td>24</td>
<td>16.0 - 33.0</td>
<td>15/30/75/95</td>
</tr>
<tr>
<td>ZNS-MCCH</td>
<td>24</td>
<td>16.0 - 33.0</td>
<td>115/177</td>
</tr>
</tbody>
</table>

Table 2: Series ZNS/ZNH Horn dBA Ratings

<table>
<thead>
<tr>
<th>Description</th>
<th>Volume @ 10 ft per UL 464</th>
<th>Reverbent dBA @ 10 ft</th>
<th>Anechoic dBA @ 10 ft</th>
</tr>
</thead>
<tbody>
<tr>
<td>Continuous</td>
<td>High: 83</td>
<td>87</td>
<td>89</td>
</tr>
<tr>
<td></td>
<td>Low: 76</td>
<td>81</td>
<td>84</td>
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<tr>
<td>Code 3</td>
<td>High: 78</td>
<td>82</td>
<td>89</td>
</tr>
<tr>
<td></td>
<td>Low: 72</td>
<td>76</td>
<td>84</td>
</tr>
</tbody>
</table>

Table 3: Series ZNS Average RMS Current*

<table>
<thead>
<tr>
<th>Series ZNS/ZNH 24 VDC</th>
<th>Audible</th>
<th>Wall Mount Strobe Models</th>
<th>Ceiling Mount Strobe Models</th>
</tr>
</thead>
<tbody>
<tr>
<td>ZNS/ZNH 12/24 @24VDC</td>
<td>ZNS-12/24</td>
<td>ZNS-MCW 15cd</td>
<td>ZNS-MCW 30cd</td>
</tr>
<tr>
<td>High (95) dBA 24VDC</td>
<td>0.044</td>
<td>0.074</td>
<td>0.107</td>
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<tr>
<td>Low (90) dBA 24VDC</td>
<td>0.018</td>
<td>0.066</td>
<td>0.101</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Series ZNS/ZNH 12VDC</th>
<th>Audible</th>
<th>ZNS-12/24 @12V</th>
</tr>
</thead>
<tbody>
<tr>
<td>High (98) dBA 12VDC</td>
<td>0.021</td>
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</tr>
<tr>
<td>Low (84) dBA 12VDC</td>
<td>0.012</td>
<td></td>
</tr>
</tbody>
</table>

Table 4: Series ZRS Average RMS Current*

<table>
<thead>
<tr>
<th>ZRS 24VDC Models</th>
<th>ZRS - Wall Mount</th>
<th>ZRS - Ceiling Mount</th>
</tr>
</thead>
<tbody>
<tr>
<td>ZRS - Wall Mount</td>
<td>ZRS - Ceiling Mount</td>
<td></td>
</tr>
<tr>
<td>MCW</td>
<td>MCWH</td>
<td>MCC</td>
</tr>
<tr>
<td>15cd</td>
<td>30cd</td>
<td>10cd</td>
</tr>
<tr>
<td>0.080</td>
<td>0.092</td>
<td>0.165</td>
</tr>
<tr>
<td>24VDC</td>
<td>MCW</td>
<td>MCWH</td>
</tr>
</tbody>
</table>

* RMS current ratings are per UL average RMS method. UL max current rating is the maximum RMS current within the listed voltage range (18-33V for 24V units). For strobes the UL max current is usually at the minimum listed voltage (18V for 24V units). For audible the max current is usually at the maximum listed voltage (33V for 24V units). For unfiltered FWR ratings, see installation instructions.
Specifications and Ordering Information

<table>
<thead>
<tr>
<th>Model Number</th>
<th>Order Code</th>
<th>Strobe Candela</th>
<th>Sync w/ SM, DSM or PS-24-8MC</th>
<th>24 VDC</th>
<th>12 VDC</th>
<th>Mounting Options#</th>
<th>Agency Approvals</th>
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</thead>
<tbody>
<tr>
<td>ZNS-MCW-FR</td>
<td>0304</td>
<td>15/30/75/110</td>
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<tr>
<td>ZNS-MCW-FW</td>
<td>0305</td>
<td>15/30/75/110</td>
<td>X</td>
<td>X</td>
<td>-</td>
<td>B, D, E, F</td>
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<tr>
<td>ZNS-MCWH-FR</td>
<td>0306</td>
<td>135/185</td>
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<td>ZNS-MCWH-FW</td>
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<td>ZNH-R</td>
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<td>ZNH-W</td>
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<td>-</td>
<td>X</td>
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<td>ZNS-MCC-FR</td>
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<td>B, D, E, F</td>
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<tr>
<td>ZNS-MCC-FW</td>
<td>0311</td>
<td>15/30/75/65</td>
<td>X</td>
<td>X</td>
<td>-</td>
<td>B, D, E, F</td>
<td>UL *  MEA X  CSFM X  FM *  BFP</td>
</tr>
<tr>
<td>ZNS-MCCH-FR</td>
<td>0312</td>
<td>115/177</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>B, D, E, F</td>
<td>UL *  MEA X  CSFM X  FM *  BFP</td>
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<tr>
<td>ZNS-MCCH-FW</td>
<td>0313</td>
<td>115/177</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>B, D, E, F</td>
<td>UL *  MEA X  CSFM X  FM *  BFP</td>
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<tr>
<td>ZRS-MCW-FR</td>
<td>4085</td>
<td>15/30/75/110</td>
<td>X</td>
<td>X</td>
<td>-</td>
<td>B, D, E, F</td>
<td>UL *  MEA X  CSFM X  FM *  BFP</td>
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<tr>
<td>ZRS-MCW-FW</td>
<td>0302</td>
<td>15/30/75/110</td>
<td>X</td>
<td>X</td>
<td>-</td>
<td>B, D, E, F</td>
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<tr>
<td>ZRS-MCWH-FR</td>
<td>5242</td>
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<td>X</td>
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<td>ZRS-MCWH-FW</td>
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<td>ZRS-MCCH-FW</td>
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<td>-</td>
<td>B, D, E, F</td>
<td>UL *  MEA X  CSFM X  FM *  BFP</td>
</tr>
</tbody>
</table>

#The ZRS, ZNS and ZNH will mount to single-gang, double-gang, 4" octal, 4" square and 3-1/2" octal back boxes.

NOTE: Due to continuous development of our products, specifications and offerings are subject to change without notice in accordance with Wheelock Inc. standard terms and conditions.

*Pending
Architects and Engineers Specifications

General
Audible/visual notification appliances shall be listed for indoor use and shall meet the requirements of FCC Part 15 Class B. These appliances shall be listed under UL Standard 1971, (Standard for Safety Signaling Devices for Hearing Impaired) and UL Standard 464 (Fire Protective Signaling). The appliances shall use a Patented Universal EZMount backplate that shall allow mounting to a single-gang, double-gang, 4-inch square, 4” octal, or a 3-1/2” octal backbox. Two wire appliance wiring shall be capable of directly connecting to the mounting back plate. Continuity checking of the entire NAC circuit prior to attaching any audible/visual notification appliances shall be allowed. A dust cover shall fit and protect the mounting plate. The dust cover shall be easily removed when the appliance is installed over the backplate. Removal of an appliance shall result in an alarm condition by the Fire Alarm Control Panel (FACP).

Strobes
Strobe appliances shall produce a minimum flash rate of 60 flashes per minute (1 flash per second) over the Regulated Voltage Range of 16 to 33 VDC and shall incorporate a Xenon flash tube enclosed in a rugged Lexan lens. The strobes shall be available with two or four field selectable settings in one unit and shall be rated, per UL 1971, for up to 185 cd for wall mounting and 177 cd for ceiling mounting. The strobes shall operate over an extended temperature range of 32°F to 120°F (0°C to 49°C) and be listed for maximum humidity of 95% RH. Strobe inputs shall be polarized for compatibility with standard reverse polarity supervision of circuit wiring by a Fire Alarm Control Panel (FACP).

Audibles and Audible/Strobe Combinations
Horns and horn/strobes shall be listed for indoor use under UL Standard 464. The horns shall be able to produce a continuous output or a temporal code-3 output that can be synchronized. The horns shall have at least 2 sound level settings of 90 and 95 dBA.

Synchronization Modules
When synchronization of strobes or temporal Code-3 audibles is required, the appliances shall be compatible with the Wheelock Series SM and DSM Sync Modules or the Wheelock PS-24-8MC Power Supply with built-in, patented sync protocol. The strobes shall not drift out of synchronization at any time during operation. Audibles and strobes shall be able to be synchronized on a 2-wire circuit with the capability to silence the audible if required. If the sync module or power supply fails to operate (i.e., contacts remain closed), the strobes shall revert to a non-synchronized flash rate.
LISTING No. 7125-0785.141

CATEGORY: Fire Alarm Devices for the Hearing Impaired

LISTEE: Wheelock Inc., 273 Branchport Ave., Long Branch NJ 07740
Contact: Deborah Piszech (732) 433-6001 Fax (732) 222-5607

DESIGN: Synchronized or non-synchronized Strobe Lights. Models are as follows:

<table>
<thead>
<tr>
<th>RSS-###W</th>
<th>RSSP-###W</th>
<th>RSS-###C</th>
<th>RSSP-###C</th>
<th>RSS-###CR</th>
<th>RSSP-###CR</th>
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<tbody>
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</tr>
</tbody>
</table>


Model numbers may be followed by any two alpha/numeric character indicating lens orientation, lettering and color. Refer to listee's data sheet for additional detailed product description and operational considerations.

RATING: Electrical 12 = 8-17.5VDC/FWR OR 24 =16-33VDC/FWR

Candela 15=5cd, 1575=1575cd on axis, 30=30cd, 75=75cd, 110=110cd (Wall)

RSS-24MCW, RSSP-24MCW, *ZRS-MCW: Selectable 15cd, 30cd, 75cd or 110cd
RSS-24MCC, RSS-24MCCR, RSSP-24MCC, *ZRS-MCC: Selectable 15cd, 30cd, 75cd and 95cd
RSS-24MCC, RSS-24MCCHR, RSSP-24MCCHR, *ZRS-MCC: Selectable 115cd, 177cd

Flash rate 80 flashes/minute

INSTALLATION: In accordance with listee's printed installation instructions, applicable codes and ordinances and in a manner acceptable to the authority having jurisdiction. Models with suffix -W, wall mount only. Models with suffix -C, ceiling mount only. All models are for indoor use only.

MARKING: Listee's name, model number, electrical/candela rating, and UL label.

APPROVAL: Listed as strobe light suitable for the hearing impaired when used with separately listed electrically compatible fire alarm control units. For synchronization strobes, Models SM-12/24, SMX-12/24, DSM-12/24 or DSMX-12/24 Sync Control Module (CSFM Listing No. 7300-0788.132) must be used. Refer to listee's Installation Instruction Manual for details.

*Rev. 12-13-2006 jw

This listing is based upon technical data submitted by the applicant. CSFM Fire Engineering staff has reviewed the test results and/or other data but does not make an independent verification of any claims. This listing is not an endorsement or recommendation of the item listed. This listing should not be used to verify correct operational requirements or installation criteria. Refer to listee's data sheet, installation instructions and/or other suitable information sources.

Date Issued: JUNE 18, 2009
Listing Expires June 30, 2010

Authorized By: FRANCIS MATEO, Program Coordinator
Fire Engineering Division
LISTING No. 7125-0785:142

CATEGORY: Fire Alarm Devices for the Hearing Impaired

LISTEE: Wheelock Inc., 273 Branchport Ave., Long Branch NJ 07740
Contact: Deborah Piserchia (732) 433-6001 Fax (732) 222-5607
deborah.piserchia@cooperwheelock.com

DESIGN: Models NH-12/24, NH-12/24R, and ZNH horns and Models NS-1215W, NS-121575W,
NS-2415W, NS-241575W, NS-2430W, NS-2410W and NS-24110W; NS4-1215W, NS4-
121575W, NS4-2415W, NS4-241575W, NS4-2430W, NS4-2475W and NS4-24110W,
NS-24MCW, NS4-24MCW, NS-24MCC, NS-24MCCH, ZNS-MCW, ZNS-MCC, ZNS-
MCWH and ZNS-MCCCH horn strobes. Model number may be followed by any two-
alpha/numeric characters indicating lens, lettering and color. Units are synchronized or
non-synchronized strobes. Models NH-12/24R, NS-24MCC, NS-24MCCH, ZNS-MCC and
ZNS-MCCCH are ceiling mount only. Refer to listee's data sheet for additional detailed
product description and operational considerations.

RATING: Electrical-Strobe Horn: 8-17.5 VDC/FWR and 16-33 VDC/FWR
Horn: 8-17.5 VDC/FWR and 16-33 VDC/FWR
Candela: 15=15cd, 1575=1575cd on axis, 30=30cd, 75=75cd, 110=110cd (Wall)
NS-24MCW, NS4-24MCW, ZNS-MCW: Selectable 15cd, 30cd, 75cd, 110cd
NS-24MCC, ZNS-MCC: Selectable 15cd, 30cd, 75cd, 95cd
NS-24MCCH, ZNS-MCCCH: Selectable 115cd, 177cd
ZNS-MCWH: Selectable 135cd, 185cd
Flash rate: 60 Flashes/minute

INSTALLATION: In accordance with listee's printed installation instructions, applicable codes & ordinances and
in a manner acceptable to the authority having jurisdiction. All units are for wall mount except
for *Models NH-12/24R, NS-24MCC, NS-24MCCH, ZNS-MCC and ZNS-MCCCH are for
ceiling mount only.

MARKING: Listee's name, model number, electrical/candela rating and UL label.

APPROVAL: Listed as audible and audible/visual signaling devices for use with separately listed
electrically compatible fire alarm control units. Models with strobe lights are suitable for
the hearing impaired. For indoor use only except for model NH-12/24 horn. All
synchronization strobes shall be used with Models SM-12/24, SMX-12/24, DSM-12/24 or
DSMX-12/24 Sync Control Module (CSFM Listing No. 7300-0785:132). Refer to
manufacturer's installation manual for details.

NOTE: These appliances can produce a distinctive three-pulse Temporal Pattern Fire Alarm
Evacuation Signal (for total evacuation) in accordance with NFPA 72, 2002 Edition.

*Corrected 07-25-08 bh

Date Issued: JUNE 18, 2009  Listing Expires June 30, 2010

Authorized By: FRANCIS MATEO, Program Coordinator
Fire Engineering Division
Description
Wheelock's patented 2-wire Series AS Audible Strobe Appliances and Series AH Audibles offer more features with low current draw.

Strobe options for wall models include 1575ciad or Wheelock's patented MCC multi-candela wall strobes with field selectable candela settings of 15/30/75/110c, or the high intensity MCWH strobe with field selectable 135/185c.

Ceiling mount models incorporate Wheelock's patented MCC multi-candela ceiling strobe with field selectable intensities of 15/30/75/95c or the high intensity MCCCH strobe with field selectable, 115/177c.

The audible provides a selectable choice of either a continuous horn or temporal pattern (Code 3) when constant voltage from a Fire Alarm Control Panel (FACP) is applied. Each tone has 3 dBA settings to choose from.

When used with the Wheelock Series SM or DSM Sync Module or Wheelock PS-12/24-8CP and PS-12/24-8MP Power Supplies with Patented Sync Protocol, synchronization of the continuous horn tone provides the temporal (Code 3) tone (mandated by NFPA 72) simultaneously for all audible appliances. This ensures a distinct temporal (Code 3) pattern when 2 or more audibles are within hearing distance. If not synchronized the temporal sound could overlap and not be distinctive. At the same time the strobes will be synchronized. This provides the ability to comply with ADA guidelines concerning photosensitive epilepsy and the NFPA standards when installing 2 or more visual appliances standards when installing 2 or more visual appliances within the field of view all of this plus the ability to silence the audible is achieved by using only 2 wires.

Features
- Approvals include: UL Standard 1971, UL Standard 464 New York City (MEA), California State Fire Marshal (CSFM), Factory Mutual (FM), and Chicago (BPP). See approvals by model in Specifications and Ordering Information.
- ADA/NFPA/IFC/ANSI Complaint
- Wall mount models are available with Field Selectable Candela Settings of 15/30/75/110c or 135/185c (Multi-Candela models) or 1575c (Single Candela model)

Ordering Information

<table>
<thead>
<tr>
<th>Model Number</th>
<th>Part Number</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>AH24-R</td>
<td>AH24-R</td>
<td>24V Electronic Horn</td>
</tr>
<tr>
<td>AH24WP-R</td>
<td>AH24WP-R</td>
<td>Weatherproof Indoor/Outdoor (WB8 required)</td>
</tr>
<tr>
<td>WBB-R</td>
<td>WBB-R</td>
<td>Weatherproof Back Box, Red</td>
</tr>
<tr>
<td>WBB-W</td>
<td>WBB-W</td>
<td>Weatherproof Back Box, White</td>
</tr>
</tbody>
</table>
Features Continued
- Ceiling mount models are available with field selectable candela settings of 15/30/75/95 cd or 115/177/235 cd (Multi-candela ceiling models) Selectable Continuous Horn or Temporal (Code 3)
- 3 Selectable dBA settings (99, 95, and 90 dBA) in both tones
- Patented 2-Wire Audible Strobe Appliances
- Patented Universal Mounting Plate
- Weatherproof models are available for outdoor use
- Strobes produce 1 flash per second over the regulated voltage range
- 12 and 24 VDC models with wide UL "Regulated Voltage Range" using filtered DC or unfiltered FWR input voltage
- The strobes can be synchronized using Wheelock's sync modules or power supplies with built-in sync protocol
- Fast installation with IN/OUT screw terminals using #12 to #18 AWG wires

Wiring Diagrams

Table 1: Ratings Per UL 1971

<table>
<thead>
<tr>
<th>Model</th>
<th>Input Voltage VDC</th>
<th>Regulated Voltage Range VDC/FWR</th>
<th>Strobe Candela (cd)</th>
</tr>
</thead>
<tbody>
<tr>
<td>AS-24MCW</td>
<td>24</td>
<td>16.0 - 33.0</td>
<td>15/30/75/90/110</td>
</tr>
<tr>
<td>AS-24MCH</td>
<td>24</td>
<td>16.0 - 33.0</td>
<td>115/177</td>
</tr>
<tr>
<td>AS-24MTW</td>
<td>24</td>
<td>16.0 - 33.0</td>
<td>115/177</td>
</tr>
<tr>
<td>AS-24MCC</td>
<td>24</td>
<td>16.0 - 33.0</td>
<td>115/177</td>
</tr>
<tr>
<td>AS-24MWH</td>
<td>24</td>
<td>16.0 - 33.0</td>
<td>53/81</td>
</tr>
<tr>
<td>ASWP2475W</td>
<td>24</td>
<td>16.0 - 33.0</td>
<td>53/81</td>
</tr>
</tbody>
</table>

Table 2: DBA Ratings for 12 VDC and 24 VDC Series ASW/12 12 and 24 VDC Audible

<table>
<thead>
<tr>
<th>Description</th>
<th>Volume</th>
<th>Reverband dBA Per Ul 46.4 @ 18 ft</th>
<th>Anochic dBA @ 10 ft</th>
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</thead>
<tbody>
<tr>
<td>Continuous Horn</td>
<td>High</td>
<td>96</td>
<td>96</td>
</tr>
<tr>
<td></td>
<td>Medium</td>
<td>95</td>
<td>95</td>
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<tr>
<td></td>
<td>Low</td>
<td>90</td>
<td>90</td>
</tr>
<tr>
<td>Code 3 Horn</td>
<td>High</td>
<td>97</td>
<td>97</td>
</tr>
<tr>
<td></td>
<td>Medium</td>
<td>95</td>
<td>95</td>
</tr>
<tr>
<td></td>
<td>Low</td>
<td>79</td>
<td>79</td>
</tr>
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</table>

Table 3: Average RMS Current

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>High (99) dBA</td>
<td>0.083</td>
<td>0.100</td>
<td>0.096</td>
<td>0.100</td>
<td>0.104</td>
<td>0.194</td>
<td>0.270</td>
<td>0.32</td>
</tr>
<tr>
<td>Ul. Max*</td>
<td>0.093</td>
<td>0.107</td>
<td>0.098</td>
<td>0.107</td>
<td>0.109</td>
<td>0.267</td>
<td>0.368</td>
<td>0.45</td>
</tr>
<tr>
<td>Med (95) dBA</td>
<td>0.033</td>
<td>0.068</td>
<td>0.058</td>
<td>0.084</td>
<td>0.132</td>
<td>0.173</td>
<td>0.230</td>
<td>0.305</td>
</tr>
<tr>
<td>Ul. Max*</td>
<td>0.043</td>
<td>0.107</td>
<td>0.068</td>
<td>0.138</td>
<td>0.190</td>
<td>0.263</td>
<td>0.362</td>
<td>0.465</td>
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<tr>
<td>Low (90) dBA</td>
<td>0.017</td>
<td>0.072</td>
<td>0.025</td>
<td>1.876</td>
<td>0.121</td>
<td>0.158</td>
<td>0.229</td>
<td>0.295</td>
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<tr>
<td>Ul. Max*</td>
<td>0.021</td>
<td>0.100</td>
<td>0.066</td>
<td>0.195</td>
<td>0.245</td>
<td>0.345</td>
<td>0.480</td>
<td>0.60</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>12 VDC Models</th>
<th>Audible AI-12</th>
<th>AI-12975W</th>
<th>AI-12MCH</th>
<th>AI-12MTW</th>
<th>AI-12MCC</th>
<th>AI-12MWH</th>
<th>AI-12P2475W</th>
<th>AI-12MCW</th>
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<tbody>
<tr>
<td>High (99) dBA</td>
<td>0.163</td>
<td>0.260</td>
<td>0.192</td>
<td>0.250</td>
<td>0.205</td>
<td>0.270</td>
<td>0.360</td>
<td>0.45</td>
</tr>
<tr>
<td>Ul. Max*</td>
<td>0.192</td>
<td>0.300</td>
<td>0.205</td>
<td>0.250</td>
<td>0.205</td>
<td>0.270</td>
<td>0.360</td>
<td>0.45</td>
</tr>
<tr>
<td>Med (95) dBA</td>
<td>0.076</td>
<td>0.185</td>
<td>0.108</td>
<td>0.275</td>
<td>0.205</td>
<td>0.270</td>
<td>0.360</td>
<td>0.45</td>
</tr>
<tr>
<td>Ul. Max*</td>
<td>0.108</td>
<td>0.275</td>
<td>0.205</td>
<td>0.275</td>
<td>0.205</td>
<td>0.270</td>
<td>0.360</td>
<td>0.45</td>
</tr>
<tr>
<td>Low (90) dBA</td>
<td>0.059</td>
<td>0.175</td>
<td>0.085</td>
<td>0.265</td>
<td>0.205</td>
<td>0.270</td>
<td>0.360</td>
<td>0.45</td>
</tr>
</tbody>
</table>

NOTICE: The information contained in this document is intended only as a summary and is subject to change without notice. The devices described in this document have specific instruction sheets which cover various technical, installation and liability information. Copies of these instruction sheets and the General Product Warning and Limitations Document, which also contains important information are provided with the product and are available from Harrington Signal Inc. Fire Alarm. Information contained in these documents should be consulted before specifying or using the product. For further information or assistance concerning particular products contact Harrington Signal Inc. Harrington Signal Inc. Fire Alarm reserves the right to change specifications without notice. Quality manufactured for Harrington Signal by Wheelock.
LISTING SERVICE

LISTING No. 7125-0785:131

CATEGORY: Fire Alarm Devices for the Hearing-Impaired

LISTEE: Wheelock Inc., 273 Branchport Ave., Long Branch NJ 07740
Contact: Deborah Piserchia (732) 433-6001 Fax (732) 222-5607

DESIGN: Models AS-1215, -2415, -1230, -2430, -121575, -241575, -2475 and -24110 audible/strobes for the hearing impaired followed by any three alpha/numeric characters indicating lens orientation, lettering and color.

Models AS-1215W, -2415W, -1230W, -2430W, -121575W, -241575W, -2475W and -24110W audible/strobes for the hearing impaired followed by any three alpha/numeric characters indicating lens orientation, lettering and color. These units with suffix -W are for wall mount only. *Models AS-121575W and AS-241575W lens color may be white, red, blue, green, or amber.

Models AS-2415C, -2430C, -2475C and -24100C audible/strobes for the hearing impaired followed by two alpha/numeric characters indicating lens lettering, orientation and color. These units are intended for ceiling mount only.

Model AH-12, -24, AH-12WP, -24WP audible appliances (no strobe), followed by an alpha or numeric character indicating product color.

Model AS-24MCW and AS-24MCC audible/strobe, followed by any two alpha or numeric character indicating lettering and product color. *Lens color may be white, red, blue, green, or amber.

Models ASWP-2475W and *ASWP-2475C audible/strobe with integral private mode fire/emergency visual signaling for non-hearing impaired applications. Lens color may be white, red, blue, green, and amber. Both models are suitable for outdoor use when mounted on the Model WPBB back box.

Models AS-24MCWH, AS-24MCH, *ASWP-24MCWH, and *ASWP-24MCH audible/strobes for the hearing impaired followed by two alpha/numeric characters indicating lens lettering and product color. Units with suffix CH are for ceiling mount only. Units with suffix WH are for wall mount only. *Lens color may be white, red, blue, green, or amber.

Refer to the listee's data sheet for detailed product description and operational considerations.

RATING:

Electrical: 8-17.5/16-33 VDC/VFWR

Flash Rate: 60 flashes/minute

MCW: Selectable 15cd, 30cd, 75cd, 110cd
MCC: Selectable 15cd, 30cd, 75cd, 95cd
MCWH: Selectable 135cd, 185cd (60cd, 90cd at -40 C)
MCCH: Selectable 115cd, 177cd (50cd, 75cd at -40 C)
INSTALLATION: In accordance with listee's printed installation instructions, applicable codes and ordinances and in a manner acceptable to the authority having jurisdiction. Models ASWP-2475W, ASWP-24MCWH, AS-24MCW and AS-24MCWH are for wall mount only. Models ASWP-2475C, ASWP-24MCCH, AS-24MCCH, and AS-24MCC are for ceiling mount only. Models with suffix -W or WH are for wall mount only. Models with suffix -C or -CH are for ceiling mount only.

MARKING: Listee's name, model number, electrical/candela rating, and UL label.

APPROVAL: Listed as audible and audible/visual signaling devices suitable for the hearing impaired when used in conjunction with separately listed electrically compatible fire alarm control units. For indoor use only except Models AH-12WP, AH-24WP, *ASWP-2475W, ASWP-2475C, ASWP-24MCWH, and ASWP-24MCCH audible appliances are suitable for indoor/outdoor. For synchronization, Models AS Series must be used with Model SM-12/24, SMX-12/24, DSM-12/24 or DSMX-12/24 sync control module (CSFM Listing No. 7300-0785:132). Refer to listee's Installation Instruction Manual for details.

These appliances can generate a distinctive three-pulse Temporal Pattern Fire Alarm Evacuation Signal (for total evacuation) in accordance with NFPA 72, 2002 Edition.

NOTE: Models AH-12, AH-24, -12WP and -24WP audible devices are not suitable for the hearing impaired applications.

*Rev. 10-01-07

This listing is based upon technical data submitted by the applicant. CSFM Fire Engineering staff has reviewed the test results and/or other data but does not make an independent verification of any claims. This listing is not an endorsement or recommendation of the item listed. This listing should not be used to verify correct operational requirements or installation criteria. Refer to listee's data sheet, installation instructions and/or other suitable information sources.

Date Issued: JUNE 18, 2009
Listing Expires June 30, 2010

Authorized By: FRANCIS MATEO, Program Coordinator
Fire Engineering Division
Series MB Motor Bells

Description
The Wheelock Series MB Motor Bells provide a better engineered motor bell for fire and life safety alarm systems. The Wheelock Series MB Bells include higher dBA, low current draw, built-in trimplate for semi-flush mounting, low frequency aluminum shells, and low RFI noise. The motor for Series MB Bells is a durable, high torque permanent magnet motor selected for its high performance and long life.

These DC vibrating Series MB Motor Bells are offered in 6" and 10" shell sizes in both 12 and 24 VDC models.

Series RSSP Sync/Non-Sync retrofit plates are used in conjunction with the Series MB Motor Bell when combination appliances are required. The Series RSSP retrofit plates are available with either Multi-Candela or single candela strobes and easily mount to a 4" square or Wheelock SBL-2 backbox. All Series RSSP strobe appliances meet or exceed the requirements of NFPA 72 (National Fire Alarm Code), ANSI 117.1 (American National Standard for Accessible and Usable Buildings and Facilities), ADA (Americans with Disabilities Act) and UL Standard 1971 (Signaling Devices for the Hearing Impaired).

The Series RSSP retrofit plates may be synchronized when installed with the Wheelock Series SM, DSM, Sync Modules or the FS-24-8MC Power Supply with Wheelock patented sync protocol. Wheelock synchronized strobes offer an easy way to comply with ADA requirements concerning photo-sensitive epilepsy.

Features
- Approvals include: UL Standard 464, Factory Mutual (FM), California State Fire Marshal (CSFM), New York (MEA) and Chicago (BFP)
- Meets OSHA 29 Part 1910.185
- High sound output with low current draw
- Low frequency aluminum shells for better audibility through walls, doors and other structures
- 6" and 10" shell sizes in 12 or 24 VDC models
- Integral RFI suppression to minimize included noise on the NAC circuit
- Mounting options for surface, semi-flush, outdoor, and concealed conduit installation
- Built-in trimplate makes semi-flush mounting simpler and less expensive
- Screw terminals permit fast in-out field wiring of #12 to 18 AWG wire
- Polarized for DC supervision of NAC circuits
- Operates on filtered or unfiltered DC
- For combined audible (bell) and visual signaling, convenient retrofit plate assemblies are available with Multi-Candela or Single candela strobes (Refer to Fire Alarm Products Catalog for Series RSSP Sync/Non-Sync Strobes specifications and technical information)

Ordering Information

<table>
<thead>
<tr>
<th>Model Number</th>
<th>Order Code</th>
<th>Shell Size</th>
<th>Input Voltage (VDC)</th>
<th>Average RMS Current</th>
<th>UL Max*</th>
<th>dBA @ 10 Ft</th>
<th>Mounting Options</th>
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</thead>
<tbody>
<tr>
<td>MB-G6-12-R</td>
<td>3942</td>
<td>6&quot;</td>
<td>12</td>
<td>0.060</td>
<td>0.090</td>
<td>92</td>
<td>D,E,J,K,N,O,P,R,S</td>
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<tr>
<td>MB-G6-12-S</td>
<td>4221</td>
<td>6&quot;</td>
<td>24</td>
<td>0.060</td>
<td>0.090</td>
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<td>MB-G6-24-R</td>
<td>3941</td>
<td>6&quot;</td>
<td>24</td>
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<td>MB-G6-24-S</td>
<td>4222</td>
<td>6&quot;</td>
<td>24</td>
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<td>0.030</td>
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</table>

* RMS current ratings are per UL average RMS method. UL max current rating is the maximum RMS current within the listed voltage range (16-33v for 24v units). For strobes the UL max current is usually at the minimum listed voltage (16v for 24v units). For audible the max current is usually at the maximum listed voltage (33v for 24v units). For unfiltered FWR ratings, see installation instructions.
Architects and Engineers Specifications

The alarm appliances shall be Wheelock Series MB vibrating Motor Bells or approved equal. They shall be UL Standard 464 Listed for Fire Protective Service. Shells shall be aluminum in 6" or 10" diameter. Sound output at 10 feet shall be 92 dBA. The bells shall incorporate a permanent magnet motor and suppression circuitry to minimize RFI. They shall include a built-in trimplate for semi-flush mounting to a standard 4" square backbox, or surface mounting to Wheelock's indoor BB backbox or outdoor WBB backbox.

For bell strobe applications, retrofit plates Wheelock Series RSSP with Multi-Candela or Single Candela strobes shall be used. All bell models shall be polarized for line supervision and shall have screw terminals for in-out field wiring of #12 to #18 AWG wire. Operating voltage shall be nominal 24 VDC or 12 VDC. Finish on all models shall be textured enamel.

<table>
<thead>
<tr>
<th>Model Number</th>
<th>Order Code</th>
<th>Nominal Voltage (VDC)</th>
<th>Strobe Candela</th>
<th>Average Current (AMPS) at listed VDC</th>
<th>UL Max*</th>
<th>**Mounting Options</th>
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<tbody>
<tr>
<td>RSSP-24MCW-FR</td>
<td>9402</td>
<td>24</td>
<td>15/30/75/110</td>
<td>.04/.083/109/140</td>
<td>0.69/0.92/1.65/220</td>
<td>D,E,Z</td>
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<td>RSSP-241575W-FR</td>
<td>7793</td>
<td>24</td>
<td>15 (75 on-axis)</td>
<td>.060</td>
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<td>RSSP-121575W-FR</td>
<td>7793</td>
<td>12</td>
<td>15 (75 on-axis)</td>
<td>.152</td>
<td>.255</td>
<td>D,E,Z</td>
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</tbody>
</table>

* RMS current ratings are per UL average RMS method. UL max current rating is themaximum RMS current within the listed voltage range (16-33V for 24V units). For strobes the UL max current is usually at the minimum listed voltage (16V for 24V units). For audible the max current is usually at the maximum listed voltage (33V for 24V units). For unfiltered FWR ratings, see installation instructions.

Wiring

![Fig. 1 Bell Models](image1)

![Fig. 2 Retrofit Strobe Plate Models (RSSP)](image2)

Wheelock products must be used within their published specifications and must be PROPERLY specified, applied, installed, operated, maintained and operationally tested with their installation instructions at the time of installation and at least twice a year or more often and in accordance with local, state and federal codes, regulations and laws. Specification, application, installation, operation, maintenance and testing must be performed by qualified personnel for proper operation in accordance with all of the applicable building and fire standards, guidelines, regulations, laws and codes including, but not limited to, all appendices and amendments and the requirements of the local authority having jurisdiction (AHJ).

**WARNING:** PLEASE READ THESE SPECIFICATIONS AND ASSOCIATED INSTALLATION INSTRUCTIONS CAREFULLY BEFORE USING, SPECIFYING OR APPLYING THIS PRODUCT. FAILURE TO COMPLY WITH ANY OF THESE INSTRUCTIONS, CAUTIONS OR WARNINGS COULD RESULT IN IMPROPER APPLICATION, INSTALLATION AND/OR OPERATION OF THESE PRODUCTS IN AN EMERGENCY SITUATION, WHICH COULD RESULT IN PROPERTY DAMAGE, AND SERIOUS INJURY OR DEATH TO YOU AND/OR OTHERS.

**NOTE:** Due to continuous development of our products, specifications and offerings are subject to change without notice in accordance with Wheelock Inc. standard terms and conditions.
LISTING No.  7135-0785:113

CATEGORY:  Audible Devices

LISTEE:  Wheelock Inc., 273 Branchport Ave., Long Branch NJ 07740  
Contact: Deborah Piscerchia (732) 433-6001 Fax (732) 222-5607

DESIGN:  Model MB series bells and Model MBS series bell/strobes. Models MB are suitable for outdoor use when used with Model WBB backbox. Refer to listee’s data sheet for detailed product description and operational considerations.

INSTALLATION:  In accordance with listee’s printed installation instructions, NFPA 72, applicable codes and ordinances and in a manner acceptable to the authority having jurisdiction.

MARKING:  Listee’s name, model number, electrical rating and UL label.

APPROVAL:  Listed as audible devices for use with separately listed compatible fire alarm control units.  

If this appliance is required to produce a distinctive three-pulse Temporal Pattern Fire Alarm Evacuation Signal (for total evacuation) in accordance with NFPA 72, 2002 Edition, the appliance must be used with a fire alarm control unit that can generate the temporal pattern signal. Refer to manufacturer’s Installation Manual for details.

*Rev. 06-13-2006

This listing is based upon technical data submitted by the applicant. CSFM Fire Engineering staff has reviewed the test results and/or other data but does not make an independent verification of any claims. This listing is not an endorsement or recommendation of the item listed. This listing should not be used to verify correct operational requirements or installation criteria. Refer to listee’s data sheet, installation instructions and/or other suitable information sources.

Date Issued:  JUNE 18, 2009  Listing Expires June 30, 2010

Authorized By:  FRANCIS MATEO, Program Coordinator
Fire Engineering Division