AMERICAN ELECTRIC POWER

Legal Department

American Electric Power
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February 27, 2012

Chairman Todd Snitchler
Ohio Power Siting Board
Public Utilities Commission of Ohio
180 East Broad Street
Columbus, OH 43215-3793

Yazen Alami, Esq.
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RE:

In the Matter of Newark BD of Education	**)**	
and Ohio Power Company	**)**	
for Approval of A Special	**)**	**Case No. 12-0691-EL-EEC**
Arrangement Agreement	**)**	
with a Mercantile Customer	**)**	

Dear Chairman Snitchler,

Attached please find the Joint Application of Ohio Power Company (OPCo) and mercantile customer Newark BD of Education for approval of a Special Arrangement of the commitment of energy efficiency/peak demand reduction (EE/PDR) resources toward compliance with the statutory benchmarks for 2012.

Amended Substitute Senate Bill 221 sets forth in R.C. 4928.66 EE/PDR benchmarks that electric distribution utilities shall be required to meet or exceed. The statute allows utilities to include EE/PDR resources committed by mercantile customers for integration into the utilities programs to be counted toward compliance with a utility's EE/PDR benchmarks. The statue also enables the Commission to approve special arrangements for mercantile customers that commit EE/PRD resources to be counted toward compliance with EE/PDR benchmarks.

The Commission's Order in Case No. 10-834-EL-EEC, established a streamlined process to expedite review of these special arrangements by developing a sample application process for parties to follow for consideration of such programs implemented during the prior three calendar years. Attached is OPCo's version of that application and accompanying affidavit. Any confidential information referenced in the Joint Application has been filed in Commission Docket 10-1599-EL-EEC, under a request for protective treatment. OPCo respectfully requests that the Commission treat the two cases as associated dockets.

Cordially,

/s/ Yazen Alami
Yazen Alami, Esq.

Attachments

Ohio | Public Utilities Commission

Application to Commit Energy Efficiency/Peak Demand Reduction Programs (Mercantile Customers Only)

Case No.: 12-0691-**EL-EEC**

Mercantile Customer: NEWARK BD OF EDUCATION

Electric Utility: Ohio Power

Program Title or Description: AEP Ohio Business Incentives for Energy Efficiency: Self Direct Program

Rule 4901:1-39-05(F), Ohio Administrative Code (O.A.C.), permits a mercantile customer to file, either individually or jointly with an electric utility, an application to commit the customer's existing demand reduction, demand response, and energy efficiency programs for integration with the electric utility's programs. The following application form is to be used by mercantile customers, either individually or jointly with their electric utility, to apply for commitment of such programs in accordance with the Commission's pilot program established in Case No. 10-834-EL-POR

Completed applications requesting the cash rebate reasonable arrangement option (Option 1) in lieu of an exemption from the electric utility's energy efficiency and demand reduction (EEDR) rider will be automatically approved on the sixty-first calendar day after filing, unless the Commission, or an attorney examiner, suspends or denies the application prior to that time. Completed applications requesting the exemption from the EEDR rider (Option 2) will also qualify for the 60-day automatic approval so long as the exemption period does not exceed 24 months. Rider exemptions for periods of more than 24 months will be reviewed by the Commission Staff and are only approved up the issuance of a Commission order.

Complete a separate application for each customer program. Projects undertaken by a customer as a single program at a single location or at various locations within the same service territory should be submitted together as a single program filing, when possible. Check all boxes that are applicable to your program. For each box checked, be sure to complete all subparts of the question, and provide all requested additional information. Submittal of incomplete applications may result in a suspension of the automatic approval process or denial of the application.

Any confidential or trade secret information may be submitted to Staff on disc or via email at ee-pdr@puc.state.oh.us.

Section 1: Company Information

Name: NEWARK BD OF EDUCATION

Principal address: 85 E Main St, Newark, Oh 43055

Address of facility for which this energy efficiency program applies: 534 Beacon Rd, Newark, Oh 43055

Name and telephone number for responses to questions:

Dave Altepeter, Newark Bd Of Education, (740) 670-7000

Electricity use by the customer (check the box(es) that apply):

☐ The customer uses more than seven hundred thousand kilowatt hours per year at our facility. (Please attach documentation.)

See Confidential and Proprietary Attachment 4 – Calculation of Rider Exemption and UCT which provides the facility consumption for the last three years, benchmark kWh, and the last 12 months usage.

☒ The customer is part of a national account involving multiple facilities in one or more states. (Please attach documentation.) When checked, see Attachment 6 – Supporting Documentation for a listing of the customer's name and service addresses of other accounts in the AEP Ohio service territory.

Section 2: Application Information

A) The customer is filing this application (choose which applies):

☐ Individually, on our own.

☒ Jointly with our electric utility.

B) Our electric utility is: Ohio Power Company

The application to participate in the electric utility energy efficiency program is "Confidential and Proprietary Attachment 3 – Self Direct Program Project Completed Application."

C) The customer is offering to commit (choose which applies):

☐ Energy savings from our energy efficiency program. (Complete Sections 3, 5, 6, and 7.)

☐ Capacity savings from the customer's demand response/demand reduction program. (Complete Sections 4, 5, 6, and 7.)

☒ Both the energy savings and the demand reduction from the customer's energy efficiency program. (Complete all sections of the Application.)

Section 3: Energy Efficiency Programs

A) The customer's energy efficiency program involves (choose whichever applies):

☐ Early replacement of fully functioning equipment with new equipment. (Provide the date on which the customer replaced fully functioning equipment, and the date on which the customer would have replaced such equipment if it had not been replaced early. Please include a brief explanation for how the customer determined this future replacement date (or, if not known, please explain why this is not known)).

☐ Installation of new equipment to replace equipment that needed to be replaced. The customer installed new equipment on the following date(s):

☒ Installation of new equipment for new construction or facility expansion. The customer installed new equipment on the following date(s): 8/1/2009

☐ Behavioral or operational improvement.

B) Energy savings achieved/to be achieved by your energy efficiency program:

1) If you checked the box indicating that your project involves the early replacement of fully functioning equipment replaced with new equipment, then calculate the annual savings [(kWh used by the original equipment) – (kWh used by new equipment) = (kWh per year saved)]. Please attach your calculations and record the results below:

Annual savings: kWh

2) If you checked the box indicating that you installed new equipment to replace equipment that needed to be replaced, then calculate the annual savings [(kWh used by less efficient new equipment) – (kWh used by the higher efficiency new equipment) = (kWh per year saved)]. Please attach your calculations and record the results below:

Annual savings: kWh

Please describe the less efficient new equipment that you rejected in favor of the more efficient new equipment.

3) If you checked the box indicating that your project involves equipment for new construction or facility expansion, then calculate the annual savings [(kWh used by less efficient new equipment) – (kWh used by higher efficiency new equipment) = (kWh per year saved)]. Please attach your calculations and record the results below:

Unit Quantity (watts) = Existing (watts x units) – Installed (watts x units)

kWh Reduction (Annual Savings) = Unit Quantity x (Deemed kWh/Unit)

Annual savings: 146,991 kWh

See Confidential and Proprietary Attachment 5 – Self Direct Program Project Calculation for annual energy savings calculations and 10-1599-EL-EEC for the work papers that provide all methodologies, protocols, and practices used in this application for prescriptive measures, as needed.

Please describe the less efficient new equipment that you rejected in favor of the more efficient new equipment.

The less efficient new equipment is the minimum required by Ohio State code or Federal Standard whichever is more stringent. For those measures where no code applies the baseline equipment is assumed to be the least efficient equipment available in the marketplace or standard practice, whichever results in the most conservative annual savings. Any information available describing the less efficient new equipment option is provided in 10-1599-EL-EEC for the work papers that provide all methodologies, protocols, and practices used in this application for prescriptive measures.

4) If you checked the box indicating that the project involves behavioral or operational improvements, provide a description of how the annual savings were determined.

Section 4: Demand Reduction/Demand Response Programs

A) The customer's program involves (check the one that applies)::

☒ Coincident peak-demand savings from the customer's energy efficiency program.

☐ Actual peak-demand reduction. (Attach a description and documentation of the peak-demand reduction.)

☐ Potential peak-demand reduction (choose which applies):

- Choose one or more of the following that applies:

  ☐ The customer's peak-demand reduction program meets the requirements to be counted as a capacity resource under a tariff of a regional transmission organization (RTO) approved by the Federal Energy Regulatory Commission.

  ☐ The customer's peak-demand reduction program meets the requirements to be counted as a capacity resource under a program that is equivalent to an RTO program, which has been approved by the Public Utilities Commission of Ohio.

B) On what date did the customer initiate its demand reduction program?

The coincident peak-demand savings are permanent installations that reduce demand through energy efficiency and were installed on the date specified in Section 3 A above.

C) What is the peak demand reduction achieved or capable of being achieved (show calculations through which this was determined):

Unit Quantity (watts) = Existing (watts x units) – Installed (watts x units)

KW Demand Reduction = Unit Quantity (watts) x (Deemed KW/Unit (watts))

49.9 kW

See Confidential and Proprietary Attachment 5 – Self Direct Program Project Calculation for peak demand reduction calculation, and 10-1599-EL-EEC for the work papers that provide all methodologies, protocols, and practices used in this application for prescriptive measures, as needed.

Section 5: Request for Cash Rebate Reasonable Arrangement (Option 1) or Exemption from Rider (Option 2)

Under this section, check the box that applies and fill in all blanks relating to that choice.

Note: If Option 2 is selected, the application will not qualify for the 60-day automatic approval. All applications, however, will be considered on a timely basis by the Commission.

A) The customer is applying for:

☒ Option 1: A cash rebate reasonable arrangement.

OR

☐ Option 2: An exemption from the cost recovery mechanism implemented by the electric utility.

OR

☐ Commitment payment

B) The value of the option that the customer is seeking is:

Option 1: A cash rebate reasonable arrangement, which is the lesser of (show both amounts):

☒ A cash rebate of $ 15,547.48. (Rebate shall not exceed 50% project cost. Attach documentation showing the methodology used to determine the cash rebate value and calculations showing how this payment amount was determined.)

See Confidential and Proprietary Attachment 5 – Self Direct Program Project Calculation for incentive calculations for this mercantile program.

Option 2: An exemption from payment of the electric utility's energy efficiency/peak demand reduction rider.

☐ An exemption from payment of the electric utility's energy efficiency/peak demand reduction rider for ____ months (not to exceed 24 months). (Attach calculations showing how this time period was determined.)

OR

☐ A commitment payment valued at no more than $_____. (Attach documentation and calculations showing how this payment amount was determined.)

OR

☐ Ongoing exemption from payment of the electric utility's energy efficiency/peak demand reduction rider for an initial period of 24 months because this program is part of an ongoing efficiency program that is practiced by our organization. (Attach documentation that establishes your organization's ongoing efficiency program. In order to continue the exemption beyond the initial 24 month period your organization will need to provide a future application establishing additional energy savings and the continuance of the organization's energy efficiency program.)

Section 6: Cost Effectiveness

The program is cost effective because it has a benefit/cost ratio greater than 1 using the (choose which applies):

☐ Total Resource Cost (TRC) Test. The calculated TRC value is: _____ (Continue to Subsection 1, then skip Subsection 2)

☒ Utility Cost Test (UCT) . The calculated UCT value is: 2.6 (Skip to Subsection 2.)

Subsection 1: TRC Test Used (please fill in all blanks).

The TRC value of the program is calculated by dividing the value of our avoided supply costs (generation capacity, energy, and any transmission or distribution) by the sum of our program overhead and installation costs and any incremental measure costs paid by either the customer or the electric utility.

The electric utility's avoided supply costs were _____.

Our program costs were _____.

The utility's incremental measure costs were _____.

Subsection 2: UCT Used (please fill in all blanks).

We calculated the UCT value of our program by dividing the value of our avoided supply costs (capacity and energy) by the costs to our electric utility (including administrative costs and incentives paid or rider exemption costs) to obtain our commitment.

Our avoided supply costs were $ 42,521.42

The utility's program costs were $ 881.94

The utility's incentive costs/rebate costs were $ 15,547.48.

Section 7: Additional Information

Please attach the following supporting documentation to this application:

- Narrative description of your program including, but not limited to, make, model, and year of any installed and replaced equipment.

  See Attachment 1 - Self Direct Project Overview and Commitment for a description of the project. See Attachment 6 – Supporting Documentation, for the specifications of the replacement equipment 10-1599-EL-EEC for the work papers that provide all methodologies, protocols, and practices used in this application for prescriptive measures, as needed. Due to the length of time since the equipment replacement, the make, model and year of the replaced equipment is not available.

- A copy of the formal declaration or agreement that commits your program to the electric utility, including:

  1) any confidentiality requirements associated with the agreement;

     See Attachment 2 – Self Direct Program Project Blank Application including Rules and Requirements. All confidentially requirements are pursuant to the Retrospective Projects/Rules and Requirements that are part of the signed application which is provided as Confidential and Proprietary Attachment 3 – Self Direct Program Project Completed Application.)

  2) a description of any consequences of noncompliance with the terms of the commitment;

     See Attachment 2 – Self Direct Program Project Blank Application including Rules and Requirements. All consequences of noncompliance are pursuant to the Retrospective Projects/Rules and Requirements that are part of the signed application which is provided as Confidential and Proprietary Attachment 3 – Self Direct Program Project Completed Application.

  3) a description of coordination requirements between the customer and the electric utility with regard to peak demand reduction;

     None required because the resources committed are permanent installations that reduce demand through increased efficiency during the Company's peak summer demand period generally defined as May through September and do not require specific coordination and communication to provide demand reduction capabilities to the Company.

4) permission by the customer to the electric utility and Commission staff and consultants to measure and verify energy savings and/or peak-demand reductions resulting from your program; and,

   See Attachment 2 – Self Direct Program Blank Application including Rules and Requirements granting such permission pursuant to the Retrospective Projects/Rules and Requirements that are part of the signed application which is provided as Confidential and Proprietary Attachment 3 – Self Direct Program Project Completed Application.

5) a commitment by you to provide an annual report on your energy savings and electric utility peak-demand reductions achieved.

   See Attachment 1 - Self Direct Project Overview and Commitment for the commitment to comply with any information and compliance reporting requirements imposed by rule or as part of the approval of this arrangement by the Public Utilities Commission of Ohio.

- A description of all methodologies, protocols, and practices used or proposed to be used in measuring and verifying program results. Additionally, identify and explain all deviations from any program measurement and verification guidelines that may be published by the Commission.

  The Company applies the same methodologies, protocols, and practices to Self Direct Program retrospective projects that are screened and submitted for approval as it does to prospective projects submitted through its Prescriptive and Custom Programs. The Commission has not published a technical reference manual for use by the Company so deviations can not be identified. The project submitted is a prescriptive project and energy savings are determined as described in Confidential and Proprietary Attachment 5 - Self Direct Program Project Calculation, and 10-1599-EL-EEC for the work papers that provide all methodologies, protocols, and practices used in this application for prescriptive measures, as needed.

Ohio | Public Utilities Commission

Application to Commit Energy Efficiency/Peak Demand Reduction Programs (Mercantile Customers Only)

Case No.: 12-0691-EL-EEC

State of Ohio :

Joo CHING YONG, Affiant, being duly sworn according to law, deposes and says that:

1. I am the duly authorized representative of:

   KEMA Services, Inc agent of Ohio Power

2. I have personally examined all the information contained in the foregoing application, including any exhibits and attachments. Based upon my examination and inquiry of those persons immediately responsible for obtaining the information contained in the application, I believe that the information is true, accurate and complete.

Joo Ching CEM, LEED AP BD+C
Signature of Affiant & Title

Sworn and subscribed before me this 20th day of February, 202 Month/Year

Signature of official administering oath

Kimberly Flowers, Outreach Coordinator
Print Name and Title

My commission expires on June 01, 2016

NOTARIAL SEAL STATE OF OHIO

KIMBERLY FLOWERS
NOTARY PUBLIC
STATE OF OHIO
My Comm. Expires June 1, 2016

AEP OHIO
A unit of American Electric Power

Self Direct Project Overview & Commitment

The Public Utility Commission of Ohio (PUCO) will soon review your application for participation in AEP Ohio's Energy Efficiency/Peak Demand Response program. Based on your submitted project, please select by initialing one of the two options below, sign and fax to 877-607-0740.

Customer Name	**NEWARK BD OF EDUCATION**	
Project Number	**AEP-11-04648**	
Customer Premise Address	**534 BEACON RD, NEWARK, OH 43055**	
Customer Mailing Address	**85 E Main St, Newark, OH 43055**	
Date Received	**11/11/2011**	
Project Installation Date	**8/1/2009**	
Annual kWh Reduction	**146,991**	
Total Project Cost	**$100,645.92**	
Unadjusted Energy Efficiency Credit (EEC) Calculation	**$20,729.97**	
Simple Payback (yrs)	**6.9**	
Utility Cost Test (UCT)	**2.6**	
		Please Choose One Option Below and Initial
Option 1 - Self Direct EEC: 75%	**$15,547.48**	☐ **Initial:**
Option 2 - EE/PDR Rider Exemption	**N/A Months (After PUCO Approval)**	☐ **Initial:**

Note: *This is a one time selection. By selecting Option 1, the customer will receive payment in the amount stated above. Selection of Option 2: EE/PDR rider exemption, will result in the customer not being eligible to participate in any other energy efficiency programs offered by AEP Ohio during the period of exemption. In addition, the term of Option 2: EE/PDR rider exemption is subject to ongoing review for compliance and could be changed by the PUCO.*

If Option 1 has been selected, will the Energy Efficiency Funds selected help you move forward with other energy efficiency projects?

____YES ____NO

Project Overview:

The Self Direct (Prescriptive) project that the above has completed and applied is as follows.

Retrofitted (386) 3LF34T12 lamps/ballasts into (386) 3LF32T8 lamps/ballasts
Retrofitted (66) 2LF34T12 lamps/ballasts into (66) 2LF32T8 lamps/ballasts
Installed occupancy sensors on all fixtures above, controlling 38.182kW
Retrofitted (20) 400W MH hi-bay gym fixtures into (20) 400W MH pulse-start fixtures
Retrofitted (29) Incandescent exit signs into (29) LED exit signs
Retrofitted (1) Exterior lighting - misc. fixtures into (1) 100W MH pulse-start fixture
Retrofitted (12) Exterior lighting - misc. fixtures into (12) 400W MH pulse-start fixtures
The 57-year-old HVAC chiller was replaced with a 99-ton air-cooled chiller with an IPLV of 0.798

The documentation that was included with the application proved that the energy measures applied for were purchased and installed.

By signing this document, the Mercantile customer affirms its intention to commit and integrate the above listed energy efficiency resources into the utility's peak demand reduction, demand response, and energy efficiency programs. By signing, the Mercantile customer also agrees to serve as a joint applicant in any filings necessary to secure approval of this arrangement by the Public Utilities Commission of Ohio, and comply with any information and compliance reporting requirements imposed by rule or as part of that approval.

Ohio Power Company

By: Jon F. Williams

Title: Manager

Date: February 16, 2012

NEWARK BD OF EDUCATION

By: David C. Alterpeter

Title: Business Manager

Date: February 14, 2012

gridSMART From AEP OHIO

Self-Direct Program Project Application

Jan 2011 - Dec 2011

Step 1: Check Project and Equipment Eligibility

- ✓ Project must be a facility improvement that results in a *permanent* reduction in electrical energy usage (kWh).
- ✓ *All installed equipment must meet or exceed the specifications given in the application* and be installed in facilities served by AEP Ohio: Customer must have a valid AEP Ohio account number on an eligible AEP Ohio non-residential rate (see terms and conditions for list of eligible rates eligibility requirements).

Step 2: Submit Application

- ✓ Fill out the Customer Information form and the Worksheet for the measures that you are installing. You may submit the application via mail, fax or e-mail.

Submit your application to:
AEP Ohio Business Incentives for Energy Efficiency
2740 Airport Drive Suite 160
Columbus, OH 43219
Call: (877)-607-0739
Fax: (877)-607-0740
Email: gridsmartohio@kema.com
Visit our web site at gridsmartohio.com

- ✓ Submit a completed application prior to Oct 1st for any projects prior to Jan 1, 2009, and Nov 15th for any projects completed Jan 1, 2009 or later. Any applications received after the deadlines may not be submitted to the PUCO by December 31, 2011 and could jeopardize approval of any incentive. Complete the checklist page and attach the documentation listed: customer information page, a signed Agreement and Signature page, measure worksheet, scope of work (type, quantity and wattage of old and new equipment), dated and itemized invoices for the purchase and installation of all equipment installed and specification sheets for all equipment installed showing that it meets the program specifications.

Step 3: Project Review

- ✓ The program team will review your Application. For some projects, an inspection will be part of the review, and you will be contacted to schedule it.
- ✓ After approval by AEP Ohio, the customer will be sent an Overview and Commitment form to sign for all self-direct projects. After the Overview and Commitment form is returned the project will be submitted to the Public Utilities Commission of Ohio (PUCO) for consideration. The PUCO will assign a case number and review the project details that were prepared by AEP Ohio. The PUCO may request additional information, approve or reject the energy efficiency credits.

Step 4: Receive Energy Efficiency Credits

- ✓ The program team will issue the energy efficiency credits, within four to six weeks after PUCO project approval.
- ✓ In lieu of a one-time energy efficiency credit, you may elect to seek an exemption from the Energy Efficiency / Peak Demand Reduction (EE/ PDR) Rider for the associated electric accounts(s) for a defined period of time as stated on this Application. For this exemption the Energy Efficiency Credit amount (Option 1) is compared to the estimated value of the estimated EE/PDR Rider obligation (Option 2), as calculated by AEP Ohio. The value of Option 2 will be approximately equal to the value of Option 1. If exemption is elected, the affective account is not eligible for other programs offered by AEP Ohio during the exemption period. Unless additional resources are committed, you will, after the specified number of months exempted, be again subject to the EE/ PDR Rider. New Construction projects are not eligible to elect Option 2. Major Renovation projects that do not have a representative billing history for three years prior to the project installation are also not eligible to elect Option 2.
- ✓ If the energy efficiency credit is elected, you remain in the EE/ PDR rider for the period of time that an exemption would have been in effect and may also participate in the AEP Ohio programs. However, during that period of time, you will not be allowed to elect the Option 2 exemption for any additional self-direct projects for the same account number.
- ✓ You are allowed and encouraged to consider using all or a portion of the energy credits, as received from AEP Ohio under this program, to help fund other energy efficiency and demand reduction projects you choose to initiate in the future. Future projects can also qualify for credits under the Prescriptive or Custom programs.

gridSMART From AEP OHIO

Self-Direct Program
Project Application

APPLICATION CHECKLIST

APPLICATION

Required Attachments

- ☐ Customer/Contractor Information
- ☐ Completed Energy Efficiency Credits Requested Section of Agreement and Signature Page
- ☐ Itemized Invoices
- ☐ Equipment Specifications
- ☐ Scope of Work

Worksheets

- ☐ Lighting
- ☐ HVAC
- ☐ Refrigeration
- ☐ Motors and VFD
- ☐ Custom

Application Date: _____

Completion Date: _____

Project Incremental Cost _____

**Incomplete applications will delay processing and energy efficiency credits.*

Please complete and submit forms for above checked boxes.

Please fill out if this is a revised submittal

ORIGINAL SUBMITTAL DATE: _____

APPLICATION NUMBER (IF KNOWN): _____

AEP Ohio Business Incentives Program for Energy Efficiency
2740 Airport Drive Suite 160
Columbus, OH 43219

Phone: (877)-607-0739
Fax: (877)-607-0740
gridsmartohio@kema.com
www.gridsmartohio.com

gridSMART From AEP OHIO

Self-Direct Program
Project Application

TERMS AND CONDITIONS

Columbus Southern Power and Ohio Power Company are collectively known as AEP Ohio (AEP Ohio). AEP Ohio is offering Prescriptive and Custom energy efficiency credits under the AEP Ohio Business Incentives Program for Energy Efficiency to credit the implementation of past cost-effective energy-efficiency improvements for non-residential (commercial and industrial) customers. AEP Ohio provides energy efficiency credits (EEC) for the purchase and installation of qualifying cost effective equipment in the customer's facility under the Terms and Conditions provided in this application and subject to regulatory approvals. Energy efficiency credits will only be provided in the form of a check or an Energy Efficiency/Peak Demand Reduction (EE/PDR) Rider exemption under this program.

All applications are subject to review and approval by AEP Ohio, its contractor(s)/agent(s), and the Public Utility Commission of Ohio (PUCO) prior to any EEC payments or exemptions from the EE/PDR rider in this program. Funds are limited and subject to availability.

Program Effective Dates

The AEP Ohio Business Incentives for Energy Efficiency program EEC are offered until approved funds are exhausted or Dec 31 of each program year, whichever comes first. The effective dates of Year 3 of the program and application submittal requirements are as follows:

- Self-direct projects are projects completed since 1/1/2008. Self-direct projects are eligible to apply for EEC with this application. Future projects that are not yet completed should apply on the Prescriptive/Custom application.
- All 2011 AEP Ohio Business Incentives for Energy Efficiency program Applications should be received no later than Oct 1st for any projects completed prior to Jan 1, 2009, and Nov 15th for any projects completed Jan 1, 2009 or later. Any applications received after the deadlines may not be submitted to the PUCO by December 31, 2011 and could jeopardize approval of any incentive. AEP Ohio reserves the right to extend or shorten this timeline.
- Subsequent program year plans will be made available toward the end of the existing program year. At the current time, AEP Ohio has a commitment to provide this program through the 2011 program year.

Program and Project Eligibility

The Self-Direct Program applies to customer facilities served by AEP Ohio's retail electric rates who meet the minimum energy usage requirements of 700,000 kWh per year or who are part of a national account involving multiple facilities in one or more states.

The AEP Ohio Business Incentives for Energy Efficiency program offers both Prescriptive energy efficiency credits for some of the more common energy efficiency measures and Custom energy efficiency credits for those eligible improvements not included on the list of Prescriptive measures. Program credits are available under the AEP Ohio Business Incentives for Energy Efficiency program to non-residential customers served at AEP Ohio's regulated retail rates, where qualifying projects are installed in a facility in AEP Ohio's electric service territory. These credits are available to all non residential customers who pay into the (EE/PDR) rider and receive their electricity over AEP Ohio wires, regardless of which retail electric supplier the customer has chosen to purchase power from.

Custom projects must involve measures that result in a reduction in electric energy usage due to an improvement in system efficiency. Projects that result in reduced energy consumption without an improvement in system efficiency are not eligible for a Custom credit. However, projects that involve an automated control technology such as energy management system programming may be eligible for a credit. All projects must meet AEP Ohio's cost-effectiveness requirements. The project simple payback prior to the credit must pass the utility cost effectiveness test(s) determined by AEP Ohio, to qualify for credit. Normally, most projects with a simple payback prior to the credit greater than one year and less than seven years generally pass the utility cost effectiveness test(s). The peak demand hours are defined as weekdays, non-holidays 3:00 PM to 6:00 PM, June through August.

Projects involving measures covered by the Prescriptive energy efficiency credit portion of the program are not eligible for a Custom energy efficiency credit. However, the applicant has the option to apply for a Custom energy efficiency credit for whole building integrated projects or systems even if they include Prescriptive measures.

The energy efficiency credits are calculated in the following Prescriptive or Custom worksheets.

gridSMART From AEP OHIO

Self-Direct Program
Project Application

TERMS AND CONDITIONS

Project requirements under the AEP Ohio Business Incentives Program for Energy Efficiency include the following:

- Projects must involve a facility improvement that results in a permanent reduction in electrical energy usage (kWh)
- Projects that are NOT eligible for a credit include the following:
  - Fuel switching (e.g. electric to gas or gas to electric)
  - Changes in operational and/or maintenance practices or simple control modifications not involving capital costs
  - Removal or termination of existing processes, facilities, and/or operations
  - On-site electricity generation
  - Projects involving gas-driven equipment in place of or to replace electric equipment (such as a chiller)
  - Projects focused primarily on power factor improvement;
  - Projects that involve peak-shifting (and not kWh savings)
  - Renewables
  - Are required by state or federal law, building or other codes, or are standard industry practice
  - Are easily reverted/removed or are installed entirely for reasons other than improving energy efficiency
  - Include other conditions to be determined by AEP Ohio.
- Any measures installed at a facility must produce **verifiable** and **persistent** energy reduction. Measures must be sustainable and provide 100% of the energy benefits as stated in the Application for a period of at least five (5) years or for the life of the product, whichever is less. If the Customer ceases to be a delivery service customer of AEP Ohio or removes the equipment or systems at any time during the 5-year period or the life of the product, the Customer may be required to return a prorated amount of credit funds to AEP Ohio.
- Customer can not apply for incentives for future projects and elect after the fact to apply for credits under this program.
- Confidential information contained in any documents associated with this application will be protected from public filings. However, this information may be disclosed to the Public Utilities Commission of Ohio for further review and approval.
- All equipment must be new. Used or rebuilt equipment is only eligible for energy efficiency credits if the energy efficiency rating of the used equipment is the same energy efficiency level of new equipment.
- All installed equipment must meet state, federal, or local codes and requirements when applicable.
- Costs associated with internal labor are not eligible.
- Projects must be installed on the AEP Ohio electric account listed on the application
- Equipment must be purchased, installed, and operating (or capable of operating in the case of seasonal uses) prior to submitting an application for energy efficiency credits
- The energy efficiency credits are paid as a one-time, one-program offer and cannot be combined with incentive payments from other AEP Ohio programs. The customer may be eligible to participate in other programs offered by AEP Ohio, as long as no project receives more than one incentive/credit.

PROGRAM ENERGY EFFICIENCY CREDITS	
Energy efficiency credit levels for one-year energy savings	See tables for prescriptive credits Custom credits $0.08/kWh x 75%
Minimum / Maximum simple payback before energy efficiency credit applied	Must pass cost effectiveness test(s) (determined by AEP Ohio) Generally 1 year Min / 7 year Max
Maximum payout	75% of 50% of the Incremental project cost (additional caps may also apply)
Energy efficiency credit levels for projects completed since 1/1/2008	Calculated amount on the Prescriptive or Custom worksheets attached and subject to funding limits
Credit Limit	Calculated credits greater than $160,000 per project are subject to a sliding scale credit tiering calculation.
Credit Calculation Order	Measure credit caps are applied first Project cost credit limits are applied second Credit tiering is applied third 75% factor applied to credit last

gridSMART From AEP OHIO

Self-Direct Program
Project Application

TERMS AND CONDITIONS

Energy Efficiency Credit Limits

For both the Prescriptive and Custom measures in this application, the total energy efficiency credits shall be 75% of the lesser of: 1) The calculated credit as approved by AEP Ohio, or 2) 50% of the incremental project cost with larger projects subject to the following limits and credit reductions. In calculating the savings and energy efficiency credits for Custom measures, please contact the AEP Ohio Business Incentives for Energy Efficiency Program office to determine appropriate baseline for savings.

Funding is limited

- The limit for each self-direct project is $225,000.
- The limit for each business entity (corporation, LLC, partnership, etc) in the Self-Direct Program is based on their tariff, as indicated below:

TARIFF	LIMIT PER BUSINESS ENTITY
General Service Tariffs 1, 2, & 3	$450,000 per year
Any Other Tariff General Service Tariff 4	$450,000 overall for years 2009-2011

- A business entity with facilities in both categories can qualify for both limits. All facilities served in one category for a business entity are combined to determine the limit.
- Limits are utility-specific, so there is a separate limit for facilities served by Ohio Power and those served by Columbus Southern Power.
- A sliding scale credit reduction will be incorporated when the calculated energy efficiency credits exceed $160,000 per project.

Application

Applications should be submitted by Oct 1st for any projects completed prior to Jan 1, 2009, and Nov 15th for any projects completed Jan 1, 2009 or later. Any applications received after the deadlines may not be submitted to the PUCO by December 31, 2011 and could jeopardize approval of any incentive. Project documentation, such as copies of dated invoices for the purchase and installation of the measures and/or product specification sheets, is required. AEP Ohio reserves the right to request additional backup information, supporting detail, calculations, manufacturer specification sheets or any other information prior to any credit payment.

The location or business name on the invoice must be consistent with the application information. Applications and all required supporting documentation should be received by November 15, 2011 to be applicable for the 2011 program year.

A signed application with documentation verifying installation of the project including, but not limited to, equipment, invoices, approvals, and other related information must be submitted to AEP Ohio prior to application approval.

The project invoice should provide sufficient detail to separate the incremental project cost from the cost of other services such as repairs and building code compliance. AEP Ohio reserves the right to request additional supporting documentation as deemed necessary to ensure measure eligibility and verify that the expected energy savings will occur. Confidential information contained in any documents associated with this application will be protected from public filings. However, this information may be disclosed to the Public Utilities Commission of Ohio for further review and approval. Requested information could include: equipment purchase dates, installation dates, proof that the equipment is operational, manufacturer specifications, warranty information, and proof of customer co-payment.

The customer understands and agrees that all other terms and conditions, as specified in the application, including all attachments and exhibits attached to this application, serves as a contract for the customer's commitment of energy resources to AEP Ohio, shall apply.

gridSMART From AEP OHIO

Self-Direct Program
Project Application

TERMS AND CONDITIONS

Application Review Process

AEP Ohio will review Applications for eligibility and completeness. Completed applications will be reviewed in the order received. Funds are reserved for the project when AEP Ohio receives a complete application and determines that the project meets the program eligibility requirements. Applicants who submit incomplete applications will be notified of deficiencies upon review of the application, and could lose their place in line in the review process until all requested information is received. Applications must be completed and all information received by the deadlines defined above to begin processing. Applicants are encouraged to call the program hotline if they have any questions about documentation requirements.

Inspections

AEP Ohio reserves the right to inspect all projects to verify compliance with the program rules and verify the accuracy of project documentation. This may include installation inspections, verification of detailed lighting layout descriptions, metering, data collection, interviews, and utility bill data analysis. The customer must allow access to project documents and the facility where the measures were installed for a period of five years after receipt of energy efficiency credits by AEP Ohio. Customer understands and agrees that Program installations may also be subject to inspections by the PUCO or their designee, and photographs of installation may be required.

Requirements for Custom Project Electricity Savings Calculation

The annual electricity savings must be calculated for Custom projects using industry accepted engineering algorithms or simulation models. The applicant must estimate the annual electricity usage of both the equipment removed (and baseline) and equipment installed based on the current operation of the facility. A listing of the pre-existing information requirements is provided at the end of the custom application section. If the previous equipment was at the end of its useful life, the applicant must use, as the baseline, the equipment that would meet the applicable federal and local energy codes unless an “as found” baseline is being used by the applicant. If the applicant is using an “as found” baseline, additional specific information on the pre-existing information must be provided.

The applicant must be able to clearly describe the method used to calculate the savings. The applicant must provide all assumptions used in the calculations and document the source for these assumptions. The method and assumptions used by the applicant to calculate the annual savings will be reviewed by AEP Ohio. AEP Ohio is solely responsible for the final determination of the annual energy savings to be used in calculating the energy efficiency credit amount. AEP Ohio also reserves the right to require specific measurement and verification activities including monitoring the retrofit and determining the credit. Verification of the preexisting consumption may also be required.

AEP Ohio may need to conduct inspections of projects to verify equipment and operation conditions. For Custom and “as-found” projects, the applicant is required to provide information in order to allow AEP Ohio to verify the baseline usage of the pre-existing equipment.. Customers are encouraged to submit projects that warrant special treatment (i.e., non-typical projects) to be considered on a case-by-case basis by AEP Ohio.

Tax Liability

Credits are taxable and, if more than $600, will be reported to the IRS unless the customer is exempt. AEP Ohio is not responsible for any taxes that may be imposed on the Payee as a result of the receipt of the energy efficiency credits.

Disclaimer

AEP Ohio does not guarantee the energy savings and does not make any warranties associated with the measures eligible for energy efficiency credits under this program. AEP Ohio has no obligations regarding and does not endorse any claims, promises, work, or equipment made, performed, or furnished by any contractors or equipment vendors or manufacturers that sell or install any energy efficiency measures and does not endorse or guarantee same . AEP Ohio is not responsible for the proper disposal/recycling of any waste generated as a result of this project. AEP Ohio is not liable for any damage caused by the operation or malfunction of the installed equipment.

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Self-Direct Program Project Application

Important: Please read the terms and conditions before signing and submitting this application.
You must complete all information and provide required additional documentation to avoid processing delays.

CUSTOMER INFORMATION

Business Type *(select one)*

- LARGE OFFICE ☐
- SMALL OFFICE ☐
- SCHOOL ☐
- SMALL RETAIL/SERVICE ☐
- LARGE RETAIL/SERVICE ☐
- HOTEL/MOTEL ☐
- MEDICAL - Hospital ☐
- MEDICAL - Nursing Home ☐
- ASSEMBLY/MEETING PLACE ☐
- RESTAURANT ☐
- GROCERY ☐
- CONDITIONED WAREHOUSE ☐
- UNCONDITIONED WAREHOUSE ☐
- INDUSTRIAL/MANUFACTURING ☐
- COLLEGE/UNIVERSITY ☐
- GOVERNMENT/MUNICIPAL ☐
- OTHER/MISCELLANEOUS _____

Tax Status *(from W9)*

- CORPORATION (Inc., PC, Etc.) ☐
- TAX EXEMPT ☐
- INDIVIDUAL ☐
- OTHER (may receive 1099) _____

Operating Days

- Seven days/week ☐
- Five days/week ☐

Operating Hours

- One shift (8h /day) ☐
- Two shifts (16h/day) ☐
- Three shifts (24h/day) ☐

Building Operating Hours _____

How Did You Hear?

- AEP Account Representative ☐
- Contractor ☐
- Website ☐
- Other _____

Square Footage

Affected Area S.F. _____

NAME OF APPLICANT'S BUSINESS		PROJECT NAME (IF APPLICABLE)		
NAME AS IT APPEARS ON UTILITY BILL	AEP OHIO ACCT #*	APPLICANT TAXPAYER ID # (SSN/FEDERAL ID)		
MAILING ADDRESS		CITY	STATE	ZIP
INSTALLATION ADDRESS		CITY	STATE	ZIP

CUSTOMER CONTACT

Please provide all contacts we may need to process for this project.

NAME OF CONTACT PERSON - *Preferred Contact for Documentation*			TITLE OF CONTACT
CONTACT PHONE #	EXT.	CONTACT FAX #	CONTACT EMAIL ADDRESS

CONTRACTOR INFORMATION

NAME OF CONTRACTING COMPANY

NAME OF CONTACT PERSON			TITLE OF CONTACT PERSON		
CONTACT PHONE #	EXT.	CONTACT FAX #	CONTACT EMAIL ADDRESS		
MAILING ADDRESS			CITY	STATE	ZIP

If there are questions about the application who should we contact? **Customer** ☐ **Contractor** ☐

As an eligible customer, I verify the information is correct and request consideration for participation under this program.

CUSTOMER SIGNATURE (AEP OHIO CUSTOMER)	PRINT NAME
TOTAL INCENTIVE REQUESTED**	DATE
COMPLETION DATE	PROJECT COST

* AEP Ohio Account Number where measure is installed

** Incentive cannot exceed 50 percent of the total Incremental cost or other caps described in the Terms and Conditions.

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Self-Direct Program
Project Application

SELF-DIRECT APPLICATION AGREEMENT

As an eligible AEP Ohio customer, I certify that the installation of the indicated energy efficiency measures, which will be demonstrated by the supporting documentation required by AEP Ohio. I certify that the work, was completed on this project on or after January 1, 2008. The energy efficiency measures are for use on-site and not for resale. I understand that project documentation, including copies of dated invoices for the purchase and installation of the measures and product specification sheets, is required. Further documentation requirements can be found at the program website www.gridsmartohio.com or by calling the program hotline.

I understand that the location or business name on the invoice must be consistent with the application information. Final Applications and all required supporting documentation should be received by **Oct 1st for any projects completed prior to Jan 1, 2009, and Nov 15th for any projects completed Jan 1, 2009 or later. Any applications received after the deadlines may not be submitted to the PUCO by December 31, 2011 and could jeopardize approval of any incentive by the PUCO**.

I agree to verification by the utility or their representatives of both sales transactions and equipment installation.

I understand that these energy efficiency credits are available to all eligible customers who pay the Energy Efficiency and Peak Demand Reduction (EE/PDR) rider and receive their electricity over AEP Ohio wires regardless of which retail electric supplier the customer has chosen to purchase power from.

I certify that the information on this application is true and correct, and that the Taxpayer ID Number and tax status is the applicant's. I understand that incentives over $600 will be reported to the IRS unless the applicant is exempt. I understand that energy efficiency credits assume related energy benefits over a period of 5 years or for the life of the product, whichever is less.

I agree that if: I remove the related product(s) identified in my application before a period of 5 years or the end of the product life, whichever is less, I shall refund a prorated amount of energy efficiency credits to AEP Ohio based on the actual period of time in which the related product(s) were installed and operating. This is necessary to assure that the project's related energy benefits will be achieved.

I understand that the program may be modified or terminated without prior notice.

AEP Ohio reserves the right to refuse payment and participation if the customer or contractor violates Program rules and requirements. AEP Ohio is not liable for energy efficiency credits promised to customers as a result of misrepresentation of the Program.

Customer and customer's contractor shall be responsible to comply with any applicable codes or ordinances.

All submissions become the property of AEP Ohio. Keep a copy for your records.

I understand that the Application and all required documentation should be received by the AEP Ohio Business Incentives for Energy Efficiency program prior to **Oct 1st for any projects completed prior to Jan 1, 2009, and Nov 15th for any projects completed Jan 1, 2009 or later. Any applications received after the deadlines may not be submitted to the PUCO by December 31, 2011 and could jeopardize approval of any incentive by the PUCO**. All equipment must be fully operational.

gridSMART® From AEP OHIO®

Self-Direct Program
Project Application

SELF-DIRECT APPLICATION AGREEMENT

I understand that this project must involve a facility improvement that results in improved energy efficiency. I also understand that all materials removed, including lamps and PCB ballasts, must be permanently taken out of service and disposed of in accordance with local codes and ordinances. Equipment can not under any circumstances be resold for reuse. I understand it is my responsibility to be aware of any applicable codes or ordinances. Information about hazardous waste disposal can be found at: http://www.epa.gov/osw/hazwaste.htm.

AEP Ohio will pay 75% of the lesser of: 1) The calculated credit as approved by AEP Ohio subject to funding limits or 2) 50% of the incremental project cost (subject to application caps). I understand that AEP Ohio or their representatives have the right to ask for additional information at any time. AEP Ohio's Business Incentives Program for Energy Efficiency will make the final determination of energy efficiency credit levels for this project.

The program has a limited budget. Applications will be processed within the budget limits. Applications and all supporting documentation required should be received by November 15, 2011 to be eligible for funding under the current program period.

Customer understands and agrees that all other terms and conditions, as specified in the application, including all attachments and exhibits attached to this application which will serve as a contract for the Customer's commitment of energy and demand resources to AEP Ohio shall apply.

I understand that AEP Ohio does not guarantee the energy savings and does not make any warranties associated with the measures eligible for energy efficiency credits under this program, and, further, that AEP Ohio has no obligations regarding any claims, promises, work, or equipment made, performed, or furnished by any contractors or equipment vendors that sell or install any energy efficiency measures and does not endorse or guarantee same.

Energy efficiency credits will be based upon the final application and program terms and conditions, as well as the availability of funds.

Any and all energy savings generated by the project described in this application are hereby committed to AEP Ohio in order to count against its respective companies' benchmark requirements in S.B. 221.

ENERGY EFFICIENCY CREDITS REQUESTED

I have read and understand the program requirements and Measure Specifications and Terms and Conditions set forth in this application and agree to abide by those requirements. Furthermore, I concur that I must meet all eligibility criteria in order to be paid under this program.

ALL EQUIPMENT MUST BE INSTALLED AND OPERATIONAL. A CUSTOMER SIGNATURE IS REQUIRED FOR PAYMENT. SIGNED APPLICATIONS RECEIVED BY FAX OR EMAIL WILL BE TREATED THE SAME AS ORIGINAL APPLICATIONS RECEIVED BY MAIL. All submissions become the property of AEP Ohio. Keep a copy for your records.

TOTAL PROJECT COST	TOTAL ENERGY EFFICIENCY CREDITS REQUESTED

CUSTOMER SIGNATURE (AEP CUSTOMER)

PRINT NAME	DATE	ACTUAL COMPLETION DATE

Customer Name	ServiceAddress	ServiceCity	ServiceZip
NEWARK BD OF ED	112 W MAIN ST	NEWARK	43055
NEWARK BD OF ED	38 GRANVILLE ST	NEWARK	43055-5084
NEWARK BD OF ED	11 N 5TH ST	NEWARK	43055-5011
NEWARK BD OF ED	112 W MAIN ST	NEWARK	43055-5061
NEWARK BD OF ED	475 DANIEL AVE	NEWARK	43055-4003
NEWARK BD OF ED	85 E MAIN ST	NEWARK	43055
NEWARK BD OF EDUCATION	549 E MAIN ST	NEWARK	43055-6619

Summary Performance Report For CH-1

Project: ~Untitled22
Prepared By:

06/0
11:2

AQUAFORCE

Carrier

AquaForce™ Air-Cooled Screw Chiller

Unit Information

Tag Name:	CH-1	
Model Number:	30XA110	
Quantity:	1	
Manufacturing Source:	Charlotte, NC USA	
Refrigerant:	R134A	
Independent Refrigerant Circuits:	2	
Shipping Weight:	8968	lb
Operating Weight:	9071	lb
Unit Length:	189	in
Unit Width:	89	in
Unit Height:	90	in

Evaporator Information

Fluid Type:	Fresh Water	
Fouling Factor:	0.00010	(hr-sqft-F)/BTU
Number of Passes:	2	
Leaving Temperature:	42.7	°F
Entering Temperature:	56.0	°F
Fluid Flow:	178.5	gpm
Pressure Drop:	7.8	ft

Condenser Information

Altitude:	0	ft
Number of Fans:	8	
Total Condenser Fan Air Flow:	74400	CFM
Entering Air Temperature:	95.0	°F

Integrated Pump Information

No Pump Selected

Performance Information

Cooling Capacity:	99.2	Tons
Total Compressor Power:	105.7	kW
Total Fan Motor Power:	10.4	kW
Total Unit Power (without pump):	116.1	kW
Efficiency (without pump):	10.26	EER
IPLV:	15.04	EER
A-Weighted Sound Power Level:	96	dbA

Accessories and Installed Options

Freeze Protection
Suction Line Insulation
Suction Service Valve
Non-Fused Disconnect
Energy Management Module
Control Transformer
Al Fin/Cu Tube
Low Sound Option
Wye-Delta
Single Point
Hail Guards, Coil Trim Panels, Grilles
Navigator Display
5 k Current Rating (All Voltages)
Carrier Translator for LonWorks (1 required for each CCN Controller / PIC)

Electrical Information

Unit Voltage:	200-3-60	V-Ph-Hz
Connection Type:	Single Point	
Minimum Voltage:	187	Volts
Maximum Voltage:	220	Volts

Amps	Electrical Circuit 1	Electrical Circuit 2
MCA	446.2	N/A
MOCP	600.0	N/A
ICF	607.8	N/A

Certified in accordance with the ARI Water-Chilling Packages using the Vapor Compression Cycle Certification Program, which is based on ARI Standard 550/590-2003.
Sound power measured in accordance with ARI 370-2001.

LUTRON SUBMITTAL DRAWINGS

JOB:
BEN FRANKLIN ELEMENTARY SCHOOL

FOR:
ACCURATE ELECTRIC

PREPARED BY:
Scott Sarno

JULY 15, 2008

Loeb Electric

915 Williams Ave.

Columbus OH 43212

p 614.294.6351

f 614.294.3131

Reynoldsburg
p 614.759.9525
f 614.759.9092

Worthington
p 614.436.8877
f 614.436.2502

Hilliard
p 614.777.8600
f 614.777.1296

Delaware
p 740.363.5258
f 740.363.3723

Bellefontaine
p 937.292.7060
f 937.292.7062

Lancaster
p 740.756.7540
f 740.756.7544

THE LOEB ELECTRIC CO.

915 Williams Ave. Columbus Ohio 43212
800-686-6351 614/294-6351 FAX 614/294-3131

LETTER OF TRANSMITTAL

TO: ACCURATE ELECTRIC
6901 AMERICANA PKWY
REYNOLDSBURG, OH 43068

Date July 15, 2008
Your No.
Our No.
Job Name BEN FRANKLIN ELEMENTARY SCHOOL

PLEASE FIND ENCLOSED, DRAWINGS LISTED BELOW

COPIES	DRAWINGS OR CATALOG NUMBER	TYPE	MANUFACTURER
12	1 LOT OF LUTRON EQUIPMENT		LUTRON

THE ABOVE DRAWINGS ARE: ☐ APPROVED ☐ DISAPPROVED ☐ APPROVED AS NOTED
☐ FOR RECORD ONLY ☑ FOR APPROVAL NOTE : IF ABOVE IS FOR APPROVAL, RETURN TWO (2) COPIES
EACH AND ADVISE REQUIREMENT DATE. ORDER WILL REMAIN ON HOLD UNTIL APPROVED DRAWINGS ARE RETURNED.

REMARKS:

SIGNATURE/TITLE: Betsy Loeb / Job Control Date: July 15, 2008

Ben Franklin Elementary

Description:

Design By: Jamie Schroyer

Company: Spectrum Lighting

Address: 1001 Kinnear Rd
Columbus, Oh 43212

Phone: 614-486-5354

Design For:

Company: Loeb Electric

Address: 906 Burr Avenue
Columbus, Ohio 43212

Phone: 614-294-6351

Lutron Contact Information

USA +1 610 282 3800
UK +44 (0)20 7702 0657
Singapore +65 6220 4666
France +33 (0)1 41 05 42 80

COMMISSIONING / STARTUP OPTION:

LCP128 Systems, Softswitch128 Systems, and GRAFIK Eye 4000 Systems containing LP, XP, or GP Power Panels include factory commissioning. Factory commissioning is optional for GRAFIK Eye 3000 and RadioTouch Systems.

Systems purchased with factory commissioning include 1 on-site visit by a Lutron field service engineer during normal business hours (M-F, 7am-6pm). Visits will include a complete system function test as well as system operation and maintenance training for the facilities team.

Please contact Lutron or check www.lutron.com for specific details about your warranty and commissioning program.

SCHEDULING:

Lutron requires 10 working days notice prior to system commissioning. Visits scheduled outside normal business hours, multiple visits or additional time on site due to circumstances beyond Lutron's direct control, or visits scheduled with less than 10 days notice will result in additional charges.

DELIVERY:

All standard products as listed in the current price guide ship within 48 hours unless otherwise indicated. Consult Lutron Customer Service for lead time on all Custom products. Build-to-order systems take approximately 4-6 weeks to manufacture after release of order from the distributor. Any changes to order will result in rescheduling, longer manufacturing time, and/or additional engineering charges.

CANCELLATION:

There will be a minimum cancellation charge of 25% of the value of this equipment should this order be cancelled.

RETURNS:

Custom products and systems are not returnable unless there is a defect in workmanship by Lutron Electronics Co., Inc.

LUTRON

www.lutron.com

Toll Free: 800 523 9466

Project Type: School/University

Location: Newark, Ohio

Project #: C139868

Project Filename: Ben Franklin Elementary 0.gdf

GRAFIK Eye Designer 7.1.124

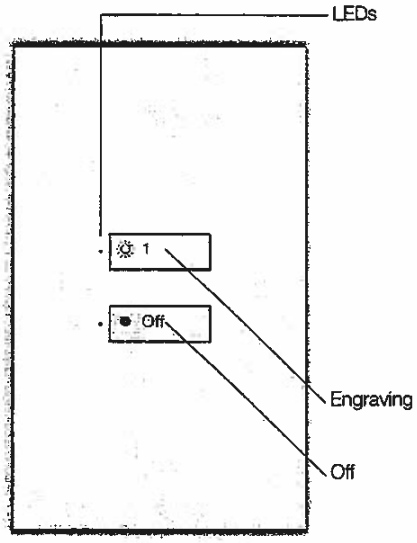
Date: 14-Jul-2008

LUTRON® seeTouch™ Wallstations

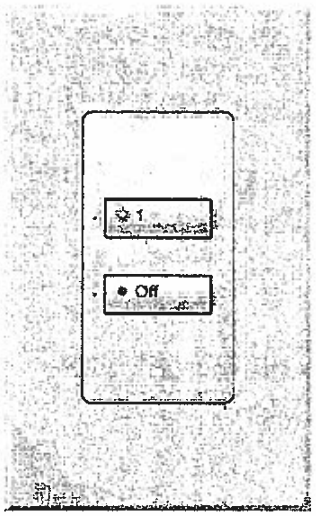
so-2b 5.11.06

Color and Engraving Codes

SO-2BN-___-___
SO-2BI-___-___
2-Button Wallstation



SO-2BN-WH-EGN
(Non-insert version)



SO-2BI-WH-EGN
(Insert version)

Description

- Often used in entryways to select Scene 1 and Off.
- Receives up to two contact closure inputs via a connector on the back of the Wallstation.
- Large, rounded buttons are easy to use.
- Backlit buttons with optional engraving make it easy to find and operate the Wallstation in low light conditions.
- Optional button engraving is angled up to the eye for easy reading.
- Recalls preset light levels for two scenes.
- Reflects door status of one or two partitions.
- Enables or disables Wallstations.
- Starts or stops one sequence.
- Enables or disables timeclock/security override Scene 1.
- Allows fine-tuning of zones.
- May be custom-configured for other functions.
- Works with GRAFIK 5000™, GRAFIK 6000®, GRAFIK 7000™, Softswitch128™, and Softswitch512™ Systems.

Finish and Engraving Options

- Available with button engraving.
- Three engraving options are available: General Engraving, Standard Engraving, & Non-Standard Text Engraving. For more details, please visit the *seeTouch* website at **www.lutron.com/seetouch**.

Specifications

Power Input (Control Link Terminal 2)

Low-voltage type PELV (Class 2: USA). Operating voltage: 24 V⎓

Key Design Features

- Field-changeable button and faceplate assemblies allow easy customization.
- Front accessible address and option switches allow change of function without removing the unit from the wall.
- Meets IEC 801-2. Tested to withstand 15kV electro-static discharge without damage or memory loss.
- Faceplate snaps on with no visible means of attachment.
- Available as an "insert" style control for multi-ganging.
- Can be ganged to share a common faceplate with NovaT*® and Vareo® Dimmers. To order new Wallplates for multi-ganging, specify "R3" openings in a *NovaT** multi-gang FB (fins broken) Series model number.
- Use Faceplate Replacement Kits to change color, button configuration, or engraving.
- Faceplate Replacement Kits may also be used to convert between non-insert and insert configurations.

System Communications and Capacity

- Low-voltage type PELV (Class 2: USA) wiring connects Wallstations to Processor Panel on the Control Station Device (CSD) Link.
- Counts as one Control Station Device (CSD).

Terminals

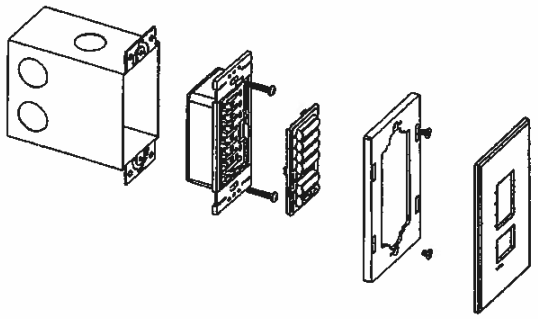
Accept up to two #18 AWG (1.0mm²) typical.

Environment

32-104°F (0-40°C). Relative humidity less than 90% non-condensing.

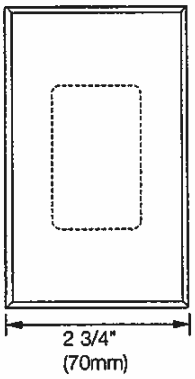
Mounting

Typical backbox dimensions: 3.74" (95mm) high, 2.17" (55mm) wide, 2.75" (70mm) deep.

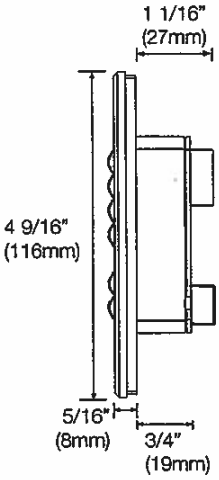


Dimensions

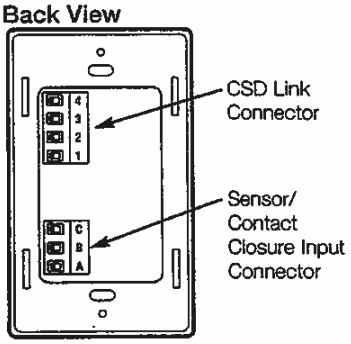
Front View



Side View



Back View



LUTRON® SPECIFICATION SUBMITTAL Page 8

Job Name:	Model Numbers:	
Ben Franklin Elementary	SO-2B	
Job Number: C 139868.1		

LUTRON® seeTouch™ Wallstations

so-p3 5.11.06

How to Build a *seeTouch* Model Number

SO- ____ ____ ____ - ____ - ____

Prefix	Button Configuration	Sensor Option	Insert Style	Color/ Finish	Engraving Code

Omit: CCI
O: Occupant sensor

N: Non-insert
I: Insert

Color/Finish Codes

Matte Finishes

White	WH
Ivory	IV
Beige	BE
Gray	GR
Brown	BR
Black	BL
Taupe	TP

Gloss Finishes

Available with Insert (I) style controls only. Ship with Claro® Wallplates.

White	GWH
Light Almond	GLA

Metal Finishes

With black plastic buttons (standard).

Bright Brass	BB
Bright Chrome	BC
Bright Nickel	BN
Satin Brass	SB
Satin Chrome	SC
Satin Nickel	SN
Antique Brass	QB
Antique Bronze	QZ

Anodized Aluminum Finishes

With black plastic buttons (standard).

Clear	CLA
Black	BLA
Brass	BRA

Satin Colors™

Available with Insert (I) style controls only.

Snow	SW
Biscuit	BI
Eggshell	ES
Midnight	MN
Blue Mist	BT*
Limestone	LS*
Stone	ST*
Desert Stone	DS*
Terracotta	TC*
Ochre	OC*
Hot	HT*

*Note: Some *Satin Colors* units ship with different color buttons. For more information, please visit the *seeTouch* website at **www.lutron.com/seetouch**.

Engraving Codes

Unengraved	E00

General/StandardEngraving

Arabic	A*xx*
Portug. (Latin)	B*xx*
Chinese	C*xx*
Danish	D*xx*
English	E*xx*
French	F*xx*
German	G*xx*
Italian	I*xx*
Japanese	J*xx*
Spanish (Latin)	L*xx*
Dutch	N*xx*
Portug. (Euro)	P*xx*
Spanish (Euro)	S*xx*

Note: Replace the *xx* with either GN (general engraving) or a two-digit number (01-99; standard engraving. Please visit the *seeTouch* website at www.lutron.com/seetouch for a listing of the standard engraving choices.

Non-Standard Text Engraving

Customized button engraving for particular needs. Use with Faceplate Replacement Kits only (model number begins with SR). Use an engraving code of NST. To order, contact Lutron customer service. Please visit the *seeTouch* website at **www.lutron.com/seetouch** for custom engraving sheets.

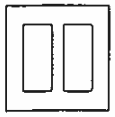
Job Name:	Model Numbers:	
Ben Franklin Elementary	SO-2B	
Job Number: C 139868.1		

Faceplate Information

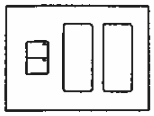
Multi-ganging

- Order Insert (I) style controls.
- To order Wallplates for multi-ganging, specify "R3" openings in a NovaT*® multi-gang FB (fins broken) Series model number.

Examples:



Wallplate for 2 *seeTouch* Wallstations,
Model # NT-R3-R3-FB-(color)



Wallplate for other *Lutron* controls and 2 *seeTouch* Wallstations,
Model # NT-T8-R3-R3-FB-(color)

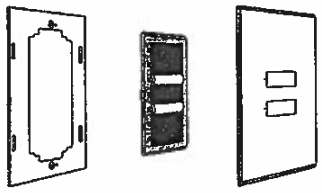
- Order Claro® Wallplates for multi-ganging Wallstations in Gloss Finishes.
- Order Satin Colors™ Wallplates for multi-ganging Wallstations in *Satin Colors*.

Note: New button inserts are not included with multi-ganging Wallplates.

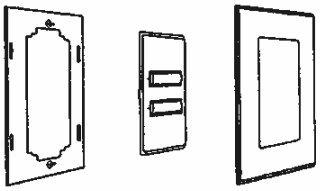
Faceplate Replacement Kits

Use Faceplate Replacement Kits to change: colors, button configuration, engraving, between insert and non-insert versions. Each Kit includes an adapter, button assembly, and wallplate

Non-Insert Kit



Insert Kit



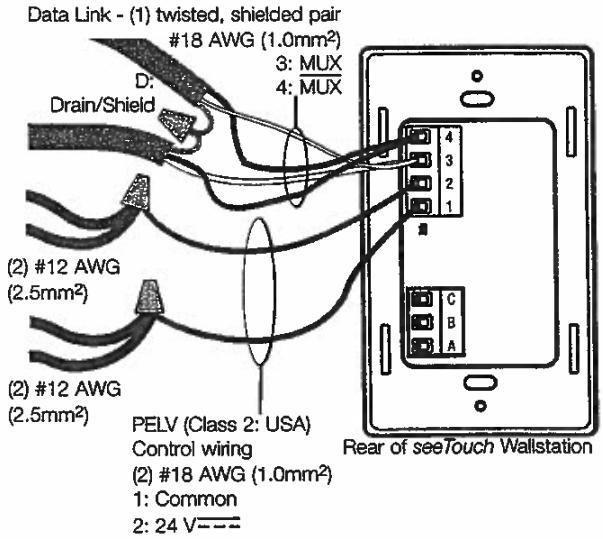
Wallstation Installation

Control Station Device (CSD) Link Wiring

- Use low-voltage PELV (Class 2: USA) wiring to daisy-chain Wallstations to the Processor Panel.
- Make connections inside the wallbox or in a switch/junction box with a maximum wire length of 8 feet (2.5m) from the link to the Wallstation.
- Two #12 AWG (2.5mm²) conductors for common (terminal 1) and 24 V⎓ (terminal 2). These will not fit in terminals. Connect as shown.
- One shielded, twisted pair #18 AWG (1.0mm²) for data link (terminals 3 and 4).
- Connect Drain/Shield as shown. Do not connect to Ground (Earth) or Wallstation. Connect the bare drain wires and cut off the outside shield.

Note: Some Wallstations have a "D" terminal for Drain. The Drain/Shield wire may be connected to this terminal.

Wiring to Control Link



Note: Use appropriate wire connecting devices as specified by local codes.

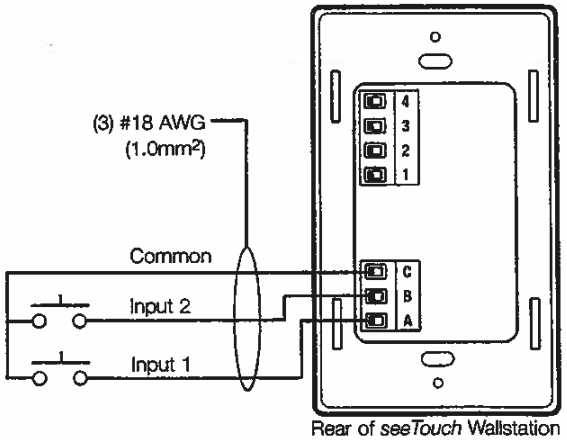
Contact Closure Inputs

Specifications

- Inputs must be dry contact closure or ground-referenced solid-state outputs:
  - Dry Contact Closure:
    - Rated Voltage: 10 V⎓ when open.
    - Rated Current: 0.5 mA when closed.
  - Solid-State Output:
    - Open collector (NPN) referenced to Common (Terminal C).
    - On-state saturation voltage less than 2 V⎓ at 0.1 mA.
    - Off-state leakage current less than 50 uA at 5 V⎓.
- Wallstation is miswire protected up to 36 V⎓.
- Outputs must stay in the closed or open states for at least 40 msec in order to be recognized by the Wallstation.

Contact Closure Input Wiring

- Use low-voltage PELV (Class 2: USA) wiring to connect the contact closure inputs to the Wallstation.



Rear of *seeTouch* Wallstation

Job Name:	Model Numbers:	
Ben Franklin Elementary	SO-2B	
Job Number: C 139868.1		

XPS/LCP system description

XPS is a Lutron Switching System that is designed to provide exceptional value and reliability to our customers. It utilizes Lutron's patented arcless Softswitch circuit that dramatically increases the lifetime of the system over conventional switching relay systems. Even when fully loaded, the arc elimination extends a relay's average rated life to more than 1,000,000 on/off cycles. Digital wall controls may be purchased for simple control in the space. The product also features an integrated time clock for automated system control.

LCP is a Lutron Dimming/Switching System that is designed to provide exceptional value and reliability to our customers. It allows the end used to use dimming and switching in the same panel for all of the space requirements. Digital wall controls may be purchased for simple control in the space. The product also features an integrated time clock for automated system control.

Both systems are similar in appearance, programming, and maintenance, however the XPS is solely a switching system and LCP can have dimming and switching capability in the same panel.

XPS/LCP Training Visit – Typical Agenda (duration – approximately 1 hour):

- Review of XPS/LCP system with end-user (control location and function).
- Discuss system model numbers
- Discuss Lutron lexicon - what is a zone, scene, fade rate, delay rate
- Review all system components
- Panel(s) and XPS/LCP Controller
    - o Bypassing outputs
    - o Spare dimmer cards/modules, switching modules
    - o Load schedule
    - o Programming of timeclock
- Wall controls
    - o Addressing
    - o Reprogramming
- Troubleshooting system. Panels, processor, controls, interfaces
- System integration (if applicable)
- Warranty information
- Tech support
- Preventive maintenance

sensorswitch

WALL SWITCH DECORATOR SENSOR - DUAL TECHNOLOGY (PDT), LINE VOLTAGE

WSD-PDT Series

Programmable Edition!

Dual Technology in a Wall Switch Sensor! The *WSD-PDT Series* is by far the most powerful Decorator occupancy sensor ever invented. The combination of Passive Infrared and patented Microphonics™ detection, allows this sensor to literally *"See & Hear"* its occupants. The *WSD-PDT* is the ideal solution for restrooms with stalls, private offices where the occupant turns his back to the sensor, or storage rooms with obstructions. Additionally, the WSD Series sensors have several On Modes and Switch Modes that can be programmed using the front push-button.

TYPICAL APPLICATIONS

- Private Offices where occupant turns back to sensor
- Restroom with Stalls
- Storage rooms with shelving

FEATURES

- Patented Dual Technology with PIR/Microphonics™ Detection
- Self Contained Relay, no Power Pack needed
- Patented Bi-Polar Wiring: Interchangeable hot & load wires
- Intrinsically Grounded
- No Minimum Load
- Time Delay: 30 sec. to 20 minutes
- Push-Button Programmable
- Three-Way & Multi-Level Switching
- Green LED Activity Indicator

AVAILABLE OPTIONS

- Vandal-Resistant Lens (-V)
- Photocell Daylight Override (-P)
- Low Temp/Hi Humidity (-LT)

SPECIFICATIONS

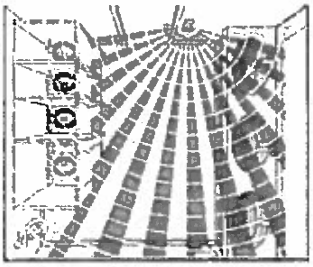
- Size: 4.2" H x 1.8" W x 1.5" D (10.67cm x 4.57cm x 3.81cm)
- Sensor Weight: 5 Ounces
- Colors: Ivory, White, Gray, Almond
- Mounting Height: 30 to 48 inches
- Relative Humidity: 20 to 90% non-condensing
- Operating Temp: 14° to 85° F (-10° to 29° C)
- Storage Temp: -14° to 160° F (-26° to 71° C)
- Load Rating (1 phase only):
  120 VAC @ 800 W
  277 VAC @ 1200 W
  347 VAC @ 1500 W
- 1/4 HP Motor Load
- Frequency: 50/60 Hz (Timers are 1.2 x for 50 Hz)
- UL, CUL, & CSA Listed
- CA Title 24 Compliant
- 5 Year Warranty
- Made in U.S.A.

LOW TEMP/HI HUMIDITY(-LT)

- Conformally coated Circuit Board is corrosion resistant from moisture
- Operates down to -4° F (-20°C)

SENSOR OPERATIONS

Sensors with Passive Dual Technology (PDT) first "See" motion using Passive Infrared (PIR) and then engage Microphonics™ to "Hear" sounds that indicate continued occupancy. This patented technology uses Automatic Gain Control (AGC) to dynamically self adapt a sensor to its environment by filtering out constant background noise and detecting only noises typical of human activity. When occupancy is detected, a self-contained relay switches the lighting "On. The sensor is line powered and can switch line voltage (see specifications). An internal timer, factory set at 10 minutes, keeps the lights "On" during brief periods of no activity. This timer is push-button programmable from 30 seconds to 20 minutes, and is reset every time occupancy is re-detected. If needed, a 10 second grace period also allows the lights to be voice reactivated after shutting off.



Bathrooms (WSD-PDT-V)

- Senses partitioned spaces
- Most inexpensive sensor approach
- Voice sound activation prevents lights out condition

OPERATIONAL MODES

On Modes (*Default)

Automatic On* - The sensor automatically turns the lights on when the sensor detects occupancy.

Reduced Turn-On - The sensor is set to initially only detect large motions, effectively ignoring any reflected PIR signals while still sensing occupants when they enter the room. Once on, the sensor returns to maximum sensitivity.

Switch Modes (*Default)

Predictive Off* - Pressing the switch overrides the lights off and temporarily disables the occupancy detection. After an exit time delay (default 10 seconds) the occupancy detection reactivates and monitors for an additional grace period time (default 5 seconds). If no occupancy is detected during this period, the sensor will revert to Automatic On operation. If occupancy is detected, the sensor will remain in Permanent Off mode requiring the switch to be pressed again in order to restore the sensor to Automatic On.

Permanent Off - Pressing the push-button switch will turn the lights off. The lights will remain off regardless of occupancy until the switch is pressed again, restoring the sensor to Automatic On mode.

Switch Disable - Prevents user from manually turning off the lights via the push-button.

Model Numbering System: WSD-PDT-[LENS]-[PHOTOCELL]-[VOLTAGE]-[COLOR*]-[TEMP/HUMIDITY]

SERIES #	LENS	PHOTOCELL	VOLTAGE	COLOR	TEMP/HUMIDITY
WSD-PDT	Blank = Standard -V = Vandal Resistant	Blank = No Photocell -P = w/Photocell	Blank = 120-277 VAC -3 = 347 VAC**	-I = Ivory -W = White -G = Gray -A = Almond	Blank = 14° to 85° F -LT = -4° to 85° F

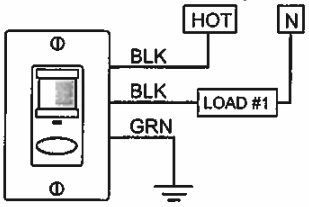
**347 VAC: Plate not provided

*Must specify color

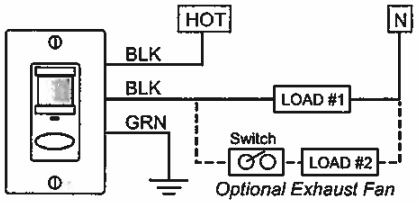
T065-003-P

Programmable Edition **WSD-PDT SERIES**

TYPICAL WIRING DIAGRAM (DO NOT WIRE HOT)



Note: Connection to Ground required for sensor to function!

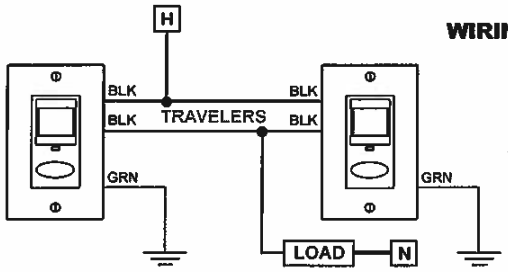


Note: Black wires are replaced with Red wires for 347 VAC.

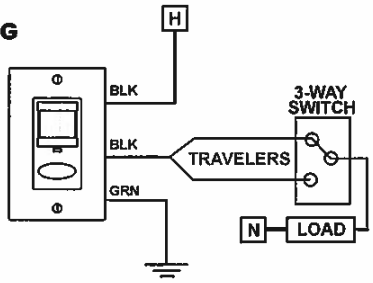
WIRING TO A LIGHT AND A FAN

One of the sensor's Black wires connects to the Hot (Line) power feed. The sensor's other Black wire connects to the Light and the Toggle Switch controlling the Exhaust Fan. The sensor's Green wire connects to Ground. When the sensor is in the Occupied Mode, the Exhaust Fan may be overridden Off by the Toggle Switch.

WIRING FOR 3-WAY SWITCHING



Travelers are used to wire sensors in parallel. If only one sensor is needed to view space, 3-way switch is non-functional.



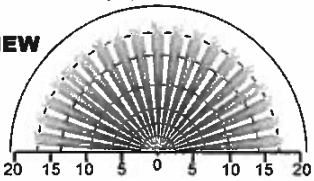
PHOTOCELL DAYLIGHT OVERRIDE OPTION (WSD-PDT-P)

The *WSD-PDT* offers a Photocell Daylight Override option (-P) for spaces with abundant natural light. Ideal for public places with windows like vestibules, corridors, or bathrooms; this option inhibits the lights from turning on if there is sufficient daylight available. Once the lights turn on, however, the photocell function is disabled until the sensor's occupancy timer expires and turns the lights off.

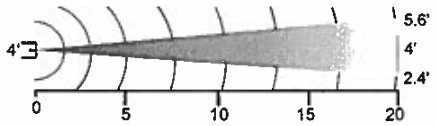
AREA OF COVERAGE

The PIR collector beams view out horizontally in a wall-to-wall pattern. The beams will see out to 50 feet, however, their effectiveness in the *Standard* product is 20 feet for small hand or body motions and 10 feet for the *Vandal Resisitant* products. The Microphonics™ will detect normal human activity up to 20 feet, but will detect greater distances in spaces with hard floors or very quiet rooms with little or no background noise.

TOP VIEW



SIDE VIEW



STANDARD vs. VANDAL RESISTANT LENS

The Standard lens provides maximum PIR detection sensing small movements up to 20 feet, and large motions up to 50 feet. This lens should be used in typical offices or rooms where occupants work for extended periods of time. The Vandal Resistant lens should be used in high abuse or public areas, where occupants simply come and go and make larger types of motions. Copy rooms, small public restrooms, storage or janitor's closets are ideal applications. A sensor with a Vandal Resistant lens will have its PIR detection range reduced by 50%, however the Microphonics™ range is not affected.

WARNING

Fire Hazard Caution: Maximum Lamps 1500 Watts, Type 347 VAC.
Attention: Risque d'incendie : Pauissance Maximales Des Lampes 1500 Watts, Type 347 VAC.
Warning: The units are intended to be installed by a qualified person with properly rated branch circuit protectors as per applicable local and national regulations (CEC, NEC).

sensorswitch
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www.sensorswitch.com

revised12/13/2007

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EXTENDED RANGE SENSOR - CEILING MOUNT, LOW VOLTAGE, PIR/MICROPHONICS™ (PDT)

CM-PDT-10 SERIES

w/ Enhanced Daylighting Control Options!

TYPICAL APPLICATIONS

- Classrooms
- Partitioned Cubical Spaces
- Library Study Carrels & Stacks

FEATURES

- Patented Dual Technology with PIR/Microphonics™ Detection
- Communicates with Other Sensors
- Time Delay: 30 sec. to 20 minutes, selectable in 2.5 min increments
- Push-Button Programmable
- Green LED Indicator
- 100 Hr. Lamp Burn-in Timer Mode

AVAILABLE OPTIONS

- Isolated Low Voltage Relay (-R)
- On/Off Photocell (-P)
- Auto Dimming Cntl. Photocell (-ADC)
- Low Temp/Hi Humidity (-LT)

SPECIFICATIONS

- Size: Circular, 4.55" Dia., 1.55" Deep (11.56 cm Dia., 3.94 cm Deep)
- Sensor Weight: 5 Ounces
- Sensor Color: White
- Mounting: Ceiling Tile Surface, Round Fixture or Junction Box
- Relative Humidity: 20 to 90% non-condensing
- Operating Temp: 14° to 160° F (-10° to 71° C)
- Storage Temp: -14° to 160° F (-26° to 71° C)
- UL, CUL, and Title 24 Compliant
- 5 Year Warranty
- Made in U.S.A.

LOW TEMP/HI HUMIDITY(-LT)

- Conformally coated Circuit Board is corrosion resistant from moisture
- Operates down to -4° F(-20° C)

Classrooms and larger spaces are conveniently controlled by the *CM-PDT-10 Series* Extended Range occupancy sensor. Even when classrooms are filled with shelving, hanging projects, or lab benches; the *CM-PDT-10* provides total coverage! When mounted at 9 feet this sensor provides line of sight PIR detection up to 28 feet in a circular pattern and combines overlapping Microphonic™ for detection around obstructions. When comparing small motion detection, the *CM-PDT-10* far out performs other "2,000 SF Dual Tech" sensors. Corner or wall mounting a WV-PDT Series sensor is also an effective solution for classrooms, however ceiling mounting is often the only option. The *CM-PDT-10* is also ideal in lower ceiling height applications. Multiple *CM-PDT-10s* may be used together or in combination with other low voltage sensors to customize coverage for large or irregularly shaped spaces.

SENSOR OPERATIONS

Sensors with Passive Dual Technology (PDT) first "See" motion using Passive Infrared (PIR) and then engage Microphonics™ to "Hear" sounds that indicate continued occupancy. This patented technology uses Automatic Gain Control (AGC) to dynamically self adapt a sensor to its environment by filtering out constant background noise and detecting only noises typical of human activity. When occupancy is detected, a DC output goes high and can drive up to 200 mA of connected load. The sensor is powered with 12 to 24 VAC/VDC and typically operates with a PP-20 or MP-20 Power Pack; enabling complete 20 Amp circuits to be controlled. An internal timer, factory set at 10 minutes, keeps the lights "On" during brief periods of no activity. This timer is selectable at 2.5 minute increments from 30 seconds to 20 minutes, and is reset every time occupancy is re-detected.

DAYLIGHTING CONTROL OPTIONS

For spaces with abundant natural light from windows or skylights, this series offers an On/Off Photocell (-P) option and an Automatic Dimming Control (-ADC) Photocell option. The -P option is ideal for public areas like vestibules, corridors, or restrooms; while the -ADC option is perfect for classrooms and private offices. As the daylight levels change in the room, both options insure that an adequate light level is maintained according to a programmable set-point value. The -P option provides two modes of operation; one simply inhibits the lights from turning on, while the other has full On/Off control of the lights. The -ADC option allows the sensor to control a dimmable ballast. It also provides a secondary dim time-out that enables the lights to go to a dim setting after one time-out and then turn fully off after a second time-out. For more detailed information on these daylighting control features, see the CM-PC-ADC Technical Data Sheet. **Note:** If both the -P and the -ADC options are selected the "Inhibit" mode of the -P option is not available.

INTERNAL LOW VOLTAGE RELAY OPTION (CM-PDT-10-R)

To enable a sensor to interface with a building management system, the -R option provides dry contact closure via a SPDT, 1 Amp, 40 Volt relay. The relay coil is energized and changes state when ALL connected sensors register "Unoccupied". When using multiple sensors, only one sensor per zone needs to have a relay. **Note:** Sensor must have power at all times for the relay to function .

CATALOG INFORMATION

MODEL #	DESCRIPTION	TEMPERATURE	OP. VOLTAGE	CURRENT
CM-PDT-10	Dual Technology Ceiling Mount Sensor	14° to 160° F	12 to 24 VAC/VDC	4 mA
Add suffix				
-R	SPDT Relay, 1 Amp			16 mA
-P	On/Off Photocell			4 mA
-RP	Relay & On/Off Photocell			16 mA
-ADC	Automatic Dimming Control Photocell			4 mA
-LT	Low Temp/High Humidity	-4° to 160° F		

T011-003-P

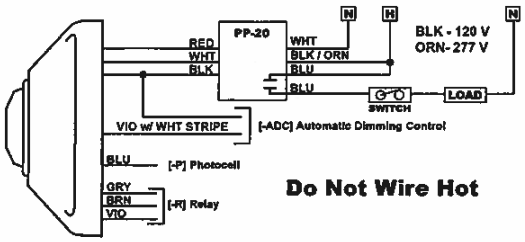
Programmable Edition **CM-PDT-10 SERIES**

WIRING INSTRUCTIONS

Wire lead connections are Class II, 18 to 22 AWG.

STANDARD CM-9

RED - 12 to 24 VAC/VDC
BLACK - Common
WHITE - Output (HI DC for Occupancy)



Do Not Wire Hot

RELAY OPTION (-R)

GRAY / BROWN - Connected during Occupied state
VIOLET / BROWN - Connected during Unoccupied state
Note: Relay is energized during Unoccupied state

PHOTOCELL OPTION (-P)

BLUE - Photocell output (High: Occupied & Low Light)
Use Blue wire from sensor in place of White wire. For multi-level control, use 2 Power Packs and connect White to primary load and Blue to daylight load.

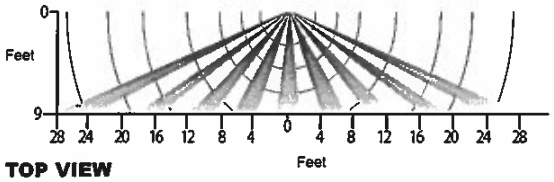
AUTOMATIC DIMMING CONTROL (-ADC)

VIOLET/WHITE striped - Connect to Violet wire from 0-10 VDC dimmable ballast. Also connect ballast Gray wire to sensor Black wire.

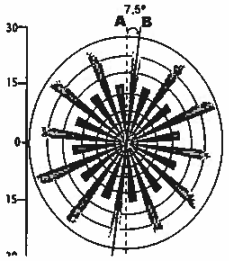
FIELD OF VIEW

The *CM-PDT-10* dome lens provides a maximum PIR viewing angle of 67° in a complete 360° conical pattern. In Classrooms, locate sensor and align mounting screws as shown to detect right at door threshold, without viewing outside the entrance. Standard round fixture boxes will provide the proper angle for maximum viewing towards the door in the corner of the room. For long narrow or smaller rooms, locate sensor along entrance wall. Avoid locating the sensor near HVAC air diffusers because the "noise" generated from air flow will decrease the sensitivity of the Microphonic™ sensor.

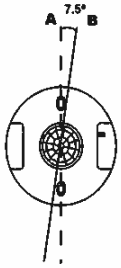
SIDE VIEW



TOP VIEW



Note: For maximum distance rotate the sensor clockwise so that the screw axis(A) is positioned 7.5° off the entrance axis(B).



1. Locate sensor 28 feet from entrance door. This would typically be 20 feet in both directions.
2. Rotate sensor so that mounting screws line up looking into corner of room.
3. Maximum beam distance will then line up with the door entrance at 28 feet.

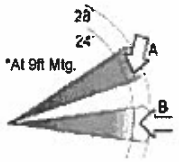
Location Guide	
Ceiling Height	Dist In and Over
8 Ft.	17 Ft.
9 Ft.	20 Ft.
10 Ft.	22 Ft.

MOUNTING CONSIDERATIONS

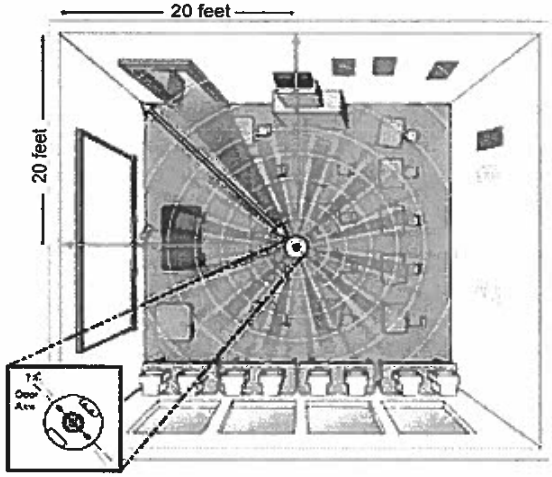
The *CM-PDT-10* is provided with 2 self tapping mounting screws. The sensor typically mounts directly to the ceiling tile, or to the metallic grid. However, if desired, the mounting holes are slotted to line up with a standard round, or rectangular box (screws not provided).

Note: The ceiling tile provides insulation from stray plenum noises. Only penetrate tile to allow for mounting screws and wires (3 small holes).

A: When walking across beam, detection will occur at approximately 28 feet.
B: When walking into beam, detection will occur at approximately 24 feet.



TYPICAL CLASSROOM 9' CEILING



WARRANTY: Sensor Switch, Inc. warrants these products to be free of defects in manufacture and workmanship for a period of sixty months. Sensor Switch, Inc., upon prompt notice of such defect will, at its option, provide a Returned Material Authorization number and a replacement product.
LIMITATIONS AND EXCLUSIONS: This Warranty is in full lieu of all other representation and expressed and implied warranties (including the implied warranties of merchantability and fitness for use) and under no circumstances shall Sensor Switch, Inc. be liable for any incidental or consequential property damages or losses.

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revised 06/13/2006

sensorswitch™

120/277 VOLT MINI POWER PACKS AND SLAVE PACKS

TECHNICAL DATA

TYPICAL APPLICATIONS

- Used with Low Voltage Sensors
- Multiple Sensors
- Multiple Loads

POWER PACK HIGHLIGHTS

- Dual Voltage Transformer
- Self-Contained Relay
- Powers up to 14 sensors

SPECIFICATIONS

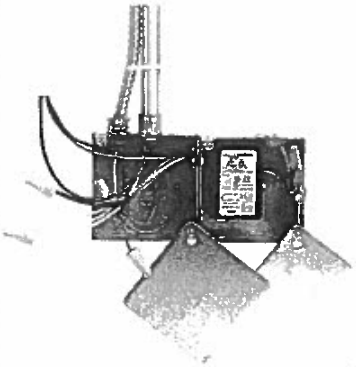
- Size:(1/2" inch chase nipple not inc.) MP-20 & MSP-20: 2 1/4" x 3" x 1 7/8"
- Mounting: 1/2" inch chase nipple
- Operating Voltage: 120, 240, or 277 VAC
- Each Relay: 20 Amps
- 1 HP Motor Load
- Output Voltage: 15 VDC, 150 mA
- Class II: 18 AWG, up to 2,000 ft.
- Plenum Rated
- Relative Humidity: 20 to 90% non-condensing
- Operating Temp: 14° to 160° F
- Storage Temp: -14° to 160° F
- UL and CUL Listed
- 5 Year Warranty
- Made in U.S.A.

LOW TEMP/HI HUMIDITY(-LT)

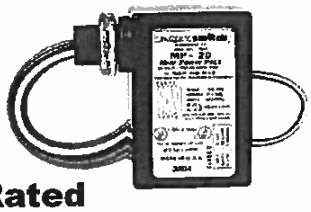
- Conformally Coated PCB
- Operates down to -40° F
- Corrosion resistant from moisture

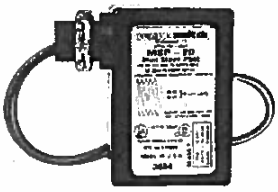
PLENUM CONSIDERATIONS

Most local codes allow for small plastic controls in Return Air Plenums; *Some Do Not!* To meet local code, the Power Pack can be mounted inside an adjacent (Deep) junction box as shown below.



MP-20
MSP-20





Plenum Rated

Mini Power Packs are the heart of the Low Voltage Sensor System. The *MP-20* transforms 120, 240 or 277 Volts to class II 15 VDC to power the remote sensors. Although Plenum Rated, the elongated mounting nipple allows for the *MP-20* to be mounted either directly thru a 1/2" inch knockout in a junction box, or to be located inside an adjacent box for specific local code requirements. Up to 14 sensors may be connected to one *MP-20*. Multi-circuit control can be handled by multiple *MP-20's* and Slave Packs (*MSP-20*) may be configured. *MP-20's* can be wired continuously hot (line side), or on the switch leg (load side) without nuisance delays upon turn "On".

MINI POWER PACK OPERATION

The Mini Power Pack consists of a transformer and a relay. The tranformer has a dual primary high voltage input, accepting 120, 240, or 277 VAC. The secondary voltage provides power to Sensor Switch low voltage heads. When the sensor head detects motion, they electronically signal the power pack to close the relay(s) connected to the lighting system.

LOW VOLTAGE OPERATION AND TEST

The Low Voltage Wires are color coded Red (15 VDC), Black (Common), and White (Occupancy Signal). With no sensors connected, touch the Red wire to the White. The lights should turn "On". Remove the connection and the lights should turn "Off". With the sensors connected, the Red and Black wires provide DC power to the remote sensors, and when there is occupancy detected, the White wire produces a 15 VDC signal from the sensor to the power pack initiating the lights to "On". Upon initial power up, the Sensors automatically send an "On" signal until the sensors have stabilized and "Timed Out".

SIZING OF THE SYSTEM - VARIOUS COMBINATIONS

Combining Power Packs provides for additional power to drive remote devices. Maximum numbers of remote sensors are shown below based on the Power Pack/ Slave Pack being used: *Maximum number of "Relays" is 30.*

	Sensors	Sensors with Relay
1 MP-20	14	8
1 MP-20 w/MSP-20	7	6
2 MP-20	28	16

Note 1: Only three relays may be controlled with one Mini Power Pack. If more than three circuits are required, multiple MiniPower Packs must be used.

Note 2: Only one "Sensor with Relay" is required in most cases. See Technical Data on Low Voltage Sensors and SPDT EMS Interface Option.

SYSTEMS CONSIDERATIONS

The local override switch may be upstream or downstream of an *MP-20*. However, if an *MSP-20* Auxiliary Relay controller is being used, the switch(es) should be downstream on the load side of the relay. If power is disconnected to the Power Pack all subsequent relays will open, turning off all of the loads. If wiring the local switches before the Power Pack and Slave Pack, use multiple *MP-20's*, one for each circuit. This will allow for one circuit to remain powered, keeping the system operational when the other is turned off. When controlling a dimming circuit, *MP-20* must be wired before dimmer, or *MSP-20* may be wired after dimmer.

CATALOG INFORMATION

MODEL#	DESCRIPTION	OUTPUT VOLTAGE	OUTPUT CURRENT
MP-20	Power Pack with 20 Amp Relays	15 to 24 VDC	70 to 110 mA
MSP-20	Slave Pack with 20 Amp Relays	N/A	40 mA(consumption)

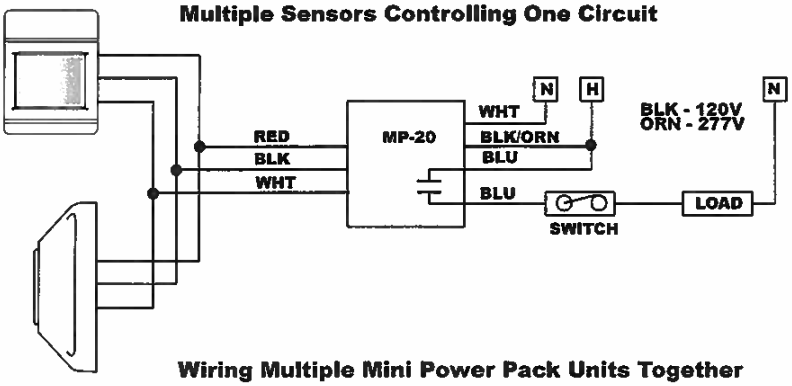
**Add suffix -LT for Low Temp/Hi Humidity

T053-001

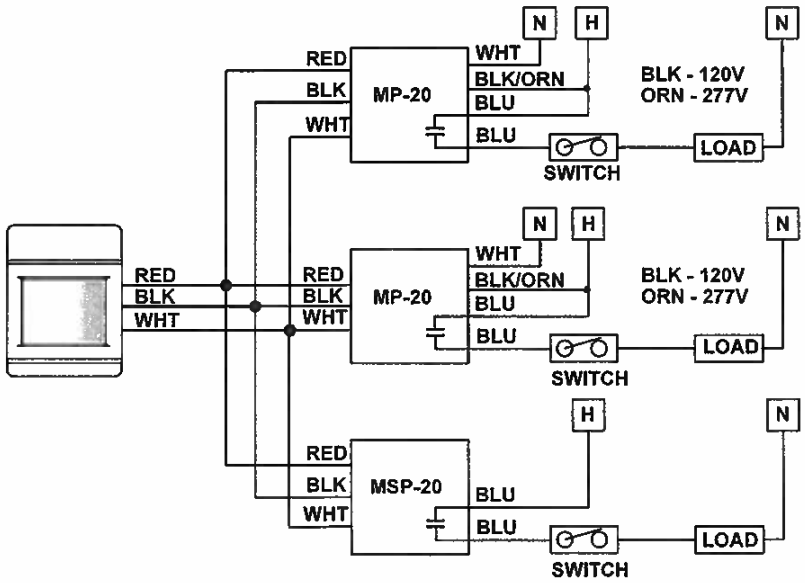
TYPICAL WIRING DIAGRAMS - DO NOT WIRE HOT

NOTE: The Power Pack must be connected to a single phase Hot and Neutral System. For 120 VAC, connect the Black wire to Hot, White wire to Neutral, and Cap off the Orange wire. For 240-277 VAC, connect the Orange to Hot, White to Neutral, and Cap off the Black wire. *Never connect both the Black and Orange wires!* Low Voltage wire can be 18 to 22 AWG; shielding is not necessary.

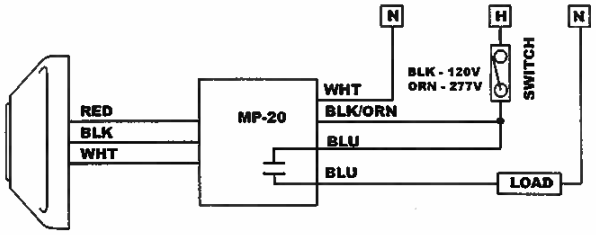
Multiple Sensors Controlling One Circuit



Wiring Multiple Mini Power Pack Units Together



One Sensor Controlling One Circuit



WARRANTY: Sensor Switch, Inc. warrants these products to be free of defects in manufacture and workmanship for a period of sixty months. Sensor Switch, Inc., upon prompt notice of such defect will, at its option, provide a Returned Material Authorization number and a replacement product.
LIMITATIONS AND EXCLUSIONS: This Warranty is in full lieu of all other representation and expressed and implied warranties (including the implied warranties of merchantability and fitness for use) and under no circumstances shall Sensor Switch, Inc. be liable for any incidental or consequential property damages or losses.

sensorswitch™
SENSOR SWITCH, INC.
900 Northrop Rd., Wallingford, CT 06492
(203) 265-2842 info@sensorswitch.com
www.sensorswitch.com

revised 7/8/2005

JOB NAME Ben Franklin Elementary School

COPIES	DRAWINGS OR CATALOG NUMBER	TYPE	MANUFACTURER
12	SRX6M30SBZM1	P03	INVUE
12	2-VXM400-MH-120-3SBZ-F-L-MA1050-BZ	P03-2	INVUE
12	SRX6M30SBZM2	P03-2	INVUE
12	2GC8-332A125-UNV-ER82-U	R01	METALUX
12	2GC8-332A125-120-ER82-LTC2-U	R01A	METALUX
12	2GC8-232A125-UNV-ER81-U	R02	METALUX
12	2GC8-232A125-120-ER81-LTC2-U	R02A	METALUX
12	2GC8-332A125-UNV-ER81-U	R03	METALUX
12	2GC8-332A125-120V-ER81-LTC2-U	R03A	METALUX
12	2EP3GX-332S36I-UNV-ER82-U	R04	METALUX
12	2GC8-432A125-UNV-ER82-G3-U	R05	METALUX
12	2GC8-3-U1-5/8A125-UNV-ER81-U	R16	METALUX
12	MHSE-ENGR21-M-400-120V-LL-F1-FL1-PC3	SO1	LUMARK
12	6DIP-1X2T8-SC48-08-1-ERS-DU-S26	SO4	NEORAY
12	6DIP-1X2T8-SC48-08-1-ERS-DU-NL-S26	SO4NL	NEORAY
12	6DIP-1X2T8-SC48-08-1-ERS-DU-GTD-S26	SO4A	NEORAY
12	6-DI-P-1X2-T8-SC-04-1-ERS-DU-S26	SO5	NEORAY
12	CX61R / WG10	W01	SURELITES
12	BC-232-UNV-ER81-U	WO3	METALUX
12	BC-232-120-ER81-LTC2-U	W03A	METALUX
12	MHWP-100H-120V-Q-LL-F1	W11	LUMARK

BEN FRANKLIN ELEMENTARY SCHOOL

TYPE CH01

METALUX®

DESCRIPTION

The DIM Series is an energy efficient family of industrials that feature premium performance and durability. The industrial series incorporates heavy duty, embossed, reflectors that precisely direct and effectively control light. The versatile DIM Series can be installed using various mounting methods and numerous options and accessories are available.

The DIM Series can be utilized in simple task and area lighting to the most demanding industrial applications.

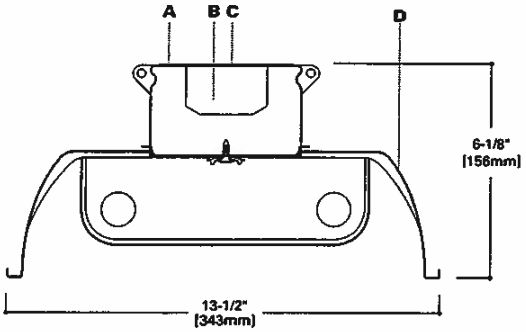
SPECIFICATION FEATURES

A ... Construction
Channel is code gauge prime cold rolled steel. Die formed with deep V-grooves for tong hanger. Die formed channel connector assures straight rows and continuity of ground through set screws. Lampholder mounting brackets are easily inserted with snap-in action.

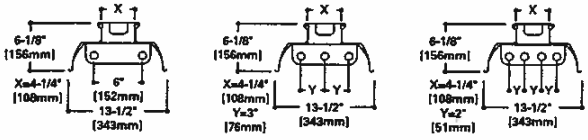
B ... Electrical*
Ballast are CBM/ETL Class "P" and positively secured by mounting bolts. Metal clad lampholders are spring loaded for turret safety. UL/CUL listed. Suitable for damp locations.

C ... Finish
Multistage iron phosphate pretreatment ensures maximum bonding and rust inhibitor. Lighting grade, baked white enamel finish.

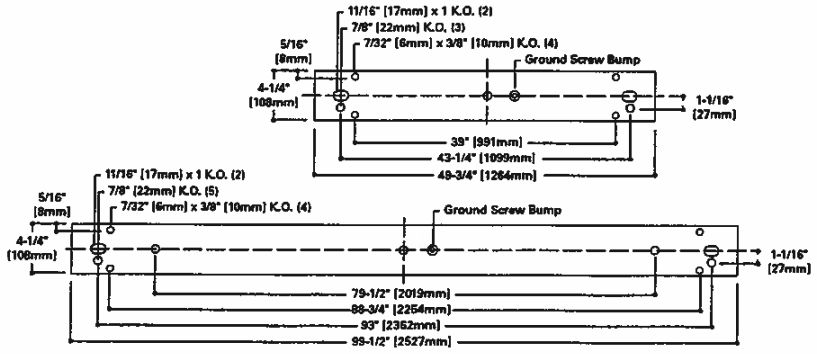
D ... Reflectors
Die formed prime steel, code gauge. Deep draw full width ribs formed with one press stroke. Side flanges lend strength with upward turn. Easily cleaned. Baked white enamel 13-1/2" width. Four foot sections. Reflectors secured by positive retaining screw. Reflector aligners provided. Standard with 20% uplight (DIM). Closed top reflector (DCIM). Optional industrial fixtures are available incorporating silver technology enhancements. (SilverLining)

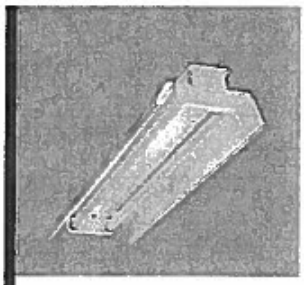


LAMP CONFIGURATIONS



MOUNTING DATA





DIM
240
232
340
332
440
432

4' OR 8' INDUSTRIAL
2, 3 OR 4 LAMP
Heavy Duty Industrial

ENERGY DATA

Input Watts:
EB Ballast & STD Lamps
240 (72)
232 (61)
340 (110)
332 (91)
440 (144)
432 (122)

ES Ballast & STD Lamps
240 (86)
232 (71)
340 (136)
332 (108)
440 (172)
432 (142)

Luminaire Efficacy Rating
LER = FI-78
Catalog Number: DIM-232

Yearly Cost of 1000 lumens, 3000 hrs at .08 KWH = $3.08

*Reference the lamp/ballast data in the Technical Section for specific lamp/ballast requirements.

LAMPS CONTAIN MERCURY. DISPOSE ACCORDING TO LOCAL, STATE OR FEDERAL LAWS

LINEAR DISCONNECT
Safe and convenient means of disconnecting power

NSF CERTIFIED

COOPER Lighting
www.cooperlighting.com

Specifications and Dimensions subject to change without notice.
Consult your representative for additional options and finishes.

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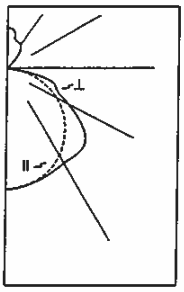
TYPE CH01
DIM

PHOTOMETRICS



DIM-232
Electronic Ballast
F32T8/35K Lamps
2850 Lumens
Spacing criterion: (II) 1.3 x mounting height, (⊥) 1.4 x mounting height
Efficiency 90.8%
Test Report: DIM232.IES
LER = FI-78
Yearly Cost of 1000 lumens, 3000 hrs at .08 KWH = $3.08

Coefficients of Utilization

Effective floor cavity reflectance					20%											
rc	80%				70%				50%			30%			10%			0%
rw	70	50	30	10	70	50	30	10	50	30	10	50	30	10	50	30	10	0
RCR																		
0	105	105	105	105	100	100	100	100	93	93	93	86	86	86	79	79	79	76
1	95	91	87	84	91	88	84	81	81	78	76	75	73	71	70	68	66	64
2	87	79	73	68	83	76	71	66	71	66	62	66	62	59	61	58	55	53
3	79	70	62	57	76	67	61	55	62	57	52	58	53	50	54	50	47	44
4	72	61	54	48	69	59	52	47	55	49	44	51	46	42	48	44	40	38
5	66	54	46	40	63	52	45	39	49	42	37	45	40	35	42	37	34	31
6	60	48	40	34	57	46	39	33	43	37	32	40	35	30	38	33	29	27
7	55	43	35	29	53	42	34	29	39	32	28	36	31	26	34	29	25	23
8	51	38	31	25	49	37	30	25	35	28	24	32	27	23	30	25	22	20
9	47	34	27	22	45	33	26	21	31	25	20	29	23	19	27	22	19	17
10	43	31	24	19	41	30	23	19	28	22	18	26	21	17	25	20	16	15

Zonal Lumen Summary

Zone	Lumens	%Lamp	%Fixture
0-30	1016	17.8	19.6
0-40	1703	29.9	32.9
0-60	3238	56.8	62.5
0-90	4330	76.0	83.7
90-180	846	14.8	16.3
0-180	5176	90.8	100.0

Candela

Angle	Along II	45°	Across ⊥
0	1278	1278	1278
10	1258	1264	1268
20	1195	1214	1228
30	1092	1133	1180
40	952	1039	1174
50	781	972	1075
60	582	817	724
70	367	472	553
80	157	251	138
90	15	30	21
100	31	65	50
110	96	18	38
120	169	45	20
130	240	140	64
140	304	244	173
150	358	286	286
160	398	369	311
170	424	426	420
180	434	434	434

ORDERING INFORMATION

SAMPLE NUMBER: DIM-232-120V-EB81-U

DIM | **N** | | **2** | **32** | **UNV** | | **ER81** | **AYC-CHAIN/SET** | **U**

- **DIM**: Tandem — Blank=4' Length, 8T=8' Length; Series — DIM=Apertured Reflector, DCIM=Closed Top Reflector
- **N**: Lamp Spacing — Blank=Standard Spacing, N=Narrow Spacing for 2 Lamp Only (10% uplight)
- (blank): Silver Reflector SS=Silver-Lining Reflector [3]
- **2**: Number of Lamps — 2, 3 or 4 Lamps (Not included)
- **32**: Wattage (Length) — 40=34/40WT12 (48"), 32=32WT8 (48")
- **UNV**: Voltage [1] — 120V=120 Volt, 277V=277 Volt, 347V=347 Volt, UNV=Universal Voltage 120-277 [2]
- (blank): Options — GL=Single Element Fuse, GM=Double Element Fuse, Emergency=EM Installed
- **ER81**: Ballast Type [1] — EB8_=T8 Electronic Instant Start. Total Harmonic Distortion < 10%; No. of Ballast 1, 2 or 3. EB8_/PLUS=T8 Electronic Instant Start. High Ballast Factor >1.13. Total Harmonic Distortion < 20%; No. of Ballast 1, 2 or 3. ER8_=T8 Electronic Program Rapid Start. Total Harmonic Distortion < 10%; No. of Ballast 1, 2 or 3. EB2_=T12 Electronic Rapid Start.; No. of Ballast 1 or 2
- **AYC-CHAIN/SET**: Options — RIF1=Radio Interference Suppressor, 6-3/18 SJT-C&P-515P=Cord & Plug (120V), 6-3/18 SJT-C&P-L715P=Cord & Plug (277V), PI/CPI=Plug-In Option, TILW=Tandem In-Line Wiring Option (Consult TILW Option Catalog Page), POR=Porcelain Finish, POX=Porlux Finish (See options & accessories)
- **U**: Packaging — U=Unit Pack, 48=4 Bulk

NOTES: [1]Products also available in non-US voltages and frequencies for international markets. [2]Not available when specifying emergencies, voltage must be specific. [3]Silver lining not available on fixtures with HO, VHO or PG.

Specifications & dimensions subject to change without notice. Consult your Cooper Lighting Representative for availability and ordering information.

ACCESSORIES (Order Separately)

A1B/Spacer-U=Spacer 1-1/2" to 2-1/2" from ceiling (Use 2 per fixture)
ATG-4=Tong Hanger (Use 2 per fixture)
SCF=Fixed Stem Set (Specify Length)
SCS=Swivel Stem Set (Specify Length)
SCA=Adjustable 48" Stem Set
AYC-Chain/Set-U =Chain Hanger Set (Use 1 set per fixture)
WG/DI-4FT-U=Wire Guard
WGG/DI-4FT-U=Wire Gym Guard
MECL-DI/RS-49-3/4-U=Metal Egg Crate Louver
MECL-DI/RS-99-1/2-U=Metal Egg Crate Louver
DI2=Long Connector
CEP=Closed End Plate
(Additional Accessories Available. See Options and Accessories Section).

SHIPPING INFORMATION

Catalog No.	Wt.
DIM-232	15 lbs.
8TDIM-232	30 lbs.
DIM-332	25 lbs.
DIM-432	25 lbs.

TYPE CH01A

COOPER LIGHTING - METALUX

DESCRIPTION

The DIM Series is an energy efficient family of industrials that feature premium performance and durability. The industrial series incorporates heavy duty, embossed, reflectors that precisely direct and effectively control light. The versatile DIM Series can be installed using various mounting methods and numerous options and accessories are available.

The DIM Series can be utilized in simple task and area lighting to the most demanding industrial applications.

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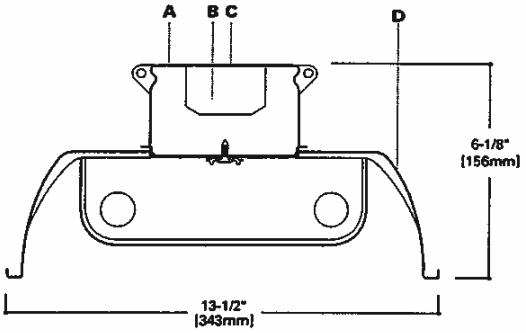
A ... Construction
Channel is code gauge prime cold rolled steel. Die formed with deep V-grooves for tong hanger. Die formed channel connector assures straight rows and continuity of ground through set screws. Lampholder mounting brackets are easily inserted with snap-in action.

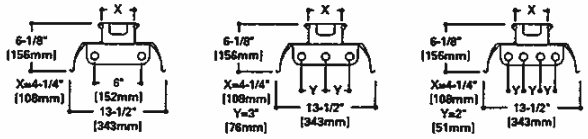
B ... Electrical*
Ballast are CBM/ETL Class "P" and positively secured by mounting bolts. Metal clad lampholders are spring loaded for turret safety. UL/CUL listed. Suitable for damp locations.

C ... Finish
Multistage iron phosphate pretreatment ensures maximum bonding and rust inhibitor. Lighting grade, baked white enamel finish.

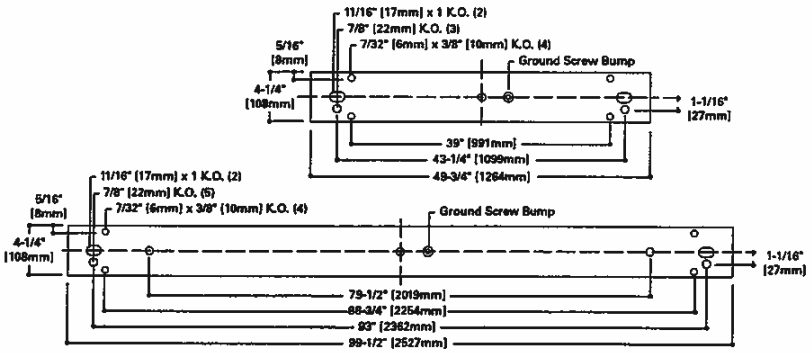
D ... Reflectors
Die formed prime steel, code gauge. Deep draw full width ribs formed with one press stroke. Side flanges lend strength with upward turn. Easily cleaned. Baked white enamel 13-1/2" width. Four foot sections. Reflectors secured by positive retaining screw. Reflector aligners provided. Standard with 20% uplight (DIM). Closed top reflector (DCIM). Optional industrial fixtures are available incorporating silver technology enhancements. (SilverLining)

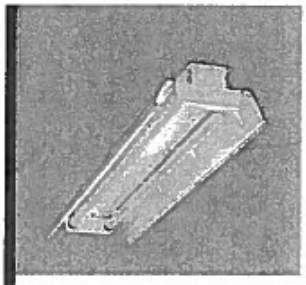


LAMP CONFIGURATIONS



MOUNTING DATA





DIM
240
232
340
332
440
432

4' OR 8' INDUSTRIAL
2, 3 OR 4 LAMP
Heavy Duty Industrial

ENERGY DATA

Input Watts:
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240 (72)
232 (61)
340 (110)
332 (91)
440 (144)
432 (122)

ES Ballast & STD Lamps
240 (86)
232 (71)
340 (136)
332 (108)
440 (172)
432 (142)

Luminaire Efficacy Rating
LER = FI-78
Catalog Number: DIM-232

Yearly Cost of 1000 lumens, 3000 hrs at .08 KWH = $3.08

*Reference the lamp/ballast data in the Technical Section for specific lamp/ballast requirements.

LAMPS CONTAIN MERCURY. DISPOSE ACCORDING TO LOCAL, STATE OR FEDERAL LAWS

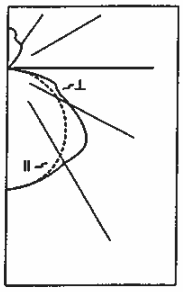
LINEAR DISCONNECT
Safe and convenient means of disconnecting power

Specifications and Dimensions subject to change without notice.
Consult your representative for additional options and finishes.

TYPE CH01A

DIM

PHOTOMETRICS



DIM-232
Electronic Ballast
F32T8/35K Lamps
2850 Lumens
Spacing criterion: (II) 1.3 x mounting height, (⊥) 1.4 x mounting height
Efficiency 90.8%
Test Report: DIM232.IES
LER = FI-78
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Effective floor cavity reflectance					20%															
rc	80%				70%				50%			30%			10%			0%		
rw	70	50	30	10	70	50	30	10	50	30	10	50	30	10	50	30	10	0		
RCR																				
0	105	105	105	105	100	100	100	100	93	93	93	86	86	86	79	79	79	76		
1	95	91	87	84	91	88	84	81	81	78	76	75	73	71	70	68	66	64		
2	87	79	73	68	83	76	71	66	71	66	62	66	62	59	61	58	55	53		
3	79	70	62	57	76	67	61	55	62	57	52	58	53	50	54	50	47	44		
4	72	61	54	48	69	59	52	47	55	49	44	51	46	42	48	44	40	38		
5	66	54	46	40	63	52	45	39	49	42	37	45	40	35	42	37	34	31		
6	60	48	40	34	57	46	39	33	43	37	32	40	35	30	38	33	29	27		
7	55	43	35	29	53	42	34	29	39	32	28	36	31	26	34	29	25	23		
8	51	38	31	25	49	37	30	25	35	28	24	32	27	23	30	25	22	20		
9	47	34	27	22	45	33	26	21	31	25	20	29	23	19	27	22	19	17		
10	43	31	24	19	41	30	23	19	28	22	18	26	21	17	25	20	16	15		

Zonal Lumen Summary

Zone	Lumens	%Lamp	%Fixture
0-30	1016	17.8	19.6
0-40	1703	29.9	32.9
0-60	3238	56.8	62.5
0-90	4330	76.0	83.7
90-180	846	14.8	16.3
0-180	5176	90.8	100.0

Candela

Angle	Along II	45°	Across ⊥
0	1278	1278	1278
10	1258	1264	1268
20	1195	1214	1228
30	1092	1133	1180
40	952	1039	1174
50	781	972	1075
60	582	817	724
70	367	472	553
80	157	251	138
90	15	30	21
100	31	65	50
110	96	18	38
120	169	45	20
130	240	140	64
140	304	244	173
150	358	286	286
160	398	369	311
170	424	426	420
180	434	434	434

ORDERING INFORMATION

SAMPLE NUMBER: DIM-232-120V-EB81-U

DIM | **N** | | **2** | **32** | **120** | | **ER81** | **LTC2-AYC-CHAIN/SET** | **U**

Tandem
Blank=4' Length
8T=8' Length

Series
DIM= Apertured Reflector
DCIM= Closed Top Reflector

Lamp Spacing
Blank=Standard Spacing
N=Narrow Spacing for 2 Lamp Only (10% uplight)

Silver Reflector
SS= Silver-Lining Reflector [3]

Number of Lamps
2 3 or 4 Lamps (Not included)

Wattage (Length)
40=34/40WT12 (48")
32=32WT8 (48")

Voltage [1]
120V=120 Volt
277V=277 Volt
347V=347 Volt
UNV=Universal Voltage 120-277 [2]

Options
GL=Single Element Fuse
GM=Double Element Fuse
Emergency=EM Installed

Ballast Type [1]
EB8_=T8 Electronic Instant Start. Total Harmonic Distortion < 10%
No. of Ballast 1, 2 or 3
EB8_/PLUS=T8 Electronic Instant Start. High Ballast Factor >1.13. Total Harmonic Distortion < 20%
No. of Ballast 1, 2 or 3
ER8_=T8 Electronic Program Rapid Start. Total Harmonic Distortion < 10%
No. of Ballast 1, 2 or 3
EB2_=T12 Electronic Rapid Start.
No. of Ballast 1 or 2

Options
RIF1=Radio Interference Suppressor
6-3/18 SJT-C&P-515P=Cord & Plug (120V)
6-3/18 SJT-C&P-L715P=Cord & Plug (277V)
PI/CPI=Plug-In Option
TILW=Tandem In-Line Wiring Option (Consult TILW Option Catalog Page)
POR=Porcelain Finish
POX=Porlux Finish
(See options & accessories)

Packaging
U=Unit Pack
4B=4 Bulk

NOTES: [1]Products also available in non-US voltages and frequencies for international markets. [2]Not available when specifying emergencies, voltage must be specific. [3]Silver lining not available on fixtures with HO, VHO or PG.

Specifications & dimensions subject to change without notice. Consult your Cooper Lighting Representative for availability and ordering information.

ACCESSORIES (Order Separately)

A1B/Spacer-U=Spacer 1-1/2" to 2-1/2" from ceiling (Use 2 per fixture)
ATG-4=Tong Hanger (Use 2 per fixture)
SCF=Fixed Stem Set (Specify Length)
SCS=Swivel Stem Set (Specify Length)
SCA=Adjustable 48" Stem Set
AYC-Chain/Set-U =Chain Hanger Set (Use 1 set per fixture)
WG/DI-4FT-U =Wire Guard
WGG/DI-4FT-U =Wire Gym Guard
MECL-DI/RS-49-3/4-U=Metal Egg Crate Louver
MECL-DI/RS-99-1/2-U=Metal Egg Crate Louver
DI2=Long Connector
CEP = Closed End Plate
(Additional Accessories Available. See Options and Accessories Section).

SHIPPING INFORMATION

Catalog No.	Wt.
DIM-232	15 lbs.
8TDIM-232	30 lbs.
DIM-332	25 lbs.
DIM-432	25 lbs.

TYPE CL01

COOPER LIGHTING - SURE-LITES®

DESCRIPTION

The CX Surface Mounted Die Cast Aluminum Exit combines the strength and durability of die casting with the bright, even illumination of LED lamp sources. Unlike competitive units that have a pronounced dot effect from protruding diodes, the CX LED offers unequalled uniform illumination and brightness.

SPECIFICATION FEATURES

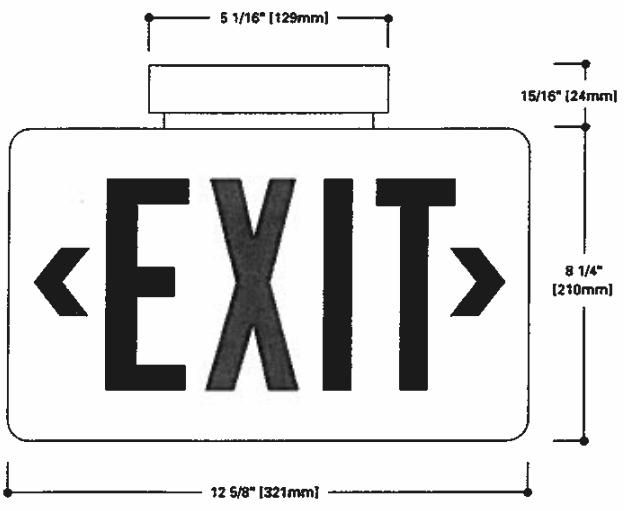
Electrical
- Dual Voltage Input 120/277 VAC, 60 Hz, isolation transformer
- Push-in AC power connectors facilitate installation

Housing Construction
- Die cast aluminum housing
- Die cast canopy included (for mounting convenience only no electrical components in canopy)
- Downlight not available on CX Series Exits with LED lamps
- Universal pattern knockouts on rear of single face housing for direct mounting to junction box
- Knockout provided on housing for surface attachment
- Exit can be universally mounted ceiling, wall or end
- Choice of three finishes
- NFPA 101 compliant knockout chevrons allow quick conversion to directional signs

Code Compliance
- Damp Location Listed
- UL 924 Listed
- CSA Certified
- Life Safety NFPA 101
- NEC/OSHA
- UL FTBR Listed When Specified With the "2C" Option
- Most State and Local Codes
- Suitable for Floor Proximity Installation

Warranty
- Exit: 5-year

Lamp Data
- AC LED: Long-life lamp provides uniform light output
- DC: LED DC lamps
- Red or green lettering only
- Extremely economical lamp operation



CX SERIES

CAST ALUMINUM EXITS
SURFACE MOUNT
AC ONLY
LED LAMPS
Exit Lighting

TOTALLY PREDICTABLE RELIABILITY

ORDERING INFORMATION

Sample Number: CX61GW

CX6	1	R			

Series
CX6= Due Cast Aluminum Exit, AC Only, LED

Face Options
1= Single
2= Double

Letter Colors
R= Red
G= Green

Housing Finish
= Brushed Aluminum Face w/Black Housing
W= White
B= Black

Options
2C= Two Circuit Operation, FTBR

Accessories [1]

Protective Housing
WG1G= Surface Mount Wire Guard (Wall Mount Only)
WG611= Ceiling or End Mount Wire Guard (Ceiling or End Mount Only)
VS1= Polycarbonate Vandal Shield (Wall Mount Only)
VS1WP= Weather Resistant Vandal Shield (Wall Mount Only)

Pendant Kit
CAX18PKBK= 18" Pendant Kit, Black
CAX18PKWH= 18" Pendant Kit, White
CAX18PKHTBK= 18" Hang True Pendant Kit, Black
CAX18PKHTWH= 18" Hang True Pendant Kit, White

Notes: 1 Order separately.

ENERGY DATA

LED Exits - Red
Input Power:
120V = 2.4W
277V = 2.5W

Input Current (Max.):
120V = .03A
277V = .02A

Power Factor:
120V = >.78
277V = >.73

T.H.D.:
120V = <33%
277V = <48%

LED Exits - Green
Input Power:
120V = 3.2W
277V = 3.0W

Input Current (Max.):
120V = .08A
277V = .03A

Power Factor:
120V = > .33
277V = > .35

T.H.D.:
120V = < 50%
277V = < 52%

COOPER Lighting
www.cooperlighting.com

Specifications and Dimensions subject to change without notice.
Consult your representative for additional options and finishes.

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TYPE CL01
CX SERIES

TECHNICAL DATA

Lamps

The CX Family is offered with energy saving LED lamps that offer extremely long-life with very low input wattage. LED lamps are available in either red or green. LED lamps have a long-life, eliminating the need for any lamp maintenance under normal conditions.

Housing

Die cast aluminum with Brushed Aluminum face and black trim standard. Optional finishes include White and Black. NFPA 101 compliant knockout chevrons for easy conversion to directional sign. Universal pattern knockouts are in the back of the single face housing for direct mounting to junction box.

Canopy

Die cast aluminum alloy canopy included for universal mounting. Canopy is included for mounting convenience only – no electrical components in canopy.

Electronics

Dual voltage input 120/277 VAC is standard. All electrical components are enclosed within the exit housing, preserving the low profile appearance.

"2C" Option

The standard CX Series Exits (Brushed finish only) "2C" Option enables the CX-LED Series Exits to operate per the requirements of UL 924 when connected simultaneously to both normal and emergency power circuits (two circuit operation–UL Category FTBR–Emergency Lighting and Power Equipment). The "2C" Option is a factory assembly change which alters the standard CX-LED Series Exit such that it complies with and is UL Listed under the FTBR Category. This option should only be used for exits which are intended to be connected simultaneously to normal and emergency power circuits. Both circuits have universal 120/277 VAC standard.

Warranty

All Sure-Lites' units are backed by a firm five (5) year warranty against defect in material and workmanship.

TYPE CL03

FAIL-SAFE®

DESCRIPTION

Fail-Safe's FPS Series combines features found only in the highest quality commercial lighting fixtures and adds the assurance of an unbreakable, tamper-resistant UV stabilized injection molded polycarbonate refractor. Its gasketed wraparound design prohibits the entrance of environmental contaminants. The result: no exposed metal in a U.L.. Listed for wet locations series of lighting fixtures.
The FPS Series is specifically designed for use in public access areas where vandalism may occur and for areas that must maintain a clean, well-lighted appearance. Ideal for schools, dormitories, hallways, locker rooms and restrooms.

SPECIFICATION FEATURES

A ... Lens
Nominal .156 UV stabilized, injection molded, polycarbonate refractor for high efficiency, low surface brightness and maximum strength. Designed to cover all metal and provide superior impact resistance.

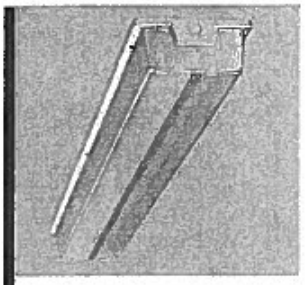
B ... Fasteners
Six captive, stainless steel tamperproof TORX®-head screws prevent unauthorized access.

C ... Lamps
(By Others)

D ... Backplate
One-piece 16 ga. prime CRS backplate with 16 ga. end-plates provides a firm mounting anchor.

E ... Ballast
Copper wound Class P, CBM/ETL ballast is standard.

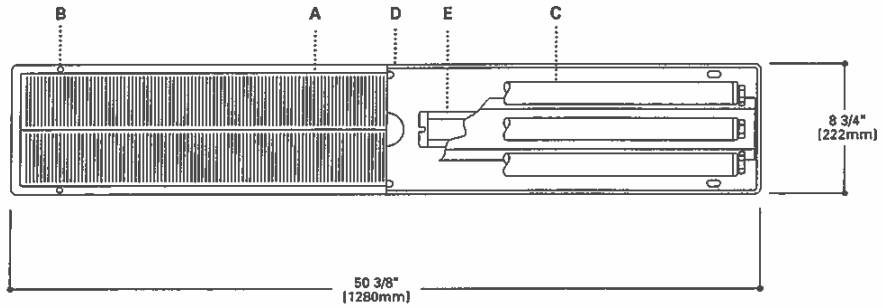
Labels
U.L. listed, C.S.A. certified, IP-65 Rated.



FPS

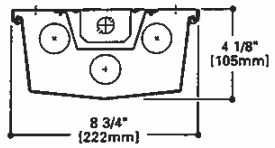
32W - 160W
Fluorescent

POLYCARBONATE HIGH ABUSE LUMINAIRE
Clear Prismatic or White

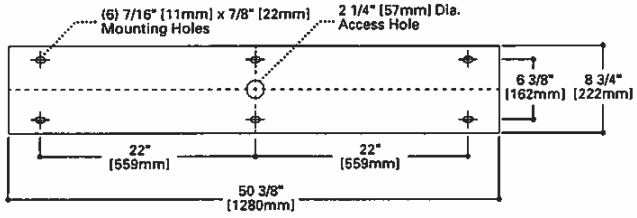


IP-65 Rated Ingress Protection (Complies with IEC - International Electrical Commission requirements)

SIDE DIMENSIONS



MOUNTING DIMENSIONS



ENERGY DATA

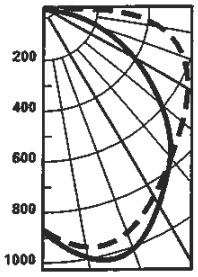
For Energy Management related technical data to support the performance of this fixture series, refer to the ordering information for input wattage.

TORX® is a registered trademark of Camcar Division of Textron Inc.

TYPE CL03
FPS

PHOTOMETRICS

Candlepower Distribution



Test No. 7416
FPS-332-277V
Lamp=(3) F32T8/SP35/RS
Lumens=2900
Spacing Criteria
⊥=1.3 ||=1.4
Efficiency=53.5%

– – – ⊥
——— ||

Candlepower

Deg.	⊥	||
0	886	886
5	917	921
15	967	1010
25	837	909
35	782	845
45	670	646
55	630	477
65	583	324
75	534	172
85	495	47
90	486	23

Zonal Lumen Summary

Zone	Lumens	%Lamp	%Luminaire
0-30	787	9.0	16.9
0-40	1332	15.3	28.6
0-60	2463	28.3	52.9
0-90	3897	44.8	83.8
90-180	756	8.7	16.2
0-180	4653	53.5	100.0

Coefficient of Utilization

rc	80%				70%			50%		30%		10%		0%
rw	70	50	30	10	50	30	10	50	10	50	10	50	10	0
RCR														
0	62	62	62	62	59	59	59	55	55	50	50	47	47	45
1	55	52	49	46	49	47	45	46	42	42	39	39	36	34
2	49	44	40	36	42	38	35	39	33	36	31	33	29	27
3	45	38	34	30	37	33	29	34	27	31	26	29	24	23
4	41	34	29	25	32	28	24	30	23	28	22	26	21	19
5	37	30	25	21	29	24	20	26	19	24	18	23	17	16
6	34	26	21	18	25	21	17	24	17	22	16	20	15	14
7	31	24	19	15	23	18	15	21	14	20	14	18	13	12
8	29	21	17	13	20	16	13	19	12	18	12	16	11	10
9	27	19	15	11	18	14	11	17	11	16	10	15	10	8
10	25	17	13	10	17	13	10	16	9	14	9	13	8	7

rc=Ceiling reflectance, rw=Wall reflectance, RCR=Room cavity ratio
CU Data Based on 20% Effective Floor Cavity Reflectance.

ORDERING INFORMATION

SAMPLE NUMBER: FPS-240-120-LE3-GLR

Product Family	Lamp Type	Voltage[2]	Ballast[2]	Options[1]	Accessories (order separately)
FPS	**232**	**UNV**	**ER81**		
FPS=High Abuse Polycarbonate Surface Luminaire	T8 Fluorescent 132=(1) 32W Lamp 232=(2) 32W Lamps 332=(3) 32W Lamps T12 Fluorescent 140=(1) 40W Lamp 240=(2) 40W Lamps 340=(3) 40W Lamps Biaxial Fluorescent 240BX=(2) 40W Lamps 440BX=(4) 40W Lamps	120=120V 277=277V 347=347V **UNV=120-277**	LE3=Energy Saving Ballast for use with T12 Lamp LEOC8=Energy Saving Ballast for use with T8 Lamp Electronic Ballast [1] EB81=(1) Ballast for use with T8 Lamp EB82=(2) Ballasts for use with T8 Lamp EB21=(1) Ballast for use with T12 Lamp EB22=(2) Ballasts for use with T12 Lamp EBX1=(1) Ballast for use with Biaxial Lamp EBX2=(2) Ballasts for use with Biaxial Lamp	ABP=Aluminum Back Plate EBP=Emergency Battery Pack FNL=Fluorescent Night Light (Lamp by others) FNL13=Fluorescent Night Light (13W lamp. Lamp by others.) GLR=Fuse and Holder OPL=Opal Diffuser RIF=Radio Interference Filter	2592=Corner Mounting Adapter 2594=Side Conduit Mounting Box 2595=Pendant Mounting Plate 7710=Continuous Row Connector Kit (wet location) VRSD=TORX®-Head Vandal Resistant Screwdriver VRSB=VR Screwdriver Bit for all Lens Screws

Notes:
For additional options consult Cooper Lighting Representative.
Specifications and Dimensions subject to change without notice.
[1] For specific electronic ballast, specify brand and catalog number.
[2] Products also available in non-US voltages and 50Hz for international markets. Consult your Cooper Lighting Representative for availability and ordering information.

ER81=(1)T8 Electronic Program Rapid Start. THD is less than 10%.

TYPE CL03A

FAIL-SAFE®

DESCRIPTION

Fail-Safe's FPS Series combines features found only in the highest quality commercial lighting fixtures and adds the assurance of an unbreakable, tamper-resistant UV stabilized injection molded polycarbonate refractor. Its gasketed wraparound design prohibits the entrance of environmental contaminants. The result: no exposed metal in a U.L.. Listed for wet locations series of lighting fixtures.
The FPS Series is specifically designed for use in public access areas where vandalism may occur and for areas that must maintain a clean, well-lighted appearance. Ideal for schools, dormitories, hallways, locker rooms and restrooms.

SPECIFICATION FEATURES

A ... Lens
Nominal .156 UV stabilized, injection molded, polycarbonate refractor for high efficiency, low surface brightness and maximum strength. Designed to cover all metal and provide superior impact resistance.

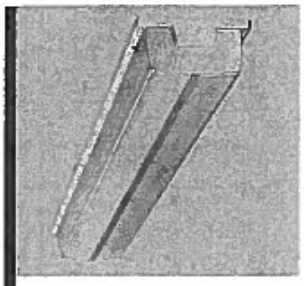
B ... Fasteners
Six captive, stainless steel tamperproof TORX®-head screws prevent unauthorized access.

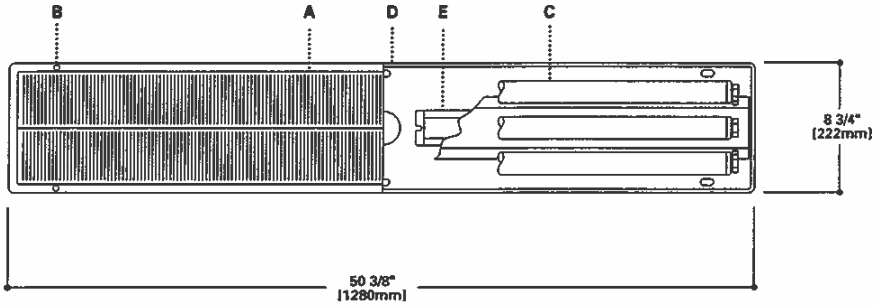
C ... Lamps
(By Others)

D ... Backplate
One-piece 16 ga. prime CRS backplate with 16 ga. end-plates provides a firm mounting anchor.

E ... Ballast
Copper wound Class P, CBM/ETL ballast is standard.

Labels
U.L. listed, C.S.A. certified, IP-65 Rated.





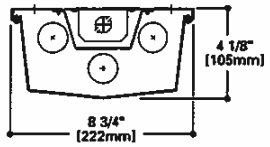
FPS

32W - 160W
Fluorescent

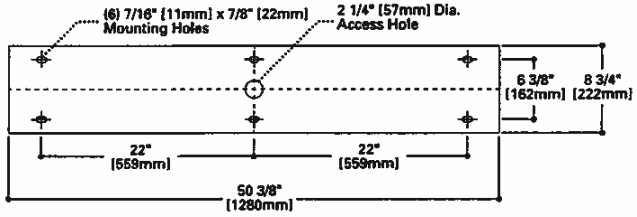
POLYCARBONATE
HIGH ABUSE LUMINAIRE
Clear Prismatic or White

IP-65 Rated
Ingress Protection
(Complies with IEC - International Electrical Commission requirements)

SIDE DIMENSIONS



MOUNTING DIMENSIONS



ENERGY DATA

For Energy Management related technical data to support the performance of this fixture series, refer to the ordering information for input wattage.

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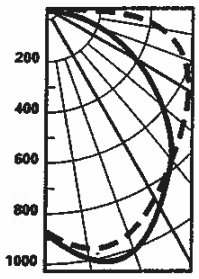
TYPE CL03A
FPS

PHOTOMETRICS

Candlepower Distribution



Test No. 7416
FPS-332-277V
Lamp=(3) F32T8/SP35/RS
Lumens=2900
Spacing Criteria
⊥=1.3 II=1.4
Efficiency=53.5%

– – – ⊥
——— II

Candlepower

Deg.	⊥	II
0	886	886
5	917	921
15	967	1010
25	837	909
35	782	845
45	670	646
55	630	477
65	583	324
75	534	172
85	496	47
90	486	23

Zonal Lumen Summary

Zone	Lumens	%Lamp	%Luminaire
0-30	787	9.0	16.9
0-40	1332	15.3	28.6
0-60	2463	28.3	52.9
0-90	3897	44.8	83.8
90-180	756	8.7	16.2
0-180	4653	53.5	100.0

Coefficient of Utilization

rc	80%				70%			50%		30%		10%		0%
rw	70	50	30	10	50	30	10	50	10	50	10	50	10	0
RCR														
0	62	62	62	62	59	59	59	55	55	50	50	47	47	45
1	55	52	49	46	49	47	45	46	42	42	39	39	36	34
2	49	44	40	36	42	38	35	39	33	36	31	33	29	27
3	45	38	34	30	37	33	29	34	27	31	26	29	24	23
4	41	34	29	25	32	28	24	30	23	28	22	26	21	19
5	37	30	25	21	29	24	20	26	19	24	18	23	17	16
6	34	26	21	18	25	21	17	24	17	22	16	20	15	14
7	31	24	19	15	23	18	15	21	14	20	14	18	13	12
8	29	21	17	13	20	16	13	19	12	18	12	16	11	10
9	27	19	15	11	18	14	11	17	11	16	10	15	10	8
10	25	17	13	10	17	13	10	16	9	14	9	13	8	7

rc=Ceiling reflectance, rw=Wall reflectance, RCR=Room cavity ratio
CU Data Based on 20% Effective Floor Cavity Reflectance.

ORDERING INFORMATION

SAMPLE NUMBER: FPS-240-120-LE3-GLR

Product Family	Lamp Type	Voltage[2]	Ballast[2]	Options[1]	Accessories (order separately)
FPS	**232**	**120**	**ER81**	**LTC2**	
FPS=High Abuse Polycarbonate Surface Luminaire	T8 Fluorescent 132=(1) 32W Lamp 232=(2) 32W Lamps 332=(3) 32W Lamps T12 Fluorescent 140=(1) 40W Lamp 240=(2) 40W Lamps 340=(3) 40W Lamps Biaxial Fluorescent 240BX=(2) 40W Lamps 440BX=(4) 40W Lamps	120=120V 277=277V 347=347V	LE3=Energy Saving Ballast for use with T12 Lamp LEOC8=Energy Saving Ballast for use with T8 Lamp Electronic Ballast [1] EB81=(1) Ballast for use with T8 Lamp EB82=(2) Ballasts for use with T8 Lamp EB21=(1) Ballast for use with T12 Lamp EB22=(2) Ballasts for use with T12 Lamp EBX1=(1) Ballast for use with Biaxial Lamp EBX2=(2) Ballasts for use with Biaxial Lamp	ABP=Aluminum Back Plate EBP=Emergency Battery Pack FNL=Fluorescent Night Light (Lamp by others) FNL13=Fluorescent Night Light (13W lamp, Lamp by others.) GLR=Fuse and Holder OPL=Opal Diffuser RIF=Radio Interference Filter	2592=Corner Mounting Adapter 2594=Side Conduit Mounting Box 2595=Pendant Mounting Plate 7710=Continuous Row Connector Kit (wet location) VRSD=TORX®-Head Vandal Resistant Screwdriver VRSB=VR Screwdriver Bit for all Lens Screws

Notes:
For additional options consult Cooper Lighting Representative.
Specifications and Dimensions subject to change without notice.
[1] For specific electronic ballast, specify brand and catalog number.
[2] Products also available in non-US voltages and 50Hz for international markets. Consult your Cooper Lighting Representative for availability and ordering information.

ER81=(1)T8 Electronic Program Rapid Start. THD is less than 10%.

TYPE GR01
INVUE®

DESCRIPTION

VISION FLOOD'S cylindrical form blends effortlessly to architectural and landscape environments. Available in wattages up to 1000 watt Metal Halide and in two (2) housing sizes, VISION FLOOD offers properly scaled solutions for any floodlighting application.

SPECIFICATION FEATURES

A ... Housing
One-piece die-cast aluminum housing maintains a nominal .125" thickness to endure the toughest environments while maintaining precise tolerance control.

B ... Door
Die-cast aluminum door maintains a nominal .125" thickness and features concealed hinging to the housing. Door is secured with four (4) tamper resistant recessed stainless steel allen head fasteners. Door frame features an integral accessory channel for the mounting of optional light control accessories. Doorframe seals to housing with a continuous extruded silicone gasket. Lens is impact resistant .180" thick tempered clear flat glass, sealed to the door with a one-piece silicone gasket.

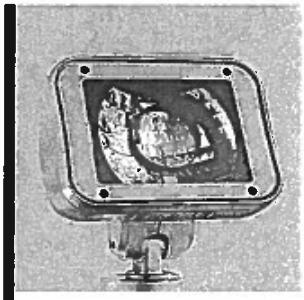
C ... Optical Assembly
Choice of six (6) high efficiency optical systems constructed of premium 95% reflective anodized aluminum sheet, or bright specular anodized polished spun aluminum. Available distributions include Narrow Spot, Narrow Flood, Medium Flood, Wide Flood, Horizontal Spot, and Vertical Flood. All reflector modules feature toolless removal, quick disconnect wire connections, and are field interchangeable. Small housing (VFS) optics feature medium-base lampholders.

D ... Knuckle
Heavy-duty die-cast aluminum knuckle utilizes a taper-lock adjustment mechanism for both solid engagement and infinite aiming adjustment. Knuckle adjustment is made via one (1) captive stainless steel allen head fastener consistent with doorframe fasteners.

D ... Knuckle (Cont'd.)
Tested to sustain 3G of vibration without loosing aiming position. VFS knuckle features a 3/4" NPT nipple on bottom surface for rigid attachment to available mounting accessories. Optional slipfitter mount available for VFS.

E ... Electrical Components
High Power Factor (HPF) ballast components are strategically located and heat sunk to the housing for cooler operation and longer life. The VFS housing is rated for 40 degrees C (104 degrees F) ambient environments.

F ... Finish
Housing and arm finished in a 5 stage premium TGIC polyester powder coat paint, 2.5 mil nominal thickness for superior protection against fade and wear. Standard colors include black, bronze, grey, white, dark platinum, and graphite metallic. RAL and custom color matches available. Consult your INVUE Lighting Systems Representative for more information.



VFS
VISION
FLOOD
SMALL

50-175W
Metal Halide
High Pressure Sodium

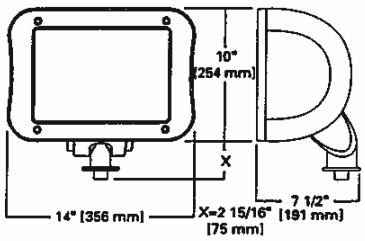
ARCHITECTURAL
FLOOD LUMINAIRE

VISION series

Wattage Table

	VFS
Metal Halide	50, 70, 100, 175W
High Pressure Sodium	50, 70, 100, 150W

DIMENSIONS



Certifications

IP65 Rated	U.L. 1598 Listed	3G Vibration Tested
CSA Listed	40°C Ambient	ISO 9001

EPA (effected projected area)
1.19

SHIPPING DATA (approx.)
Net Weight (lbs.): 37

Specifications and Dimensions subject to change without notice.
Consult your representative for additional options and finishes.

TYPE GR01
VFS VISION FLOOD SMALL

ORDERING INFORMATION

Sample Number: VFS-K-150-MH-120-NF-WH

VFS	K	70	MH	120	WF	BZ	F-L	SM-BZ

Product Family
VFS= Vision Flood Small

Mounting Type
K= Knuckle

Lamp Wattage [1]
50= 50W
70= 70W
100= 100W
150= 150W
175= 175W

Lamp Type
MH= Metal Halide
HPS= High Pressure Sodium

Voltage [2]
120= 120V
208= 208V
240= 240V
277= 277V
347= 347V
480= 480V
DT= Dual-Tap wired 277V[3]
MT= Multi-Tap wired 277V[4]
TT= Triple-Tap wired 347V[5]

Optical System
NS= Narrow Spot
NF= Narrow Flood
MF= Medium Flood
WF= Wide Flood
VF= Vertical Flood
HS= Horizontal Spot

Color [6]
BK= Black
AP= Grey
BZ= Bronze
WH= White
DP= Dark Platinum
GM= Graphite Metallic
VR= Verde Green

Options [7]
F= Single Fuse (120, 277 or 347V) Specify Voltage
FF= Double Fuse (208, 240 or 480V) Specify Voltage
PC= Button Type Photocontrol (Specify Voltage)
L= Lamp Included

Accessories [8]
JB-XX= Architectural J-Box with two 3/4" NPT Entries
SM-XX= Stanchion Mount
ST-XX= Stanchion Mount Tenon
WM-XX= Wall Mount
WMA-XX= Wall Mount Arm
WMT-XX= Wall Mount Arm Tenon Mount
TMA-XX= Twin Mount Arm - EPA 0.35
TMT-XX= Twin Mount Arm Tenon Mount - EPA 0.42
SMT-XX= Surface Mount Tenon
SF-XX= Slipfitter
PM1-XX= Post Mount Extension Single - EPA 0.12
PM2-XX= Post Mount Extension Double - EPA 0.12
VFS-CFR-XX= Color Filter Adapter with Red Gel
VFS-CFB-XX= Color Filter Adapter with Bright Blue Gel
VFS-CFG-XX= Color Filter Adapter with Deep Green Gel
VFS-CFO-XX= Color Filter Adapter with Warm Orange Gel
VFS-BD-XX= Barn Doors - EPA 1.01
VFS-TV-XX= Top Visor - EPA 0.6
VFS-VS= Vandal Shield
VFS-GL1-XX= External Grid Louver (NS and NF Optics Only)
VFS-GL2-XX= External Grid Louver (MF, WF, VF and HS optics only)

Notes:
1 All HID lamps are medium-base.
2 Products also available in non-US voltages and 50Hz for international markets. Consult factory for availability and ordering information.
3 Dual-tap is 120/277V wired 277V.
4 Multi-tap is 120/208/240/277V wired 277V.
5 Triple-tap is 120/277/347V wired 347V.
6 Custom and RAL color matching available upon request. Consult your INVUE Lighting Systems Representative for further information.
7 Add as suffix in the order shown.
8 Order separately, replace XX with color suffix.

TYPES CH01A, CL03A, R01A, R02A, R03A, W03A
COOPER LIGHTING - SURE-LITES®

DESCRIPTION

In the event of AC power loss, the Sure-Lites LTC2, Load Transfer Circuit, automatically switches normal light fixtures to approved emergency lights. The LTC2, in conjunction with an auxiliary emergency power generator or inverter, will provide emergency power to lighting fixtures regardless of the room switch position. The LTC2 will operate up to a maximum 10A load. The LTC2 is UL924 listed for field retrofit installation.

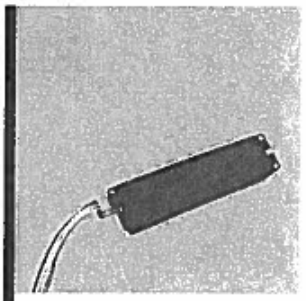
SPECIFICATION FEATURES

Electronic
- 120/277VAC, 60 Hz
- Operates incandescent, fluorescent, HID and other loads. 10 Amps. max.

Code Compliance
- UL924 Listed, Dry Locations
- UL Listed for Retrofit/Field Installation
- Life Safety NFPA 101
- NEC/OSHA

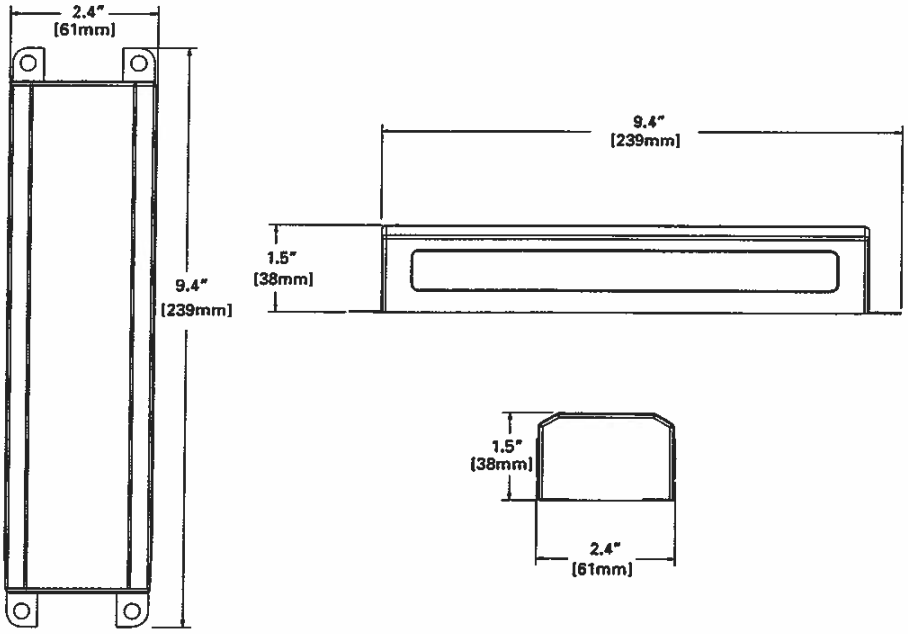
Construction
- Matte black painted steel housing
- Sized to fit inside ballast channel

Features
- Can be installed inside or on top of fixture (for top mount use Sure-Lites FBP1WBC)
- Easy-to-follow instructions make installation quick and simple
- May be used with switched fixtures
- Compatible with many different lamp types - consult your Cooper Lighting Representative regarding specific applications
- Compatible with many ballast types including standard, rapid start, slimline, instant start, energy saving, dimming, and electronic AC ballasts - consult your Cooper Lighting Representative regarding specific applications



LTC2
SERIES

LOAD TRANSFER CIRCUIT
Emergency Lighting



ORDERING INFORMATION

SAMPLE NUMBER: LTC2

LTC2	Voltage
Family LTC2=Load Transfer Circuit	Blank=120/277VAC

Specifications and Dimensions subject to change without notice.
Consult your representative for additional options and finishes.

TECHNICAL DATA

Application

The LTC2, load transfer circuit, operates in conjunction with an auxiliary power generator upon normal AC power loss. The LTC2 switches the circuit and the fixtures to emergency lighting regardless of the wall switch position. The LTC2 provides flexibility for emergency lighting by not limiting it to those fixtures on the night light circuit only. The LTC2 is recommended for application in classrooms, office spaces, auditoriums, and any additional applications utilizing an auxiliary power generator.

Operation

The LTC2 detects normal utility power loss. The LTC2's internal relay switching circuit switches the AC ballast input power to the auxiliary generator. The auxiliary generator or inverter AC source powers lighting fixtures on the circuit producing emergency lighting. Upon restoration of normal lighting power, the LTC2 switches back to "Utility Power" mode.

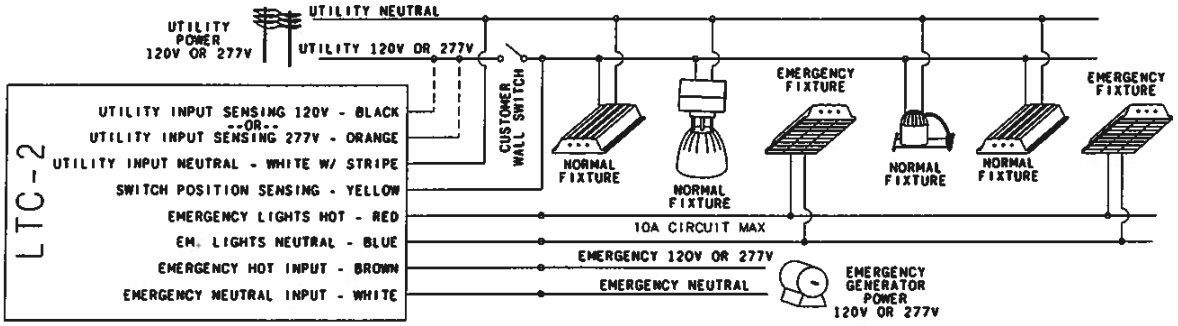
Electric Switching

The switching circuit is designed to detect voltage irregularities and automatically switches lamp(s) into emergency operation. Upon restoration of the AC current, the lamp(s) will switch back to AC operation.

Warranty

All Sure-Lites products are backed by a firm one year warranty against defects in material and workmanship.

APPLICATION



Emergency Circuit Diagram

Switched fixtures and emergency fixtures are controlled by switch in normal mode. Emergency fixtures only are on in emergency mode.

TYPE P02
INVUE®

DESCRIPTION

The classic lines and sophisticated construction of the Vision Site luminaire makes it an ideal complement to site design. The combination of smooth contours and sharp rear reveals allow the fixture to change character from different viewing angles while providing excellent low-glare photometrics. U.L. listed and CSA certified for wet locations.

SPECIFICATION FEATURES

A ... Housing
One-piece, die-cast aluminum housing maintains a nominal 0.125" wall thickness. Integral reveal channels along top surface of housing promote heat extraction and prolonged electrical component life. Solid cast wall separates optical chamber from electrical area.

B ... Electrical Tray
Ballast and related electrical componentry are mounted to a reinforced one piece galvanized steel tray with integral handle. For ease of maintenance, tray hinges open via toolless release of one spring loaded latch. Electrical quick disconnects allow tray to be completely removed from housing providing ample hand and tool room for attachment of fixture during installation, and a safer servicing environment. Optional tray mounted fuse connections offer a distinct and easy to maintain alternative to common inline fuse connections.

C ... Door
One-piece die-cast aluminum door frame. Door frame opens via release of two flush mounted toolless latches. Tempered 1/8" thick clear glass lens seals to door with a weather-tight continuous gasket. Optical chamber is sealed against entry of dirt and moisture by a continuous door mounted gasket which firmly compresses against optical enclosure walls.

D ... Lens
Impact resistant 1/8" thick tempered clear flat glass.

E ... Optical Systems
Choice of five (5) efficiency segmented optical systems constructed of premium 95% reflective anodized aluminum sheet. Optical segments are rigidly mounted inside a thick gauge aluminum housing for superior protection. All segment faces are clean of rivet heads, tabs, or other means of attachment which may cause streaking in the light distribution. Optional high efficiency hydroformed reflectors available in VXM housing only in four (4) distributions patterns. All reflector modules feature toolless removal, quick disconnect wiring plugs, and are field rotatable in 90 degree increments. HID lamp sources in medium housing (VXM) optics feature mogul-base lampholders.

F ... Arm
One-piece extruded rectangular arm available in standard 6" and 10" lengths. Internal bolt guides allow easy positioning of fixture during installation to pole or wall surface.

G ... Structural Mount
Die-cast aluminum cleat factory mounted to luminaire and finished in luminaire color. Stainless steel structural rod measures 1/2" in diameter and is provided in luminaire finish color or optional natural finish. Product works in conjunction with accessory 10" arms. INVUE poles provided pre-drilled for suspension mount option. See INVUE pole brochure for a complete selection of matching poles.

H ... Finish
Housing and arm finished in a 5 stage premium TGIC polyester powder coat paint, 2.5 mil nominal thickness for superior protection against fade and wear. Standard colors include black, bronze, grey, white, dark platinum, and graphite metallic. RAL and custom color matches available. Consult your INVUE Lighting Systems Representative for more information.

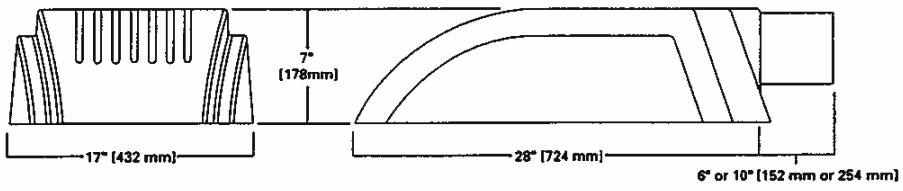
VXM
VISION SITE MEDIUM

85-400W
Metal Halide
Pulse Start Metal Halide
High Pressure Sodium
Compact Fluorescent
Electrodeless Fluorescent

ARCHITECTURAL AREA LUMINAIRE

DARK SKY COMPLIANT FCO Full Cutoff

DIMENSIONS



Wattage Table

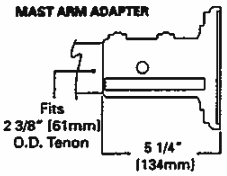
	VXM
Metal Halide	175, 250, 400W
Pulse Start Metal Halide	250, 320, 350, 400W
High Pressure Sodium	150, 250, 400W
Compact Fluorescent	(2) 57, (2) 70W
Electrodeless Fluorescent	85W

Certifications

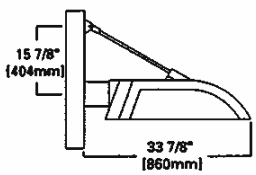
IP54 Rated	U.L. 1598 Listed	3G Vibration Tested	FCO Full Cutoff
CSA Listed	40°C Ambient	ISO 9001	

MOUNTING OPTIONS

MAST ARM ADAPTER



STRUCTURAL MOUNT



EPA: (effected projected area)
Single: 1.6
Single Structural: 1.82

SHIPPING DATA (approx.)
Net Weight (lbs.): 51
Volume (cu. ft): 3.18

COOPER Lighting
www.cooperlighting.com

Specifications and Dimensions subject to change without notice.
Consult your representative for additional options and finishes.

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TYPE P02

VXM VISION SITE MEDIUM

ORDERING INFORMATION

Sample Number: VXM-400-MH-MT-3S-BK-PRCPS-L

VXM	400	MH	120	2S	BZ		F-L	MA1050-BZ

Product Family [1]
VXM= Vision Site Medium

Lamp Wattage
HID [2]
150= 150W
175= 175W
250= 250W
320= 320W[3]
350= 350W[3]
400= 400W[4]
Compact Fluorescent
114= (2) 57W[5]
140= (2) 70W[5]
Electrodeless Fluorescent
85= 85W[6]

Lamp Type
MH= Metal Halide
MP= Pulse Start Metal Halide
HPS= High Pressure Sodium
CF= Compact Fluorescent [7]
QL= Electrodeless Fluorescent

Voltage [8]
120= 120V
208= 208V
240= 240V
277= 277V
347= 347V
480= 480V
DT= Dual-Tap wired[9] 277V
MT= Multi-Tap wired[10] 277V
TT= Triple-Tap wired[11] 347V
UNV= 120-277V Universal Electronic Ballast

Optical System
2S= Type II
3S= Type III
4S= Type IV
5S= Type V
SL= Forward Throw w/ Spill Light Eliminator
2F= Design 20 Formed
3F= Design 30 Formed
4F= Design 40 Formed
5F= Design 50 Formed

Color [12]
BK= Black
AP= Grey
BZ= Bronze
WH= White
DP= Dark Platinum
GM= Graphite Metallic

Structural Options [1, 13]
Pole Mount
PRCPS= Strut Rod and Clevis Set for Square Poles (Painted to match fixture, does not include arm) [14]
PRCSS= Stainless Steel Strut Rod and Clevis Set for Square Poles (Clevis' painted to match fixture, does not include arm) [14]
PRCPR= Strut Rod and Clevis Set for Round Poles (Painted to match fixture, does not include arm) [15]
PRCSR= Stainless Steel Strut Rod and Clevis Set for Round Poles (Clevis' painted to match fixture, does not include arm) [15]
Wall Mount
WRCP= Strut Rod and Clevis Set (Painted to match fixture, does not include arm) [16]
WRCS= Stainless Steel Strut Rod and Clevis Set (Clevis' painted to match fixture, does not include arm) [16]

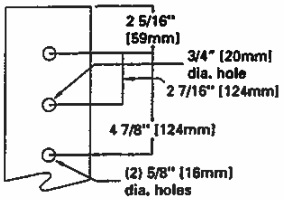
Options [13]
F= Single Fuse (120, 277 or 347V) Specify Voltage
FF= Double Fuse (208, 240 or 480V) Specify Voltage
Q= Quartz Restrike[17]
EM= Quartz Restrike w/ Time Delay (Also Strikes at Cold Start) [17]
EM/SC= Quartz Emergency Separate Circuit [17]
R= NEMA Twistlock Photocell Receptacle
DS= Dual Fluorescent Switching Control [18]
HS= House Side Shield [19]
VS= Polycarbonate Vandal Shield
T= Terminal Block
L= Lamp Included **VENTURE LAMP**

Accessories [20]
MA1050-XX= 6" Arm for Square Pole
MA1051-XX= 10" Arm for Square Pole [21]
MA1052-XX= 6" Arm for Round Pole
MA1053-XX= 10" Arm for Round Pole [21]
MA1054-XX= Wall Bracket with 6" Arm [22]
MA1056-XX= Direct Mount for Square Pole
MA1057-XX= Direct Mount for Round Pole
MA1201-XX= Direct Wall Mount Kit [22]
MA1207-XX= Mast Arm Adapter
MA1231-XX= VXM Structural Mount Wall Mount Arm [23]
MA1017-XX= Single-arm Tenon Adapter for 2 3/8" O.D. Tenon
MA1018-XX= 2@180° Tenon Adapter for 2 3/8" O.D. Tenon
MA1019-XX= 3@120° Tenon Adapter for 2 3/8" O.D. Tenon
MA1045-XX= 4@90° Tenon Adapter for 2 3/8" O.D. Tenon
MA1048-XX= 2@90° Tenon Adapter for 2 3/8" O.D. Tenon
MA1115-XX= 3@90° Tenon Adapter for 2 3/8" O.D. Tenon
MA1116-XX= 2@120° Tenon Adapter for 2 3/8" O.D. Tenon
MA1010-XX= Single-arm Tenon Adapter for 3 1/2" O.D. Tenon
MA1011-XX= 2@180° Tenon Adapter for 3 1/2" O.D Tenon
MA1012-XX= 3@120° Tenon Adapter for 3 1/2" O.D. Tenon
MA1013-XX= 4@90° Tenon Adapter for 3 1/2" O.D. Tenon
MA1014-XX= 2@90° Tenon Adapter for 3 1/2" O.D. Tenon
MA1016-XX= 3@90° Tenon Adapter for 3 1/2" O.D. Tenon
MA1015-XX= 2@120° Tenon Adapter for 3 1/2" O.D. Tenon
OA/RA1016= NEMA Photocontrol - Multi-Tap
OA/RA1027= NEMA Photocontrol - 480V
OA/RA1201= NEMA Photocontrol - 347V

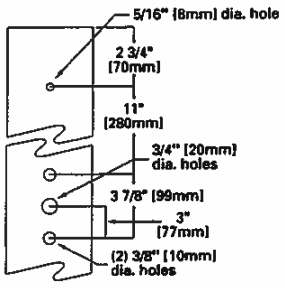
Notes: 1 Arm not included. See accessories. 2 All HID lamps are mogul-base. 3 320W and 350W Pulse Start Metal Halide lamps only. 4 400W Metal Halide requires reduced envelope ED28 lamp. 5 Dual Compact Fluorescent lamp options available in Type 4S distribution only. 6 Electrodeless Fluorescent QL lamp only. Available in Type 3S and 5S distributions only. 120V only. 7 Compact Fluorescent ballasts contain internal fusing. No supplemental fusing is necessary. CF ballasts are 120 through 277V. Specify with UNV voltage designation. 8 Products also available in non-US voltages and 50Hz for international markets. Consult factory for availability and ordering information. 9 Dual-tap is 120/277V wired 277V. 10 Multi-tap is 120/208/240/277V wired 277V. 11 Triple-tap is 120/277/347V wired 347V. 12 Custom and RAL color matching available upon request. Consult your INVUE Lighting Systems Representative for further information. 13 Add as suffix in the order shown. 14 Compatible with 10" MA1051 arm only. 15 Compatible with 10" MA1053 arm only. 16 Wall mount structual options do not include arm assembly (See Accessories). Compatible with 10" MA1231 arm only. 17 Quartz options not available with SL optic. 18 Dual switching requires dual 57W or dual 70W Compact Fluorescent lamps. Allows independent switching control of each lamp through use of two (2) electronic ballasts. Allows 50% power reduction when dual ballasts are independently wired and controlled. 19 House side shield not available on 5S and SL optics. 20 Order separately, replace XX with color suffix. 21 Use when mounting fixture heads at 90° increments. 22 For use in down lighting applications only. 23 Includes arm only. Must specify WRCP or WRCS in fixture ordering logic. Down light only.

DRILLING PATTERNS

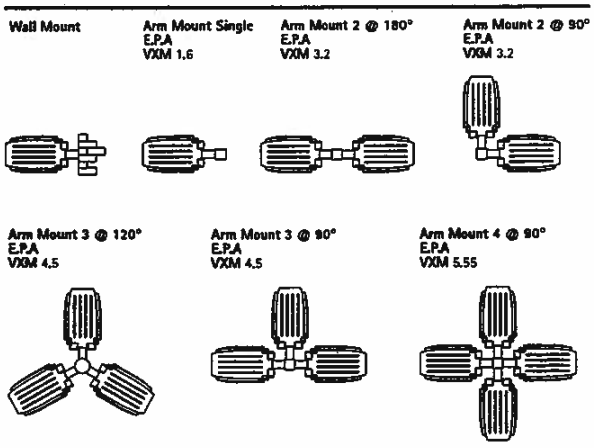
(TYPE "M")



Structural Mount
(TYPE "G")



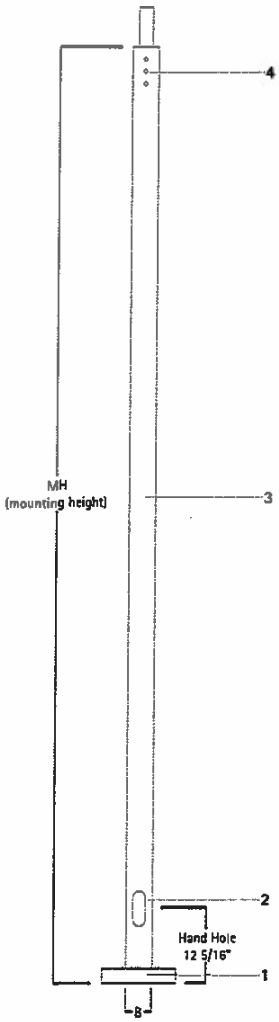
MOUNTING VARIATIONS

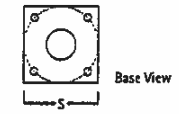


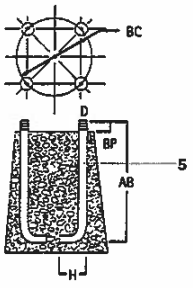
TYPE P02
INVUE

SRX=STEEL ROUND STRAIGHT

10'–30' Mounting Height







SPECIFICATION FEATURES

1 ASTM Grade steel base plate with ASTM A366 base cover.

2 Hand hole assembly 3" x 5" on 5" and 6" SRX poles, 2" x 4" on 4" SRX poles.

3 ASTM A500 grade "B" steel shaft. Shot blasted and painted with premium TGIC polyester powder coat.

4 Drilled or Tenon (specify).

5 Anchor bolt per ASTM A576 with (2) nuts, (2) flat washer, and (1) lock washer. Nuts, washers and threaded portion of bolt are hot dip galvanized 3" hook for 3/4" bolt. 4" hook for 1" bolt.

POLE COMPATIBILITY MATRIX	DRILL	EPA + MOUNTING CONFIGURATIONS					
	PATTERN	Single w/Arm	2 @ 180	2 @ 90	3 @ 90	3 @ 120	4 @ 90
PRODUCT	TENON	[1]	[2]	[5]	[3]	[6]	[4]
ICON SMALL	A	0.69	1.38	1.38	1.84	1.84	2.07
ICON MEDIUM	C	1.09	2.18	2.18	2.86	2.86	3.20
ICON SMALL STRUCTURAL MOUNT	J	0.71	1.42	1.42	1.90	1.90	2.14
ICON MEDIUM STRUCTURAL MOUNT	K	1.11	2.22	2.22	2.92	2.92	3.27
SLIDE	4"	2.97	—	—	—	—	—
FLITE	4"	1.56	—	—	—	—	—
VISION SMALL	E	1.27	2.54	2.54	3.60	3.60	4.13
VISION MEDIUM	M	1.6	3.20	3.20	4.50	4.50	5.55
VISION SMALL STRUCTURAL MOUNT	F	1.28	2.56	2.56	3.63	3.63	4.17
VISION MEDIUM STRUCTURAL MOUNT	G	1.82	3.64	3.64	4.96	4.96	5.62
ASCENT SMALL	A	0.85	1.70	1.70	2.35	2.35	2.68
ASCENT MEDIUM	C	1.35	2.70	2.70	3.83	3.83	4.56
STRUT SMALL	A	1.03	2.06	2.06	2.89	2.89	3.49
STRUT MEDIUM	C	1.64	3.28	3.28	4.70	4.70	5.77
X-FORM SMALL	E	1.15	2.30	2.30	3.20	3.20	3.81
X-FORM MEDIUM	M	2.1	4.20	4.20	6.00	6.00	7.50
MESA	5"*	1.1	3.56	—	—	—	—
EPIC MEDIUM	4"	Consult EPIC brochure for system EPA data					
EPIC LARGE	4"	Consult EPIC brochure for system EPA data					

* Fits 4" O.D. by 6" long tenon or slipfits over 4" ARX or SRS pole. ** Fits 3" O.D. by 4" long tenon. See Drill Patterns on page 3.

FOUR BOLT ANCHORAGE [see ordering information]

PB=Bolt Projection AB=Bolt Dimensions D=Bolt Diameter H=Bolt Dimensions

TYPE P02

SRX STEEL ROUND STRAIGHT

The following information illustrates the correct way to enter an order for SRX4A20SGMC3G. The ordering designation is detailed as follows.

Steel	Round	Straight	Shaft[3] Size	Wall Thickness	Mounting Height (ft.)	Base Type	Colors	Fixture Mounting + Type	No. + Location of Arms	Accessories (Ground Lug)
S	R	X	4	A	20	S	GM	C	3	G
S	**R**	**X**	**6**	**M**	**30**	**S**	**BZ**	**M**	**1**	

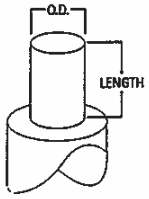
Mtg. Height MH	Catalog[1,2] Number	Wall Thickness	Base Square (in.) S	Bolt Circle Dia. (in.) BC	Bolt Proj. (in.) BP	Shaft Size (in.) B	Anchor Bolt Dia. + Length (in.) AB	Net. Wt. (Lbs.)	EPA (Sq. Ft.)[4] At Pole Top 70	80	90	100	EPA (Sq. Ft.)[4] 2' Above Pole Top 70	80	90	100	Max. Fixture Load—Include Bracket (Lbs.)
10	SRX4A10SBZ	.120	10 1/2	11.0	4 1/2	4	3/4 x 25 x 3	82	24.4	18.2	14.0	11.1	20.3	15.2	11.7	9.3	150
15	SRX4A15SBZ	.120	10 1/2	11.0	4 1/2	4	3/4 x 25 x 3	113	11.3	8.1	6.0	4.5	10.0	7.2	5.3	4.0	150
20	SRX4A20SBZ	.120	10 1/2	11.0	4 1/2	4	3/4 x 25 x 3	144	6.4	4.2	2.7	1.8	5.8	3.8	2.4	1.6	200
20	SRX5M20SBZ	.188	10 1/2	11.0	4 1/2	5	3/4 x 25 x 3	236	20.4	14.9	11.5	9.2	18.5	13.6	10.5	8.3	300
25	SRX5M25SBZ	.188	10 1/2	11.0	4 1/2	5	3/4 x 25 x 3	288	13.7	9.6	7.3	5.7	12.7	8.9	6.8	5.3	300
30	SRX6M30SBZ	.188	12 1/2	12.5	5	6	1 x 36 x 4	419	13.8	10.0	7.5	5.8	12.9	9.4	7.1	5.4	300

NOTES: 1 Catalog number includes pole with anchor bolts with double nuts.
(BEFORE INSTALLING ANCHOR BOLTS MAKE SURE PROPER ANCHOR BOLT TEMPLATE IS OBTAINED FROM COOPER LIGHTING).
2 Tenon size or machining for rectangular arms must be specified. Hand hole is located 180° from single arm.
3 Shaft size, base plate, anchor bolts and projections may vary slightly—all dimensions nominal.
4 EPAs based on shaft properties with wind normal to flat. EPAs calculated using base wind velocity as indicated plus 30% gust factor.

BZ=BRONZE

MOUNTING OPTIONS=FIXED TENON [add as suffix]

Designation Number	O.D. (in.)	Length (in.)
2	2 3/8"	4"
3	3 1/2"	5"
5	3"	4"
4	4"	6"



ACCESSORIES
A=1/2" Tapped Hub[1]
B=3/4" Tapped Hub[1]
C=Convenience Outlet[2]
G=Grounding Lug
(Max. Wire #8 AWG)
H=Additional Hand Hole and Cover
(12" Below Pole Top—90° from Hand Hole)

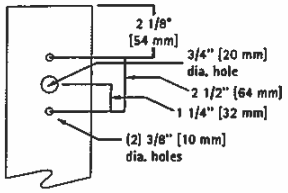
NOTES: 1 Location is 3' above base 90° from hand hole.
2 Outlet is located 4' above base and on same side of pole as hand hole, unless specified otherwise. Receptacle not included, provision only.

SRX STEEL ROUND STRAIGHT

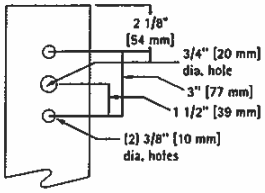
TYPE P02

DRILL PATTERNS

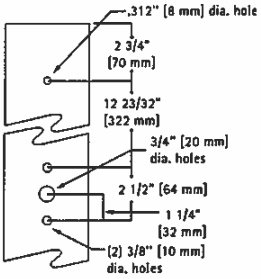
(TYPE "A")



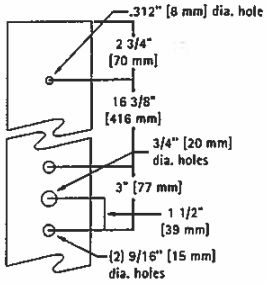
(TYPE "C")



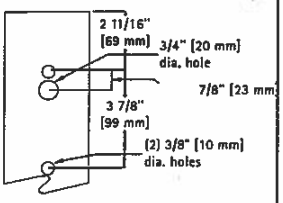
(TYPE "J")



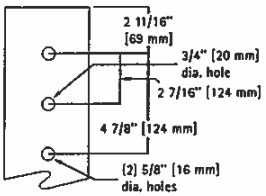
(TYPE "K")



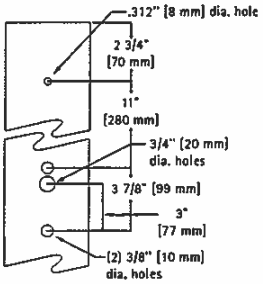
(TYPE "E")



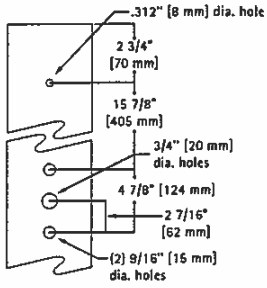
(TYPE "M")



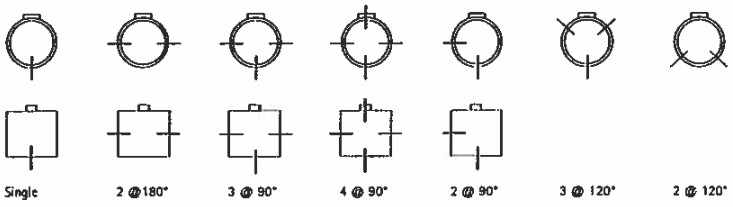
(TYPE "F")



(TYPE "G")



FIXTURE DRILLING OPTIONS (Note handhole position relative to drill locations)



CAUTION: Cooper Lighting poles have been designed to support only the luminaires and equipment originally intended. Miscellaneous items such as pennants, signs, and decorations may cause pole failure because of overloading. Addition of these items voids The Cooper Lighting warranty. Cooper Lighting will, however, supply information regarding total loading capacity on request. Cooper Lighting poles are guaranteed only when used in a pole/luminaire or floodlight combination. Any other application of poles, including application without a luminaire or floodlight, voids Cooper Lighting's warranty.

TYPE R01

COOPER LIGHTING - METALUX®

DESCRIPTION

GC8 is a premium grade specification lensed troffer series. This innovative, high quality luminaire is dedicated to the latest T8 lamp and micro electronic ballast technology for optimal performance and energy efficiency. The GC8 is compatible with all of today's popular ceiling systems and is available with a number of options and accessories for application versatility.

The GC8 Series features efficiency, quality and performance. The series is an excellent choice for commercial office spaces, schools, hospitals or retail merchandising areas.

SPECIFICATION FEATURES

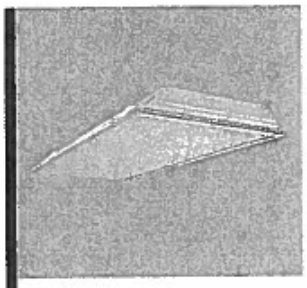
A ... Construction
Rigid housing is die formed of code gauge prime cold rolled steel and features full length die-formed stiffeners for added strength. Side flanges are hemmed. Innovative design provides superior lens brightness uniformity and visual comfort. Micro ballast cover*** reduces ballst shadow for superior lens brightness uniformity and is easily removed without tools. Die formed captive lampholder brackets fully enclose lampholder wiring permitting easy lampholder replacement. Heavy endplates are securely attached with interlocking tabs and screws. Four auxiliary fixture end suspension points provided. KOs for continuous row wiring. Endplates have integral Grid-lock feature for safety and convenience.

B ... Electrical
Ballasts are CBM/ETL Class "P" and are positively secured by mounting bolts. Pressure lock lampholders. UL/CUL listed. Suitable for damp locations.

C ... Finish
Multistage, iron phosphate pretreatment ensures maximum bonding and rust inhibition. Housing and ballast cover finished with new 90% reflective white enamel for superior performance. "PAF" Painted After Fabrication option also available.

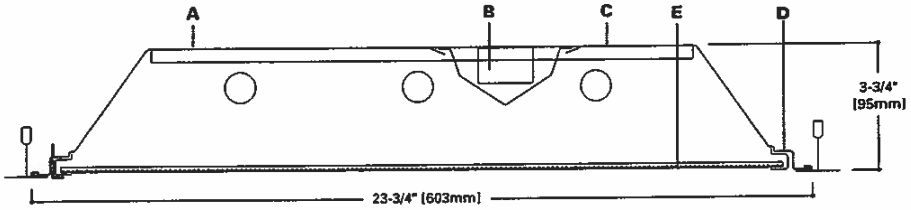
D ... Hinging/Latching
Positive cam action spring loaded steel latches with baked white enamel finish. Safety-lock T-hinges allow hinging and latching either side.

E ... Frame/Shielding
Die formed, heavy gauge, flat steel door with reinforced mitered corners and baked white enamel finish. Flat and regressed aluminum doors also available. Positive light seals. Light stabilized 100% virgin acrylic prismatic lens. Standard #12 pattern. Numerous additional shielding options available.



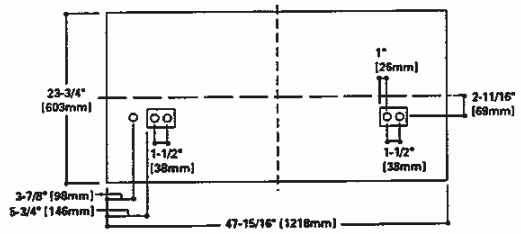
2GC8
332

2' X 4' TROFFER
3 LAMP
Specification T8 Troffer

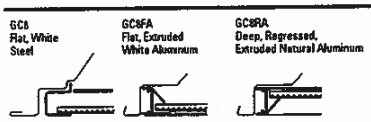


*maximum overall nominal depth

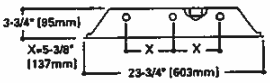
MOUNTING DATA



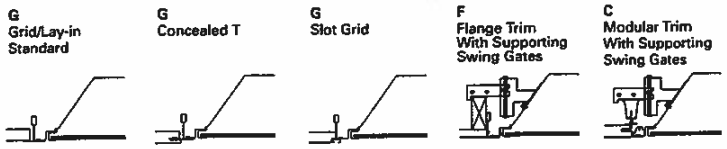
DOOR FRAMES



LAMP CONFIGURATIONS



CEILING COMPATIBILITY



Ceiling Type	Trim Type
Exposed Grid	G
Concealed T	G
Slot Grid	G
Flange	F
Metal Pan	C

(Verify compatibility/ consult factory.)

ENERGY DATA

Input Watts:
EB Ballast & STD Lamps
332 (91)

ES Ballast & STD Lamps
332 (108)

Luminaire Efficacy Rating
LER = FL-69
Catalog Number: 2GC8-332A

Yearly Cost of 1000 lumens, 3000 hrs at .08 KWH = $3.46

*Reference the lamp/ballast data in the Technical Section for specific lamp/ballast requirements.

**Consult Pre Sales Technical Support.

***Full sized ballast cover for biaxial lamps and emergency option.

LAMPS CONTAIN MERCURY. DISPOSE ACCORDING TO LOCAL, STATE OR FEDERAL LAWS

LINEAR DISCONNECT
Safe and convenient means of disconnecting power

USD SYSTEMS CERTIFIED

COOPER Lighting
www.cooperlighting.com

Specifications and Dimensions subject to change without notice.
Consult your representative for additional options and finishes.

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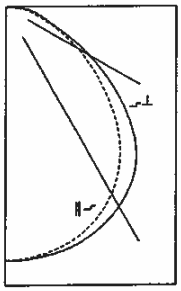
TYPE R01
2GC8

PHOTOMETRICS



2GC8-332A-PAF
Electronic Ballast
(3) FO32/35K lamps
2800 lumens
Spacing criterion: (II) 1.2 x mounting height, (⊥) 1.3 x mounting height
Efficiency 83.0%
Test Report: 2GC8332APAFHRPP.IES
LER = FL-73
Yearly Cost of 1000 lumens, 3000 hrs at .08 KWH = $3.29

Candela

Angle	Along II	45°	Across ⊥
0	2686	2686	2686
5	2673	2679	2686
10	2641	2655	2670
15	2585	2612	2640
20	2504	2546	2587
25	2392	2457	2612
30	2248	2337	2413
35	2069	2175	2288
40	1851	1985	2119
45	1592	1721	1881
50	1322	1464	1589
55	1070	1188	1278
60	834	885	967
65	617	596	694
70	447	374	497
75	324	251	381
80	238	199	294
85	137	123	179
90	0	0	0

Coefficients of Utilization

Effective floor cavity reflectance 20%

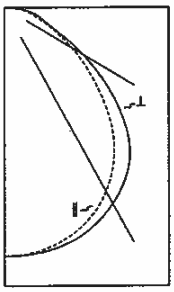
rc	80%				70%				50%			30%			10%			0%
rw	70	50	30	10	70	50	30	10	50	30	10	50	30	10	50	30	10	0
RCR																		
0	99	99	99	99	97	97	97	97	92	92	92	88	88	88	85	85	85	83
1	91	87	84	81	89	85	82	79	82	79	77	78	76	74	75	74	72	71
2	83	77	71	67	81	75	70	66	72	68	64	70	66	63	67	64	62	60
3	76	68	61	56	74	67	61	56	64	59	55	62	58	54	60	56	53	51
4	70	61	54	48	68	59	53	48	57	52	47	55	51	47	54	49	46	44
5	65	54	47	42	63	53	47	42	52	46	41	50	45	41	49	44	40	39
6	60	49	42	37	58	48	42	37	47	41	36	45	40	36	44	39	36	34
7	56	45	38	33	54	44	37	32	43	37	32	42	36	32	40	36	32	30
8	52	41	34	29	50	40	34	29	39	33	29	38	33	29	37	32	29	27
9	48	37	31	26	47	37	31	26	36	30	26	35	30	26	34	29	26	24
10	45	35	28	24	44	34	28	24	33	28	24	33	27	24	32	27	24	22

Zonal Lumen Summary

Zone	Lumens	%Lamp	%Fixture
0-30	2124	25.3	30.5
0-40	3484	41.5	49.9
0-60	5861	69.8	84.0
0-90	6975	83.0	100.0
0-180	6975	83.0	100.0

Typical VCP Percentages

Room Size (Ft.)	Height Along 8.5'	Height Along 10.0'	Height Across 8.5'	Height Across 10.0'
20 x 20	63	67	60	64
30 x 30	58	61	55	58
30 x 60	49	52	44	47
60 x 30	60	63	58	62
60 x 60	50	53	45	49



2GC8-332A
Electronic Ballast
(3) FO32/35K lamps
2800 lumens
Spacing criterion: (II) 1.2 x mounting height, (⊥) 1.3 x mounting height
Efficiency 81.6%
Test Report: 2GC8332A.IES
LER = FL-69
Yearly Cost of 1000 lumens, 3000 hrs at .08 KWH = $3.46

Candela

Angle	Along II	45°	Across ⊥
0	2634	2634	2634
5	2624	2628	2634
10	2593	2606	2621
15	2539	2566	2593
20	2461	2503	2542
25	2354	2417	2468
30	2214	2303	2371
35	2040	2148	2253
40	1831	1944	2099
45	1576	1697	1872
50	1301	1442	1580
55	1050	1165	1259
60	814	852	940
65	604	562	667
70	441	351	486
75	325	246	385
80	245	203	300
85	142	125	178
90	0	0	0

Coefficients of Utilization

Effective floor cavity reflectance 20%

rc	80%				70%				50%			30%			10%			0%
rw	70	50	30	10	70	50	30	10	50	30	10	50	30	10	50	30	10	0
RCR																		
0	97	97	97	97	95	95	95	95	91	91	91	87	87	87	83	83	83	82
1	89	86	82	79	87	84	81	78	80	78	76	77	75	73	74	73	71	69
2	82	75	70	66	80	74	69	65	71	67	63	68	65	62	66	63	61	59
3	75	67	60	55	73	65	60	55	63	58	54	61	57	53	59	55	52	50
4	69	60	53	47	67	58	52	47	56	51	46	55	50	46	53	49	45	44
5	64	53	48	41	62	53	46	41	51	45	41	49	44	40	48	43	40	38
6	59	48	41	36	57	48	41	36	46	40	36	45	39	35	43	39	35	33
7	55	44	37	32	53	43	37	32	42	36	32	41	35	32	40	35	31	30
8	51	40	33	29	50	40	33	29	38	33	28	37	32	28	37	32	28	27
9	48	37	30	26	46	36	30	26	35	30	26	35	29	26	34	29	25	24
10	45	34	28	24	44	34	28	23	33	27	23	32	27	23	31	27	23	22

Zonal Lumen Summary

Zone	Lumens	%Lamp	%Fixture
0-30	2088	24.9	30.5
0-40	3429	40.8	50.0
0-60	5768	68.7	84.1
0-90	6855	81.6	100.0
0-180	6855	81.6	100.0

Typical VCP Percentages

Room Size (Ft.)	Height Along 8.5'	Height Along 10.0'	Height Across 8.5'	Height Across 10.0'
20 x 20	64	68	61	65
30 x 30	58	62	55	59
30 x 60	49	52	44	48
60 x 30	60	64	58	62
60 x 60	50	53	46	49

ORDERING INFORMATION

Sample Number: 2GC8-232A-120V-EB81-U

2	G	C8		3	32	A125	UNV		ER	8	2		U

Width
2= 2' Width

Trim Type
G= Grid/Lay-in[1] (Standard)
G= Concealed T
G= Slot Grid
F= Flange Trim

Series
C8= Specification T8 Troffer

Door Frame
Standard= Flat White Steel Door (Leave blank)
FA= Flush White Extruded Aluminum c/w Spring Latch
RA= Regressed White Extruded Aluminum
FAN= Flush Natural Anodized Extruded Aluminum
RAN= Regressed Natural Anodized Extruded Aluminum
FAB= Flush Black Extruded Aluminum
RAB= Regressed Black Extruded Aluminum

Number of Lamps [2]
3 Lamps (Not Included)

Wattage
32= 32W T8 (48")

Shielding
A= # 12 Acrylic Pattern
A125= #12 Pattern Acrylic (.125" Thickness)
A19/156= #19 Pattern Acrylic (.156" Thickness)
DA= Dropped Dish Matte White Acrylic
IMA48= Injection Molded Acrylic (.150" Thickness)
PB1S= 1/2" x 1/2" x 1/2" Silver Parabolic Louver (Styrene)

Voltage [3]
120V= 120 Volt
277V= 277 Volt
347V= 347 Volt
UNV= Universal Voltage[4] 120-277

Options
GL= Single Element Fuse
GM= Double Element Fuse
Lamps= Lamps Installed
Flex= Flex Installed
Emergency= EM Installed

Ballast Type [3]
EB= Electronic Instant Start
ER= T8 Electronic Program Rapid Start. Total Harmonic Distortion < 10%
DLS= Digital Lighting System Dimming

Lamp Size
8= T8

Number of Ballasts
1= 1 Ballast
2= 2 Ballast
3= 3 Ballast

Options
/PLUS= Higher Ballast Factor > 1.13. Total Harmonic Distortion < 20%
RLS= Rotor Lock Socket (T8 Lamp only)
FR= Fire Rated Label
MEP= Modified End Plate
REP= Riveted End Plates
PAF= Painted After Fabrication

Packaging
U= Unit Pack
PAL= Palletized Uncartoned Fixtures
PALC= Palletized Fixtures in Carton

Notes: 1 An EQ Grid Clip is recommended for all 9/16" ceiling systems.
2 Standard off-center ballast on 3 lamp fixtures.
3 Products also available in non-US voltage and frequencies for international markets
4 Not Available when specifying emergencies, voltage must be specific

ACCESSORIES

EQ = T-BAR Safety Earthquake Clips [1]

SHIPPING INFORMATION

Catalog No.	Wt.
2GC8-332A	31 lbs.

COOPER Lighting
www.cooperlighting.com

Specifications and Dimensions subject to change without notice.
Metalux • Customer First Center • 1121 Highway 74 South • Peachtree City, GA 30269 • TEL 770.486.4800 • FAX 770.486.4801

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TYPE R01A

COOPER LIGHTING - METALUX®

DESCRIPTION

GC8 is a premium grade specification lensed troffer series. This innovative, high quality luminaire is dedicated to the latest T8 lamp and micro electronic ballast technology for optimal performance and energy efficiency. The GC8 is compatible with all of today's popular ceiling systems and is available with a number of options and accessories for application versatility.

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SPECIFICATION FEATURES

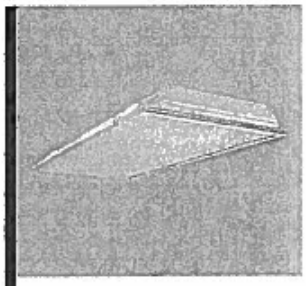
A ... Construction
Rigid housing is die formed of code gauge prime cold rolled steel and features full length die-formed stiffeners for added strength. Side flanges are hemmed. Innovative design provides superior lens brightness uniformity and visual comfort. Micro ballast cover*** reduces ballst shadow for superior lens brightness uniformity and is easily removed without tools. Die formed captive lampholder brackets fully enclose lampholder wiring permitting easy lampholder replacement. Heavy endplates are securely attached with interlocking tabs and screws. Four auxiliary fixture end suspension points provided. KOs for continuous row wiring. Endplates have integral Grid-lock feature for safety and convenience.

B ... Electrical
Ballasts are CBM/ETL Class "P" and are positively secured by mounting bolts. Pressure lock lampholders. UL/CUL listed. Suitable for damp locations.

C ... Finish
Multistage, iron phosphate pretreatment ensures maximum bonding and rust inhibition. Housing and ballast cover finished with new 90% reflective white enamel for superior performance. "PAF" Painted After Fabrication option also available.

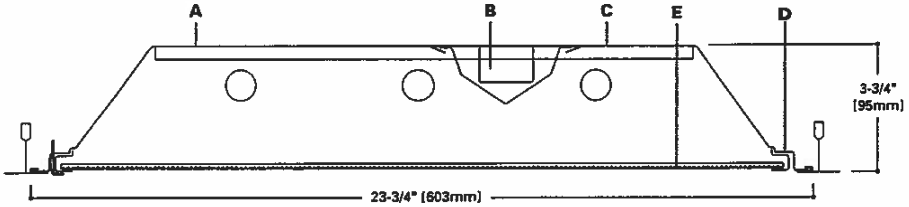
D ... Hinging/Latching
Positive cam action spring loaded steel latches with baked white enamel finish. Safety-lock T-hinges allow hinging and latching either side.

E ... Frame/Shielding
Die formed, heavy gauge, flat steel door with reinforced mitered corners and baked white enamel finish. Flat and regressed aluminum doors also available. Positive light seals. Light stabilized 100% virgin acrylic prismatic lens. Standard #12 pattern. Numerous additional shielding options available.



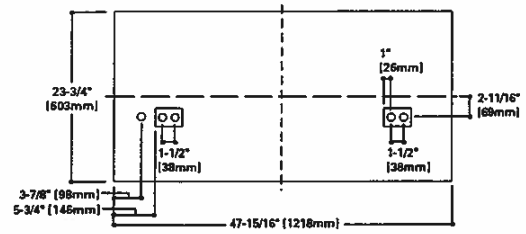
2GC8
332

2' X 4' TROFFER
3 LAMP
Specification T8 Troffer

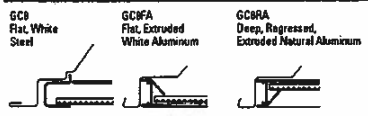


*maximum overall nominal depth

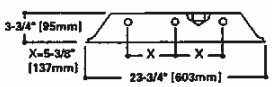
MOUNTING DATA



DOOR FRAMES

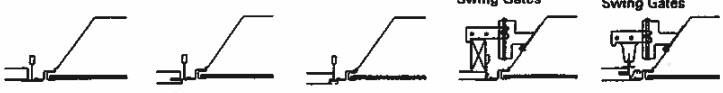


LAMP CONFIGURATIONS



CEILING COMPATIBILITY

G	G	G	F	C
Grid/Lay-in Standard	Concealed T	Slot Grid	Flange Trim With Supporting Swing Gates	Modular Trim With Supporting Swing Gates



Ceiling Type	Trim Type
Exposed Grid	G
Concealed T	G
Slot Grid	G
Flange	F
Metal Pan	C

(Verify compatibility/ consult factory.)

ENERGY DATA

Input Watts:
EB Ballast & STD Lamps
332 (91)

ES Ballast & STD Lamps
332 (108)

Luminaire Efficacy Rating
LER = FL-69
Catalog Number: 2GC8-332A

Yearly Cost of 1000 lumens, 3000 hrs at .08 KWH = $3.46

*Reference the lamp/ballast data in the Technical Section for specific lamp/ballast requirements.

**Consult Pre Sales Technical Support.

***Full sized ballast cover for biaxial lamps and emergency option.

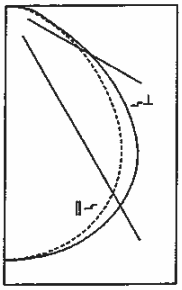
LAMPS CONTAIN MERCURY. DISPOSE ACCORDING TO LOCAL, STATE OR FEDERAL LAWS

LINEAR DISCONNECT
Safe and convenient means of disconnecting power

Specifications and Dimensions subject to change without notice.
Consult your representative for additional options and finishes.

TYPE R01A
2GC8

PHOTOMETRICS



2GC8-332A-PAF
Electronic Ballast
(3) FO32/35K lamps
2800 lumens
Spacing criterion: (||) 1.2 x mounting height, (⊥) 1.3 x mounting height
Efficiency 83.0%
Test Report: 2GC8332APAFHRPP.IES
LER = FL-73
Yearly Cost of 1000 lumens, 3000 hrs at .08 KWH = $3.29

Candela

Angle	Along II	45°	Across ⊥
0	2686	2686	2686
5	2673	2679	2686
10	2641	2655	2670
15	2585	2612	2640
20	2504	2546	2587
25	2392	2457	2512
30	2248	2337	2413
35	2069	2175	2288
40	1851	1965	2119
45	1592	1721	1881
50	1322	1464	1589
55	1070	1188	1278
60	834	885	967
65	617	596	694
70	447	374	497
75	324	251	381
80	238	199	294
85	137	123	179
90	0	0	0

Coefficients of Utilization

Effective floor cavity reflectance 20%

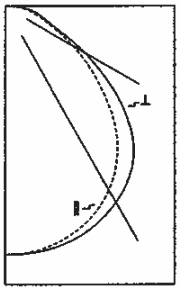
rc	80%				70%				50%			30%			10%		0%
rw	70	50	30	10	70	50	30	10	50	30	10	50	30	10	50	30	10	0
RCR																		
0	99	99	99	99	97	97	97	97	92	92	92	88	88	88	85	85	85	83
1	91	87	84	81	89	85	82	79	82	79	77	78	76	74	75	74	72	71
2	83	77	71	67	81	75	70	66	72	68	64	70	66	63	67	64	62	60
3	76	68	61	56	74	67	61	56	64	59	55	62	58	54	60	56	53	51
4	70	61	54	48	68	59	53	48	57	52	47	55	51	47	54	49	46	44
5	65	54	47	42	63	53	47	42	52	46	41	50	45	41	49	44	40	39
6	60	49	42	37	58	48	42	37	47	41	36	45	40	36	44	39	36	34
7	56	45	38	33	54	44	37	32	43	37	32	42	36	32	40	36	32	30
8	52	41	34	29	50	40	34	29	39	33	29	38	33	29	37	32	29	27
9	48	37	31	26	47	37	31	26	36	30	26	35	30	26	34	29	26	24
10	45	35	28	24	44	34	28	24	33	28	24	33	27	24	32	27	24	22

Zonal Lumen Summary

Zone	Lumens	%Lamp	%Fixture
0-30	2124	25.3	30.5
0-40	3484	41.5	49.9
0-60	5861	69.8	84.0
0-90	6975	83.0	100.0
0-180	6975	83.0	100.0

Typical VCP Percentages

Room Size (Ft.)	Height Along 8.5'	Height Along 10.0'	Height Across 8.5'	Height Across 10.0'
20 x 20	63	67	60	64
30 x 30	58	61	55	58
30 x 60	49	52	44	47
60 x 30	60	63	58	62
60 x 60	50	53	45	49



2GC8-332A
Electronic Ballast
(3) FO32/35K lamps
2800 lumens
Spacing criterion: (||) 1.2 x mounting height, (⊥) 1.3 x mounting height
Efficiency 81.6%
Test Report: 2GC8332A.IES
LER = FL-69
Yearly Cost of 1000 lumens, 3000 hrs at .08 KWH = $3.46

Candela

Angle	Along II	45°	Across ⊥
0	2634	2634	2634
5	2624	2628	2634
10	2593	2606	2621
15	2539	2566	2593
20	2461	2503	2542
25	2354	2417	2468
30	2214	2303	2371
35	2040	2148	2253
40	1831	1944	2099
45	1576	1697	1872
50	1301	1442	1580
55	1050	1165	1259
60	814	852	940
65	604	562	667
70	441	351	486
75	325	246	385
80	245	203	300
85	142	125	178
90	0	0	0

Coefficients of Utilization

Effective floor cavity reflectance 20%

rc	80%				70%				50%			30%			10%		0%
rw	70	50	30	10	70	50	30	10	50	30	10	50	30	10	50	30	10	0
RCR																		
0	97	97	97	97	95	95	95	95	91	91	91	87	87	87	83	83	83	82
1	89	86	82	79	87	84	81	78	80	78	76	77	75	73	74	73	71	69
2	82	75	70	66	80	74	69	65	71	67	63	68	65	62	66	63	61	59
3	75	67	60	55	73	65	60	55	63	58	54	61	57	53	59	55	52	50
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8	51	40	33	29	50	40	33	29	38	33	28	37	32	28	37	32	28	27
9	48	37	30	26	46	36	30	26	35	30	26	35	29	26	34	29	25	24
10	45	34	28	24	44	34	28	23	33	27	23	32	27	23	31	27	23	22

Zonal Lumen Summary

Zone	Lumens	%Lamp	%Fixture
0-30	2088	24.9	30.5
0-40	3429	40.8	50.0
0-60	5768	68.7	84.1
0-90	6855	81.6	100.0
0-180	6855	81.6	100.0

Typical VCP Percentages

Room Size (Ft.)	Height Along 8.5'	Height Along 10.0'	Height Across 8.5'	Height Across 10.0'
20 x 20	64	68	61	65
30 x 30	58	62	55	59
30 x 60	49	52	44	48
60 x 30	60	64	58	62
60 x 60	50	53	46	49

ORDERING INFORMATION

Sample Number: 2GC8-232A-120V-EB81-U

2	G	C8		3	32	A125	120		ER	8	2		LTC2-U

Width
2 = 2' Width

Trim Type
G = Grid/Lay-in [1] (Standard)
G = Concealed T
G = Slot Grid
F = Flange Trim

Series
C8 = Specification T8 Troffer

Door Frame
Standard = Flat White Steel Door (Leave blank)
FA = Flush White Extruded Aluminum c/w Spring Latch
RA = Regressed White Extruded Aluminum
FAN = Flush Natural Anodized Extruded Aluminum
RAN = Regressed Natural Anodized Extruded Aluminum
FAB = Flush Black Extruded Aluminum
RAB = Regressed Black Extruded Aluminum

Number of Lamps [2]
3 Lamps (Not included)

Wattage
32 = 32W T8 (48")

Shielding
A = # 12 Acrylic Pattern
A125 = #12 Pattern Acrylic (.125" Thickness)
A19/156 = #19 Pattern Acrylic (.156" Thickness)
DA = Dropped Dish Matte White Acrylic
IMA48 = Injection Molded Acrylic (.150" Thickness)
PB1S = 1/2" x 1/2" x 1/2" Silver Parabolic Louver (Styrene)

Voltage [3]
120V = 120 Volt
277V = 277 Volt
347V = 347 Volt
UNV = Universal Voltage[4] 120-277

Options
GL = Single Element Fuse
GM = Double Element Fuse
Lamps = Lamps Installed
Flex = Flex Installed
Emergency = EM Installed

Ballast Type [3]
EB = Electronic Instant Start
ER = T8 Electronic Program Rapid Start. Total Harmonic Distortion < 10%
DLS = Digital Lighting System Dimming

Lamp Size
8 = T8

Number of Ballasts
1 = 1 Ballast
2 = 2 Ballast
3 = 3 Ballast

Options
/PLUS = Higher Ballast Factor > 1.13. Total Harmonic Distortion < 20%
RLS = Rotor Lock Socket (T8 Lamp only)
FR = Fire Rated Label
MEP = Modified End Plate
REP = Riveted End Plates
PAF = Painted After Fabrication

Packaging
U = Unit Pack
PAL = Palletized Uncartoned Fixtures
PALC = Palletized Fixtures in Carton

Notes: 1 An EQ Grid Clip is recommended for all 9/16" ceiling systems.
2 Standard off-center ballast on 3 lamp fixtures.
3 Products also available in non-US voltage and frequencies for international markets
4 Not Available when specifying emergencies, voltage must be specific

ACCESSORIES

EQ = T-BAR Safety Earthquake Clips [1]

SHIPPING INFORMATION

Catalog No.	Wt.
2GC8-332A	31 lbs.

TYPE R02

COOPER LIGHTING - METALUX

DESCRIPTION

GC8 is a premium grade specification lensed troffer series. This innovative, high quality luminaire is dedicated to the latest T8 lamp and micro electronic ballast technology for optimal performance and energy efficiency. The GC8 is compatible with all of today's popular ceiling systems and is available with a number of options and accessories for application versatility.

The GC8 Series features efficiency, quality and performance. The series is an excellent choice for commercial office spaces, schools, hospitals or retail merchandising areas.

SPECIFICATION FEATURES

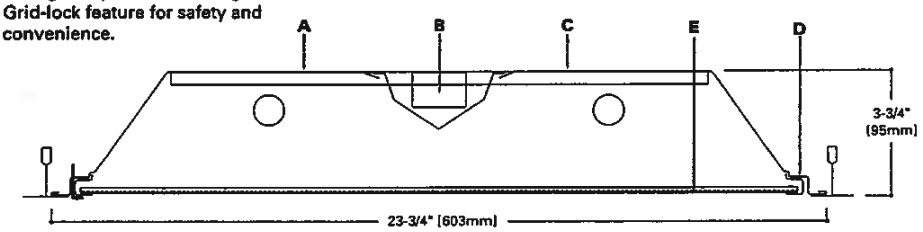
A ... Construction
Rigid housing is die formed of code gauge prime cold rolled steel and features full length die-formed stiffeners for added strength. Side flanges are hemmed. Innovative design provides superior lens brightness uniformity and visual comfort. Micro ballast cover*** reduces ballst shadow for superior lens brightness uniformity and is easily removed without tools. Die formed captive lampholder brackets fully enclose lampholder wiring permitting easy lampholder replacement. Heavy endplates are securely attached with interlocking tabs and screws. Four auxiliary fixture end suspension points provided. KOs for continuous row wiring. Endplates have integral Grid-lock feature for safety and convenience.

B ... Electrical
Ballasts are CBM/ETL Class "P" and are positively secured by mounting bolts. Pressure lock lampholders. UL/CUL listed. Suitable for damp locations.

C ... Finish
Multistage, iron phosphate pretreatment ensures maximum bonding and rust inhibition. Housing and ballast cover finished with new 90% reflective matte white enamel for superior performance. "PAF" Painted After Fabrication option also available.

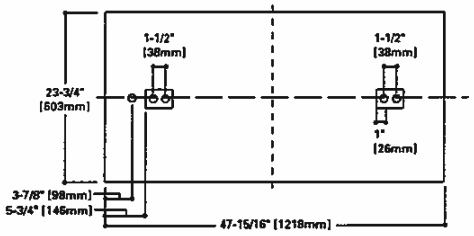
D ... Hinging/Latching
Positive cam action spring loaded steel latches with baked white enamel finish. Safety-lock T-hinges allow hinging and latching either side.

E ... Frame/Shielding
Die formed, heavy gauge, flat steel door with reinforced mitered corners and baked white enamel finish. Flat and regressed aluminum doors also available. Positive light seals. Light stabilized 100% virgin acrylic prismatic lens. Standard #12 pattern. Numerous additional shielding options available.

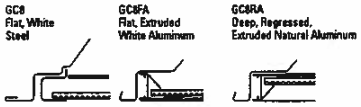


*maximum overall nominal depth

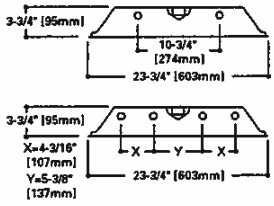
MOUNTING DATA



DOOR FRAMES

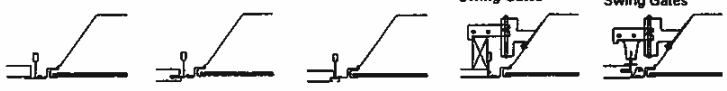


LAMP CONFIGURATIONS



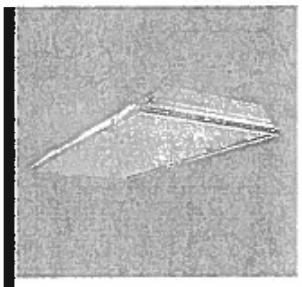
CEILING COMPATIBILITY

G	G	G	F	C
Grid/Lay-in Standard	Concealed T	Slot Grid	Flange Trim With Supporting Swing Gates	Modular Trim With Supporting Swing Gates



Ceiling Type	Trim Type
Exposed Grid	G
Concealed T	G
Slot Grid	G
Flange	F
Metal Pan	C

(Verify compatibility/ consult factory.)



2GC8
232
432

2' X 4' TROFFER
2 OR 4 LAMP
Specification T8 Troffer

ENERGY DATA

Input Watts:
EB Ballast & STD Lamps
232 (61)
432 (122)

ES Ballast & STD Lamps
232 (71)
432 (142)

Luminaire Efficacy Rating
LER = FL-69
Catalog Number: 2GC8-232A

Yearly Cost of 1000 lumens, 3000 hrs at .08 KWH = $3.50

LER = FL-64
Catalog Number: 2GC8-432A

Yearly Cost of 1000 lumens, 3000 hrs at .08 KWH = $3.75

*Reference the lamp/ballast data in the Technical Section for specific lamp/ballast requirements.

**Consult Pre Sales Technical Support.

***Full sized ballast cover for biaxial lamps and emergency option.

LAMPS CONTAIN MERCURY. DISPOSE ACCORDING TO LOCAL, STATE OR FEDERAL LAWS

LINEAR DISCONNECT
Safe and convenient means of disconnecting power

TSI CERTIFIED

COOPER Lighting
www.cooperlighting.com

Specifications and Dimensions subject to change without notice.
Consult your representative for additional options and finishes.

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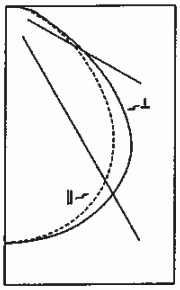
TYPE R02

2GC8

PHOTOMETRICS



2GC8-232A
Electronic Ballast
(2) FO32/35K lamps
2800 lumens
Spacing criterion: (∥) 1.2 x mounting height, (⊥) 1.3 x mounting height
Efficiency 84.8%
Test Report: 2GC8232A.IES
LER = FL-69
Yearly Cost of 1000 lumens, 3000 hrs at .08 KWH = $3.50

Candela

Angle	Along ∥	45°	Across ⊥
0	1810	1810	1810
5	1801	1806	1810
10	1789	1791	1800
15	1743	1764	1782
20	1690	1723	1750
25	1616	1667	1703
30	1520	1591	1644
35	1401	1489	1569
40	1258	1351	1467
45	1085	1193	1308
50	898	1008	1100
55	725	813	870
60	564	593	650
65	420	392	468
70	307	244	339
75	226	171	256
80	170	141	207
85	98	87	122
90	0	0	0

Coefficients of Utilization

Effective floor cavity reflectance 20%

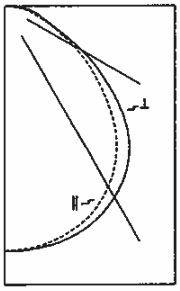
rc	80%			70%			50%			30%			10%		0%
rw	70	50	30	70	50	30	50	30	10	50	30	10	50	30	10	0
RCR																
0	101	101	101	99	99	99	94	94	94	90	90	90	87	87	87	85
1	93	89	85	92	87	84	83	81	78	80	78	76	77	75	74	72
2	85	78	73	68	83	77	72	67	74	69	66	71	67	64	68	66	63	61
3	78	69	63	57	76	68	62	57	65	60	56	63	59	55	61	57	54	52
4	72	62	55	49	70	61	54	49	59	53	48	57	52	48	55	51	47	45
5	66	55	48	43	64	55	48	42	53	47	42	51	46	42	50	45	41	39
6	61	50	43	37	59	49	42	37	48	42	37	46	41	37	45	40	36	35
7	57	46	38	33	55	45	38	33	44	37	33	42	37	33	41	36	32	31
8	53	42	35	30	51	41	34	30	40	34	29	39	33	29	38	33	29	28
9	49	38	31	27	48	38	31	27	37	31	27	36	30	26	35	30	26	25
10	46	35	29	24	45	35	29	24	34	28	24	33	28	24	32	28	24	23

Zonal Lumen Summary

Zone	Lumens	%Lamp	%Fixture
0-30	1437	25.7	30.2
0-40	2366	42.3	49.8
0-60	3995	71.3	84.1
0-90	4751	84.8	100.0
0-180	4751	84.8	100.0

Typical VCP Percentages

Room Size (Ft.)	Height Along 8.5'	Height Along 10.0'	Height Across 8.5'	Height Across 10.0'
20 x 20	71	75	69	72
30 x 30	66	70	63	67
30 x 60	58	61	53	57
60 x 30	68	72	66	70
60 x 60	58	61	54	58



2GC8-432A
Electronic Ballast
(4) FO32/35K lamps
2800 lumens
Spacing criterion: (∥) 1.2 x mounting height, (⊥) 1.3 x mounting height
Efficiency 79.2%
Test Report: 2GC8432A.IES
LER = FL-64
Yearly Cost of 1000 lumens, 3000 hrs at .08 KWH = $3.75

Candela

Angle	Along ∥	45°	Across ⊥
0	3460	3460	3460
5	3444	3452	3461
10	3402	3422	3441
15	3331	3367	3401
20	3228	3282	3329
25	3085	3163	3222
30	2899	3003	3079
35	2670	2789	2904
40	2392	2510	2677
45	2057	2184	2369
50	1701	1843	1986
55	1370	1478	1582
60	1059	1083	1192
65	783	719	849
70	588	449	621
75	419	315	491
80	316	259	381
85	183	159	228
90	0	0	0

Coefficients of Utilization

Effective floor cavity reflectance 20%

rc	80%			70%			50%			30%			10%		0%
rw	70	50	30	70	50	30	50	30	10	50	30	10	50	30	10	0
RCR																
0	94	94	94	92	92	92	88	88	88	84	84	84	81	81	81	79
1	87	83	80	77	84	81	78	76	78	76	73	75	73	71	72	70	69	67
2	79	73	68	64	77	72	67	63	69	65	62	66	63	60	64	61	59	57
3	73	65	59	54	71	64	58	53	61	56	52	59	55	52	57	54	51	49
4	67	58	51	46	65	57	51	46	55	50	45	53	48	45	51	47	44	42
5	62	52	45	40	60	51	45	40	49	44	39	48	43	39	46	42	39	37
6	57	47	40	35	56	46	40	35	45	39	35	44	38	35	42	38	34	33
7	53	43	36	31	52	42	36	31	41	35	31	40	35	31	39	34	31	29
8	49	39	33	28	48	39	32	28	38	32	28	37	31	28	36	31	27	26
9	46	36	30	25	45	35	29	25	35	29	25	34	29	25	33	28	25	23
10	43	33	27	23	42	33	27	23	32	27	23	31	26	23	31	26	23	21

Zonal Lumen Summary

Zone	Lumens	%Lamp	%Fixture
0-30	2735	24.4	30.9
0-40	4476	40.0	50.5
0-60	7474	66.7	84.3
0-90	8865	79.2	100.0
0-180	8865	79.2	100.0

Typical VCP Percentages

Room Size (Ft.)	Height Along 8.5'	Height Along 10.0'	Height Across 8.5'	Height Across 10.0'
20 x 20	58	62	56	60
30 x 30	52	56	49	53
30 x 60	42	46	38	42
60 x 30	54	58	52	57
60 x 60	43	47	40	43

ORDERING INFORMATION

Sample Number: 2GC8-232A-120V-EB81-U

2	G	C8		2	32	A125	UNV		ER	8	1		U

Width
2= 2' Width

Trim Type
G= Grid/Lay-in [1] (Standard)
C= Concealed T
G= Slot Grid
F= Flange Trim

Series
C8= Specification T8 Troffer

Door Frame
Standard= Flat White Steel Door (Leave blank)
FA= Flush White Extruded Aluminum c/w Spring Latch
RA= Regressed White Extruded Aluminum
FAN= Flush Natural Anodized Extruded Aluminum
RAN= Regressed Natural Anodized Extruded Aluminum
FAB= Flush Black Extruded Aluminum
RAB= Regressed Black Extruded Aluminum

Number of Lamps [2]
2 Lamps (Not Included)
4 Lamps (Not Included)

Wattage
32= 32W T8 (48")

Shielding
A= # 12 Acrylic Pattern
A125= #12 Pattern Acrylic (.125" Thickness)
A19/156= #19 Pattern Acrylic (.156" Thickness)
DA= Dropped Dish Matte White Acrylic
IMA48= Injection Molded Acrylic (.150" Thickness)
PB1S= 1/2" x 1/2" x 1/2" Silver Parabolic Louver (Styrene)

Voltage [3]
120V= 120 Volt
277V= 277 Volt
347V= 347 Volt
UNV= Universal Voltage[4] 120-277

Options
GL= Single Element Fuse
GM= Double Element Fuse
Lamps= Lamps Installed
Flex= Flex Installed
Emergency= EM Installed

Ballast Type [3]
EB= Electronic Instant Start
ER= T8 Electronic Program Rapid Start. Total Harmonic Distortion < 10%
DLS= Digital Lighting System Dimming

Lamp Size
8= T8

Number of Ballasts
1= 1 Ballast
2= 2 Ballast
3= 3 Ballast

Options
/PLUS= Higher Ballast Factor > 1.13. Total Harmonic Distortion < 20%
RLS= Rotor Lock Socket (T8 Lamp only)
FR= Fire Rated Label
MEP= Modified End Plate
REP= Riveted End Plates
PAF= Painted After Fabrication

Packaging
U= Unit Pack
PAL= Palletized Uncartoned Fixtures
PALC= Palletized Fixtures in Carton

Notes: 1 An EQ Grid Clip is recommended for all 9/16" ceiling systems.
2 Standard off-center ballast on 3 lamp fixtures.
3 Products also available in non-US voltage and frequencies for international markets
4 Not Available when specifying emergencies, voltage must be specific

ACCESSORIES

EQ = T-BAR Safety Earthquake Clips [1]

SHIPPING INFORMATION

Catalog No.	Wt.
2GC8-232A	29 lbs.
2GC8-432A	32 lbs.

TYPE R04

COOPER LIGHTING - METALUX®

DESCRIPTION

The Paralux III Series features recessed aesthetics and the latest in energy efficient technology. The luminaire incorporates a true 3" deep precision cell louver into a nominal 5-1/2" deep para-contoured fixture housing. This combination creates a total high performance parabolic optical assembly for optimum performance. The series is compatible with all of today's popular ceiling systems and is available with a number of options and accessories for application versatility. The high performance luminaire is designed to offer maximum efficiency and performance for today's unique interior specifications. The Paralux III series is an excellent choice for commercial office spaces, schools, hospitals or retail merchandising areas.

SPECIFICATION FEATURES

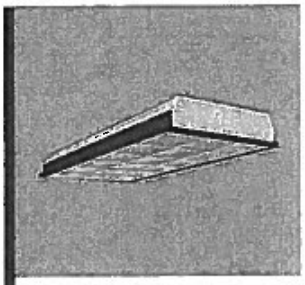
A ... Construction
Nominal 5-1/2" deep, para-contoured housing, die formed of code gauge, prime cold rolled steel. Die embossed housing has full length die formed stiffeners for added strength. Contoured ballast/wireway cover is easily removed without tools. Die formed captive lampholder bracket fully encloses lampholder wiring permitting easy lampholder replacement. Heavy end plates are securely attached with interlocking tabs and screws. Four auxiliary fixture end suspension points provided. KOs for continuous row wiring. End plates have labor saving integral Grid-Lock feature for safety and convenience. Housing features enable fixture to be converted from Grid to T-option or vice versa in the field.*

B ... Electrical**
Ballasts are CBM/ETL Class "P" and are positively secured by mounting bolts. Pressure lock lampholders. UL/CUL listed. Suitable for damp locations.

C ... Finish
Lighting grade, baked white enamel finish. Multistage, iron phosphate pretreatment ensures maximum bonding and rust inhibition.

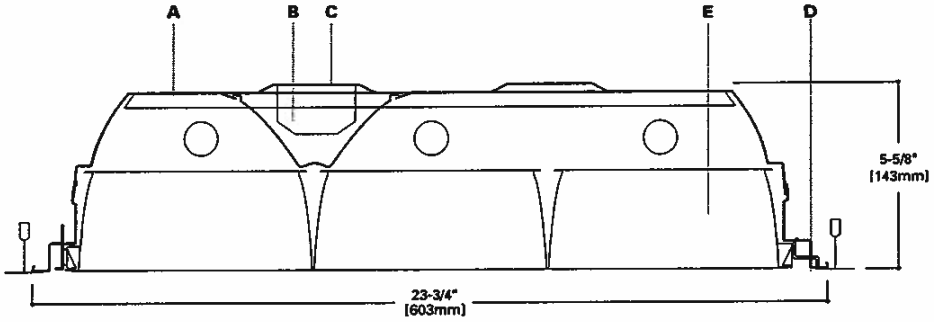
D ... Hinging/Latching
Positive cam action spring loaded, self locking, black steel latches. Safety lock T-hinges allow hinging and latching either side.

E ... Louver
Die formed of low iridescent, vertical grain anodized aluminum. Finish is Anodic oxide coating. Accurate precision parabolic cells are held in place with interlocking feature. True-cut mitered corners. Black reveal with integral mechanical light seal around entire perimeter of louver. Louver protected from construction contaminants by polyethylene cover.

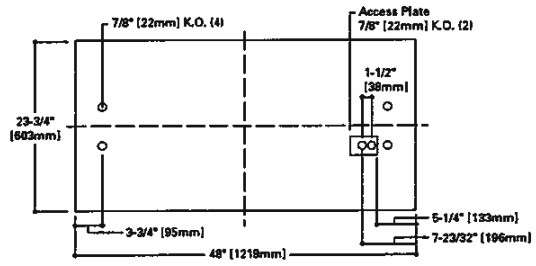


2EP3GAX
332

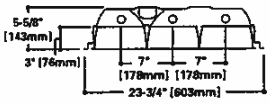
18 Cell
2' X 4' PARABOLIC
3 LAMP
SEMI-SPECULAR OR
SPECULAR LOUVER
Paralux III
Recessed Static or
Air Supply Troffer



MOUNTING DATA



LAMP CONFIGURATIONS



CEILING COMPATIBILITY

G
Grid/Lay-in
Standard

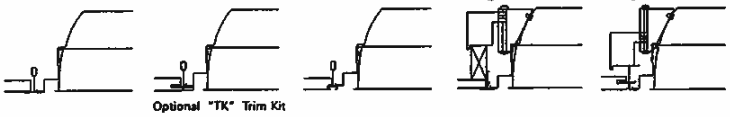
T
Concealed T

Optional "TK" Trim Kit

T
Slot Grid

F
Flange Trim
With Supporting
Swing Gates

MZ
Modular Trim
With Supporting
Swing Gates



Ceiling Type	Trim Type
Exposed Grid	G
Concealed T	G or T
Slot Grid	G or T
Flange	F
Concealed Spline	MZ
Metal Pan	MZ

(Verify compatibility / consult Pre Sales Technical Support.)

ENERGY DATA

Input Watts:
EB Ballast & STD Lamps
332 (91)
ES Ballast & STD Lamps
332 (108)
Luminaire Efficacy Rating
LER = FP-60
Catalog Number: 2EP3GAX-332
Yearly Cost of 1000 lumens, 3000 hrs at .08 KWH = $4.00

*Convertibility applies to housing only. Appropriate shielding media assemblies must be utilized.

**Reference the lamp/ballast data in the Technical Section for specific lamp/ballast requirements.

LAMPS CONTAIN MERCURY. DISPOSE ACCORDING TO LOCAL, STATE OR FEDERAL LAWS

LINEAR DISCONNECT
Safe and convenient means of disconnecting power

ISTU CERTIFIED

COOPER Lighting
www.cooperlighting.com

Specifications and Dimensions subject to change without notice.
Consult your representative for additional options and finishes.

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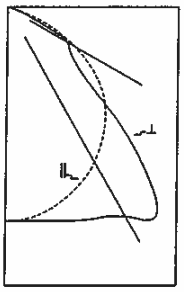
TYPE R04
2EP3GAX

PHOTOMETRICS



2EP3GAX-332S36I
Electronic Ballast
F32/35K Lamps
2800 Lumens
Spacing criterion: (II) 1.2 x mounting height, (⊥) 1.6 x mounting height
Efficiency 69.4%
Test Report: 2EP3GX332S36I.IES
LER = FP-60
Yearly Cost of 1000 lumens, 3000 hrs at .08 KWH = $4.00

Coefficients of Utilization

Effective floor cavity reflectance																				
rc	80%				70%				50%			30%			10%			0%		
rw	70	50	30	10	70	50	30	10	50	30	10	50	30	10	50	30	10	0		
RCR																				
0	83	83	83	83	81	81	81	81	77	77	77	74	74	74	71	71	71	69		
1	78	75	73	71	76	73	71	70	71	69	68	68	67	65	66	65	64	62		
2	72	68	64	61	71	67	63	60	64	62	59	62	60	58	60	58	57	55		
3	67	61	57	53	66	60	56	53	58	55	52	56	53	51	55	52	50	49		
4	62	55	50	46	61	54	50	46	53	49	45	51	48	45	50	47	44	43		
5	57	49	44	40	56	49	44	40	47	43	39	46	42	39	45	41	39	37		
6	53	45	39	35	52	44	39	35	43	38	35	42	38	34	41	37	34	33		
7	49	40	35	31	48	40	34	31	39	34	30	38	33	30	37	33	30	29		
8	45	36	30	27	44	35	30	26	35	30	26	34	29	26	33	29	26	25		
9	41	32	27	23	40	32	26	23	31	26	23	30	26	23	29	25	22	21		
10	38	29	24	20	37	29	24	20	28	23	20	27	23	20	27	23	20	19		

Zonal Lumen Summary

Zone	Lumens	%Lamp	%Fixture
0-30	1903	22.7	32.6
0-40	3285	39.1	56.3
0-60	5425	64.6	93.0
0-90	5834	69.4	100.0
0-180	5834	69.4	100.0

Typical VCP Percentages

	Height Along		Height Across	
Room Size (Ft.)	8.5'	10.0'	8.5'	10.0'
20 x 20	76	73	82	79
30 x 30	83	79	87	83
30 x 60	86	83	89	86
60 x 30	85	82	88	86
60 x 60	88	85	90	88

Candela

Angle	Along II	45°	Across ⊥
0	2312	2312	2312
5	2295	2306	2324
10	2251	2289	2347
15	2189	2274	2395
20	2108	2258	2451
25	2007	2235	2506
30	1891	2205	2636
35	1762	2173	2766
40	1617	2153	2259
45	1449	2001	1423
50	1257	1463	960
55	1043	885	807
60	782	571	666
65	443	325	243
70	142	106	79
75	45	38	35
80	18	16	15
85	6	6	4
90	0	0	0

ORDERING INFORMATION

Sample Number: 2EP3GAX-332S36I-120V-EB81-U

	2	EP3	G	X	3	32	S	36	I	UNV		ER	8	2		U

Heat Removal [1]
HR= Heat Removal
HRDO= Heat Removal Damper Open
HRDC= Heat Removal Damper Closed

Width
2= 2' Width

Series
EP3= Paralux III

Trim Type [2]
G= Grid/Lay-in - Standard
T= Concealed T/Slot[3] Grid
F= Flange Trim
MZ= Modular Trim

Air Supply
AX= Air Supply Floating Louver
X= Blank Side/Floating Louver - Non Air Supply
AVX= Air Supply Floating Louver w/Directional Air Vane

Number of Lamps [4]
3 Lamps (Not Included)

Wattage
32= 32W T8 (48")

Louver Color
S= Silver
G= Gold
W= White

Cell Configuration
36= 3 Rows of 6, 18 Cell (2'x4')

Louver Finish
H= Semi-Specular/Haze (Gold Only)
I= Semi-Specular/Haze (Low Iridescent) Standard
MI= Specular/Mirrored (Low Iridescent)
P= Painted

Voltage [5]
120V= 120 Volt
277V= 277 Volt
347V= 347 Volt
UNV= Universal Voltage[6] 120-277

Options
GL= Single Element Fuse
GM= Double Element Fuse
WTR= White Reveal
Lamps= Lamps Installed
Flex= Flex Installed
Emergency= EM Installed

Ballast Type [6]
EB= Electronic Ballast
ER= Generic Rapid Start
DLS= Dimming Ballast

Lamp Size
8= T8

Number of Ballasts
1= 1 Ballast
2= 2 Ballast
3= 3 Ballast

Options
/PLUS= Higher Ballast Factor(1.18)
RLS= Rotor Lock Socket (T8 Lamp only)
RIF1= Advance Suppressor
FR= Fire Rated Label
20GA/REP= 20 Gauge Housing w/Riveted End Plate
MEP= Modified End Plate
PAF= Painted After Fabrication

Packaging
U= Unit Pack
PAL= Palletized Uncartoned Fixtures
PALC= Palletized Fixtures in Carton

Notes: 1 Integral End Plate Grid Lock feature not available in Heat Removal
2 Convertability applies to housing only, appropriate shielding media assemblies must be utilized. Fixture also adaptable with flanged or modular trims.
3 An EQ Grid Clip is recommended for all 9/16" ceiling systems.
4 Standard off-center ballast on 3 lamp fixtures.
5 Products also available in non-US voltage and frequencies for international markets
6 Not Available when specifying emergencies, voltage must be specific

ACCESSORIES

EQ = T-BAR Safety Earthquake Clips [3]

SHIPPING INFORMATION

Catalog No.	Wt.
2EP3GAX-332S36I	42 lbs.

TYPE R05

COOPER LIGHTING - METALUX®

DESCRIPTION

GC8 is a premium grade specification lensed troffer series. This innovative, high quality luminaire is dedicated to the latest T8 lamp and micro electronic ballast technology for optimal performance and energy efficiency. The GC8 is compatible with all of today's popular ceiling systems and is available with a number of options and accessories for application versatility.

The GC8 Series features efficiency, quality and performance. The series is an excellent choice for commercial office spaces, schools, hospitals or retail merchandising areas.

SPECIFICATION FEATURES

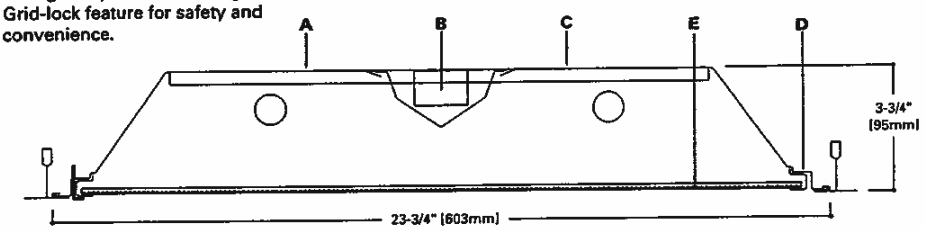
A ... Construction
Rigid housing is die formed of code gauge prime cold rolled steel and features full length die-formed stiffeners for added strength. Side flanges are hemmed. Innovative design provides superior lens brightness uniformity and visual comfort. Micro ballast cover*** reduces ballst shadow for superior lens brightness uniformity and is easily removed without tools. Die formed captive lampholder brackets fully enclose lampholder wiring permitting easy lampholder replacement. Heavy endplates are securely attached with interlocking tabs and screws. Four auxiliary fixture end suspension points provided. KOs for continuous row wiring. Endplates have integral Grid-lock feature for safety and convenience.

B ... Electrical
Ballasts are CBM/ETL Class "P" and are positively secured by mounting bolts. Pressure lock lampholders. UL/CUL listed. Suitable for damp locations.

C ... Finish
Multistage, iron phosphate pretreatment ensures maximum bonding and rust inhibition. Housing and ballast cover finished with new 90% reflective matte white enamel for superior performance. "PAF" Painted After Fabrication option also available.

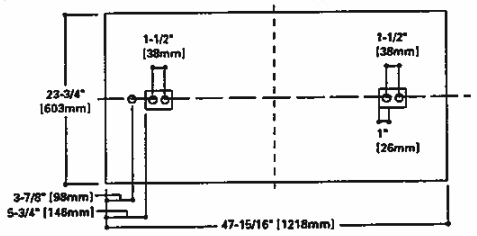
D ... Hinging/Latching
Positive cam action spring loaded steel latches with baked white enamel finish. Safety-lock T-hinges allow hinging and latching either side.

E ... Frame/Shielding
Die formed, heavy gauge, flat steel door with reinforced mitered corners and baked white enamel finish. Flat and regressed aluminum doors also available. Positive light seals. Light stabilized 100% virgin acrylic prismatic lens. Standard #12 pattern. Numerous additional shielding options available.

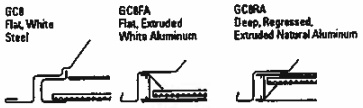


*maximum overall nominal depth

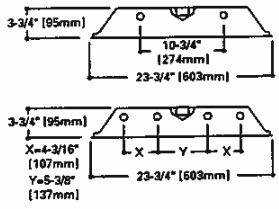
MOUNTING DATA



DOOR FRAMES

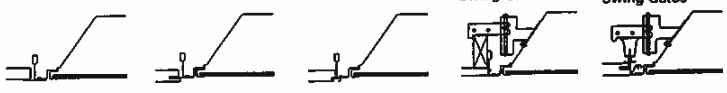


LAMP CONFIGURATIONS



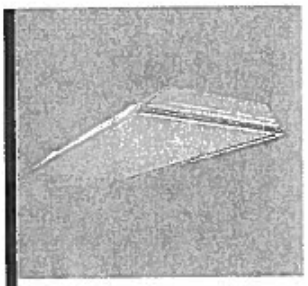
CEILING COMPATIBILITY

G Grid/Lay-in Standard	G Concealed T	G Slot Grid	F Flange Trim With Supporting Swing Gates	C Modular Trim With Supporting Swing Gates



Ceiling Type	Trim Type
Exposed Grid	G
Concealed T	G
Slot Grid	G
Flange	F
Metal Pan	C

(Verify compatibility/ consult factory.)



2GC8
232
432

2' X 4' TROFFER
2 OR 4 LAMP
Specification T8 Troffer

ENERGY DATA

Input Watts:
EB Ballast & STD Lamps
232 (61)
432 (122)

ES Ballast & STD Lamps
232 (71)
432 (142)

Luminaire Efficacy Rating
LER = FL-69
Catalog Number: 2GC8-232A

Yearly Cost of 1000 lumens, 3000 hrs at .08 KWH = $3.50

LER = FL-64
Catalog Number: 2GC8-432A

Yearly Cost of 1000 lumens, 3000 hrs at .08 KWH = $3.75

*Reference the lamp/ballast data in the Technical Section for specific lamp/ballast requirements.

**Consult Pre Sales Technical Support.

***Full sized ballast cover for biaxial lamps and emergency option.

LAMPS CONTAIN MERCURY. DISPOSE ACCORDING TO LOCAL, STATE OR FEDERAL LAWS

LINEAR DISCONNECT
Safe and convenient means of disconnecting power

LSD CERTIFIED

COOPER Lighting
www.cooperlighting.com

Specifications and Dimensions subject to change without notice.
Consult your representative for additional options and finishes.

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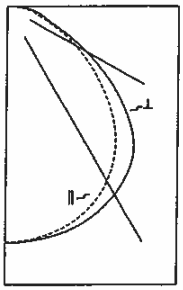
TYPE R05

2GC8

PHOTOMETRICS



2GC8-232A
Electronic Ballast
(2) FO32/35K lamps
2800 lumens
Spacing criterion: (∥) 1.2 x mounting height, (⊥) 1.3 x mounting height
Efficiency 84.8%
Test Report: 2GC8232A.IES
LER = FL-69
Yearly Cost of 1000 lumens, 3000 hrs at .08 KWH = $3.50

Candela

Angle	Along ∥	45°	Across ⊥
0	1810	1810	1810
5	1801	1806	1810
10	1780	1791	1800
15	1743	1764	1782
20	1690	1723	1750
25	1616	1667	1703
30	1520	1591	1644
35	1401	1489	1569
40	1258	1351	1467
45	1085	1183	1308
50	898	1008	1100
55	725	813	870
60	564	593	650
65	420	392	468
70	307	244	339
75	226	171	266
80	170	141	207
85	98	87	122
90	0	0	0

Coefficients of Utilization

Effective floor cavity reflectance 20%

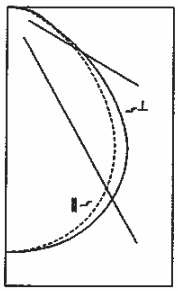
rc	80%				70%				50%			30%			10%			0%
rw	70	50	30	10	70	50	30	10	50	30	10	50	30	10	50	30	10	0
RCR																		
0	101	101	101	101	99	99	99	99	94	94	94	90	90	90	87	87	87	85
1	93	89	85	82	90	87	84	81	83	81	78	80	78	76	77	75	74	72
2	85	78	73	68	83	77	72	67	74	69	66	71	67	64	68	66	63	61
3	78	69	63	57	76	68	62	57	65	60	56	63	59	55	61	57	54	52
4	72	62	55	49	70	61	54	49	59	53	48	57	52	48	55	51	47	45
5	66	55	48	43	64	55	48	42	53	47	42	51	46	42	50	45	41	39
6	61	50	43	37	59	49	42	37	48	42	37	46	41	37	45	40	36	35
7	57	46	38	33	55	45	38	33	44	37	33	42	37	33	41	36	32	31
8	53	42	35	30	51	41	34	30	40	34	29	39	33	29	38	33	29	28
9	49	38	31	27	48	38	31	27	37	31	27	36	30	26	35	30	26	25
10	46	35	29	24	45	35	29	24	34	28	24	33	28	24	32	28	24	23

Zonal Lumen Summary

Zone	Lumens	%Lamp	%Fixture
0-30	1437	25.7	30.2
0-40	2366	42.3	49.8
0-60	3995	71.3	84.1
0-90	4751	84.8	100.0
0-180	4751	84.8	100.0

Typical VCP Percentages

Room Size (Ft.)	Height Along 8.5'	Height Along 10.0'	Height Across 8.5'	Height Across 10.0'
20 x 20	71	75	69	72
30 x 30	66	70	63	67
30 x 60	58	61	53	57
60 x 30	68	72	66	70
60 x 60	58	61	54	58



2GC8-432A
Electronic Ballast
(4) FO32/35K lamps
2800 lumens
Spacing criterion: (∥) 1.2 x mounting height, (⊥) 1.3 x mounting height
Efficiency 79.2%
Test Report: 2GC8432A.IES
LER = FL-64
Yearly Cost of 1000 lumens, 3000 hrs at .08 KWH = $3.75

Candela

Angle	Along ∥	45°	Across ⊥
0	3460	3460	3460
5	3444	3452	3461
10	3402	3422	3441
15	3331	3367	3401
20	3228	3282	3329
25	3085	3163	3222
30	2899	3003	3079
35	2670	2789	2904
40	2392	2510	2677
45	2057	2184	2369
50	1701	1843	1986
55	1370	1478	1582
60	1059	1083	1192
65	783	719	849
70	568	449	621
75	419	315	491
80	316	259	381
85	183	159	226
90	0	0	0

Coefficients of Utilization

Effective floor cavity reflectance 20%

rc	80%				70%				50%			30%			10%			0%
rw	70	50	30	10	70	50	30	10	50	30	10	50	30	10	50	30	10	0
RCR																		
0	94	94	94	94	92	92	92	92	88	88	88	84	84	84	81	81	81	79
1	87	83	80	77	84	81	78	76	78	76	73	75	73	71	72	70	69	67
2	79	73	68	64	77	72	67	63	69	65	62	66	63	60	64	61	59	57
3	73	65	59	54	71	64	58	53	61	56	52	59	55	52	57	54	51	49
4	67	58	51	46	65	57	51	46	55	50	45	53	48	45	51	47	44	42
5	62	52	45	40	60	51	45	40	48	44	39	48	43	39	46	42	39	37
6	57	47	40	35	56	46	40	35	45	39	35	44	38	35	42	38	34	33
7	53	43	36	31	52	42	36	31	41	35	31	40	35	31	39	34	31	29
8	49	39	33	28	48	39	32	28	38	32	28	37	31	28	36	31	27	26
9	46	36	30	25	45	35	29	25	35	29	25	34	29	25	33	28	25	23
10	43	33	27	23	42	33	27	23	32	27	23	31	28	23	31	26	23	21

Zonal Lumen Summary

Zone	Lumens	%Lamp	%Fixture
0-30	2735	24.4	30.9
0-40	4476	40.0	50.5
0-60	7474	66.7	84.3
0-90	8865	79.2	100.0
0-180	8865	79.2	100.0

Typical VCP Percentages

Room Size (Ft.)	Height Along 8.5'	Height Along 10.0'	Height Across 8.5'	Height Across 10.0'
20 x 20	58	62	56	60
30 x 30	52	56	49	53
30 x 60	42	46	38	42
60 x 30	54	58	52	57
60 x 60	43	47	40	43

ORDERING INFORMATION

Sample Number: 2GC8-232A-120V-EB81-U

2	G	C8		4	32	A125	UNV		ER	8	2		G3-U

Width
2= 2' Width

Trim Type
G= Grid/Lay-in [1] (Standard)
C= Concealed T
S= Slot Grid
F= Flange Trim

Series
C8= Specification T8 Troffer

Door Frame
Standard= Flat White Steel Door (Leave blank)
FA= Flush White Extruded Aluminum c/w Spring Latch
RA= Regressed White Extruded Aluminum
FAN= Flush Natural Anodized Extruded Aluminum
RAN= Regressed Natural Anodized Extruded Aluminum
FAB= Flush Black Extruded Aluminum
RAB= Regressed Black Extruded Aluminum

Number of Lamps [2]
2 Lamps (Not Included)
4 Lamps (Not Included)

Wattage
32= 32W T8 (48")

Shielding
A= # 12 Acrylic Pattern
A125= #12 Pattern Acrylic (.125" Thickness)
A19/156= #19 Pattern Acrylic (.156" Thickness)
DA= Dropped Dish Matte White Acrylic
IMA48= Injection Molded Acrylic (.150" Thickness)
PB1S= 1/2" x 1/2" x 1/2" Silver Parabolic Louver (Styrene)

Voltage [3]
120V= 120 Volt
277V= 277 Volt
347V= 347 Volt
UNV= Universal Voltage[4] 120-277

Options
GL= Single Element Fuse
GM= Double Element Fuse
Lamps= Lamps Installed
Flex= Flex Installed
Emergency= EM Installed

Ballast Type [3]
EB= Electronic Instant Start
ER= T8 Electronic Program Rapid Start. Total Harmonic Distortion < 10%
DLS= Digital Lighting System Dimming

Lamp Size
8= T8

Number of Ballasts
1= 1 Ballast
2= 2 Ballast
3= 3 Ballast

Options
/PLUS= Higher Ballast Factor > 1.13. Total Harmonic Distortion < 20%
RLS= Rotor Lock Socket (T8 Lamp only)
FR= Fire Rated Label
MEP= Modified End Plate
REP= Riveted End Plates
PAF= Painted After Fabrication

Packaging
U= Unit Pack
PAL= Palletized Uncartoned Fixtures
PALC= Palletized Fixtures in Carton

Notes: 1 An EQ Grid Clip is recommended for all 9/16" ceiling systems.
2 Standard off-center ballast on 3 lamp fixtures.
3 Products also available in non-US voltage and frequencies for International markets
4 Not Available when specifying emergencies, voltage must be specific

ACCESSORIES

EQ = T-BAR Safety Earthquake Clips [1]

SHIPPING INFORMATION

Catalog No.	Wt.
2GC8-232A	29 lbs.
2GC8-432A	32 lbs.

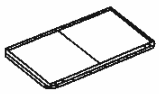
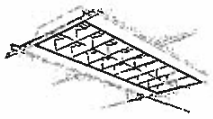
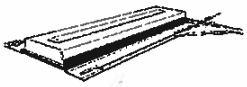
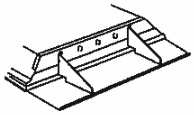
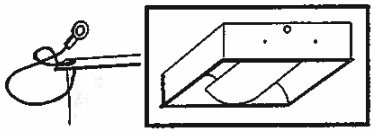
TYPE R05

METALUX®

G3

OPTIONS AND ACCESSORIES

PARABOLIC, RECESSED AND SURFACE

MISCELLANEOUS		DESIGNATION	DESCRIPTION
Plaster Frames		**95-PF-14 (1x4)** **95-PF-22 (2x2)** **95-PF-24 (2x4)** **95-PF-44 (4x4)**	Heavy Gauge Metal Construction. Used with Flanged Recessed Fixtures. (Intended to serve as a plaster stop only, not to fit into an opening.)
Rated Construction		**FR** **Example:** GCXRD-340A-120V-LE3-FR-U	Fluorescent Recessed Fixture Classification for Fire Resistance Fixture FR labeled "SUITABLE FOR INSTALLATION IN FIRE RATED CEILINGS' when applied in conformance with the designs specified in the Underwriters Laboratories Fire Resistance Directory."
Fixture Gasketing		**G1**	Neoprene gasket between door frame and fixture housing.
		**G2**	G1 gasketing plus vinyl gasketing between lens and door frame.
		**G3**	G1 & G2 gasketing plus neoprene gasketing on mounting surface of fixture trim. (Grid or Flange). Field installed. Gasketing availability: GPXF, GCXF, GMXF. No HR, air or louvers. (Lens min .125 - max .125)
		**FTG**	Foam tape gasket applied between door frame and fixture housing when quadrasealed fixture is required. Prevents light spillage. (Consult Pre Sales Technical Support for availability.)
Side Filler Panel		**SFP** 	Heavy gauge side filler panels for 20" x 48" fixture for use in a 2' x 4' ceiling installation. (Baked white finish, use 2 per fixture).
Spacer		**A-1-B/Spacer-U**	Spaces fixture 1-1/2" to 2-1/2" from ceiling
End Fillers		**12-EFS-B (1x2, 1x4)** **20-EFS-B (20x48)** **24-22EFS-B (2x2, 2x4)**	6" Heavy gauge end fillers use 2 per fixture. End fillers lay on T-bars and are held in place by fixtures but are not attached.
End Support Brackets		**ESS-B**	Heavy gauge end support brackets. Four per fixture are required when fixtures are supported from ends. Must be used with fixture that has a modified end plate (MEP).
Ovation Shield Cable Option		**LSC** Center Mount **LSCS** Side Mount **Example:** (Center Mount) 2RDI-2BX40RP-120V-EB51-LSC (Side Mount) 2RDI-2BX40RP-120V-EB51-LSCS	The lamp shield cable is a factory option available for any and all Ovation products. For center mount Ovation models, use the LSC option. For side-mount, use the LSCS option. Ovation products specified with this option ship with a parts bag included, which contain the safety lanyards, clear rubber "caps" and an instruction sheet.
Palletizing	 PAL  PALC	**PAL** **PALC**	Un-cartoned fixtures secured by corrugated end cap protectors and heavy gauge stretch wrap. Fast and efficient handling. Fixtures in cartons secured by heavy gauge stretch wrap. Fast and efficient handling.

Items listed are the major options and accessories available on Metalux Recessed (Parabolic and Recessed) and Surface Fixtures. Additional options and accessories are available. Consult Pre Sales Technical Support for additional information.

COOPER LIGHTING - METALUX®

TYPE R16

GC8 SERIES

1' x 4', 2' x 2', 2' x 4' Troffer
2, 3 or 4 Lamp

SPECIFICATION GRADE T8 RECESSED STATIC TROFFER

GC8
T8 DEDICATED LENSED LUMINAIRE

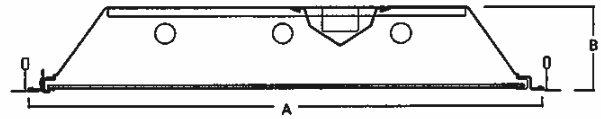
- Optimized for T8 lamps
- Equipped with energy saving ballasts / complies with federal energy efficiency standards
- Innovative design provides superior lens brightness uniformity and visual comfort
- Reinforced flat white steel door or flat and regressed aluminum, mitered corners
- Spring loaded latch
- Min. 90% reflective white enamel finish for superior performance
- Optional "PAF" finish
- Positive light seal
- Die embossed housing
- Four auxiliary fixture end suspension points provided
- Endplate grid-lock feature
- For information on flanged fixture, including ceiling opening size, see Technical Section.
- UL/CUL Listed. Suitable for damp locations.

DESCRIPTION

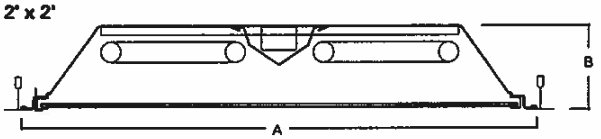
GC8 is a premium grade specification lensed troffer series. This innovative, high quality luminaire is dedicated to the latest T8 lamp and micro electronic ballast technology for optimal performance and energy efficiency. The GC8 is compatible with all of today's popular ceiling systems and is available with a number of options and accessories for application versatility. The GC8 Series features efficiency, quality and performance in a low profile luminaire. The series is an excellent choice for commercial office spaces, schools, hospitals or retail merchandising areas.

DIMENSIONS

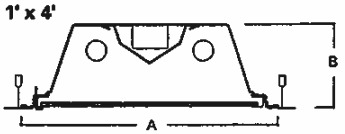
2' x 4'



2' x 2'



1' x 4'



NOMINAL SIZE	A	B
1' x 4'	11-3/4" (298mm)	3-3/4" (95mm)
2' x 2'	23-3/4" (603mm)	3-3/4" (95mm)
2' x 4'	23-3/4" (603mm)	3-3/4" (95mm)

ORDERING INFORMATION

SAMPLE NUMBER: 2GC8-332-120V-EB81-U

2 G C8 3 UI-5/8A125 UNV ER81 U

2=2' Width
Blank=1' Width

Trim Type
G=Grid/Lay-in - Standard
~~GeConcealed T~~
G=Slot Grid[1]
F=Flange Trim

Series
C8=Specification T8 Troffer

Standard=Flat White Steel Door (Leave Blank)
~~PA=Flat White Extruded Aluminum~~ Door
RA=3/8" Regressed White Extruded Aluminum Door
FAN=Flat Natural Extruded Aluminum Door
RAN=3/8" Regressed Natural Extruded Aluminum Door
FAB=Flat Black Extruded Aluminum Door
RAB=3/8" Regressed Black Extruded Aluminum Door

Number of Lamps[2]
2, 3 or 4 Lamps
(Not included)

Wattage (Length)
U6T8=32W (24")
17=17W T8 (24")
U1-5/8=31W T8 (24")
~~32=32W T8 (48")~~
BX40=40W Biaxial (24")

A=#12 PatternAcrylic
(See Lens and Louver Tables for additional shielding options)

Voltage[3]
120V=120 Volt
277V=277 Volt
347V=347 Volt
UNV=Universal Voltage 120-277[4]

Options
GL=Single Element Fuse
GM=Double Element Fuse
Lamps - for lamps installed, see lamp options table
Flex - for flex installed, see flex ordering table
Emergency - for EM installed, see EM options table[5]

Options
(See Options Section)

Packaging
U=Unit Pack
PAL=Job Pack, out of carton
PALC=Job Pack, in carton

Ballast Type[3]
Blank=Standard Magnetic Ballast (Biax & 20W)
ER8_=T8 Electronic Program Rapid Start. Total Harmonic Distortion < 10%
No. of Ballast
1, 2 or 3
EB8_=T8 Electronic Instant Start. Total Harmonic Distortion < 10%
No. of Ballast
1, 2 or 3
EB8_/PLUS=T8 Electronic Instant Start. High Ballast Factor >1.13. Total Harmonic Distortion < 20%
No. of Ballast
1, 2 or 3
EB5_=T5 Biax Electronic Instant Start. Total Harmonic Distortion < 20%
No. of Ballast
1, 2 or 3
TEB5_=T5 Biax Electronic Instant Start. Total Harmonic Distortion < 10%
No. of Ballast
1, 2 or 3
DLS=Digital Lighting System Dimming
(For complete details on generic or to specify manufacturer's ballast see pg. 469)

NOTES: [1]An EQ Grid Clip is recommended for all 9/16" ceiling systems. [2]Standard off-center ballast compartment on 3-lamp fixtures. [3]Products also available in non-US voltages and frequencies for international markets. [4]Not available when specifying emergencies, voltage must be specific. [5]If field installing, battery pack requires larger ballast cover. Enter with EM/BC in fixture catalog number for larger ballast cover.

For complete product data, reference the Fluorescent Specification binder. Specifications & dimensions subject to change without notice. Consult your Cooper Lighting Representative for availability and ordering information.

TYPE S01

COOPER LIGHTING - LUMARK®

DESCRIPTION

The Enclosed and Gasketed Glass Steeler features a cast aluminum neck for superior strength and a hinged door frame with latches for access to the lamp without tools. The Enclosed and Gasketed Glass Steeler is fully enclosed and gasketed at three separate points to prevent entry of external contaminant's. U.L. listed and CSA Certified for damp locations.

The Enclosed and Gasketed Glass Steeler is perfect for textile mills, hangars, assembly and auto service areas.

SPECIFICATION FEATURES

A ... Mounting
Easy slide-on die-cast aluminum mounting box with tapped opening for 3/4" conduit.

B ... Housing
Heavy-duty formed steel housing with an open air ballast for cooler operation. Finished in white polyester paint.

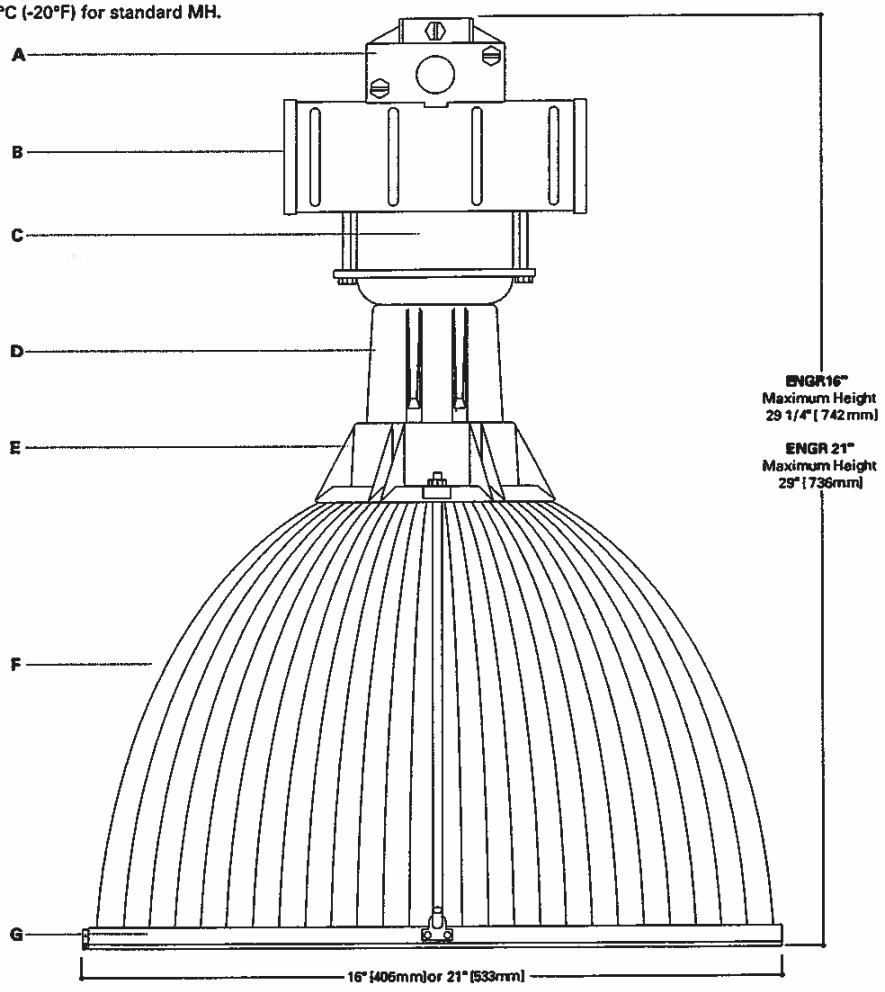
C ... Ballast
High power factor ballast with class H insulation. Minimum starting temperature is -40°C (-40°F) for HPS and Pulse Start MH, -30°C (-20°F) for standard MH.

D ... Socket
Mogul-base porcelain socket.

E ... Neck
Cast aluminum neck with staggered inserts for adjustability of the socket providing a variety of distributions from concentrated to wide.

F ... Refractor System
Faceted borosilicate glass refractor provides maximum photometric performance and beam efficiency. The system is completely enclosed and gasketed at three (3) points: door to refractor, refractor to neck, and neck to housing.

G ... Lens
Clear tempered glass lens in an extruded aluminum hinged door frame with latches allows access for relamping without tools.



SE
16" & 21"
ENCLOSED &
GASKETED
GLASS STEELER

175-1000W
High Pressure Sodium
Pulse Start Metal Halide
Metal Halide

ENCLOSED & GASKETED
GLASS HIGH-BAY
INDUSTRIAL LUMINAIRE

TECHNICAL DATA

Maximum Ambient Temperatures
65°C (400W and Below)
55°C (Above 400W)
External Supply Wiring 90°C Minimum

ENERGY DATA

CWI Ballast Input Watts
400W HPS HPF (465 Watts)
400W MH HPF (475 Watts)

CWA Ballast Input Watts
320W MP HPF (365 Watts)
320W ML HPF (342 Watts)
350W MP HPF (395 Watts)
350W ML HPF (375 Watts)
400W HPS HPF (465 Watts)
400W MP HPF (448 Watts)
400W MH HPF (455 Watts)
400W ML HPF (425 Watts)
750W MP HPF (810 Watts)
1000W HPS HPF (1000 Watts)
1000W MP HPF (1080 Watts)
1000W MH HPF (1080 Watts)

SHIPPING DATA

Approximate Net Weight:
77 lbs. (35 kgs.)

TYPE S01

SE 16" & 21" ENCLOSED GASKETED GLASS STEELER

ORDERING INFORMATION

Sample Number: HPSE-ENGR16-M-400-MT-Q

MH	SE	ENGR	21	M	400	120	LL	F1-FL1-PC3

Lamp Type
- HP= High Pressure[1] Sodium
- **MH**= Metal Halide
- MP= Pulse Start MH[2] (CWA)
- ML= Pulse Start MH [2, 3] (Linear Reactor)

Series
- **SE**= E & G Steeler

Reflector Type
- **ENGR**= Enclosed & Gasketed Glass Refractor

Reflector Diameter
- **16**= 16" Diameter
- **21**= 21" Diameter

Distribution
- C= Concentrated
- **M**= Medium
- W= Wide

Lamp Wattage
- 175= 175W
- 250= 250W
- 320= 320W
- 350= 350W
- **400**= 400W
- 450= 450W
- 1000= 1000W[4]

Voltage [5]
- **120V**
- 208V
- 240V
- 277V
- 347V
- 480V
- MT [6]
- TT [7]
- 5T [8]

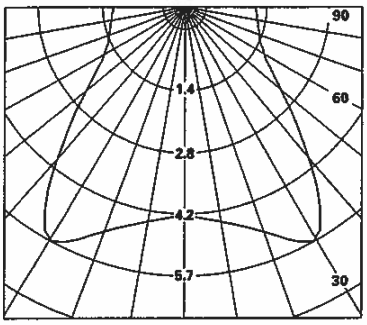
Options [9]
- **PS**= Protective Starter (Available in 1000W HPS only. For other wattages consult factory).
- **P**= Pre-set Socket Position from the factory
- **SS**= Space Saver Feature
- **Q**= Quartz Restrike DC Bayonet Base (Does not strike at cold start)
- **EM**= Quartz Restrike with "Delay Relay" (Quartz lamp strikes at both hot and cold starts)
- **EM/SC**= Emergency Separate Circuit
- **QD**= Quick Disconnect Die-Cast Pendant Mount Box(Specify Single Voltage, Not Compatible with PC3, PHC, C3, MWS, RM or HC)
- **SCF**= 3' Aircraft Safety Cable secures Housing to Ceiling (Alternative lengths available. Example: SCF6 = 6' Cable)
- **SCR**= Aircraft Safety Cable-Housing to Reflector
- **LTCB**= Less Top Connector Box (Housing shipped less top connector box. (Specify when using TWMBS accessory)
- **RM**= Remote Mount
- **LL**= Lamp Included **w/Venture lamp**
- **QLL**= Quartz Lamp Included (Lamp is Cooper sesignated product based on luminaire requirements. Lamp is shipped separate from luminaire unless otherewise noted)
- **FILT**= Sintered Bronze filter (Sintered bronze filter prevents the entrance of contaminants)
- **WMWS**= MWS Industrial components attached to the fixture at the factory. (Standard cord length is 3 ft. 6 ft. and 11 ft. also available. Please refer to MWS Modular Wiring System section for additional information.
- **F1**= Single Fuse (120, 277 or 347V only)
- **F2**= Double Fuse (208, 240 or 480V only)
- **FH-1**= Die-cast Aluminum Fixture Hook (with 3/4" threads for easy installation)
- **FL-1**= Malleable Iron Plated Fixture Loop (with 3/4" threads for easy installation)
- **SHK**= Die-cast Aluminum Fixture Hook (with safety screw and 3/4" threads for easy installation)
- **C3**= 3' Cord with no plug (Must use with FH-1 or FL-1 or SHK)
- **PC3**= 3' Cord with NEMA Plug (120V-L5-15P, 208V-L6-15P, 347V-L37-20P, AND 480V-L8-20P)Other cord lengths are available by specifying length (PC6 for 6' Cord) Requires FH-1 or FL-1, or SHK. Example: PC3-120VUse with TPPH-NEMA. Specify Voltage.
- **PHC**= Power Cord and Plug (18" Power Cord and Non-NEMA plug configuration. Must be used with FL-1 and TPPH (Thru-Way Pendant Power Hook). Must specify single voltage.
- **PHC-NEMA**= Power Cord and NEMA Plug (18" Power Cord and and 20 AMP NEMA plug configuration). Must be used with FL-1 and TPPH-NEMA (Thru-Way Pendant Power Hook).
- **HL**= LumaWatt Fixture Control Module (Allows low voltage control wire to be daisy-chained between fixtures outside AC conduit run similar to low voltage intercom's, fire alarms and phone systems)
- **HC**= LumaWatt Fixture Control Module (Low voltage leads pulled out of top connection box for areas requiring all wiring to be installed in conduit)

Accessories
- C3= 3' Cord-No Plug - Requires FH-1, FL-1, or SHK
- PC3= 3' Cord with NEMA Plug - (120V-L5, 208V-L6-15P, 347V-L37-20P and 480V-L8-20P) Other cord lengths are available by specifying length (PC6 for 6' cord).Requires FH-1 or FL-1, or SHK. Use with TPPH-NEMA. Specify Voltage.
- PHC= Power Hook Cord and Non-NEMA plug configuration. Must be used with FL-1 and TPPH (Thru-Way Pendant Power Hook)
- PHC-NEMA= Power Cord and NEMA plug - 18" Power Cord and 20 Amp NEMA plug configuration. Must be used with FL-1 and TPPH-NEMA (Thru-Way Pendant Power Hook)
- MBT= Twin Mount Bracket (Fixtures must be same voltage and without hooks, loops or plugs.)
- TPPH= Thru-Way Pendant Power Hook. Requires FL-1 and PHC. Specify Voltage.
- TPPH-F= Thru-Way Pendant Power Hook Single Fuse, 120, 277 or 347 Volt. Requires FL-1 and PHC. Specify Voltage.
- TPPH-F2= Thru-Way Pendant Power Hook - Double Fused, 208, 240, or 480 Volt. Requires FL-1 and PHC. Specify Voltage.
- TPPH-F-QD= Thru-Way Pendant Power Hook Single Fuse, Quick Disconnect. Requires FL-1 and PHC. Specify Voltage (120, 277, or 347V)
- TPPH-F2-QD= Thru-Way Pendant Power Hook Double Fuse, Quick Disconnect. Requires FL-1 and PHC. Specify Voltage (208, 240, or 480V)
- TPPH-NEMA= Thru-Way Pendant Power Hook Requires FL-1 and PHC-XXXV-NEMA. Specify
- FH-1= Fixture Hook
- **FL-1**= Fixture Loop
- SHK= Hook with Safety Screw
- TWMBS= Thru-Way Mounting Box[10]

Notes:
1. Not available in 175, 200, 320, 350, 450 and 750W.
2. 175, 250, 320, 350, 400 and 450W only.
3. 277V only, not available with Q, EM, HL or HC options.
4. Requires reduced envelope BT-37 lamp for Metal Halide lamps.
5. Products also available in non-US voltages and 50HZ for International markets.
6. Multi-Tap ballast 120/208/240/277V wired 277V.
7. Triple-Tap ballast 120/277/347V wired 347V.
8. 5-Tap ballast 120/208/240/277/480V wired 277V. 400W Metal Halide only.
9. Must be listed in the order shown and separated by a dash.
10. Specify L/TCB when using thru-way mounting box (TWMBS) accessory.

TYPE S01

PHOTOMETRICS



MHSE-ENGR16-M-400-120V
400-Watt MH
34,000-Lumen Coated BT-37 Lamp

Coefficients Of Utilization

	Effective floor cavity reflectance								20%											
rc	80%				70%				50%			30%			10%			0%		
rw	70	50	30	10	70	50	30	10	50	30	10	50	30	10	50	30	10	0		
RCR																				
1	72	68	65	61	68	65	61	58	58	56	53	52	50	48	47	45	44	41		
2	65	59	52	49	62	56	51	47	50	46	43	45	42	39	40	38	36	33		
3	59	52	45	41	56	49	43	39	44	40	36	40	36	33	35	33	30	28		
4	54	46	39	34	51	43	37	33	39	34	30	35	31	28	32	28	26	24		
5	50	41	34	29	47	39	33	28	35	30	26	32	28	24	28	25	22	20		
6	46	36	30	25	43	35	29	25	32	27	23	29	24	21	26	22	20	18		
7	43	33	27	22	40	31	26	22	29	24	20	26	22	19	24	20	17	16		
8	40	30	24	20	37	29	23	19	26	21	18	24	20	17	22	18	16	14		
9	37	27	22	18	35	26	21	17	24	19	16	22	18	15	20	16	14	12		
10	35	25	20	16	33	24	19	15	22	18	14	20	16	14	18	15	13	11		

Spacing Criterion 1.6

Zone	%Lamp	Zone	%Lamp
0-30	12.6	0-90	53.1
0-40	22.1	90-180	18.9
0-60	36.8	Total	72

Candlepower

Degree	CP
0	4397
5	4480
10	4591
15	4778
20	5033
25	5410
30	5717
35	5242
40	4383
45	3661
50	2929
55	2445
60	2113
65	1921
70	1787
75	1728
80	1676
85	1631
90	1607

TYPE S04

NEO-RAY™

DESCRIPTION

Series 6-DIP/1, 6-DIP/2, 6-DIP/3...a group committed to technology, proportion, simplicity, and to the spatial clarity of open plan, space design available with a clear ribbed acrylic lens or round lateral baffle.
Features
- Low glare wide spread illumination.
- Pendant mounted applications are provided to any length, to any configuration, and in a standard or custom finish.
- The extruded aluminum 4" round spatial tubes offer the the unity and quality required for today?s energy conscious free style open plan space design.

SPECIFICATION FEATURES

A ... Construction
Extruded aluminum housing. Nominal 3', 4', 6' or 8' illuminated sections.

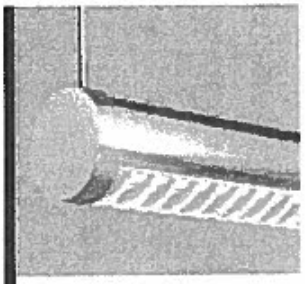
End Caps
Die-cast aluminum.

B ... Shielding
Clear ribbed acrylic lens or contoured baffle.

C ... Electrical
120, 277, 347 or Universal Voltage electronic ballast. Fixtures and electrical components certified to UL and CUL standards.

D ... Finish
Durable, low gloss, white, powder coated acrylic finish.

Mounting
Pendant with single stem (standard) or single cable. Canopy: Round 5" diameter.

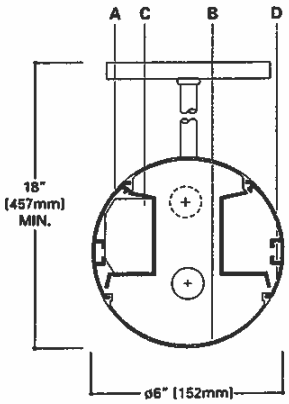


Cirque 6-DIP

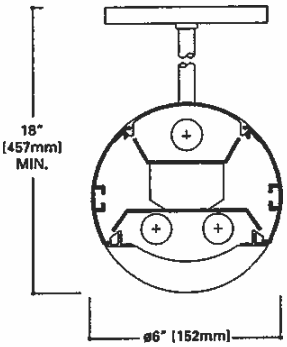
1, 2 & 3T8
1, 2 & 3T5
1, 2 & 3T5HO

SUSPENDED
DIRECT/INDIRECT

Light Distribution
Indirect - 43.6%
Direct - 56.4%



6DIP 1 or 2 Lamps



6DIP 3 Lamps

ORDERING INFORMATION

Sample Number: S6DIP/1x1T8/ST84/1EB-DU

6	DI	P	1X2	T8	SC	08	1	ERS	DU			S26

Series
6= Cirque

Light Output
DI= Direct/Indirect

Mounting
P= Pendant

Number of Lamps
1= 1 Lamp
1x1= 2 Lamps
1x2= 3 Lamps

Lamp Type
T8= T8
T5= T5
T5HO= T5HO

Pendant
SC= Single Cable
SC48=48" Cable

Run Length
Overall Nominal Run Length __ ft.

Voltage [2]
1= 120V
2= 277V
3= 347V

Ballast
EB= Electronic Ballast
DB= Dimming Ballast

Switching Options
SI= Single Switching
DU= Double Switching

Emergency
EM= Emergency Pack

Fusing
GLR= GLR
GMF= GMF

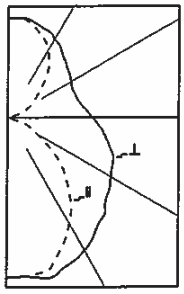
Shielding Options
S14= Contoured Baffle
S26= Acrylic Lens

ERS=(1)Electronic Program Rapid Start Ballast,THD <10%

Notes: 1 Available with 7" or earthquake 45° swivel canopy assembly.
2 Not all options available. Please consult your Cooper Lighting Representative for availability.

TYPE S04
Cirque 6-DIP

PHOTOMETRICS



6DIP-3T8-S26-S26
(3) F32T8/735/RS
2850 Lumens
Efficiency 67.9%
Test Report
#8072.0

Coefficients of Utilization

Effective floor cavity reflectance					20%													
rc	80%				70%				50%			30%			10%			0%
rw	70	50	30	10	70	50	30	10	50	30	10	50	30	10	50	30	10	0
RCR																		
0	75	75	75	75	70	70	70	70	61	61	61	53	53	53	45	45	45	42
1	67	63	60	57	62	59	56	54	51	49	47	44	43	41	38	37	36	32
2	60	55	50	46	56	51	47	43	44	41	38	38	36	34	33	31	29	26
3	55	48	42	38	51	45	40	36	39	35	32	34	31	28	29	27	25	22
4	50	42	36	32	47	40	34	30	35	30	27	30	27	24	26	23	21	19
5	46	37	31	27	43	35	30	26	31	26	23	26	23	20	23	20	18	16
6	42	33	27	23	39	31	26	22	27	23	20	24	20	18	20	18	15	13
7	39	30	24	20	36	28	23	19	25	20	17	21	18	15	18	16	13	12
8	36	27	21	18	33	25	20	17	22	18	15	19	16	13	17	14	12	10
9	33	24	19	15	31	23	18	15	20	16	13	17	14	12	15	12	10	09
10	31	22	17	14	29	21	16	13	18	14	12	16	13	10	14	11	09	08

Candela

Angle	Along II	45°	Across ⊥
0	996	996	996
5	992	993	993
15	983	1003	1032
25	847	913	981
35	690	827	923
45	503	704	852
55	301	595	773
65	158	510	715
75	67	421	646
85	9	350	563
90	0	316	526
95	4	292	492
105	52	278	441
115	123	293	435
125	210	336	460
135	316	404	496
145	440	492	550
155	532	561	592
165	590	600	615
175	621	621	621
180	619	619	619

Zonal Lumen Summary

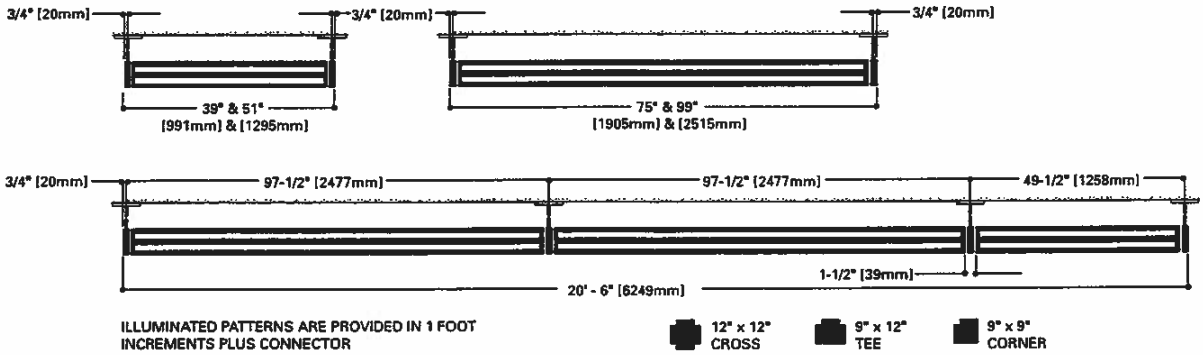
Zone	Lumens	%Lamp	%Fixture
0-30	803	9.4	13.8
0-40	1315	15.4	22.7
0-60	2356	27.6	40.6
0-90	3556	41.6	61.3
90-120	834	9.7	14.4
90-130	1134	13.3	19.5
90-150	1757	20.5	30.3
90-180	2246	26.3	38.7
0-180	5802	67.9	100.0

Total Luminaire Efficiency = 71.3%

Luminance Data

Angle In Deg	0-Deg cd/sm	45-Deg cd/sm	90-Deg cd/sm
45	1276	1389	1681
55	941	1321	1717
65	671	1342	1882
75	464	1412	2167
85	185	1689	2716

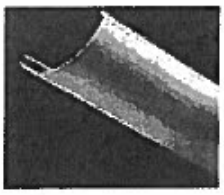
MOUNTING INFORMATION



ILLUMINATED PATTERNS ARE PROVIDED IN 1 FOOT INCREMENTS PLUS CONNECTOR

12" x 12" CROSS
9" x 12" TEE
9" x 9" CORNER

SHIELDING INFORMATION



S26 Acrylic Lens
Clear acrylic ribbed lens.

S14 Round Baffle
Lateral baffle, 1 1/2" spacing, 35° cutoff, baked white finish.

TYPE W03

COOPER LIGHTING - METALUX®

DESCRIPTION

The BC Series is an energy efficient luminaire designed for versatility in application and performance. The BC Series features an opal white acrylic refractor that produces a 180° uniform light distribution pattern.

The versatile BC Series combines quality and economy in a multi-purpose wall bracket. The luminaire is perfect for illuminating corridors, stairwells, lavatories, dressing rooms, patient rooms, utility/task and area lighting.

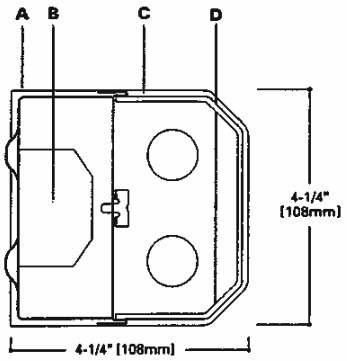
SPECIFICATION FEATURES

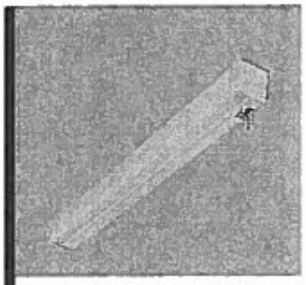
A ... Construction
Housing channel die formed code gauge prime cold rolled steel. Sturdy positive lampholder mounting bracket. Reflector/channel wireway cover secured by quarter-turn fastener for easy wireway access. Channel back has numerous KO's for easy installation. Decorative white opaque injection molded end plates.

B ... Electrical
Ballast are CBM/ETL Class "P" and positively secured by mounting bolts. Pressure lock lampholders. UL/CUL listed. Suitable for damp locations.

C ... Finish
Painted after fabrication. Electrostatically applied baked white polyester powder enamel finish. Multistage cleaning cycle, iron phosphate coating with rust inhibitor. Conveyorized application and baking time accurately controlled at an elevated temperature.

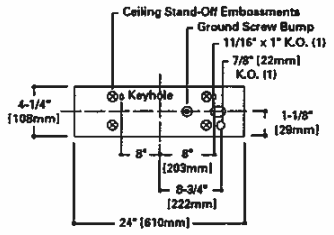
D ... Frame/Shielding
Smooth opal 100% virgin acrylic refractor. 180° uniform light distribution (Uplight, Frontal & Downlight). Refractor is securely held in place by removable decorative injection molded white end plates. Refractor can be easily removed for installation and maintenance.

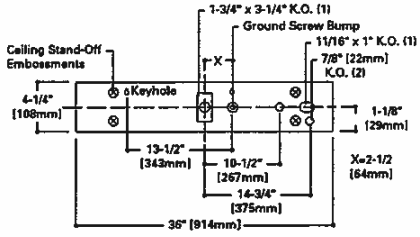


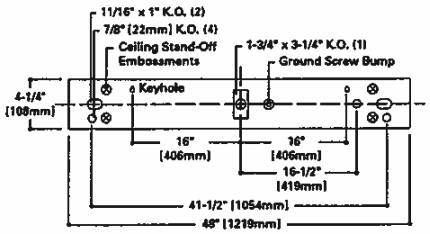


BC
120
117
130
125
140
132
220
217
230
225
240
232

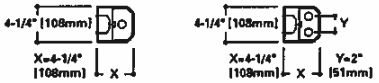
MOUNTING DATA







LAMP CONFIGURATIONS



ALL PURPOSE WALL BRACKET
2' Wall Bracket
1 or 2 Lamp LTS or HTS
3' or 4' Wall Bracket
1 or 2 Lamp

ENERGY DATA
Input Watts:
EB Ballast & STD Lamps
117 (20), 130 (31), 125 (28), 140 (38)
132 (30), 217 (36), 230 (60), 225 (47)
240 (72), 232 (61)
ES Ballast & STD Lamps
120 (32), 117 (23), 130 (46), 125 (33)
140 (38), 132 (30), 220 (58), 217 (45)
230 (74), 225 (65), 240 (86), 232 (71)
Luminaire Efficacy Rating
LER = FL-65
Catalog Number: BC-232A
Yearly Cost of 1000 lumens, 3000 hrs at .08 KWH = $3.69

LAMPS CONTAIN MERCURY. DISPOSE ACCORDING TO LOCAL, STATE OR FEDERAL LAWS

LINEAR DISCONNECT
Safe and convenient means of disconnecting power

Specifications and Dimensions subject to change without notice.
Consult your representative for additional options and finishes.

TYPE W03
BC

PHOTOMETRICS

Energy Saving Ballast, F32T8/35K lamps rated at 2850 lumens. Spacing criterion: (II) 1.3 x mounting heights, (⊥) 1.5 x mounting height.

Light Loss Factor .74. For complete photometric report BC232A.IES

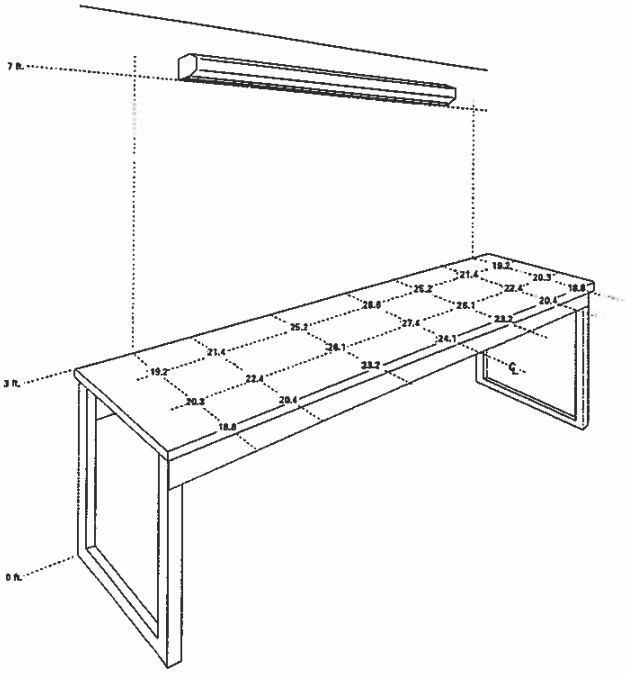
BC-232A
(II)Lamps (2) F32T8/35K
Lumens 2850 Each

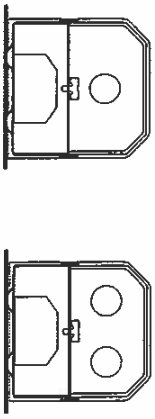
Conditions

Ceiling Height	8'-0"
Mounting Height	7'-43/64"
Work Plane	12'-0"

Reflectance

Ceiling	80%
Walls	50%
Floor	20%





Scale is Exaggerated on Fixture Application and Mounting

ORDERING INFORMATION

Sample Number: BC-232-120V-EB81-U

BC	2	32		UNV		ER	8	1		U

Series
BC= All Purpose Wall Bracket

Number of Lamps
1 Lamp (Not Included)
2 Lamps (Not Included)

Wattage
20= 20W T12 (24")
17= 17W T8 (24")
25= 25W T8 (36")
30= 30W T12 (36")
32= 32W T8 (48")
40= 40W T12 (48")

Ballast Start Type
LTS= Low Trigger Start (20W only) (120V only)
HTS= High Trigger Start (20W only)

Voltage [1]
120V= 120 Volt
277V= 277 Volt
347V= 347 Volt
UNV= Universal Voltage[2] 120-277

Options
GL= Single Element Fuse
GM= Double Element Fuse
Emergency= EM Installed[3]

Ballast Type [1]
_= Standard Magnetic T12 Ballast
LE3= T12 Magnetic Energy Saving
EB= Electronic Instant Start
ER= T8 Electronic Program Rapid Start, Total Harmonic Distortion < 10%

Lamp Size
2= T12
8= T8

Number of Ballasts
1= 1 Ballast
2= 2 Ballast

Options
/PLUS= Higher Ballast Factor > 1.13. Total Harmonic Distortion < 20%
RLS= Rotor Lock Socket (T8 Lamp only)
CO= Convenience Outlet (120V only)
RS1= Rotary Switch (1 Circuit, 120V only)
PS1= Pull Switch (1 Circuit)

Packaging
U= Unit Pack

Notes: 1 Products also available in non-US voltage and frequencies for international markets
2 Not Available when specifying emergencies, voltage must be specific
3 Non available for 2' version.

SHIPPING INFORMATION

Catalog No.	Wt.
BC-117	8 lbs.
BC-125	10 lbs.
BC-132	11 lbs.
BC-217	8 lbs.
BC-225	10 lbs.
BC-232	11 lbs.

TYPE W03A

COOPER LIGHTING - METALUX®

DESCRIPTION

The BC Series is an energy efficient luminaire designed for versatility in application and performance. The BC Series features an opal white acrylic refractor that produces a 180° uniform light distribution pattern.

The versatile BC Series combines quality and economy in a multi-purpose wall bracket. The luminaire is perfect for illuminating corridors, stairwells, lavatories, dressing rooms, patient rooms, utility/task and area lighting.

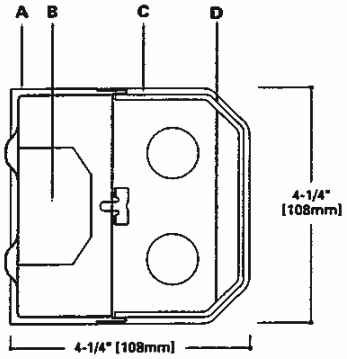
SPECIFICATION FEATURES

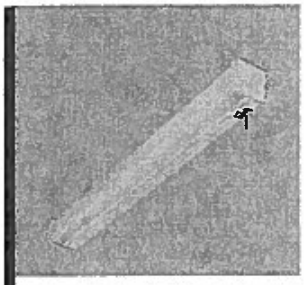
A ... Construction
Housing channel die formed code gauge prime cold rolled steel. Sturdy positive lampholder mounting bracket. Reflector/channel wireway cover secured by quarter-turn fastener for easy wireway access. Channel back has numerous KO's for easy installation. Decorative white opaque injection molded end plates.

B ... Electrical
Ballast are CBM/ETL Class "P" and positively secured by mounting bolts. Pressure lock lampholders. UL/CUL listed. Suitable for damp locations.

C ... Finish
Painted after fabrication. Electrostatically applied baked white polyester powder enamel finish. Multistage cleaning cycle, iron phosphate coating with rust inhibitor. Conveyorized application and baking time accurately controlled at an elevated temperature.

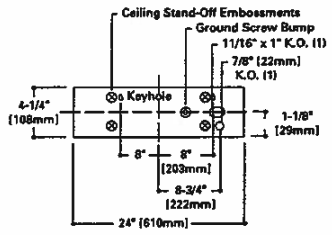
D ... Frame/Shielding
Smooth opal 100% virgin acrylic refractor. 180° uniform light distribution (Uplight, Frontal & Downlight). Refractor is securely held in place by removable decorative injection molded white end plates. Refractor can be easily removed for installation and maintenance.

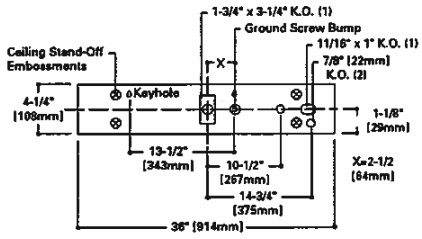




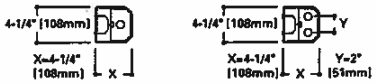
BC
120
117
130
125
140
132
220
217
230
225
240
232

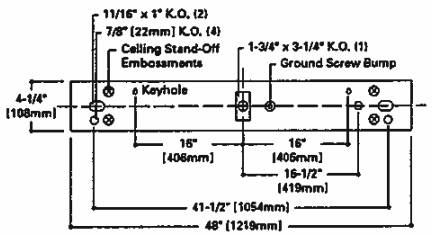
MOUNTING DATA





LAMP CONFIGURATIONS





ALL PURPOSE WALL BRACKET
2' Wall Bracket
1 or 2 Lamp LTS or HTS
3' or 4' Wall Bracket
1 or 2 Lamp

ENERGY DATA
Input Watts:
EB Ballast & STD Lamps
117 (20), 130 (31), 125 (28), 140 (38)
132 (30), 217 (36), 230 (60), 225 (47)
240 (72), 232 (61)
ES Ballast & STD Lamps
120 (32), 117 (23), 130 (46), 125 (33)
140 (38), 132 (30), 220 (58), 217 (45)
230 (74), 225 (65), 240 (86), 232 (71)
Luminaire Efficacy Rating
LER = FL-65
Catalog Number: BC-232A
Yearly Cost of 1000 lumens, 3000 hrs at .08 KWH = $3.69

LAMPS CONTAIN MERCURY. DISPOSE ACCORDING TO LOCAL, STATE OR FEDERAL LAWS

LINEAR DISCONNECT
Safe and convenient means of disconnecting power

ISO 9001 CERTIFIED

COOPER Lighting
www.cooperlighting.com

Specifications and Dimensions subject to change without notice.
Consult your representative for additional options and finishes.

TYPE W03A
BC

PHOTOMETRICS

Energy Saving Ballast, F32T8/35K lamps rated at 2850 lumens. Spacing criterion: (II) 1.3 x mounting heights, (⊥) 1.5 x mounting height.

Light Loss Factor .74. For complete photometric report BC232A.IES

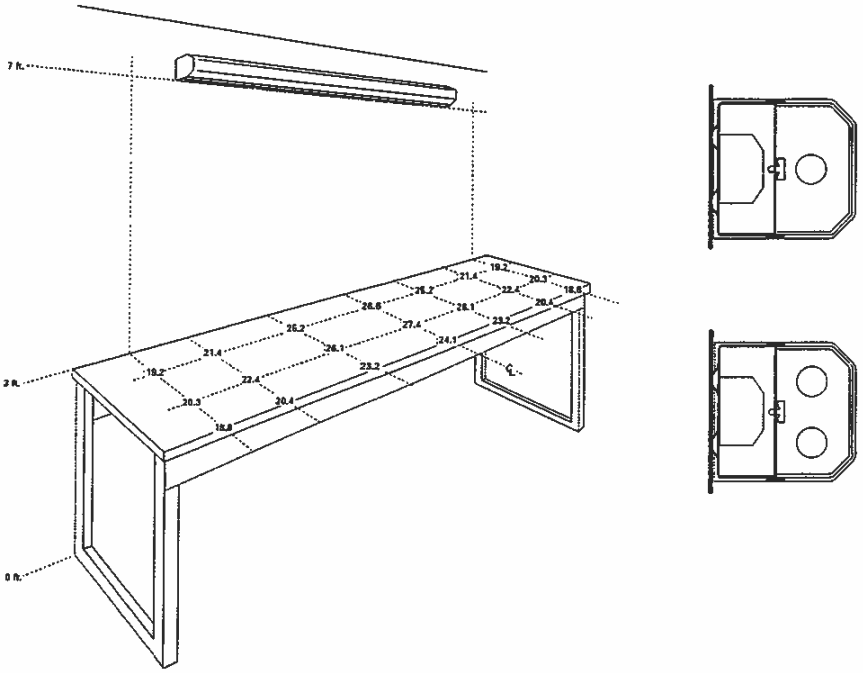
BC-232A
(II)Lamps (2) F32T8/35K
Lumens 2850 Each

Conditions

Ceiling Height	8'-0"
Mounting Height	7'-43/64"
Work Plane	12'-0"

Reflectance

Ceiling	80%
Walls	50%
Floor	20%



Scale is Exaggerated on Fixture Application and Mounting

ORDERING INFORMATION

Sample Number: BC-232-120V-EB81-U

BC	2	32		120		ER	8	1		LTC2-U

Series
BC= All Purpose Wall Bracket

Number of Lamps
1 Lamp (Not Included)
2 Lamps (Not Included)

Wattage
20= 20W T12 (24")
17= 17W T8 (24")
25= 25W T8 (36")
30= 30W T12 (36")
32= 32W T8 (48")
40= 40W T12 (48")

Ballast Start Type
LTS= Low Trigger Start (20W only) (120V only)
HTS= High Trigger Start (20W only)

Voltage [1]
120V= 120 Volt
277V= 277 Volt
347V= 347 Volt
UNV= Universal Voltage[2] 120-277

Options
GL= Single Element Fuse
GM= Double Element Fuse
Emergency= EM Installed[3]

Ballast Type [1]
_= Standard Magnetic T12 Ballast
LE3= T12 Magnetic Energy Saving
EB= Electronic Instant Start
ER= T8 Electronic Program Rapid Start. Total Harmonic Distortion < 10%

Lamp Size
2= T12
8= T8

Number of Ballasts
1= 1 Ballast
2= 2 Ballast

Options
/PLUS= Higher Ballast Factor > 1.13. Total Harmonic Distortion < 20%
RLS= Rotor Lock Socket (T8 Lamp only)
CO= Convenience Outlet (120V only)
RS1= Rotary Switch (1 Circuit, 120V only)
PS1= Pull Switch (1 Circuit)

Packaging
U= Unit Pack

Notes: 1 Products also available in non-US voltage and frequencies for international markets
2 Not Available when specifying emergencies, voltage must be specific
3 Non available for 2' version.

SHIPPING INFORMATION

Catalog No.	Wt.
BC-117	8 lbs.
BC-125	10 lbs.
BC-132	11 lbs.
BC-217	8 lbs.
BC-225	10 lbs.
BC-232	11 lbs.

TYPE W11

COOPER LIGHTING - LUMARK®

DESCRIPTION

The Lumark WAL-Eye blends durable polycarbonate construction and efficient illumination with an exciting design to deliver lasting performance in virtually any architectural setting. U.L. listed for wet locations. CSA certified.

With its easy-mounting back plate, the WAL-Eye is perfect for schools, loading docks, offices and underpasses.

SPECIFICATION FEATURES

A ... Front Cover
One-piece polycarbonate front cover with choice of prismatic or clear lens area.

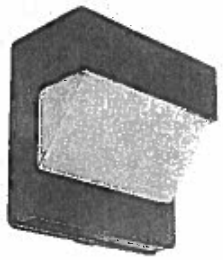
B ... Finish
Specially formulated finish on inside of unit for maximum weather resistance.

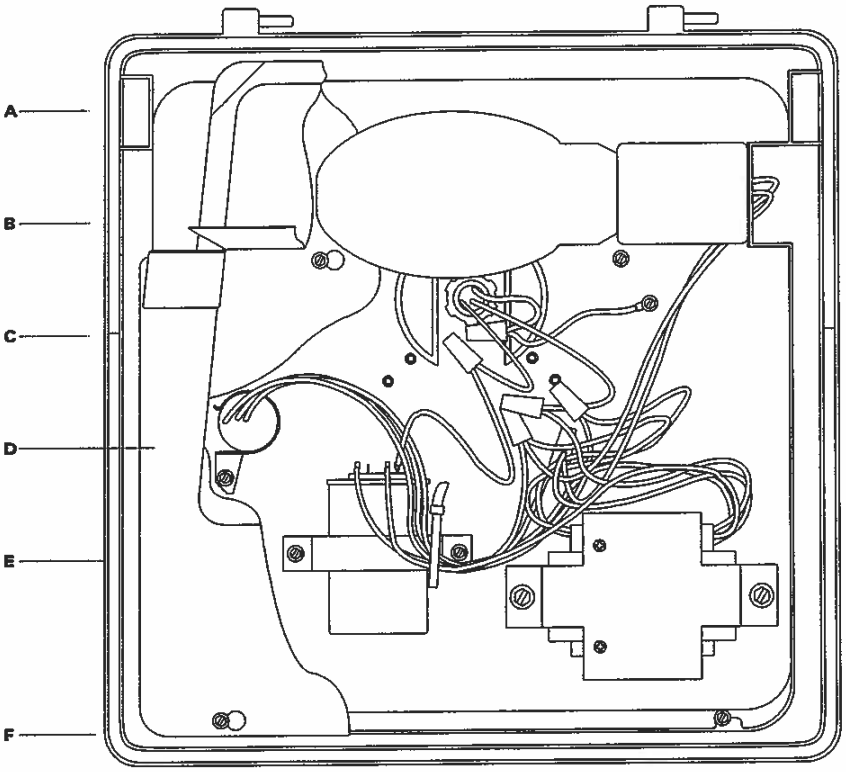
C ... Base Housing
Die-cast aluminum base housing is U.L. listed for wet locations and CSA certified.

D ... Reflector
Formed, specular anodized aluminum reflector.

E ... Gasket
Cast-in gasket-retaining channel positively locates door gasket.

F ... Latch
Molded-in latch for tooliess entry.



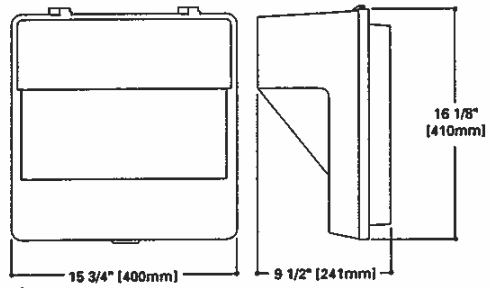


WP
WAL-EYE

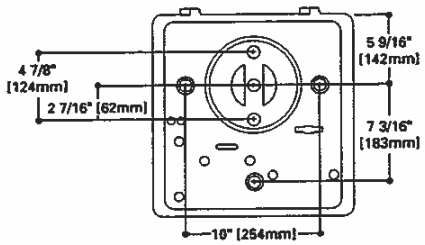
70 - 175W
High Pressure Sodium
Metal Halide

WALL MOUNT LUMINAIRE

DIMENSIONS



MOUNTING DETAIL



ENERGY DATA

Reactor Ballast Input Watts
70W HPS NPF/HPF (82 Watts)
100W HPS NPF/HPF (118 Watts)
150W HPS NPF/HPF (175 Watts)

High Reactance Ballast Input Watts
70W MH HPF (94 Watts)
100W MH HPF (129 Watts)
150W HPS HPF (190 Watts)

CWA Ballast Input Watts
175W MH HPF (210 Watts)

SHIPPING DATA

Approximate Net Weight:
20 lbs. (9 kgs.)

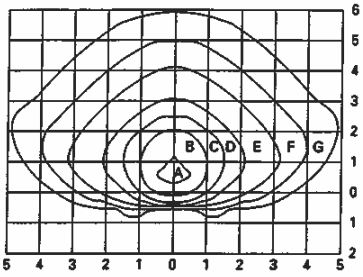
COOPER Lighting
www.cooperlighting.com

Specifications and Dimensions subject to change without notice.
Consult your representative for additional options and finishes.

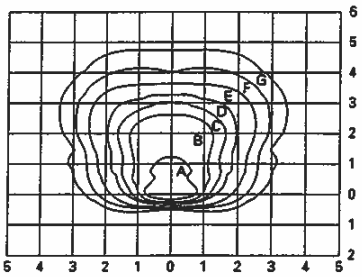
ADH041273
05/03/2007 2:52:01 PM

TYPE W11
WP WAL-EYE

PHOTOMETRICS



HPWP-150-120
150-Watt HPS
16,000-Lumen Clear Lamp



HPWC-150-120
150-Watt HPS
16,000-Lumen Clear Lamp

Footcandle Table

Select mounting height and read across for footcandle values of each isofootcandle line. Distance in units of mounting height.

Mounting Height	Footcandle Values for Isofootcandle Lines						
	A	B	C	D	E	F	G
8'	17.60	7.04	3.52	1.76	0.70	0.35	0.18
10'	11.25	4.50	2.25	1.13	0.45	0.23	0.11
12'	7.80	3.12	1.56	0.78	0.31	0.16	0.08
15'	5.00	2.00	1.00	0.50	0.20	0.10	0.05
18'	3.45	1.38	0.69	0.35	0.14	0.07	0.03
20'	2.80	1.12	0.56	0.28	0.11	0.06	0.03

ORDERING INFORMATION

Sample Number: MHWP-175-MT-Q

MH	WP	100	H	120	Q-LL-F1	

Lamp Type
HP= High Pressure Sodium
MH= Metal Halide

Series [1]
WP= WAL-Eye w/ Prismatic Polycarbonate
WC= WAL-Eye w/ Clear Polycarbonate

Lamp Wattage [2]
70= 70W
100= 100W
150= 150W[3]
175= 175W[4]

Ballast
H= High Power Factor
= Normal Power Factor

Voltage [5]
120V= 120V
208V= 208V
240V= 240V
277V= 277V
347V= 347V
480V= 480V
MT= Multi-Tap, [6] wired 277V
TT= Triple-Tap, [7] wired 347V

Options [8]
Q= Quartz Restrike DC Bayonet Base (Does not strike at cold start)
LL= Lamp Included[9]
TR= Tamper Resistant Screws
R= Omit Hinge Pins and Include Vandal-Proof Screws
F1= Single Fuse (120, 277 or 347V only)
F2= Double Fuse (208, 240 or 480V only)
PE= Internal Photocontrol (Specify Voltage)

Accessories [10]
QUARTZ LAMP INCLUDED

Notes:
1 Standard lens is prismatic polycarbonate. To specify clear polycarbonate change "WP" in catalog number to "WC".
2 All lamps are mogul-base except 150W Metal Halide and below are medium-base. Lamp not included.
3 Uses S-55 (55 Volt) lamp only.
4 Uses coated lamp.
5 Products also available in non-US voltages and 50HZ for International markets.
6 Multi-Tap ballast 120/208/240/277V wired 277V.
7 Triple-Tap ballast 120/277/347V wired 347V.
8 Add as suffix in the order shown.
9 Lamp is shipped separate from luminaire. Lamp is Cooper designated product based on luminaire requirements. Specified lamps must be ordered as a separate line item.
10 Order separately.

26667 - F32T8/SP35/ECO

GE Ecolux® Starcoat® T8

• Passes TCLP, which can lower disposal costs.

Photo Not Available

Rendering

High Color

Photo Not Available

Minimum Efficiency Standards

Meets Federal

GENERAL CHARACTERISTICS

Lamp Type	Linear Fluorescent - Straight Linear
Bulb	T8
Base	Medium Bi-Pin (G13)
Rated Life	30000.0 hrs
Rated Life (instant start) @ Time	21000 h @ 3 h 30000 h @ 12 h
Rated Life (rapid start) @ Time	30000.0 @ 3.0/36000.0 @ 12.0 h
Bulb Material	Soda lime
Starting Temperature (MIN)	10.0 K
LEED-EB MR Credit	36 picograms Hg per mean lumen hour
Additional Info	TCLP compliant

PHOTOMETRIC CHARACTERISTICS

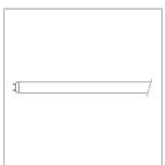
Initial Lumens	2800.0
Mean Lumens	2660.0
Nominal Initial Lumens per Watt	87
Color Temperature	3500.0 K
Color Rendering Index (CRI)	78.0
S/P Ratio (Scotopic/Photopic Ratio)	1.4

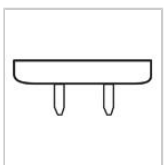
ELECTRICAL CHARACTERISTICS

Wattage	32.0
Voltage	137.0
Open Circuit Voltage (rapid start) Min @ Temperature	315 V @ 10 nV
Cathode Resistance Ratio - Rh/Rc (MIN)	4.25
Cathode Resistance Ratio - Rh/Rc (MAX)	6.5
Current Crest Factor (MAX)	1.7

PRODUCT INFORMATION

Product Code	26667
Description	F32T8/SP35/ECO
ANSI Code	1005-2
Standard Package	Case
Standard Package GTIN	10043168266670
Standard Package Quantity	36
Sales Unit	Unit
No Of Items Per Sales Unit	1
No Of Items Per Standard Package	36
UPC	043168266673





CAUTIONS & WARNINGS

Caution

• Lamp may shatter and cause injury if broken

Ohio | Public Utilities Commission

Application to Commit Energy Efficiency/Peak Demand Reduction Programs (Mercantile Customers Only)

Case No.: 12-0691-**EL-EEC**

Mercantile Customer: NEWARK BD OF EDUCATION

Electric Utility: Ohio Power

Program Title or Description: AEP Ohio Business Incentives for Energy Efficiency: Self Direct Program

Rule 4901:1-39-05(F), Ohio Administrative Code (O.A.C.), permits a mercantile customer to file, either individually or jointly with an electric utility, an application to commit the customer's existing demand reduction, demand response, and energy efficiency programs for integration with the electric utility's programs. The following application form is to be used by mercantile customers, either individually or jointly with their electric utility, to apply for commitment of such programs in accordance with the Commission's pilot program established in Case No. 10-834-EL-POR

Completed applications requesting the cash rebate reasonable arrangement option (Option 1) in lieu of an exemption from the electric utility's energy efficiency and demand reduction (EEDR) rider will be automatically approved on the sixty-first calendar day after filing, unless the Commission, or an attorney examiner, suspends or denies the application prior to that time. Completed applications requesting the exemption from the EEDR rider (Option 2) will also qualify for the 60-day automatic approval so long as the exemption period does not exceed 24 months. Rider exemptions for periods of more than 24 months will be reviewed by the Commission Staff and are only approved up the issuance of a Commission order.

Complete a separate application for each customer program. Projects undertaken by a customer as a single program at a single location or at various locations within the same service territory should be submitted together as a single program filing, when possible. Check all boxes that are applicable to your program. For each box checked, be sure to complete all subparts of the question, and provide all requested additional information. Submittal of incomplete applications may result in a suspension of the automatic approval process or denial of the application.

Any confidential or trade secret information may be submitted to Staff on disc or via email at ee-pdr@puc.state.oh.us.

Section 1: Company Information

Name: NEWARK BD OF EDUCATION

Principal address: 85 E Main St, Newark, Oh 43055

Address of facility for which this energy efficiency program applies: 534 Beacon Rd, Newark, Oh 43055

Name and telephone number for responses to questions:

Dave Altepeter, Newark Bd Of Education, (740) 670-7000

Electricity use by the customer (check the box(es) that apply):

☐ The customer uses more than seven hundred thousand kilowatt hours per year at our facility. (Please attach documentation.)

See Confidential and Proprietary Attachment 4 – Calculation of Rider Exemption and UCT which provides the facility consumption for the last three years, benchmark kWh, and the last 12 months usage.

☒ The customer is part of a national account involving multiple facilities in one or more states. (Please attach documentation.) When checked, see Attachment 6 – Supporting Documentation for a listing of the customer's name and service addresses of other accounts in the AEP Ohio service territory.

Section 2: Application Information

A) The customer is filing this application (choose which applies):

☐ Individually, on our own.

☒ Jointly with our electric utility.

B) Our electric utility is: Ohio Power Company

The application to participate in the electric utility energy efficiency program is "Confidential and Proprietary Attachment 3 – Self Direct Program Project Completed Application."

C) The customer is offering to commit (choose which applies):

☐ Energy savings from our energy efficiency program. (Complete Sections 3, 5, 6, and 7.)

☐ Capacity savings from the customer's demand response/demand reduction program. (Complete Sections 4, 5, 6, and 7.)

☒ Both the energy savings and the demand reduction from the customer's energy efficiency program. (Complete all sections of the Application.)

Section 3: Energy Efficiency Programs

A) The customer's energy efficiency program involves (choose whichever applies):

☐ Early replacement of fully functioning equipment with new equipment. (Provide the date on which the customer replaced fully functioning equipment, and the date on which the customer would have replaced such equipment if it had not been replaced early. Please include a brief explanation for how the customer determined this future replacement date (or, if not known, please explain why this is not known)).

☐ Installation of new equipment to replace equipment that needed to be replaced. The customer installed new equipment on the following date(s):

☒ Installation of new equipment for new construction or facility expansion. The customer installed new equipment on the following date(s): 8/1/2009

☐ Behavioral or operational improvement.

B) Energy savings achieved/to be achieved by your energy efficiency program:

1) If you checked the box indicating that your project involves the early replacement of fully functioning equipment replaced with new equipment, then calculate the annual savings [(kWh used by the original equipment) – (kWh used by new equipment) = (kWh per year saved)]. Please attach your calculations and record the results below:

Annual savings: kWh

2) If you checked the box indicating that you installed new equipment to replace equipment that needed to be replaced, then calculate the annual savings [(kWh used by less efficient new equipment) – (kWh used by the higher efficiency new equipment) = (kWh per year saved)]. Please attach your calculations and record the results below:

Annual savings: kWh

Please describe the less efficient new equipment that you rejected in favor of the more efficient new equipment.

3) If you checked the box indicating that your project involves equipment for new construction or facility expansion, then calculate the annual savings [(kWh used by less efficient new equipment) – (kWh used by higher efficiency new equipment) = (kWh per year saved)]. Please attach your calculations and record the results below:

Unit Quantity (watts) = Existing (watts x units) – Installed (watts x units)

kWh Reduction (Annual Savings) = Unit Quantity x (Deemed kWh/Unit)

Annual savings: 146,991 kWh

See Confidential and Proprietary Attachment 5 – Self Direct Program Project Calculation for annual energy savings calculations and 10-1599-EL-EEC for the work papers that provide all methodologies, protocols, and practices used in this application for prescriptive measures, as needed.

Please describe the less efficient new equipment that you rejected in favor of the more efficient new equipment.

The less efficient new equipment is the minimum required by Ohio State code or Federal Standard whichever is more stringent. For those measures where no code applies the baseline equipment is assumed to be the least efficient equipment available in the marketplace or standard practice, whichever results in the most conservative annual savings. Any information available describing the less efficient new equipment option is provided in 10-1599-EL-EEC for the work papers that provide all methodologies, protocols, and practices used in this application for prescriptive measures.

4) If you checked the box indicating that the project involves behavioral or operational improvements, provide a description of how the annual savings were determined.

Section 4: Demand Reduction/Demand Response Programs

A) The customer's program involves (check the one that applies)::

☒ Coincident peak-demand savings from the customer's energy efficiency program.

☐ Actual peak-demand reduction. (Attach a description and documentation of the peak-demand reduction.)

☐ Potential peak-demand reduction (choose which applies):

- Choose one or more of the following that applies:

  ☐ The customer's peak-demand reduction program meets the requirements to be counted as a capacity resource under a tariff of a regional transmission organization (RTO) approved by the Federal Energy Regulatory Commission.

  ☐ The customer's peak-demand reduction program meets the requirements to be counted as a capacity resource under a program that is equivalent to an RTO program, which has been approved by the Public Utilities Commission of Ohio.

B) On what date did the customer initiate its demand reduction program?

The coincident peak-demand savings are permanent installations that reduce demand through energy efficiency and were installed on the date specified in Section 3 A above.

C) What is the peak demand reduction achieved or capable of being achieved (show calculations through which this was determined):

Unit Quantity (watts) = Existing (watts x units) – Installed (watts x units)

KW Demand Reduction = Unit Quantity (watts) x (Deemed KW/Unit (watts))

49.9 kW

See Confidential and Proprietary Attachment 5 – Self Direct Program Project Calculation for peak demand reduction calculation, and 10-1599-EL-EEC for the work papers that provide all methodologies, protocols, and practices used in this application for prescriptive measures, as needed.

Section 5: Request for Cash Rebate Reasonable Arrangement (Option 1) or Exemption from Rider (Option 2)

Under this section, check the box that applies and fill in all blanks relating to that choice.

Note: If Option 2 is selected, the application will not qualify for the 60-day automatic approval. All applications, however, will be considered on a timely basis by the Commission.

A) The customer is applying for:

☒ Option 1: A cash rebate reasonable arrangement.

OR

☐ Option 2: An exemption from the cost recovery mechanism implemented by the electric utility.

OR

☐ Commitment payment

B) The value of the option that the customer is seeking is:

Option 1: A cash rebate reasonable arrangement, which is the lesser of (show both amounts):

☒ A cash rebate of $ 15,547.48. (Rebate shall not exceed 50% project cost. Attach documentation showing the methodology used to determine the cash rebate value and calculations showing how this payment amount was determined.)

See Confidential and Proprietary Attachment 5 – Self Direct Program Project Calculation for incentive calculations for this mercantile program.

Option 2: An exemption from payment of the electric utility's energy efficiency/peak demand reduction rider.

☐ An exemption from payment of the electric utility's energy efficiency/peak demand reduction rider for ____ months (not to exceed 24 months). (Attach calculations showing how this time period was determined.)

OR

☐ A commitment payment valued at no more than $_____. (Attach documentation and calculations showing how this payment amount was determined.)

OR

☐ Ongoing exemption from payment of the electric utility's energy efficiency/peak demand reduction rider for an initial period of 24 months because this program is part of an ongoing efficiency program that is practiced by our organization. (Attach documentation that establishes your organization's ongoing efficiency program. In order to continue the exemption beyond the initial 24 month period your organization will need to provide a future application establishing additional energy savings and the continuance of the organization's energy efficiency program.)

Section 6: Cost Effectiveness

The program is cost effective because it has a benefit/cost ratio greater than 1 using the (choose which applies):

☐ Total Resource Cost (TRC) Test. The calculated TRC value is: _____ (Continue to Subsection 1, then skip Subsection 2)

☒ Utility Cost Test (UCT) . The calculated UCT value is: 2.6 (Skip to Subsection 2.)

Subsection 1: TRC Test Used (please fill in all blanks).

The TRC value of the program is calculated by dividing the value of our avoided supply costs (generation capacity, energy, and any transmission or distribution) by the sum of our program overhead and installation costs and any incremental measure costs paid by either the customer or the electric utility.

The electric utility's avoided supply costs were _____.

Our program costs were _____.

The utility's incremental measure costs were _____.

Subsection 2: UCT Used (please fill in all blanks).

We calculated the UCT value of our program by dividing the value of our avoided supply costs (capacity and energy) by the costs to our electric utility (including administrative costs and incentives paid or rider exemption costs) to obtain our commitment.

Our avoided supply costs were $ 42,521.42

The utility's program costs were $ 881.94

The utility's incentive costs/rebate costs were $ 15,547.48.

Section 7: Additional Information

Please attach the following supporting documentation to this application:

- Narrative description of your program including, but not limited to, make, model, and year of any installed and replaced equipment.

  See Attachment 1 - Self Direct Project Overview and Commitment for a description of the project. See Attachment 6 – Supporting Documentation, for the specifications of the replacement equipment 10-1599-EL-EEC for the work papers that provide all methodologies, protocols, and practices used in this application for prescriptive measures, as needed. Due to the length of time since the equipment replacement, the make, model and year of the replaced equipment is not available.

- A copy of the formal declaration or agreement that commits your program to the electric utility, including:

  1) any confidentiality requirements associated with the agreement;

     See Attachment 2 – Self Direct Program Project Blank Application including Rules and Requirements. All confidentially requirements are pursuant to the Retrospective Projects/Rules and Requirements that are part of the signed application which is provided as Confidential and Proprietary Attachment 3 – Self Direct Program Project Completed Application.)

  2) a description of any consequences of noncompliance with the terms of the commitment;

     See Attachment 2 – Self Direct Program Project Blank Application including Rules and Requirements. All consequences of noncompliance are pursuant to the Retrospective Projects/Rules and Requirements that are part of the signed application which is provided as Confidential and Proprietary Attachment 3 – Self Direct Program Project Completed Application.

  3) a description of coordination requirements between the customer and the electric utility with regard to peak demand reduction;

     None required because the resources committed are permanent installations that reduce demand through increased efficiency during the Company's peak summer demand period generally defined as May through September and do not require specific coordination and communication to provide demand reduction capabilities to the Company.

4) permission by the customer to the electric utility and Commission staff and consultants to measure and verify energy savings and/or peak-demand reductions resulting from your program; and,

   See Attachment 2 – Self Direct Program Blank Application including Rules and Requirements granting such permission pursuant to the Retrospective Projects/Rules and Requirements that are part of the signed application which is provided as Confidential and Proprietary Attachment 3 – Self Direct Program Project Completed Application.

5) a commitment by you to provide an annual report on your energy savings and electric utility peak-demand reductions achieved.

   See Attachment 1 - Self Direct Project Overview and Commitment for the commitment to comply with any information and compliance reporting requirements imposed by rule or as part of the approval of this arrangement by the Public Utilities Commission of Ohio.

- A description of all methodologies, protocols, and practices used or proposed to be used in measuring and verifying program results. Additionally, identify and explain all deviations from any program measurement and verification guidelines that may be published by the Commission.

  The Company applies the same methodologies, protocols, and practices to Self Direct Program retrospective projects that are screened and submitted for approval as it does to prospective projects submitted through its Prescriptive and Custom Programs. The Commission has not published a technical reference manual for use by the Company so deviations can not be identified. The project submitted is a prescriptive project and energy savings are determined as described in Confidential and Proprietary Attachment 5 - Self Direct Program Project Calculation, and 10-1599-EL-EEC for the work papers that provide all methodologies, protocols, and practices used in this application for prescriptive measures, as needed.

Ohio | Public Utilities Commission

Application to Commit Energy Efficiency/Peak Demand Reduction Programs (Mercantile Customers Only)

Case No.: 12-0691-EL-EEC

State of Ohio :

Joo CHING YONG, Affiant, being duly sworn according to law, deposes and says that:

1. I am the duly authorized representative of:

   KEMA Services, Inc agent of Ohio Power

2. I have personally examined all the information contained in the foregoing application, including any exhibits and attachments. Based upon my examination and inquiry of those persons immediately responsible for obtaining the information contained in the application, I believe that the information is true, accurate and complete.

Joo Ching CEM, LEED AP BD+C
Signature of Affiant & Title

Sworn and subscribed before me this 20th day of February, 202 Month/Year

Signature of official administering oath

Kimberly Flowers, Outreach Coordinator
Print Name and Title

My commission expires on June 01, 2016

NOTARIAL SEAL STATE OF OHIO

KIMBERLY FLOWERS
NOTARY PUBLIC
STATE OF OHIO
My Comm. Expires June 1, 2016

AEP OHIO
A unit of American Electric Power

Self Direct Project Overview & Commitment

The Public Utility Commission of Ohio (PUCO) will soon review your application for participation in AEP Ohio's Energy Efficiency/Peak Demand Response program. Based on your submitted project, please select by initialing one of the two options below, sign and fax to 877-607-0740.

Customer Name	**NEWARK BD OF EDUCATION**	
Project Number	**AEP-11-04648**	
Customer Premise Address	**534 BEACON RD, NEWARK, OH 43055**	
Customer Mailing Address	**85 E Main St, Newark, OH 43055**	
Date Received	**11/11/2011**	
Project Installation Date	**8/1/2009**	
Annual kWh Reduction	**146,991**	
Total Project Cost	**$100,645.92**	
Unadjusted Energy Efficiency Credit (EEC) Calculation	**$20,729.97**	
Simple Payback (yrs)	**6.9**	
Utility Cost Test (UCT)	**2.6**	
		Please Choose One Option Below and Initial
Option 1 - Self Direct EEC: 75%	**$15,547.48**	☐ **Initial:**
Option 2 - EE/PDR Rider Exemption	**N/A Months (After PUCO Approval)**	☐ **Initial:**

Note: *This is a one time selection. By selecting Option 1, the customer will receive payment in the amount stated above. Selection of Option 2: EE/PDR rider exemption, will result in the customer not being eligible to participate in any other energy efficiency programs offered by AEP Ohio during the period of exemption. In addition, the term of Option 2: EE/PDR rider exemption is subject to ongoing review for compliance and could be changed by the PUCO.*

If Option 1 has been selected, will the Energy Efficiency Funds selected help you move forward with other energy efficiency projects?

____YES ____NO

Project Overview:

The Self Direct (Prescriptive) project that the above has completed and applied is as follows.

Retrofitted (386) 3LF34T12 lamps/ballasts into (386) 3LF32T8 lamps/ballasts
Retrofitted (66) 2LF34T12 lamps/ballasts into (66) 2LF32T8 lamps/ballasts
Installed occupancy sensors on all fixtures above, controlling 38.182kW
Retrofitted (20) 400W MH hi-bay gym fixtures into (20) 400W MH pulse-start fixtures
Retrofitted (29) Incandescent exit signs into (29) LED exit signs
Retrofitted (1) Exterior lighting - misc. fixtures into (1) 100W MH pulse-start fixture
Retrofitted (12) Exterior lighting - misc. fixtures into (12) 400W MH pulse-start fixtures
The 57-year-old HVAC chiller was replaced with a 99-ton air-cooled chiller with an IPLV of 0.798

The documentation that was included with the application proved that the energy measures applied for were purchased and installed.

By signing this document, the Mercantile customer affirms its intention to commit and integrate the above listed energy efficiency resources into the utility's peak demand reduction, demand response, and energy efficiency programs. By signing, the Mercantile customer also agrees to serve as a joint applicant in any filings necessary to secure approval of this arrangement by the Public Utilities Commission of Ohio, and comply with any information and compliance reporting requirements imposed by rule or as part of that approval.

Ohio Power Company

By: Jon F. Williams

Title: Manager

Date: February 16, 2012

NEWARK BD OF EDUCATION

By: David C. Alterpeter

Title: Business Manager

Date: February 14, 2012

gridSMART From AEP OHIO

Self-Direct Program Project Application

Jan 2011 - Dec 2011

Step 1: Check Project and Equipment Eligibility

- ✓ Project must be a facility improvement that results in a *permanent* reduction in electrical energy usage (kWh).
- ✓ *All installed equipment must meet or exceed the specifications given in the application* and be installed in facilities served by AEP Ohio: Customer must have a valid AEP Ohio account number on an eligible AEP Ohio non-residential rate (see terms and conditions for list of eligible rates eligibility requirements).

Step 2: Submit Application

- ✓ Fill out the Customer Information form and the Worksheet for the measures that you are installing. You may submit the application via mail, fax or e-mail.

Submit your application to:
AEP Ohio Business Incentives for Energy Efficiency
2740 Airport Drive Suite 160
Columbus, OH 43219
Call: (877)-607-0739
Fax: (877)-607-0740
Email: gridsmartohio@kema.com
Visit our web site at gridsmartohio.com

- ✓ Submit a completed application prior to Oct 1st for any projects prior to Jan 1, 2009, and Nov 15th for any projects completed Jan 1, 2009 or later. Any applications received after the deadlines may not be submitted to the PUCO by December 31, 2011 and could jeopardize approval of any incentive. Complete the checklist page and attach the documentation listed: customer information page, a signed Agreement and Signature page, measure worksheet, scope of work (type, quantity and wattage of old and new equipment), dated and itemized invoices for the purchase and installation of all equipment installed and specification sheets for all equipment installed showing that it meets the program specifications.

Step 3: Project Review

- ✓ The program team will review your Application. For some projects, an inspection will be part of the review, and you will be contacted to schedule it.
- ✓ After approval by AEP Ohio, the customer will be sent an Overview and Commitment form to sign for all self-direct projects. After the Overview and Commitment form is returned the project will be submitted to the Public Utilities Commission of Ohio (PUCO) for consideration. The PUCO will assign a case number and review the project details that were prepared by AEP Ohio. The PUCO may request additional information, approve or reject the energy efficiency credits.

Step 4: Receive Energy Efficiency Credits

- ✓ The program team will issue the energy efficiency credits, within four to six weeks after PUCO project approval.
- ✓ In lieu of a one-time energy efficiency credit, you may elect to seek an exemption from the Energy Efficiency / Peak Demand Reduction (EE/ PDR) Rider for the associated electric accounts(s) for a defined period of time as stated on this Application. For this exemption the Energy Efficiency Credit amount (Option 1) is compared to the estimated value of the estimated EE/PDR Rider obligation (Option 2), as calculated by AEP Ohio. The value of Option 2 will be approximately equal to the value of Option 1. If exemption is elected, the affective account is not eligible for other programs offered by AEP Ohio during the exemption period. Unless additional resources are committed, you will, after the specified number of months exempted, be again subject to the EE/ PDR Rider. New Construction projects are not eligible to elect Option 2. Major Renovation projects that do not have a representative billing history for three years prior to the project installation are also not eligible to elect Option 2.
- ✓ If the energy efficiency credit is elected, you remain in the EE/ PDR rider for the period of time that an exemption would have been in effect and may also participate in the AEP Ohio programs. However, during that period of time, you will not be allowed to elect the Option 2 exemption for any additional self-direct projects for the same account number.
- ✓ You are allowed and encouraged to consider using all or a portion of the energy credits, as received from AEP Ohio under this program, to help fund other energy efficiency and demand reduction projects you choose to initiate in the future. Future projects can also qualify for credits under the Prescriptive or Custom programs.

gridSMART From AEP OHIO

Self-Direct Program
Project Application

APPLICATION CHECKLIST

APPLICATION

Required Attachments

- ☐ Customer/Contractor Information
- ☐ Completed Energy Efficiency Credits Requested Section of Agreement and Signature Page
- ☐ Itemized Invoices
- ☐ Equipment Specifications
- ☐ Scope of Work

Worksheets

- ☐ Lighting
- ☐ HVAC
- ☐ Refrigeration
- ☐ Motors and VFD
- ☐ Custom

Application Date: _____

Completion Date: _____

Project Incremental Cost _____

**Incomplete applications will delay processing and energy efficiency credits.*

Please complete and submit forms for above checked boxes.

Please fill out if this is a revised submittal

ORIGINAL SUBMITTAL DATE: _____

APPLICATION NUMBER (IF KNOWN): _____

AEP Ohio Business Incentives Program for Energy Efficiency
2740 Airport Drive Suite 160
Columbus, OH 43219

Phone: (877)-607-0739
Fax: (877)-607-0740
gridsmartohio@kema.com
www.gridsmartohio.com

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Self-Direct Program
Project Application

TERMS AND CONDITIONS

Columbus Southern Power and Ohio Power Company are collectively known as AEP Ohio (AEP Ohio). AEP Ohio is offering Prescriptive and Custom energy efficiency credits under the AEP Ohio Business Incentives Program for Energy Efficiency to credit the implementation of past cost-effective energy-efficiency improvements for non-residential (commercial and industrial) customers. AEP Ohio provides energy efficiency credits (EEC) for the purchase and installation of qualifying cost effective equipment in the customer's facility under the Terms and Conditions provided in this application and subject to regulatory approvals. Energy efficiency credits will only be provided in the form of a check or an Energy Efficiency/Peak Demand Reduction (EE/PDR) Rider exemption under this program.

All applications are subject to review and approval by AEP Ohio, its contractor(s)/agent(s), and the Public Utility Commission of Ohio (PUCO) prior to any EEC payments or exemptions from the EE/PDR rider in this program. Funds are limited and subject to availability.

Program Effective Dates

The AEP Ohio Business Incentives for Energy Efficiency program EEC are offered until approved funds are exhausted or Dec 31 of each program year, whichever comes first. The effective dates of Year 3 of the program and application submittal requirements are as follows:

- Self-direct projects are projects completed since 1/1/2008. Self-direct projects are eligible to apply for EEC with this application. Future projects that are not yet completed should apply on the Prescriptive/Custom application.
- All 2011 AEP Ohio Business Incentives for Energy Efficiency program Applications should be received no later than Oct 1st for any projects completed prior to Jan 1, 2009, and Nov 15th for any projects completed Jan 1, 2009 or later. Any applications received after the deadlines may not be submitted to the PUCO by December 31, 2011 and could jeopardize approval of any incentive. AEP Ohio reserves the right to extend or shorten this timeline.
- Subsequent program year plans will be made available toward the end of the existing program year. At the current time, AEP Ohio has a commitment to provide this program through the 2011 program year.

Program and Project Eligibility

The Self-Direct Program applies to customer facilities served by AEP Ohio's retail electric rates who meet the minimum energy usage requirements of 700,000 kWh per year or who are part of a national account involving multiple facilities in one or more states.

The AEP Ohio Business Incentives for Energy Efficiency program offers both Prescriptive energy efficiency credits for some of the more common energy efficiency measures and Custom energy efficiency credits for those eligible improvements not included on the list of Prescriptive measures. Program credits are available under the AEP Ohio Business Incentives for Energy Efficiency program to non-residential customers served at AEP Ohio's regulated retail rates, where qualifying projects are installed in a facility in AEP Ohio's electric service territory. These credits are available to all non residential customers who pay into the (EE/PDR) rider and receive their electricity over AEP Ohio wires, regardless of which retail electric supplier the customer has chosen to purchase power from.

Custom projects must involve measures that result in a reduction in electric energy usage due to an improvement in system efficiency. Projects that result in reduced energy consumption without an improvement in system efficiency are not eligible for a Custom credit. However, projects that involve an automated control technology such as energy management system programming may be eligible for a credit. All projects must meet AEP Ohio's cost-effectiveness requirements. The project simple payback prior to the credit must pass the utility cost effectiveness test(s) determined by AEP Ohio, to qualify for credit. Normally, most projects with a simple payback prior to the credit greater than one year and less than seven years generally pass the utility cost effectiveness test(s). The peak demand hours are defined as weekdays, non-holidays 3:00 PM to 6:00 PM, June through August.

Projects involving measures covered by the Prescriptive energy efficiency credit portion of the program are not eligible for a Custom energy efficiency credit. However, the applicant has the option to apply for a Custom energy efficiency credit for whole building integrated projects or systems even if they include Prescriptive measures.

The energy efficiency credits are calculated in the following Prescriptive or Custom worksheets.

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Self-Direct Program
Project Application

TERMS AND CONDITIONS

Project requirements under the AEP Ohio Business Incentives Program for Energy Efficiency include the following:

- Projects must involve a facility improvement that results in a permanent reduction in electrical energy usage (kWh)
- Projects that are NOT eligible for a credit include the following:
  - Fuel switching (e.g. electric to gas or gas to electric)
  - Changes in operational and/or maintenance practices or simple control modifications not involving capital costs
  - Removal or termination of existing processes, facilities, and/or operations
  - On-site electricity generation
  - Projects involving gas-driven equipment in place of or to replace electric equipment (such as a chiller)
  - Projects focused primarily on power factor improvement;
  - Projects that involve peak-shifting (and not kWh savings)
  - Renewables
  - Are required by state or federal law, building or other codes, or are standard industry practice
  - Are easily reverted/removed or are installed entirely for reasons other than improving energy efficiency
  - Include other conditions to be determined by AEP Ohio.
- Any measures installed at a facility must produce **verifiable** and **persistent** energy reduction. Measures must be sustainable and provide 100% of the energy benefits as stated in the Application for a period of at least five (5) years or for the life of the product, whichever is less. If the Customer ceases to be a delivery service customer of AEP Ohio or removes the equipment or systems at any time during the 5-year period or the life of the product, the Customer may be required to return a prorated amount of credit funds to AEP Ohio.
- Customer can not apply for incentives for future projects and elect after the fact to apply for credits under this program.
- Confidential information contained in any documents associated with this application will be protected from public filings. However, this information may be disclosed to the Public Utilities Commission of Ohio for further review and approval.
- All equipment must be new. Used or rebuilt equipment is only eligible for energy efficiency credits if the energy efficiency rating of the used equipment is the same energy efficiency level of new equipment.
- All installed equipment must meet state, federal, or local codes and requirements when applicable.
- Costs associated with internal labor are not eligible.
- Projects must be installed on the AEP Ohio electric account listed on the application
- Equipment must be purchased, installed, and operating (or capable of operating in the case of seasonal uses) prior to submitting an application for energy efficiency credits
- The energy efficiency credits are paid as a one-time, one-program offer and cannot be combined with incentive payments from other AEP Ohio programs. The customer may be eligible to participate in other programs offered by AEP Ohio, as long as no project receives more than one incentive/credit.

PROGRAM ENERGY EFFICIENCY CREDITS	
Energy efficiency credit levels for one-year energy savings	See tables for prescriptive credits Custom credits $0.08/kWh x 75%
Minimum / Maximum simple payback before energy efficiency credit applied	Must pass cost effectiveness test(s) (determined by AEP Ohio) Generally 1 year Min / 7 year Max
Maximum payout	75% of 50% of the Incremental project cost (additional caps may also apply)
Energy efficiency credit levels for projects completed since 1/1/2008	Calculated amount on the Prescriptive or Custom worksheets attached and subject to funding limits
Credit Limit	Calculated credits greater than $160,000 per project are subject to a sliding scale credit tiering calculation.
Credit Calculation Order	Measure credit caps are applied first Project cost credit limits are applied second Credit tiering is applied third 75% factor applied to credit last

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Self-Direct Program
Project Application

TERMS AND CONDITIONS

Energy Efficiency Credit Limits

For both the Prescriptive and Custom measures in this application, the total energy efficiency credits shall be 75% of the lesser of: 1) The calculated credit as approved by AEP Ohio, or 2) 50% of the incremental project cost with larger projects subject to the following limits and credit reductions. In calculating the savings and energy efficiency credits for Custom measures, please contact the AEP Ohio Business Incentives for Energy Efficiency Program office to determine appropriate baseline for savings.

Funding is limited

- The limit for each self-direct project is $225,000.
- The limit for each business entity (corporation, LLC, partnership, etc) in the Self-Direct Program is based on their tariff, as indicated below:

TARIFF	LIMIT PER BUSINESS ENTITY
General Service Tariffs 1, 2, & 3	$450,000 per year
Any Other Tariff General Service Tariff 4	$450,000 overall for years 2009-2011

- A business entity with facilities in both categories can qualify for both limits. All facilities served in one category for a business entity are combined to determine the limit.
- Limits are utility-specific, so there is a separate limit for facilities served by Ohio Power and those served by Columbus Southern Power.
- A sliding scale credit reduction will be incorporated when the calculated energy efficiency credits exceed $160,000 per project.

Application

Applications should be submitted by Oct 1st for any projects completed prior to Jan 1, 2009, and Nov 15th for any projects completed Jan 1, 2009 or later. Any applications received after the deadlines may not be submitted to the PUCO by December 31, 2011 and could jeopardize approval of any incentive. Project documentation, such as copies of dated invoices for the purchase and installation of the measures and/or product specification sheets, is required. AEP Ohio reserves the right to request additional backup information, supporting detail, calculations, manufacturer specification sheets or any other information prior to any credit payment.

The location or business name on the invoice must be consistent with the application information. Applications and all required supporting documentation should be received by November 15, 2011 to be applicable for the 2011 program year.

A signed application with documentation verifying installation of the project including, but not limited to, equipment, invoices, approvals, and other related information must be submitted to AEP Ohio prior to application approval.

The project invoice should provide sufficient detail to separate the incremental project cost from the cost of other services such as repairs and building code compliance. AEP Ohio reserves the right to request additional supporting documentation as deemed necessary to ensure measure eligibility and verify that the expected energy savings will occur. Confidential information contained in any documents associated with this application will be protected from public filings. However, this information may be disclosed to the Public Utilities Commission of Ohio for further review and approval. Requested information could include: equipment purchase dates, installation dates, proof that the equipment is operational, manufacturer specifications, warranty information, and proof of customer co-payment.

The customer understands and agrees that all other terms and conditions, as specified in the application, including all attachments and exhibits attached to this application, serves as a contract for the customer's commitment of energy resources to AEP Ohio, shall apply.

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Self-Direct Program
Project Application

TERMS AND CONDITIONS

Application Review Process

AEP Ohio will review Applications for eligibility and completeness. Completed applications will be reviewed in the order received. Funds are reserved for the project when AEP Ohio receives a complete application and determines that the project meets the program eligibility requirements. Applicants who submit incomplete applications will be notified of deficiencies upon review of the application, and could lose their place in line in the review process until all requested information is received. Applications must be completed and all information received by the deadlines defined above to begin processing. Applicants are encouraged to call the program hotline if they have any questions about documentation requirements.

Inspections

AEP Ohio reserves the right to inspect all projects to verify compliance with the program rules and verify the accuracy of project documentation. This may include installation inspections, verification of detailed lighting layout descriptions, metering, data collection, interviews, and utility bill data analysis. The customer must allow access to project documents and the facility where the measures were installed for a period of five years after receipt of energy efficiency credits by AEP Ohio. Customer understands and agrees that Program installations may also be subject to inspections by the PUCO or their designee, and photographs of installation may be required.

Requirements for Custom Project Electricity Savings Calculation

The annual electricity savings must be calculated for Custom projects using industry accepted engineering algorithms or simulation models. The applicant must estimate the annual electricity usage of both the equipment removed (and baseline) and equipment installed based on the current operation of the facility. A listing of the pre-existing information requirements is provided at the end of the custom application section. If the previous equipment was at the end of its useful life, the applicant must use, as the baseline, the equipment that would meet the applicable federal and local energy codes unless an “as found” baseline is being used by the applicant. If the applicant is using an “as found” baseline, additional specific information on the pre-existing information must be provided.

The applicant must be able to clearly describe the method used to calculate the savings. The applicant must provide all assumptions used in the calculations and document the source for these assumptions. The method and assumptions used by the applicant to calculate the annual savings will be reviewed by AEP Ohio. AEP Ohio is solely responsible for the final determination of the annual energy savings to be used in calculating the energy efficiency credit amount. AEP Ohio also reserves the right to require specific measurement and verification activities including monitoring the retrofit and determining the credit. Verification of the preexisting consumption may also be required.

AEP Ohio may need to conduct inspections of projects to verify equipment and operation conditions. For Custom and “as-found” projects, the applicant is required to provide information in order to allow AEP Ohio to verify the baseline usage of the pre-existing equipment.. Customers are encouraged to submit projects that warrant special treatment (i.e., non-typical projects) to be considered on a case-by-case basis by AEP Ohio.

Tax Liability

Credits are taxable and, if more than $600, will be reported to the IRS unless the customer is exempt. AEP Ohio is not responsible for any taxes that may be imposed on the Payee as a result of the receipt of the energy efficiency credits.

Disclaimer

AEP Ohio does not guarantee the energy savings and does not make any warranties associated with the measures eligible for energy efficiency credits under this program. AEP Ohio has no obligations regarding and does not endorse any claims, promises, work, or equipment made, performed, or furnished by any contractors or equipment vendors or manufacturers that sell or install any energy efficiency measures and does not endorse or guarantee same . AEP Ohio is not responsible for the proper disposal/recycling of any waste generated as a result of this project. AEP Ohio is not liable for any damage caused by the operation or malfunction of the installed equipment.

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Self-Direct Program Project Application

Important: Please read the terms and conditions before signing and submitting this application.
You must complete all information and provide required additional documentation to avoid processing delays.

CUSTOMER INFORMATION

Business Type *(select one)*

- LARGE OFFICE ☐
- SMALL OFFICE ☐
- SCHOOL ☐
- SMALL RETAIL/SERVICE ☐
- LARGE RETAIL/SERVICE ☐
- HOTEL/MOTEL ☐
- MEDICAL - Hospital ☐
- MEDICAL - Nursing Home ☐
- ASSEMBLY/MEETING PLACE ☐
- RESTAURANT ☐
- GROCERY ☐
- CONDITIONED WAREHOUSE ☐
- UNCONDITIONED WAREHOUSE ☐
- INDUSTRIAL/MANUFACTURING ☐
- COLLEGE/UNIVERSITY ☐
- GOVERNMENT/MUNICIPAL ☐
- OTHER/MISCELLANEOUS _____

Tax Status *(from W9)*

- CORPORATION (Inc., PC, Etc.) ☐
- TAX EXEMPT ☐
- INDIVIDUAL ☐
- OTHER (may receive 1099) _____

Operating Days

- Seven days/week ☐
- Five days/week ☐

Operating Hours

- One shift (8h /day) ☐
- Two shifts (16h/day) ☐
- Three shifts (24h/day) ☐

Building Operating Hours _____

How Did You Hear?

- AEP Account Representative ☐
- Contractor ☐
- Website ☐
- Other _____

Square Footage

Affected Area S.F. _____

NAME OF APPLICANT'S BUSINESS		PROJECT NAME (IF APPLICABLE)		
NAME AS IT APPEARS ON UTILITY BILL	AEP OHIO ACCT #*	APPLICANT TAXPAYER ID # (SSN/FEDERAL ID)		
MAILING ADDRESS		CITY	STATE	ZIP
INSTALLATION ADDRESS		CITY	STATE	ZIP

CUSTOMER CONTACT

Please provide all contacts we may need to process for this project.

NAME OF CONTACT PERSON - *Preferred Contact for Documentation*			TITLE OF CONTACT
CONTACT PHONE #	EXT.	CONTACT FAX #	CONTACT EMAIL ADDRESS

CONTRACTOR INFORMATION

NAME OF CONTRACTING COMPANY

NAME OF CONTACT PERSON			TITLE OF CONTACT PERSON		
CONTACT PHONE #	EXT.	CONTACT FAX #	CONTACT EMAIL ADDRESS		
MAILING ADDRESS			CITY	STATE	ZIP

If there are questions about the application who should we contact? **Customer** ☐ **Contractor** ☐

As an eligible customer, I verify the information is correct and request consideration for participation under this program.

CUSTOMER SIGNATURE (AEP OHIO CUSTOMER)	PRINT NAME
TOTAL INCENTIVE REQUESTED**	DATE
COMPLETION DATE	PROJECT COST

* AEP Ohio Account Number where measure is installed

** Incentive cannot exceed 50 percent of the total Incremental cost or other caps described in the Terms and Conditions.

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Self-Direct Program
Project Application

SELF-DIRECT APPLICATION AGREEMENT

As an eligible AEP Ohio customer, I certify that the installation of the indicated energy efficiency measures, which will be demonstrated by the supporting documentation required by AEP Ohio. I certify that the work, was completed on this project on or after January 1, 2008. The energy efficiency measures are for use on-site and not for resale. I understand that project documentation, including copies of dated invoices for the purchase and installation of the measures and product specification sheets, is required. Further documentation requirements can be found at the program website www.gridsmartohio.com or by calling the program hotline.

I understand that the location or business name on the invoice must be consistent with the application information. Final Applications and all required supporting documentation should be received by **Oct 1st for any projects completed prior to Jan 1, 2009, and Nov 15th for any projects completed Jan 1, 2009 or later. Any applications received after the deadlines may not be submitted to the PUCO by December 31, 2011 and could jeopardize approval of any incentive by the PUCO**.

I agree to verification by the utility or their representatives of both sales transactions and equipment installation.

I understand that these energy efficiency credits are available to all eligible customers who pay the Energy Efficiency and Peak Demand Reduction (EE/PDR) rider and receive their electricity over AEP Ohio wires regardless of which retail electric supplier the customer has chosen to purchase power from.

I certify that the information on this application is true and correct, and that the Taxpayer ID Number and tax status is the applicant's. I understand that incentives over $600 will be reported to the IRS unless the applicant is exempt. I understand that energy efficiency credits assume related energy benefits over a period of 5 years or for the life of the product, whichever is less.

I agree that if: I remove the related product(s) identified in my application before a period of 5 years or the end of the product life, whichever is less, I shall refund a prorated amount of energy efficiency credits to AEP Ohio based on the actual period of time in which the related product(s) were installed and operating. This is necessary to assure that the project's related energy benefits will be achieved.

I understand that the program may be modified or terminated without prior notice.

AEP Ohio reserves the right to refuse payment and participation if the customer or contractor violates Program rules and requirements. AEP Ohio is not liable for energy efficiency credits promised to customers as a result of misrepresentation of the Program.

Customer and customer's contractor shall be responsible to comply with any applicable codes or ordinances.

All submissions become the property of AEP Ohio. Keep a copy for your records.

I understand that the Application and all required documentation should be received by the AEP Ohio Business Incentives for Energy Efficiency program prior to **Oct 1st for any projects completed prior to Jan 1, 2009, and Nov 15th for any projects completed Jan 1, 2009 or later. Any applications received after the deadlines may not be submitted to the PUCO by December 31, 2011 and could jeopardize approval of any incentive by the PUCO**. All equipment must be fully operational.

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Self-Direct Program
Project Application

SELF-DIRECT APPLICATION AGREEMENT

I understand that this project must involve a facility improvement that results in improved energy efficiency. I also understand that all materials removed, including lamps and PCB ballasts, must be permanently taken out of service and disposed of in accordance with local codes and ordinances. Equipment can not under any circumstances be resold for reuse. I understand it is my responsibility to be aware of any applicable codes or ordinances. Information about hazardous waste disposal can be found at: http://www.epa.gov/osw/hazwaste.htm.

AEP Ohio will pay 75% of the lesser of: 1) The calculated credit as approved by AEP Ohio subject to funding limits or 2) 50% of the incremental project cost (subject to application caps). I understand that AEP Ohio or their representatives have the right to ask for additional information at any time. AEP Ohio's Business Incentives Program for Energy Efficiency will make the final determination of energy efficiency credit levels for this project.

The program has a limited budget. Applications will be processed within the budget limits. Applications and all supporting documentation required should be received by November 15, 2011 to be eligible for funding under the current program period.

Customer understands and agrees that all other terms and conditions, as specified in the application, including all attachments and exhibits attached to this application which will serve as a contract for the Customer's commitment of energy and demand resources to AEP Ohio shall apply.

I understand that AEP Ohio does not guarantee the energy savings and does not make any warranties associated with the measures eligible for energy efficiency credits under this program, and, further, that AEP Ohio has no obligations regarding any claims, promises, work, or equipment made, performed, or furnished by any contractors or equipment vendors that sell or install any energy efficiency measures and does not endorse or guarantee same.

Energy efficiency credits will be based upon the final application and program terms and conditions, as well as the availability of funds.

Any and all energy savings generated by the project described in this application are hereby committed to AEP Ohio in order to count against its respective companies' benchmark requirements in S.B. 221.

ENERGY EFFICIENCY CREDITS REQUESTED

I have read and understand the program requirements and Measure Specifications and Terms and Conditions set forth in this application and agree to abide by those requirements. Furthermore, I concur that I must meet all eligibility criteria in order to be paid under this program.

ALL EQUIPMENT MUST BE INSTALLED AND OPERATIONAL. A CUSTOMER SIGNATURE IS REQUIRED FOR PAYMENT. SIGNED APPLICATIONS RECEIVED BY FAX OR EMAIL WILL BE TREATED THE SAME AS ORIGINAL APPLICATIONS RECEIVED BY MAIL. All submissions become the property of AEP Ohio. Keep a copy for your records.

TOTAL PROJECT COST	TOTAL ENERGY EFFICIENCY CREDITS REQUESTED

CUSTOMER SIGNATURE (AEP CUSTOMER)

PRINT NAME	DATE	ACTUAL COMPLETION DATE

Customer Name	ServiceAddress	ServiceCity	ServiceZip
NEWARK BD OF ED	112 W MAIN ST	NEWARK	43055
NEWARK BD OF ED	38 GRANVILLE ST	NEWARK	43055-5084
NEWARK BD OF ED	11 N 5TH ST	NEWARK	43055-5011
NEWARK BD OF ED	112 W MAIN ST	NEWARK	43055-5061
NEWARK BD OF ED	475 DANIEL AVE	NEWARK	43055-4003
NEWARK BD OF ED	85 E MAIN ST	NEWARK	43055
NEWARK BD OF EDUCATION	549 E MAIN ST	NEWARK	43055-6619

Summary Performance Report For CH-1

Project: ~Untitled22
Prepared By:

06/0
11:2

AQUAFORCE

Carrier

AquaForce™ Air-Cooled Screw Chiller

Unit Information

Tag Name:	CH-1	
Model Number:	30XA110	
Quantity:	1	
Manufacturing Source:	Charlotte, NC USA	
Refrigerant:	R134A	
Independent Refrigerant Circuits:	2	
Shipping Weight:	8968	lb
Operating Weight:	9071	lb
Unit Length:	189	in
Unit Width:	89	in
Unit Height:	90	in

Evaporator Information

Fluid Type:	Fresh Water	
Fouling Factor:	0.00010	(hr-sqft-F)/BTU
Number of Passes:	2	
Leaving Temperature:	42.7	°F
Entering Temperature:	56.0	°F
Fluid Flow:	178.5	gpm
Pressure Drop:	7.8	ft

Condenser Information

Altitude:	0	ft
Number of Fans:	8	
Total Condenser Fan Air Flow:	74400	CFM
Entering Air Temperature:	95.0	°F

Integrated Pump Information

No Pump Selected

Performance Information

Cooling Capacity:	99.2	Tons
Total Compressor Power:	105.7	kW
Total Fan Motor Power:	10.4	kW
Total Unit Power (without pump):	116.1	kW
Efficiency (without pump):	10.26	EER
IPLV:	15.04	EER
A-Weighted Sound Power Level:	96	dbA

Accessories and Installed Options

Freeze Protection
Suction Line Insulation
Suction Service Valve
Non-Fused Disconnect
Energy Management Module
Control Transformer
Al Fin/Cu Tube
Low Sound Option
Wye-Delta
Single Point
Hail Guards, Coil Trim Panels, Grilles
Navigator Display
5 k Current Rating (All Voltages)
Carrier Translator for LonWorks (1 required for each CCN Controller / PIC)

Electrical Information

Unit Voltage:	200-3-60	V-Ph-Hz
Connection Type:	Single Point	
Minimum Voltage:	187	Volts
Maximum Voltage:	220	Volts

Amps	Electrical Circuit 1	Electrical Circuit 2
MCA	446.2	N/A
MOCP	600.0	N/A
ICF	607.8	N/A

Certified in accordance with the ARI Water-Chilling Packages using the Vapor Compression Cycle Certification Program, which is based on ARI Standard 550/590-2003.
Sound power measured in accordance with ARI 370-2001.

LUTRON SUBMITTAL DRAWINGS

JOB:
BEN FRANKLIN ELEMENTARY SCHOOL

FOR:
ACCURATE ELECTRIC

PREPARED BY:
Scott Sarno

JULY 15, 2008

Loeb Electric

915 Williams Ave.

Columbus OH 43212

p 614.294.6351

f 614.294.3131

Reynoldsburg
p 614.759.9525
f 614.759.9092

Worthington
p 614.436.8877
f 614.436.2502

Hilliard
p 614.777.8600
f 614.777.1296

Delaware
p 740.363.5258
f 740.363.3723

Bellefontaine
p 937.292.7060
f 937.292.7062

Lancaster
p 740.756.7540
f 740.756.7544

THE LOEB ELECTRIC CO.

915 Williams Ave. Columbus Ohio 43212
800-686-6351 614/294-6351 FAX 614/294-3131

LETTER OF TRANSMITTAL

TO: ACCURATE ELECTRIC
6901 AMERICANA PKWY
REYNOLDSBURG, OH 43068

Date July 15, 2008
Your No.
Our No.
Job Name BEN FRANKLIN ELEMENTARY SCHOOL

PLEASE FIND ENCLOSED, DRAWINGS LISTED BELOW

COPIES	DRAWINGS OR CATALOG NUMBER	TYPE	MANUFACTURER
12	1 LOT OF LUTRON EQUIPMENT		LUTRON

THE ABOVE DRAWINGS ARE: ☐ APPROVED ☐ DISAPPROVED ☐ APPROVED AS NOTED
☐ FOR RECORD ONLY ☑ FOR APPROVAL NOTE : IF ABOVE IS FOR APPROVAL, RETURN TWO (2) COPIES
EACH AND ADVISE REQUIREMENT DATE. ORDER WILL REMAIN ON HOLD UNTIL APPROVED DRAWINGS ARE RETURNED.

REMARKS:

SIGNATURE/TITLE: Betsy Loeb / Job Control Date: July 15, 2008

Ben Franklin Elementary

Description:

Design By: Jamie Schroyer

Company: Spectrum Lighting

Address: 1001 Kinnear Rd
Columbus, Oh 43212

Phone: 614-486-5354

Design For:

Company: Loeb Electric

Address: 906 Burr Avenue
Columbus, Ohio 43212

Phone: 614-294-6351

Lutron Contact Information

USA +1 610 282 3800
UK +44 (0)20 7702 0657
Singapore +65 6220 4666
France +33 (0)1 41 05 42 80

COMMISSIONING / STARTUP OPTION:

LCP128 Systems, Softswitch128 Systems, and GRAFIK Eye 4000 Systems containing LP, XP, or GP Power Panels include factory commissioning. Factory commissioning is optional for GRAFIK Eye 3000 and RadioTouch Systems.

Systems purchased with factory commissioning include 1 on-site visit by a Lutron field service engineer during normal business hours (M-F, 7am-6pm). Visits will include a complete system function test as well as system operation and maintenance training for the facilities team.

Please contact Lutron or check www.lutron.com for specific details about your warranty and commissioning program.

SCHEDULING:

Lutron requires 10 working days notice prior to system commissioning. Visits scheduled outside normal business hours, multiple visits or additional time on site due to circumstances beyond Lutron's direct control, or visits scheduled with less than 10 days notice will result in additional charges.

DELIVERY:

All standard products as listed in the current price guide ship within 48 hours unless otherwise indicated. Consult Lutron Customer Service for lead time on all Custom products. Build-to-order systems take approximately 4-6 weeks to manufacture after release of order from the distributor. Any changes to order will result in rescheduling, longer manufacturing time, and/or additional engineering charges.

CANCELLATION:

There will be a minimum cancellation charge of 25% of the value of this equipment should this order be cancelled.

RETURNS:

Custom products and systems are not returnable unless there is a defect in workmanship by Lutron Electronics Co., Inc.

LUTRON

www.lutron.com

Toll Free: 800 523 9466

Project Type: School/University

Location: Newark, Ohio

Project #: C139868

Project Filename: Ben Franklin Elementary 0.gdf

GRAFIK Eye Designer 7.1.124

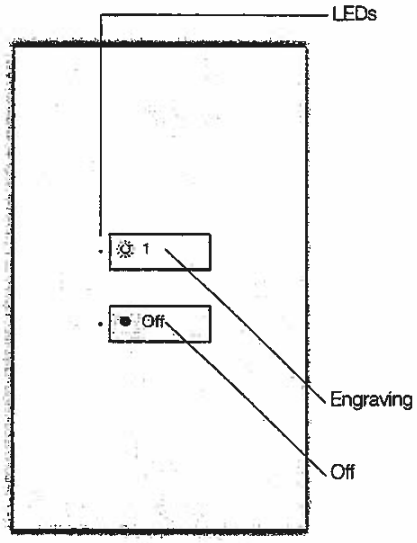
Date: 14-Jul-2008

LUTRON® seeTouch™ Wallstations

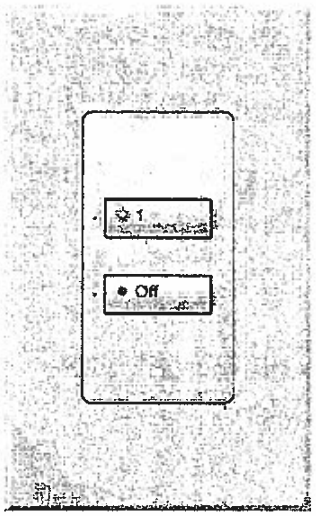
so-2b 5.11.06

Color and Engraving Codes

SO-2BN-___-___
SO-2BI-___-___
2-Button Wallstation



SO-2BN-WH-EGN
(Non-insert version)



SO-2BI-WH-EGN
(Insert version)

Description

- Often used in entryways to select Scene 1 and Off.
- Receives up to two contact closure inputs via a connector on the back of the Wallstation.
- Large, rounded buttons are easy to use.
- Backlit buttons with optional engraving make it easy to find and operate the Wallstation in low light conditions.
- Optional button engraving is angled up to the eye for easy reading.
- Recalls preset light levels for two scenes.
- Reflects door status of one or two partitions.
- Enables or disables Wallstations.
- Starts or stops one sequence.
- Enables or disables timeclock/security override Scene 1.
- Allows fine-tuning of zones.
- May be custom-configured for other functions.
- Works with GRAFIK 5000™, GRAFIK 6000®, GRAFIK 7000™, Softswitch128™, and Softswitch512™ Systems.

Finish and Engraving Options

- Available with button engraving.
- Three engraving options are available: General Engraving, Standard Engraving, & Non-Standard Text Engraving. For more details, please visit the *seeTouch* website at **www.lutron.com/seetouch**.

Specifications

Power Input (Control Link Terminal 2)

Low-voltage type PELV (Class 2: USA). Operating voltage: 24 V⎓

Key Design Features

- Field-changeable button and faceplate assemblies allow easy customization.
- Front accessible address and option switches allow change of function without removing the unit from the wall.
- Meets IEC 801-2. Tested to withstand 15kV electro-static discharge without damage or memory loss.
- Faceplate snaps on with no visible means of attachment.
- Available as an "insert" style control for multi-ganging.
- Can be ganged to share a common faceplate with NovaT*® and Vareo® Dimmers. To order new Wallplates for multi-ganging, specify "R3" openings in a *NovaT** multi-gang FB (fins broken) Series model number.
- Use Faceplate Replacement Kits to change color, button configuration, or engraving.
- Faceplate Replacement Kits may also be used to convert between non-insert and insert configurations.

System Communications and Capacity

- Low-voltage type PELV (Class 2: USA) wiring connects Wallstations to Processor Panel on the Control Station Device (CSD) Link.
- Counts as one Control Station Device (CSD).

Terminals

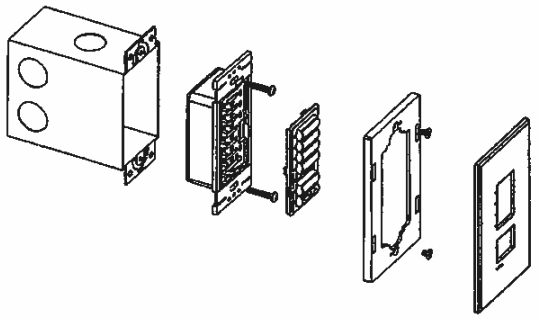
Accept up to two #18 AWG (1.0mm²) typical.

Environment

32-104°F (0-40°C). Relative humidity less than 90% non-condensing.

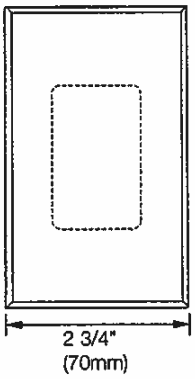
Mounting

Typical backbox dimensions: 3.74" (95mm) high, 2.17" (55mm) wide, 2.75" (70mm) deep.

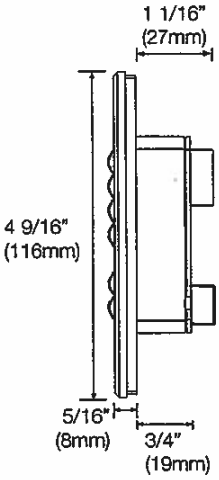


Dimensions

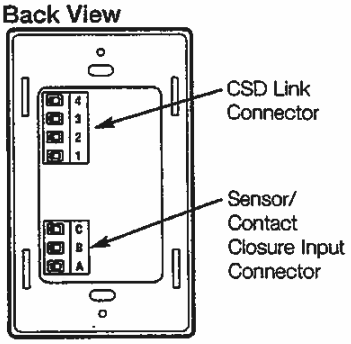
Front View



Side View



Back View



LUTRON® SPECIFICATION SUBMITTAL Page 8

Job Name:	Model Numbers:	
Ben Franklin Elementary	SO-2B	
Job Number: C 139868.1		

LUTRON® seeTouch™ Wallstations

so-p3 5.11.06

How to Build a *seeTouch* Model Number

SO- ____ ____ ____ - ____ - ____

Prefix	Button Configuration	Sensor Option	Insert Style	Color/ Finish	Engraving Code

Omit: CCI
O: Occupant sensor

N: Non-insert
I: Insert

Color/Finish Codes

Matte Finishes

White	WH
Ivory	IV
Beige	BE
Gray	GR
Brown	BR
Black	BL
Taupe	TP

Gloss Finishes

Available with Insert (I) style controls only. Ship with Claro® Wallplates.

White	GWH
Light Almond	GLA

Metal Finishes

With black plastic buttons (standard).

Bright Brass	BB
Bright Chrome	BC
Bright Nickel	BN
Satin Brass	SB
Satin Chrome	SC
Satin Nickel	SN
Antique Brass	QB
Antique Bronze	QZ

Anodized Aluminum Finishes

With black plastic buttons (standard).

Clear	CLA
Black	BLA
Brass	BRA

Satin Colors™

Available with Insert (I) style controls only.

Snow	SW
Biscuit	BI
Eggshell	ES
Midnight	MN
Blue Mist	BT*
Limestone	LS*
Stone	ST*
Desert Stone	DS*
Terracotta	TC*
Ochre	OC*
Hot	HT*

*Note: Some *Satin Colors* units ship with different color buttons. For more information, please visit the *seeTouch* website at **www.lutron.com/seetouch**.

Engraving Codes

Unengraved	E00

General/StandardEngraving

Arabic	A*xx*
Portug. (Latin)	B*xx*
Chinese	C*xx*
Danish	D*xx*
English	E*xx*
French	F*xx*
German	G*xx*
Italian	I*xx*
Japanese	J*xx*
Spanish (Latin)	L*xx*
Dutch	N*xx*
Portug. (Euro)	P*xx*
Spanish (Euro)	S*xx*

Note: Replace the *xx* with either GN (general engraving) or a two-digit number (01-99; standard engraving. Please visit the *seeTouch* website at www.lutron.com/seetouch for a listing of the standard engraving choices.

Non-Standard Text Engraving

Customized button engraving for particular needs. Use with Faceplate Replacement Kits only (model number begins with SR). Use an engraving code of NST. To order, contact Lutron customer service. Please visit the *seeTouch* website at **www.lutron.com/seetouch** for custom engraving sheets.

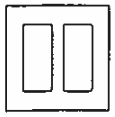
Job Name:	Model Numbers:	
Ben Franklin Elementary	SO-2B	
Job Number: C 139868.1		

Faceplate Information

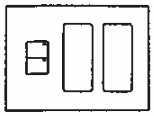
Multi-ganging

- Order Insert (I) style controls.
- To order Wallplates for multi-ganging, specify "R3" openings in a NovaT*® multi-gang FB (fins broken) Series model number.

Examples:



Wallplate for 2 *seeTouch* Wallstations,
Model # NT-R3-R3-FB-(color)



Wallplate for other *Lutron* controls and 2 *seeTouch* Wallstations,
Model # NT-T8-R3-R3-FB-(color)

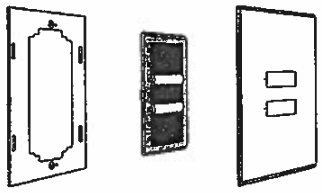
- Order Claro® Wallplates for multi-ganging Wallstations in Gloss Finishes.
- Order Satin Colors™ Wallplates for multi-ganging Wallstations in *Satin Colors*.

Note: New button inserts are not included with multi-ganging Wallplates.

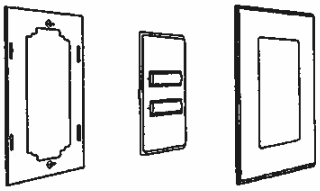
Faceplate Replacement Kits

Use Faceplate Replacement Kits to change: colors, button configuration, engraving, between insert and non-insert versions. Each Kit includes an adapter, button assembly, and wallplate

Non-Insert Kit



Insert Kit



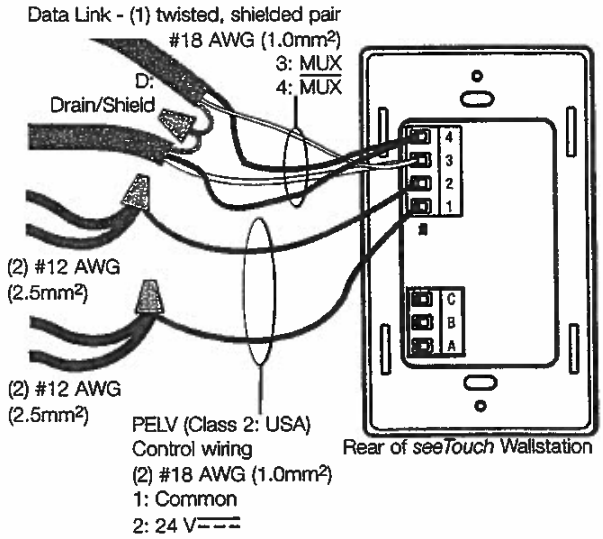
Wallstation Installation

Control Station Device (CSD) Link Wiring

- Use low-voltage PELV (Class 2: USA) wiring to daisy-chain Wallstations to the Processor Panel.
- Make connections inside the wallbox or in a switch/junction box with a maximum wire length of 8 feet (2.5m) from the link to the Wallstation.
- Two #12 AWG (2.5mm²) conductors for common (terminal 1) and 24 V⎓ (terminal 2). These will not fit in terminals. Connect as shown.
- One shielded, twisted pair #18 AWG (1.0mm²) for data link (terminals 3 and 4).
- Connect Drain/Shield as shown. Do not connect to Ground (Earth) or Wallstation. Connect the bare drain wires and cut off the outside shield.

Note: Some Wallstations have a "D" terminal for Drain. The Drain/Shield wire may be connected to this terminal.

Wiring to Control Link



Note: Use appropriate wire connecting devices as specified by local codes.

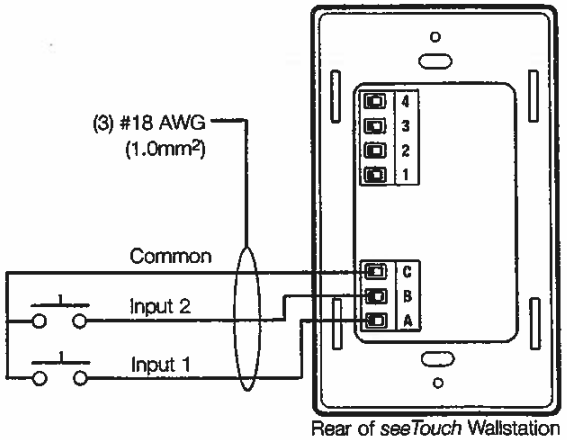
Contact Closure Inputs

Specifications

- Inputs must be dry contact closure or ground-referenced solid-state outputs:
  - Dry Contact Closure:
    - Rated Voltage: 10 V⎓ when open.
    - Rated Current: 0.5 mA when closed.
  - Solid-State Output:
    - Open collector (NPN) referenced to Common (Terminal C).
    - On-state saturation voltage less than 2 V⎓ at 0.1 mA.
    - Off-state leakage current less than 50 uA at 5 V⎓.
- Wallstation is miswire protected up to 36 V⎓.
- Outputs must stay in the closed or open states for at least 40 msec in order to be recognized by the Wallstation.

Contact Closure Input Wiring

- Use low-voltage PELV (Class 2: USA) wiring to connect the contact closure inputs to the Wallstation.



Rear of *seeTouch* Wallstation

Job Name:	Model Numbers:	
Ben Franklin Elementary	SO-2B	
Job Number: C 139868.1		

XPS/LCP system description

XPS is a Lutron Switching System that is designed to provide exceptional value and reliability to our customers. It utilizes Lutron's patented arcless Softswitch circuit that dramatically increases the lifetime of the system over conventional switching relay systems. Even when fully loaded, the arc elimination extends a relay's average rated life to more than 1,000,000 on/off cycles. Digital wall controls may be purchased for simple control in the space. The product also features an integrated time clock for automated system control.

LCP is a Lutron Dimming/Switching System that is designed to provide exceptional value and reliability to our customers. It allows the end used to use dimming and switching in the same panel for all of the space requirements. Digital wall controls may be purchased for simple control in the space. The product also features an integrated time clock for automated system control.

Both systems are similar in appearance, programming, and maintenance, however the XPS is solely a switching system and LCP can have dimming and switching capability in the same panel.

XPS/LCP Training Visit – Typical Agenda (duration – approximately 1 hour):

- Review of XPS/LCP system with end-user (control location and function).
- Discuss system model numbers
- Discuss Lutron lexicon - what is a zone, scene, fade rate, delay rate
- Review all system components
- Panel(s) and XPS/LCP Controller
    - o Bypassing outputs
    - o Spare dimmer cards/modules, switching modules
    - o Load schedule
    - o Programming of timeclock
- Wall controls
    - o Addressing
    - o Reprogramming
- Troubleshooting system. Panels, processor, controls, interfaces
- System integration (if applicable)
- Warranty information
- Tech support
- Preventive maintenance

sensorswitch

WALL SWITCH DECORATOR SENSOR - DUAL TECHNOLOGY (PDT), LINE VOLTAGE

WSD-PDT Series

Programmable Edition!

Dual Technology in a Wall Switch Sensor! The *WSD-PDT Series* is by far the most powerful Decorator occupancy sensor ever invented. The combination of Passive Infrared and patented Microphonics™ detection, allows this sensor to literally *"See & Hear"* its occupants. The *WSD-PDT* is the ideal solution for restrooms with stalls, private offices where the occupant turns his back to the sensor, or storage rooms with obstructions. Additionally, the WSD Series sensors have several On Modes and Switch Modes that can be programmed using the front push-button.

TYPICAL APPLICATIONS

- Private Offices where occupant turns back to sensor
- Restroom with Stalls
- Storage rooms with shelving

FEATURES

- Patented Dual Technology with PIR/Microphonics™ Detection
- Self Contained Relay, no Power Pack needed
- Patented Bi-Polar Wiring: Interchangeable hot & load wires
- Intrinsically Grounded
- No Minimum Load
- Time Delay: 30 sec. to 20 minutes
- Push-Button Programmable
- Three-Way & Multi-Level Switching
- Green LED Activity Indicator

AVAILABLE OPTIONS

- Vandal-Resistant Lens (-V)
- Photocell Daylight Override (-P)
- Low Temp/Hi Humidity (-LT)

SPECIFICATIONS

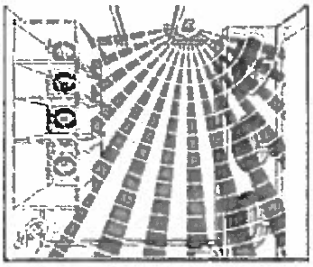
- Size: 4.2" H x 1.8" W x 1.5" D (10.67cm x 4.57cm x 3.81cm)
- Sensor Weight: 5 Ounces
- Colors: Ivory, White, Gray, Almond
- Mounting Height: 30 to 48 inches
- Relative Humidity: 20 to 90% non-condensing
- Operating Temp: 14° to 85° F (-10° to 29° C)
- Storage Temp: -14° to 160° F (-26° to 71° C)
- Load Rating (1 phase only):
  120 VAC @ 800 W
  277 VAC @ 1200 W
  347 VAC @ 1500 W
- 1/4 HP Motor Load
- Frequency: 50/60 Hz (Timers are 1.2 x for 50 Hz)
- UL, CUL, & CSA Listed
- CA Title 24 Compliant
- 5 Year Warranty
- Made in U.S.A.

LOW TEMP/HI HUMIDITY(-LT)

- Conformally coated Circuit Board is corrosion resistant from moisture
- Operates down to -4° F (-20°C)

SENSOR OPERATIONS

Sensors with Passive Dual Technology (PDT) first "See" motion using Passive Infrared (PIR) and then engage Microphonics™ to "Hear" sounds that indicate continued occupancy. This patented technology uses Automatic Gain Control (AGC) to dynamically self adapt a sensor to its environment by filtering out constant background noise and detecting only noises typical of human activity. When occupancy is detected, a self-contained relay switches the lighting "On. The sensor is line powered and can switch line voltage (see specifications). An internal timer, factory set at 10 minutes, keeps the lights "On" during brief periods of no activity. This timer is push-button programmable from 30 seconds to 20 minutes, and is reset every time occupancy is re-detected. If needed, a 10 second grace period also allows the lights to be voice reactivated after shutting off.



Bathrooms (WSD-PDT-V)

- Senses partitioned spaces
- Most inexpensive sensor approach
- Voice sound activation prevents lights out condition

OPERATIONAL MODES

On Modes (*Default)

Automatic On* - The sensor automatically turns the lights on when the sensor detects occupancy.

Reduced Turn-On - The sensor is set to initially only detect large motions, effectively ignoring any reflected PIR signals while still sensing occupants when they enter the room. Once on, the sensor returns to maximum sensitivity.

Switch Modes (*Default)

Predictive Off* - Pressing the switch overrides the lights off and temporarily disables the occupancy detection. After an exit time delay (default 10 seconds) the occupancy detection reactivates and monitors for an additional grace period time (default 5 seconds). If no occupancy is detected during this period, the sensor will revert to Automatic On operation. If occupancy is detected, the sensor will remain in Permanent Off mode requiring the switch to be pressed again in order to restore the sensor to Automatic On.

Permanent Off - Pressing the push-button switch will turn the lights off. The lights will remain off regardless of occupancy until the switch is pressed again, restoring the sensor to Automatic On mode.

Switch Disable - Prevents user from manually turning off the lights via the push-button.

Model Numbering System: WSD-PDT-[LENS]-[PHOTOCELL]-[VOLTAGE]-[COLOR*]-[TEMP/HUMIDITY]

SERIES #	LENS	PHOTOCELL	VOLTAGE	COLOR	TEMP/HUMIDITY
WSD-PDT	Blank = Standard -V = Vandal Resistant	Blank = No Photocell -P = w/Photocell	Blank = 120-277 VAC -3 = 347 VAC**	-I = Ivory -W = White -G = Gray -A = Almond	Blank = 14° to 85° F -LT = -4° to 85° F

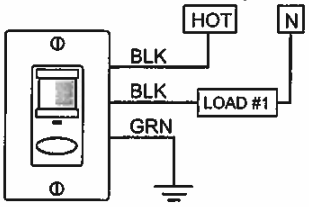
**347 VAC: Plate not provided

*Must specify color

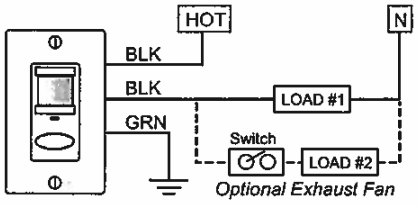
T065-003-P

Programmable Edition **WSD-PDT SERIES**

TYPICAL WIRING DIAGRAM (DO NOT WIRE HOT)



Note: Connection to Ground required for sensor to function!

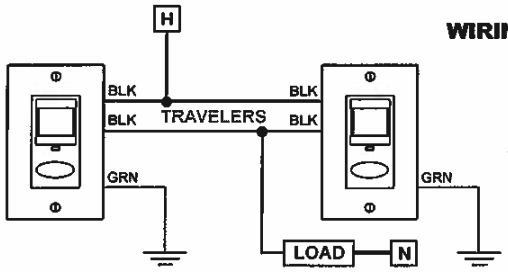


Note: Black wires are replaced with Red wires for 347 VAC.

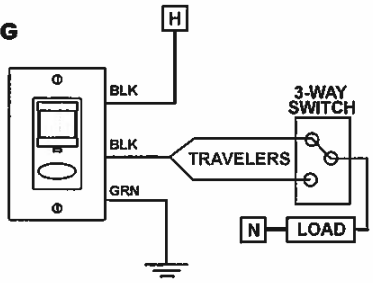
WIRING TO A LIGHT AND A FAN

One of the sensor's Black wires connects to the Hot (Line) power feed. The sensor's other Black wire connects to the Light and the Toggle Switch controlling the Exhaust Fan. The sensor's Green wire connects to Ground. When the sensor is in the Occupied Mode, the Exhaust Fan may be overridden Off by the Toggle Switch.

WIRING FOR 3-WAY SWITCHING



Travelers are used to wire sensors in parallel. If only one sensor is needed to view space, 3-way switch is non-functional.



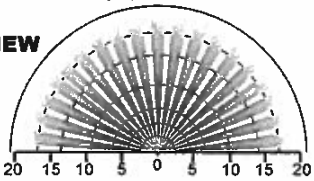
PHOTOCELL DAYLIGHT OVERRIDE OPTION (WSD-PDT-P)

The *WSD-PDT* offers a Photocell Daylight Override option (-P) for spaces with abundant natural light. Ideal for public places with windows like vestibules, corridors, or bathrooms; this option inhibits the lights from turning on if there is sufficient daylight available. Once the lights turn on, however, the photocell function is disabled until the sensor's occupancy timer expires and turns the lights off.

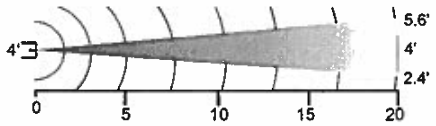
AREA OF COVERAGE

The PIR collector beams view out horizontally in a wall-to-wall pattern. The beams will see out to 50 feet, however, their effectiveness in the *Standard* product is 20 feet for small hand or body motions and 10 feet for the *Vandal Resisitant* products. The Microphonics™ will detect normal human activity up to 20 feet, but will detect greater distances in spaces with hard floors or very quiet rooms with little or no background noise.

TOP VIEW



SIDE VIEW



STANDARD vs. VANDAL RESISTANT LENS

The Standard lens provides maximum PIR detection sensing small movements up to 20 feet, and large motions up to 50 feet. This lens should be used in typical offices or rooms where occupants work for extended periods of time. The Vandal Resistant lens should be used in high abuse or public areas, where occupants simply come and go and make larger types of motions. Copy rooms, small public restrooms, storage or janitor's closets are ideal applications. A sensor with a Vandal Resistant lens will have its PIR detection range reduced by 50%, however the Microphonics™ range is not affected.

WARNING

Fire Hazard Caution: Maximum Lamps 1500 Watts, Type 347 VAC.
Attention: Risque d'incendie : Pauissance Maximales Des Lampes 1500 Watts, Type 347 VAC.
Warning: The units are intended to be installed by a qualified person with properly rated branch circuit protectors as per applicable local and national regulations (CEC, NEC).

sensorswitch
SENSOR SWITCH, INC.
900 Northrop Rd., Wallingford, CT 06492
(203) 265-2842 info@sensorswitch.com
www.sensorswitch.com

revised12/13/2007

sensorswitch

EXTENDED RANGE SENSOR - CEILING MOUNT, LOW VOLTAGE, PIR/MICROPHONICS™ (PDT)

CM-PDT-10 SERIES

w/ Enhanced Daylighting Control Options!

TYPICAL APPLICATIONS

- Classrooms
- Partitioned Cubical Spaces
- Library Study Carrels & Stacks

FEATURES

- Patented Dual Technology with PIR/Microphonics™ Detection
- Communicates with Other Sensors
- Time Delay: 30 sec. to 20 minutes, selectable in 2.5 min increments
- Push-Button Programmable
- Green LED Indicator
- 100 Hr. Lamp Burn-in Timer Mode

AVAILABLE OPTIONS

- Isolated Low Voltage Relay (-R)
- On/Off Photocell (-P)
- Auto Dimming Cntl. Photocell (-ADC)
- Low Temp/Hi Humidity (-LT)

SPECIFICATIONS

- Size: Circular, 4.55" Dia., 1.55" Deep (11.56 cm Dia., 3.94 cm Deep)
- Sensor Weight: 5 Ounces
- Sensor Color: White
- Mounting: Ceiling Tile Surface, Round Fixture or Junction Box
- Relative Humidity: 20 to 90% non-condensing
- Operating Temp: 14° to 160° F (-10° to 71° C)
- Storage Temp: -14° to 160° F (-26° to 71° C)
- UL, CUL, and Title 24 Compliant
- 5 Year Warranty
- Made in U.S.A.

LOW TEMP/HI HUMIDITY(-LT)

- Conformally coated Circuit Board is corrosion resistant from moisture
- Operates down to -4° F(-20° C)

Classrooms and larger spaces are conveniently controlled by the *CM-PDT-10 Series* Extended Range occupancy sensor. Even when classrooms are filled with shelving, hanging projects, or lab benches; the *CM-PDT-10* provides total coverage! When mounted at 9 feet this sensor provides line of sight PIR detection up to 28 feet in a circular pattern and combines overlapping Microphonic™ for detection around obstructions. When comparing small motion detection, the *CM-PDT-10* far out performs other "2,000 SF Dual Tech" sensors. Corner or wall mounting a WV-PDT Series sensor is also an effective solution for classrooms, however ceiling mounting is often the only option. The *CM-PDT-10* is also ideal in lower ceiling height applications. Multiple *CM-PDT-10s* may be used together or in combination with other low voltage sensors to customize coverage for large or irregularly shaped spaces.

SENSOR OPERATIONS

Sensors with Passive Dual Technology (PDT) first "See" motion using Passive Infrared (PIR) and then engage Microphonics™ to "Hear" sounds that indicate continued occupancy. This patented technology uses Automatic Gain Control (AGC) to dynamically self adapt a sensor to its environment by filtering out constant background noise and detecting only noises typical of human activity. When occupancy is detected, a DC output goes high and can drive up to 200 mA of connected load. The sensor is powered with 12 to 24 VAC/VDC and typically operates with a PP-20 or MP-20 Power Pack; enabling complete 20 Amp circuits to be controlled. An internal timer, factory set at 10 minutes, keeps the lights "On" during brief periods of no activity. This timer is selectable at 2.5 minute increments from 30 seconds to 20 minutes, and is reset every time occupancy is re-detected.

DAYLIGHTING CONTROL OPTIONS

For spaces with abundant natural light from windows or skylights, this series offers an On/Off Photocell (-P) option and an Automatic Dimming Control (-ADC) Photocell option. The -P option is ideal for public areas like vestibules, corridors, or restrooms; while the -ADC option is perfect for classrooms and private offices. As the daylight levels change in the room, both options insure that an adequate light level is maintained according to a programmable set-point value. The -P option provides two modes of operation; one simply inhibits the lights from turning on, while the other has full On/Off control of the lights. The -ADC option allows the sensor to control a dimmable ballast. It also provides a secondary dim time-out that enables the lights to go to a dim setting after one time-out and then turn fully off after a second time-out. For more detailed information on these daylighting control features, see the CM-PC-ADC Technical Data Sheet. **Note:** If both the -P and the -ADC options are selected the "Inhibit" mode of the -P option is not available.

INTERNAL LOW VOLTAGE RELAY OPTION (CM-PDT-10-R)

To enable a sensor to interface with a building management system, the -R option provides dry contact closure via a SPDT, 1 Amp, 40 Volt relay. The relay coil is energized and changes state when ALL connected sensors register "Unoccupied". When using multiple sensors, only one sensor per zone needs to have a relay. **Note:** Sensor must have power at all times for the relay to function .

CATALOG INFORMATION

MODEL #	DESCRIPTION	TEMPERATURE	OP. VOLTAGE	CURRENT
CM-PDT-10	Dual Technology Ceiling Mount Sensor	14° to 160° F	12 to 24 VAC/VDC	4 mA
Add suffix				
-R	SPDT Relay, 1 Amp			16 mA
-P	On/Off Photocell			4 mA
-RP	Relay & On/Off Photocell			16 mA
-ADC	Automatic Dimming Control Photocell			4 mA
-LT	Low Temp/High Humidity	-4° to 160° F		

T011-003-P

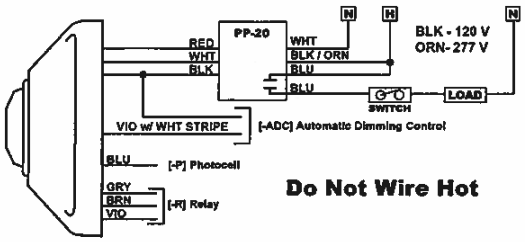
Programmable Edition **CM-PDT-10 SERIES**

WIRING INSTRUCTIONS

Wire lead connections are Class II, 18 to 22 AWG.

STANDARD CM-9

RED - 12 to 24 VAC/VDC
BLACK - Common
WHITE - Output (HI DC for Occupancy)



Do Not Wire Hot

RELAY OPTION (-R)

GRAY / BROWN - Connected during Occupied state
VIOLET / BROWN - Connected during Unoccupied state
Note: Relay is energized during Unoccupied state

PHOTOCELL OPTION (-P)

BLUE - Photocell output (High: Occupied & Low Light)
Use Blue wire from sensor in place of White wire. For multi-level control, use 2 Power Packs and connect White to primary load and Blue to daylight load.

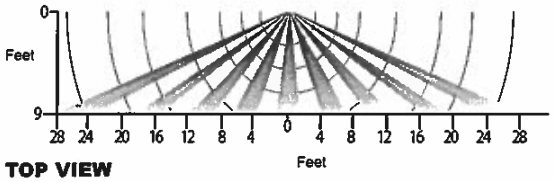
AUTOMATIC DIMMING CONTROL (-ADC)

VIOLET/WHITE striped - Connect to Violet wire from 0-10 VDC dimmable ballast. Also connect ballast Gray wire to sensor Black wire.

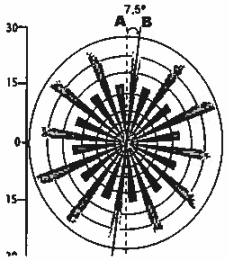
FIELD OF VIEW

The *CM-PDT-10* dome lens provides a maximum PIR viewing angle of 67° in a complete 360° conical pattern. In Classrooms, locate sensor and align mounting screws as shown to detect right at door threshold, without viewing outside the entrance. Standard round fixture boxes will provide the proper angle for maximum viewing towards the door in the corner of the room. For long narrow or smaller rooms, locate sensor along entrance wall. Avoid locating the sensor near HVAC air diffusers because the "noise" generated from air flow will decrease the sensitivity of the Microphonic™ sensor.

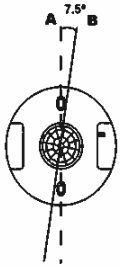
SIDE VIEW



TOP VIEW



Note: For maximum distance rotate the sensor clockwise so that the screw axis(A) is positioned 7.5° off the entrance axis(B).



1. Locate sensor 28 feet from entrance door. This would typically be 20 feet in both directions.
2. Rotate sensor so that mounting screws line up looking into corner of room.
3. Maximum beam distance will then line up with the door entrance at 28 feet.

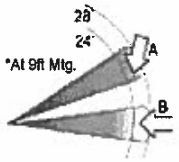
Location Guide	
Ceiling Height	Dist In and Over
8 Ft.	17 Ft.
9 Ft.	20 Ft.
10 Ft.	22 Ft.

MOUNTING CONSIDERATIONS

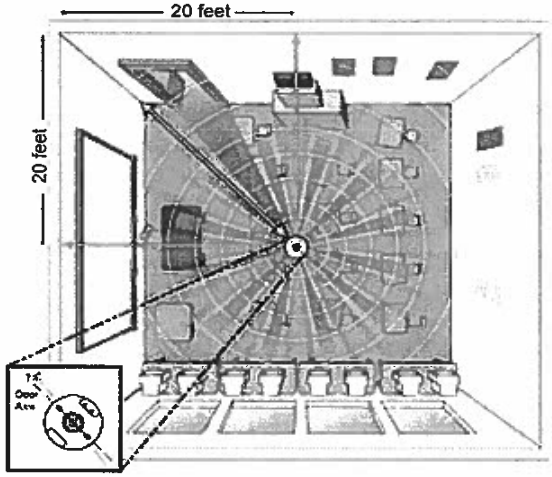
The *CM-PDT-10* is provided with 2 self tapping mounting screws. The sensor typically mounts directly to the ceiling tile, or to the metallic grid. However, if desired, the mounting holes are slotted to line up with a standard round, or rectangular box (screws not provided).

Note: The ceiling tile provides insulation from stray plenum noises. Only penetrate tile to allow for mounting screws and wires (3 small holes).

A: When walking across beam, detection will occur at approximately 28 feet.
B: When walking into beam, detection will occur at approximately 24 feet.



TYPICAL CLASSROOM 9' CEILING



WARRANTY: Sensor Switch, Inc. warrants these products to be free of defects in manufacture and workmanship for a period of sixty months. Sensor Switch, Inc., upon prompt notice of such defect will, at its option, provide a Returned Material Authorization number and a replacement product.
LIMITATIONS AND EXCLUSIONS: This Warranty is in full lieu of all other representation and expressed and implied warranties (including the implied warranties of merchantability and fitness for use) and under no circumstances shall Sensor Switch, Inc. be liable for any incidental or consequential property damages or losses.

sensorswitch

SENSOR SWITCH, INC.
900 Northrop Rd., Wallingford, CT 06492
(203) 265-2842 info@sensorswitch.com
www.sensorswitch.com

revised 06/13/2006

sensorswitch™

120/277 VOLT MINI POWER PACKS AND SLAVE PACKS

TECHNICAL DATA

TYPICAL APPLICATIONS

- Used with Low Voltage Sensors
- Multiple Sensors
- Multiple Loads

POWER PACK HIGHLIGHTS

- Dual Voltage Transformer
- Self-Contained Relay
- Powers up to 14 sensors

SPECIFICATIONS

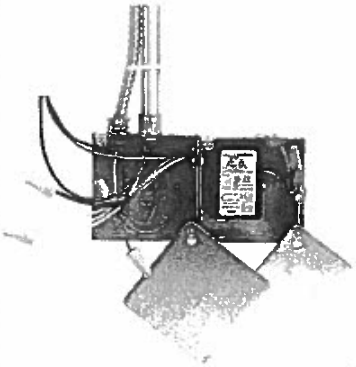
- Size:(1/2" inch chase nipple not inc.) MP-20 & MSP-20: 2 1/4" x 3" x 1 7/8"
- Mounting: 1/2" inch chase nipple
- Operating Voltage: 120, 240, or 277 VAC
- Each Relay: 20 Amps
- 1 HP Motor Load
- Output Voltage: 15 VDC, 150 mA
- Class II: 18 AWG, up to 2,000 ft.
- Plenum Rated
- Relative Humidity: 20 to 90% non-condensing
- Operating Temp: 14° to 160° F
- Storage Temp: -14° to 160° F
- UL and CUL Listed
- 5 Year Warranty
- Made in U.S.A.

LOW TEMP/HI HUMIDITY(-LT)

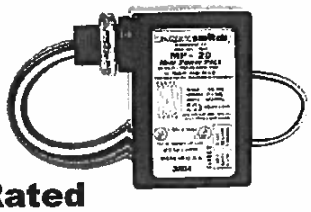
- Conformally Coated PCB
- Operates down to -40° F
- Corrosion resistant from moisture

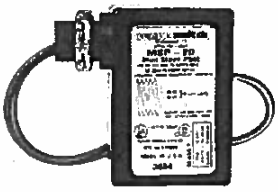
PLENUM CONSIDERATIONS

Most local codes allow for small plastic controls in Return Air Plenums; *Some Do Not!* To meet local code, the Power Pack can be mounted inside an adjacent (Deep) junction box as shown below.



MP-20
MSP-20





Plenum Rated

Mini Power Packs are the heart of the Low Voltage Sensor System. The *MP-20* transforms 120, 240 or 277 Volts to class II 15 VDC to power the remote sensors. Although Plenum Rated, the elongated mounting nipple allows for the *MP-20* to be mounted either directly thru a 1/2" inch knockout in a junction box, or to be located inside an adjacent box for specific local code requirements. Up to 14 sensors may be connected to one *MP-20*. Multi-circuit control can be handled by multiple *MP-20's* and Slave Packs (*MSP-20*) may be configured. *MP-20's* can be wired continuously hot (line side), or on the switch leg (load side) without nuisance delays upon turn "On".

MINI POWER PACK OPERATION

The Mini Power Pack consists of a transformer and a relay. The tranformer has a dual primary high voltage input, accepting 120, 240, or 277 VAC. The secondary voltage provides power to Sensor Switch low voltage heads. When the sensor head detects motion, they electronically signal the power pack to close the relay(s) connected to the lighting system.

LOW VOLTAGE OPERATION AND TEST

The Low Voltage Wires are color coded Red (15 VDC), Black (Common), and White (Occupancy Signal). With no sensors connected, touch the Red wire to the White. The lights should turn "On". Remove the connection and the lights should turn "Off". With the sensors connected, the Red and Black wires provide DC power to the remote sensors, and when there is occupancy detected, the White wire produces a 15 VDC signal from the sensor to the power pack initiating the lights to "On". Upon initial power up, the Sensors automatically send an "On" signal until the sensors have stabilized and "Timed Out".

SIZING OF THE SYSTEM - VARIOUS COMBINATIONS

Combining Power Packs provides for additional power to drive remote devices. Maximum numbers of remote sensors are shown below based on the Power Pack/ Slave Pack being used: *Maximum number of "Relays" is 30.*

	Sensors	Sensors with Relay
1 MP-20	14	8
1 MP-20 w/MSP-20	7	6
2 MP-20	28	16

Note 1: Only three relays may be controlled with one Mini Power Pack. If more than three circuits are required, multiple MiniPower Packs must be used.

Note 2: Only one "Sensor with Relay" is required in most cases. See Technical Data on Low Voltage Sensors and SPDT EMS Interface Option.

SYSTEMS CONSIDERATIONS

The local override switch may be upstream or downstream of an *MP-20*. However, if an *MSP-20* Auxiliary Relay controller is being used, the switch(es) should be downstream on the load side of the relay. If power is disconnected to the Power Pack all subsequent relays will open, turning off all of the loads. If wiring the local switches before the Power Pack and Slave Pack, use multiple *MP-20's*, one for each circuit. This will allow for one circuit to remain powered, keeping the system operational when the other is turned off. When controlling a dimming circuit, *MP-20* must be wired before dimmer, or *MSP-20* may be wired after dimmer.

CATALOG INFORMATION

MODEL#	DESCRIPTION	OUTPUT VOLTAGE	OUTPUT CURRENT
MP-20	Power Pack with 20 Amp Relays	15 to 24 VDC	70 to 110 mA
MSP-20	Slave Pack with 20 Amp Relays	N/A	40 mA(consumption)

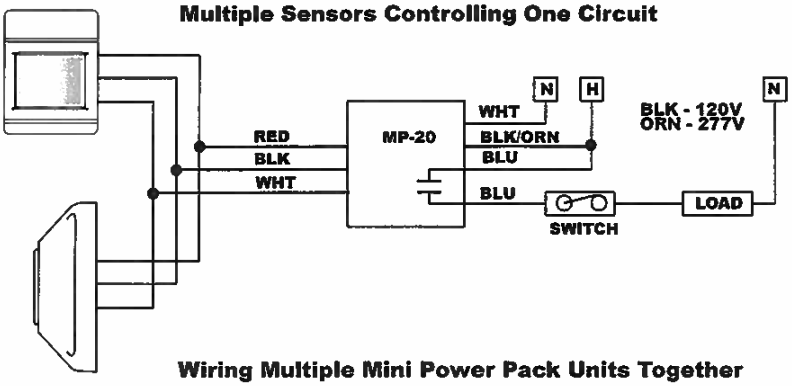
**Add suffix -LT for Low Temp/Hi Humidity

T053-001

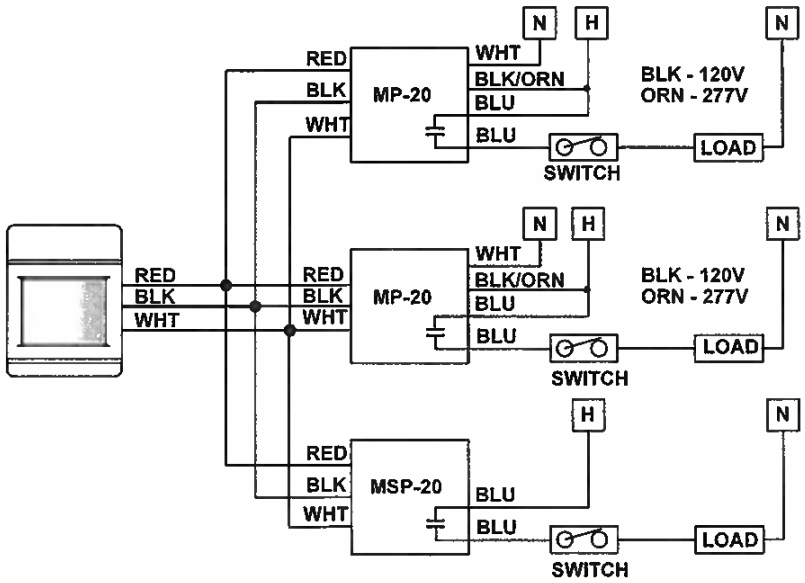
TYPICAL WIRING DIAGRAMS - DO NOT WIRE HOT

NOTE: The Power Pack must be connected to a single phase Hot and Neutral System. For 120 VAC, connect the Black wire to Hot, White wire to Neutral, and Cap off the Orange wire. For 240-277 VAC, connect the Orange to Hot, White to Neutral, and Cap off the Black wire. *Never connect both the Black and Orange wires!* Low Voltage wire can be 18 to 22 AWG; shielding is not necessary.

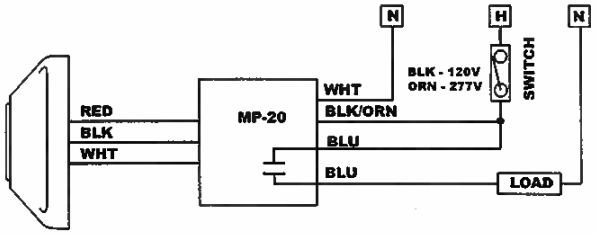
Multiple Sensors Controlling One Circuit



Wiring Multiple Mini Power Pack Units Together



One Sensor Controlling One Circuit



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(203) 265-2842 info@sensorswitch.com
www.sensorswitch.com

revised 7/8/2005

JOB NAME Ben Franklin Elementary School

COPIES	DRAWINGS OR CATALOG NUMBER	TYPE	MANUFACTURER
12	SRX6M30SBZM1	P03	INVUE
12	2-VXM400-MH-120-3SBZ-F-L-MA1050-BZ	P03-2	INVUE
12	SRX6M30SBZM2	P03-2	INVUE
12	2GC8-332A125-UNV-ER82-U	R01	METALUX
12	2GC8-332A125-120-ER82-LTC2-U	R01A	METALUX
12	2GC8-232A125-UNV-ER81-U	R02	METALUX
12	2GC8-232A125-120-ER81-LTC2-U	R02A	METALUX
12	2GC8-332A125-UNV-ER81-U	R03	METALUX
12	2GC8-332A125-120V-ER81-LTC2-U	R03A	METALUX
12	2EP3GX-332S36I-UNV-ER82-U	R04	METALUX
12	2GC8-432A125-UNV-ER82-G3-U	R05	METALUX
12	2GC8-3-U1-5/8A125-UNV-ER81-U	R16	METALUX
12	MHSE-ENGR21-M-400-120V-LL-F1-FL1-PC3	SO1	LUMARK
12	6DIP-1X2T8-SC48-08-1-ERS-DU-S26	SO4	NEORAY
12	6DIP-1X2T8-SC48-08-1-ERS-DU-NL-S26	SO4NL	NEORAY
12	6DIP-1X2T8-SC48-08-1-ERS-DU-GTD-S26	SO4A	NEORAY
12	6-DI-P-1X2-T8-SC-04-1-ERS-DU-S26	SO5	NEORAY
12	CX61R / WG10	W01	SURELITES
12	BC-232-UNV-ER81-U	WO3	METALUX
12	BC-232-120-ER81-LTC2-U	W03A	METALUX
12	MHWP-100H-120V-Q-LL-F1	W11	LUMARK

BEN FRANKLIN ELEMENTARY SCHOOL

TYPE CH01

METALUX®

DESCRIPTION

The DIM Series is an energy efficient family of industrials that feature premium performance and durability. The industrial series incorporates heavy duty, embossed, reflectors that precisely direct and effectively control light. The versatile DIM Series can be installed using various mounting methods and numerous options and accessories are available.

The DIM Series can be utilized in simple task and area lighting to the most demanding industrial applications.

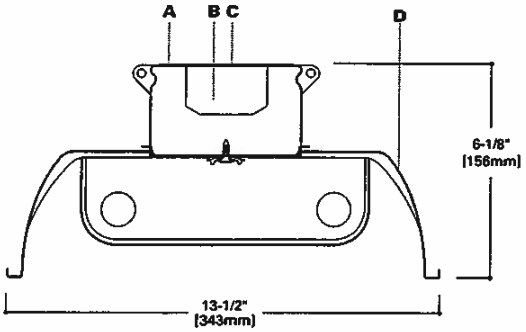
SPECIFICATION FEATURES

A ... Construction
Channel is code gauge prime cold rolled steel. Die formed with deep V-grooves for tong hanger. Die formed channel connector assures straight rows and continuity of ground through set screws. Lampholder mounting brackets are easily inserted with snap-in action.

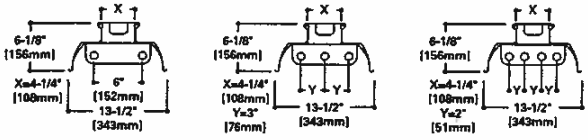
B ... Electrical*
Ballast are CBM/ETL Class "P" and positively secured by mounting bolts. Metal clad lampholders are spring loaded for turret safety. UL/CUL listed. Suitable for damp locations.

C ... Finish
Multistage iron phosphate pretreatment ensures maximum bonding and rust inhibitor. Lighting grade, baked white enamel finish.

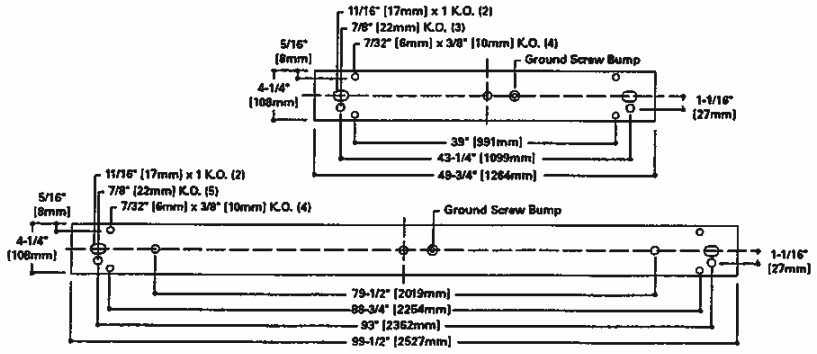
D ... Reflectors
Die formed prime steel, code gauge. Deep draw full width ribs formed with one press stroke. Side flanges lend strength with upward turn. Easily cleaned. Baked white enamel 13-1/2" width. Four foot sections. Reflectors secured by positive retaining screw. Reflector aligners provided. Standard with 20% uplight (DIM). Closed top reflector (DCIM). Optional industrial fixtures are available incorporating silver technology enhancements. (SilverLining)

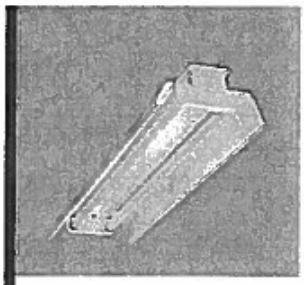


LAMP CONFIGURATIONS



MOUNTING DATA





DIM
240
232
340
332
440
432

4' OR 8' INDUSTRIAL
2, 3 OR 4 LAMP
Heavy Duty Industrial

ENERGY DATA

Input Watts:
EB Ballast & STD Lamps
240 (72)
232 (61)
340 (110)
332 (91)
440 (144)
432 (122)

ES Ballast & STD Lamps
240 (86)
232 (71)
340 (136)
332 (108)
440 (172)
432 (142)

Luminaire Efficacy Rating
LER = FI-78
Catalog Number: DIM-232

Yearly Cost of 1000 lumens, 3000 hrs at .08 KWH = $3.08

*Reference the lamp/ballast data in the Technical Section for specific lamp/ballast requirements.

LAMPS CONTAIN MERCURY. DISPOSE ACCORDING TO LOCAL, STATE OR FEDERAL LAWS

LINEAR DISCONNECT
Safe and convenient means of disconnecting power

NSF CERTIFIED

COOPER Lighting
www.cooperlighting.com

Specifications and Dimensions subject to change without notice.
Consult your representative for additional options and finishes.

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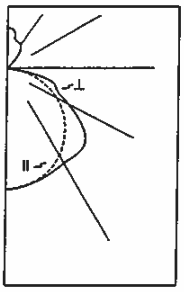
TYPE CH01
DIM

PHOTOMETRICS



DIM-232
Electronic Ballast
F32T8/35K Lamps
2850 Lumens
Spacing criterion: (II) 1.3 x mounting height, (⊥) 1.4 x mounting height
Efficiency 90.8%
Test Report: DIM232.IES
LER = FI-78
Yearly Cost of 1000 lumens, 3000 hrs at .08 KWH = $3.08

Coefficients of Utilization

Effective floor cavity reflectance					20%											
rc	80%				70%				50%			30%			10%			0%
rw	70	50	30	10	70	50	30	10	50	30	10	50	30	10	50	30	10	0
RCR																		
0	105	105	105	105	100	100	100	100	93	93	93	86	86	86	79	79	79	76
1	95	91	87	84	91	88	84	81	81	78	76	75	73	71	70	68	66	64
2	87	79	73	68	83	76	71	66	71	66	62	66	62	59	61	58	55	53
3	79	70	62	57	76	67	61	55	62	57	52	58	53	50	54	50	47	44
4	72	61	54	48	69	59	52	47	55	49	44	51	46	42	48	44	40	38
5	66	54	46	40	63	52	45	39	49	42	37	45	40	35	42	37	34	31
6	60	48	40	34	57	46	39	33	43	37	32	40	35	30	38	33	29	27
7	55	43	35	29	53	42	34	29	39	32	28	36	31	26	34	29	25	23
8	51	38	31	25	49	37	30	25	35	28	24	32	27	23	30	25	22	20
9	47	34	27	22	45	33	26	21	31	25	20	29	23	19	27	22	19	17
10	43	31	24	19	41	30	23	19	28	22	18	26	21	17	25	20	16	15

Zonal Lumen Summary

Zone	Lumens	%Lamp	%Fixture
0-30	1016	17.8	19.6
0-40	1703	29.9	32.9
0-60	3238	56.8	62.5
0-90	4330	76.0	83.7
90-180	846	14.8	16.3
0-180	5176	90.8	100.0

Candela

Angle	Along II	45°	Across ⊥
0	1278	1278	1278
10	1258	1264	1268
20	1195	1214	1228
30	1092	1133	1180
40	952	1039	1174
50	781	972	1075
60	582	817	724
70	367	472	553
80	157	251	138
90	15	30	21
100	31	65	50
110	96	18	38
120	169	45	20
130	240	140	64
140	304	244	173
150	358	286	286
160	398	369	311
170	424	426	420
180	434	434	434

ORDERING INFORMATION

SAMPLE NUMBER: DIM-232-120V-EB81-U

DIM | **N** | | **2** | **32** | **UNV** | | **ER81** | **AYC-CHAIN/SET** | **U**

- **DIM**: Tandem — Blank=4' Length, 8T=8' Length; Series — DIM=Apertured Reflector, DCIM=Closed Top Reflector
- **N**: Lamp Spacing — Blank=Standard Spacing, N=Narrow Spacing for 2 Lamp Only (10% uplight)
- (blank): Silver Reflector SS=Silver-Lining Reflector [3]
- **2**: Number of Lamps — 2, 3 or 4 Lamps (Not included)
- **32**: Wattage (Length) — 40=34/40WT12 (48"), 32=32WT8 (48")
- **UNV**: Voltage [1] — 120V=120 Volt, 277V=277 Volt, 347V=347 Volt, UNV=Universal Voltage 120-277 [2]
- (blank): Options — GL=Single Element Fuse, GM=Double Element Fuse, Emergency=EM Installed
- **ER81**: Ballast Type [1] — EB8_=T8 Electronic Instant Start. Total Harmonic Distortion < 10%; No. of Ballast 1, 2 or 3. EB8_/PLUS=T8 Electronic Instant Start. High Ballast Factor >1.13. Total Harmonic Distortion < 20%; No. of Ballast 1, 2 or 3. ER8_=T8 Electronic Program Rapid Start. Total Harmonic Distortion < 10%; No. of Ballast 1, 2 or 3. EB2_=T12 Electronic Rapid Start.; No. of Ballast 1 or 2
- **AYC-CHAIN/SET**: Options — RIF1=Radio Interference Suppressor, 6-3/18 SJT-C&P-515P=Cord & Plug (120V), 6-3/18 SJT-C&P-L715P=Cord & Plug (277V), PI/CPI=Plug-In Option, TILW=Tandem In-Line Wiring Option (Consult TILW Option Catalog Page), POR=Porcelain Finish, POX=Porlux Finish (See options & accessories)
- **U**: Packaging — U=Unit Pack, 48=4 Bulk

NOTES: [1]Products also available in non-US voltages and frequencies for international markets. [2]Not available when specifying emergencies, voltage must be specific. [3]Silver lining not available on fixtures with HO, VHO or PG.

Specifications & dimensions subject to change without notice. Consult your Cooper Lighting Representative for availability and ordering information.

ACCESSORIES (Order Separately)

A1B/Spacer-U=Spacer 1-1/2" to 2-1/2" from ceiling (Use 2 per fixture)
ATG-4=Tong Hanger (Use 2 per fixture)
SCF=Fixed Stem Set (Specify Length)
SCS=Swivel Stem Set (Specify Length)
SCA=Adjustable 48" Stem Set
AYC-Chain/Set-U =Chain Hanger Set (Use 1 set per fixture)
WG/DI-4FT-U=Wire Guard
WGG/DI-4FT-U=Wire Gym Guard
MECL-DI/RS-49-3/4-U=Metal Egg Crate Louver
MECL-DI/RS-99-1/2-U=Metal Egg Crate Louver
DI2=Long Connector
CEP=Closed End Plate
(Additional Accessories Available. See Options and Accessories Section).

SHIPPING INFORMATION

Catalog No.	Wt.
DIM-232	15 lbs.
8TDIM-232	30 lbs.
DIM-332	25 lbs.
DIM-432	25 lbs.

TYPE CH01A

COOPER LIGHTING - METALUX

DESCRIPTION

The DIM Series is an energy efficient family of industrials that feature premium performance and durability. The industrial series incorporates heavy duty, embossed, reflectors that precisely direct and effectively control light. The versatile DIM Series can be installed using various mounting methods and numerous options and accessories are available.

The DIM Series can be utilized in simple task and area lighting to the most demanding industrial applications.

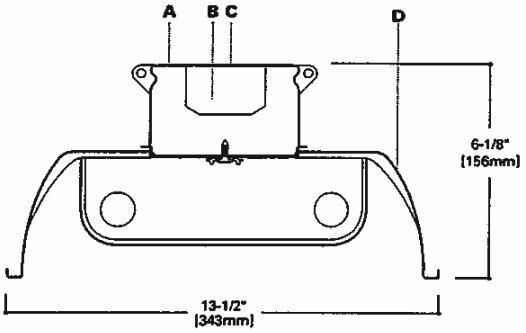
SPECIFICATION FEATURES

A ... Construction
Channel is code gauge prime cold rolled steel. Die formed with deep V-grooves for tong hanger. Die formed channel connector assures straight rows and continuity of ground through set screws. Lampholder mounting brackets are easily inserted with snap-in action.

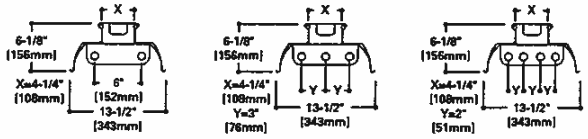
B ... Electrical*
Ballast are CBM/ETL Class "P" and positively secured by mounting bolts. Metal clad lampholders are spring loaded for turret safety. UL/CUL listed. Suitable for damp locations.

C ... Finish
Multistage iron phosphate pretreatment ensures maximum bonding and rust inhibitor. Lighting grade, baked white enamel finish.

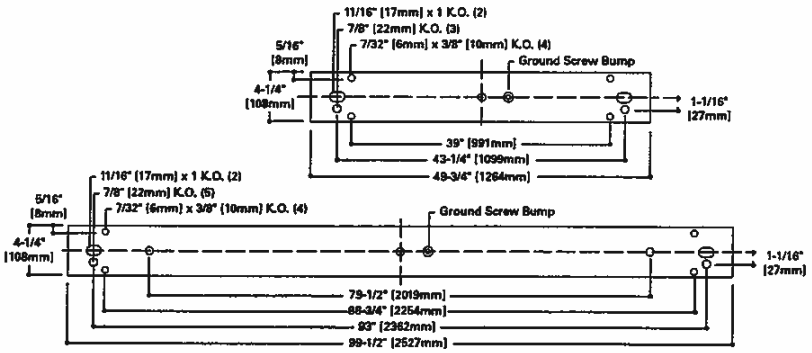
D ... Reflectors
Die formed prime steel, code gauge. Deep draw full width ribs formed with one press stroke. Side flanges lend strength with upward turn. Easily cleaned. Baked white enamel 13-1/2" width. Four foot sections. Reflectors secured by positive retaining screw. Reflector aligners provided. Standard with 20% uplight (DIM). Closed top reflector (DCIM). Optional industrial fixtures are available incorporating silver technology enhancements. (SilverLining)

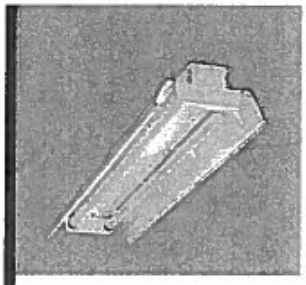


LAMP CONFIGURATIONS



MOUNTING DATA





DIM
240
232
340
332
440
432

4' OR 8' INDUSTRIAL
2, 3 OR 4 LAMP
Heavy Duty Industrial

ENERGY DATA

Input Watts:
EB Ballast & STD Lamps
240 (72)
232 (61)
340 (110)
332 (91)
440 (144)
432 (122)

ES Ballast & STD Lamps
240 (86)
232 (71)
340 (136)
332 (108)
440 (172)
432 (142)

Luminaire Efficacy Rating
LER = FI-78
Catalog Number: DIM-232

Yearly Cost of 1000 lumens, 3000 hrs at .08 KWH = $3.08

*Reference the lamp/ballast data in the Technical Section for specific lamp/ballast requirements.

LAMPS CONTAIN MERCURY. DISPOSE ACCORDING TO LOCAL, STATE OR FEDERAL LAWS

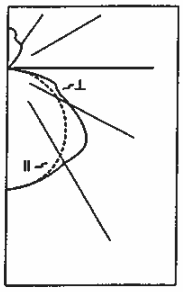
LINEAR DISCONNECT
Safe and convenient means of disconnecting power

Specifications and Dimensions subject to change without notice.
Consult your representative for additional options and finishes.

TYPE CH01A

DIM

PHOTOMETRICS



DIM-232
Electronic Ballast
F32T8/35K Lamps
2850 Lumens
Spacing criterion: (II) 1.3 x mounting height, (⊥) 1.4 x mounting height
Efficiency 90.8%
Test Report: DIM232.IES
LER = FI-78
Yearly Cost of 1000 lumens, 3000 hrs at .08 KWH = $3.08

Coefficients of Utilization

Effective floor cavity reflectance					20%															
rc	80%				70%				50%			30%			10%			0%		
rw	70	50	30	10	70	50	30	10	50	30	10	50	30	10	50	30	10	0		
RCR																				
0	105	105	105	105	100	100	100	100	93	93	93	86	86	86	79	79	79	76		
1	95	91	87	84	91	88	84	81	81	78	76	75	73	71	70	68	66	64		
2	87	79	73	68	83	76	71	66	71	66	62	66	62	59	61	58	55	53		
3	79	70	62	57	76	67	61	55	62	57	52	58	53	50	54	50	47	44		
4	72	61	54	48	69	59	52	47	55	49	44	51	46	42	48	44	40	38		
5	66	54	46	40	63	52	45	39	49	42	37	45	40	35	42	37	34	31		
6	60	48	40	34	57	46	39	33	43	37	32	40	35	30	38	33	29	27		
7	55	43	35	29	53	42	34	29	39	32	28	36	31	26	34	29	25	23		
8	51	38	31	25	49	37	30	25	35	28	24	32	27	23	30	25	22	20		
9	47	34	27	22	45	33	26	21	31	25	20	29	23	19	27	22	19	17		
10	43	31	24	19	41	30	23	19	28	22	18	26	21	17	25	20	16	15		

Zonal Lumen Summary

Zone	Lumens	%Lamp	%Fixture
0-30	1016	17.8	19.6
0-40	1703	29.9	32.9
0-60	3238	56.8	62.5
0-90	4330	76.0	83.7
90-180	846	14.8	16.3
0-180	5176	90.8	100.0

Candela

Angle	Along II	45°	Across ⊥
0	1278	1278	1278
10	1258	1264	1268
20	1195	1214	1228
30	1092	1133	1180
40	952	1039	1174
50	781	972	1075
60	582	817	724
70	367	472	553
80	157	251	138
90	15	30	21
100	31	65	50
110	96	18	38
120	169	45	20
130	240	140	64
140	304	244	173
150	358	286	286
160	398	369	311
170	424	426	420
180	434	434	434

ORDERING INFORMATION

SAMPLE NUMBER: DIM-232-120V-EB81-U

DIM | **N** | | **2** | **32** | **120** | | **ER81** | **LTC2-AYC-CHAIN/SET** | **U**

Tandem
Blank=4' Length
8T=8' Length

Series
DIM= Apertured Reflector
DCIM= Closed Top Reflector

Lamp Spacing
Blank=Standard Spacing
N=Narrow Spacing for 2 Lamp Only (10% uplight)

Silver Reflector
SS= Silver-Lining Reflector [3]

Number of Lamps
2 3 or 4 Lamps (Not included)

Wattage (Length)
40=34/40WT12 (48")
32=32WT8 (48")

Voltage [1]
120V=120 Volt
277V=277 Volt
347V=347 Volt
UNV=Universal Voltage 120-277 [2]

Options
GL=Single Element Fuse
GM=Double Element Fuse
Emergency=EM Installed

Ballast Type [1]
EB8_=T8 Electronic Instant Start. Total Harmonic Distortion < 10%
No. of Ballast 1, 2 or 3
EB8_/PLUS=T8 Electronic Instant Start. High Ballast Factor >1.13. Total Harmonic Distortion < 20%
No. of Ballast 1, 2 or 3
ER8_=T8 Electronic Program Rapid Start. Total Harmonic Distortion < 10%
No. of Ballast 1, 2 or 3
EB2_=T12 Electronic Rapid Start.
No. of Ballast 1 or 2

Options
RIF1=Radio Interference Suppressor
6-3/18 SJT-C&P-515P=Cord & Plug (120V)
6-3/18 SJT-C&P-L715P=Cord & Plug (277V)
PI/CPI=Plug-In Option
TILW=Tandem In-Line Wiring Option (Consult TILW Option Catalog Page)
POR=Porcelain Finish
POX=Porlux Finish
(See options & accessories)

Packaging
U=Unit Pack
4B=4 Bulk

NOTES: [1]Products also available in non-US voltages and frequencies for international markets. [2]Not available when specifying emergencies, voltage must be specific. [3]Silver lining not available on fixtures with HO, VHO or PG.

Specifications & dimensions subject to change without notice. Consult your Cooper Lighting Representative for availability and ordering information.

ACCESSORIES (Order Separately)

A1B/Spacer-U=Spacer 1-1/2" to 2-1/2" from ceiling (Use 2 per fixture)
ATG-4=Tong Hanger (Use 2 per fixture)
SCF=Fixed Stem Set (Specify Length)
SCS=Swivel Stem Set (Specify Length)
SCA=Adjustable 48" Stem Set
AYC-Chain/Set-U =Chain Hanger Set (Use 1 set per fixture)
WG/DI-4FT-U =Wire Guard
WGG/DI-4FT-U =Wire Gym Guard
MECL-DI/RS-49-3/4-U=Metal Egg Crate Louver
MECL-DI/RS-99-1/2-U=Metal Egg Crate Louver
DI2=Long Connector
CEP = Closed End Plate
(Additional Accessories Available. See Options and Accessories Section).

SHIPPING INFORMATION

Catalog No.	Wt.
DIM-232	15 lbs.
8TDIM-232	30 lbs.
DIM-332	25 lbs.
DIM-432	25 lbs.

TYPE CL01

COOPER LIGHTING - SURE-LITES®

DESCRIPTION

The CX Surface Mounted Die Cast Aluminum Exit combines the strength and durability of die casting with the bright, even illumination of LED lamp sources. Unlike competitive units that have a pronounced dot effect from protruding diodes, the CX LED offers unequalled uniform illumination and brightness.

SPECIFICATION FEATURES

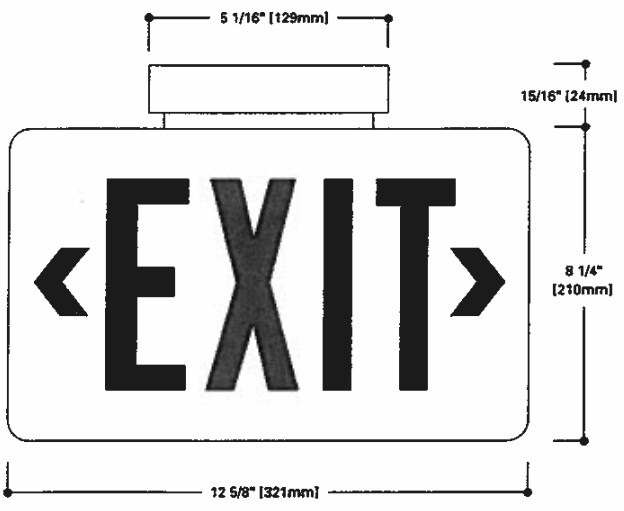
Electrical
- Dual Voltage Input 120/277 VAC, 60 Hz, isolation transformer
- Push-in AC power connectors facilitate installation

Housing Construction
- Die cast aluminum housing
- Die cast canopy included (for mounting convenience only no electrical components in canopy)
- Downlight not available on CX Series Exits with LED lamps
- Universal pattern knockouts on rear of single face housing for direct mounting to junction box
- Knockout provided on housing for surface attachment
- Exit can be universally mounted ceiling, wall or end
- Choice of three finishes
- NFPA 101 compliant knockout chevrons allow quick conversion to directional signs

Code Compliance
- Damp Location Listed
- UL 924 Listed
- CSA Certified
- Life Safety NFPA 101
- NEC/OSHA
- UL FTBR Listed When Specified With the "2C" Option
- Most State and Local Codes
- Suitable for Floor Proximity Installation

Warranty
- Exit: 5-year

Lamp Data
- AC LED: Long-life lamp provides uniform light output
- DC: LED DC lamps
- Red or green lettering only
- Extremely economical lamp operation



CX SERIES

CAST ALUMINUM EXITS
SURFACE MOUNT
AC ONLY
LED LAMPS
Exit Lighting

TOTALLY PREDICTABLE RELIABILITY

ORDERING INFORMATION

Sample Number: CX61GW

CX6	1	R			

Series
CX6= Due Cast Aluminum Exit, AC Only, LED

Face Options
1= Single
2= Double

Letter Colors
R= Red
G= Green

Housing Finish
= Brushed Aluminum Face w/Black Housing
W= White
B= Black

Options
2C= Two Circuit Operation, FTBR

Accessories [1]

Protective Housing
WG1G= Surface Mount Wire Guard (Wall Mount Only)
WG611= Ceiling or End Mount Wire Guard (Ceiling or End Mount Only)
VS1= Polycarbonate Vandal Shield (Wall Mount Only)
VS1WP= Weather Resistant Vandal Shield (Wall Mount Only)

Pendant Kit
CAX18PKBK= 18" Pendant Kit, Black
CAX18PKWH= 18" Pendant Kit, White
CAX18PKHTBK= 18" Hang True Pendant Kit, Black
CAX18PKHTWH= 18" Hang True Pendant Kit, White

Notes: 1 Order separately.

ENERGY DATA

LED Exits - Red
Input Power:
120V = 2.4W
277V = 2.5W

Input Current (Max.):
120V = .03A
277V = .02A

Power Factor:
120V = >.78
277V = >.73

T.H.D.:
120V = <33%
277V = <48%

LED Exits - Green
Input Power:
120V = 3.2W
277V = 3.0W

Input Current (Max.):
120V = .08A
277V = .03A

Power Factor:
120V = > .33
277V = > .35

T.H.D.:
120V = < 50%
277V = < 52%

COOPER Lighting
www.cooperlighting.com

Specifications and Dimensions subject to change without notice.
Consult your representative for additional options and finishes.

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TYPE CL01
CX SERIES

TECHNICAL DATA

Lamps

The CX Family is offered with energy saving LED lamps that offer extremely long-life with very low input wattage. LED lamps are available in either red or green. LED lamps have a long-life, eliminating the need for any lamp maintenance under normal conditions.

Housing

Die cast aluminum with Brushed Aluminum face and black trim standard. Optional finishes include White and Black. NFPA 101 compliant knockout chevrons for easy conversion to directional sign. Universal pattern knockouts are in the back of the single face housing for direct mounting to junction box.

Canopy

Die cast aluminum alloy canopy included for universal mounting. Canopy is included for mounting convenience only – no electrical components in canopy.

Electronics

Dual voltage input 120/277 VAC is standard. All electrical components are enclosed within the exit housing, preserving the low profile appearance.

"2C" Option

The standard CX Series Exits (Brushed finish only) "2C" Option enables the CX-LED Series Exits to operate per the requirements of UL 924 when connected simultaneously to both normal and emergency power circuits (two circuit operation–UL Category FTBR–Emergency Lighting and Power Equipment). The "2C" Option is a factory assembly change which alters the standard CX-LED Series Exit such that it complies with and is UL Listed under the FTBR Category. This option should only be used for exits which are intended to be connected simultaneously to normal and emergency power circuits. Both circuits have universal 120/277 VAC standard.

Warranty

All Sure-Lites' units are backed by a firm five (5) year warranty against defect in material and workmanship.

TYPE CL03

FAIL-SAFE®

DESCRIPTION

Fail-Safe's FPS Series combines features found only in the highest quality commercial lighting fixtures and adds the assurance of an unbreakable, tamper-resistant UV stabilized injection molded polycarbonate refractor. Its gasketed wraparound design prohibits the entrance of environmental contaminants. The result: no exposed metal in a U.L.. Listed for wet locations series of lighting fixtures.
The FPS Series is specifically designed for use in public access areas where vandalism may occur and for areas that must maintain a clean, well-lighted appearance. Ideal for schools, dormitories, hallways, locker rooms and restrooms.

SPECIFICATION FEATURES

A ... Lens
Nominal .156 UV stabilized, injection molded, polycarbonate refractor for high efficiency, low surface brightness and maximum strength. Designed to cover all metal and provide superior impact resistance.

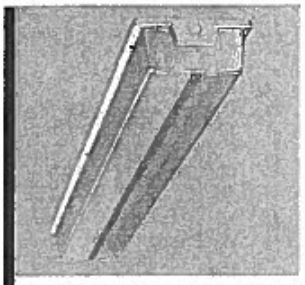
B ... Fasteners
Six captive, stainless steel tamperproof TORX®-head screws prevent unauthorized access.

C ... Lamps
(By Others)

D ... Backplate
One-piece 16 ga. prime CRS backplate with 16 ga. end-plates provides a firm mounting anchor.

E ... Ballast
Copper wound Class P, CBM/ETL ballast is standard.

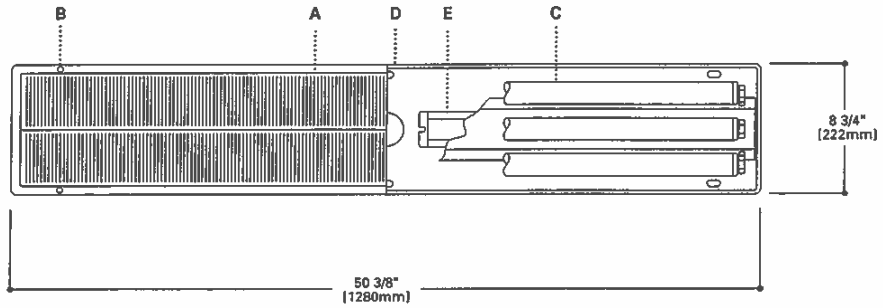
Labels
U.L. listed, C.S.A. certified, IP-65 Rated.



FPS

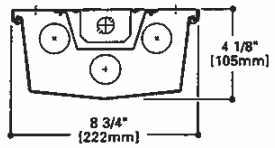
32W - 160W
Fluorescent

POLYCARBONATE HIGH ABUSE LUMINAIRE
Clear Prismatic or White

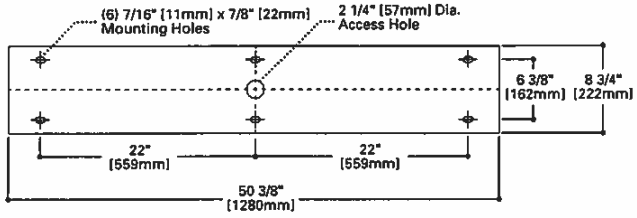


IP-65 Rated Ingress Protection (Complies with IEC - International Electrical Commission requirements)

SIDE DIMENSIONS



MOUNTING DIMENSIONS



ENERGY DATA

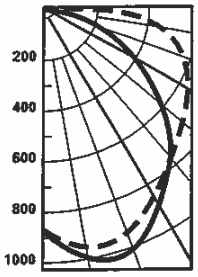
For Energy Management related technical data to support the performance of this fixture series, refer to the ordering information for input wattage.

TORX® is a registered trademark of Camcar Division of Textron Inc.

TYPE CL03
FPS

PHOTOMETRICS

Candlepower Distribution



Test No. 7416
FPS-332-277V
Lamp=(3) F32T8/SP35/RS
Lumens=2900
Spacing Criteria
⊥=1.3 ||=1.4
Efficiency=53.5%

--- ⊥
——— ||

Candlepower

Deg.	⊥	||
0	886	886
5	917	921
15	967	1010
25	837	909
35	782	845
45	670	646
55	630	477
65	583	324
75	534	172
85	495	47
90	486	23

Zonal Lumen Summary

Zone	Lumens	%Lamp	%Luminaire
0-30	787	9.0	16.9
0-40	1332	15.3	28.6
0-60	2463	28.3	52.9
0-90	3897	44.8	83.8
90-180	756	8.7	16.2
0-180	4653	53.5	100.0

Coefficient of Utilization

rc	80%				70%			50%		30%		10%		0%
rw	70	50	30	10	50	30	10	50	10	50	10	50	10	0
RCR														
0	62	62	62	62	59	59	59	55	55	50	50	47	47	45
1	55	52	49	46	49	47	45	46	42	42	39	39	36	34
2	49	44	40	36	42	38	35	39	33	36	31	33	29	27
3	45	38	34	30	37	33	29	34	27	31	26	29	24	23
4	41	34	29	25	32	28	24	30	23	28	22	26	21	19
5	37	30	25	21	29	24	20	26	19	24	18	23	17	16
6	34	26	21	18	25	21	17	24	17	22	16	20	15	14
7	31	24	19	15	23	18	15	21	14	20	14	18	13	12
8	29	21	17	13	20	16	13	19	12	18	12	16	11	10
9	27	19	15	11	18	14	11	17	11	16	10	15	10	8
10	25	17	13	10	17	13	10	16	9	14	9	13	8	7

rc=Ceiling reflectance, rw=Wall reflectance, RCR=Room cavity ratio
CU Data Based on 20% Effective Floor Cavity Reflectance.

ORDERING INFORMATION

SAMPLE NUMBER: FPS-240-120-LE3-GLR

Product Family	Lamp Type	Voltage[2]	Ballast[2]	Options[1]	Accessories (order separately)
FPS	232	UNV	ER81		

Product Family
FPS=High Abuse Polycarbonate Surface Luminaire

Lamp Type
T8 Fluorescent
132=(1) 32W Lamp
232=(2) 32W Lamps
332=(3) 32W Lamps
T12 Fluorescent
140=(1) 40W Lamp
240=(2) 40W Lamps
340=(3) 40W Lamps
Biaxial Fluorescent
240BX=(2) 40W Lamps
440BX=(4) 40W Lamps

Voltage[2]
120=120V
277=277V
347=347V
UNV=120-277

Ballast[2]
LE3=Energy Saving Ballast for use with T12 Lamp
LEOC8=Energy Saving Ballast for use with T8 Lamp
Electronic Ballast [1]
EB81=(1) Ballast for use with T8 Lamp
EB82=(2) Ballasts for use with T8 Lamp
EB21=(1) Ballast for use with T12 Lamp
EB22=(2) Ballasts for use with T12 Lamp
EBX1=(1) Ballast for use with Biaxial Lamp
EBX2=(2) Ballasts for use with Biaxial Lamp

Options[1]
ABP=Aluminum Back Plate
EBP=Emergency Battery Pack
FNL=Fluorescent Night Light (Lamp by others)
FNL13=Fluorescent Night Light (13W lamp. Lamp by others.)
GLR=Fuse and Holder
OPL=Opal Diffuser
RIF=Radio Interference Filter

Accessories (order separately)
2592=Corner Mounting Adapter
2594=Side Conduit Mounting Box
2595=Pendant Mounting Plate
7710=Continuous Row Connector Kit (wet location)
VRSD=TORX®-Head Vandal Resistant Screwdriver
VRSB=VR Screwdriver Bit for all Lens Screws

Notes:
For additional options consult Cooper Lighting Representative.
Specifications and Dimensions subject to change without notice.
[1] For specific electronic ballast, specify brand and catalog number.
[2] Products also available in non-US voltages and 50Hz for international markets. Consult your Cooper Lighting Representative for availability and ordering information.

ER81=(1)T8 Electronic Program Rapid Start. THD is less than 10%.

TYPE CL03A

FAIL-SAFE®

DESCRIPTION

Fail-Safe's FPS Series combines features found only in the highest quality commercial lighting fixtures and adds the assurance of an unbreakable, tamper-resistant UV stabilized injection molded polycarbonate refractor. Its gasketed wraparound design prohibits the entrance of environmental contaminants. The result: no exposed metal in a U.L.. Listed for wet locations series of lighting fixtures.
The FPS Series is specifically designed for use in public access areas where vandalism may occur and for areas that must maintain a clean, well-lighted appearance. Ideal for schools, dormitories, hallways, locker rooms and restrooms.

SPECIFICATION FEATURES

A ... Lens
Nominal .156 UV stabilized, injection molded, polycarbonate refractor for high efficiency, low surface brightness and maximum strength. Designed to cover all metal and provide superior impact resistance.

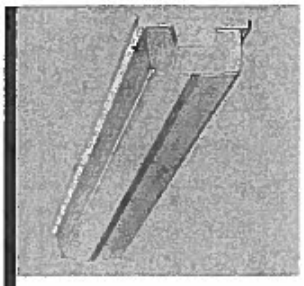
B ... Fasteners
Six captive, stainless steel tamperproof TORX®-head screws prevent unauthorized access.

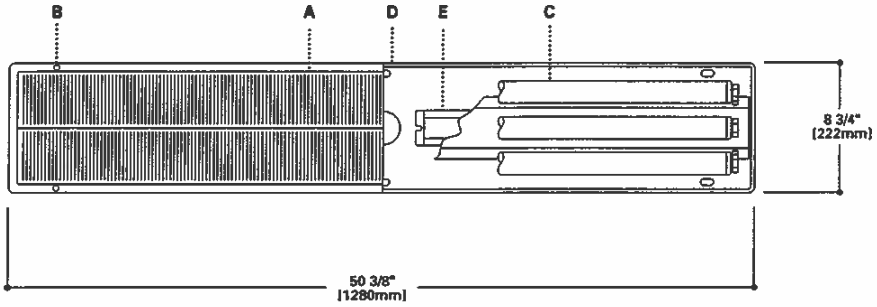
C ... Lamps
(By Others)

D ... Backplate
One-piece 16 ga. prime CRS backplate with 16 ga. end-plates provides a firm mounting anchor.

E ... Ballast
Copper wound Class P, CBM/ETL ballast is standard.

Labels
U.L. listed, C.S.A. certified, IP-65 Rated.





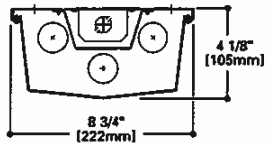
FPS

32W - 160W
Fluorescent

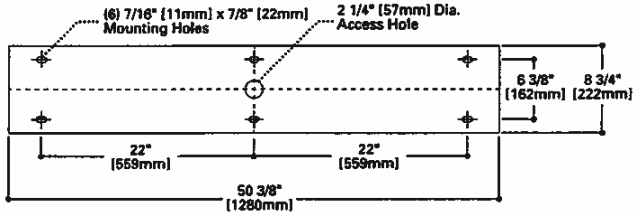
POLYCARBONATE
HIGH ABUSE LUMINAIRE
Clear Prismatic or White

IP-65 Rated
Ingress Protection
(Complies with IEC - International Electrical Commission requirements)

SIDE DIMENSIONS



MOUNTING DIMENSIONS



ENERGY DATA

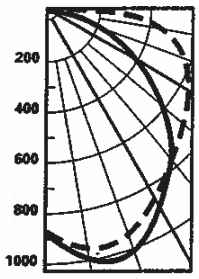
For Energy Management related technical data to support the performance of this fixture series, refer to the ordering information for input wattage.

TORX® is a registered trademark of Camcar Division of Textron Inc.

TYPE CL03A
FPS

PHOTOMETRICS

Candlepower Distribution



Test No. 7416
FPS-332-277V
Lamp=(3) F32T8/SP35/RS
Lumens=2900
Spacing Criteria
⊥=1.3 II=1.4
Efficiency=53.5%

– – – ⊥
——— II

Candlepower

Deg.	⊥	II
0	886	886
5	917	921
15	967	1010
25	837	909
35	782	845
45	670	646
55	630	477
65	583	324
75	534	172
85	496	47
90	486	23

Zonal Lumen Summary

Zone	Lumens	%Lamp	%Luminaire
0-30	787	9.0	16.9
0-40	1332	15.3	28.6
0-60	2463	28.3	52.9
0-90	3897	44.8	83.8
90-180	756	8.7	16.2
0-180	4653	53.5	100.0

Coefficient of Utilization

rc	80%				70%			50%		30%		10%		0%
rw	70	50	30	10	50	30	10	50	10	50	10	50	10	0
RCR														
0	62	62	62	62	59	59	59	55	55	50	50	47	47	45
1	55	52	49	46	49	47	45	46	42	42	39	39	36	34
2	49	44	40	36	42	38	35	39	33	36	31	33	29	27
3	45	38	34	30	37	33	29	34	27	31	26	29	24	23
4	41	34	29	25	32	28	24	30	23	28	22	26	21	19
5	37	30	25	21	29	24	20	26	19	24	18	23	17	16
6	34	26	21	18	25	21	17	24	17	22	16	20	15	14
7	31	24	19	15	23	18	15	21	14	20	14	18	13	12
8	29	21	17	13	20	16	13	19	12	18	12	16	11	10
9	27	19	15	11	18	14	11	17	11	16	10	15	10	8
10	25	17	13	10	17	13	10	16	9	14	9	13	8	7

rc=Ceiling reflectance, rw=Wall reflectance, RCR=Room cavity ratio
CU Data Based on 20% Effective Floor Cavity Reflectance.

ORDERING INFORMATION

SAMPLE NUMBER: FPS-240-120-LE3-GLR

Product Family	Lamp Type	Voltage[2]	Ballast[2]	Options[1]	Accessories (order separately)
FPS	**232**	**120**	**ER81**	**LTC2**	
FPS=High Abuse Polycarbonate Surface Luminaire	T8 Fluorescent 132=(1) 32W Lamp 232=(2) 32W Lamps 332=(3) 32W Lamps T12 Fluorescent 140=(1) 40W Lamp 240=(2) 40W Lamps 340=(3) 40W Lamps Biaxial Fluorescent 240BX=(2) 40W Lamps 440BX=(4) 40W Lamps	120=120V 277=277V 347=347V	LE3=Energy Saving Ballast for use with T12 Lamp LEOC8=Energy Saving Ballast for use with T8 Lamp Electronic Ballast [1] EB81=(1) Ballast for use with T8 Lamp EB82=(2) Ballasts for use with T8 Lamp EB21=(1) Ballast for use with T12 Lamp EB22=(2) Ballasts for use with T12 Lamp EBX1=(1) Ballast for use with Biaxial Lamp EBX2=(2) Ballasts for use with Biaxial Lamp	ABP=Aluminum Back Plate EBP=Emergency Battery Pack FNL=Fluorescent Night Light (Lamp by others) FNL13=Fluorescent Night Light (13W lamp, Lamp by others.) GLR=Fuse and Holder OPL=Opal Diffuser RIF=Radio Interference Filter	2592=Corner Mounting Adapter 2594=Side Conduit Mounting Box 2595=Pendant Mounting Plate 7710=Continuous Row Connector Kit (wet location) VRSD=TORX®-Head Vandal Resistant Screwdriver VRSB=VR Screwdriver Bit for all Lens Screws

Notes:
For additional options consult Cooper Lighting Representative.
Specifications and Dimensions subject to change without notice.
[1] For specific electronic ballast, specify brand and catalog number.
[2] Products also available in non-US voltages and 50Hz for international markets. Consult your Cooper Lighting Representative for availability and ordering information.

ER81=(1)T8 Electronic Program Rapid Start. THD is less than 10%.

TYPE GR01
INVUE®

DESCRIPTION

VISION FLOOD'S cylindrical form blends effortlessly to architectural and landscape environments. Available in wattages up to 1000 watt Metal Halide and in two (2) housing sizes, VISION FLOOD offers properly scaled solutions for any floodlighting application.

SPECIFICATION FEATURES

A ... Housing
One-piece die-cast aluminum housing maintains a nominal .125" thickness to endure the toughest environments while maintaining precise tolerance control.

B ... Door
Die-cast aluminum door maintains a nominal .125" thickness and features concealed hinging to the housing. Door is secured with four (4) tamper resistant recessed stainless steel allen head fasteners. Door frame features an integral accessory channel for the mounting of optional light control accessories. Doorframe seals to housing with a continuous extruded silicone gasket. Lens is impact resistant .180" thick tempered clear flat glass, sealed to the door with a one-piece silicone gasket.

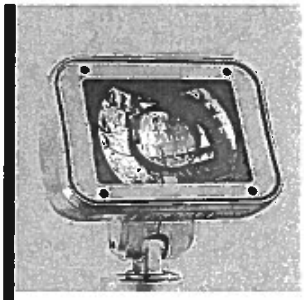
C ... Optical Assembly
Choice of six (6) high efficiency optical systems constructed of premium 95% reflective anodized aluminum sheet, or bright specular anodized polished spun aluminum. Available distributions include Narrow Spot, Narrow Flood, Medium Flood, Wide Flood, Horizontal Spot, and Vertical Flood. All reflector modules feature toolless removal, quick disconnect wire connections, and are field interchangeable. Small housing (VFS) optics feature medium-base lampholders.

D ... Knuckle
Heavy-duty die-cast aluminum knuckle utilizes a taper-lock adjustment mechanism for both solid engagement and infinite aiming adjustment. Knuckle adjustment is made via one (1) captive stainless steel allen head fastener consistent with doorframe fasteners.

D ... Knuckle (Cont'd.)
Tested to sustain 3G of vibration without loosing aiming position. VFS knuckle features a 3/4" NPT nipple on bottom surface for rigid attachment to available mounting accessories. Optional slipfitter mount available for VFS.

E ... Electrical Components
High Power Factor (HPF) ballast components are strategically located and heat sunk to the housing for cooler operation and longer life. The VFS housing is rated for 40 degrees C (104 degrees F) ambient environments.

F ... Finish
Housing and arm finished in a 5 stage premium TGIC polyester powder coat paint, 2.5 mil nominal thickness for superior protection against fade and wear. Standard colors include black, bronze, grey, white, dark platinum, and graphite metallic. RAL and custom color matches available. Consult your INVUE Lighting Systems Representative for more information.



VFS
VISION
FLOOD
SMALL

50-175W
Metal Halide
High Pressure Sodium

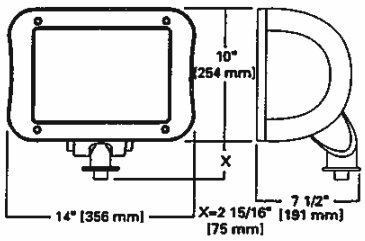
ARCHITECTURAL
FLOOD LUMINAIRE

VISION series

Wattage Table

	VFS
Metal Halide	50, 70, 100, 175W
High Pressure Sodium	50, 70, 100, 150W

DIMENSIONS



Certifications

IP65 Rated	U.L. 1598 Listed	3G Vibration Tested
CSA Listed	40°C Ambient	ISO 9001

EPA (effected projected area)
1.19

SHIPPING DATA (approx.)
Net Weight (lbs.): 37

Specifications and Dimensions subject to change without notice.
Consult your representative for additional options and finishes.

TYPE GR01
VFS VISION FLOOD SMALL

ORDERING INFORMATION

Sample Number: VFS-K-150-MH-120-NF-WH

VFS	K	70	MH	120	WF	BZ	F-L	SM-BZ

Product Family
VFS= Vision Flood Small

Mounting Type
K= Knuckle

Lamp Wattage [1]
50= 50W
70= 70W
100= 100W
150= 150W
175= 175W

Lamp Type
MH= Metal Halide
HPS= High Pressure Sodium

Voltage [2]
120= 120V
208= 208V
240= 240V
277= 277V
347= 347V
480= 480V
DT= Dual-Tap wired 277V[3]
MT= Multi-Tap wired 277V[4]
TT= Triple-Tap wired 347V[5]

Optical System
NS= Narrow Spot
NF= Narrow Flood
MF= Medium Flood
WF= Wide Flood
VF= Vertical Flood
HS= Horizontal Spot

Color [6]
BK= Black
AP= Grey
BZ= Bronze
WH= White
DP= Dark Platinum
GM= Graphite Metallic
VR= Verde Green

Options [7]
F= Single Fuse (120, 277 or 347V) Specify Voltage
FF= Double Fuse (208, 240 or 480V) Specify Voltage
PC= Button Type Photocontrol (Specify Voltage)
L= Lamp Included

Accessories [8]
JB-XX= Architectural J-Box with two 3/4" NPT Entries
SM-XX= Stanchion Mount
ST-XX= Stanchion Mount Tenon
WM-XX= Wall Mount
WMA-XX= Wall Mount Arm
WMT-XX= Wall Mount Arm Tenon Mount
TMA-XX= Twin Mount Arm - EPA 0.35
TMT-XX= Twin Mount Arm Tenon Mount - EPA 0.42
SMT-XX= Surface Mount Tenon
SF-XX= Slipfitter
PM1-XX= Post Mount Extension Single - EPA 0.12
PM2-XX= Post Mount Extension Double - EPA 0.12
VFS-CFR-XX= Color Filter Adapter with Red Gel
VFS-CFB-XX= Color Filter Adapter with Bright Blue Gel
VFS-CFG-XX= Color Filter Adapter with Deep Green Gel
VFS-CFO-XX= Color Filter Adapter with Warm Orange Gel
VFS-BD-XX= Barn Doors - EPA 1.01
VFS-TV-XX= Top Visor - EPA 0.6
VFS-VS= Vandal Shield
VFS-GL1-XX= External Grid Louver (NS and NF Optics Only)
VFS-GL2-XX= External Grid Louver (MF, WF, VF and HS optics only)

Notes:
1 All HID lamps are medium-base.
2 Products also available in non-US voltages and 50Hz for international markets. Consult factory for availability and ordering information.
3 Dual-tap is 120/277V wired 277V.
4 Multi-tap is 120/208/240/277V wired 277V.
5 Triple-tap is 120/277/347V wired 347V.
6 Custom and RAL color matching available upon request. Consult your INVUE Lighting Systems Representative for further information.
7 Add as suffix in the order shown.
8 Order separately, replace XX with color suffix.

TYPES CH01A, CL03A, R01A, R02A, R03A, W03A
COOPER LIGHTING - SURE-LITES®

DESCRIPTION

In the event of AC power loss, the Sure-Lites LTC2, Load Transfer Circuit, automatically switches normal light fixtures to approved emergency lights. The LTC2, in conjunction with an auxiliary emergency power generator or inverter, will provide emergency power to lighting fixtures regardless of the room switch position. The LTC2 will operate up to a maximum 10A load. The LTC2 is UL924 listed for field retrofit installation.

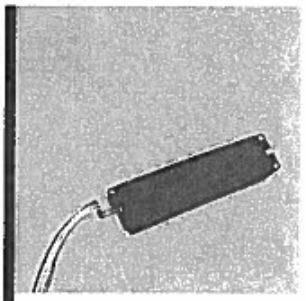
SPECIFICATION FEATURES

Electronic
- 120/277VAC, 60 Hz
- Operates incandescent, fluorescent, HID and other loads. 10 Amps. max.

Code Compliance
- UL924 Listed, Dry Locations
- UL Listed for Retrofit/Field Installation
- Life Safety NFPA 101
- NEC/OSHA

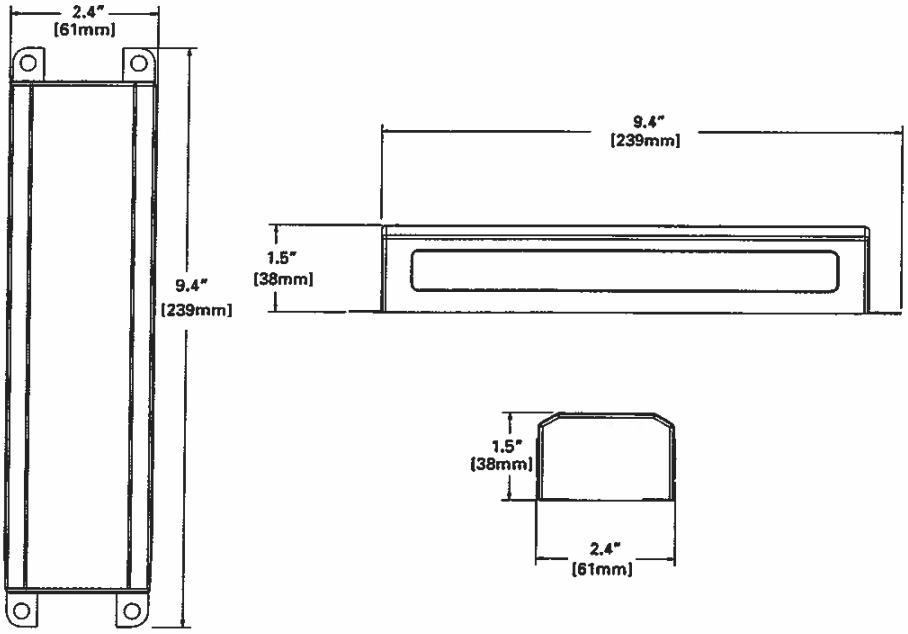
Construction
- Matte black painted steel housing
- Sized to fit inside ballast channel

Features
- Can be installed inside or on top of fixture (for top mount use Sure-Lites FBP1WBC)
- Easy-to-follow instructions make installation quick and simple
- May be used with switched fixtures
- Compatible with many different lamp types - consult your Cooper Lighting Representative regarding specific applications
- Compatible with many ballast types including standard, rapid start, slimline, instant start, energy saving, dimming, and electronic AC ballasts - consult your Cooper Lighting Representative regarding specific applications



LTC2
SERIES

LOAD TRANSFER CIRCUIT
Emergency Lighting



ORDERING INFORMATION

SAMPLE NUMBER: LTC2

LTC2	Voltage
Family LTC2=Load Transfer Circuit	Blank=120/277VAC

Specifications and Dimensions subject to change without notice.
Consult your representative for additional options and finishes.

TECHNICAL DATA

Application

The LTC2, load transfer circuit, operates in conjunction with an auxiliary power generator upon normal AC power loss. The LTC2 switches the circuit and the fixtures to emergency lighting regardless of the wall switch position. The LTC2 provides flexibility for emergency lighting by not limiting it to those fixtures on the night light circuit only. The LTC2 is recommended for application in classrooms, office spaces, auditoriums, and any additional applications utilizing an auxiliary power generator.

Operation

The LTC2 detects normal utility power loss. The LTC2's internal relay switching circuit switches the AC ballast input power to the auxiliary generator. The auxiliary generator or inverter AC source powers lighting fixtures on the circuit producing emergency lighting. Upon restoration of normal lighting power, the LTC2 switches back to "Utility Power" mode.

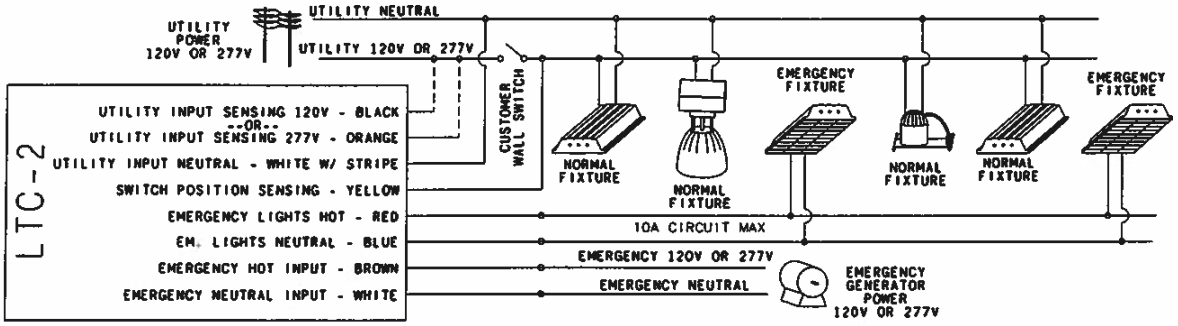
Electric Switching

The switching circuit is designed to detect voltage irregularities and automatically switches lamp(s) into emergency operation. Upon restoration of the AC current, the lamp(s) will switch back to AC operation.

Warranty

All Sure-Lites products are backed by a firm one year warranty against defects in material and workmanship.

APPLICATION



Emergency Circuit Diagram

Switched fixtures and emergency fixtures are controlled by switch in normal mode. Emergency fixtures only are on in emergency mode.

TYPE P02
INVUE®

DESCRIPTION

The classic lines and sophisticated construction of the Vision Site luminaire makes it an ideal complement to site design. The combination of smooth contours and sharp rear reveals allow the fixture to change character from different viewing angles while providing excellent low-glare photometrics. U.L. listed and CSA certified for wet locations.

SPECIFICATION FEATURES

A ... Housing
One-piece, die-cast aluminum housing maintains a nominal 0.125" wall thickness. Integral reveal channels along top surface of housing promote heat extraction and prolonged electrical component life. Solid cast wall separates optical chamber from electrical area.

B ... Electrical Tray
Ballast and related electrical componentry are mounted to a reinforced one piece galvanized steel tray with integral handle. For ease of maintenance, tray hinges open via toolless release of one spring loaded latch. Electrical quick disconnects allow tray to be completely removed from housing providing ample hand and tool room for attachment of fixture during installation, and a safer servicing environment. Optional tray mounted fuse connections offer a distinct and easy to maintain alternative to common inline fuse connections.

C ... Door
One-piece die-cast aluminum door frame. Door frame opens via release of two flush mounted toolless latches. Tempered 1/8" thick clear glass lens seals to door with a weather-tight continuous gasket. Optical chamber is sealed against entry of dirt and moisture by a continuous door mounted gasket which firmly compresses against optical enclosure walls.

D ... Lens
Impact resistant 1/8" thick tempered clear flat glass.

E ... Optical Systems
Choice of five (5) efficiency segmented optical systems constructed of premium 95% reflective anodized aluminum sheet. Optical segments are rigidly mounted inside a thick gauge aluminum housing for superior protection. All segment faces are clean of rivet heads, tabs, or other means of attachment which may cause streaking in the light distribution. Optional high efficiency hydroformed reflectors available in VXM housing only in four (4) distributions patterns. All reflector modules feature toolless removal, quick disconnect wiring plugs, and are field rotatable in 90 degree increments. HID lamp sources in medium housing (VXM) optics feature mogul-base lampholders.

F ... Arm
One-piece extruded rectangular arm available in standard 6" and 10" lengths. Internal bolt guides allow easy positioning of fixture during installation to pole or wall surface.

G ... Structural Mount
Die-cast aluminum cleat factory mounted to luminaire and finished in luminaire color. Stainless steel structural rod measures 1/2" in diameter and is provided in luminaire finish color or optional natural finish. Product works in conjunction with accessory 10" arms. INVUE poles provided pre-drilled for suspension mount option. See INVUE pole brochure for a complete selection of matching poles.

H ... Finish
Housing and arm finished in a 5 stage premium TGIC polyester powder coat paint, 2.5 mil nominal thickness for superior protection against fade and wear. Standard colors include black, bronze, grey, white, dark platinum, and graphite metallic. RAL and custom color matches available. Consult your INVUE Lighting Systems Representative for more information.

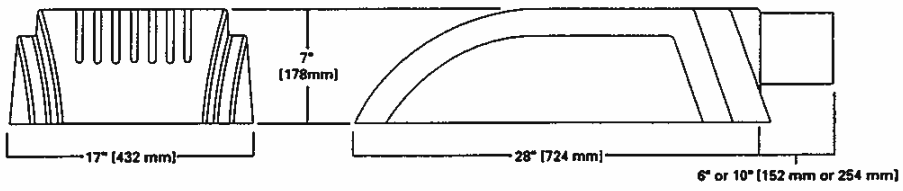
VXM
VISION SITE MEDIUM

85-400W
Metal Halide
Pulse Start Metal Halide
High Pressure Sodium
Compact Fluorescent
Electrodeless Fluorescent

ARCHITECTURAL AREA LUMINAIRE

DARK SKY COMPLIANT FCO Full Cutoff

DIMENSIONS



Wattage Table

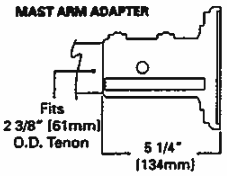
	VXM
Metal Halide	175, 250, 400W
Pulse Start Metal Halide	250, 320, 350, 400W
High Pressure Sodium	150, 250, 400W
Compact Fluorescent	(2) 57, (2) 70W
Electrodeless Fluorescent	85W

Certifications

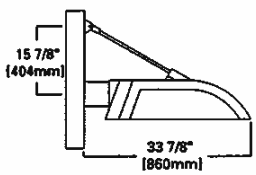
IP54 Rated	U.L. 1598 Listed	3G Vibration Tested	FCO Full Cutoff
CSA Listed	40°C Ambient	ISO 9001	

MOUNTING OPTIONS

MAST ARM ADAPTER



STRUCTURAL MOUNT



EPA: (effected projected area)
Single: 1.6
Single Structural: 1.82

SHIPPING DATA (approx.)
Net Weight (lbs.): 51
Volume (cu. ft): 3.18

COOPER Lighting
www.cooperlighting.com

Specifications and Dimensions subject to change without notice.
Consult your representative for additional options and finishes.

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TYPE P02

VXM VISION SITE MEDIUM

ORDERING INFORMATION

Sample Number: VXM-400-MH-MT-3S-BK-PRCPS-L

VXM	400	MH	120	2S	BZ		F-L	MA1050-BZ

Product Family [1]
VXM= Vision Site Medium

Lamp Wattage
HID [2]
150= 150W
175= 175W
250= 250W
320= 320W[3]
350= 350W[3]
400= 400W[4]
Compact Fluorescent
114= (2) 57W[5]
140= (2) 70W[5]
Electrodeless Fluorescent
85= 85W[6]

Lamp Type
MH= Metal Halide
MP= Pulse Start Metal Halide
HPS= High Pressure Sodium
CF= Compact Fluorescent [7]
QL= Electrodeless Fluorescent

Voltage [8]
120= 120V
208= 208V
240= 240V
277= 277V
347= 347V
480= 480V
DT= Dual-Tap wired[9] 277V
MT= Multi-Tap wired[10] 277V
TT= Triple-Tap wired[11] 347V
UNV= 120-277V Universal Electronic Ballast

Optical System
2S= Type II
3S= Type III
4S= Type IV
5S= Type V
SL= Forward Throw w/ Spill Light Eliminator
2F= Design 20 Formed
3F= Design 30 Formed
4F= Design 40 Formed
5F= Design 50 Formed

Color [12]
BK= Black
AP= Grey
BZ= Bronze
WH= White
DP= Dark Platinum
GM= Graphite Metallic

Structural Options [1, 13]
Pole Mount
PRCPS= Strut Rod and Clevis Set for Square Poles (Painted to match fixture, does not include arm) [14]
PRCSS= Stainless Steel Strut Rod and Clevis Set for Square Poles (Clevis' painted to match fixture, does not include arm) [14]
PRCPR= Strut Rod and Clevis Set for Round Poles (Painted to match fixture, does not include arm) [15]
PRCSR= Stainless Steel Strut Rod and Clevis Set for Round Poles (Clevis' painted to match fixture, does not include arm) [15]
Wall Mount
WRCP= Strut Rod and Clevis Set (Painted to match fixture, does not include arm) [16]
WRCS= Stainless Steel Strut Rod and Clevis Set (Clevis' painted to match fixture, does not include arm) [16]

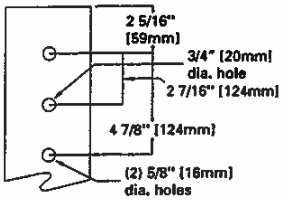
Options [13]
F= Single Fuse (120, 277 or 347V) Specify Voltage
FF= Double Fuse (208, 240 or 480V) Specify Voltage
Q= Quartz Restrike[17]
EM= Quartz Restrike w/ Time Delay (Also Strikes at Cold Start) [17]
EM/SC= Quartz Emergency Separate Circuit [17]
R= NEMA Twistlock Photocell Receptacle
DS= Dual Fluorescent Switching Control [18]
HS= House Side Shield [19]
VS= Polycarbonate Vandal Shield
T= Terminal Block
L= Lamp Included **VENTURE LAMP**

Accessories [20]
MA1050-XX= 6" Arm for Square Pole
MA1051-XX= 10" Arm for Square Pole [21]
MA1052-XX= 6" Arm for Round Pole
MA1053-XX= 10" Arm for Round Pole [21]
MA1054-XX= Wall Bracket with 6" Arm [22]
MA1056-XX= Direct Mount for Square Pole
MA1057-XX= Direct Mount for Round Pole
MA1201-XX= Direct Wall Mount Kit [22]
MA1207-XX= Mast Arm Adapter
MA1231-XX= VXM Structural Mount Wall Mount Arm [23]
MA1017-XX= Single-arm Tenon Adapter for 2 3/8" O.D. Tenon
MA1018-XX= 2@180° Tenon Adapter for 2 3/8" O.D. Tenon
MA1019-XX= 3@120° Tenon Adapter for 2 3/8" O.D. Tenon
MA1045-XX= 4@90° Tenon Adapter for 2 3/8" O.D. Tenon
MA1048-XX= 2@90° Tenon Adapter for 2 3/8" O.D. Tenon
MA1115-XX= 3@90° Tenon Adapter for 2 3/8" O.D. Tenon
MA1116-XX= 2@120° Tenon Adapter for 2 3/8" O.D. Tenon
MA1010-XX= Single-arm Tenon Adapter for 3 1/2" O.D. Tenon
MA1011-XX= 2@180° Tenon Adapter for 3 1/2" O.D Tenon
MA1012-XX= 3@120° Tenon Adapter for 3 1/2" O.D. Tenon
MA1013-XX= 4@90° Tenon Adapter for 3 1/2" O.D. Tenon
MA1014-XX= 2@90° Tenon Adapter for 3 1/2" O.D. Tenon
MA1016-XX= 3@90° Tenon Adapter for 3 1/2" O.D. Tenon
MA1015-XX= 2@120° Tenon Adapter for 3 1/2" O.D. Tenon
OA/RA1016= NEMA Photocontrol - Multi-Tap
OA/RA1027= NEMA Photocontrol - 480V
OA/RA1201= NEMA Photocontrol - 347V

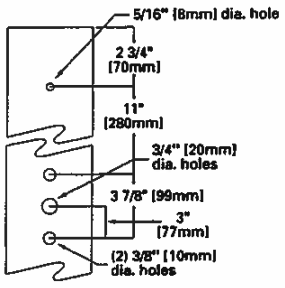
Notes: 1 Arm not included. See accessories. 2 All HID lamps are mogul-base. 3 320W and 350W Pulse Start Metal Halide lamps only. 4 400W Metal Halide requires reduced envelope ED28 lamp. 5 Dual Compact Fluorescent lamp options available in Type 4S distribution only. 6 Electrodeless Fluorescent QL lamp only. Available in Type 3S and 5S distributions only. 120V only. 7 Compact Fluorescent ballasts contain internal fusing. No supplemental fusing is necessary. CF ballasts are 120 through 277V. Specify with UNV voltage designation. 8 Products also available in non-US voltages and 50Hz for international markets. Consult factory for availability and ordering information. 9 Dual-tap is 120/277V wired 277V. 10 Multi-tap is 120/208/240/277V wired 277V. 11 Triple-tap is 120/277/347V wired 347V. 12 Custom and RAL color matching available upon request. Consult your INVUE Lighting Systems Representative for further information. 13 Add as suffix in the order shown. 14 Compatible with 10" MA1051 arm only. 15 Compatible with 10" MA1053 arm only. 16 Wall mount structual options do not include arm assembly (See Accessories). Compatible with 10" MA1231 arm only. 17 Quartz options not available with SL optic. 18 Dual switching requires dual 57W or dual 70W Compact Fluorescent lamps. Allows independent switching control of each lamp through use of two (2) electronic ballasts. Allows 50% power reduction when dual ballasts are independently wired and controlled. 19 House side shield not available on 5S and SL optics. 20 Order separately, replace XX with color suffix. 21 Use when mounting fixture heads at 90° increments. 22 For use in down lighting applications only. 23 Includes arm only. Must specify WRCP or WRCS in fixture ordering logic. Down light only.

DRILLING PATTERNS

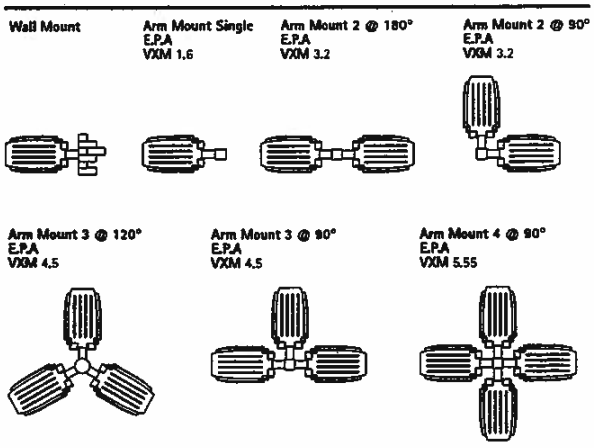
(TYPE "M")



Structural Mount
(TYPE "G")



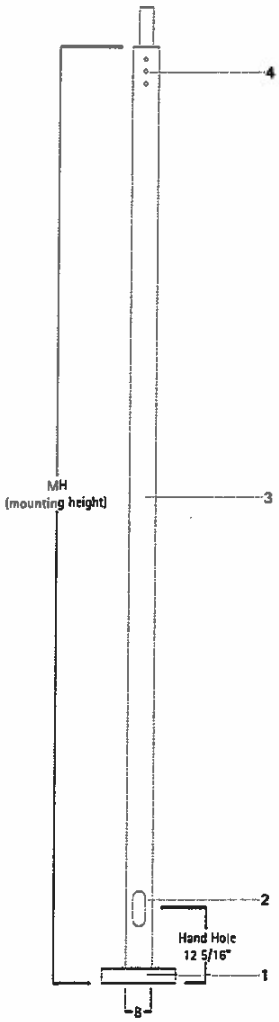
MOUNTING VARIATIONS

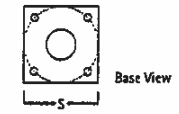


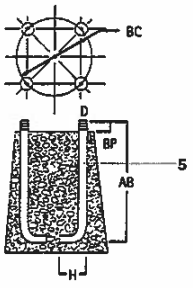
TYPE P02
INVUE

SRX=STEEL ROUND STRAIGHT

10'–30' Mounting Height







SPECIFICATION FEATURES

1 ASTM Grade steel base plate with ASTM A366 base cover.

2 Hand hole assembly 3" x 5" on 5" and 6" SRX poles, 2" x 4" on 4" SRX poles.

3 ASTM A500 grade "B" steel shaft. Shot blasted and painted with premium TGIC polyester powder coat.

4 Drilled or Tenon (specify).

5 Anchor bolt per ASTM A576 with (2) nuts, (2) flat washer, and (1) lock washer. Nuts, washers and threaded portion of bolt are hot dip galvanized 3" hook for 3/4" bolt. 4" hook for 1" bolt.

POLE COMPATIBILITY MATRIX	DRILL	EPA + MOUNTING CONFIGURATIONS					
	PATTERN	Single w/Arm	2 @ 180	2 @ 90	3 @ 90	3 @ 120	4 @ 90
PRODUCT	TENON	[1]	[2]	[5]	[3]	[6]	[4]
ICON SMALL	A	0.69	1.38	1.38	1.84	1.84	2.07
ICON MEDIUM	C	1.09	2.18	2.18	2.86	2.86	3.20
ICON SMALL STRUCTURAL MOUNT	J	0.71	1.42	1.42	1.90	1.90	2.14
ICON MEDIUM STRUCTURAL MOUNT	K	1.11	2.22	2.22	2.92	2.92	3.27
SLIDE	4"	2.97	—	—	—	—	—
FLITE	4"	1.56	—	—	—	—	—
VISION SMALL	E	1.27	2.54	2.54	3.60	3.60	4.13
VISION MEDIUM	M	1.6	3.20	3.20	4.50	4.50	5.55
VISION SMALL STRUCTURAL MOUNT	F	1.28	2.56	2.56	3.63	3.63	4.17
VISION MEDIUM STRUCTURAL MOUNT	G	1.82	3.64	3.64	4.96	4.96	5.62
ASCENT SMALL	A	0.85	1.70	1.70	2.35	2.35	2.68
ASCENT MEDIUM	C	1.35	2.70	2.70	3.83	3.83	4.56
STRUT SMALL	A	1.03	2.06	2.06	2.89	2.89	3.49
STRUT MEDIUM	C	1.64	3.28	3.28	4.70	4.70	5.77
X-FORM SMALL	E	1.15	2.30	2.30	3.20	3.20	3.81
X-FORM MEDIUM	M	2.1	4.20	4.20	6.00	6.00	7.50
MESA	5"*	1.1	3.56	—	—	—	—
EPIC MEDIUM	4"	Consult EPIC brochure for system EPA data					
EPIC LARGE	4"	Consult EPIC brochure for system EPA data					

* Fits 4" O.D. by 6" long tenon or slipfits over 4" ARX or SRS pole. ** Fits 3" O.D. by 4" long tenon. See Drill Patterns on page 3.

FOUR BOLT ANCHORAGE [see ordering information]

PB=Bolt Projection AB=Bolt Dimensions D=Bolt Diameter H=Bolt Dimensions

TYPE P02

SRX STEEL ROUND STRAIGHT

The following information illustrates the correct way to enter an order for SRX4A20SGMC3G. The ordering designation is detailed as follows.

Steel	Round	Straight	Shaft[3] Size	Wall Thickness	Mounting Height (ft.)	Base Type	Colors	Fixture Mounting + Type	No. + Location of Arms	Accessories (Ground Lug)
S	R	X	4	A	20	S	GM	C	3	G
S	**R**	**X**	**6**	**M**	**30**	**S**	**BZ**	**M**	**1**	

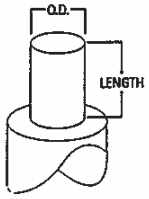
Mtg. Height MH	Catalog[1,2] Number	Wall Thickness	Base Square (in.) S	Bolt Circle Dia. (in.) BC	Bolt Proj. (in.) BP	Shaft Size (in.) B	Anchor Bolt Dia. + Length (in.) AB	Net. Wt. (Lbs.)	EPA (Sq. Ft.)[4] At Pole Top 70	80	90	100	EPA (Sq. Ft.)[4] 2' Above Pole Top 70	80	90	100	Max. Fixture Load—Include Bracket (Lbs.)
10	SRX4A10SBZ	.120	10 1/2	11.0	4 1/2	4	3/4 x 25 x 3	82	24.4	18.2	14.0	11.1	20.3	15.2	11.7	9.3	150
15	SRX4A15SBZ	.120	10 1/2	11.0	4 1/2	4	3/4 x 25 x 3	113	11.3	8.1	6.0	4.5	10.0	7.2	5.3	4.0	150
20	SRX4A20SBZ	.120	10 1/2	11.0	4 1/2	4	3/4 x 25 x 3	144	6.4	4.2	2.7	1.8	5.8	3.8	2.4	1.6	200
20	SRX5M20SBZ	.188	10 1/2	11.0	4 1/2	5	3/4 x 25 x 3	236	20.4	14.9	11.5	9.2	18.5	13.6	10.5	8.3	300
25	SRX5M25SBZ	.188	10 1/2	11.0	4 1/2	5	3/4 x 25 x 3	288	13.7	9.6	7.3	5.7	12.7	8.9	6.8	5.3	300
30	SRX6M30SBZ	.188	12 1/2	12.5	5	6	1 x 36 x 4	419	13.8	10.0	7.5	5.8	12.9	9.4	7.1	5.4	300

NOTES: 1 Catalog number includes pole with anchor bolts with double nuts.
(BEFORE INSTALLING ANCHOR BOLTS MAKE SURE PROPER ANCHOR BOLT TEMPLATE IS OBTAINED FROM COOPER LIGHTING).
2 Tenon size or machining for rectangular arms must be specified. Hand hole is located 180° from single arm.
3 Shaft size, base plate, anchor bolts and projections may vary slightly—all dimensions nominal.
4 EPAs based on shaft properties with wind normal to flat. EPAs calculated using base wind velocity as indicated plus 30% gust factor.

BZ=BRONZE

MOUNTING OPTIONS=FIXED TENON [add as suffix]

Designation Number	O.D. (in.)	Length (in.)
2	2 3/8"	4"
3	3 1/2"	5"
5	3"	4"
4	4"	6"



ACCESSORIES
A=1/2" Tapped Hub[1]
B=3/4" Tapped Hub[1]
C=Convenience Outlet[2]
G=Grounding Lug
(Max. Wire #8 AWG)
H=Additional Hand Hole and Cover
(12" Below Pole Top—90° from Hand Hole)

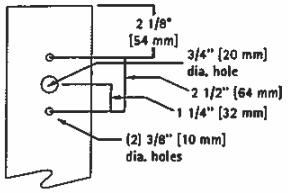
NOTES: 1 Location is 3' above base 90° from hand hole.
2 Outlet is located 4' above base and on same side of pole as hand hole, unless specified otherwise. Receptacle not included, provision only.

SRX STEEL ROUND STRAIGHT

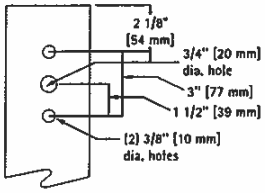
TYPE P02

DRILL PATTERNS

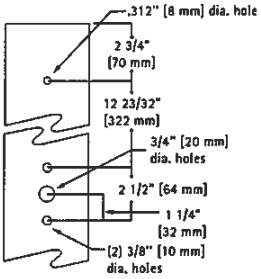
(TYPE "A")



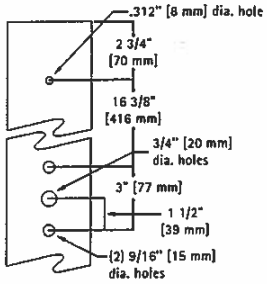
(TYPE "C")



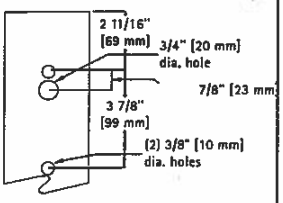
(TYPE "J")



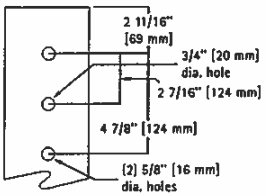
(TYPE "K")



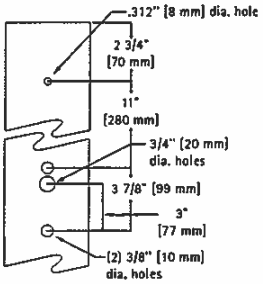
(TYPE "E")



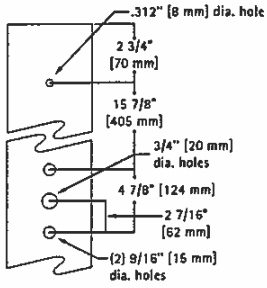
(TYPE "M")



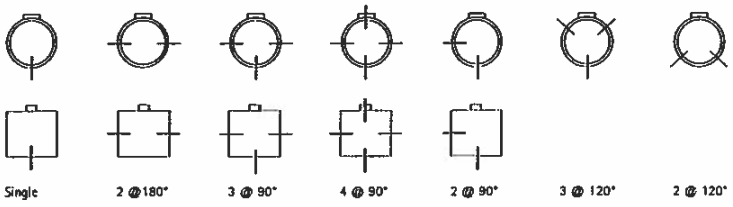
(TYPE "F")



(TYPE "G")



FIXTURE DRILLING OPTIONS (Note handhole position relative to drill locations)



CAUTION: Cooper Lighting poles have been designed to support only the luminaires and equipment originally intended. Miscellaneous items such as pennants, signs, and decorations may cause pole failure because of overloading. Addition of these items voids The Cooper Lighting warranty. Cooper Lighting will, however, supply information regarding total loading capacity on request. Cooper Lighting poles are guaranteed only when used in a pole/luminaire or floodlight combination. Any other application of poles, including application without a luminaire or floodlight, voids Cooper Lighting's warranty.

TYPE R01

COOPER LIGHTING - METALUX®

DESCRIPTION

GC8 is a premium grade specification lensed troffer series. This innovative, high quality luminaire is dedicated to the latest T8 lamp and micro electronic ballast technology for optimal performance and energy efficiency. The GC8 is compatible with all of today's popular ceiling systems and is available with a number of options and accessories for application versatility.

The GC8 Series features efficiency, quality and performance. The series is an excellent choice for commercial office spaces, schools, hospitals or retail merchandising areas.

SPECIFICATION FEATURES

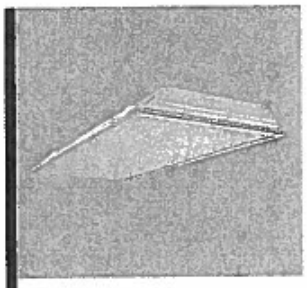
A ... Construction
Rigid housing is die formed of code gauge prime cold rolled steel and features full length die-formed stiffeners for added strength. Side flanges are hemmed. Innovative design provides superior lens brightness uniformity and visual comfort. Micro ballast cover*** reduces ballst shadow for superior lens brightness uniformity and is easily removed without tools. Die formed captive lampholder brackets fully enclose lampholder wiring permitting easy lampholder replacement. Heavy endplates are securely attached with interlocking tabs and screws. Four auxiliary fixture end suspension points provided. KOs for continuous row wiring. Endplates have integral Grid-lock feature for safety and convenience.

B ... Electrical
Ballasts are CBM/ETL Class "P" and are positively secured by mounting bolts. Pressure lock lampholders. UL/CUL listed. Suitable for damp locations.

C ... Finish
Multistage, iron phosphate pretreatment ensures maximum bonding and rust inhibition. Housing and ballast cover finished with new 90% reflective white enamel for superior performance. "PAF" Painted After Fabrication option also available.

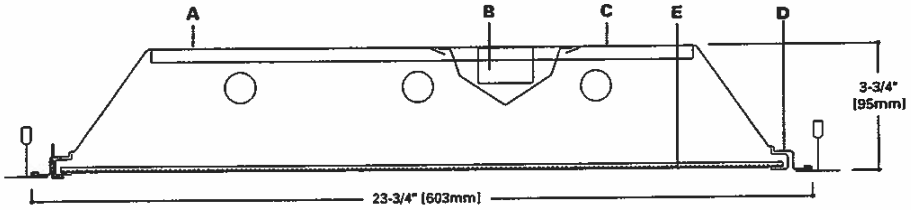
D ... Hinging/Latching
Positive cam action spring loaded steel latches with baked white enamel finish. Safety-lock T-hinges allow hinging and latching either side.

E ... Frame/Shielding
Die formed, heavy gauge, flat steel door with reinforced mitered corners and baked white enamel finish. Flat and regressed aluminum doors also available. Positive light seals. Light stabilized 100% virgin acrylic prismatic lens. Standard #12 pattern. Numerous additional shielding options available.



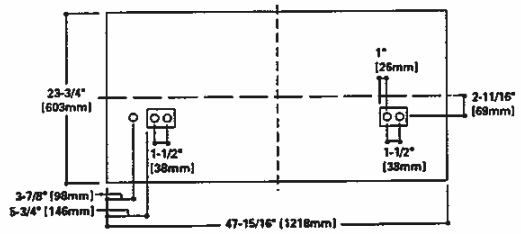
2GC8
332

2' X 4' TROFFER
3 LAMP
Specification T8 Troffer

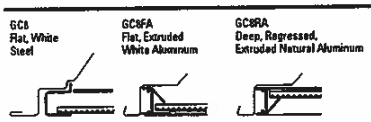


*maximum overall nominal depth

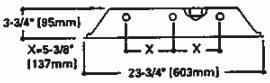
MOUNTING DATA



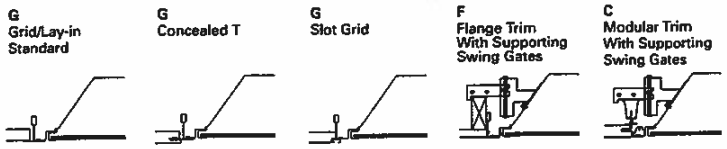
DOOR FRAMES



LAMP CONFIGURATIONS



CEILING COMPATIBILITY



Ceiling Type	Trim Type
Exposed Grid	G
Concealed T	G
Slot Grid	G
Flange	F
Metal Pan	C

(Verify compatibility/ consult factory.)

ENERGY DATA

Input Watts:
EB Ballast & STD Lamps
332 (91)

ES Ballast & STD Lamps
332 (108)

Luminaire Efficacy Rating
LER = FL-69
Catalog Number: 2GC8-332A

Yearly Cost of 1000 lumens, 3000 hrs at .08 KWH = $3.46

*Reference the lamp/ballast data in the Technical Section for specific lamp/ballast requirements.

**Consult Pre Sales Technical Support.

***Full sized ballast cover for biaxial lamps and emergency option.

LAMPS CONTAIN MERCURY. DISPOSE ACCORDING TO LOCAL, STATE OR FEDERAL LAWS

LINEAR DISCONNECT
Safe and convenient means of disconnecting power

USD SYSTEMS CERTIFIED

COOPER Lighting
www.cooperlighting.com

Specifications and Dimensions subject to change without notice.
Consult your representative for additional options and finishes.

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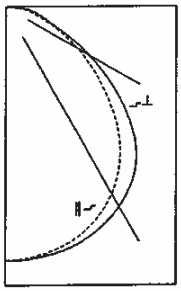
TYPE R01
2GC8

PHOTOMETRICS



2GC8-332A-PAF
Electronic Ballast
(3) FO32/35K lamps
2800 lumens
Spacing criterion: (II) 1.2 x mounting height, (⊥) 1.3 x mounting height
Efficiency 83.0%
Test Report: 2GC8332APAFHRPP.IES
LER = FL-73
Yearly Cost of 1000 lumens, 3000 hrs at .08 KWH = $3.29

Candela

Angle	Along II	45°	Across ⊥
0	2686	2686	2686
5	2673	2679	2686
10	2641	2655	2670
15	2585	2612	2640
20	2504	2546	2587
25	2392	2457	2612
30	2248	2337	2413
35	2069	2175	2288
40	1851	1985	2119
45	1592	1721	1881
50	1322	1464	1589
55	1070	1188	1278
60	834	885	967
65	617	596	694
70	447	374	497
75	324	251	381
80	238	199	294
85	137	123	179
90	0	0	0

Coefficients of Utilization

Effective floor cavity reflectance 20%

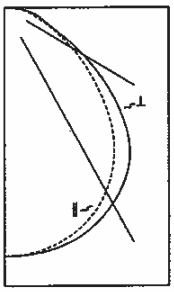
rc	80%				70%				50%			30%			10%			0%
rw	70	50	30	10	70	50	30	10	50	30	10	50	30	10	50	30	10	0
RCR																		
0	99	99	99	99	97	97	97	97	92	92	92	88	88	88	85	85	85	83
1	91	87	84	81	89	85	82	79	82	79	77	78	76	74	75	74	72	71
2	83	77	71	67	81	75	70	66	72	68	64	70	66	63	67	64	62	60
3	76	68	61	56	74	67	61	56	64	59	55	62	58	54	60	56	53	51
4	70	61	54	48	68	59	53	48	57	52	47	55	51	47	54	49	46	44
5	65	54	47	42	63	53	47	42	52	46	41	50	45	41	49	44	40	39
6	60	49	42	37	58	48	42	37	47	41	36	45	40	36	44	39	36	34
7	56	45	38	33	54	44	37	32	43	37	32	42	36	32	40	36	32	30
8	52	41	34	29	50	40	34	29	39	33	29	38	33	29	37	32	29	27
9	48	37	31	26	47	37	31	26	36	30	26	35	30	26	34	29	26	24
10	45	35	28	24	44	34	28	24	33	28	24	33	27	24	32	27	24	22

Zonal Lumen Summary

Zone	Lumens	%Lamp	%Fixture
0-30	2124	25.3	30.5
0-40	3484	41.5	49.9
0-60	5861	69.8	84.0
0-90	6975	83.0	100.0
0-180	6975	83.0	100.0

Typical VCP Percentages

Room Size (Ft.)	Height Along 8.5'	Height Along 10.0'	Height Across 8.5'	Height Across 10.0'
20 x 20	63	67	60	64
30 x 30	58	61	55	58
30 x 60	49	52	44	47
60 x 30	60	63	58	62
60 x 60	50	53	45	49



2GC8-332A
Electronic Ballast
(3) FO32/35K lamps
2800 lumens
Spacing criterion: (II) 1.2 x mounting height, (⊥) 1.3 x mounting height
Efficiency 81.6%
Test Report: 2GC8332A.IES
LER = FL-69
Yearly Cost of 1000 lumens, 3000 hrs at .08 KWH = $3.46

Candela

Angle	Along II	45°	Across ⊥
0	2634	2634	2634
5	2624	2628	2634
10	2593	2606	2621
15	2539	2566	2593
20	2461	2503	2542
25	2354	2417	2468
30	2214	2303	2371
35	2040	2148	2253
40	1831	1944	2099
45	1576	1697	1872
50	1301	1442	1580
55	1050	1165	1259
60	814	852	940
65	604	562	667
70	441	351	486
75	325	246	385
80	245	203	300
85	142	125	178
90	0	0	0

Coefficients of Utilization

Effective floor cavity reflectance 20%

rc	80%				70%				50%			30%			10%			0%
rw	70	50	30	10	70	50	30	10	50	30	10	50	30	10	50	30	10	0
RCR																		
0	97	97	97	97	95	95	95	95	91	91	91	87	87	87	83	83	83	82
1	89	86	82	79	87	84	81	78	80	78	76	77	75	73	74	73	71	69
2	82	75	70	66	80	74	69	65	71	67	63	68	65	62	66	63	61	59
3	75	67	60	55	73	65	60	55	63	58	54	61	57	53	59	55	52	50
4	69	60	53	47	67	58	52	47	56	51	46	55	50	46	53	49	45	44
5	64	53	48	41	62	53	46	41	51	45	41	49	44	40	48	43	40	38
6	59	48	41	36	57	48	41	36	46	40	36	45	39	35	43	39	35	33
7	55	44	37	32	53	43	37	32	42	36	32	41	35	32	40	35	31	30
8	51	40	33	29	50	40	33	29	38	33	28	37	32	28	37	32	28	27
9	48	37	30	26	46	36	30	26	35	30	26	35	29	26	34	29	25	24
10	45	34	28	24	44	34	28	23	33	27	23	32	27	23	31	27	23	22

Zonal Lumen Summary

Zone	Lumens	%Lamp	%Fixture
0-30	2088	24.9	30.5
0-40	3429	40.8	50.0
0-60	5768	68.7	84.1
0-90	6855	81.6	100.0
0-180	6855	81.6	100.0

Typical VCP Percentages

Room Size (Ft.)	Height Along 8.5'	Height Along 10.0'	Height Across 8.5'	Height Across 10.0'
20 x 20	64	68	61	65
30 x 30	58	62	55	59
30 x 60	49	52	44	48
60 x 30	60	64	58	62
60 x 60	50	53	46	49

ORDERING INFORMATION

Sample Number: 2GC8-232A-120V-EB81-U

2	G	C8		3	32	A125	UNV		ER	8	2		U

Width
2= 2' Width

Trim Type
G= Grid/Lay-in[1] (Standard)
G= Concealed T
G= Slot Grid
F= Flange Trim

Series
C8= Specification T8 Troffer

Door Frame
Standard= Flat White Steel Door (Leave blank)
FA= Flush White Extruded Aluminum c/w Spring Latch
RA= Regressed White Extruded Aluminum
FAN= Flush Natural Anodized Extruded Aluminum
RAN= Regressed Natural Anodized Extruded Aluminum
FAB= Flush Black Extruded Aluminum
RAB= Regressed Black Extruded Aluminum

Number of Lamps [2]
3 Lamps (Not Included)

Wattage
32= 32W T8 (48")

Shielding
A= # 12 Acrylic Pattern
A125= #12 Pattern Acrylic (.125" Thickness)
A19/156= #19 Pattern Acrylic (.156" Thickness)
DA= Dropped Dish Matte White Acrylic
IMA48= Injection Molded Acrylic (.150" Thickness)
PB1S= 1/2" x 1/2" x 1/2" Silver Parabolic Louver (Styrene)

Voltage [3]
120V= 120 Volt
277V= 277 Volt
347V= 347 Volt
UNV= Universal Voltage[4] 120-277

Options
GL= Single Element Fuse
GM= Double Element Fuse
Lamps= Lamps Installed
Flex= Flex Installed
Emergency= EM Installed

Ballast Type [3]
EB= Electronic Instant Start
ER= T8 Electronic Program Rapid Start. Total Harmonic Distortion < 10%
DLS= Digital Lighting System Dimming

Lamp Size
8= T8

Number of Ballasts
1= 1 Ballast
2= 2 Ballast
3= 3 Ballast

Options
/PLUS= Higher Ballast Factor > 1.13. Total Harmonic Distortion < 20%
RLS= Rotor Lock Socket (T8 Lamp only)
FR= Fire Rated Label
MEP= Modified End Plate
REP= Riveted End Plates
PAF= Painted After Fabrication

Packaging
U= Unit Pack
PAL= Palletized Uncartoned Fixtures
PALC= Palletized Fixtures in Carton

Notes: 1 An EQ Grid Clip is recommended for all 9/16" ceiling systems.
2 Standard off-center ballast on 3 lamp fixtures.
3 Products also available in non-US voltage and frequencies for international markets
4 Not Available when specifying emergencies, voltage must be specific

ACCESSORIES

EQ = T-BAR Safety Earthquake Clips [1]

SHIPPING INFORMATION

Catalog No.	Wt.
2GC8-332A	31 lbs.

COOPER Lighting
www.cooperlighting.com

Specifications and Dimensions subject to change without notice.
Metalux • Customer First Center • 1121 Highway 74 South • Peachtree City, GA 30269 • TEL 770.486.4800 • FAX 770.486.4801

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TYPE R01A

COOPER LIGHTING - METALUX®

DESCRIPTION

GC8 is a premium grade specification lensed troffer series. This innovative, high quality luminaire is dedicated to the latest T8 lamp and micro electronic ballast technology for optimal performance and energy efficiency. The GC8 is compatible with all of today's popular ceiling systems and is available with a number of options and accessories for application versatility.

The GC8 Series features efficiency, quality and performance. The series is an excellent choice for commercial office spaces, schools, hospitals or retail merchandising areas.

SPECIFICATION FEATURES

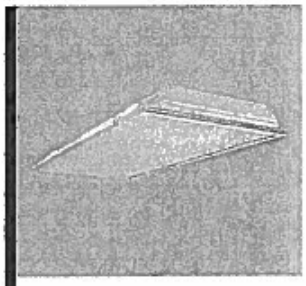
A ... Construction
Rigid housing is die formed of code gauge prime cold rolled steel and features full length die-formed stiffeners for added strength. Side flanges are hemmed. Innovative design provides superior lens brightness uniformity and visual comfort. Micro ballast cover*** reduces ballst shadow for superior lens brightness uniformity and is easily removed without tools. Die formed captive lampholder brackets fully enclose lampholder wiring permitting easy lampholder replacement. Heavy endplates are securely attached with interlocking tabs and screws. Four auxiliary fixture end suspension points provided. KOs for continuous row wiring. Endplates have integral Grid-lock feature for safety and convenience.

B ... Electrical
Ballasts are CBM/ETL Class "P" and are positively secured by mounting bolts. Pressure lock lampholders. UL/CUL listed. Suitable for damp locations.

C ... Finish
Multistage, iron phosphate pretreatment ensures maximum bonding and rust inhibition. Housing and ballast cover finished with new 90% reflective white enamel for superior performance. "PAF" Painted After Fabrication option also available.

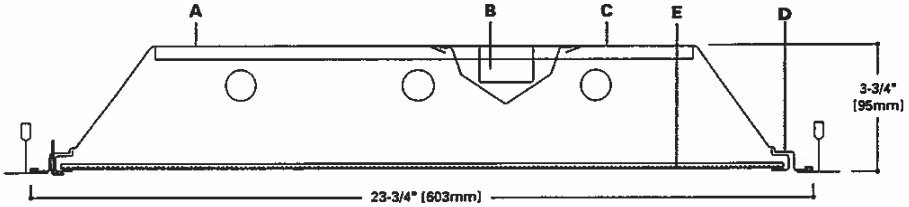
D ... Hinging/Latching
Positive cam action spring loaded steel latches with baked white enamel finish. Safety-lock T-hinges allow hinging and latching either side.

E ... Frame/Shielding
Die formed, heavy gauge, flat steel door with reinforced mitered corners and baked white enamel finish. Flat and regressed aluminum doors also available. Positive light seals. Light stabilized 100% virgin acrylic prismatic lens. Standard #12 pattern. Numerous additional shielding options available.



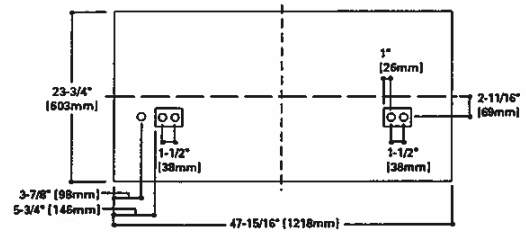
2GC8
332

2' X 4' TROFFER
3 LAMP
Specification T8 Troffer

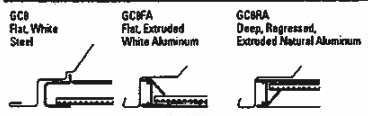


*maximum overall nominal depth

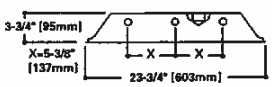
MOUNTING DATA



DOOR FRAMES

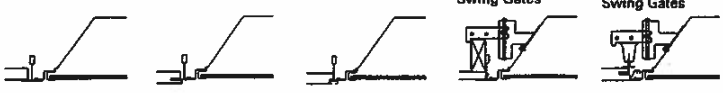


LAMP CONFIGURATIONS



CEILING COMPATIBILITY

G	G	G	F	C
Grid/Lay-in Standard	Concealed T	Slot Grid	Flange Trim With Supporting Swing Gates	Modular Trim With Supporting Swing Gates



Ceiling Type	Trim Type
Exposed Grid	G
Concealed T	G
Slot Grid	G
Flange	F
Metal Pan	C

(Verify compatibility/ consult factory.)

ENERGY DATA

Input Watts:
EB Ballast & STD Lamps
332 (91)

ES Ballast & STD Lamps
332 (108)

Luminaire Efficacy Rating
LER = FL-69
Catalog Number: 2GC8-332A

Yearly Cost of 1000 lumens, 3000 hrs at .08 KWH = $3.46

*Reference the lamp/ballast data in the Technical Section for specific lamp/ballast requirements.

**Consult Pre Sales Technical Support.

***Full sized ballast cover for biaxial lamps and emergency option.

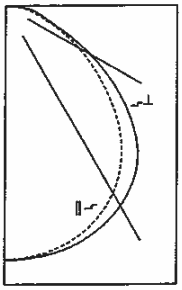
LAMPS CONTAIN MERCURY. DISPOSE ACCORDING TO LOCAL, STATE OR FEDERAL LAWS

LINEAR DISCONNECT
Safe and convenient means of disconnecting power

Specifications and Dimensions subject to change without notice.
Consult your representative for additional options and finishes.

TYPE R01A
2GC8

PHOTOMETRICS



2GC8-332A-PAF
Electronic Ballast
(3) FO32/35K lamps
2800 lumens
Spacing criterion: (||) 1.2 x mounting height, (⊥) 1.3 x mounting height
Efficiency 83.0%
Test Report: 2GC8332APAFHRPP.IES
LER = FL-73
Yearly Cost of 1000 lumens, 3000 hrs at .08 KWH = $3.29

Candela

Angle	Along II	45°	Across ⊥
0	2686	2686	2686
5	2673	2679	2686
10	2641	2655	2670
15	2585	2612	2640
20	2504	2546	2587
25	2392	2457	2512
30	2248	2337	2413
35	2069	2175	2288
40	1851	1965	2119
45	1592	1721	1881
50	1322	1464	1589
55	1070	1188	1278
60	834	885	967
65	617	596	694
70	447	374	497
75	324	251	381
80	238	199	294
85	137	123	179
90	0	0	0

Coefficients of Utilization

Effective floor cavity reflectance 20%

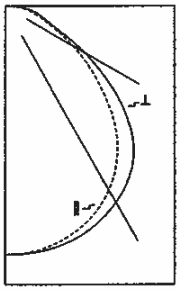
rc	80%				70%				50%			30%			10%		0%
rw	70	50	30	10	70	50	30	10	50	30	10	50	30	10	50	30	10	0
RCR																		
0	99	99	99	99	97	97	97	97	92	92	92	88	88	88	85	85	85	83
1	91	87	84	81	89	85	82	79	82	79	77	78	76	74	75	74	72	71
2	83	77	71	67	81	75	70	66	72	68	64	70	66	63	67	64	62	60
3	76	68	61	56	74	67	61	56	64	59	55	62	58	54	60	56	53	51
4	70	61	54	48	68	59	53	48	57	52	47	55	51	47	54	49	46	44
5	65	54	47	42	63	53	47	42	52	46	41	50	45	41	49	44	40	39
6	60	49	42	37	58	48	42	37	47	41	36	45	40	36	44	39	36	34
7	56	45	38	33	54	44	37	32	43	37	32	42	36	32	40	36	32	30
8	52	41	34	29	50	40	34	29	39	33	29	38	33	29	37	32	29	27
9	48	37	31	26	47	37	31	26	36	30	26	35	30	26	34	29	26	24
10	45	35	28	24	44	34	28	24	33	28	24	33	27	24	32	27	24	22

Zonal Lumen Summary

Zone	Lumens	%Lamp	%Fixture
0-30	2124	25.3	30.5
0-40	3484	41.5	49.9
0-60	5861	69.8	84.0
0-90	6975	83.0	100.0
0-180	6975	83.0	100.0

Typical VCP Percentages

Room Size (Ft.)	Height Along 8.5'	Height Along 10.0'	Height Across 8.5'	Height Across 10.0'
20 x 20	63	67	60	64
30 x 30	58	61	55	58
30 x 60	49	52	44	47
60 x 30	60	63	58	62
60 x 60	50	53	45	49



2GC8-332A
Electronic Ballast
(3) FO32/35K lamps
2800 lumens
Spacing criterion: (||) 1.2 x mounting height, (⊥) 1.3 x mounting height
Efficiency 81.6%
Test Report: 2GC8332A.IES
LER = FL-69
Yearly Cost of 1000 lumens, 3000 hrs at .08 KWH = $3.46

Candela

Angle	Along II	45°	Across ⊥
0	2634	2634	2634
5	2624	2628	2634
10	2593	2606	2621
15	2539	2566	2593
20	2461	2503	2542
25	2354	2417	2468
30	2214	2303	2371
35	2040	2148	2253
40	1831	1944	2099
45	1576	1697	1872
50	1301	1442	1580
55	1050	1165	1259
60	814	852	940
65	604	562	667
70	441	351	486
75	325	246	385
80	245	203	300
85	142	125	178
90	0	0	0

Coefficients of Utilization

Effective floor cavity reflectance 20%

rc	80%				70%				50%			30%			10%		0%
rw	70	50	30	10	70	50	30	10	50	30	10	50	30	10	50	30	10	0
RCR																		
0	97	97	97	97	95	95	95	95	91	91	91	87	87	87	83	83	83	82
1	89	86	82	79	87	84	81	78	80	78	76	77	75	73	74	73	71	69
2	82	75	70	66	80	74	69	65	71	67	63	68	65	62	66	63	61	59
3	75	67	60	55	73	65	60	55	63	58	54	61	57	53	59	55	52	50
4	69	60	53	47	67	58	52	47	56	51	46	55	50	46	53	49	45	44
5	64	53	46	41	62	53	46	41	51	45	41	49	44	40	48	43	40	38
6	59	48	41	36	57	48	41	36	48	40	36	45	39	35	43	39	35	33
7	55	44	37	32	53	43	37	32	42	36	32	41	35	32	40	35	31	30
8	51	40	33	29	50	40	33	29	38	33	28	37	32	28	37	32	28	27
9	48	37	30	26	46	36	30	26	35	30	26	35	29	26	34	29	25	24
10	45	34	28	24	44	34	28	23	33	27	23	32	27	23	31	27	23	22

Zonal Lumen Summary

Zone	Lumens	%Lamp	%Fixture
0-30	2088	24.9	30.5
0-40	3429	40.8	50.0
0-60	5768	68.7	84.1
0-90	6855	81.6	100.0
0-180	6855	81.6	100.0

Typical VCP Percentages

Room Size (Ft.)	Height Along 8.5'	Height Along 10.0'	Height Across 8.5'	Height Across 10.0'
20 x 20	64	68	61	65
30 x 30	58	62	55	59
30 x 60	49	52	44	48
60 x 30	60	64	58	62
60 x 60	50	53	46	49

ORDERING INFORMATION

Sample Number: 2GC8-232A-120V-EB81-U

2	G	C8		3	32	A125	120		ER	8	2		LTC2-U

Width
2 = 2' Width

Trim Type
G = Grid/Lay-in [1] (Standard)
G = Concealed T
G = Slot Grid
F = Flange Trim

Series
C8 = Specification T8 Troffer

Door Frame
Standard = Flat White Steel Door (Leave blank)
FA = Flush White Extruded Aluminum c/w Spring Latch
RA = Regressed White Extruded Aluminum
FAN = Flush Natural Anodized Extruded Aluminum
RAN = Regressed Natural Anodized Extruded Aluminum
FAB = Flush Black Extruded Aluminum
RAB = Regressed Black Extruded Aluminum

Number of Lamps [2]
3 Lamps (Not included)

Wattage
32 = 32W T8 (48")

Shielding
A = # 12 Acrylic Pattern
A125 = #12 Pattern Acrylic (.125" Thickness)
A19/156 = #19 Pattern Acrylic (.156" Thickness)
DA = Dropped Dish Matte White Acrylic
IMA48 = Injection Molded Acrylic (.150" Thickness)
PB1S = 1/2" x 1/2" x 1/2" Silver Parabolic Louver (Styrene)

Voltage [3]
120V = 120 Volt
277V = 277 Volt
347V = 347 Volt
UNV = Universal Voltage[4] 120-277

Options
GL = Single Element Fuse
GM = Double Element Fuse
Lamps = Lamps Installed
Flex = Flex Installed
Emergency = EM Installed

Ballast Type [3]
EB = Electronic Instant Start
ER = T8 Electronic Program Rapid Start. Total Harmonic Distortion < 10%
DLS = Digital Lighting System Dimming

Lamp Size
8 = T8

Number of Ballasts
1 = 1 Ballast
2 = 2 Ballast
3 = 3 Ballast

Options
/PLUS = Higher Ballast Factor > 1.13. Total Harmonic Distortion < 20%
RLS = Rotor Lock Socket (T8 Lamp only)
FR = Fire Rated Label
MEP = Modified End Plate
REP = Riveted End Plates
PAF = Painted After Fabrication

Packaging
U = Unit Pack
PAL = Palletized Uncartoned Fixtures
PALC = Palletized Fixtures in Carton

Notes: 1 An EQ Grid Clip is recommended for all 9/16" ceiling systems.
2 Standard off-center ballast on 3 lamp fixtures.
3 Products also available in non-US voltage and frequencies for international markets
4 Not Available when specifying emergencies, voltage must be specific

ACCESSORIES

EQ = T-BAR Safety Earthquake Clips [1]

SHIPPING INFORMATION

Catalog No.	Wt.
2GC8-332A	31 lbs.

TYPE R02

COOPER LIGHTING - METALUX

DESCRIPTION

GC8 is a premium grade specification lensed troffer series. This innovative, high quality luminaire is dedicated to the latest T8 lamp and micro electronic ballast technology for optimal performance and energy efficiency. The GC8 is compatible with all of today's popular ceiling systems and is available with a number of options and accessories for application versatility.

The GC8 Series features efficiency, quality and performance. The series is an excellent choice for commercial office spaces, schools, hospitals or retail merchandising areas.

SPECIFICATION FEATURES

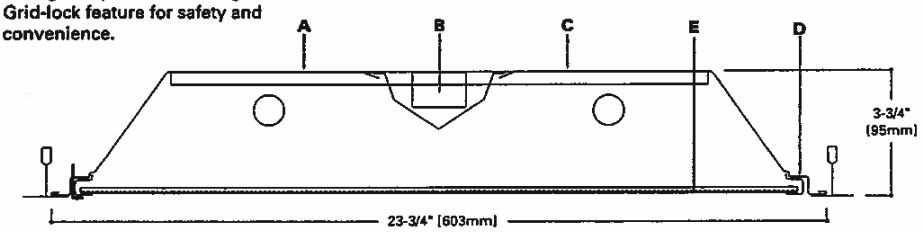
A ... Construction
Rigid housing is die formed of code gauge prime cold rolled steel and features full length die-formed stiffeners for added strength. Side flanges are hemmed. Innovative design provides superior lens brightness uniformity and visual comfort. Micro ballast cover*** reduces ballst shadow for superior lens brightness uniformity and is easily removed without tools. Die formed captive lampholder brackets fully enclose lampholder wiring permitting easy lampholder replacement. Heavy endplates are securely attached with interlocking tabs and screws. Four auxiliary fixture end suspension points provided. KOs for continuous row wiring. Endplates have integral Grid-lock feature for safety and convenience.

B ... Electrical
Ballasts are CBM/ETL Class "P" and are positively secured by mounting bolts. Pressure lock lampholders. UL/CUL listed. Suitable for damp locations.

C ... Finish
Multistage, iron phosphate pretreatment ensures maximum bonding and rust inhibition. Housing and ballast cover finished with new 90% reflective matte white enamel for superior performance. "PAF" Painted After Fabrication option also available.

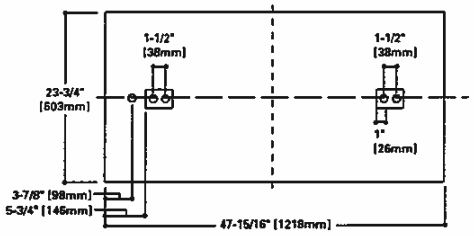
D ... Hinging/Latching
Positive cam action spring loaded steel latches with baked white enamel finish. Safety-lock T-hinges allow hinging and latching either side.

E ... Frame/Shielding
Die formed, heavy gauge, flat steel door with reinforced mitered corners and baked white enamel finish. Flat and regressed aluminum doors also available. Positive light seals. Light stabilized 100% virgin acrylic prismatic lens. Standard #12 pattern. Numerous additional shielding options available.

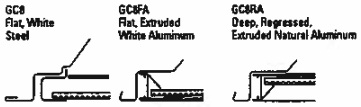


*maximum overall nominal depth

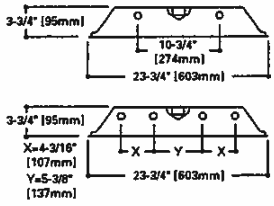
MOUNTING DATA



DOOR FRAMES

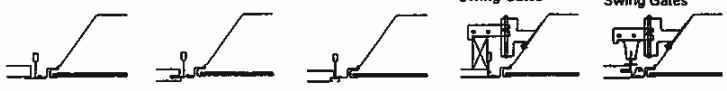


LAMP CONFIGURATIONS



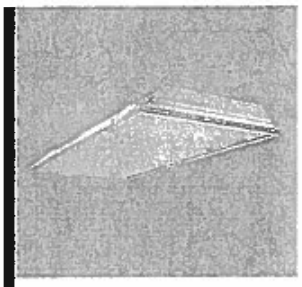
CEILING COMPATIBILITY

G	G	G	F	C
Grid/Lay-in Standard	Concealed T	Slot Grid	Flange Trim With Supporting Swing Gates	Modular Trim With Supporting Swing Gates



Ceiling Type	Trim Type
Exposed Grid	G
Concealed T	G
Slot Grid	G
Flange	F
Metal Pan	C

(Verify compatibility/ consult factory.)



2GC8
232
432

2' X 4' TROFFER
2 OR 4 LAMP
Specification T8 Troffer

ENERGY DATA

Input Watts:
EB Ballast & STD Lamps
232 (61)
432 (122)

ES Ballast & STD Lamps
232 (71)
432 (142)

Luminaire Efficacy Rating
LER = FL-69
Catalog Number: 2GC8-232A

Yearly Cost of 1000 lumens, 3000 hrs at .08 KWH = $3.50

LER = FL-64
Catalog Number: 2GC8-432A

Yearly Cost of 1000 lumens, 3000 hrs at .08 KWH = $3.75

*Reference the lamp/ballast data in the Technical Section for specific lamp/ballast requirements.

**Consult Pre Sales Technical Support.

***Full sized ballast cover for biaxial lamps and emergency option.

LAMPS CONTAIN MERCURY. DISPOSE ACCORDING TO LOCAL, STATE OR FEDERAL LAWS

LINEAR DISCONNECT
Safe and convenient means of disconnecting power

TSI CERTIFIED

COOPER Lighting
www.cooperlighting.com

Specifications and Dimensions subject to change without notice.
Consult your representative for additional options and finishes.

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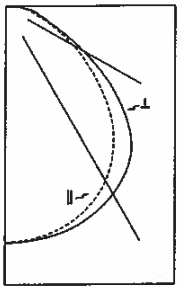
TYPE R02

2GC8

PHOTOMETRICS



2GC8-232A
Electronic Ballast
(2) FO32/35K lamps
2800 lumens
Spacing criterion: (∥) 1.2 x mounting height, (⊥) 1.3 x mounting height
Efficiency 84.8%
Test Report: 2GC8232A.IES
LER = FL-69
Yearly Cost of 1000 lumens, 3000 hrs at .08 KWH = $3.50

Candela

Angle	Along ∥	45°	Across ⊥
0	1810	1810	1810
5	1801	1806	1810
10	1789	1791	1800
15	1743	1764	1782
20	1690	1723	1750
25	1616	1667	1703
30	1520	1591	1644
35	1401	1489	1569
40	1258	1351	1467
45	1085	1193	1308
50	898	1008	1100
55	725	813	870
60	564	593	650
65	420	392	468
70	307	244	339
75	226	171	256
80	170	141	207
85	98	87	122
90	0	0	0

Coefficients of Utilization

Effective floor cavity reflectance 20%

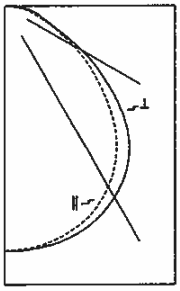
rc	80%			70%			50%			30%			10%		0%
rw	70	50	30	70	50	30	50	30	10	50	30	10	50	30	10	0
RCR																
0	101	101	101	99	99	99	94	94	94	90	90	90	87	87	87	85
1	93	89	85	92	87	84	83	81	78	80	78	76	77	75	74	72
2	85	78	73	68	83	77	72	67	74	69	66	71	67	64	68	66	63	61
3	78	69	63	57	76	68	62	57	65	60	56	63	59	55	61	57	54	52
4	72	62	55	49	70	61	54	49	59	53	48	57	52	48	55	51	47	45
5	66	55	48	43	64	55	48	42	53	47	42	51	46	42	50	45	41	39
6	61	50	43	37	59	49	42	37	48	42	37	46	41	37	45	40	36	35
7	57	46	38	33	55	45	38	33	44	37	33	42	37	33	41	36	32	31
8	53	42	35	30	51	41	34	30	40	34	29	39	33	29	38	33	29	28
9	49	38	31	27	48	38	31	27	37	31	27	36	30	26	35	30	26	25
10	46	35	29	24	45	35	29	24	34	28	24	33	28	24	32	28	24	23

Zonal Lumen Summary

Zone	Lumens	%Lamp	%Fixture
0-30	1437	25.7	30.2
0-40	2366	42.3	49.8
0-60	3995	71.3	84.1
0-90	4751	84.8	100.0
0-180	4751	84.8	100.0

Typical VCP Percentages

Room Size (Ft.)	Height Along 8.5'	Height Along 10.0'	Height Across 8.5'	Height Across 10.0'
20 x 20	71	75	69	72
30 x 30	66	70	63	67
30 x 60	58	61	53	57
60 x 30	68	72	66	70
60 x 60	58	61	54	58



2GC8-432A
Electronic Ballast
(4) FO32/35K lamps
2800 lumens
Spacing criterion: (∥) 1.2 x mounting height, (⊥) 1.3 x mounting height
Efficiency 79.2%
Test Report: 2GC8432A.IES
LER = FL-64
Yearly Cost of 1000 lumens, 3000 hrs at .08 KWH = $3.75

Candela

Angle	Along ∥	45°	Across ⊥
0	3460	3460	3460
5	3444	3452	3461
10	3402	3422	3441
15	3331	3367	3401
20	3228	3282	3329
25	3085	3163	3222
30	2899	3003	3079
35	2670	2789	2904
40	2392	2510	2677
45	2057	2184	2369
50	1701	1843	1986
55	1370	1478	1582
60	1059	1083	1192
65	783	719	849
70	588	449	621
75	419	315	491
80	316	259	381
85	183	159	228
90	0	0	0

Coefficients of Utilization

Effective floor cavity reflectance 20%

rc	80%			70%			50%			30%			10%		0%
rw	70	50	30	70	50	30	50	30	10	50	30	10	50	30	10	0
RCR																
0	94	94	94	92	92	92	88	88	88	84	84	84	81	81	81	79
1	87	83	80	77	84	81	78	76	78	76	73	75	73	71	72	70	69	67
2	79	73	68	64	77	72	67	63	69	65	62	66	63	60	64	61	59	57
3	73	65	59	54	71	64	58	53	61	56	52	59	55	52	57	54	51	49
4	67	58	51	46	65	57	51	46	55	50	45	53	48	45	51	47	44	42
5	62	52	45	40	60	51	45	40	49	44	39	48	43	39	46	42	39	37
6	57	47	40	35	56	46	40	35	45	39	35	44	38	35	42	38	34	33
7	53	43	36	31	52	42	36	31	41	35	31	40	35	31	39	34	31	29
8	49	39	33	28	48	39	32	28	38	32	28	37	31	28	36	31	27	26
9	46	36	30	25	45	35	29	25	35	29	25	34	29	25	33	28	25	23
10	43	33	27	23	42	33	27	23	32	27	23	31	26	23	31	26	23	21

Zonal Lumen Summary

Zone	Lumens	%Lamp	%Fixture
0-30	2735	24.4	30.9
0-40	4476	40.0	50.5
0-60	7474	66.7	84.3
0-90	8865	79.2	100.0
0-180	8865	79.2	100.0

Typical VCP Percentages

Room Size (Ft.)	Height Along 8.5'	Height Along 10.0'	Height Across 8.5'	Height Across 10.0'
20 x 20	58	62	56	60
30 x 30	52	56	49	53
30 x 60	42	46	38	42
60 x 30	54	58	52	57
60 x 60	43	47	40	43

ORDERING INFORMATION

Sample Number: 2GC8-232A-120V-EB81-U

2	G	C8		2	32	A125	UNV		ER	8	1		U

Width
2= 2' Width

Trim Type
G= Grid/Lay-in [1] (Standard)
C= Concealed T
G= Slot Grid
F= Flange Trim

Series
C8= Specification T8 Troffer

Door Frame
Standard= Flat White Steel Door (Leave blank)
FA= Flush White Extruded Aluminum c/w Spring Latch
RA= Regressed White Extruded Aluminum
FAN= Flush Natural Anodized Extruded Aluminum
RAN= Regressed Natural Anodized Extruded Aluminum
FAB= Flush Black Extruded Aluminum
RAB= Regressed Black Extruded Aluminum

Number of Lamps [2]
2 Lamps (Not Included)
4 Lamps (Not Included)

Wattage
32= 32W T8 (48")

Shielding
A= # 12 Acrylic Pattern
A125= #12 Pattern Acrylic (.125" Thickness)
A19/156= #19 Pattern Acrylic (.156" Thickness)
DA= Dropped Dish Matte White Acrylic
IMA48= Injection Molded Acrylic (.150" Thickness)
PB1S= 1/2" x 1/2" x 1/2" Silver Parabolic Louver (Styrene)

Voltage [3]
120V= 120 Volt
277V= 277 Volt
347V= 347 Volt
UNV= Universal Voltage[4] 120-277

Options
GL= Single Element Fuse
GM= Double Element Fuse
Lamps= Lamps Installed
Flex= Flex Installed
Emergency= EM Installed

Ballast Type [3]
EB= Electronic Instant Start
ER= T8 Electronic Program Rapid Start. Total Harmonic Distortion < 10%
DLS= Digital Lighting System Dimming

Lamp Size
8= T8

Number of Ballasts
1= 1 Ballast
2= 2 Ballast
3= 3 Ballast

Options
/PLUS= Higher Ballast Factor > 1.13. Total Harmonic Distortion < 20%
RLS= Rotor Lock Socket (T8 Lamp only)
FR= Fire Rated Label
MEP= Modified End Plate
REP= Riveted End Plates
PAF= Painted After Fabrication

Packaging
U= Unit Pack
PAL= Palletized Uncartoned Fixtures
PALC= Palletized Fixtures in Carton

Notes: 1 An EQ Grid Clip is recommended for all 9/16" ceiling systems.
2 Standard off-center ballast on 3 lamp fixtures.
3 Products also available in non-US voltage and frequencies for international markets
4 Not Available when specifying emergencies, voltage must be specific

ACCESSORIES

EQ = T-BAR Safety Earthquake Clips [1]

SHIPPING INFORMATION

Catalog No.	Wt.
2GC8-232A	29 lbs.
2GC8-432A	32 lbs.

TYPE R04

COOPER LIGHTING - METALUX®

DESCRIPTION

The Paralux III Series features recessed aesthetics and the latest in energy efficient technology. The luminaire incorporates a true 3" deep precision cell louver into a nominal 5-1/2" deep para-contoured fixture housing. This combination creates a total high performance parabolic optical assembly for optimum performance. The series is compatible with all of today's popular ceiling systems and is available with a number of options and accessories for application versatility. The high performance luminaire is designed to offer maximum efficiency and performance for today's unique interior specifications. The Paralux III series is an excellent choice for commercial office spaces, schools, hospitals or retail merchandising areas.

SPECIFICATION FEATURES

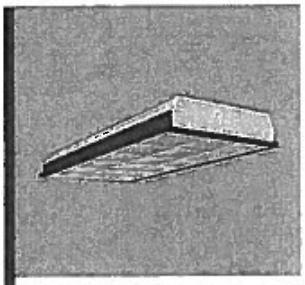
A ... Construction
Nominal 5-1/2" deep, para-contoured housing, die formed of code gauge, prime cold rolled steel. Die embossed housing has full length die formed stiffeners for added strength. Contoured ballast/wireway cover is easily removed without tools. Die formed captive lampholder bracket fully encloses lampholder wiring permitting easy lampholder replacement. Heavy end plates are securely attached with interlocking tabs and screws. Four auxiliary fixture end suspension points provided. KOs for continuous row wiring. End plates have labor saving integral Grid-Lock feature for safety and convenience. Housing features enable fixture to be converted from Grid to T-option or vice versa in the field.*

B ... Electrical**
Ballasts are CBM/ETL Class "P" and are positively secured by mounting bolts. Pressure lock lampholders. UL/CUL listed. Suitable for damp locations.

C ... Finish
Lighting grade, baked white enamel finish. Multistage, iron phosphate pretreatment ensures maximum bonding and rust inhibition.

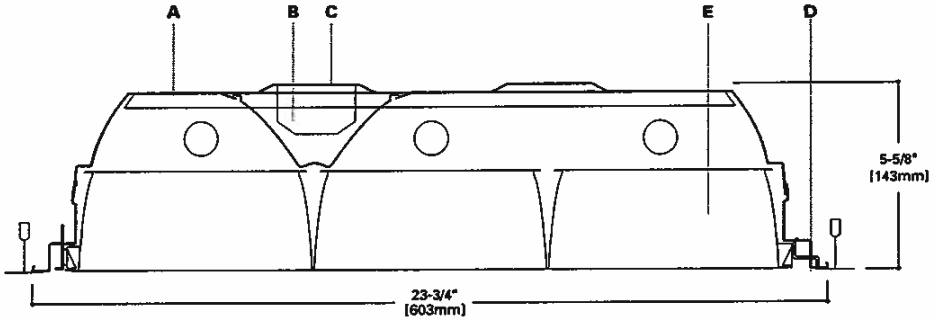
D ... Hinging/Latching
Positive cam action spring loaded, self locking, black steel latches. Safety lock T-hinges allow hinging and latching either side.

E ... Louver
Die formed of low iridescent, vertical grain anodized aluminum. Finish is Anodic oxide coating. Accurate precision parabolic cells are held in place with interlocking feature. True-cut mitered corners. Black reveal with integral mechanical light seal around entire perimeter of louver. Louver protected from construction contaminants by polyethylene cover.

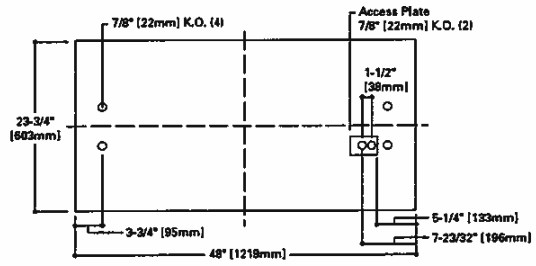


2EP3GAX
332

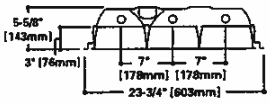
18 Cell
2' X 4' PARABOLIC
3 LAMP
SEMI-SPECULAR OR
SPECULAR LOUVER
Paralux III
Recessed Static or
Air Supply Troffer



MOUNTING DATA



LAMP CONFIGURATIONS



CEILING COMPATIBILITY

G
Grid/Lay-in
Standard

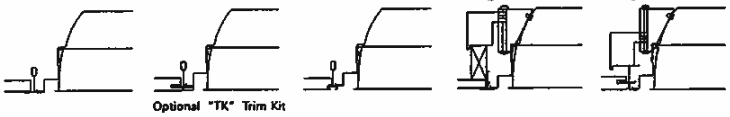
T
Concealed T

Optional "TK" Trim Kit

T
Slot Grid

F
Flange Trim
With Supporting
Swing Gates

MZ
Modular Trim
With Supporting
Swing Gates



Ceiling Type	Trim Type
Exposed Grid	G
Concealed T	G or T
Slot Grid	G or T
Flange	F
Concealed Spline	MZ
Metal Pan	MZ

(Verify compatibility / consult Pre Sales Technical Support.)

ENERGY DATA

Input Watts:
EB Ballast & STD Lamps
332 (91)
ES Ballast & STD Lamps
332 (108)
Luminaire Efficacy Rating
LER = FP-60
Catalog Number: 2EP3GAX-332
Yearly Cost of 1000 lumens, 3000 hrs at .08 KWH = $4.00

*Convertibility applies to housing only. Appropriate shielding media assemblies must be utilized.

**Reference the lamp/ballast data in the Technical Section for specific lamp/ballast requirements.

LAMPS CONTAIN MERCURY. DISPOSE ACCORDING TO LOCAL, STATE OR FEDERAL LAWS

LINEAR DISCONNECT
Safe and convenient means of disconnecting power

ISTU CERTIFIED

COOPER Lighting
www.cooperlighting.com

Specifications and Dimensions subject to change without notice.
Consult your representative for additional options and finishes.

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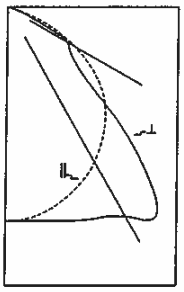
TYPE R04
2EP3GAX

PHOTOMETRICS



2EP3GAX-332S36I
Electronic Ballast
F32/35K Lamps
2800 Lumens
Spacing criterion: (II) 1.2 x mounting height, (⊥) 1.6 x mounting height
Efficiency 69.4%
Test Report: 2EP3GX332S36I.IES
LER = FP-60
Yearly Cost of 1000 lumens, 3000 hrs at .08 KWH = $4.00

Coefficients of Utilization

Effective floor cavity reflectance																				
rc	80%				70%				50%			30%			10%			0%		
rw	70	50	30	10	70	50	30	10	50	30	10	50	30	10	50	30	10	0		
RCR																				
0	83	83	83	83	81	81	81	81	77	77	77	74	74	74	71	71	71	69		
1	78	75	73	71	76	73	71	70	71	69	68	68	67	65	66	65	64	62		
2	72	68	64	61	71	67	63	60	64	62	59	62	60	58	60	58	57	55		
3	67	61	57	53	66	60	56	53	58	55	52	56	53	51	55	52	50	49		
4	62	55	50	46	61	54	50	46	53	49	45	51	48	45	50	47	44	43		
5	57	49	44	40	56	49	44	40	47	43	39	46	42	39	45	41	39	37		
6	53	45	39	35	52	44	39	35	43	38	35	42	38	34	41	37	34	33		
7	49	40	35	31	48	40	34	31	39	34	30	38	33	30	37	33	30	29		
8	45	36	30	27	44	35	30	26	35	30	26	34	29	26	33	29	26	25		
9	41	32	27	23	40	32	26	23	31	26	23	30	26	23	29	25	22	21		
10	38	29	24	20	37	29	24	20	28	23	20	27	23	20	27	23	20	19		

Zonal Lumen Summary

Zone	Lumens	%Lamp	%Fixture
0-30	1903	22.7	32.6
0-40	3285	39.1	56.3
0-60	5425	64.6	93.0
0-90	5834	69.4	100.0
0-180	5834	69.4	100.0

Typical VCP Percentages

	Height Along		Height Across	
Room Size (Ft.)	8.5'	10.0'	8.5'	10.0'
20 x 20	76	73	82	79
30 x 30	83	79	87	83
30 x 60	86	83	89	86
60 x 30	85	82	88	86
60 x 60	88	85	90	88

Candela

Angle	Along II	45°	Across ⊥
0	2312	2312	2312
5	2295	2306	2324
10	2251	2289	2347
15	2189	2274	2395
20	2108	2258	2451
25	2007	2235	2506
30	1891	2205	2636
35	1762	2173	2766
40	1617	2153	2259
45	1449	2001	1423
50	1257	1463	960
55	1043	885	807
60	782	571	666
65	443	325	243
70	142	106	79
75	45	38	35
80	18	16	15
85	6	6	4
90	0	0	0

ORDERING INFORMATION

Sample Number: 2EP3GAX-332S36I-120V-EB81-U

	2	EP3	G	X	3	32	S	36	I	UNV		ER	8	2		U

Heat Removal [1]
HR= Heat Removal
HRDO= Heat Removal Damper Open
HRDC= Heat Removal Damper Closed

Width
2= 2' Width

Series
EP3= Paralux III

Trim Type [2]
G= Grid/Lay-in - Standard
T= Concealed T/Slot[3] Grid
F= Flange Trim
MZ= Modular Trim

Air Supply
AX= Air Supply Floating Louver
X= Blank Side/Floating Louver - Non Air Supply
AVX= Air Supply Floating Louver w/Directional Air Vane

Number of Lamps [4]
3 Lamps (Not Included)

Wattage
32= 32W T8 (48")

Louver Color
S= Silver
G= Gold
W= White

Cell Configuration
36= 3 Rows of 6, 18 Cell (2'x4')

Louver Finish
H= Semi-Specular/Haze (Gold Only)
I= Semi-Specular/Haze (Low Iridescent) Standard
MI= Specular/Mirrored (Low Iridescent)
P= Painted

Voltage [5]
120V= 120 Volt
277V= 277 Volt
347V= 347 Volt
UNV= Universal Voltage[6] 120-277

Options
GL= Single Element Fuse
GM= Double Element Fuse
WTR= White Reveal
Lamps= Lamps Installed
Flex= Flex Installed
Emergency= EM Installed

Ballast Type [6]
EB= Electronic Ballast
ER= Generic Rapid Start
DLS= Dimming Ballast

Lamp Size
8= T8

Number of Ballasts
1= 1 Ballast
2= 2 Ballast
3= 3 Ballast

Options
/PLUS= Higher Ballast Factor(1.18)
RLS= Rotor Lock Socket (T8 Lamp only)
RIF1= Advance Suppressor
FR= Fire Rated Label
20GA/REP= 20 Gauge Housing w/Riveted End Plate
MEP= Modified End Plate
PAF= Painted After Fabrication

Packaging
U= Unit Pack
PAL= Palletized Uncartoned Fixtures
PALC= Palletized Fixtures in Carton

Notes: 1 Integral End Plate Grid Lock feature not available in Heat Removal
2 Convertability applies to housing only, appropriate shielding media assemblies must be utilized. Fixture also adaptable with flanged or modular trims.
3 An EQ Grid Clip is recommended for all 9/16" ceiling systems.
4 Standard off-center ballast on 3 lamp fixtures.
5 Products also available in non-US voltage and frequencies for international markets
6 Not Available when specifying emergencies, voltage must be specific

ACCESSORIES

EQ = T-BAR Safety Earthquake Clips [3]

SHIPPING INFORMATION

Catalog No.	Wt.
2EP3GAX-332S36I	42 lbs.

TYPE R05

COOPER LIGHTING - METALUX®

DESCRIPTION

GC8 is a premium grade specification lensed troffer series. This innovative, high quality luminaire is dedicated to the latest T8 lamp and micro electronic ballast technology for optimal performance and energy efficiency. The GC8 is compatible with all of today's popular ceiling systems and is available with a number of options and accessories for application versatility.

The GC8 Series features efficiency, quality and performance. The series is an excellent choice for commercial office spaces, schools, hospitals or retail merchandising areas.

SPECIFICATION FEATURES

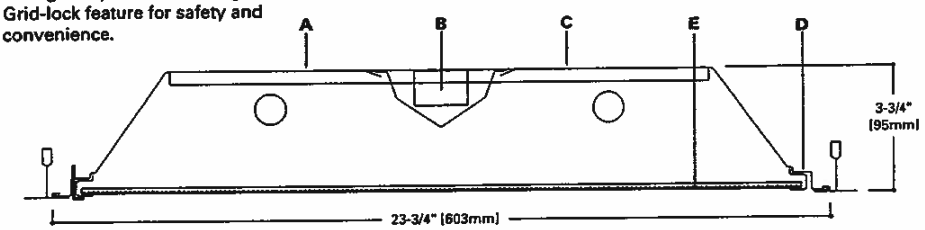
A ... Construction
Rigid housing is die formed of code gauge prime cold rolled steel and features full length die-formed stiffeners for added strength. Side flanges are hemmed. Innovative design provides superior lens brightness uniformity and visual comfort. Micro ballast cover*** reduces ballst shadow for superior lens brightness uniformity and is easily removed without tools. Die formed captive lampholder brackets fully enclose lampholder wiring permitting easy lampholder replacement. Heavy endplates are securely attached with interlocking tabs and screws. Four auxiliary fixture end suspension points provided. KOs for continuous row wiring. Endplates have integral Grid-lock feature for safety and convenience.

B ... Electrical
Ballasts are CBM/ETL Class "P" and are positively secured by mounting bolts. Pressure lock lampholders. UL/CUL listed. Suitable for damp locations.

C ... Finish
Multistage, iron phosphate pretreatment ensures maximum bonding and rust inhibition. Housing and ballast cover finished with new 90% reflective matte white enamel for superior performance. "PAF" Painted After Fabrication option also available.

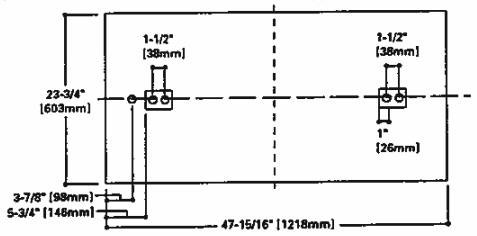
D ... Hinging/Latching
Positive cam action spring loaded steel latches with baked white enamel finish. Safety-lock T-hinges allow hinging and latching either side.

E ... Frame/Shielding
Die formed, heavy gauge, flat steel door with reinforced mitered corners and baked white enamel finish. Flat and regressed aluminum doors also available. Positive light seals. Light stabilized 100% virgin acrylic prismatic lens. Standard #12 pattern. Numerous additional shielding options available.

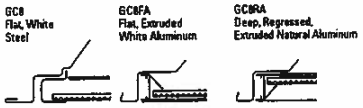


*maximum overall nominal depth

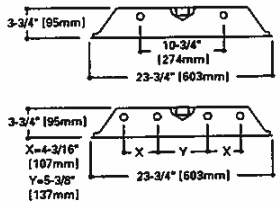
MOUNTING DATA



DOOR FRAMES

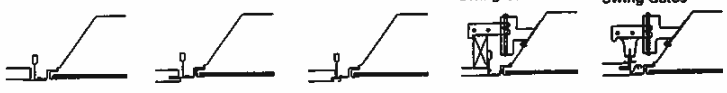


LAMP CONFIGURATIONS



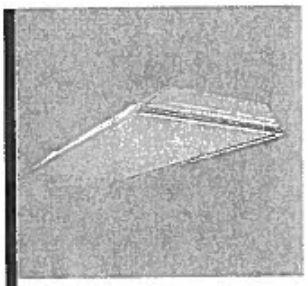
CEILING COMPATIBILITY

G Grid/Lay-in Standard	G Concealed T	G Slot Grid	F Flange Trim With Supporting Swing Gates	C Modular Trim With Supporting Swing Gates



Ceiling Type	Trim Type
Exposed Grid	G
Concealed T	G
Slot Grid	G
Flange	F
Metal Pan	C

(Verify compatibility/ consult factory.)



2GC8
232
432

2' X 4' TROFFER
2 OR 4 LAMP
Specification T8 Troffer

ENERGY DATA

Input Watts:
EB Ballast & STD Lamps
232 (61)
432 (122)

ES Ballast & STD Lamps
232 (71)
432 (142)

Luminaire Efficacy Rating
LER = FL-69
Catalog Number: 2GC8-232A

Yearly Cost of 1000 lumens, 3000 hrs at .08 KWH = $3.50

LER = FL-64
Catalog Number: 2GC8-432A

Yearly Cost of 1000 lumens, 3000 hrs at .08 KWH = $3.75

*Reference the lamp/ballast data in the Technical Section for specific lamp/ballast requirements.

**Consult Pre Sales Technical Support.

***Full sized ballast cover for biaxial lamps and emergency option.

LAMPS CONTAIN MERCURY. DISPOSE ACCORDING TO LOCAL, STATE OR FEDERAL LAWS

LINEAR DISCONNECT
Safe and convenient means of disconnecting power

LSD CERTIFIED

COOPER Lighting
www.cooperlighting.com

Specifications and Dimensions subject to change without notice.
Consult your representative for additional options and finishes.

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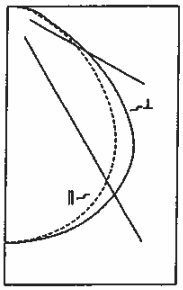
TYPE R05

2GC8

PHOTOMETRICS



2GC8-232A
Electronic Ballast
(2) FO32/35K lamps
2800 lumens
Spacing criterion: (∥) 1.2 x mounting height, (⊥) 1.3 x mounting height
Efficiency 84.8%
Test Report: 2GC8232A.IES
LER = FL-69
Yearly Cost of 1000 lumens, 3000 hrs at .08 KWH = $3.50

Candela

Angle	Along ∥	45°	Across ⊥
0	1810	1810	1810
5	1801	1806	1810
10	1780	1791	1800
15	1743	1764	1782
20	1690	1723	1750
25	1616	1667	1703
30	1520	1591	1644
35	1401	1489	1569
40	1258	1351	1467
45	1085	1183	1308
50	898	1008	1100
55	725	813	870
60	564	593	650
65	420	392	468
70	307	244	339
75	226	171	266
80	170	141	207
85	98	87	122
90	0	0	0

Coefficients of Utilization

Effective floor cavity reflectance 20%

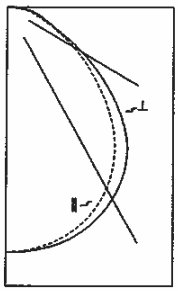
rc	80%				70%				50%			30%			10%			0%
rw	70	50	30	10	70	50	30	10	50	30	10	50	30	10	50	30	10	0
RCR																		
0	101	101	101	101	99	99	99	99	94	94	94	90	90	90	87	87	87	85
1	93	89	85	82	90	87	84	81	83	81	78	80	78	76	77	75	74	72
2	85	78	73	68	83	77	72	67	74	69	66	71	67	64	68	66	63	61
3	78	69	63	57	76	68	62	57	65	60	56	63	59	55	61	57	54	52
4	72	62	55	49	70	61	54	49	59	53	48	57	52	48	55	51	47	45
5	66	55	48	43	64	55	48	42	53	47	42	51	46	42	50	45	41	39
6	61	50	43	37	59	49	42	37	48	42	37	46	41	37	45	40	36	35
7	57	46	38	33	55	45	38	33	44	37	33	42	37	33	41	36	32	31
8	53	42	35	30	51	41	34	30	40	34	29	39	33	29	38	33	29	28
9	49	38	31	27	48	38	31	27	37	31	27	36	30	26	35	30	26	25
10	46	35	29	24	45	35	29	24	34	28	24	33	28	24	32	28	24	23

Zonal Lumen Summary

Zone	Lumens	%Lamp	%Fixture
0-30	1437	25.7	30.2
0-40	2366	42.3	49.8
0-60	3995	71.3	84.1
0-90	4751	84.8	100.0
0-180	4751	84.8	100.0

Typical VCP Percentages

Room Size (Ft.)	Height Along 8.5'	Height Along 10.0'	Height Across 8.5'	Height Across 10.0'
20 x 20	71	75	69	72
30 x 30	66	70	63	67
30 x 60	58	61	53	57
60 x 30	68	72	66	70
60 x 60	58	61	54	58



2GC8-432A
Electronic Ballast
(4) FO32/35K lamps
2800 lumens
Spacing criterion: (∥) 1.2 x mounting height, (⊥) 1.3 x mounting height
Efficiency 79.2%
Test Report: 2GC8432A.IES
LER = FL-64
Yearly Cost of 1000 lumens, 3000 hrs at .08 KWH = $3.75

Candela

Angle	Along ∥	45°	Across ⊥
0	3460	3460	3460
5	3444	3452	3461
10	3402	3422	3441
15	3331	3367	3401
20	3228	3282	3329
25	3085	3163	3222
30	2899	3003	3079
35	2670	2789	2904
40	2392	2510	2677
45	2057	2184	2369
50	1701	1843	1986
55	1370	1478	1582
60	1059	1083	1192
65	783	719	849
70	568	449	621
75	419	315	491
80	316	259	381
85	183	159	226
90	0	0	0

Coefficients of Utilization

Effective floor cavity reflectance 20%

rc	80%				70%				50%			30%			10%			0%
rw	70	50	30	10	70	50	30	10	50	30	10	50	30	10	50	30	10	0
RCR																		
0	94	94	94	94	92	92	92	92	88	88	88	84	84	84	81	81	81	79
1	87	83	80	77	84	81	78	76	78	76	73	75	73	71	72	70	69	67
2	79	73	68	64	77	72	67	63	69	65	62	66	63	60	64	61	59	57
3	73	65	59	54	71	64	58	53	61	56	52	59	55	52	57	54	51	49
4	67	58	51	46	65	57	51	46	55	50	45	53	48	45	51	47	44	42
5	62	52	45	40	60	51	45	40	48	44	39	48	43	39	46	42	39	37
6	57	47	40	35	56	46	40	35	45	39	35	44	38	35	42	38	34	33
7	53	43	36	31	52	42	36	31	41	35	31	40	35	31	39	34	31	29
8	49	39	33	28	48	39	32	28	38	32	28	37	31	28	36	31	27	26
9	46	36	30	25	45	35	29	25	35	29	25	34	29	25	33	28	25	23
10	43	33	27	23	42	33	27	23	32	27	23	31	28	23	31	26	23	21

Zonal Lumen Summary

Zone	Lumens	%Lamp	%Fixture
0-30	2735	24.4	30.9
0-40	4476	40.0	50.5
0-60	7474	66.7	84.3
0-90	8865	79.2	100.0
0-180	8865	79.2	100.0

Typical VCP Percentages

Room Size (Ft.)	Height Along 8.5'	Height Along 10.0'	Height Across 8.5'	Height Across 10.0'
20 x 20	58	62	56	60
30 x 30	52	56	49	53
30 x 60	42	46	38	42
60 x 30	54	58	52	57
60 x 60	43	47	40	43

ORDERING INFORMATION

Sample Number: 2GC8-232A-120V-EB81-U

2	G	C8		4	32	A125	UNV		ER	8	2		G3-U

Width
2= 2' Width

Trim Type
G= Grid/Lay-in [1] (Standard)
C= Concealed T
S= Slot Grid
F= Flange Trim

Series
C8= Specification T8 Troffer

Door Frame
Standard= Flat White Steel Door (Leave blank)
FA= Flush White Extruded Aluminum c/w Spring Latch
RA= Regressed White Extruded Aluminum
FAN= Flush Natural Anodized Extruded Aluminum
RAN= Regressed Natural Anodized Extruded Aluminum
FAB= Flush Black Extruded Aluminum
RAB= Regressed Black Extruded Aluminum

Number of Lamps [2]
2 Lamps (Not Included)
4 Lamps (Not Included)

Wattage
32= 32W T8 (48")

Shielding
A= # 12 Acrylic Pattern
A125= #12 Pattern Acrylic (.125" Thickness)
A19/156= #19 Pattern Acrylic (.156" Thickness)
DA= Dropped Dish Matte White Acrylic
IMA48= Injection Molded Acrylic (.150" Thickness)
PB1S= 1/2" x 1/2" x 1/2" Silver Parabolic Louver (Styrene)

Voltage [3]
120V= 120 Volt
277V= 277 Volt
347V= 347 Volt
UNV= Universal Voltage[4] 120-277

Options
GL= Single Element Fuse
GM= Double Element Fuse
Lamps= Lamps Installed
Flex= Flex Installed
Emergency= EM Installed

Ballast Type [3]
EB= Electronic Instant Start
ER= T8 Electronic Program Rapid Start. Total Harmonic Distortion < 10%
DLS= Digital Lighting System Dimming

Lamp Size
8= T8

Number of Ballasts
1= 1 Ballast
2= 2 Ballast
3= 3 Ballast

Options
/PLUS= Higher Ballast Factor > 1.13. Total Harmonic Distortion < 20%
RLS= Rotor Lock Socket (T8 Lamp only)
FR= Fire Rated Label
MEP= Modified End Plate
REP= Riveted End Plates
PAF= Painted After Fabrication

Packaging
U= Unit Pack
PAL= Palletized Uncartoned Fixtures
PALC= Palletized Fixtures in Carton

Notes: 1 An EQ Grid Clip is recommended for all 9/16" ceiling systems.
2 Standard off-center ballast on 3 lamp fixtures.
3 Products also available in non-US voltage and frequencies for International markets
4 Not Available when specifying emergencies, voltage must be specific

ACCESSORIES

EQ = T-BAR Safety Earthquake Clips [1]

SHIPPING INFORMATION

Catalog No.	Wt.
2GC8-232A	29 lbs.
2GC8-432A	32 lbs.

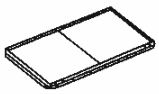
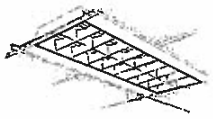
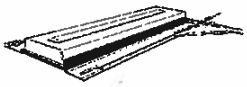
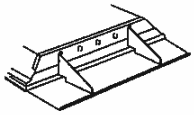
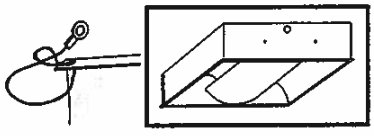
TYPE R05

METALUX®

G3

OPTIONS AND ACCESSORIES

PARABOLIC, RECESSED AND SURFACE

MISCELLANEOUS		DESIGNATION	DESCRIPTION
Plaster Frames		**95-PF-14 (1x4)** **95-PF-22 (2x2)** **95-PF-24 (2x4)** **95-PF-44 (4x4)**	Heavy Gauge Metal Construction. Used with Flanged Recessed Fixtures. (Intended to serve as a plaster stop only, not to fit into an opening.)
Rated Construction		**FR** **Example:** GCXRD-340A-120V-LE3-FR-U	Fluorescent Recessed Fixture Classification for Fire Resistance Fixture FR labeled "SUITABLE FOR INSTALLATION IN FIRE RATED CEILINGS' when applied in conformance with the designs specified in the Underwriters Laboratories Fire Resistance Directory."
Fixture Gasketing		**G1**	Neoprene gasket between door frame and fixture housing.
		**G2**	G1 gasketing plus vinyl gasketing between lens and door frame.
		**G3**	G1 & G2 gasketing plus neoprene gasketing on mounting surface of fixture trim. (Grid or Flange). Field installed. Gasketing availability: GPXF, GCXF, GMXF. No HR, air or louvers. (Lens min .125 - max .125)
		**FTG**	Foam tape gasket applied between door frame and fixture housing when quadrasealed fixture is required. Prevents light spillage. (Consult Pre Sales Technical Support for availability.)
Side Filler Panel		**SFP** 	Heavy gauge side filler panels for 20" x 48" fixture for use in a 2' x 4' ceiling installation. (Baked white finish, use 2 per fixture).
Spacer		**A-1-B/Spacer-U**	Spaces fixture 1-1/2" to 2-1/2" from ceiling
End Fillers		**12-EFS-B (1x2, 1x4)** **20-EFS-B (20x48)** **24-22EFS-B (2x2, 2x4)**	6" Heavy gauge end fillers use 2 per fixture. End fillers lay on T-bars and are held in place by fixtures but are not attached.
End Support Brackets		**ESS-B**	Heavy gauge end support brackets. Four per fixture are required when fixtures are supported from ends. Must be used with fixture that has a modified end plate (MEP).
Ovation Shield Cable Option		**LSC** Center Mount **LSCS** Side Mount **Example:** (Center Mount) 2RDI-2BX40RP-120V-EB51-LSC (Side Mount) 2RDI-2BX40RP-120V-EB51-LSCS	The lamp shield cable is a factory option available for any and all Ovation products. For center mount Ovation models, use the LSC option. For side-mount, use the LSCS option. Ovation products specified with this option ship with a parts bag included, which contain the safety lanyards, clear rubber "caps" and an instruction sheet.
Palletizing	 PAL  PALC	**PAL** **PALC**	Un-cartoned fixtures secured by corrugated end cap protectors and heavy gauge stretch wrap. Fast and efficient handling. Fixtures in cartons secured by heavy gauge stretch wrap. Fast and efficient handling.

Items listed are the major options and accessories available on Metalux Recessed (Parabolic and Recessed) and Surface Fixtures. Additional options and accessories are available. Consult Pre Sales Technical Support for additional information.

COOPER LIGHTING - METALUX®

TYPE R16

GC8 SERIES

1' x 4', 2' x 2', 2' x 4' Troffer
2, 3 or 4 Lamp

SPECIFICATION GRADE T8 RECESSED STATIC TROFFER

GC8
T8 DEDICATED LENSED LUMINAIRE

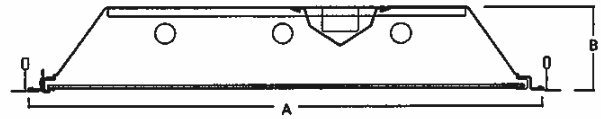
- Optimized for T8 lamps
- Equipped with energy saving ballasts / complies with federal energy efficiency standards
- Innovative design provides superior lens brightness uniformity and visual comfort
- Reinforced flat white steel door or flat and regressed aluminum, mitered corners
- Spring loaded latch
- Min. 90% reflective white enamel finish for superior performance
- Optional "PAF" finish
- Positive light seal
- Die embossed housing
- Four auxiliary fixture end suspension points provided
- Endplate grid-lock feature
- For information on flanged fixture, including ceiling opening size, see Technical Section.
- UL/CUL Listed. Suitable for damp locations.

DESCRIPTION

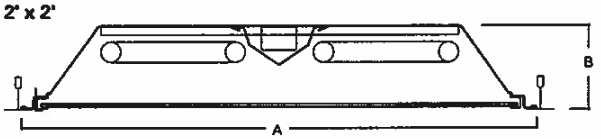
GC8 is a premium grade specification lensed troffer series. This innovative, high quality luminaire is dedicated to the latest T8 lamp and micro electronic ballast technology for optimal performance and energy efficiency. The GC8 is compatible with all of today's popular ceiling systems and is available with a number of options and accessories for application versatility. The GC8 Series features efficiency, quality and performance in a low profile luminaire. The series is an excellent choice for commercial office spaces, schools, hospitals or retail merchandising areas.

DIMENSIONS

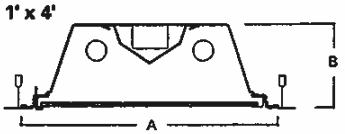
2' x 4'



2' x 2'



1' x 4'



NOMINAL SIZE	A	B
1' x 4'	11-3/4" (298mm)	3-3/4" (95mm)
2' x 2'	23-3/4" (603mm)	3-3/4" (95mm)
2' x 4'	23-3/4" (603mm)	3-3/4" (95mm)

ORDERING INFORMATION

SAMPLE NUMBER: 2GC8-332-120V-EB81-U

2 G C8 3 UI-5/8A125 UNV ER81 U

2=2' Width
Blank=1' Width

Trim Type
G=Grid/Lay-in - Standard
~~GeConcealed T~~
G=Slot Grid[1]
F=Flange Trim

Series
C8=Specification T8 Troffer

Standard=Flat White Steel Door (Leave Blank)
~~PA=Flat White Extruded Aluminum~~ Door
RA=3/8" Regressed White Extruded Aluminum Door
FAN=Flat Natural Extruded Aluminum Door
RAN=3/8" Regressed Natural Extruded Aluminum Door
FAB=Flat Black Extruded Aluminum Door
RAB=3/8" Regressed Black Extruded Aluminum Door

Number of Lamps[2]
2, 3 or 4 Lamps
(Not included)

Wattage (Length)
U6T8=32W (24")
17=17W T8 (24")
U1-5/8=31W T8 (24")
~~32=32W T8 (48")~~
BX40=40W Biaxial (24")

A=#12 PatternAcrylic
(See Lens and Louver Tables for additional shielding options)

Voltage[3]
120V=120 Volt
277V=277 Volt
347V=347 Volt
UNV=Universal Voltage 120-277[4]

Options
GL=Single Element Fuse
GM=Double Element Fuse
Lamps - for lamps installed, see lamp options table
Flex - for flex installed, see flex ordering table
Emergency - for EM installed, see EM options table[5]

Options
(See Options Section)

Packaging
U=Unit Pack
PAL=Job Pack, out of carton
PALC=Job Pack, in carton

Ballast Type[3]
Blank=Standard Magnetic Ballast (Biax & 20W)
ER8_=T8 Electronic Program Rapid Start. Total Harmonic Distortion < 10%
No. of Ballast
1, 2 or 3
EB8_=T8 Electronic Instant Start. Total Harmonic Distortion < 10%
No. of Ballast
1, 2 or 3
EB8_/PLUS=T8 Electronic Instant Start. High Ballast Factor >1.13. Total Harmonic Distortion < 20%
No. of Ballast
1, 2 or 3
EB5_=T5 Biax Electronic Instant Start. Total Harmonic Distortion < 20%
No. of Ballast
1, 2 or 3
TEB5_=T5 Biax Electronic Instant Start. Total Harmonic Distortion < 10%
No. of Ballast
1, 2 or 3
DLS=Digital Lighting System Dimming
(For complete details on generic or to specify manufacturer's ballast see pg. 469)

NOTES: [1]An EQ Grid Clip is recommended for all 9/16" ceiling systems. [2]Standard off-center ballast compartment on 3-lamp fixtures. [3]Products also available in non-US voltages and frequencies for international markets. [4]Not available when specifying emergencies, voltage must be specific. [5]If field installing, battery pack requires larger ballast cover. Enter with EM/BC in fixture catalog number for larger ballast cover.

For complete product data, reference the Fluorescent Specification binder. Specifications & dimensions subject to change without notice. Consult your Cooper Lighting Representative for availability and ordering information.

TYPE S01

COOPER LIGHTING - LUMARK®

DESCRIPTION

The Enclosed and Gasketed Glass Steeler features a cast aluminum neck for superior strength and a hinged door frame with latches for access to the lamp without tools. The Enclosed and Gasketed Glass Steeler is fully enclosed and gasketed at three separate points to prevent entry of external contaminant's. U.L. listed and CSA Certified for damp locations.

The Enclosed and Gasketed Glass Steeler is perfect for textile mills, hangars, assembly and auto service areas.

SPECIFICATION FEATURES

A ... Mounting
Easy slide-on die-cast aluminum mounting box with tapped opening for 3/4" conduit.

B ... Housing
Heavy-duty formed steel housing with an open air ballast for cooler operation. Finished in white polyester paint.

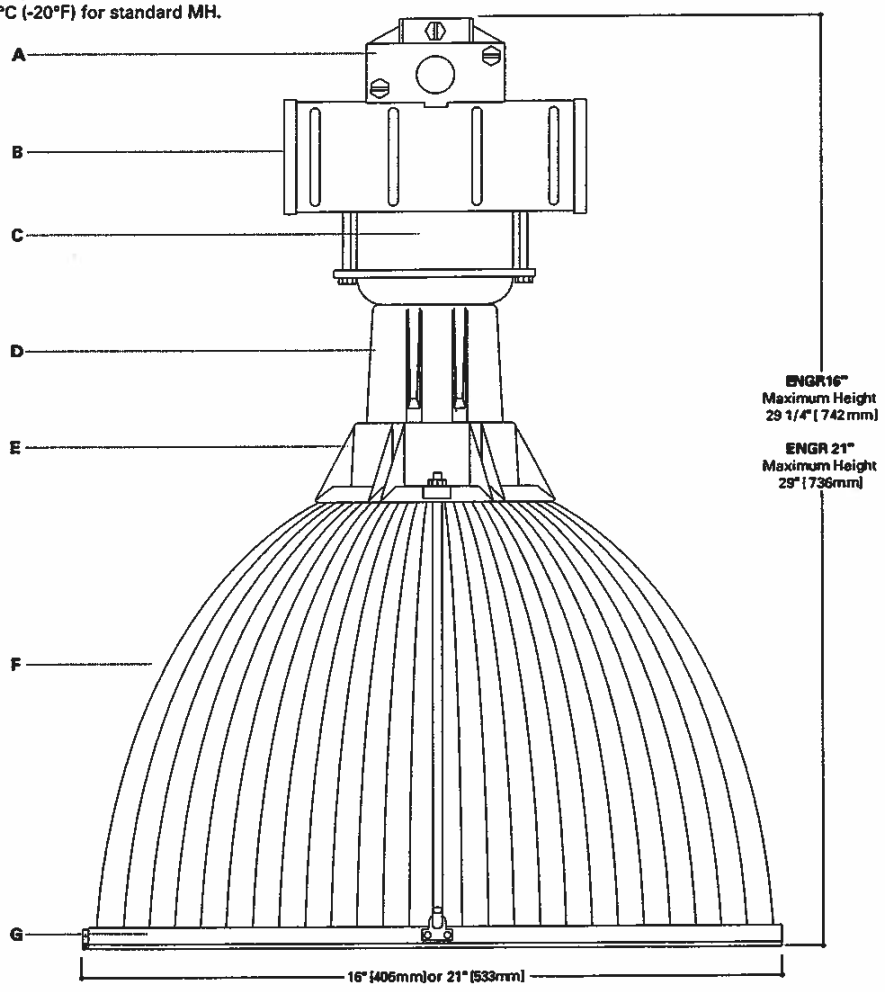
C ... Ballast
High power factor ballast with class H insulation. Minimum starting temperature is -40°C (-40°F) for HPS and Pulse Start MH, -30°C (-20°F) for standard MH.

D ... Socket
Mogul-base porcelain socket.

E ... Neck
Cast aluminum neck with staggered inserts for adjustability of the socket providing a variety of distributions from concentrated to wide.

F ... Refractor System
Faceted borosilicate glass refractor provides maximum photometric performance and beam efficiency. The system is completely enclosed and gasketed at three (3) points: door to refractor, refractor to neck, and neck to housing.

G ... Lens
Clear tempered glass lens in an extruded aluminum hinged door frame with latches allows access for relamping without tools.



SE
16" & 21"
ENCLOSED &
GASKETED
GLASS STEELER

175-1000W
High Pressure Sodium
Pulse Start Metal Halide
Metal Halide

ENCLOSED & GASKETED
GLASS HIGH-BAY
INDUSTRIAL LUMINAIRE

TECHNICAL DATA

Maximum Ambient Temperatures
65°C (400W and Below)
55°C (Above 400W)
External Supply Wiring 90°C Minimum

ENERGY DATA

CWI Ballast Input Watts
400W HPS HPF (465 Watts)
400W MH HPF (475 Watts)

CWA Ballast Input Watts
320W MP HPF (365 Watts)
320W ML HPF (342 Watts)
350W MP HPF (395 Watts)
350W ML HPF (375 Watts)
400W HPS HPF (465 Watts)
400W MP HPF (448 Watts)
400W MH HPF (455 Watts)
400W ML HPF (425 Watts)
750W MP HPF (810 Watts)
1000W HPS HPF (1000 Watts)
1000W MP HPF (1080 Watts)
1000W MH HPF (1080 Watts)

SHIPPING DATA

Approximate Net Weight:
77 lbs. (35 kgs.)

Specifications and Dimensions subject to change without notice.
Consult your representative for additional options and finishes.

TYPE S01

SE 16" & 21" ENCLOSED GASKETED GLASS STEELER

ORDERING INFORMATION

Sample Number: HPSE-ENGR16-M-400-MT-Q

MH	SE	ENGR	21	M	400	120	LL	F1-FL1-PC3

Lamp Type
- HP= High Pressure[1] Sodium
- **MH**= Metal Halide
- MP= Pulse Start MH[2] (CWA)
- ML= Pulse Start MH [2, 3] (Linear Reactor)

Series
- **SE**= E & G Steeler

Reflector Type
- **ENGR**= Enclosed & Gasketed Glass Refractor

Reflector Diameter
- **16**= 16" Diameter
- **21**= 21" Diameter

Distribution
- C= Concentrated
- **M**= Medium
- W= Wide

Lamp Wattage
- 175= 175W
- 250= 250W
- 320= 320W
- 350= 350W
- **400**= 400W
- 450= 450W
- 1000= 1000W[4]

Voltage [5]
- **120V**
- 208V
- 240V
- 277V
- 347V
- 480V
- MT [6]
- TT [7]
- 5T [8]

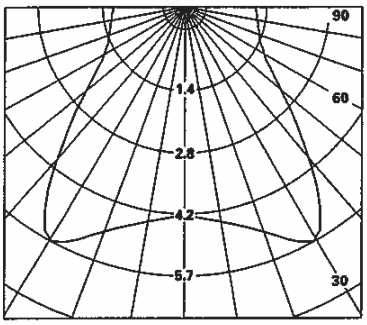
Options [9]
- **PS**= Protective Starter (Available in 1000W HPS only. For other wattages consult factory).
- **P**= Pre-set Socket Position from the factory
- **SS**= Space Saver Feature
- **Q**= Quartz Restrike DC Bayonet Base (Does not strike at cold start)
- **EM**= Quartz Restrike with "Delay Relay" (Quartz lamp strikes at both hot and cold starts)
- **EM/SC**= Emergency Separate Circuit
- **QD**= Quick Disconnect Die-Cast Pendant Mount Box(Specify Single Voltage, Not Compatible with PC3, PHC, C3, MWS, RM or HC)
- **SCF**= 3' Aircraft Safety Cable secures Housing to Ceiling (Alternative lengths available. Example: SCF6 = 6' Cable)
- **SCR**= Aircraft Safety Cable-Housing to Reflector
- **LTCB**= Less Top Connector Box (Housing shipped less top connector box. (Specify when using TWMBS accessory)
- **RM**= Remote Mount
- **LL**= Lamp Included **w/Venture lamp**
- **QLL**= Quartz Lamp Included (Lamp is Cooper sesignated product based on luminaire requirements. Lamp is shipped separate from luminaire unless otherewise noted)
- **FILT**= Sintered Bronze filter (Sintered bronze filter prevents the entrance of contaminants)
- **WMWS**= MWS Industrial components attached to the fixture at the factory. (Standard cord length is 3 ft. 6 ft. and 11 ft. also available. Please refer to MWS Modular Wiring System section for additional information.
- **F1**= Single Fuse (120, 277 or 347V only)
- **F2**= Double Fuse (208, 240 or 480V only)
- **FH-1**= Die-cast Aluminum Fixture Hook (with 3/4" threads for easy installation)
- **FL-1**= Malleable Iron Plated Fixture Loop (with 3/4" threads for easy installation)
- **SHK**= Die-cast Aluminum Fixture Hook (with safety screw and 3/4" threads for easy installation)
- **C3**= 3' Cord with no plug (Must use with FH-1 or FL-1 or SHK)
- **PC3**= 3' Cord with NEMA Plug (120V-L5-15P, 208V-L6-15P, 347V-L37-20P, AND 480V-L8-20P)Other cord lengths are available by specifying length (PC6 for 6' Cord) Requires FH-1 or FL-1, or SHK. Example: PC3-120VUse with TPPH-NEMA. Specify Voltage.
- **PHC**= Power Cord and Plug (18" Power Cord and Non-NEMA plug configuration. Must be used with FL-1 and TPPH (Thru-Way Pendant Power Hook). Must specify single voltage.
- **PHC-NEMA**= Power Cord and NEMA Plug (18" Power Cord and and 20 AMP NEMA plug configuration). Must be used with FL-1 and TPPH-NEMA (Thru-Way Pendant Power Hook).
- **HL**= LumaWatt Fixture Control Module (Allows low voltage control wire to be daisy-chained between fixtures outside AC conduit run similar to low voltage intercom's, fire alarms and phone systems)
- **HC**= LumaWatt Fixture Control Module (Low voltage leads pulled out of top connection box for areas requiring all wiring to be installed in conduit)

Accessories
- C3= 3' Cord-No Plug - Requires FH-1, FL-1, or SHK
- PC3= 3' Cord with NEMA Plug - (120V-L5, 208V-L6-15P, 347V-L37-20P and 480V-L8-20P) Other cord lengths are available by specifying length (PC6 for 6' cord).Requires FH-1 or FL-1, or SHK. Use with TPPH-NEMA. Specify Voltage.
- PHC= Power Hook Cord and Non-NEMA plug configuration. Must be used with FL-1 and TPPH (Thru-Way Pendant Power Hook)
- PHC-NEMA= Power Cord and NEMA plug - 18" Power Cord and 20 Amp NEMA plug configuration. Must be used with FL-1 and TPPH-NEMA (Thru-Way Pendant Power Hook)
- MBT= Twin Mount Bracket (Fixtures must be same voltage and without hooks, loops or plugs.)
- TPPH= Thru-Way Pendant Power Hook. Requires FL-1 and PHC. Specify Voltage.
- TPPH-F= Thru-Way Pendant Power Hook Single Fuse, 120, 277 or 347 Volt. Requires FL-1 and PHC. Specify Voltage.
- TPPH-F2= Thru-Way Pendant Power Hook - Double Fused, 208, 240, or 480 Volt. Requires FL-1 and PHC. Specify Voltage.
- TPPH-F-QD= Thru-Way Pendant Power Hook Single Fuse, Quick Disconnect. Requires FL-1 and PHC. Specify Voltage (120, 277, or 347V)
- TPPH-F2-QD= Thru-Way Pendant Power Hook Double Fuse, Quick Disconnect. Requires FL-1 and PHC. Specify Voltage (208, 240, or 480V)
- TPPH-NEMA= Thru-Way Pendant Power Hook Requires FL-1 and PHC-XXXV-NEMA. Specify
- FH-1= Fixture Hook
- **FL-1**= Fixture Loop
- SHK= Hook with Safety Screw
- TWMBS= Thru-Way Mounting Box[10]

Notes:
1. Not available in 175, 200, 320, 350, 450 and 750W.
2. 175, 250, 320, 350, 400 and 450W only.
3. 277V only, not available with Q, EM, HL or HC options.
4. Requires reduced envelope BT-37 lamp for Metal Halide lamps.
5. Products also available in non-US voltages and 50HZ for International markets.
6. Multi-Tap ballast 120/208/240/277V wired 277V.
7. Triple-Tap ballast 120/277/347V wired 347V.
8. 5-Tap ballast 120/208/240/277/480V wired 277V. 400W Metal Halide only.
9. Must be listed in the order shown and separated by a dash.
10. Specify L/TCB when using thru-way mounting box (TWMBS) accessory.

TYPE S01

PHOTOMETRICS



MHSE-ENGR16-M-400-120V
400-Watt MH
34,000-Lumen Coated BT-37 Lamp

Coefficients Of Utilization

	Effective floor cavity reflectance								20%											
rc	80%				70%				50%			30%			10%			0%		
rw	70	50	30	10	70	50	30	10	50	30	10	50	30	10	50	30	10	0		
RCR																				
1	72	68	65	61	68	65	61	58	58	56	53	52	50	48	47	45	44	41		
2	65	59	52	49	62	56	51	47	50	46	43	45	42	39	40	38	36	33		
3	59	52	45	41	56	49	43	39	44	40	36	40	36	33	35	33	30	28		
4	54	46	39	34	51	43	37	33	39	34	30	35	31	28	32	28	26	24		
5	50	41	34	29	47	39	33	28	35	30	26	32	28	24	28	25	22	20		
6	46	36	30	25	43	35	29	25	32	27	23	29	24	21	26	22	20	18		
7	43	33	27	22	40	31	26	22	29	24	20	26	22	19	24	20	17	16		
8	40	30	24	20	37	29	23	19	26	21	18	24	20	17	22	18	16	14		
9	37	27	22	18	35	26	21	17	24	19	16	22	18	15	20	16	14	12		
10	35	25	20	16	33	24	19	15	22	18	14	20	16	14	18	15	13	11		

Spacing Criterion 1.6

Zone	%Lamp	Zone	%Lamp
0-30	12.6	0-90	53.1
0-40	22.1	90-180	18.9
0-60	36.8	Total	72

Candlepower

Degree	CP
0	4397
5	4480
10	4591
15	4778
20	5033
25	5410
30	5717
35	5242
40	4383
45	3661
50	2929
55	2445
60	2113
65	1921
70	1787
75	1728
80	1676
85	1631
90	1607

TYPE S04

NEO-RAY™

DESCRIPTION

Series 6-DIP/1, 6-DIP/2, 6-DIP/3...a group committed to technology, proportion, simplicity, and to the spatial clarity of open plan, space design available with a clear ribbed acrylic lens or round lateral baffle.
Features
- Low glare wide spread illumination.
- Pendant mounted applications are provided to any length, to any configuration, and in a standard or custom finish.
- The extruded aluminum 4" round spatial tubes offer the the unity and quality required for today?s energy conscious free style open plan space design.

SPECIFICATION FEATURES

A ... Construction
Extruded aluminum housing. Nominal 3', 4', 6' or 8' illuminated sections.

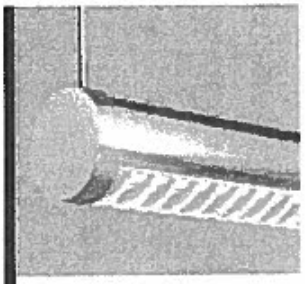
End Caps
Die-cast aluminum.

B ... Shielding
Clear ribbed acrylic lens or contoured baffle.

C ... Electrical
120, 277, 347 or Universal Voltage electronic ballast. Fixtures and electrical components certified to UL and CUL standards.

D ... Finish
Durable, low gloss, white, powder coated acrylic finish.

Mounting
Pendant with single stem (standard) or single cable. Canopy: Round 5" diameter.

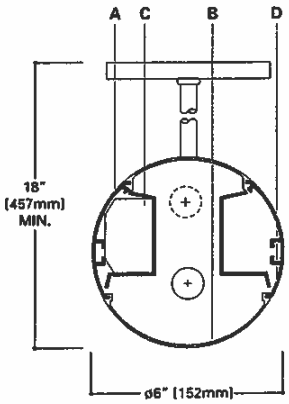


Cirque 6-DIP

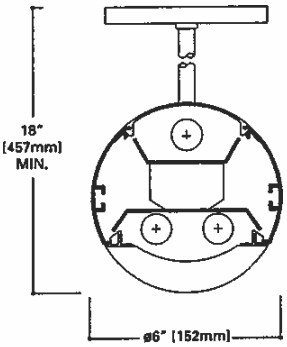
1, 2 & 3T8
1, 2 & 3T5
1, 2 & 3T5HO

SUSPENDED
DIRECT/INDIRECT

Light Distribution
Indirect - 43.6%
Direct - 56.4%



6DIP 1 or 2 Lamps



6DIP 3 Lamps

ORDERING INFORMATION

Sample Number: S6DIP/1x1T8/ST84/1EB-DU

6	DI	P	1X2	T8	SC	08	1	ERS	DU			S26

Series
6= Cirque

Light Output
DI= Direct/Indirect

Mounting
P= Pendant

Number of Lamps
1= 1 Lamp
1x1= 2 Lamps
1x2= 3 Lamps

Lamp Type
T8= T8
T5= T5
T5HO= T5HO

Pendant
SC= Single Cable
SC48=48" Cable

Run Length
Overall Nominal Run Length __ ft.

Voltage [2]
1= 120V
2= 277V
3= 347V

Ballast
EB= Electronic Ballast
DB= Dimming Ballast

Switching Options
SI= Single Switching
DU= Double Switching

Emergency
EM= Emergency Pack

Fusing
GLR= GLR
GMF= GMF

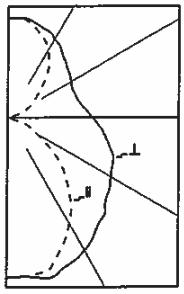
Shielding Options
S14= Contoured Baffle
S26= Acrylic Lens

ERS=(1)Electronic Program Rapid Start Ballast,THD <10%

Notes: 1 Available with 7" or earthquake 45° swivel canopy assembly.
2 Not all options available. Please consult your Cooper Lighting Representative for availability.

TYPE S04
Cirque 6-DIP

PHOTOMETRICS



6DIP-3T8-S26-S26
(3) F32T8/735/RS
2850 Lumens
Efficiency 67.9%
Test Report
#8072.0

Coefficients of Utilization

Effective floor cavity reflectance					20%													
rc	80%				70%				50%			30%			10%			0%
rw	70	50	30	10	70	50	30	10	50	30	10	50	30	10	50	30	10	0
RCR																		
0	75	75	75	75	70	70	70	70	61	61	61	53	53	53	45	45	45	42
1	67	63	60	57	62	59	56	54	51	49	47	44	43	41	38	37	36	32
2	60	55	50	46	56	51	47	43	44	41	38	38	36	34	33	31	29	26
3	55	48	42	38	51	45	40	36	39	35	32	34	31	28	29	27	25	22
4	50	42	36	32	47	40	34	30	35	30	27	30	27	24	26	23	21	19
5	46	37	31	27	43	35	30	26	31	26	23	26	23	20	23	20	18	16
6	42	33	27	23	39	31	26	22	27	23	20	24	20	18	20	18	15	13
7	39	30	24	20	36	28	23	19	25	20	17	21	18	15	18	16	13	12
8	36	27	21	18	33	25	20	17	22	18	15	19	16	13	17	14	12	10
9	33	24	19	15	31	23	18	15	20	16	13	17	14	12	15	12	10	09
10	31	22	17	14	29	21	16	13	18	14	12	16	13	10	14	11	09	08

Candela

Angle	Along II	45°	Across ⊥
0	996	996	996
5	992	993	993
15	983	1003	1032
25	847	913	981
35	690	827	923
45	503	704	852
55	301	595	773
65	158	510	715
75	67	421	646
85	9	350	563
90	0	316	526
95	4	292	492
105	52	278	441
115	123	293	435
125	210	336	460
135	316	404	496
145	440	492	550
155	532	561	592
165	590	600	615
175	621	621	621
180	619	619	619

Zonal Lumen Summary

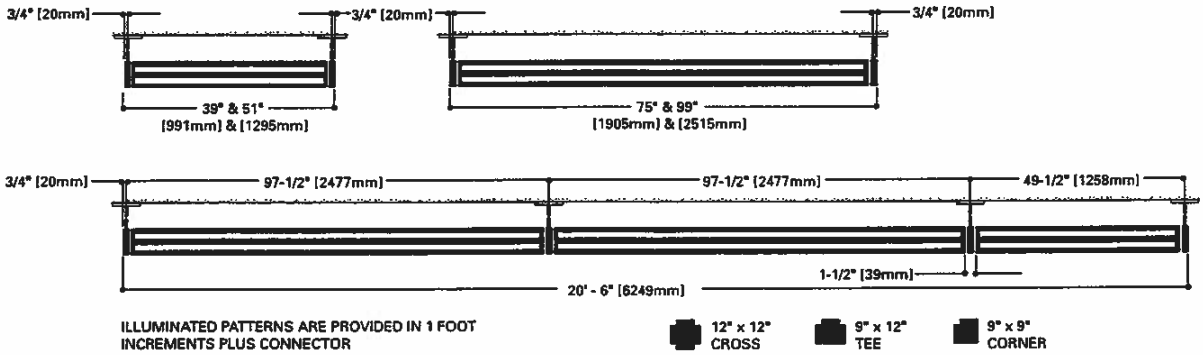
Zone	Lumens	%Lamp	%Fixture
0-30	803	9.4	13.8
0-40	1315	15.4	22.7
0-60	2356	27.6	40.6
0-90	3556	41.6	61.3
90-120	834	9.7	14.4
90-130	1134	13.3	19.5
90-150	1757	20.5	30.3
90-180	2246	26.3	38.7
0-180	5802	67.9	100.0

Total Luminaire Efficiency = 71.3%

Luminance Data

Angle In Deg	0-Deg cd/sm	45-Deg cd/sm	90-Deg cd/sm
45	1276	1389	1681
55	941	1321	1717
65	671	1342	1882
75	464	1412	2167
85	185	1689	2716

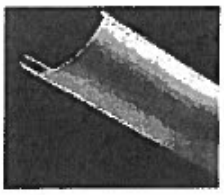
MOUNTING INFORMATION



ILLUMINATED PATTERNS ARE PROVIDED IN 1 FOOT INCREMENTS PLUS CONNECTOR

12" x 12" CROSS
9" x 12" TEE
9" x 9" CORNER

SHIELDING INFORMATION



S26 Acrylic Lens
Clear acrylic ribbed lens.

S14 Round Baffle
Lateral baffle, 1 1/2" spacing, 35° cutoff, baked white finish.

TYPE W03

COOPER LIGHTING - METALUX®

DESCRIPTION

The BC Series is an energy efficient luminaire designed for versatility in application and performance. The BC Series features an opal white acrylic refractor that produces a 180° uniform light distribution pattern.

The versatile BC Series combines quality and economy in a multi-purpose wall bracket. The luminaire is perfect for illuminating corridors, stairwells, lavatories, dressing rooms, patient rooms, utility/task and area lighting.

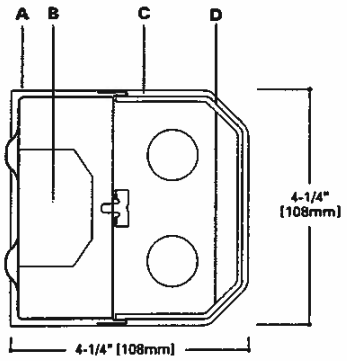
SPECIFICATION FEATURES

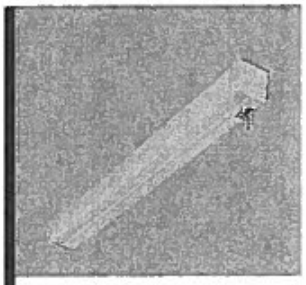
A ... Construction
Housing channel die formed code gauge prime cold rolled steel. Sturdy positive lampholder mounting bracket. Reflector/channel wireway cover secured by quarter-turn fastener for easy wireway access. Channel back has numerous KO's for easy installation. Decorative white opaque injection molded end plates.

B ... Electrical
Ballast are CBM/ETL Class "P" and positively secured by mounting bolts. Pressure lock lampholders. UL/CUL listed. Suitable for damp locations.

C ... Finish
Painted after fabrication. Electrostatically applied baked white polyester powder enamel finish. Multistage cleaning cycle, iron phosphate coating with rust inhibitor. Conveyorized application and baking time accurately controlled at an elevated temperature.

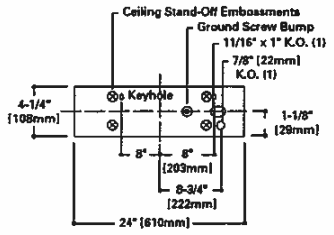
D ... Frame/Shielding
Smooth opal 100% virgin acrylic refractor. 180° uniform light distribution (Uplight, Frontal & Downlight). Refractor is securely held in place by removable decorative injection molded white end plates. Refractor can be easily removed for installation and maintenance.

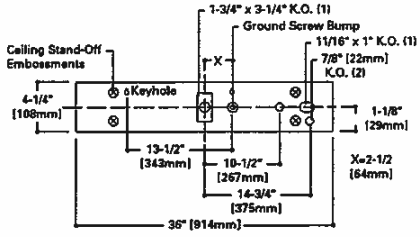


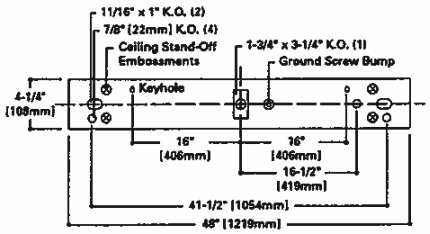


BC
120
117
130
125
140
132
220
217
230
225
240
232

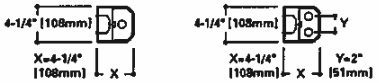
MOUNTING DATA







LAMP CONFIGURATIONS



ALL PURPOSE WALL BRACKET
2' Wall Bracket
1 or 2 Lamp LTS or HTS
3' or 4' Wall Bracket
1 or 2 Lamp

ENERGY DATA
Input Watts:
EB Ballast & STD Lamps
117 (20), 130 (31), 125 (28), 140 (38)
132 (30), 217 (36), 230 (60), 225 (47)
240 (72), 232 (61)
ES Ballast & STD Lamps
120 (32), 117 (23), 130 (46), 125 (33)
140 (38), 132 (30), 220 (58), 217 (45)
230 (74), 225 (65), 240 (86), 232 (71)
Luminaire Efficacy Rating
LER = FL-65
Catalog Number: BC-232A
Yearly Cost of 1000 lumens, 3000 hrs at .08 KWH = $3.69

LAMPS CONTAIN MERCURY. DISPOSE ACCORDING TO LOCAL, STATE OR FEDERAL LAWS

LINEAR DISCONNECT
Safe and convenient means of disconnecting power

Specifications and Dimensions subject to change without notice.
Consult your representative for additional options and finishes.

TYPE W03
BC

PHOTOMETRICS

Energy Saving Ballast, F32T8/35K lamps rated at 2850 lumens. Spacing criterion: (II) 1.3 x mounting heights, (⊥) 1.5 x mounting height.

Light Loss Factor .74. For complete photometric report BC232A.IES

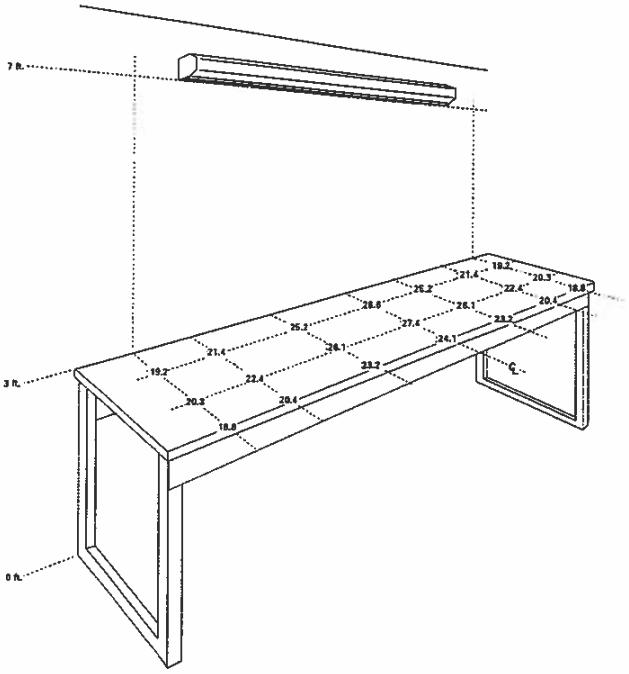
BC-232A
(II)Lamps (2) F32T8/35K
Lumens 2850 Each

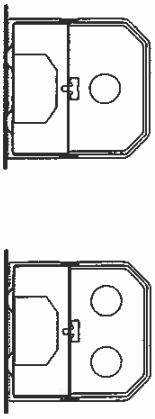
Conditions

Ceiling Height	8'-0"
Mounting Height	7'-43/64"
Work Plane	12'-0"

Reflectance

Ceiling	80%
Walls	50%
Floor	20%





Scale is Exaggerated on Fixture Application and Mounting

ORDERING INFORMATION

Sample Number: BC-232-120V-EB81-U

BC	2	32		UNV		ER	8	1		U

Series
BC= All Purpose Wall Bracket

Number of Lamps
1 Lamp (Not Included)
2 Lamps (Not Included)

Wattage
20= 20W T12 (24")
17= 17W T8 (24")
25= 25W T8 (36")
30= 30W T12 (36")
32= 32W T8 (48")
40= 40W T12 (48")

Ballast Start Type
LTS= Low Trigger Start (20W only) (120V only)
HTS= High Trigger Start (20W only)

Voltage [1]
120V= 120 Volt
277V= 277 Volt
347V= 347 Volt
UNV= Universal Voltage[2] 120-277

Options
GL= Single Element Fuse
GM= Double Element Fuse
Emergency= EM Installed[3]

Ballast Type [1]
_= Standard Magnetic T12 Ballast
LE3= T12 Magnetic Energy Saving
EB= Electronic Instant Start
ER= T8 Electronic Program Rapid Start, Total Harmonic Distortion < 10%

Lamp Size
2= T12
8= T8

Number of Ballasts
1= 1 Ballast
2= 2 Ballast

Options
/PLUS= Higher Ballast Factor > 1.13. Total Harmonic Distortion < 20%
RLS= Rotor Lock Socket (T8 Lamp only)
CO= Convenience Outlet (120V only)
RS1= Rotary Switch (1 Circuit, 120V only)
PS1= Pull Switch (1 Circuit)

Packaging
U= Unit Pack

Notes: 1 Products also available in non-US voltage and frequencies for international markets
2 Not Available when specifying emergencies, voltage must be specific
3 Non available for 2' version.

SHIPPING INFORMATION

Catalog No.	Wt.
BC-117	8 lbs.
BC-125	10 lbs.
BC-132	11 lbs.
BC-217	8 lbs.
BC-225	10 lbs.
BC-232	11 lbs.

TYPE W03A

COOPER LIGHTING - METALUX®

DESCRIPTION

The BC Series is an energy efficient luminaire designed for versatility in application and performance. The BC Series features an opal white acrylic refractor that produces a 180° uniform light distribution pattern.

The versatile BC Series combines quality and economy in a multi-purpose wall bracket. The luminaire is perfect for illuminating corridors, stairwells, lavatories, dressing rooms, patient rooms, utility/task and area lighting.

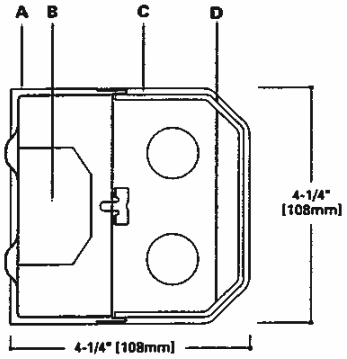
SPECIFICATION FEATURES

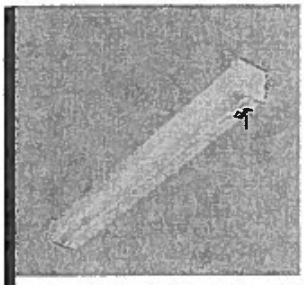
A ... Construction
Housing channel die formed code gauge prime cold rolled steel. Sturdy positive lampholder mounting bracket. Reflector/channel wireway cover secured by quarter-turn fastener for easy wireway access. Channel back has numerous KO's for easy installation. Decorative white opaque injection molded end plates.

B ... Electrical
Ballast are CBM/ETL Class "P" and positively secured by mounting bolts. Pressure lock lampholders. UL/CUL listed. Suitable for damp locations.

C ... Finish
Painted after fabrication. Electrostatically applied baked white polyester powder enamel finish. Multistage cleaning cycle, iron phosphate coating with rust inhibitor. Conveyorized application and baking time accurately controlled at an elevated temperature.

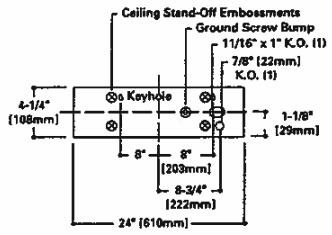
D ... Frame/Shielding
Smooth opal 100% virgin acrylic refractor. 180° uniform light distribution (Uplight, Frontal & Downlight). Refractor is securely held in place by removable decorative injection molded white end plates. Refractor can be easily removed for installation and maintenance.

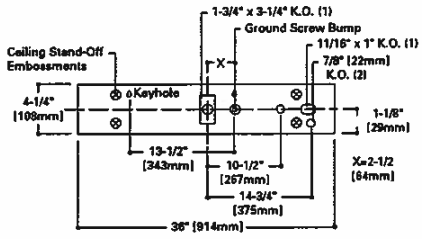




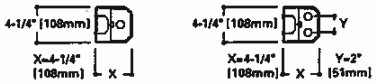
BC
120
117
130
125
140
132
220
217
230
225
240
232

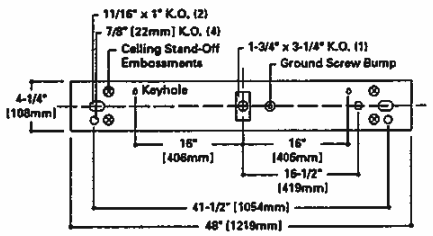
MOUNTING DATA





LAMP CONFIGURATIONS





ALL PURPOSE WALL BRACKET
2' Wall Bracket
1 or 2 Lamp LTS or HTS
3' or 4' Wall Bracket
1 or 2 Lamp

ENERGY DATA
Input Watts:
EB Ballast & STD Lamps
117 (20), 130 (31), 125 (28), 140 (38)
132 (30), 217 (36), 230 (60), 225 (47)
240 (72), 232 (61)
ES Ballast & STD Lamps
120 (32), 117 (23), 130 (46), 125 (33)
140 (38), 132 (30), 220 (58), 217 (45)
230 (74), 225 (65), 240 (86), 232 (71)
Luminaire Efficacy Rating
LER = FL-65
Catalog Number: BC-232A
Yearly Cost of 1000 lumens, 3000 hrs at .08 KWH = $3.69

LAMPS CONTAIN MERCURY. DISPOSE ACCORDING TO LOCAL, STATE OR FEDERAL LAWS

LINEAR DISCONNECT
Safe and convenient means of disconnecting power

ISO 9001 CERTIFIED

COOPER Lighting
www.cooperlighting.com

Specifications and Dimensions subject to change without notice.
Consult your representative for additional options and finishes.

TYPE W03A
BC

PHOTOMETRICS

Energy Saving Ballast, F32T8/35K lamps rated at 2850 lumens. Spacing criterion: (II) 1.3 x mounting heights, (⊥) 1.5 x mounting height.

Light Loss Factor .74. For complete photometric report BC232A.IES

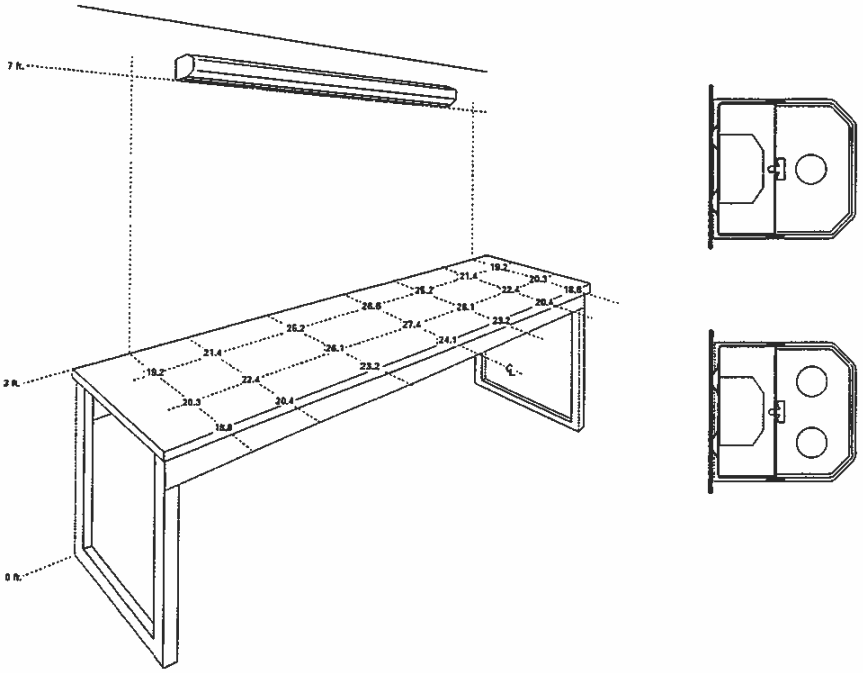
BC-232A
(II)Lamps (2) F32T8/35K
Lumens 2850 Each

Conditions

Ceiling Height	8'-0"
Mounting Height	7'-43/64"
Work Plane	12'-0"

Reflectance

Ceiling	80%
Walls	50%
Floor	20%



Scale is Exaggerated on Fixture Application and Mounting

ORDERING INFORMATION

Sample Number: BC-232-120V-EB81-U

BC	2	32		120		ER	8	1		LTC2-U

Series
BC= All Purpose Wall Bracket

Number of Lamps
1 Lamp (Not Included)
2 Lamps (Not Included)

Wattage
20= 20W T12 (24")
17= 17W T8 (24")
25= 25W T8 (36")
30= 30W T12 (36")
32= 32W T8 (48")
40= 40W T12 (48")

Ballast Start Type
LTS= Low Trigger Start (20W only) (120V only)
HTS= High Trigger Start (20W only)

Voltage [1]
120V= 120 Volt
277V= 277 Volt
347V= 347 Volt
UNV= Universal Voltage[2] 120-277

Options
GL= Single Element Fuse
GM= Double Element Fuse
Emergency= EM Installed[3]

Ballast Type [1]
_= Standard Magnetic T12 Ballast
LE3= T12 Magnetic Energy Saving
EB= Electronic Instant Start
ER= T8 Electronic Program Rapid Start. Total Harmonic Distortion < 10%

Lamp Size
2= T12
8= T8

Number of Ballasts
1= 1 Ballast
2= 2 Ballast

Options
/PLUS= Higher Ballast Factor > 1.13. Total Harmonic Distortion < 20%
RLS= Rotor Lock Socket (T8 Lamp only)
CO= Convenience Outlet (120V only)
RS1= Rotary Switch (1 Circuit, 120V only)
PS1= Pull Switch (1 Circuit)

Packaging
U= Unit Pack

Notes: 1 Products also available in non-US voltage and frequencies for international markets
2 Not Available when specifying emergencies, voltage must be specific
3 Non available for 2' version.

SHIPPING INFORMATION

Catalog No.	Wt.
BC-117	8 lbs.
BC-125	10 lbs.
BC-132	11 lbs.
BC-217	8 lbs.
BC-225	10 lbs.
BC-232	11 lbs.

TYPE W11

COOPER LIGHTING - LUMARK®

DESCRIPTION

The Lumark WAL-Eye blends durable polycarbonate construction and efficient illumination with an exciting design to deliver lasting performance in virtually any architectural setting. U.L. listed for wet locations. CSA certified.

With its easy-mounting back plate, the WAL-Eye is perfect for schools, loading docks, offices and underpasses.

SPECIFICATION FEATURES

A ... Front Cover
One-piece polycarbonate front cover with choice of prismatic or clear lens area.

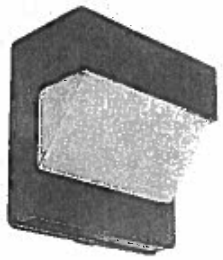
B ... Finish
Specially formulated finish on inside of unit for maximum weather resistance.

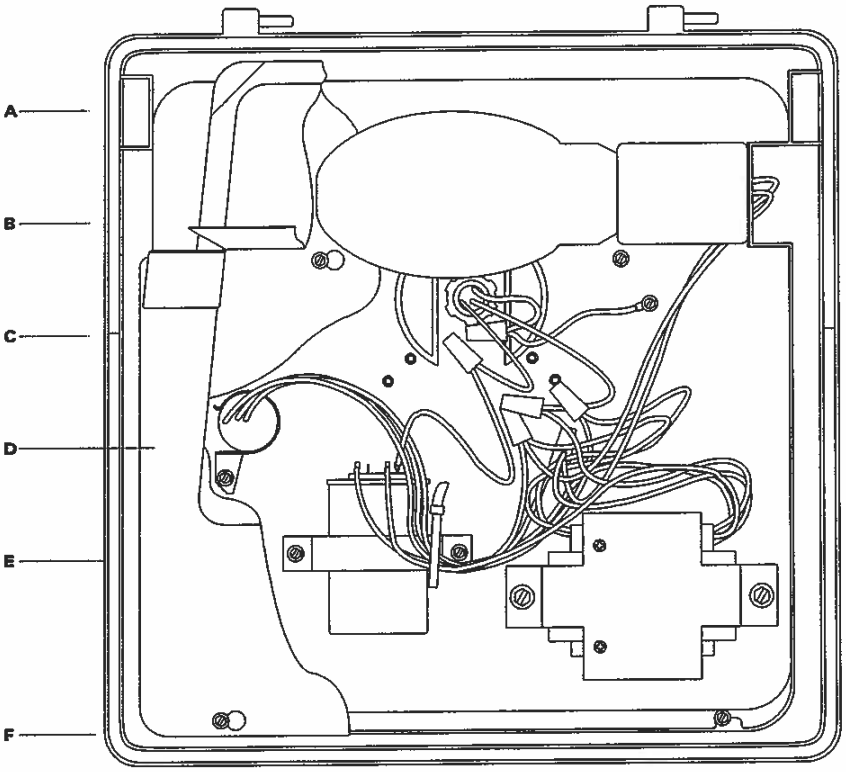
C ... Base Housing
Die-cast aluminum base housing is U.L. listed for wet locations and CSA certified.

D ... Reflector
Formed, specular anodized aluminum reflector.

E ... Gasket
Cast-in gasket-retaining channel positively locates door gasket.

F ... Latch
Molded-in latch for tooliess entry.



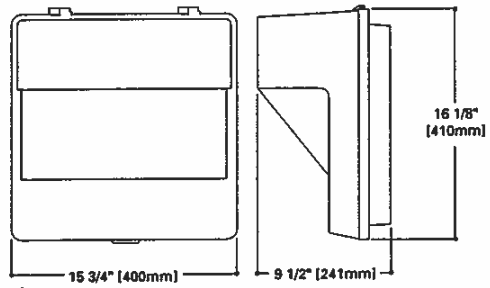


WP
WAL-EYE

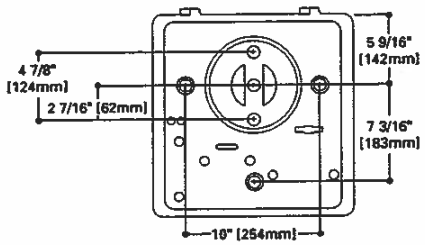
70 - 175W
High Pressure Sodium
Metal Halide

WALL MOUNT LUMINAIRE

DIMENSIONS



MOUNTING DETAIL



ENERGY DATA

Reactor Ballast Input Watts
70W HPS NPF/HPF (82 Watts)
100W HPS NPF/HPF (118 Watts)
150W HPS NPF/HPF (175 Watts)

High Reactance Ballast Input Watts
70W MH HPF (94 Watts)
100W MH HPF (129 Watts)
150W HPS HPF (190 Watts)

CWA Ballast Input Watts
175W MH HPF (210 Watts)

SHIPPING DATA

Approximate Net Weight:
20 lbs. (9 kgs.)

COOPER Lighting
www.cooperlighting.com

Specifications and Dimensions subject to change without notice.
Consult your representative for additional options and finishes.

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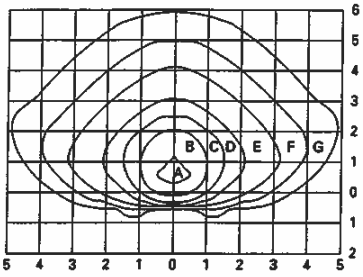
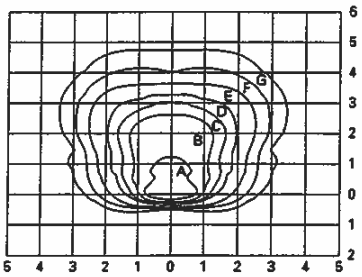
TYPE W11
WP WAL-EYE

PHOTOMETRICS



HPWP-150-120
150-Watt HPS
16,000-Lumen Clear Lamp



HPWC-150-120
150-Watt HPS
16,000-Lumen Clear Lamp

Footcandle Table

Select mounting height and read across for footcandle values of each isofootcandle line. Distance in units of mounting height.

Mounting Height	Footcandle Values for Isofootcandle Lines						
	A	B	C	D	E	F	G
8'	17.60	7.04	3.52	1.76	0.70	0.35	0.18
10'	11.25	4.50	2.25	1.13	0.45	0.23	0.11
12'	7.80	3.12	1.56	0.78	0.31	0.16	0.08
15'	5.00	2.00	1.00	0.50	0.20	0.10	0.05
18'	3.45	1.38	0.69	0.35	0.14	0.07	0.03
20'	2.80	1.12	0.56	0.28	0.11	0.06	0.03

ORDERING INFORMATION

Sample Number: MHWP-175-MT-Q

MH	WP	100	H	120	Q-LL-F1	

Lamp Type
HP= High Pressure Sodium
MH= Metal Halide

Series [1]
WP= WAL-Eye w/ Prismatic Polycarbonate
WC= WAL-Eye w/ Clear Polycarbonate

Lamp Wattage [2]
70= 70W
100= 100W
150= 150W[3]
175= 175W[4]

Ballast
H= High Power Factor
= Normal Power Factor

Voltage [5]
120V= 120V
208V= 208V
240V= 240V
277V= 277V
347V= 347V
480V= 480V
MT= Multi-Tap, [6] wired 277V
TT= Triple-Tap, [7] wired 347V

Options [8]
Q= Quartz Restrike DC Bayonet Base (Does not strike at cold start)
LL= Lamp Included[9]
TR= Tamper Resistant Screws
R= Omit Hinge Pins and Include Vandal-Proof Screws
F1= Single Fuse (120, 277 or 347V only)
F2= Double Fuse (208, 240 or 480V only)
PE= Internal Photocontrol (Specify Voltage)

Accessories [10]
QUARTZ LAMP INCLUDED

Notes:
1 Standard lens is prismatic polycarbonate. To specify clear polycarbonate change "WP" in catalog number to "WC".
2 All lamps are mogul-base except 150W Metal Halide and below are medium-base. Lamp not included.
3 Uses S-55 (55 Volt) lamp only.
4 Uses coated lamp.
5 Products also available in non-US voltages and 50HZ for International markets.
6 Multi-Tap ballast 120/208/240/277V wired 277V.
7 Triple-Tap ballast 120/277/347V wired 347V.
8 Add as suffix in the order shown.
9 Lamp is shipped separate from luminaire. Lamp is Cooper designated product based on luminaire requirements. Specified lamps must be ordered as a separate line item.
10 Order separately.

26667 - F32T8/SP35/ECO

GE Ecolux® Starcoat® T8

• Passes TCLP, which can lower disposal costs.

Photo Not Available

Rendering

High Color

Photo Not Available

Minimum Efficiency Standards

Meets Federal

GENERAL CHARACTERISTICS

Lamp Type	Linear Fluorescent - Straight Linear
Bulb	T8
Base	Medium Bi-Pin (G13)
Rated Life	30000.0 hrs
Rated Life (instant start) @ Time	21000 h @ 3 h 30000 h @ 12 h
Rated Life (rapid start) @ Time	30000.0 @ 3.0/36000.0 @ 12.0 h
Bulb Material	Soda lime
Starting Temperature (MIN)	10.0 K
LEED-EB MR Credit	36 picograms Hg per mean lumen hour
Additional Info	TCLP compliant

PHOTOMETRIC CHARACTERISTICS

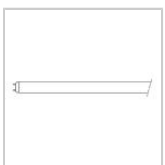
Initial Lumens	2800.0
Mean Lumens	2660.0
Nominal Initial Lumens per Watt	87
Color Temperature	3500.0 K
Color Rendering Index (CRI)	78.0
S/P Ratio (Scotopic/Photopic Ratio)	1.4

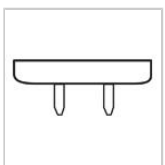
ELECTRICAL CHARACTERISTICS

Wattage	32.0
Voltage	137.0
Open Circuit Voltage (rapid start) Min @ Temperature	315 V @ 10 nV
Cathode Resistance Ratio - Rh/Rc (MIN)	4.25
Cathode Resistance Ratio - Rh/Rc (MAX)	6.5
Current Crest Factor (MAX)	1.7

PRODUCT INFORMATION

Product Code	26667
Description	F32T8/SP35/ECO
ANSI Code	1005-2
Standard Package	Case
Standard Package GTIN	10043168266670
Standard Package Quantity	36
Sales Unit	Unit
No Of Items Per Sales Unit	1
No Of Items Per Standard Package	36
UPC	043168266673





CAUTIONS & WARNINGS

Caution

• Lamp may shatter and cause injury if broken

This foregoing document was electronically filed with the Public Utilities

Commission of Ohio Docketing Information System on

2/27/2012 2:53:43 PM

in

Case No(s). 12-0691-EL-EEC

Summary: Application for Newark Board of Education and Ohio Power Company for approval of a special arrangement agreement with a mercantile customer electronically filed by Mr. Yazen Alami on behalf of Ohio Power Company