



Legal Department

October 9, 2018

Chairman Asim Z. Haque
Public Utilities Commission of Ohio
180 East Broad Street
Columbus, OH 43215-3793

Re: **In the Matter of the Application of**)
The Ohio State University)
and Ohio Power Company) **Case No. 18-0812-EL-EEC**
for Approval of a Special Arrangement)
Agreement with a Mercantile Customer)

Tanner Wolfram
Legal Fellow
Regulatory Services
(614) 716-2914 (T)
(614) 716-2950 (F)
tswolfram@aep.com

Dear Chairman Haque,

Attached please find the Joint Application of Ohio Power Company (AEP Ohio) and the above-referenced mercantile customer 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 2018 (hereinafter "Joint Application").

Amended Substitute Senate Bill 221, codified at R.C. 4928.66, sets forth EE/PDR benchmarks that electric distribution utilities are 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 statute also enables the Commission to approve special arrangements for mercantile customers that commit EE/PDR 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. The attached Joint Application and affidavit conforms with AEP Ohio's version of the streamlined sample application. As requested by Commission Staff, any confidential information referenced in the Joint Application has been provided confidentially to Commission Staff for filing in Commission Docket 10-1599-EL-EEC and subject to the confidentially protections of R.C. 4901.16 and OAC 4901-1-24(E). AEP Ohio respectfully requests that the Commission treat the two cases as associated dockets and that any confidential information provided to Staff for filing in connection with the Joint Application be subject to the protective order requested in Docket 10-1599-EL-EEC.

Cordially,

/s/ Tanner Wolfram
Tanner Wolfram

Attachments



Case No.: 18-0812-EL-EEC

Mercantile Customer: THE OHIO STATE UNIVERSITY

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: THE OHIO STATE UNIVERSITY

Principal address: 2003 Millikin Rd, Columbus, Oh 43210

Address of facility for which this energy efficiency program applies: 1735 Cannon Dr, Columbus, Oh 43210

Name and telephone number for responses to questions:

John Rappleye, The Ohio State University, (614) 292-6240

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): 8/1/2016
- ☐ 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: 109,316 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))

24.6 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 \$ 8,460.45. (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: 4.12 (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 \$ 37,575.45

The utility's program costs were \$ 655.90

The utility's incentive costs/rebate costs were \$ 8,460.45.

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 confidentiality 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.



Public Utilities Commission

Project # 18-22680
Docket # 18-0812

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

Case No.: 18-0812-EL-EEC

State of Ohio :

Nigma Mustafa, Affiant, being duly sworn according to law, deposes and says that:

1. I am the duly authorized representative of:

DNV GL Energy Services USA 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.

Nigma Mustafa Engineer
Signature of Affiant & Title

Sworn and subscribed before me this 9th day of August, 2018 Month/Year

Linda M. Schmitt
Signature of official administering oath

LINDA M. SCHMIDT
Print Name and Title
Admin. Assistant

My commission expires on 7/31/2022



LINDA M. SCHMIDT
Notary Public, State of Ohio
My Commission Expires 7-31-2022



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 | THE OHIO STATE UNIVERSITY | |
| Project Number | AEP-18-22680 | |
| Customer Premise Address | 1735 CANNON DR, COLUMBUS, OH 43210 | |
| Customer Mailing Address | 2003 Millikin Rd, Columbus, OH 43210 | |
| Date Received | 2/15/2018 | |
| Project Installation Date | 8/1/2016 | |
| Annual kWh Reduction | 109,316 | |
| Total Project Cost | \$31,961.70 | |
| Unadjusted Energy Efficiency Credit (EEC) Calculation | \$11,280.60 | |
| Simple Payback (yrs) | 5.9 | |
| Utility Cost Test (UCT) for EEC | 4.12 | |
| Utility Cost Test (UCT) for Exemption | N/A | |
| <i>Please Choose One Option Below and Initial</i> | | |
| Self Direct EEC: 75% | \$8,460.45 | <input checked="" type="checkbox"/> Initial: <u>JUE</u> |
| EE/PDR Rider Exemption | 12 Months (with possible extension up to N/A months after PUCO Approval) | <input type="checkbox"/> Initial: <u>N/A</u> |

Note: This is a one time selection. By selecting EEC, the customer will receive payment in the amount stated above. Selection of 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 EE/PDR rider exemption is subject to ongoing review for compliance and could be changed by the PUCO.

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

___ YES ☒ NO

Note: Exemptions for periods beyond 24 months are subject to look-back or true-up adjustments every year to ensure that the exemption accurately reflects the EEDR savings. Applicants must file for renewal for any exemption beyond 12 months.

Project Overview:

The Self Direct (Prescriptive and Custom) project that the above has completed and applied is as follows. Installed lighting in a 91,104 square foot new dormitory. The new lighting draws 53,502 Watts of power, which is 41% lower than the ASHRAE 90.1-2007 maximum allowed lighting connected load.

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: [Signature]

Title: Manager

Date: 05/31/2018

THE OHIO STATE UNIVERSITY

By: [Signature]

Title: ENERGY PROGRAMS MANAGER

Date: MAY 31, 2018



Application Guidelines

Final Applications must be submitted before November 16, 2018 in order to qualify for incentives identified in this application.

Step 1. Verify Eligibility

- Customer must have a valid AEP Ohio account.
- Equipment/measure must be installed at facilities served by the AEP Ohio account.
- Project must produce permanent reduction in electrical energy use (kWh).
- All installed equipment must meet or exceed the specifications in the application.
- Please see [Efficient Products for Business, Process Efficiency and New Construction Terms and Conditions](#) or [Self-Direct Terms and Conditions](#) for program rules and regulations.

Step 2. Complete Applicant Information

- All fields in customer and project information sections must be completed.
- Contractor information must be completed if project is not self-performed.

Step 3. Complete the Incentive Worksheet(s)

- Find and read specifications related to the project.
- Choose the incentive category on the worksheet based on installed equipment and specifications.
- Complete all fields (fixture description, operating hours, etc.) on the related worksheet.

Step 4. Sign Customer Agreement

- Read the Terms and Conditions before signing and submitting the application.
- Sign Pre-Approval Agreement and submit the application to reserve funds.
- Sign Final Application Agreement and submit the application after the project is completed to receive funds.
- Complete Third Party Payment Release Authorization ONLY if incentive payment is to be paid to an entity other than AEP Ohio customer listed on the Applicant Information page.

Step 5. Submit Pre-Approval Application¹

(For Self-Direct applications, skip to Step 6)

- Submitting a Pre-Approval Application to determine qualification and reserve program funds for a project is strongly recommended.
- All process efficiency projects require pre-approval.
- Complete all fields in Pre-Approval Agreement.
- Pre-Approval Application must be submitted with:
 - Proposed scope of work (type and quantity of old and new equipment must be listed)
 - Specification sheets for all proposed equipment
 - W-9 form
- Submit application via email, fax or mail.
- An inspection may be required during application review; applicants requiring inspection will be contacted for scheduling.

Step 6. Submit Final Application

- Complete all fields for Final Application Agreement.
- Update the application if measures/equipment differs from pre-application.
- Final Application must be submitted with:
 - Dated and itemized material invoice
 - External labor invoice (if applicable)
 - If Pre-Approval Application was not submitted, include the documents listed on Step 5
- Submit application via email, fax or mail.
- An inspection may be required during application review; applicants requiring inspection will be contacted for scheduling.
- Self-Direct applications require additional steps. Please see the [Self-Direct Terms and Conditions](#) for details.

AEP Ohio Business Incentives Program

445 Hutchinson Avenue, Suite 300

Columbus, Ohio 43235

877-541-3048 | aepohiosolutions@clearesult.com

Visit our website at AEPohio.com/solutions

¹A Pre-Approval Application is not a guarantee of an incentive; the actual incentive will be based on the energy savings and equipment installed as determined in the Final Application. Funds are reserved for 90 days, unless an applicant is granted an extension. The program team reserves the right to contact the customer before the reservation expiration date to ensure that the project is moving forward. If the project is not underway, the reservation may be cancelled. Reserved funds are not transferable to other projects, facilities and/or customers. A waiting list will be established when funds become fully subscribed.



Application Checklist

Pre-Approval

- ☐ Completed Applicant Information
- ☐ Estimated Total Project Cost
- ☐ Estimated Completion Date
- ☐ Completed Incentives Requested Section of Application
- ☐ Applicable Incentive Worksheets Completed
- ☐ Completed and Signed Customer Agreement
- ☐ Equipment Specifications
- ☐ Proposed Scope of Work
- ☐ W-9 Form (Business Name Must Match Line 1 or 2 on the Form)

Final Application Only (Without Pre-Approval)

- ☐ Completed Applicant Information
- ☐ Completed Incentives Requested Section of Application
- ☐ Applicable Incentive Worksheets Completed
- ☐ Total Project Cost
- ☐ Completion date
- ☐ Completed and Signed Customer Agreement
- ☐ Completed Third-Party Payment Release Authorization (optional)
- ☐ Itemized Invoices
- ☐ Equipment Specifications
- ☐ Scope of Work
- ☐ W-9 Form (Business Name Must Match Line 1 or 2 on the Form)

Final Application (With Pre-Approval)

- ☐ Completed Applicant Information
- ☐ Assigned Project Number on Signature Page
- ☐ Total Project Cost
- ☐ Project Completion Date
- ☐ Completed and Signed Final Payment Agreement
- ☐ Completed Third-Party Payment Release Authorization (optional)
- ☐ Installed Equipment Specifications (if there were changes from pre)
- ☐ Itemized Invoices
- ☐ Updated Scope of Work (if there were changes from pre)
- ☐ Applicable Incentive Worksheets (if there were changes from pre)



Applicant Information

AEP Application Number AEP - _ _ - _ _ _ _ _

Application Type _____

CUSTOMER INFORMATION

Business Name _____

Name as It Appears on Utility Bill _____

How many AEP Ohio Accounts are at the Project Site? _____

AEP Ohio Account Numbers for this Project¹ _____

Taxpayer ID _____ - _____ W-9 Tax Status _____

MAILING ADDRESS - WHERE CHECK WILL BE SENT

Contact Name _____ Contact Title _____

Mailing Address _____ City _____ State _____ Zip _____

Phone _____ Ext. _____ Contact Email _____

How Did You Hear About the Program? _____ AEP OH Energy Advisor _____

PROJECT INFORMATION

Project Name (if applicable) _____

☐ Check if mailing address and project site address are the same.

Project Site Address _____ City _____ State _____ Zip _____

Building Type _____ Shift _____

Annual Operating Hours _____ Building Area (sq. ft.) _____

Construction Type _____ Does the facility have a data center? _____

¹Please only enter the first eleven digits of the account number.



Applicant Information

CONTRACTOR INFORMATION

Company Name _____

Contact Name _____ Title of Contact _____

Mailing Address _____ City _____ State _____ Zip _____

Phone _____ Ext. _____ Contact Email _____

PRIMARY CUSTOMER CONTACT INFORMATION

Contact Name _____ Title of Contact _____

Phone _____ Ext. _____ Contact Email _____

Who should we contact with questions about the application? ☐ Customer ☐ Contractor

Incentive Summary Table

| INCENTIVE CATEGORY | TOTAL INCENTIVES |
|--------------------------------|------------------|
| LIGHTING | |
| HVAC | |
| MOTORS & DRIVES | |
| COMPRESSED AIR | |
| REFRIGERATION/FOOD SERVICE | |
| AGRICULTURE | |
| MISCELLANEOUS | |
| PROCESS EFFICIENCY | |
| NC LIGHTING (SELF-DIRECT ONLY) | |
| TOTAL INCENTIVES | |

AEP Application Number AEP - _ _ - _ _ _ _ _



Customer Agreement

APPLICATION AGREEMENT

By signing this document, I agree to program requirements outlined in the measure specifications, Terms and Conditions for the applicable program and Final Application Agreement. As an eligible customer, I verify the information is correct and request consideration for participation under this program. Furthermore, I concur that I meet all eligibility criteria in order to receive payment under this program.

[Link to Efficient Products for Business/Process Efficiency Terms and Conditions, and Final Application Agreement](#)

[Link to Self-Direct Terms and Conditions, and Final Application Agreement](#)

☐ Pre-Application ☐ Final-Application

Project Completion Year _____

Self-Direct _____

Project Completion Date _____

Total Project Cost _____

Total Requested Incentive¹ _____

Total Self-Direct Requested Incentive² _____

Print Name

Date

AEP Ohio Customer Signature

PRINT APPLICATION

¹Incentives have a threshold of 50% of the project cost and total incentives paid to a threshold of \$25,000 and Bid4Efficiency above that.

²Self-Direct incentives are 75% of Total Requested Incentive, after 50% of the project cost threshold and tiering is applied.



Third Party Payment Release

THIRD PARTY PAYMENT RELEASE AUTHORIZATION (NOT APPLICABLE TO SELF-DIRECT)

Complete this section **ONLY** if incentive payment is to be paid to an entity other than the AEP Ohio customer.

Make checks payable to: Company/Individual _____

Mailing Address _____ City _____ State _____ Zip _____

Phone _____ Ext. _____

Taxpayer ID of 3rd Party ____ - _____ W-9 Tax Status _____

By signing this document, I authorize the payment of the incentive to the third party named above and understand that I will not receive the incentive payment from AEP Ohio. I also understand that my release of the payment to a third party does not exempt me from the program requirements outlined in the measure specifications, Terms and Conditions, and Final Application Agreement.

Print Name

Date

AEP Ohio Customer Signature

Contractor: Vaughn Industries

PANEL LUMINAIRE

LM22 - 2 X 2 LIGHT PANEL SERIES

FEATURES

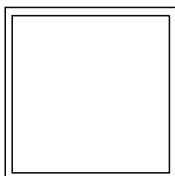
CONSTRUCTION

- Side lit design for an ultra thin profile
- IC rated, IP44-suitable for damp or dry locations
- Wide beam angle (120°) for better spacing
- CE and cULus rated
- RoHS compliant
- 5 year warranty (standard)

ELECTRICAL

- Dimmable (via driver or using PWM) ⁽¹⁾
- Constant voltage design allows for multiple lights per driver
- LM-80 and LM-79 available
- Panels should be placed within 50 feet of driver
- Rated at 60W max AC power (51W DC) ⁽²⁾

2X2



| | |
|--------------|-------------------|
| Project Name | OSU - NRDT |
| Date | |
| Type | A1 |

T/LT

| | |
|------------------|---------------------|
| TILT Part Number | L GM 22 35 W |
| TILT Driver | LD60 |

CM22 DCOS

| LUMEN PACKAGES (2X2) ⁽³⁾ | | | | | |
|-------------------------------------|---------------------------|------|------|------|------|
| CCT | 50,000 hours (L70) | | | | |
| | STANDARD 90+ CRI, R9 > 50 | | | | |
| | | | | | |
| 5000k | Lumens | 4700 | 4157 | 3736 | 2775 |
| | LPW | 74.1 | 79.2 | 82 | 87.5 |
| 4000k | Lumens | 4550 | 4298 | 3837 | 2847 |
| | LPW | 77.3 | 78.4 | 80.4 | 87.7 |
| 3500k | Lumens | 4225 | 3829 | 3426 | 2542 |
| | LPW | 72.5 | 75.2 | 77.4 | 84.8 |
| 3000k | Lumens | 3900 | 3360 | 3016 | 2237 |
| | LPW | 67.6 | 71.5 | 73.9 | 81.4 |

ORDERING INFORMATION

| L | GM | 22 | 50 | W |
|------------------|------------------------|---------------------|--|--|
| Fixture Type | Mounting Type | Size | CCT | Frame Color ⁽⁴⁾ |
| L - Light | GM - Grid Mount | 22 - 2' x 2' | 50 - 5,000K 40 - 4,000K 35 - 3,500K 30 - 3,000K | W - White B - Black S - Silver + - special order |

USE WITH

| Driver | |
|--------|----------|
| LD60 | LD60PE7 |
| LD60P | LD90PE7 |
| LD90 | LD100PE7 |
| LD100P | |

DRIVER SPECIFICATION

NOTE on DRIVERS: UL 8750, short circuit, over current, over voltage, and over temperature protection
UL recognized and CE rated, RoHS compliant
Class II, SELV, IP67

| Model ⁽⁵⁾ | Size in Inches (LxWxH) | AC Input | DC Output | Dimming ⁽⁹⁾ | Temp | Max Fixtures ⁽⁸⁾ |
|----------------------|------------------------|-----------|-----------|------------------------|------------|-----------------------------|
| LD60 | 6.50 x 1.63 x 1.26 | 90 - 305V | 60W | I-10V | -40C - 60C | 1 |
| LD60P | 12.50 x 2.38 x 1.50 | 90 - 305V | 60W | I-10V | -40C - 70C | 1 |
| LD90 | 6.34 x 2.40 x 1.26 | 90 - 305V | 90W | I-10V | -40C - 60C | 1 |
| LD100P | 14.50 x 2.63 x 1.58 | 90 - 305V | 100W | I-10V | -40C - 60C | 2 |

| Emergency ⁽⁷⁾ | Size in Inches (LxWxH) | AC Input | Output ⁽⁶⁾ | Lumens | Temp | Max Fixtures ⁽⁸⁾ |
|--------------------------|------------------------|-----------|-----------------------|-----------|----------|-----------------------------|
| LD60PE7 | 13.00 x 5.50 x 1.75 | 90 - 305V | 7W for 90 mins | 400 - 600 | 0C - 50C | 1 |
| LD90PE7 | 13.00 x 5.50 x 1.75 | 90 - 305V | 7W for 90 mins | 400 - 600 | 0C - 50C | 1 |
| LD100PE7 | 13.00 x 5.50 x 1.75 | 90 - 305V | 7W for 90 mins | 400 - 600 | 0C - 50C | 2 |

NOTES (NUMBERS)

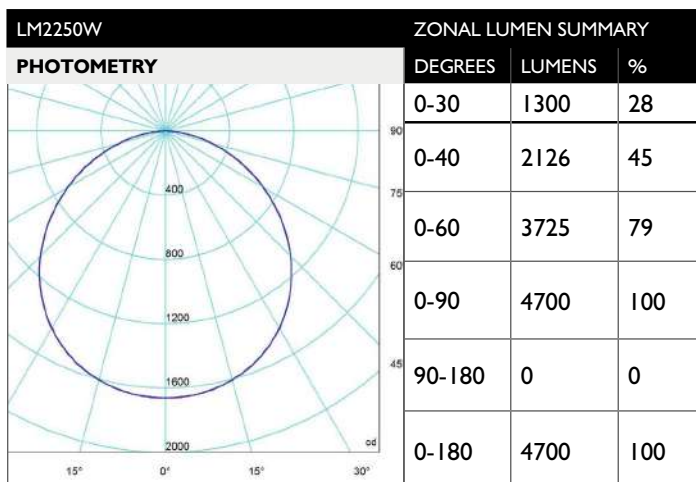
- (1) See driver or dimming product sheet for specific details
- (2) AC W used for circuit power, DC W used for driver circuit
- (3) Lumen packages provided using Dim Chip with driver
- (4) Colors other than white are custom
- (5) TILT drivers use a I-10V control but are compatible with most 0-10V control systems. For details specific to your system, contact us at 855.440.8458

- (5) "P" designation after watt rating denotes Plenum Rated
- (6) Based on watt load of fixtures and driver output
- (7) See Product Sheet for Emergency Drivers
- (8) Safe amount of fixtures per driver



TILT PANEL LUMINAIRES LM22

PHOTOMETRIC CHARTS WITH TESTING DATA. CALL FOR SPECIFIC INFORMATION NOT LISTED HERE: 855.440.8458



| LUMINANCE SUMMARY CD./SQ.M. | |
|-----------------------------|---------------|
| ANGLE | MEAN CD./SQ.M |
| 45 | 4997 |
| 55 | 4708 |
| 65 | 4309 |
| 75 | 3742 |
| 85 | 2819 |

| | COEFFICIENT OF UTILIZATION | | | | | | | | |
|-------|----------------------------|------|------|------|------|------|------|------|------|
| | 80% | | | 70% | | | 50% | | |
| | 70 | 50 | 30 | 70 | 50 | 30 | 70 | 50 | 30 |
| 0 | 1.19 | 1.19 | 1.19 | 1.16 | 1.16 | 1.16 | 1.11 | 1.11 | 1.11 |
| 1 | 1.09 | 1.05 | 1.01 | 1.07 | 1.03 | 0.99 | 0.98 | 0.95 | 0.92 |
| 2 | 1.00 | 0.92 | 0.86 | 0.98 | 0.90 | 0.85 | 0.87 | 0.82 | 0.78 |
| 3 | 0.91 | 0.81 | 0.74 | 0.89 | 0.80 | 0.73 | 0.77 | 0.71 | 0.66 |
| 4 | 0.84 | 0.73 | 0.65 | 0.82 | 0.72 | 0.64 | 0.69 | 0.62 | 0.57 |
| 5 | 0.78 | 0.65 | 0.56 | 0.75 | 0.64 | 0.56 | 0.62 | 0.55 | 0.49 |
| 6 | 0.71 | 0.58 | 0.50 | 0.69 | 0.57 | 0.49 | 0.56 | 0.48 | 0.43 |
| 7 | 0.66 | 0.52 | 0.44 | 0.64 | 0.51 | 0.43 | 0.50 | 0.42 | 0.37 |
| 8 | 0.61 | 0.47 | 0.39 | 0.59 | 0.47 | 0.39 | 0.45 | 0.38 | 0.33 |
| 9 | 0.56 | 0.43 | 0.35 | 0.55 | 0.42 | 0.35 | 0.41 | 0.34 | 0.29 |
| 10 | 0.52 | 0.39 | 0.31 | 0.51 | 0.39 | 0.31 | 0.38 | 0.31 | 0.26 |
| NOTES | | | | | | | | | |

- Lifespan: 50,000 hrs (L70)
- LM79 and LM80 available upon request. Call 855.440.8458
- IES files available online at: laurenillumination.com/resources



Lauren Illumination is a Lauren International Company
©Lauren Illumination and ©TILT are registered trademarks of Lauren Illumination
2162 Reiser Avenue SE | New Philadelphia, OH 44663 P: 855.440.8458 | F: 330.339.1515
laurenillumination.com | laureninternational.com

Contractor: Vaughn Industries

SURFACE MOUNT KIT

Job Name: OSU NRDT Building L

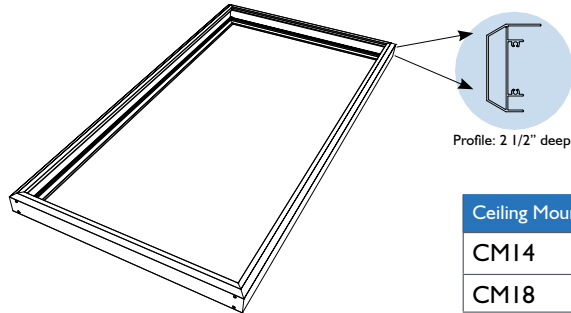
FEATURES

- Designed for use with TILT panels and drivers
- Multi-purpose hanging configurations for:
 - Mounting light to ceiling
 - As a down-lighted hanging fixture
 - As a two-way, up and down-lighted fixture
- Frame profile: 2-1/2" deep
- Screw location guide included in flange for mounting
- Heavy-duty frame construction
- Easily adapted for conduit feed

| | |
|--------------|-------------------|
| Project Name | OSU - NRDT |
| Date | |
| Type | A1 |



| | |
|------------------|-------------|
| TILT Part Number | CM22 |
|------------------|-------------|



| Ceiling Mount and Hanging Kit Models: | | |
|---------------------------------------|---------------------|------|
| CM14 | CM22 | CM24 |
| CM18 | Custom ¹ | HK02 |

Part Number
Example: CM14

| CM | I4 | | |
|---------------------------|---------------------|------------------------------------|--|
| Name | Model | Description | Use |
| CM - Surface Mount | CM14 | Accessories, 1' x 4' Surface Mount | Use to surface mount or for hanging* panel lights. |
| HK - Hanging Kit | CM18 | Accessories, 1' x 8' Surface Mount | |
| | CM22 | Accessories, 2' x 2' Surface Mount | Call for details |
| | CM24 | Accessories, 2' x 4' Surface Mount | |
| | Custom ¹ | Made to order sizes | |
| | HK02 | 2 pcs. Hanging Mount Kit* | |

| SURFACE MOUNT | MODEL | DESCRIPTION | WIDTH | LENGTH | USE |
|-----------------------------|---------------------|----------------------------------|--|---------------------|--|
| <p>Profile: 2 1/2" deep</p> | CM14 | Accessories, 1'X4' Surface Mount | 13.075" | 49.075" | Use to surface mount or hang panel lights. NOTE: Hanging mount requires use of HK02. |
| | CM22 | Accessories, 2'X2' Surface Mount | 25.075" | 25.075" | |
| | CM24 | Accessories, 2'X4' Surface Mount | 25.075" | 49.075" | |
| | CM18 | Accessories, 1'X8' Surface Mount | 13.075" | 96.825" | |
| | CUSTOM ¹ | Made to order | Custom ¹ | Custom ¹ | Call for details |
| | HK02 | 2 pcs Hanging Mount Kit | Specify 5-foot or 10-foot lengths for cables | | Use to hang* Surface mount kit from Surface or substrate |

NOTES

* When hanging light panels, Surface Mount Kit requires the use of HK02

¹ Custom sizes available - call when ordering 855.440.8458



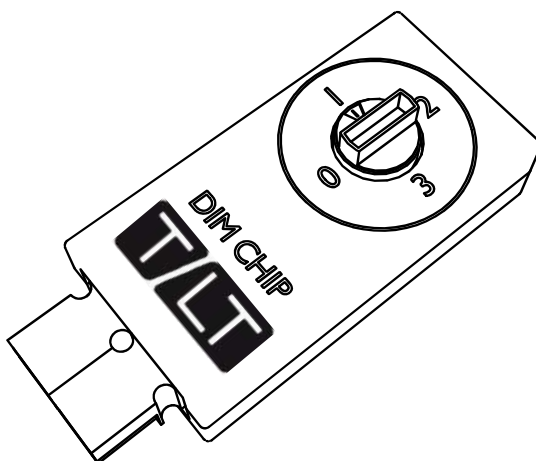
Contractor: Vaughn Industries

DIM CHIP

PRODUCT DATA SHEETS

FEATURES

- Dim Chips are designed to be used with TILT drivers
- Limits driver wattage through control circuit
- Four level options available per chip
- Custom settings available with driver wattage levels set to customer request
- Limits both light output and corresponding wattage with no efficiency loss
- 5 year warranty



| | |
|--------------|------------------|
| Project Name | OSU - NRD |
| Date | |
| Type | A1 |



| | |
|------------------|------------|
| TILT Part Number | DCO |
|------------------|------------|

Dim Chip Models:

| |
|----------|
| DC01 |
| DC02 |
| DC03 |
| CUSTOM + |

SPECIFICATIONS

| ALL DIM CHIP MODELS | PERCENT OF DRIVER WATTAGE | | | CUSTOM+ |
|---------------------|---------------------------|------|------|---|
| | DC01 | DC02 | DC03 | |
| Dim Chip Setting 0 | 100% | 100% | 100% | Contact Lauren at 855.440.8458 for a custom Dim Chip, to set wattage or lumen levels for your application |
| Dim Chip Setting 1 | 85% | 75% | 50% | |
| Dim Chip Setting 2 | 75% | 50% | 30% | |
| Dim Chip Setting 3 | 50% | 25% | 10% | |

FOR USE WITH

| DOWNLIGHTS | PANELS |
|------------------|---------------------------------------|
| LCLCV6 LCLCV8 | LGM14, LFM14 LGM22, LFM22 LGM24 |

DIMMER COMPATIBILITY CHART*

| DRIVER | DIMMING |
|---|---------|
| <p>NOTE: Driver selection may be specific to your installation configuration.</p> <p>For complete listing of driver and its particular dimming compatibility, see individual TILT driver sheet.</p> | |

NOTES

*TILT drivers use a 1-10V control but are compatible with most 0-10V control systems. For details specific to your system, contact us at 855.440.8458

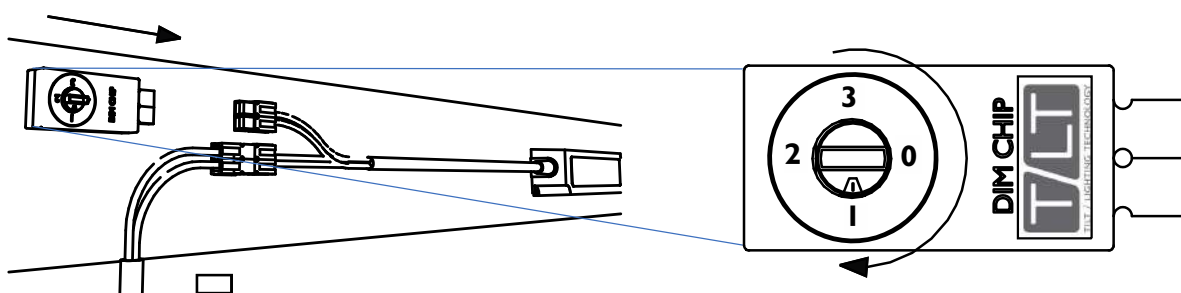
+For custom Dim Chip settings, call Customer Service at 855.550.8458



DIM CHIP DC01, DC02, DC03

WIRING DETAIL & SETTING CONTROL

SEE INSTALLATION MANUAL FOR APPROVED INSTALLATION METHODS AND OTHER DETAILS FOR ALL DRIVERS



SETTING DIAGRAM

| DC01 | | DC02 | | DC03 | | CUSTOM ⁺ | |
|---------|---------------------|---------|---------------------|---------|---------------------|--|---------------------|
| Setting | % of driver Wattage | Setting | % of driver Wattage | Setting | % of Driver Wattage | Setting | % of Driver Wattage |
| 0 | 100 | 0 | 100 | 0 | 100 | Contact Lauren at 855.440.8458 for a custom Dim Chip, to set wattage or lumen levels for your application. | |
| 1 | 85 | 1 | 75 | 1 | 50 | | |
| 2 | 75 | 2 | 50 | 2 | 30 | | |
| 3 | 50 | 3 | 25 | 3 | 10 | | |

NOTES

- For details specific to your system, call us at 855.550.8458
- + For custom Dim Chip settings, call Customer Service at 855.550.8458
- * TILT drivers use a 1-10V control but are compatible with most 0-10V control systems. For details specific to your system, contact us at 855.440.8458



Lauren Illumination is a Lauren International Company.
©Lauren Illumination and ©TILT are registered trademarks of Lauren Illumination
2162 Reiser Avenue SE | New Philadelphia, OH 44663 P: 855.440.8458 | F: 330.339.1515
laurenillumination.com | laureninternational.com

Contractor: Vaughn Industries

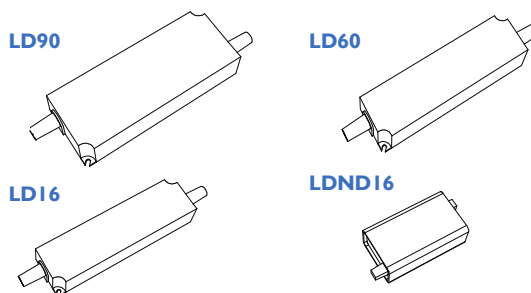
Job Name: OSU NRDT Building L

CONSTANT VOLTAGE DRIVERS

PRODUCT DATA SHEETS

FEATURES

- 24V constant voltage power supply
- Protections include:
 - Short circuit / over current / over voltage / over temperature
- Class II power unit, SELV rated
- Built in active PFC function
- Dimmable (see chart below)
- UL recognized
- RoHS compliant
- CE rated
- 5-year warranty



| | |
|--------------|-------------------|
| Project Name | OSU - NRDT |
| Date | |
| Type | A1 |

T/LT

| | |
|------------------|-------------|
| TILT Part Number | LD60 |
|------------------|-------------|

Constant Voltage Driver Models:

| |
|-------------------------|
| LD90 |
| LD60 |
| LD16 |
| LDND16 (Non Dim) |

SPECIFICATIONS

| ALL PLENUM MODELS | LD60 | LD90 | LD16 | LDND16 (Non Dim) |
|---------------------------------------|--|-----------------|----------------|------------------|
| Length x Width (in) | 6.500" x 1.750" | 6.500" x 2.375" | 6.00" x 1.625" | 3.00" x 1.50" |
| Height (in) | 1.250" | 1.500" | 1.250" | 1.125" |
| IP Rating | IP67 | IP67 | IP30 | IP30 |
| DC output supply (W) | 60 | 90 | 16 | 16 |
| AC input voltage range | 90 - 305VAC | 90-305VAC | 90-305VAC | 90 - 264VAC |
| AC inrush current (max) Cold start | 75A @ 230VAC | 70A @ 230VAC | 50A @ 230VAC | 70A @ 230VAC |
| Safety standards | UL 8750 | UL 8750 | UL 8750 | UL 8750 |
| Protections | Short circuit/over current/over voltage/over temperature | | | |
| Thermal Operation | -40°C - 50°C | -40°C - 50°C | -40°C - 50°C | -40°C - 50°C |
| Thermal Shutdown | 75°C | 70°C | 70°C | 70°C |

FOR USE WITH

| LUMINAIRE | CV DRIVER | MAX # UNITS | CV DRIVER | MAX # UNITS | CV DRIVER | MAX # UNITS |
|-----------|--------------|-------------|-----------|-------------|-----------|-------------|
| LCLCV6 | LD16, LDND16 | 1 | LD60 | 5 | LD90 | 8 |
| LCLCV8 | LD16, LDND16 | 1 | LD60 | 4 | LD90 | 6 |
| LGM22 | LD16, LDND16 | 0 | LD60 | 1 | LD90 | 1 |
| LGM24 | LD16, LDND16 | 0 | LD60 | 0 | LD90 | 1 |
| LGM14 | LD16, LDND16 | 0 | LD60 | 1 | LD90 | 1 |

DIMMER COMPATIBILITY CHART

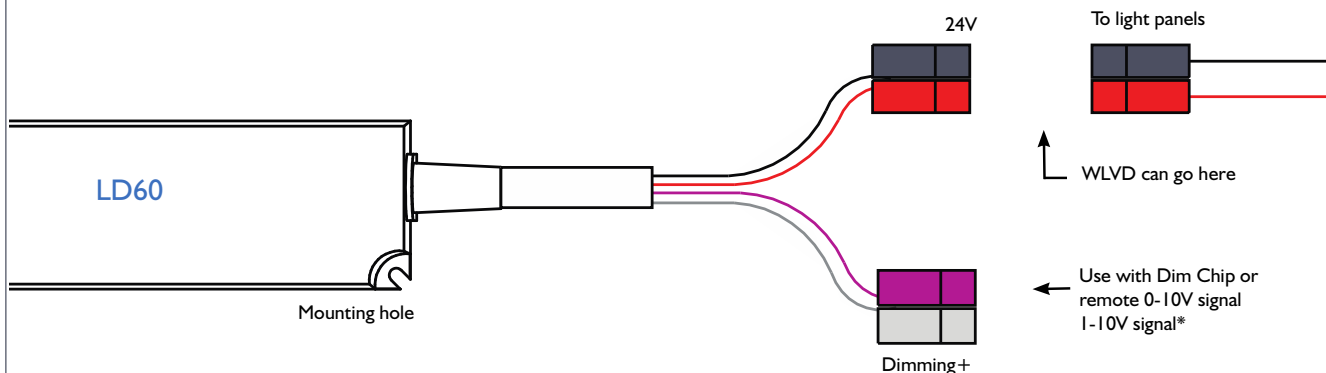
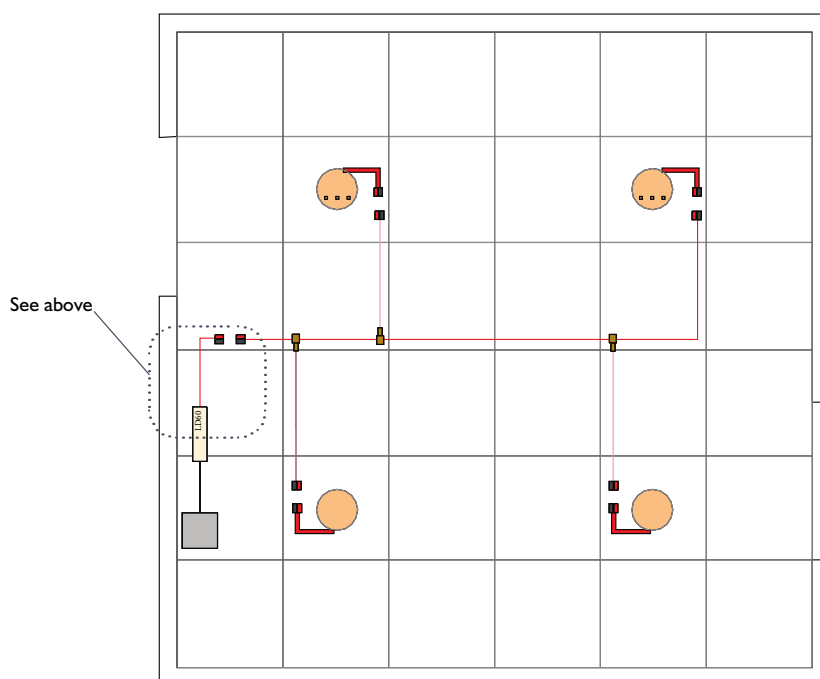
| BRAND | MODEL |
|-----------------|-----------------------------|
| TILT | WLVD |
| TILT | DIM CHIP (DC01, DC02, DC03) |
| LEVITON (0-10V) | IP-710* |
| LUTRON (0-10V) | DVSTV* |

***TILT drivers use a 1-10V control but are compatible with most 0-10V control systems.**
For details specific to your system, contact us at 855.440.8458



CONSTANT VOLTAGE DRIVERS LD90, LD60, LD16, LDND16**CONNECTING CONSTANT VOLTAGE DRIVERS - DC WIRING****CLOSE-UP DC WIRING DETAIL**

SEE INSTALLATION MANUAL FOR APPROVED INSTALLATION METHODS AND OTHER DETAILS FOR ALL DRIVERS

**SAMPLE ROOM LAYOUT WITH DRIVERS INSTALLED****NOTES**

- Lights should be placed within 50 feet of driver
- Wattage load (lights) should not exceed wattage of driver
- + TILT drivers use I-10V. They will accept 0-10V signals. Operation from 0-1V will depend on the system being used. For details specific to your system, call us at 855.440.8458



©TILT is a registered product brand
of Lauren Illumination



Lauren Illumination is a Lauren International Company
2162 Reiser Avenue SE | New Philadelphia, OH 44663
P: 855.440.8458 | F: 330.339.1515
laurenillumination.com | laureninternational.com



CONSTRUCTION 6063-T5 extruded aluminum housing. Highly reflective die-formed white painted aluminum reflector. Die-formed anodized snap-in aluminum semi-specular parabolic louver, removable for lamp replacement.

ELECTRICAL Standard T5 and T5HO: Program start 120/277 volt integral electronic ballast with less than 10% THD. Standard T8: Instant start 120/277 volt electronic ballast with less than 10% THD. Through wiring with quick connects standard. Standard single circuit. Each ballast provided with disconnects to meet luminaire disconnect code requirement.

MOUNTING Aircraft cable and wall mount available. Adjustable aircraft cable mounts on 4'-0" and 8'-0" centers (See back page for MR16 mounting detail). Aircraft Cable supplied with 5" power and 2" non-power canopies. Refer to installation instructions for appropriate ceiling detail. Canopies are painted white unless otherwise specified.

FINISH Standard powder-coat white painted finish. Consult factory for custom colors.

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

LUMINAIRE SPECIFICATION

Sample Catalog #: EX4-A-N-1T5-24-AC48G1-120-1C-W

EX4 _ - _ _ - N - _ T _ _ -

EX4-
Edge EX 4,
Straight Lamp

N- None,
Closed

1T5- (1) T5
2T5- (2) T5^{1,8}
1T5HO-(1) T5HO
2T5HO-(2) T5HO^{1,8}
1T8- (1) T8⁸
2T8- (2) T8^{1,8}

LO- Lens Overlay
M _- MR16 Lamp⁷
CN- Non-
Illuminated
Connector

P- Parabolic Louver
L- White Louver
WP- Asymmetric with
Acrylic Lens⁹
WL- Asymmetric with
Acrylic Lens⁹

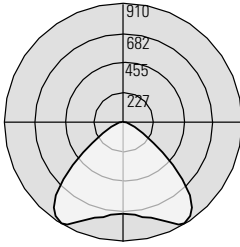
Individual Units

4- 4'
8- 8'

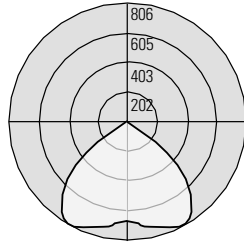
Continuous Runs

xx'- Specify nominal
overall row length
in 4' increments

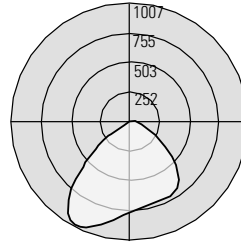
¹Not available with Asymmetric Lamp option (WP and WL). ²Consult factory for additional lengths. ³Consult factory for tegular edged tiles. ⁴Replaces standard 2" canopy. ⁵347 volt and UNV not available with MR16 and battery packs. ⁶Some Edge EX configurations will not accommodate all electrical options. Consult factory. ⁷See Back Page for Layout and Ordering Information. ⁸WP, WL, 2T5/2T5HO, and T8 lamps are not available with staggered lamp option (EX4S).



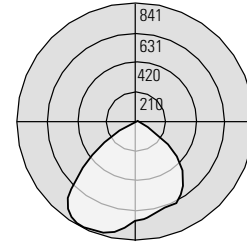
Test # 202436
Part # EX4-P-N-1T5
Total Luminaire Efficiency: 74.5%



Test # 202438
Part # EX4-P-N-1T8
Total Luminaire Efficiency: 61.6%

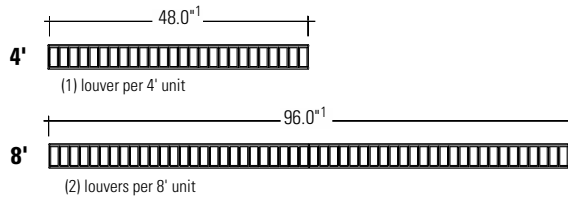


Test # 202442
Part # EX4-WP-N-1T5
Total Luminaire Efficiency: 72.9%



Test # 202444
Part # EX4-WP-N-1T8
Total Luminaire Efficiency: 59.5%

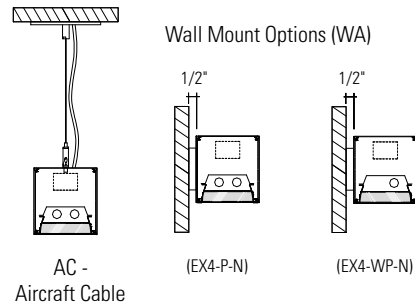
• INDIVIDUAL MODULES¹



See Straight or Staggered Lamp Guide for row configuration, wattage and number of lamps per run.

¹Add 1/16" for each end plate or 1/8" to the overall length of the row.

• MOUNTING OPTIONS

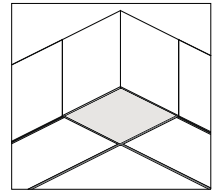


• NON-ILLUMINATED CONNECTOR

APPLICATION: Utilize non-illuminated connectors to create unique configurations.

INSTALLATION: Non-illuminated connector easily joins to linear fixtures using standard Pinnacle Lighting joiner kits.

ORDERING INFORMATION: Specify Non-Illuminated Connector (CN) in the options section of the part number. Sample Catalog #: EX4-P-N-1T5-24-AC48G1-120-1C-W**CN**.





CONSTRUCTION 6063-T5 extruded aluminum housing. Highly reflective die-formed white painted aluminum reflector. Die-formed anodized snap-in aluminum semi-specular parabolic louver, removable for lamp replacement.

ELECTRICAL Standard T5 and T5HO: Program start 120/277 volt integral electronic ballast with less than 10% THD. Standard T8: Instant start 120/277 volt electronic ballast with less than 10% THD. Through wiring with quick connects standard. Standard single circuit. Each ballast provided with disconnects to meet luminaire disconnect code requirement.

MOUNTING Aircraft cable and wall mount available. Adjustable aircraft cable mounts on 4'-0" and 8'-0" centers (See back page for MR16 mounting detail). Aircraft Cable supplied with 5" power and 2" non-power canopies. Refer to installation instructions for appropriate ceiling detail. Canopies are painted white unless otherwise specified.

FINISH Standard powder-coat white painted finish. Consult factory for custom colors.

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

LUMINAIRE SPECIFICATION

Sample Catalog #: EX4-A-N-1T5-24-AC48G1-120-1C-W

EX4 _ - _ - **N** - _ **T** _ -

EX4-
Edge EX 4,
Straight Lamp

N- None,
Closed

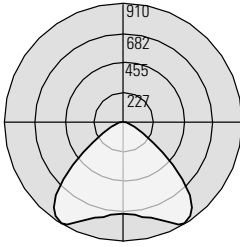
1T5- (1) T5
2T5- (2) T5^{1,8}
1T5HO-(1) T5HO
2T5HO-(2) T5HO^{1,8}
1T8- (1) T8⁸
2T8- (2) T8^{1,8}

LO- Lens Overlay
M _ - MR16 Lamp⁷
CN- Non-
Illuminated
Connector

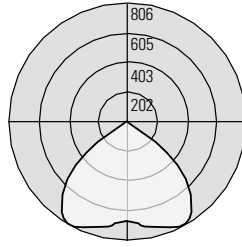
P- Parabolic Louver
L- White Louver
WP- Asymmetric with
Acrylic Lens⁹
WL- Asymmetric with
Acrylic Lens⁹

Individual Units
4- 4'
8- 8'
Continuous Runs
xx'- Specify nominal
overall row length
in 4' increments

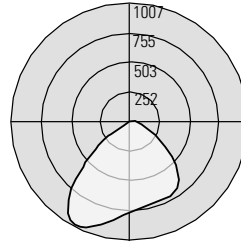
¹Not available with Asymmetric Lamp option (WP and WL). ²Consult factory for additional lengths. ³Consult factory for tegular edged tiles. ⁴Replaces standard 2" canopy. ⁵347 volt and UNV not available with MR16 and battery packs. ⁶Some Edge EX configurations will not accommodate all electrical options. Consult factory. ⁷See Back Page for Layout and Ordering Information. ⁸WP, WL, 2T5/2T5HO, and T8 lamps are not available with staggered lamp option (EX4S).



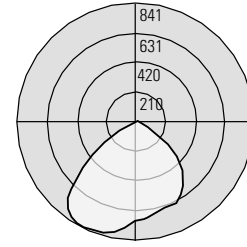
Test # 202436
Part # EX4-P-N-1T5
Total Luminaire Efficiency: 74.5%



Test # 202438
Part # EX4-P-N-1T8
Total Luminaire Efficiency: 61.6%

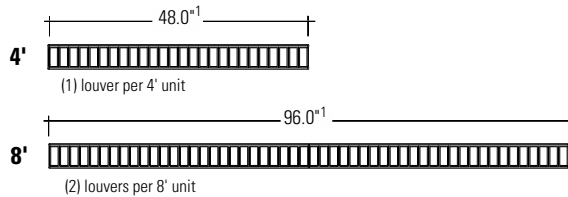


Test # 202442
Part # EX4-WP-N-1T5
Total Luminaire Efficiency: 72.9%



Test # 202444
Part # EX4-WP-N-1T8
Total Luminaire Efficiency: 59.5%

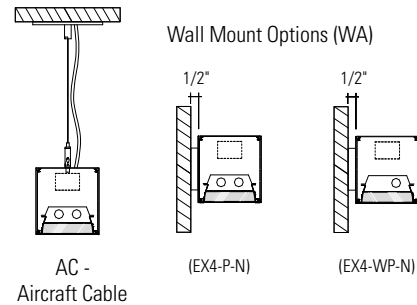
• INDIVIDUAL MODULES¹



See Straight or Staggered Lamp Guide for row configuration, wattage and number of lamps per run.

¹Add 1/16" for each end plate or 1/8" to the overall length of the row.

• MOUNTING OPTIONS



AC -
Aircraft Cable

(EX4-P-N)

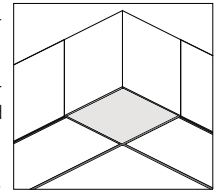
(EX4-WP-N)

• NON-ILLUMINATED CONNECTOR

APPLICATION: Utilize non-illuminated connectors to create unique configurations.

INSTALLATION: Non-illuminated connector easily joins to linear fixtures using standard Pinnacle Lighting joiner kits.

ORDERING INFORMATION: Specify Non-Illuminated Connector (CN) in the options section of the part number. Sample Catalog #: EX4-P-N-1T5-24-AC48G1-120-1C-W**CN**.



Contractor: Vaughn Industries

GTD

Generator Transfer Device

PHILIPS
bodine

A Division Of Philips Electronics North America Corporation

For Generator or Central Inverter Supplied Lighting

Product Summary

UL LISTED

Factory or Field Installation

Full Warranty

5 Years (NOT pro-rata)

Dual Input Voltage

120/277 VAC, 60 Hz

AC Input Current

280 mA

AC Input Power Rating

1.6 Watts

Fusing

All inputs fused to 3 A Maximum

Temperature Rating (Ambient)

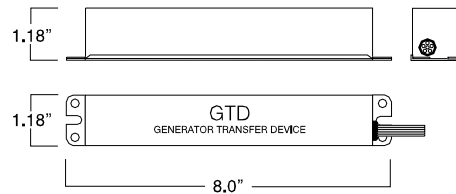
0°C to +50°C
(32°F to 122°F)

Dimensions

8" x 1.18" x 1.18"
(204 mm x 30 mm x 30 mm)
Mounting Center 7.60" (193 mm)

Weight

0.50 lbs. (0.23 kg)



APPLICATION

The GTD generator transfer device works in conjunction with an auxiliary generator or a central inverter system to power existing fluorescent or LED fixtures for egress lighting regardless of fixture wall switch position. The device consists of relay switching circuitry and fusing in one compact galvanized steel case. One generator transfer device per fixture is used to bypass the fixture wall switch, allowing the building's generator (or central inverter) to bring on switchable fixtures. The generator transfer device is suitable for indoor or damp locations and for sealed and gasketed fixtures. Recommended applications include: auditoriums, classrooms or any other location with generator (or central inverter) supplied lighting.

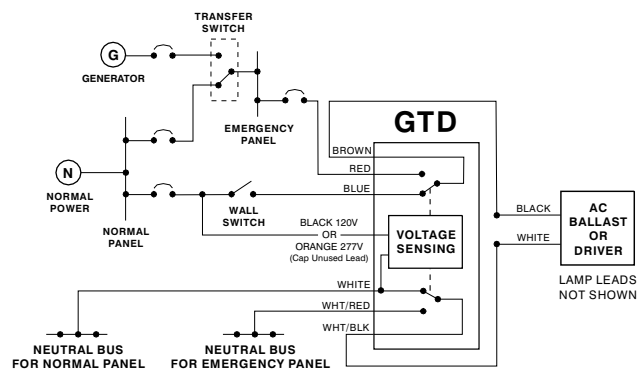
OPERATION

The GTD generator transfer device senses the loss of normal power and switches the AC ballast or driver input power connection to an unswitched, generator (or central inverter) supplied lighting circuit. No routine maintenance is required to keep the GTD functional; however, like other life safety unit equipment, it should be checked periodically to ensure that it is working properly.

INSTALLATION

The GTD generator transfer device does not affect normal fixture operation and comes fully assembled to mount inside, on top of or remote from the fixture ballast.

In addition to available wiring, the device requires a direct, unswitched connection to a generator (or central inverter) supplied emergency panel and an unswitched source on the same branch circuit as the switched supply (see diagram below).



Normal Operation - (Shown Above) AC Lighting Ballast supplied by normal panel & controlled by wall switch.
Generator Operation - AC Lighting Ballast or Driver Supplied by generator (or central inverter) through emergency panel and independent of wall switch position.

Specifiers Reference

Project **OSU - NRDT** Type _____ Model No. **GTD**
Comments **Types: A7-GTD, A14-GTD, A16-GTD**

L4100004

09/15/11 © Philips Emergency Lighting
P.O. Box 460 Collierville, TN USA 38027-0460
Sales 800-223-5728 FAX 901-853-5009
Tech. Support 888-263-4638
www.philips.com/bodine

GTD

Generator Transfer Device

Types A7-gtd, A14-gtd, A16-gtd

**For Generator or
Central Inverter Supplied Lighting**

UL LISTED

The GTD has been tested by Underwriters Laboratories in accordance with the standards set forth in UL 924, "Emergency Lighting and Power Equipment," and is UL Listed for factory or field installation.

SPECIFICATION

Generator (or central inverter) supplied egress lighting shall be provided by using a standard fluorescent or LED fixture equipped with a Philips Bodine GTD generator transfer device. The device shall be capable of bypassing the wall switch when the auxiliary generator (or central inverter) powers lighting. The device shall consist of relay switching circuitry and fusing contained in one 8" x 1.18" x 1.18" galvanized steel case; shall operate at 120 or 277 VAC, 60 Hz; shall have all inputs fused to 3 A maximum; shall draw 280 mA and 1.6 Watts during normal operation; and shall comply with the current NEC. The device shall be UL Listed for installation inside, on top of or remote from the fixture and shall be warranted for a full five years from date of purchase.

WARRANTY

The GTD generator transfer device is warranted for five (5) full years from date of purchase. This warranty covers only properly installed generator transfer devices used under normal conditions. For the warranty period, Philips Emergency Lighting will, at its option, repair or replace without charge a defective device, provided it is returned to the factory transportation prepaid and our inspection determines it to be defective under terms of the warranty. Repair or replacement, as stated above, shall constitute the purchaser's exclusive warranty, which does not extend to transportation, installation, labor or any other charges; nor does it apply to any equipment of another manufacturer used in conjunction with the device.

L4100004

09/15/11 © Philips Emergency Lighting
P.O. Box 460 Collierville, TN USA 38027-0460
Sales 800-223-5728 FAX 901-853-5009
Tech. Support 888-263-4638
www.philips.com/bodine

For the most current technical information and notices, please visit TechNotes on our website.

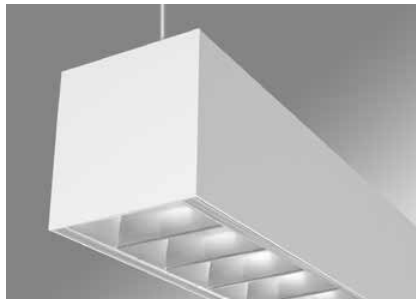
Contractor: Vaughn Industries

Job Name: OSU NRDT Building L

EDGE EX4B

LUMINOUS GEOMETRY™

T5, T5HO, T8 Direct and Indirect Linear with
Straight & Staggered Lamps / Parabolic Louver



OSU NRDT

Project Name

EX4B P O T8 2 1 ** AC 120 2C W DG

Catalog Number

Date

A8 = 4'

Type

A9 = 8'

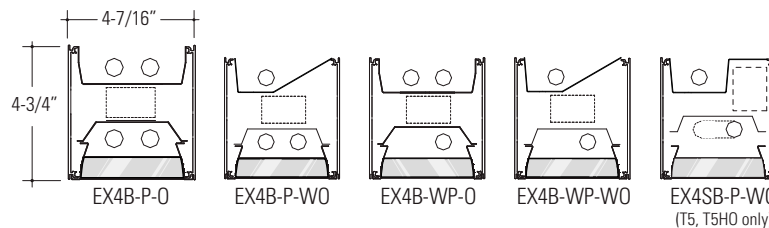
CONSTRUCTION 6063-T5 extruded aluminum housing. Highly reflective die-formed white painted aluminum reflector. Die-formed anodized snap-in aluminum semi-specular parabolic louver, removable for lamp replacement.

ELECTRICAL Standard T5 and T5HO: Program start 120/277 volt integral electronic ballast with less than 10% THD. Standard T8: Instant start 120/277 volt electronic ballast with less than 10% THD. Through wiring with quick connects standard. Standard single circuit. Each ballast provided with disconnects to meet luminaire disconnect code requirement.

MOUNTING Aircraft cable and wall mount available. Adjustable aircraft cable mounts on 4'-0" and 8'-0" centers (See back page for MR16 mounting detail). Aircraft Cable supplied with 5" power and 2" non-power canopies. Refer to installation instructions for appropriate ceiling detail. Canopies, and power cords are painted white unless otherwise specified.

FINISH Standard powder-coat textured white, metallic silver, textured black or bronze painted finish, consult factory for chip of standard paint finishes. Pendants and canopies painted white unless specified differently in the options section of the part number. Contact factory for additional custom color and finish options.

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



LUMINAIRE SPECIFICATION

Type A8 = 4'

Type A9 = 8'

Sample Catalog #: EX4B-P-O-T5-1-1-24-AC48G1-120-1C-W-DG

EX4_B - P - O - T8 - 2 - 1 ** AC48G9 120 - 2C - W - DG

| HOUSING | DIRECT | INDIRECT | LAMP TYPE | LAMPS DOWN | LAMP UP | LENGTH | MOUNTING | VOLTAGE | CIRCUITING | FINISH | OPTIONS |
|--|--|---|-----------|--|---|---|--|--|---|---|---------|
| <div>EX4B- Edge EX 4 Bi-Directional, Straight Lamp</div> <div>EX4SB- Edge EX 4 Bi-Directional, Staggered Lamp¹⁰</div> | <div>0- Open WO-Asymmetric Open¹⁰</div> | | | <div>1- 1 Lamp 2- 2 Lamp¹</div> | | <div>Individual Units 4- 4' Type A 8 8- 8' Type A 9 Continuous Runs xx'- Specify nominal overall row length in 4' increments</div> | | <div>120- 120 V 277- 277 V 347- 347 V⁶ UNV- UNV⁶ (120/277)</div> | <div>W- Matte White S- Metallic Silver¹¹ BL- Textured Black¹¹ BR- Bronze¹¹ CC- Custom Color¹¹</div> | <div>DG- Dust Guard LO- Lens Overlay SR- Specular Reflector MR16- MR16 Lamp⁹ CN- Non- Illuminated Connector CC-C- Custom Color Canopy¹¹</div> | |
| <div>P- Parabolic Louver L- White Louver WP- Asymmetric with Parabolic Louver¹⁰ WL- Asymmetric with White Louver¹⁰</div> | | <div>T5- T5 Lamp¹⁰ T5HO- T5HO Lamp¹⁰ T8- T8 Lamp¹⁰</div> | | <div>1- 1 Lamp 2- 2 Lamp²</div> | <div>Aircraft Cable³ AC48G1- 1" T-Bar⁴ AC48G9- 9/16" T-Bar⁴ AC48GS- Slotted T-Bar⁴ AC48JB- Junction Box Structure AC48ST- 5" Non-Power Canopy⁵ AC5_G- 5" Non-Power Canopy⁵ AC5_JB- 5" Non-Power Canopy⁵ SQ48G- 5" Square Canopy⁵ SQ48JB- 5" Square Canopy⁵</div> | | <div>1C- Single Circuit 2C- Dual Circuit^{7,8} 1D- Single Circuit Dimming⁷ 2D- Dual Circuit Dimming^{7,8} 1B- Single Circuit with Battery Pack⁷ 2B- Dual Circuit with Battery Pack^{7,8} 1E- Single Circuit with Emergency Circuit⁷ 2E- Dual Circuit with Emergency Circuit^{7,8}</div> | | | | |
| | | | | | | Wall WA- Wall Mount | | | | | |

¹Not available with Asymmetric Lamp option (WP). ²Not available in EX4SB or with WO option. ³Consult factory for additional lengths. ⁴Consult factory for regular edged tiles. ⁵Replaces standard 2" canopy.

⁶347 volt and UNV not available with MR16 and battery packs. ⁷Some Edge EX configurations will not accommodate all electrical options. Consult factory. ⁸Dual circuit = top and bottom lamps are on separate circuits. ⁹See Back Page for Layout and Ordering Information. ¹⁰WP, WL, WO, T5/T5HO and T8 lamps not available with staggered lamp. ¹¹If canopy is to match fixture housing, must specify with CC-C. If not specified canopy will be standard matte white.



Pinnacle Architectural Lighting 12655 East 42nd Avenue, Suite 50 Denver, CO 80239

Phone 303.322.5570

Fax 303.322.5568

www.pinnacle-ltg.com

© 2014 Pinnacle Architectural Lighting®

June 2014

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

Date Submitted: Sept. 2, 2015

Distributor: C.E.D. Columbus, Oh 43207

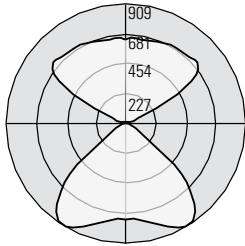
Contractor: Vaughn Industries

Job Name: OSU NRDT Building L

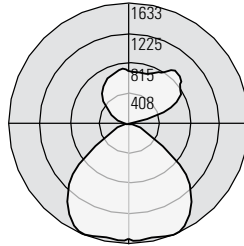
PHOTOMETRICS

TYPE A10

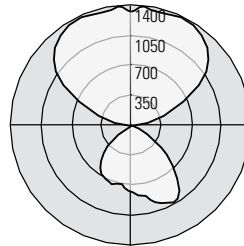
EDGE EX4B_P



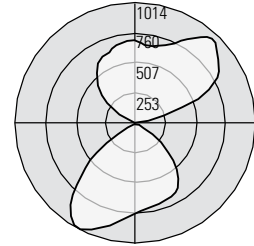
Test # 202480
Part # EX4B-P-O-T5-1-1-SR
Total Luminaire Efficiency: 84.3%



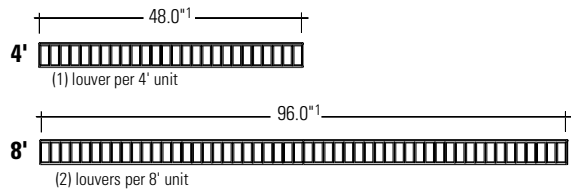
Test # 202495
Part # EX4B-P-WO-T5-2-1-SR
Total Luminaire Efficiency: 78.6%



Test # 202501
Part # EX4B-WP-O-T5-1-2-SR
Total Luminaire Efficiency: 85.1%



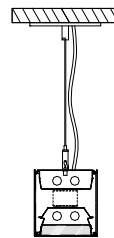
Test # 202504
Part # EX4B-WP-WO-T5-1-1-SR
Total Luminaire Efficiency: 83.5%

• INDIVIDUAL MODULES¹

See Straight and Staggered Lamp Guide for row configuration, wattage and number of lamps per run.

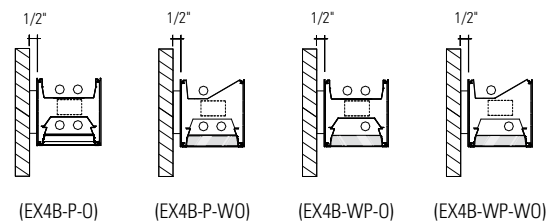
¹Add 1/16" for each end plate or 1/8" to the overall length of the row.

• MOUNTING OPTIONS



AC -
Aircraft Cable

Wall Mount Options (WA)



• MR16 HALOGEN LAMP

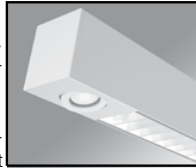
APPLICATION: MR16's are ideal for conference rooms, corridors, wall washing, retail spaces and training facilities where accent lighting is required.

TECHNICAL: MR16 fully enclosed compartment eliminates light from entering into other fixture areas. Available in 20, 35 and 50 watt halogen lamps (lamps not included). Consult factory for other lamp types. Lamp tilts to 35 degrees left or right with 179 degree rotation.

ELECTRICAL: Standard 50 watt max halogen lamp transformer. MR16 installed as independent circuit. MR16 voltage to match fluorescent voltage. Universal voltage and 347 volt not available.

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

ORDERING INFORMATION: Specify MR16 layout and lens in the options section of the part number. Sample Catalog #: EX4B-P-O-T5-1-1-24-AC48G1-120-1C-S-M2/LP. See MR16 Resource Guide for Layout and Lens Options.

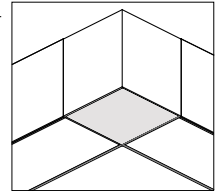


• NON-ILLUMINATED CONNECTOR

APPLICATION: Utilize non-illuminated connectors to create unique configurations.

INSTALLATION: Non-illuminated connector easily joins to linear fixtures using standard Pinnacle Lighting joiner kits.

ORDERING INFORMATION: Specify Non-Illuminated Connector (CN) in the options section of the part number. Sample Catalog #: EX4B-P-O-T5-1-1-24-AC48G1-120-1C-W-CN.



• DUST GUARD

APPLICATION: Dust Guard prevents particle ingress.

CONSTRUCTION: Clear acrylic lens lays on top of fixture and is easily removed for lamp replacement.

ORDERING INFORMATION: Specify Dust Guard (DG) in the options section of the part number. Sample Catalog #: EX4B-P-O-T5-1-1-24-AC48G1-120-1C-W-DG.

• LENS OVERLAY

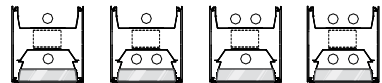
APPLICATION: Lens overlay provides additional lamp shielding in conjunction with parabolic louver.

CONSTRUCTION: Extruded frosted acrylic lens easily installs on top of semi-specular parabolic louver.

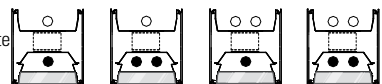
ORDERING INFORMATION: Specify Lens Overlay (LO) in the options section of the part number. Sample Catalog #: EX4B-P-O-T5-2-2-24-AC48G1-120-1C-W-LO.

• CIRCUITING

1C = All lamps on 1 circuit.*



2C = Top and bottom lamps are on separate circuits.**



*1D= All lamps on 1 dimmed circuit

**2D = Top and bottom lamps are on separate dimmed circuits

Consult factory for emergency circuit (E) and battery pack (B) applications as detailed shop drawings are required.



Pinnacle Architectural Lighting 12655 East 42nd Avenue, Suite 50 Denver, CO 80239
Phone 303.322.5570 Fax 303.322.5568 www.pinnacle-ltg.com

© 2014 Pinnacle Architectural Lighting®

June 2014

Specifications and dimensions subject to change without notice. Specification sheets that appear on pinnacle-ltg.com are the most recent version and supersede all other previously printed or electronic versions.
Date Submitted: Sept. 2, 2015 Distributor: C.E.D. Columbus, On 43207

Contractor: Vaughn Industries

Job Name: OSU NRDT Building L

| | | | |
|--------------------------------------|---|--|---|
| Submitted by Spectrum Lighting, Inc. | Job Name: OSU - NRDT BUILDING | Catalog Number: FVRS-ACF-DR2-2T8-1C-120-S-C24-DC-WH-4 Notes: | Type: A14 SPEC14-5147 |
|--------------------------------------|---|--|---|

veer®



Covered by US Patents: D645,192 S & D645,193 S
Covered by European Patent: (D)00170300

**features**

Suspended linear direct/indirect fluorescent with flat or radial acrylic diffuser.

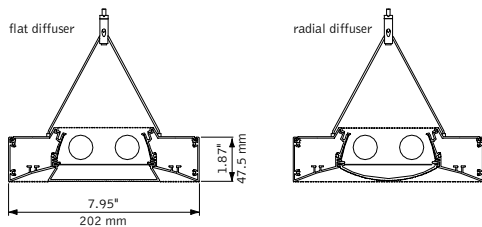
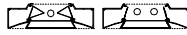
MicroGroove™ diffusers add texture and visual interest with a ribbed pattern that minimizes lamp image.

Optional DR optics deliver light where you need it. Increased direct illumination can benefit spaces with ceilings from low to high.

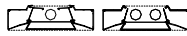
Extruded aluminum housing with die-cast end caps.

Internal Debris Shield keeps diffusers looking clean over the life of the project.

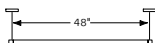
Veer™ is an excellent choice for office spaces, labs and educational facilities.

dimensional data**lamping options**

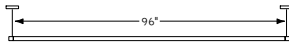
T5/T5HO LAMPS



T8 LAMPS

fixture information

4' (4' 2")



8' (8' 2")

shielding options

Flat Diffuser

Radial Diffuser

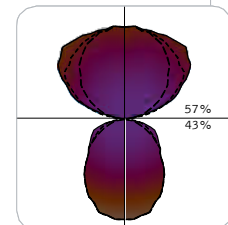
sensor detail

Flat Diffuser

Radial Diffuser


performance

Flat Acrylic Diffuser
2-Lamp T5
95.7% Efficiency
877 cd @ 0°



Visit focalpointlights.com for complete photometric data.

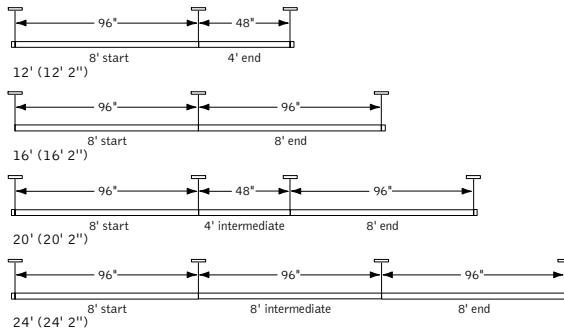
october 2011 H

| | | | |
|---|---|---|----------------------------|
| Submitted by Spectrum Lighting, Inc. | | Catalog Number: FVRS-ACF-DR2-2T8-1C-120-S-C24-DC-WH-4 | Type: A14 |
|  | Job Name: OSU - NRDT BUILDING | Notes: | SPEC14-5147 |

fixture:

project:

suspension information



Consult factory for additional row length information.

specifications

construction

Two-piece, .060" thick 6063-T5 extruded aluminium housing.
Die-cast aluminum end caps and bulkhead.
For row installation, locking mechanism creates hairline joint.
All luminaires are provided with Y-cable suspension mounted on 48" or 96" centers.

4' unit weight: 12 lbs.
8' unit weight: 22 lbs.

optic

.095" thick frosted white MicroGroove acrylic diffusers with ribbed linear pattern.
Clear acrylic internal debris shield supplied as standard.
Optional Downlight Reflector optics fabricated of die-formed aluminum.

electrical

Luminaires are pre-wired with factory installed branch circuit wiring and over-molded quick connects.
Factory installed SJT power cord at feed location is included.
Electronic ballasts are thermally protected and have a Class "P" rating.
Optional dimming ballasts available.
UL and cUL listed.

sensors

Lutron daylight sensor is a directional sensor that operates with a Lutron EcoSystem (DB) or H-Series (DK) ballast and control system. The sensor has an integrated IR receiver for EcoSystem programming.

Philips Luxsense daylight sensor measures reflected light from the surface below and dims lamp output when the light level exceeds required level. Output may be adjusted by turning the dial. A 0-10V dimming ballast is required (T5 - DS, T5HO - D7 standard).

Wattstopper daylight sensor is a closed loop system that measures total light level from daylight and electric light. A 0-10V dimming ballast is required (T5 - DS, T5HO - D7 standard).

Wattstopper occupancy sensor is a passive infrared sensor designed for cubicles and small offices. It has built-in daylight sensing that will hold lights off when adequate ambient light exists. One sensor controls multiple fixtures.

finish

Polyester powder coat applied over a 5-stage pretreatment.
Canopy finished in Matte Satin White.

ordering

fixture series

FVRS

Veer FVRS

shielding

ACF

Flat MicroGroove Acrylic Diffuser ACF

Radial MicroGroove Acrylic Diffuser ACR

optional downlight accessories**

DR2

100% downlight DR0

up to 90% downlight DR1

up to 85% downlight DR2

up to 70% downlight DR4

lamping

2T8

1 Lamp T5 1T5

2 Lamp T5 2T5

1 Lamp T5HO 1T5HO

2 Lamp T5HO 2T5HO

1 Lamp T8 1T8

2 Lamp T8 2T8

circuit

Single Circuit 1C

Dual Circuit 2C

(Multiple lamp luminaires only)

voltage

1C

120 Volt 120

277 Volt 277

347 Volt 347

ballast

120

Electronic Instant Start <20% THD E

Electronic Program Start <10% THD S

Electronic Dimming Ballast* D

(Consult factory for dimming limitations)

mounting

S

24" Cable Suspension C24

48" Cable Suspension C48

96" Cable Suspension C96

(Specify "J" in place of "C" for 5" dia. canopies at power feed and 2" dia. canopies at non-feed locations)

(Consult factory for sloped ceiling applications)

factory options

C24

Concealed Dust Cover DC

Emergency Circuit* EC

Emergency Battery Pack* EM

HLR/GLR Fuse FU

Include 3000K Lamp L830

Include 3500K Lamp L835

Include 4100K Lamp L841

Lutron™ Daylight Sensor* LY1

(EcoSystem/H-Series ballast & controls required)

Lutron™ Sensor Feed* SF

(EcoSystem ballast & controls required)

Philips® Daylight Sensor* PY1

(T5/T5HO only. 0-10V dimming ballast required)

WattStopper™ Daylight Sensor* WY1

(T5/T5HO only. 0-10V dimming ballast required)

WattStopper™ Occupancy Sensor* W01

WH

finish

Matte Satin White WH

Titanium Silver TS

luminaire length

4'

4' 4'

8' 8'

12' (8'+4') 12'

16' (8'+8') 16'

20' (8'+4'+8') 20'

24' (8'+8'+8') 24'

remotes

(specify quantity)

WattStopper™ Daylight Setup Remote* WYSR

(required for daylight programming, one included per order)

WattStopper™ Occupant Controller* WOR


* for more information see Reference section. **lamp type will effect actual percentage values. See IES file for exact uplight/downlight %.

Focal Point LLC | 4141 S. Pulaski Rd, Chicago, IL 60632 | T: 773.247.9494 | F: 773.247.8484 | info@focalpointlights.com | www.focalpointlights.com
Focal Point LLC reserves the right to change specifications for product improvement without notification.

linear

Contractor: Vaughn Industries

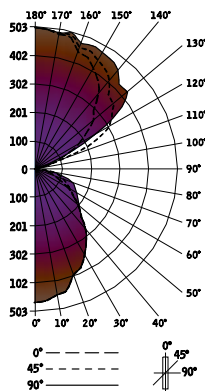
Job Name: OSU NRDT Building L

| | | | |
|---|--|---|----------------------------|
| Submitted by Spectrum Lighting, Inc. | | Catalog Number: FVRS-ACF-DR2-2T8-1C-120-S-C24-DC-WH-4 | Type: A14 |
|  | Job Name: OSU - NRDT BUILDINGS | Notes: | SPEC14-5147 |

flat acrylic diffuser
veer™



Filename: FVRSACF1T5.IES
Catalog #: FVRS-ACF-1T5-1C-120-S-WH-4
Efficiency: 90.8%
Test #: 15692.0

CANDLEPOWER DISTRIBUTION

| Vertical Angle | 0° | 22.5° | 45° | 67.5° | 90° | Zonal Lumens |
|----------------|-----|-------|-----|-------|-----|--------------|
| 0° | 477 | 477 | 477 | 477 | 477 | |
| 5° | 473 | 473 | 473 | 473 | 472 | 45 |
| 15° | 448 | 448 | 448 | 448 | 448 | 127 |
| 25° | 391 | 391 | 390 | 388 | 387 | 180 |
| 35° | 326 | 324 | 320 | 317 | 315 | 201 |
| 45° | 233 | 231 | 228 | 225 | 224 | 177 |
| 55° | 171 | 170 | 171 | 179 | 189 | 157 |
| 65° | 108 | 110 | 125 | 147 | 160 | 128 |
| 75° | 55 | 65 | 88 | 105 | 112 | 90 |
| 85° | 14 | 21 | 26 | 28 | 30 | 27 |
| 90° | 0 | 2 | 2 | 2 | 2 | |
| 95° | 2 | 7 | 10 | 11 | 11 | 9 |
| 105° | 55 | 118 | 42 | 31 | 31 | 62 |
| 115° | 141 | 197 | 241 | 167 | 141 | 185 |
| 125° | 228 | 272 | 333 | 387 | 374 | 290 |
| 135° | 297 | 325 | 371 | 409 | 423 | 284 |
| 145° | 387 | 402 | 432 | 462 | 473 | 271 |
| 155° | 438 | 445 | 462 | 478 | 485 | 214 |
| 165° | 485 | 486 | 792 | 799 | 501 | 140 |
| 175° | 498 | 498 | 498 | 500 | 500 | 48 |
| 180° | 503 | 503 | 503 | 503 | 503 | |

LUMEN SUMMARY

| | Zone Lumens | % Lamp | % Fixt |
|------------------------|---------------------|-------------|--------------|
| 0°-30° | 352 | 12.2 | 13.4 |
| 0°-90° | 1132 | 39.0 | 43.0 |
| 90°-130° | 546 | 18.8 | 20.7 |
| 90°-180° | 1502 | 51.8 | 57.0 |
| Total Luminaire | 0°-180° 2634 | 90.8 | 100.0 |

LUMINANCE DATA (CD/M²)

| Vertical Angle | 0° | 45° | 90° |
|----------------|------|------|------|
| 45° | 1346 | 1317 | 1294 |
| 55° | 1218 | 1218 | 1346 |
| 65° | 1044 | 1208 | 1547 |
| 75° | 868 | 1389 | 1768 |
| 85° | 656 | 1219 | 1406 |

CO-EFFICIENTS OF UTILIZATION

| | Floor | Ceiling | Wall | RCR 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
|--|-------|---------|------|-------|----|----|----|----|----|----|----|----|----|----|
| | 80 | 70 | 20 | | | | | | | | | | | |
| | 50 | 50 | 50 | | | | | | | | | | | |
| | 30 | 30 | 30 | | | | | | | | | | | |
| | 10 | 10 | 10 | | | | | | | | | | | |
| | 00 | 00 | 00 | | | | | | | | | | | |
| | 96 | 96 | 96 | 96 | 88 | 88 | 88 | 72 | 72 | 58 | 58 | 45 | 45 | 39 |
| | 88 | 84 | 80 | 77 | 80 | 77 | 71 | 63 | 59 | 51 | 49 | 40 | 38 | 33 |
| | 80 | 73 | 68 | 63 | 73 | 67 | 59 | 56 | 50 | 45 | 41 | 36 | 33 | 28 |
| | 73 | 65 | 58 | 53 | 67 | 59 | 49 | 50 | 42 | 40 | 35 | 32 | 28 | 24 |
| | 67 | 57 | 50 | 45 | 61 | 53 | 42 | 44 | 36 | 36 | 30 | 29 | 25 | 21 |
| | 61 | 51 | 44 | 39 | 56 | 47 | 36 | 39 | 31 | 32 | 26 | 26 | 21 | 18 |
| | 57 | 46 | 39 | 34 | 52 | 42 | 31 | 35 | 27 | 29 | 23 | 23 | 19 | 16 |
| | 52 | 41 | 34 | 29 | 48 | 38 | 28 | 32 | 24 | 26 | 20 | 21 | 17 | 14 |
| | 48 | 37 | 31 | 26 | 44 | 35 | 24 | 29 | 21 | 24 | 18 | 19 | 15 | 12 |
| | 45 | 34 | 27 | 25 | 41 | 31 | 21 | 26 | 18 | 22 | 16 | 17 | 13 | 11 |
| | 42 | 31 | 25 | 20 | 38 | 29 | 19 | 24 | 16 | 20 | 14 | 16 | 11 | 10 |

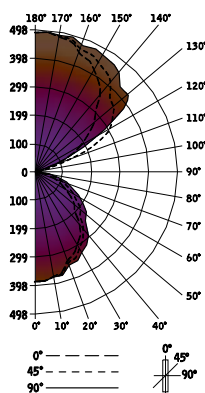
Go to www.focalpointlights.com for additional photometric data.

Numbers indicate percentage values of reflectivity.

radial acrylic diffuser
veer™



Filename: FVRSACR1T5.IES
Catalog #: FVRS-ACR-1T5-1C-120-S-WH-4
Efficiency: 87.9%
Test #: 15693.0

CANDLEPOWER DISTRIBUTION

| Vertical Angle | 0° | 22.5° | 45° | 67.5° | 90° | Zonal Lumens |
|----------------|-----|-------|-----|-------|-----|--------------|
| 0° | 393 | 393 | 393 | 393 | 393 | |
| 5° | 392 | 390 | 392 | 392 | 390 | 37 |
| 15° | 372 | 373 | 377 | 382 | 382 | 107 |
| 25° | 326 | 330 | 340 | 349 | 353 | 157 |
| 35° | 279 | 282 | 296 | 313 | 318 | 187 |
| 45° | 196 | 204 | 224 | 245 | 251 | 174 |
| 55° | 150 | 156 | 179 | 200 | 210 | 160 |
| 65° | 97 | 106 | 127 | 144 | 150 | 124 |
| 75° | 50 | 60 | 76 | 88 | 90 | 78 |
| 85° | 13 | 18 | 23 | 27 | 28 | 24 |
| 90° | 0 | 1 | 2 | 1 | 1 | |
| 95° | 2 | 6 | 10 | 11 | 11 | 9 |
| 105° | 55 | 117 | 42 | 31 | 31 | 62 |
| 115° | 142 | 200 | 239 | 167 | 141 | 186 |
| 125° | 228 | 274 | 332 | 384 | 373 | 289 |
| 135° | 297 | 324 | 370 | 408 | 423 | 283 |
| 145° | 387 | 403 | 433 | 462 | 474 | 272 |
| 155° | 438 | 445 | 462 | 479 | 486 | 214 |
| 165° | 480 | 481 | 486 | 493 | 496 | 138 |
| 175° | 498 | 498 | 498 | 498 | 498 | 48 |
| 180° | 497 | 497 | 497 | 497 | 497 | |

LUMEN SUMMARY

| | Zone Lumens | % Lamp | % Fixt |
|------------------------|---------------------|-------------|--------------|
| 0°-30° | 301 | 10.4 | 11.8 |
| 0°-90° | 1048 | 36.1 | 41.1 |
| 90°-130° | 546 | 18.8 | 21.4 |
| 90°-180° | 1500 | 51.7 | 58.9 |
| Total Luminaire | 0°-180° 2548 | 87.9 | 100.0 |

LUMINANCE DATA (CD/M²)

| Vertical Angle | 0° | 45° | 90° |
|----------------|------|------|------|
| 45° | 1132 | 1294 | 1450 |
| 55° | 1068 | 1275 | 1496 |
| 65° | 938 | 1228 | 1450 |
| 75° | 789 | 1200 | 1421 |
| 85° | 609 | 1078 | 1312 |

CO-EFFICIENTS OF UTILIZATION

| | Floor | Ceiling | Wall | RCR 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
|--|-------|---------|------|-------|----|----|----|----|----|----|----|----|----|----|
| | 80 | 70 | 20 | | | | | | | | | | | |
| | 50 | 50 | 50 | | | | | | | | | | | |
| | 30 | 30 | 30 | | | | | | | | | | | |
| | 10 | 10 | 10 | | | | | | | | | | | |
| | 00 | 00 | 00 | | | | | | | | | | | |
| | 92 | 92 | 92 | 92 | 84 | 84 | 84 | 69 | 69 | 55 | 55 | 42 | 42 | 36 |
| | 84 | 81 | 77 | 74 | 77 | 74 | 68 | 61 | 57 | 49 | 46 | 37 | 36 | 31 |
| | 77 | 70 | 65 | 61 | 70 | 64 | 56 | 53 | 47 | 43 | 39 | 33 | 30 | 26 |
| | 70 | 62 | 56 | 51 | 64 | 57 | 47 | 47 | 40 | 38 | 33 | 30 | 26 | 22 |
| | 64 | 55 | 48 | 43 | 58 | 50 | 40 | 42 | 34 | 34 | 28 | 27 | 23 | 19 |
| | 59 | 49 | 42 | 37 | 53 | 45 | 34 | 37 | 29 | 30 | 24 | 24 | 19 | 16 |
| | 54 | 44 | 37 | 32 | 49 | 40 | 30 | 33 | 28 | 27 | 21 | 21 | 17 | 14 |
| | 50 | 39 | 33 | 28 | 45 | 36 | 26 | 30 | 22 | 25 | 19 | 19 | 15 | 12 |
| | 46 | 36 | 29 | 24 | 42 | 33 | 23 | 27 | 19 | 22 | 16 | 17 | 13 | 11 |
| | 43 | 32 | 26 | 21 | 39 | 30 | 20 | 25 | 17 | 20 | 14 | 16 | 11 | 9 |
| | 40 | 29 | 23 | 19 | 36 | 27 | 18 | 23 | 15 | 18 | 13 | 14 | 10 | 8 |

Go to www.focalpointlights.com for additional photometric data.

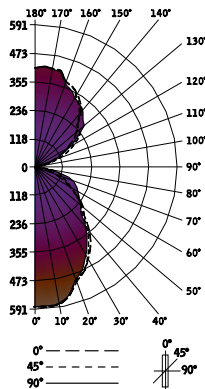
Numbers indicate percentage values of reflectivity.

Job Name: OSU NRDT Building L

flat acrylic diffuser
veer™



CANDLEPOWER DISTRIBUTION



| Vertical Angle | Horizontal Angle | | | | | Zonal Lumin |
|----------------|------------------|-----|-------|-----|-----|-------------|
| 0° | 22.5° | 45° | 67.5° | 90° | | |
| 0° | 589 | 589 | 589 | 589 | 589 | |
| 5° | 591 | 591 | 591 | 591 | 589 | 56 |
| 15° | 563 | 562 | 561 | 561 | 559 | 159 |
| 25° | 489 | 489 | 486 | 480 | 479 | 224 |
| 35° | 407 | 405 | 396 | 390 | 387 | 249 |
| 45° | 293 | 290 | 281 | 276 | 276 | 219 |
| 55° | 217 | 213 | 210 | 221 | 229 | 195 |
| 65° | 138 | 138 | 153 | 180 | 193 | 158 |
| 75° | 70 | 78 | 105 | 128 | 134 | 109 |
| 85° | 18 | 27 | 32 | 35 | 38 | 33 |
| 90° | 1 | 1 | 2 | 2 | 1 | |
| 95° | 1 | 8 | 4 | 2 | 2 | 4 |
| 105° | 47 | 71 | 67 | 60 | 54 | 66 |
| 115° | 117 | 134 | 145 | 130 | 127 | 132 |
| 125° | 191 | 191 | 27 | 230 | 224 | 192 |
| 135° | 249 | 249 | 249 | 276 | 284 | 202 |
| 145° | 329 | 332 | 317 | 319 | 323 | 203 |
| 155° | 372 | 377 | 370 | 360 | 357 | 170 |
| 165° | 415 | 412 | 420 | 420 | 417 | 119 |
| 175° | 423 | 423 | 423 | 425 | 425 | 41 |
| 180° | 419 | 419 | 419 | 419 | 419 | |

LUMEN SUMMARY

| | Zone | Lumens | % Lamp | % Fixt |
|--------------------|----------|--------|--------|--------|
| Total Luminaire | 0°-30° | 440 | 14.9 | 17.4 |
| | 0°-90° | 1403 | 47.6 | 55.4 |
| | 90°-130° | 394 | 13.3 | 15.6 |
| | 90°-180° | 1128 | 38.2 | 44.6 |
| | 0°-180° | 2531 | 85.8 | 100.0 |

LUMINANCE DATA (CD/M²)

| Vertical Angle | 0° | 45° | 90° |
|----------------|------|------|------|
| 45° | 1693 | 1623 | 1595 |
| 55° | 1546 | 1496 | 1631 |
| 65° | 1334 | 1479 | 1866 |
| 75° | 1105 | 1657 | 2115 |
| 85° | 844 | 1500 | 1781 |

CO-EFFICIENTS OF UTILIZATION

| Floor | 80 | | | | 70 | | 20 | | 30 | | 10 | | 00 | |
|---------|----|----|----|----|----|----|----|----|----|----|----|----|----|----|
| Ceiling | 70 | 50 | 30 | 10 | 70 | 50 | 10 | 50 | 50 | 10 | 50 | 10 | 00 | |
| Wall | 70 | 50 | 30 | 10 | 70 | 50 | 10 | 50 | 10 | 50 | 10 | 50 | 10 | 00 |
| RCR 0 | 96 | 96 | 96 | 96 | 88 | 88 | 88 | 72 | 72 | 58 | 58 | 45 | 45 | 39 |
| 1 | 93 | 93 | 93 | 93 | 86 | 86 | 86 | 74 | 74 | 63 | 63 | 52 | 52 | 48 |
| 2 | 85 | 81 | 78 | 75 | 79 | 76 | 70 | 65 | 61 | 56 | 53 | 47 | 45 | 41 |
| 3 | 78 | 71 | 66 | 62 | 72 | 67 | 58 | 58 | 51 | 49 | 45 | 42 | 38 | 34 |
| 4 | 71 | 63 | 57 | 52 | 66 | 59 | 49 | 51 | 44 | 44 | 38 | 37 | 33 | 30 |
| 5 | 65 | 56 | 49 | 44 | 61 | 53 | 42 | 46 | 37 | 39 | 33 | 33 | 29 | 26 |
| 6 | 60 | 50 | 43 | 38 | 55 | 47 | 36 | 41 | 32 | 35 | 28 | 30 | 25 | 22 |
| 7 | 55 | 45 | 38 | 33 | 51 | 42 | 31 | 37 | 28 | 32 | 25 | 27 | 22 | 20 |
| 8 | 51 | 41 | 34 | 29 | 47 | 38 | 28 | 33 | 25 | 29 | 22 | 25 | 19 | 17 |
| 9 | 47 | 37 | 30 | 26 | 44 | 34 | 24 | 30 | 22 | 26 | 19 | 22 | 17 | 15 |
| 10 | 44 | 33 | 27 | 22 | 41 | 31 | 21 | 27 | 19 | 24 | 19 | 20 | 15 | 13 |

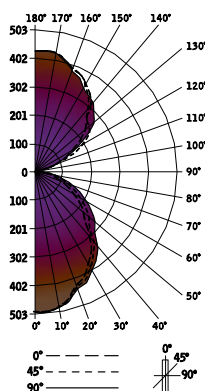
Numbers indicate percentage values of reflectivity.

Go to www.focalpointlights.com for additional photometric data.

radial acrylic diffuser
veer™



CANDLEPOWER DISTRIBUTION



| Vertical Angle | 0° | 22.5° | 45° | 67.5° | 90° | Zonal Lumens |
|----------------|-----|-------|-----|-------|-----|--------------|
| 0° | 498 | 498 | 498 | 498 | 498 | |
| 5° | 503 | 500 | 503 | 503 | 500 | 48 |
| 15° | 470 | 470 | 475 | 478 | 478 | 134 |
| 25° | 416 | 419 | 426 | 433 | 436 | 197 |
| 35° | 349 | 353 | 364 | 379 | 383 | 230 |
| 45° | 251 | 257 | 273 | 291 | 300 | 212 |
| 55° | 190 | 197 | 217 | 237 | 247 | 195 |
| 65° | 123 | 131 | 153 | 171 | 176 | 150 |
| 75° | 65 | 75 | 90 | 103 | 105 | 93 |
| 85° | 17 | 22 | 28 | 32 | 35 | 30 |
| 90° | 1 | 1 | 2 | 2 | 2 | |
| 95° | 1 | 10 | 4 | 2 | 2 | 5 |
| 105° | 48 | 71 | 67 | 60 | 55 | 66 |
| 115° | 121 | 137 | 148 | 138 | 128 | 135 |
| 125° | 196 | 196 | 233 | 233 | 226 | 196 |
| 135° | 253 | 254 | 254 | 281 | 291 | 205 |
| 145° | 333 | 339 | 324 | 324 | 327 | 207 |
| 155° | 377 | 382 | 377 | 369 | 366 | 174 |
| 165° | 400 | 402 | 406 | 406 | 406 | 115 |
| 175° | 429 | 429 | 429 | 430 | 429 | 41 |
| 180° | 426 | 426 | 426 | 426 | 426 | |

LUMEN SUMMARY

| | Zone | Lumens | % Lamp | % Fixt |
|------------------------|----------------|-------------|-------------|--------------|
| | 0°-30° | 380 | 12.9 | 15.6 |
| | 0°-90° | 1289 | 43.7 | 53.0 |
| | 90°-130° | 401 | 13.6 | 16.5 |
| | 90°-180° | 1143 | 38.7 | 47.0 |
| Total Luminaire | 0°-180° | 2432 | 82.4 | 100.0 |

LUMINANCE DATA (CD/M²)

| Vertical Angle | 0° | 45° | 90° |
|----------------|------|------|------|
| 45° | 1450 | 1577 | 1733 |
| 55° | 1353 | 1546 | 1759 |
| 65° | 1189 | 1479 | 1701 |
| 75° | 1026 | 1421 | 1657 |
| 85° | 797 | 1312 | 1641 |

CO-EFFICIENTS OF UTILIZATION


| Floor | 80 | | | | 70 | | | | 20 | | | | 50 | | | | 30 | | | | 10 | | | | 00 |
|---------|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|--|----|
| Ceiling | 70 | 50 | 30 | 10 | 70 | 50 | 10 | 70 | 50 | 10 | 50 | 10 | 50 | 10 | 50 | 10 | 50 | 10 | 50 | 10 | 50 | 10 | 00 | | |
| Wall | 70 | 50 | 30 | 10 | 70 | 50 | 10 | 70 | 50 | 10 | 70 | 50 | 10 | 70 | 50 | 10 | 70 | 50 | 10 | 70 | 50 | 10 | 00 | | |
| RCR 0 | 89 | 89 | 89 | 89 | 82 | 82 | 82 | 70 | 70 | 70 | 70 | 59 | 59 | 59 | 49 | 49 | 49 | 49 | 49 | 49 | 49 | 49 | 44 | | |
| 1 | 81 | 78 | 75 | 72 | 75 | 72 | 67 | 62 | 58 | 57 | 62 | 58 | 52 | 49 | 43 | 41 | 37 | 32 | 30 | 27 | 23 | 20 | 18 | | |
| 2 | 74 | 68 | 63 | 59 | 69 | 63 | 55 | 51 | 48 | 46 | 42 | 38 | 35 | 32 | 28 | 25 | 20 | 18 | 15 | 12 | 10 | 08 | | | |
| 3 | 68 | 60 | 54 | 49 | 63 | 56 | 47 | 48 | 41 | 41 | 36 | 34 | 30 | 27 | 23 | 20 | 17 | 15 | 12 | 10 | 08 | 06 | | | |
| 4 | 62 | 53 | 47 | 42 | 57 | 50 | 40 | 43 | 35 | 37 | 31 | 31 | 26 | 23 | 20 | 17 | 15 | 12 | 10 | 08 | 06 | 04 | | | |
| 5 | 57 | 47 | 41 | 36 | 53 | 44 | 34 | 38 | 30 | 33 | 26 | 27 | 23 | 20 | 18 | 15 | 12 | 10 | 08 | 06 | 04 | 02 | | | |
| 6 | 52 | 43 | 36 | 31 | 48 | 40 | 29 | 34 | 26 | 29 | 23 | 25 | 20 | 18 | 15 | 12 | 10 | 08 | 06 | 04 | 02 | 00 | | | |
| 7 | 48 | 38 | 32 | 27 | 45 | 36 | 26 | 31 | 23 | 27 | 20 | 22 | 17 | 15 | 12 | 10 | 08 | 06 | 04 | 02 | 00 | 98 | | | |
| 8 | 45 | 35 | 28 | 24 | 41 | 32 | 23 | 28 | 20 | 24 | 18 | 20 | 15 | 13 | 10 | 08 | 06 | 04 | 02 | 00 | 98 | 96 | | | |
| 9 | 41 | 31 | 25 | 21 | 38 | 29 | 20 | 25 | 18 | 22 | 15 | 18 | 13 | 10 | 08 | 06 | 04 | 02 | 00 | 98 | 96 | 94 | | | |
| 10 | 39 | 29 | 23 | 19 | 36 | 27 | 18 | 23 | 16 | 20 | 14 | 17 | 12 | 10 | 08 | 06 | 04 | 02 | 00 | 98 | 96 | 92 | | | |

Numbers indicate percentage values of reflectivity.

Go to www.focalpointlights.com for additional photometric data.

Contractor: Vaughn Industries

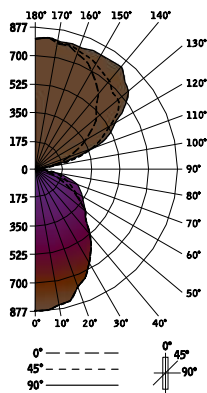
Job Name: OSU NRDT Building L

| | | | |
|---|--|---|----------------------------|
| Submitted by Spectrum Lighting, Inc. | | Catalog Number: FVRS-ACF-DR2-2T8-1C-120-S-C24-DC-WH-4 | Type: A14 |
|  | Job Name: OSU - NRDT BUILDINGS | Notes: | SPEC14-5147 |

flat acrylic diffuser
veer™



Filename: FVRSACF2T5.IES
Catalog #: FVRS-ACF-2T5-1C-120-S-WH-4
Efficiency: 95.7%
Test #: 15240.0

CANDLEPOWER DISTRIBUTION

| Vertical Angle | 0° | 22.5° | 45° | 67.5° | 90° | Zonal Lumens |
|----------------|-----|-------|-----|-------|-----|--------------|
| 0° | 877 | 877 | 877 | 877 | 877 | |
| 5° | 876 | 876 | 876 | 876 | 876 | 84 |
| 15° | 841 | 841 | 841 | 841 | 841 | 238 |
| 25° | 741 | 741 | 741 | 738 | 735 | 342 |
| 35° | 608 | 608 | 601 | 594 | 592 | 377 |
| 45° | 448 | 445 | 443 | 438 | 437 | 342 |
| 55° | 326 | 327 | 330 | 347 | 360 | 302 |
| 65° | 200 | 212 | 237 | 281 | 303 | 244 |
| 75° | 92 | 116 | 163 | 196 | 210 | 166 |
| 85° | 14 | 39 | 51 | 59 | 62 | 51 |
| 90° | 0 | 2 | 2 | 2 | 3 | |
| 95° | 28 | 40 | 29 | 26 | 22 | 33 |
| 105° | 143 | 224 | 254 | 206 | 191 | 225 |
| 115° | 281 | 379 | 449 | 484 | 494 | 422 |
| 125° | 420 | 486 | 617 | 661 | 672 | 518 |
| 135° | 520 | 558 | 672 | 757 | 775 | 510 |
| 145° | 643 | 662 | 726 | 791 | 820 | 457 |
| 155° | 735 | 744 | 770 | 805 | 820 | 358 |
| 165° | 791 | 794 | 801 | 809 | 814 | 227 |
| 175° | 820 | 819 | 822 | 822 | 820 | 78 |
| 180° | 813 | 813 | 813 | 813 | 813 | |

LUMEN SUMMARY

| Zone | Lumens | % Lamp | % Fixt |
|------------------------|-------------|-------------|--------------|
| 0°-30° | 664 | 12.8 | 13.4 |
| 0°-90° | 2147 | 41.3 | 43.1 |
| 90°-130° | 198 | 3.0 | 24.1 |
| 90°-180° | 2829 | 54.4 | 56.9 |
| Total Luminaire | 4976 | 95.7 | 100.0 |

LUMINANCE DATA (CD/M²)

| Vertical Angle | 0° | 45° | 90° |
|----------------|------|------|------|
| 45° | 2588 | 2559 | 2525 |
| 55° | 2322 | 2350 | 2564 |
| 65° | 1933 | 2291 | 2929 |
| 75° | 1452 | 2573 | 3315 |
| 85° | 656 | 2391 | 2906 |

CO-EFFICIENTS OF UTILIZATION

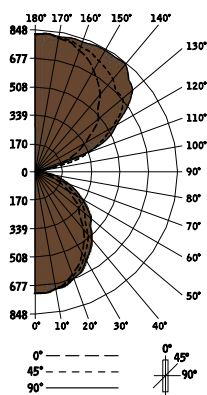
| Floor | 80 | 70 | 20 |
|---------|-----------------|----------|-------|
| Ceiling | 50 | 50 | 50 |
| Wall | 70 50 30 10 | 70 50 10 | 50 10 |
| RCR 0 | 101 101 101 101 | 92 92 92 | 76 76 |
| 1 | 92 88 85 81 | 84 81 75 | 67 63 |
| 2 | 84 77 71 67 | 77 71 62 | 59 52 |
| 3 | 77 68 61 56 | 70 63 52 | 52 44 |
| 4 | 71 60 53 47 | 64 56 44 | 47 38 |
| 5 | 65 54 46 41 | 59 50 38 | 41 33 |
| 6 | 60 48 41 35 | 54 45 33 | 37 28 |
| 7 | 55 44 36 31 | 50 40 29 | 34 25 |
| 8 | 51 37 32 27 | 46 36 25 | 31 22 |
| 9 | 47 36 29 24 | 43 33 22 | 28 19 |
| 10 | 44 33 26 21 | 40 30 20 | 25 17 |

Go to www.focalpointlights.com for additional photometric data.

radial acrylic diffuser
veer™



Filename: FVRSACR2T5.IES
Catalog #: FVRS-ACR-2T5-1C-120-S-WH-4
Efficiency: 93.0%
Test #: 15244.0

CANDLEPOWER DISTRIBUTION

| Vertical Angle | 0° | 22.5° | 45° | 67.5° | 90° | Zonal Lumens |
|----------------|-----|-------|-----|-------|-----|--------------|
| 0° | 734 | 734 | 734 | 734 | 734 | |
| 5° | 737 | 735 | 737 | 737 | 737 | 70 |
| 15° | 701 | 705 | 709 | 715 | 716 | 201 |
| 25° | 626 | 632 | 646 | 659 | 665 | 299 |
| 35° | 517 | 527 | 547 | 570 | 580 | 344 |
| 45° | 383 | 396 | 425 | 455 | 468 | 329 |
| 55° | 286 | 304 | 339 | 371 | 381 | 302 |
| 65° | 177 | 197 | 232 | 256 | 266 | 225 |
| 75° | 82 | 107 | 135 | 149 | 152 | 134 |
| 85° | 11 | 34 | 41 | 47 | 49 | 42 |
| 90° | 2 | 3 | 4 | 4 | 4 | |
| 95° | 27 | 41 | 28 | 22 | 22 | 32 |
| 105° | 147 | 228 | 249 | 200 | 182 | 223 |
| 115° | 290 | 390 | 459 | 485 | 497 | 429 |
| 125° | 731 | 503 | 635 | 677 | 685 | 632 |
| 135° | 534 | 576 | 689 | 777 | 798 | 524 |
| 145° | 659 | 680 | 749 | 815 | 843 | 470 |
| 155° | 751 | 761 | 791 | 858 | 843 | 368 |
| 165° | 806 | 809 | 819 | 830 | 834 | 232 |
| 175° | 835 | 835 | 836 | 836 | 835 | 80 |
| 180° | 829 | 829 | 829 | 829 | 829 | |

LUMEN SUMMARY

| Zone | Lumens | % Lamp | % Fixt |
|------------------------|-------------|-------------|--------------|
| 0°-30° | 570 | 11.0 | 11.8 |
| 0°-90° | 1947 | 37.4 | 40.3 |
| 90°-130° | 1215 | 23.4 | 25.1 |
| 90°-180° | 2889 | 55.6 | 59.7 |
| Total Luminaire | 4836 | 93.0 | 100.0 |

LUMINANCE DATA (CD/M²)

| Vertical Angle | 0° | 45° | 90° |
|----------------|------|------|------|
| 45° | 213 | 2455 | 2704 |
| 55° | 2037 | 2415 | 2714 |
| 65° | 1711 | 2243 | 2571 |
| 75° | 1294 | 2131 | 2399 |
| 85° | 516 | 1922 | 2297 |

CO-EFFICIENTS OF UTILIZATION

| Floor | 80 | 70 | 20 |
|---------|-------------|----------|-------|
| Ceiling | 50 | 50 | 50 |
| Wall | 70 50 30 10 | 70 50 10 | 50 10 |
| RCR 0 | 97 97 97 97 | 89 89 89 | 72 72 |
| 1 | 89 85 82 78 | 84 78 72 | 64 60 |
| 2 | 81 75 69 64 | 74 68 59 | 56 50 |
| 3 | 74 66 59 54 | 67 60 50 | 50 42 |
| 4 | 68 58 51 46 | 62 53 42 | 44 36 |
| 5 | 62 52 44 39 | 56 47 36 | 39 31 |
| 6 | 57 46 39 34 | 52 43 31 | 35 27 |
| 7 | 53 42 35 29 | 48 38 27 | 32 23 |
| 8 | 49 38 31 26 | 44 35 24 | 29 21 |
| 9 | 45 34 27 23 | 41 31 21 | 26 18 |
| 10 | 42 31 25 20 | 38 29 19 | 24 16 |

Go to www.focalpointlights.com for additional photometric data.

Contractor: Vaughn Industries

Job Name: OSU NRDT Building L

Submitted by Spectrum Lighting, Inc.


Job Name:
OSU - NRDT BUILDINGS

Catalog Number:
FVRS-ACF-DR2-2T8-1C-120-S-C24-
DC-WH-4
Notes:
Type:**A14**

SPEC14-5147

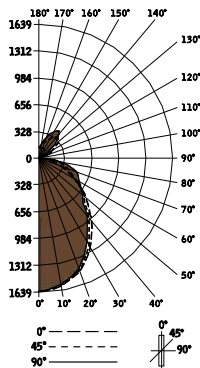
 flat acrylic diffuser
veer™


Filename: FVRSACFDR22T5.IES

Catalog #: FVRS-ACF-DR2-2T5-1C-120-S-WH-4

Efficiency: 82.6%

Test #: 15239.0

CANDLEPOWER DISTRIBUTION

| Vertical Angle | 0° | 22.5° | Horizontal Angle | 45° | 67.5° | 90° | Zonal Lumens |
|----------------|------|-------|------------------|------|-------|-----|--------------|
| 0° | 1639 | 1639 | 1639 | 1639 | 1639 | | |
| 5° | 1622 | 1622 | 1620 | 1620 | 1618 | 155 | |
| 15° | 1530 | 1527 | 1521 | 1513 | 1510 | 431 | |
| 25° | 1372 | 1364 | 1346 | 1326 | 1312 | 622 | |
| 35° | 1117 | 1105 | 1070 | 1038 | 1027 | 673 | |
| 45° | 843 | 828 | 792 | 767 | 757 | 617 | |
| 55° | 610 | 604 | 589 | 606 | 626 | 542 | |
| 65° | 368 | 380 | 417 | 490 | 525 | 430 | |
| 75° | 169 | 207 | 285 | 343 | 363 | 292 | |
| 85° | 26 | 69 | 90 | 104 | 106 | 90 | |
| 90° | 5 | 6 | 6 | 5 | 5 | | |
| 95° | 10 | 14 | 16 | 18 | 20 | 17 | |
| 105° | 38 | 62 | 89 | 74 | 62 | 73 | |
| 115° | 60 | 165 | 100 | 147 | 167 | 130 | |
| 125° | 84 | 203 | 244 | 184 | 157 | 169 | |
| 135° | 94 | 183 | 315 | 320 | 304 | 197 | |
| 145° | 120 | 187 | 306 | 390 | 411 | 180 | |
| 155° | 125 | 168 | 236 | 302 | 327 | 108 | |
| 165° | 130 | 150 | 185 | 214 | 225 | 52 | |
| 175° | 128 | 131 | 137 | 143 | 144 | 13 | |
| 180° | 124 | 124 | 124 | 124 | 124 | | |

LUMEN SUMMARY

| Zone | Lumens | % Lamp | % Fixt |
|-----------------|---------|--------|------------|
| 0°-30° | 1208 | 20.8 | 25.2 |
| 0°-90° | 3851 | 66.4 | 80.4 |
| 90°-130° | 389 | 6.7 | 8.1 |
| 90°-180° | 939 | 16.2 | 19.6 |
| Total Luminaire | 0°-180° | 4790 | 82.6 100.0 |

LUMINANCE DATA (CD/M²)

| Vertical Angle | 0° | 45° | 90° |
|----------------|------|------|------|
| 45° | 4870 | 4576 | 4374 |
| 55° | 4345 | 4195 | 4459 |
| 65° | 3557 | 4031 | 5075 |
| 75° | 2668 | 4514 | 5730 |
| 85° | 1219 | 4219 | 4969 |

CO-EFFICIENTS OF UTILIZATION

| Floor | Ceiling | 80 | 70 | 20 | 30 | 10 | 00 |
|-------|---------|----|----|----|----|----|----|
| Wall | 70 | 50 | 30 | 10 | 70 | 50 | 10 |
| RCR 0 | 94 | 94 | 94 | 94 | 90 | 90 | 90 |
| 1 | 87 | 83 | 80 | 77 | 83 | 80 | 74 |
| 2 | 79 | 73 | 68 | 64 | 76 | 70 | 62 |
| 3 | 73 | 65 | 59 | 51 | 40 | 62 | 52 |
| 4 | 67 | 58 | 51 | 46 | 64 | 56 | 46 |
| 5 | 61 | 52 | 45 | 39 | 59 | 50 | 39 |
| 6 | 57 | 46 | 40 | 35 | 54 | 45 | 34 |
| 7 | 52 | 42 | 35 | 30 | 50 | 41 | 30 |
| 8 | 48 | 38 | 31 | 27 | 46 | 37 | 26 |
| 9 | 45 | 34 | 25 | 23 | 43 | 33 | 23 |
| 10 | 42 | 31 | 25 | 21 | 40 | 30 | 20 |

Go to www.focalpointlights.com for additional photometric data.

Numbers indicate percentage values of reflectivity.

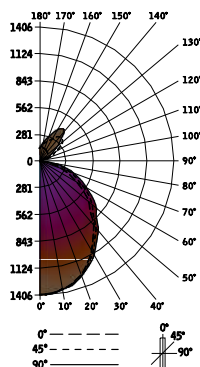
 radial acrylic diffuser
veer™


Filename: FVRSACRDR22T5.IES

Catalog #: FVRS-ACR-DR2-2T5-1C-120-S-WH-4

Efficiency: 78.0%

Test #: 15243.0

CANDLEPOWER DISTRIBUTION

| Vertical Angle | 0° | 22.5° | Horizontal Angle | 45° | 67.5° | 90° | Zonal Lumens |
|----------------|------|-------|------------------|------|-------|-----|--------------|
| 0° | 1406 | 1406 | 1406 | 1406 | 1406 | | |
| 5° | 1399 | 1399 | 1400 | 1400 | 1399 | 134 | |
| 15° | 1331 | 1332 | 1336 | 1340 | 1343 | 379 | |
| 25° | 1185 | 1191 | 1201 | 1213 | 1217 | 556 | |
| 35° | 975 | 982 | 1001 | 1023 | 1033 | 630 | |
| 45° | 736 | 749 | 780 | 818 | 831 | 606 | |
| 55° | 542 | 562 | 606 | 653 | 669 | 544 | |
| 65° | 336 | 367 | 418 | 457 | 469 | 408 | |
| 75° | 152 | 196 | 240 | 264 | 270 | 241 | |
| 85° | 24 | 62 | 76 | 85 | 88 | 76 | |
| 90° | 5 | 6 | 6 | 6 | 6 | | |
| 95° | 10 | 14 | 17 | 21 | 21 | 18 | |
| 105° | 41 | 62 | 88 | 73 | 62 | 73 | |
| 115° | 65 | 169 | 109 | 147 | 167 | 134 | |
| 125° | 89 | 203 | 243 | 184 | 160 | 169 | |
| 135° | 98 | 187 | 314 | 316 | 302 | 197 | |
| 145° | 125 | 195 | 307 | 390 | 411 | 182 | |
| 155° | 132 | 175 | 243 | 306 | 330 | 111 | |
| 165° | 139 | 158 | 194 | 225 | 234 | 54 | |
| 175° | 137 | 139 | 145 | 151 | 152 | 14 | |
| 180° | 132 | 132 | 132 | 132 | 132 | | |

LUMEN SUMMARY

| Zone | Lumens | % Lamp | % Fixt |
|-----------------|---------|--------|------------|
| 0°-30° | 1069 | 18.4 | 23.6 |
| 0°-90° | 3574 | 61.6 | 79.0 |
| 90°-130° | 394 | 6.8 | 8.7 |
| 90°-180° | 952 | 16.4 | 21.0 |
| Total Luminaire | 0°-180° | 456 | 78.0 100.0 |

LUMINANCE DATA (CD/M²)

| Vertical Angle | 0° | 45° | 90° |
|----------------|------|------|------|
| 45° | 4252 | 4506 | 4801 |
| 55° | 3860 | 4316 | 4765 |
| 65° | 3248 | 4041 | 4534 |
| 75° | 2399 | 3788 | 4262 |
| 85° | 1125 | 3562 | 4125 |

CO-EFFICIENTS OF UTILIZATION

| Floor | Ceiling | 80 | 70 | 20 | 30 | 10 | 00 |
|-------|---------|----|----|----|----|----|----|
| Wall | 70 | 50 | 30 | 10 | 70 | 50 | 10 |
| RCR 0 | 89 | 89 | 89 | 89 | 85 | 85 | 85 |
| 1 | 82 | 79 | 75 | 72 | 79 | 75 | 70 |
| 2 | 75 | 69 | 64 | 60 | 71 | 66 | 58 |
| 3 | 69 | 61 | 65 | 51 | 65 | 59 | 49 |
| 4 | 63 | 54 | 48 | 43 | 60 | 52 | 42 |
| 5 | 58 | 48 | 42 | 37 | 55 | 47 | 36 |
| 6 | 53 | 43 | 37 | 32 | 51 | 42 | 31 |
| 7 | 49 | 39 | 33 | 28 | 47 | 38 | 27 |
| 8 | 45 | 35 | 29 | 25 | 43 | 34 | 24 |
| 9 | 42 | 32 | 26 | 21 | 40 | 31 | 21 |
| 10 | 39 | 29 | 23 | 19 | 37 | 28 | 19 |

Go to www.focalpointlights.com for additional photometric data.

Numbers indicate percentage values of reflectivity.

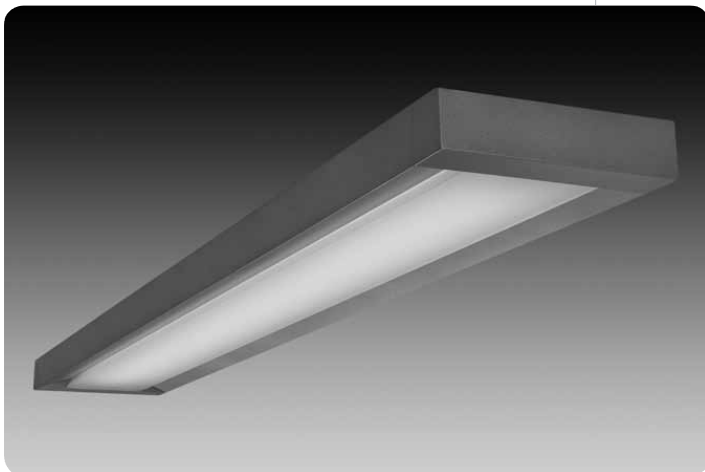
Contractor: Vaughn Industries

Job Name: OSU NRDT Building L

Submitted by Spectrum Lighting, Inc.


Job Name:
OSU - NRDT BUILDING
Catalog Number:
 FVRS-ACF-DR2-2T8-1C-120-S-C24-
DC-WH-4 **w/Bodine GTD**
Notes:
Type:**A14 - GTD**

SPEC14-5147

veer®
 Covered by US Patents: D645,192 S & D645,193 S
Covered by European Patent: (D)00170300
**features**

Suspended linear direct/indirect fluorescent with flat or radial acrylic diffuser.

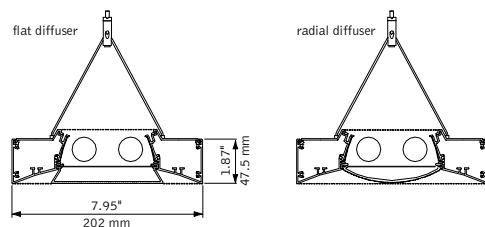
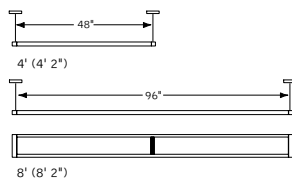
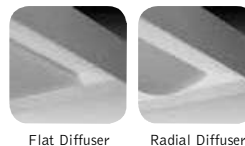
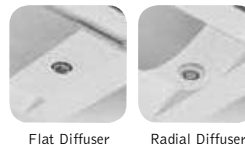
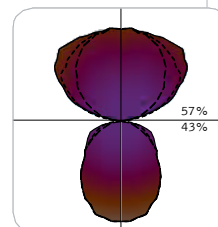
MicroGroove™ diffusers add texture and visual interest with a ribbed pattern that minimizes lamp image.

Optional DR optics deliver light where you need it. Increased direct illumination can benefit spaces with ceilings from low to high.

Extruded aluminum housing with die-cast end caps.

Internal Debris Shield keeps diffusers looking clean over the life of the project.

Veer™ is an excellent choice for office spaces, labs and educational facilities.

dimensional data**lampping options****fixture information****shielding options****sensor detail****performance**
 Flat Acrylic Diffuser
2-Lamp T5
95.7% Efficiency
877 cd @ 0°


Visit focalpointlights.com for complete photometric data.

october 2011 H

Contractor: Vaughn Industries

Job Name: OSU NRDT Building L

Submitted by Spectrum Lighting, Inc.

**Job Name:**

OSU - NRDT BUILDING

Catalog Number:

FVRS-ACF-DR2-2T8-1C-120-S-C24-DC-WH-4

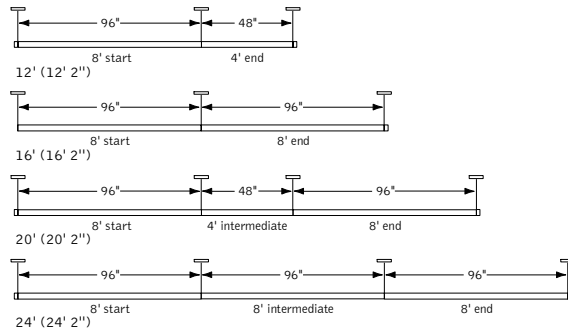
Notes:

w/Bodine GTD**Type:****A14-GTD**

SPEC14-5147

fixture:

project:

suspension information

Consult factory for additional row length information.

specifications**construction**

Two-piece, .060" thick 6063-T5 extruded aluminum housing.
Die-cast aluminum end caps and bulkhead.
For row installation, locking mechanism creates hairline joint.
All luminaires are provided with Y-cable suspension mounted on 48" or 96" centers.

4' unit weight: 12 lbs.
8' unit weight: 22 lbs.

optic

.095" thick frosted white MicroGroove acrylic diffusers with ribbed linear pattern.
Clear acrylic internal debris shield supplied as standard.
Optional Downlight Reflector optics fabricated of die-formed aluminum.

electrical

Luminaires are pre-wired with factory installed branch circuit wiring and over-molded quick connects.
Factory installed SJT power cord at feed location is included.
Electronic ballasts are thermally protected and have a Class "P" rating.
Optional dimming ballasts available.
UL and cUL listed.

sensors

Lutron daylight sensor is a directional sensor that operates with a Lutron EcoSystem (DB) or H-Series (DK) ballast and control system. The sensor has an integrated IR receiver for EcoSystem programming.

Philips Luxsense daylight sensor measures reflected light from the surface below and dims lamp output when the light level exceeds required level. Output may be adjusted by turning the dial. A 0-10V dimming ballast is required (T5 - DS, T5HO - D7 standard).

Wattstopper daylight sensor is a closed loop system that measures total light level from daylight and electric light. A 0-10V dimming ballast is required (T5 - DS, T5HO - D7 standard).

Wattstopper occupancy sensor is a passive infrared sensor designed for cubicles and small offices. It has built-in daylight sensing that will hold lights off when adequate ambient light exists. One sensor controls multiple fixtures.

finish

Polyester powder coat applied over a 5-stage pretreatment.
Canopy finished in Matte Satin White.

ordering**fixture series**

FVRS

Veer

FVRS

shielding

ACF

Flat MicroGroove Acrylic Diffuser

ACF

Radial MicroGroove Acrylic Diffuser

ACR

optional downlight accessories**

DR2

100% downlight

DR0

up to 90% downlight

DR1

up to 85% downlight

DR2

up to 70% downlight

DR4

lampping

2T8

1 Lamp T5

1T5

2 Lamp T5

2T5

1 Lamp T5HO

1T5HO

2 Lamp T5HO

2T5HO

1 Lamp T8

1T8

2 Lamp T8

2T8

circuit

Single Circuit

1C

Dual Circuit

2C

(Multiple lamp luminaires only)

voltage

1C

120 Volt

120

277 Volt

277

347 Volt

347

ballast

120

Electronic Instant Start <20% THD

E

Electronic Program Start <10% THD

S

Electronic Dimming Ballast*

D

(Consult factory for dimming limitations)

mounting

S

24" Cable Suspension

C24

48" Cable Suspension

C48

96" Cable Suspension

C96

(Specify "J" in place of "C" for 5" dia. canopies at power feed and 2" dia. canopies at non-feed locations)
(Consult factory for sloped ceiling applications)

factory options

C24

Concealed Dust Cover

DC

Emergency Circuit*

EC

Emergency Battery Pack*

EM

HLR/GLR Fuse

FU

Include 3000K Lamp

L830

Include 3500K Lamp

L835

Include 4100K Lamp

L841

Lutron™ Daylight Sensor*

LY1

(EcoSystem/H-Series ballast & controls required)

Lutron™ Sensor Feed*

SF

(EcoSystem ballast & controls required)

Philips® Daylight Sensor*

PY1

(T5/T5HO only. 0-10V dimming ballast required)

WattStopper™ Daylight Sensor*

WY1

(T5/T5HO only. 0-10V dimming ballast required)

WattStopper™ Occupancy Sensor*

W01

finish

WH

Matte Satin White

WH

Titanium Silver

TS

luminaire length

4'

4'

4'

8'

8'

12' (8'+4')

12'

16' (8'+8')

16'

20' (8'+4'+8')

20'

24' (8'+8'+8')

24'

remotes

(specify quantity)

WattStopper™ Daylight Setup Remote*

WYSR

(required for daylight programming, one included per order)

WattStopper™ Occupant Controller*

WOR

w/Bodine GTD

* for more information see Reference section. **lamp type will effect actual percentage values. See IES file for exact uplight/downlight %.

Focal Point LLC | 4141 S. Pulaski Rd., Chicago, IL 60632 | T: 773.247.9494 | F: 773.247.8484 | info@focalpointlights.com | www.focalpointlights.com
Focal Point LLC reserves the right to change specifications for product improvement without notification.

linear

Contractor: Vaughn Industries

GTD

Generator Transfer Device

PHILIPS
bodine

A Division Of Philips Electronics North America Corporation

For Generator or Central Inverter Supplied Lighting

Product Summary

UL LISTED

Factory or Field Installation

Full Warranty

5 Years (NOT pro-rata)

Dual Input Voltage

120/277 VAC, 60 Hz

AC Input Current

280 mA

AC Input Power Rating

1.6 Watts

Fusing

All inputs fused to 3 A Maximum

Temperature Rating (Ambient)

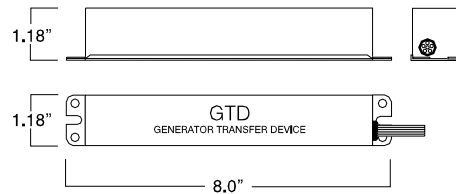
0°C to +50°C
(32°F to 122°F)

Dimensions

8" x 1.18" x 1.18"
(204 mm x 30 mm x 30 mm)
Mounting Center 7.60" (193 mm)

Weight

0.50 lbs. (0.23 kg)



APPLICATION

The GTD generator transfer device works in conjunction with an auxiliary generator or a central inverter system to power existing fluorescent or LED fixtures for egress lighting regardless of fixture wall switch position. The device consists of relay switching circuitry and fusing in one compact galvanized steel case. One generator transfer device per fixture is used to bypass the fixture wall switch, allowing the building's generator (or central inverter) to bring on switchable fixtures. The generator transfer device is suitable for indoor or damp locations and for sealed and gasketed fixtures. Recommended applications include: auditoriums, classrooms or any other location with generator (or central inverter) supplied lighting.

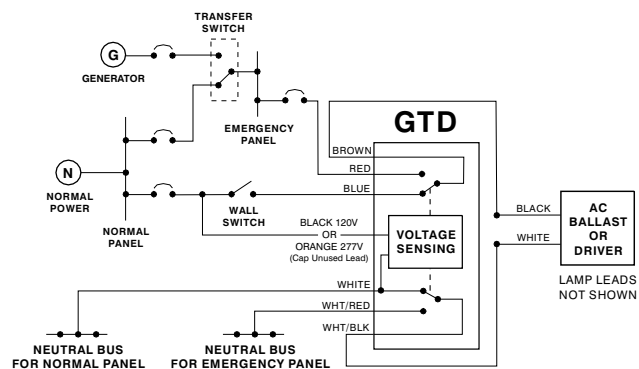
OPERATION

The GTD generator transfer device senses the loss of normal power and switches the AC ballast or driver input power connection to an unswitched, generator (or central inverter) supplied lighting circuit. No routine maintenance is required to keep the GTD functional; however, like other life safety unit equipment, it should be checked periodically to ensure that it is working properly.

INSTALLATION

The GTD generator transfer device does not affect normal fixture operation and comes fully assembled to mount inside, on top of or remote from the fixture ballast.

In addition to available wiring, the device requires a direct, unswitched connection to a generator (or central inverter) supplied emergency panel and an unswitched source on the same branch circuit as the switched supply (see diagram below).



Normal Operation - (Shown Above) AC Lighting Ballast supplied by normal panel & controlled by wall switch.
Generator Operation - AC Lighting Ballast or Driver Supplied by generator (or central inverter) through emergency panel and independent of wall switch position.

Specifiers Reference

Project **OSU - NRDT** Type _____ Model No. **GTD**
Comments **Types: A7-GTD, A14-GTD, A16-GTD**

L4100004

09/15/11 © Philips Emergency Lighting
P.O. Box 460 Collierville, TN USA 38027-0460
Sales 800-223-5728 FAX 901-853-5009
Tech. Support 888-263-4638
www.philips.com/bodine

GTD

Generator Transfer Device

Types A7-gtd, A14-gtd, A16-gtd

**For Generator or
Central Inverter Supplied Lighting**

UL LISTED

The GTD has been tested by Underwriters Laboratories in accordance with the standards set forth in UL 924, "Emergency Lighting and Power Equipment," and is UL Listed for factory or field installation.

SPECIFICATION

Generator (or central inverter) supplied egress lighting shall be provided by using a standard fluorescent or LED fixture equipped with a Philips Bodine GTD generator transfer device. The device shall be capable of bypassing the wall switch when the auxiliary generator (or central inverter) powers lighting. The device shall consist of relay switching circuitry and fusing contained in one 8" x 1.18" x 1.18" galvanized steel case; shall operate at 120 or 277 VAC, 60 Hz; shall have all inputs fused to 3 A maximum; shall draw 280 mA and 1.6 Watts during normal operation; and shall comply with the current NEC. The device shall be UL Listed for installation inside, on top of or remote from the fixture and shall be warranted for a full five years from date of purchase.

WARRANTY

The GTD generator transfer device is warranted for five (5) full years from date of purchase. This warranty covers only properly installed generator transfer devices used under normal conditions. For the warranty period, Philips Emergency Lighting will, at its option, repair or replace without charge a defective device, provided it is returned to the factory transportation prepaid and our inspection determines it to be defective under terms of the warranty. Repair or replacement, as stated above, shall constitute the purchaser's exclusive warranty, which does not extend to transportation, installation, labor or any other charges; nor does it apply to any equipment of another manufacturer used in conjunction with the device.

L4100004

09/15/11 © Philips Emergency Lighting
P.O. Box 460 Collierville, TN USA 38027-0460
Sales 800-223-5728 FAX 901-853-5009
Tech. Support 888-263-4638
www.philips.com/bodine

For the most current technical information and notices, please visit TechNotes on our website.

Contractor: Vaughn Industries

Job Name: OSU NRDT Building I

Submitted by Spectrum Lighting, Inc.



Job Name:
OSU - NRDT BUILDING

Catalog Number:
FAVCS-PL-1T5-1C-120-S-CXX-TS-8
(DUST COVER NOT AVAIL)

Notes:

Type:

A16

SPEC14-S147

new in '05

avenue® c



FEATURES

Extruded aluminum, suspended linear
T5/T5H0 fluorescent luminaire.

3.5" miniature square profile creates sleek
aesthetic.

Luminaire may be specified in a direct or
indirect configuration.

Avenue® C makes an exceptional aesthetic
statement in conference rooms, private
offices, reception areas or other high-end
applications.

shielding options

flush opal
satin lensconcave
parabolic louversolid
(indirect)

companion luminaire

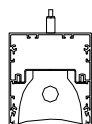
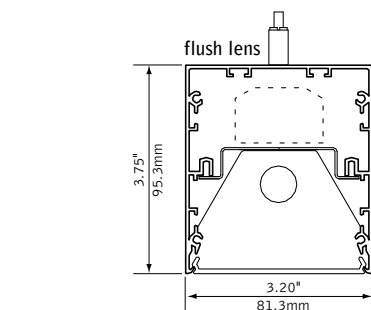


wall mount

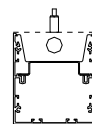


recessed

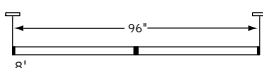
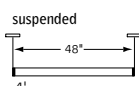
DIMENSIONAL DATA



louver

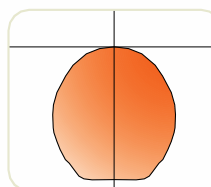


solid (indirect)



august 2005

PERFORMANCE



Flush Lens
1-Lamp T5
59% Efficiency
620 cd @ 10°

See Photometric section for
additional performance data.

Contractor: Vaughn Industries

Job Name: OSU NRD Building L

Submitted by Spectrum Lighting, Inc.



Job Name:
OSU - NRD BUILDING

Catalog Number:

FAVCS-PL-1T5-1C-120-S-CXX-TS-8
(DUST COVER NOT AVAIL)

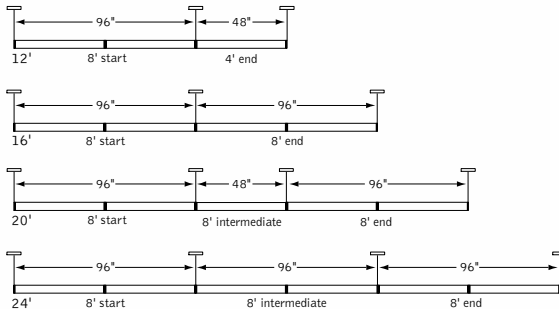
Notes:

Type:**A16**

SPEC14-5147

fixture type:

project name:

MOUNTING INFORMATION

Consult factory for additional row length information.

SPECIFICATIONS**construction**

One-piece, .050" thick housing of 6063-T5 extruded aluminum.

20 Ga. ballast channel.

16 Ga. internal bulkhead.

14 Ga. steel end caps.

All luminaires are provided with single point aircraft cable suspension mounted on 48" and 96" centers.

4' unit weight: 15 lbs

8' unit weight: 28 lbs

optic

22 Ga. reflector finished in high reflectance white.

Concave parabolic louver: 1"H x 1" frequency fabricated of low iridescent, semi-specular premium grade aluminum.

Flush lens: extruded DR™ acrylic lens .156" thick with opal satin finish.

electrical

Luminaires are pre-wired with factory installed branch circuit wiring and over-molded quick connects.

Electronic ballasts are thermally protected and have a Class "P" rating.

Optional DALI and other dimming ballasts available.

Consult factory for dimming specifications and availability.

UL and cUL listed.

emergency

Emergency battery packs provide 90 minutes of illumination.

Initial lumen output for lamp types are as follows:

T5 Lamp: Up to 550 lumens

T5H0 Lamps: Up to 825 lumens

Battery pack requires unswitched hot from same branch circuit as AC ballast.

finish

Polyester powder coat applied over a 5-stage pre-treatment.

Standard luminaire housing finished in Matte Satin White or Titanium Silver.

ORDERING**luminaire series**

Avenue C FAVCS

FAVCS**shielding**

Flush Satin Lens FL

Concave Parabolic Louver PL

Indirect with Solid Housing SD

lamping

One Lamp T5 1T5

One Lamp T5H0 1T5H0

circuits

Single Circuit 1C

voltage

120 Volt 120

277 Volt 277

347 Volt 347

(Consult factory for availability)

ballast

Electronic Program Start S

Electronic Dimming Ballast D

(Consult factory for dimming availability)

suspension

24" Cable Suspension C24

48" Cable Suspension C48

96" Cable Suspension C96

(Specify "J" in place of "C" for 5" dia.

canopies at power feed and 2" dia.

canopies at non-feed locations)

(Consult factory for sloped ceiling

applications)

Surface Mount SM

factory options

Clear Acrylic Dust Cover DC

Emergency Circuit EC

Emergency Battery Pack EM

HLR/GLR Fuse FU

Include 3000K Lamp L830

Include 3500K Lamp L835

Include 4100K Lamp L841

finish

Matte White Housing WH

Titanium Silver TS

luminaire length

4' Nominal Housing 4'

8' Nominal Housing 8'

12' (8'+4') 12'

16' (8'+8') 16'

20' (8'+4'+8') 20'

24' (8'+8'+8') 24'

(Consult factory for custom lengths

and corner availability)

w/Bodine GTD**S****CXX****CXX = MUST SPECIFY
SUSPENSION LENGTH****TS****8'**

LINEAR

Focal Point L.L.C. 4201 South Pulaski Rd, Chicago, Illinois 60632 | T: 773.247.9494 | F: 773.247.8484 | info@focalpointlights.com | www.focalpointlights.com
Focal Point L.L.C. reserves the right to change specifications for product improvement without notification.

Contractor: Vaughn Industries

Job Name: OSU NRDT Building I

Submitted by Spectrum Lighting, Inc.



Job Name:
OSU - NRDT BUILDINGS

Catalog Number:
FAVCS-PL-1T5-1C-120-S-CXX-TS-8
(DUST COVER NOT AVAIL)

Type:**A16****Notes:**

SPEC14-5147

flush lens
avenue® c

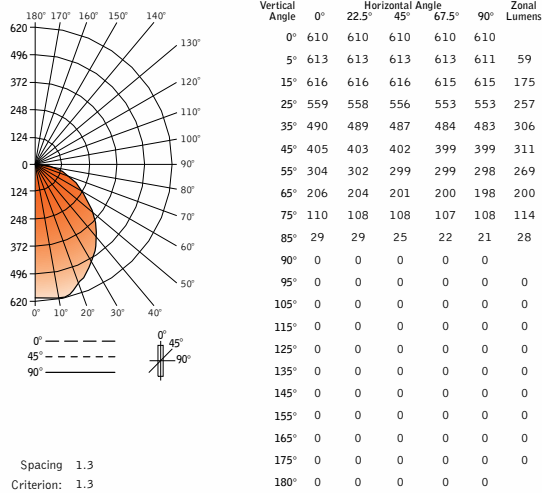


Filename: FAVCSFLT5.IES

Catalog #: FAVCS-FL-1T5-1C-120-S-C24-WH-4'

Efficiency: 59%

Test #: 12397.1

CANDLEPOWER DISTRIBUTION**LUMEN SUMMARY**

| Zone | Lumens | % Lamp | % Fixt |
|------------------------|---------------------|-------------|--------------|
| 0°-30° | 490 | 16.9 | 28.5 |
| 0°-40° | 796 | 27.4 | 46.3 |
| 0°-60° | 1376 | 47.5 | 80.1 |
| 0°-90° | 1718 | 59.3 | 100.0 |
| Total Luminaire | 0°-180° 1718 | 59.3 | 100.0 |

LUMINANCE DATA (CD/M²)

| Vertical Angle | 0° | 45° | 90° |
|----------------|------|------|------|
| 45° | 7474 | 7418 | 7363 |
| 55° | 6916 | 6802 | 6779 |
| 65° | 6360 | 6206 | 6113 |
| 75° | 5546 | 5445 | 5445 |
| 85° | 4342 | 3743 | 3144 |

CO-EFFICIENTS OF UTILIZATION

| Floor | Ceiling | Wall | RCR 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
|-------|---------|------|-------|----|----|----|----|----|----|----|----|----|----|
| 80 | 70 | 20 | 71 | 69 | 66 | 63 | 60 | 58 | 55 | 52 | 49 | 46 | 43 |
| 50 | 50 | 50 | 71 | 69 | 66 | 63 | 60 | 58 | 55 | 52 | 49 | 46 | 43 |
| 30 | 30 | 30 | 71 | 69 | 66 | 63 | 60 | 58 | 55 | 52 | 49 | 46 | 43 |
| 10 | 10 | 10 | 71 | 69 | 66 | 63 | 60 | 58 | 55 | 52 | 49 | 46 | 43 |
| 00 | 00 | 00 | 71 | 69 | 66 | 63 | 60 | 58 | 55 | 52 | 49 | 46 | 43 |

Numbers indicate percentage values of reflectivity.

Go to www.focalpointlights.com for additional photometric data.

louver
avenue® c

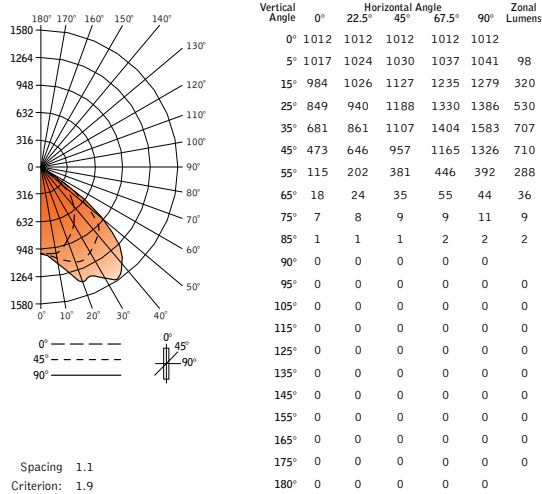


Filename: FAVCSPL1T5H.IES

Catalog #: FAVCS-PL-T5H0-1C-120-S-C24-WH-4'

Efficiency: 54%

Test #: 12387.1

CANDLEPOWER DISTRIBUTION**LUMEN SUMMARY**

| Zone | Lumens | % Lamp | % Fixt |
|------------------------|---------------------|-------------|--------------|
| 0°-30° | 948 | 19.0 | 35.1 |
| 0°-40° | 1655 | 33.1 | 61.3 |
| 0°-60° | 2653 | 53.1 | 98.3 |
| 0°-90° | 2700 | 54.0 | 100.0 |
| Total Luminaire | 0°-180° 2700 | 54.0 | 100.0 |

LUMINANCE DATA (CD/M²)

| Vertical Angle | 0° | 45° | 90° |
|----------------|------|-------|------|
| 45° | 8729 | 17660 | 2447 |
| 55° | 2616 | 8668 | 8918 |
| 65° | 556 | 1081 | 1359 |
| 75° | 353 | 454 | 555 |
| 85° | 150 | 150 | 299 |

CO-EFFICIENTS OF UTILIZATION

| Floor | Ceiling | Wall | RCR 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
|-------|---------|------|-------|----|----|----|----|----|----|----|----|----|----|
| 80 | 70 | 20 | 64 | 64 | 64 | 63 | 63 | 63 | 60 | 57 | 55 | 53 | 51 |
| 50 | 50 | 50 | 64 | 64 | 64 | 63 | 63 | 63 | 60 | 57 | 55 | 53 | 51 |
| 30 | 30 | 30 | 64 | 64 | 64 | 63 | 63 | 63 | 60 | 57 | 55 | 53 | 51 |
| 10 | 10 | 10 | 64 | 64 | 64 | 63 | 63 | 63 | 60 | 57 | 55 | 53 | 51 |
| 00 | 00 | 00 | 64 | 64 | 64 | 63 | 63 | 63 | 60 | 57 | 55 | 53 | 51 |

Numbers indicate percentage values of reflectivity.

Go to www.focalpointlights.com for additional photometric data.

Contractor: Vaughn Industries

Job Name: OSU NRDT Building L

Submitted by Spectrum Lighting Inc.



Job Name:
OSU - NRDT BUILDINGS

Catalog Number:

FAVCS-PL-T15-1C-120-S-CXX-TS-8
(DUST COVER NOT AVAIL)

Notes:

Type:**A16**

SPEC14-5147

solid
avenue® c

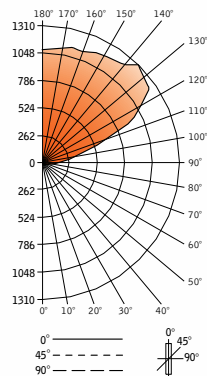


Filename: FAVCSSD1T5H.IES

Catalog #: FAVCS-SD-1T5H0-1C-120-S-C24-WH-4'

Efficiency: 88%

Test #: 12596.1

CANDLEPOWER DISTRIBUTION

| Vertical Angle | 0° | 22.5° | 45° | 67.5° | 90° | Zonal Lumens |
|----------------|------|-------|------|-------|------|--------------|
| 0° | 0 | 0 | 0 | 0 | 0 | |
| 5° | 0 | 0 | 0 | 0 | 0 | 0 |
| 15° | 0 | 0 | 0 | 0 | 0 | 0 |
| 25° | 0 | 0 | 0 | 0 | 0 | 0 |
| 35° | 0 | 0 | 0 | 0 | 0 | 0 |
| 45° | 0 | 0 | 0 | 0 | 0 | 0 |
| 55° | 0 | 0 | 0 | 0 | 0 | 0 |
| 65° | 0 | 0 | 0 | 0 | 0 | 0 |
| 75° | 0 | 0 | 0 | 0 | 0 | 0 |
| 85° | 0 | 0 | 0 | 0 | 0 | 0 |
| 90° | 0 | 1 | 2 | 2 | 2 | |
| 95° | 18 | 63 | 32 | 25 | 23 | 67 |
| 105° | 162 | 399 | 446 | 389 | 361 | 398 |
| 115° | 366 | 606 | 861 | 925 | 929 | 735 |
| 125° | 557 | 731 | 1012 | 1197 | 1245 | 843 |
| 135° | 731 | 836 | 1061 | 1245 | 1309 | 790 |
| 145° | 861 | 914 | 1044 | 1164 | 1203 | 650 |
| 155° | 985 | 1009 | 1075 | 1142 | 1168 | 495 |
| 165° | 1082 | 1090 | 1111 | 1135 | 1142 | 312 |
| 175° | 1092 | 1089 | 1089 | 1092 | 1090 | 104 |
| 180° | 1080 | 1080 | 1080 | 1080 | 1080 | |

LUMEN SUMMARY

| Zone | Lumens | % Lamp | % Fixt |
|-----------------|---------|--------|----------|
| 0°-30° | 0 | 0 | 0 |
| 0°-90° | 0 | 0 | 0 |
| 90°-130° | 2042 | 40.9 | 46.5 |
| 90°-180° | 4393 | 87.9 | 100 |
| Total Luminaire | 0°-180° | 4393 | 87.9 100 |

LUMINANCE DATA (CD/M²)

| Vertical Angle | 0° | 45° | 90° |
|----------------|----|-----|-----|
| 45° | 0 | 0 | 0 |
| 55° | 0 | 0 | 0 |
| 65° | 0 | 0 | 0 |
| 75° | 0 | 0 | 0 |
| 85° | 0 | 0 | 0 |

CO-EFFICIENTS OF UTILIZATION

| Floor | 80 | 70 | 20 | 30 | 10 | 00 |
|---------|----|----|----|----|----|-----|
| Ceiling | 70 | 50 | 30 | 10 | 50 | 100 |
| Wall | 70 | 50 | 30 | 10 | 50 | 100 |
| RCR 0 | 84 | 84 | 84 | 84 | 72 | 72 |
| 1 | 76 | 73 | 69 | 67 | 65 | 62 |
| 2 | 69 | 63 | 58 | 54 | 59 | 54 |
| 3 | 63 | 55 | 50 | 45 | 54 | 48 |
| 4 | 57 | 49 | 43 | 38 | 49 | 42 |
| 5 | 53 | 43 | 37 | 32 | 45 | 37 |
| 6 | 48 | 39 | 32 | 27 | 41 | 33 |
| 7 | 44 | 34 | 28 | 24 | 38 | 30 |
| 8 | 41 | 31 | 25 | 21 | 35 | 27 |
| 9 | 38 | 28 | 22 | 18 | 32 | 24 |
| 10 | 35 | 25 | 20 | 16 | 30 | 22 |

Go to www.focalpointlights.com for additional photometric data.

Numbers indicate percentage values of reflectivity.

Contractor: Vaughn Industries

Job Name: OSU NRD Building I

Submitted by Spectrum Lighting, Inc.



Job Name:
OSU - NRD Building

Catalog Number:

FAVCS-PL-1T5-1C-120-S-CXX-TS-8
(DUST COVER NOT AVAIL)

Type:**A16- GTD**

Notes:

w/GTD

SPEC14-5147

new in '05

avenue® c

**FEATURES**

Extruded aluminum, suspended linear
T5/T5H0 fluorescent luminaire.

3.5" miniature square profile creates sleek
aesthetic.

Luminaire may be specified in a direct or
indirect configuration.

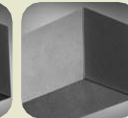
Avenue® C makes an exceptional aesthetic
statement in conference rooms, private
offices, reception areas or other high-end
applications.

shielding options

flush opal
satin lens



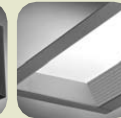
concave
parabolic louver



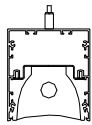
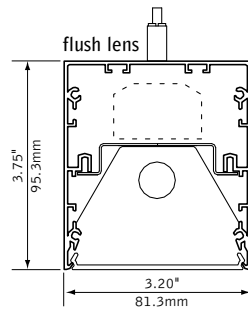
solid
(indirect)

companion luminaire

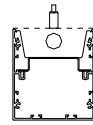
wall mount



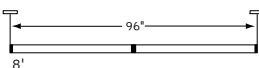
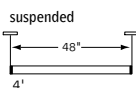
recessed

DIMENSIONAL DATA

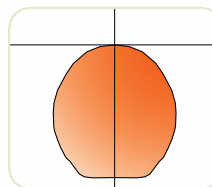
louver



solid (indirect)



august 2005

PERFORMANCE

Flush Lens
1-Lamp T5
59% Efficiency
620 cd @ 10°

See **Photometric** section for
additional performance data.

Contractor: Vaughn Industries

Job Name: OSU NRD Building L

Submitted by Spectrum Lighting, Inc.



Job Name:
OSU - NRD BUILDING

Catalog Number:

FAVCS-PL-1T5-1C-120-S-CXX-TS-8
(DUST COVER NOT AVAIL)

Notes:

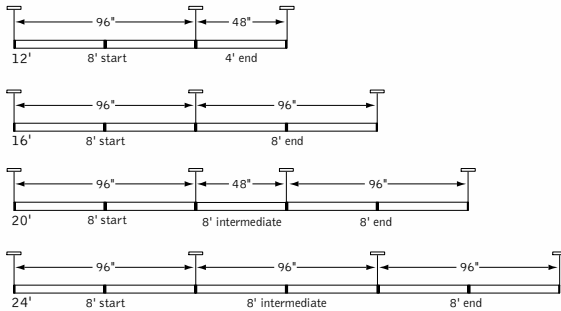
w/Bodine GTD

Type:**A16-GTD**

SPEC14-5147

fixture type:

project name:

MOUNTING INFORMATION

Consult factory for additional row length information.

SPECIFICATIONS**construction**

One-piece, .050" thick housing of 6063-T5 extruded aluminum.

20 Ga. ballast channel.

16 Ga. internal bulkhead.

14 Ga. steel end caps.

All luminaires are provided with single point aircraft cable suspension mounted on 48" and 96" centers.

4' unit weight: 15 lbs

8' unit weight: 28 lbs

optic

22 Ga. reflector finished in high reflectance white.

Concave parabolic louver: 1"H x 1" frequency fabricated of low iridescent, semi-specular premium grade aluminum.

Flush lens: extruded DR™ acrylic lens .156" thick with opal satin finish.

electrical

Luminaires are pre-wired with factory installed branch circuit wiring and over-molded quick connects.

Electronic ballasts are thermally protected and have a Class "P" rating.

Optional DALI and other dimming ballasts available.

Consult factory for dimming specifications and availability.

UL and cUL listed.

emergency

Emergency battery packs provide 90 minutes of illumination.

Initial lumen output for lamp types are as follows:

T5 Lamp: Up to 550 lumens

T5H0 Lamps: Up to 825 lumens

Battery pack requires unswitched hot from same branch circuit as AC ballast.

finish

Polyester powder coat applied over a 5-stage pre-treatment.

Standard luminaire housing finished in Matte Satin White or Titanium Silver.

ORDERING**luminaire series**

Avenue C FAVCS

FAVCS**shielding**

Flush Satin Lens FL

Concave Parabolic Louver PL

Indirect with Solid Housing SD

lamping

One Lamp T5 1T5

One Lamp T5H0 1T5H0

circuits

Single Circuit 1C

voltage

120 Volt 120

277 Volt 277

347 Volt 347

(Consult factory for availability)

ballast

Electronic Program Start S

Electronic Dimming Ballast D

(Consult factory for dimming availability)

suspension

24" Cable Suspension C24

48" Cable Suspension C48

96" Cable Suspension C96

(Specify "J" in place of "C" for 5" dia.

canopies at power feed and 2" dia.

canopies at non-feed locations)

(Consult factory for sloped ceiling

applications)

Surface Mount SM

factory options

Clear Acrylic Dust Cover DC

Emergency Circuit EC

Emergency Battery Pack EM

HLR/GLR Fuse FU

Include 3000K Lamp L830

Include 3500K Lamp L835

Include 4100K Lamp L841

finish

Matte White Housing WH

Titanium Silver TS

luminaire length

4' Nominal Housing 4'

8' Nominal Housing 8'

12' (8'+4') 12'

16' (8'+8') 16'

20' (8'+4'+8') 20'

24' (8'+8'+8') 24'

(Consult factory for custom lengths

and corner availability)

w/Bodine GTD

LINEAR

CXX = MUST SPECIFY
SUSPENSION LENGTHFocal Point L.L.C. 4201 South Pulaski Rd, Chicago, Illinois 60632 | T: 773.247.9494 | F: 773.247.8484 | info@focalpointlights.com | www.focalpointlights.com
Focal Point L.L.C. reserves the right to change specifications for product improvement without notification.

Contractor: Vaughn Industries

GTD

Generator Transfer Device

PHILIPS
bodine

A Division Of Philips Electronics North America Corporation

For Generator or Central Inverter Supplied Lighting

Product Summary

UL LISTED

Factory or Field Installation

Full Warranty

5 Years (NOT pro-rata)

Dual Input Voltage

120/277 VAC, 60 Hz

AC Input Current

280 mA

AC Input Power Rating

1.6 Watts

Fusing

All inputs fused to 3 A Maximum

Temperature Rating (Ambient)

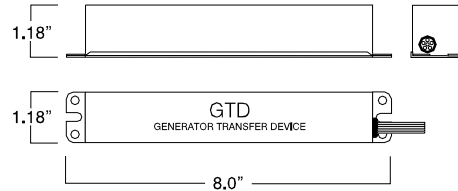
0°C to +50°C
(32°F to 122°F)

Dimensions

8" x 1.18" x 1.18"
(204 mm x 30 mm x 30 mm)
Mounting Center 7.60" (193 mm)

Weight

0.50 lbs. (0.23 kg)



APPLICATION

The GTD generator transfer device works in conjunction with an auxiliary generator or a central inverter system to power existing fluorescent or LED fixtures for egress lighting regardless of fixture wall switch position. The device consists of relay switching circuitry and fusing in one compact galvanized steel case. One generator transfer device per fixture is used to bypass the fixture wall switch, allowing the building's generator (or central inverter) to bring on switchable fixtures. The generator transfer device is suitable for indoor or damp locations and for sealed and gasketed fixtures. Recommended applications include: auditoriums, classrooms or any other location with generator (or central inverter) supplied lighting.

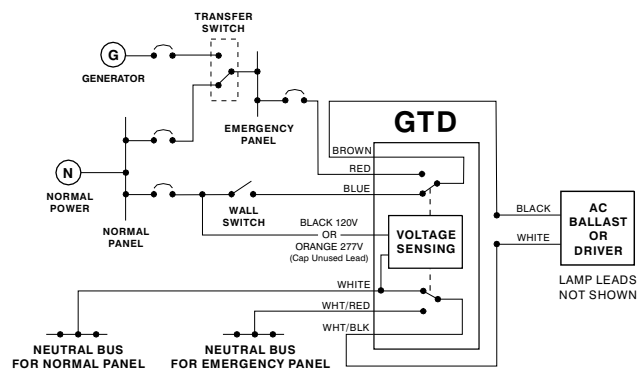
OPERATION

The GTD generator transfer device senses the loss of normal power and switches the AC ballast or driver input power connection to an unswitched, generator (or central inverter) supplied lighting circuit. No routine maintenance is required to keep the GTD functional; however, like other life safety unit equipment, it should be checked periodically to ensure that it is working properly.

INSTALLATION

The GTD generator transfer device does not affect normal fixture operation and comes fully assembled to mount inside, on top of or remote from the fixture ballast.

In addition to available wiring, the device requires a direct, unswitched connection to a generator (or central inverter) supplied emergency panel and an unswitched source on the same branch circuit as the switched supply (see diagram below).



Normal Operation - (Shown Above) AC Lighting Ballast supplied by normal panel & controlled by wall switch.
Generator Operation - AC Lighting Ballast or Driver Supplied by generator (or central inverter) through emergency panel and independent of wall switch position.

Specifiers Reference

Project **OSU - NRDT** Type _____ Model No. **GTD**
Comments **Types: A7-GTD, A14-GTD, A16-GTD**

L4100004

09/15/11 © Philips Emergency Lighting
P.O. Box 460 Collierville, TN USA 38027-0460
Sales 800-223-5728 FAX 901-853-5009
Tech. Support 888-263-4638
www.philips.com/bodine

Types A7-gtd, A14-gtd, A16-gtd

GTD

Generator Transfer Device

**For Generator or
Central Inverter Supplied Lighting**

UL LISTED

The GTD has been tested by Underwriters Laboratories in accordance with the standards set forth in UL 924, "Emergency Lighting and Power Equipment," and is UL Listed for factory or field installation.

SPECIFICATION

Generator (or central inverter) supplied egress lighting shall be provided by using a standard fluorescent or LED fixture equipped with a Philips Bodine GTD generator transfer device. The device shall be capable of bypassing the wall switch when the auxiliary generator (or central inverter) powers lighting. The device shall consist of relay switching circuitry and fusing contained in one 8" x 1.18" x 1.18" galvanized steel case; shall operate at 120 or 277 VAC, 60 Hz; shall have all inputs fused to 3 A maximum; shall draw 280 mA and 1.6 Watts during normal operation; and shall comply with the current NEC. The device shall be UL Listed for installation inside, on top of or remote from the fixture and shall be warranted for a full five years from date of purchase.

WARRANTY

The GTD generator transfer device is warranted for five (5) full years from date of purchase. This warranty covers only properly installed generator transfer devices used under normal conditions. For the warranty period, Philips Emergency Lighting will, at its option, repair or replace without charge a defective device, provided it is returned to the factory transportation prepaid and our inspection determines it to be defective under terms of the warranty. Repair or replacement, as stated above, shall constitute the purchaser's exclusive warranty, which does not extend to transportation, installation, labor or any other charges; nor does it apply to any equipment of another manufacturer used in conjunction with the device.

L4100004

09/15/11 © Philips Emergency Lighting
P.O. Box 460 Collierville, TN USA 38027-0460
Sales 800-223-5728 FAX 901-853-5009
Tech. Support 888-263-4638
www.philips.com/bodine

For the most current technical information and notices, please visit TechNotes on our website.

Contractor: Vaughn Industries

Job Name: OSU NRDT Building I

Submitted by Lighting Systems of Columbus

**Job Name:**OHIO STATE UNIVERSITY NORTH RESIDENTIAL
DISTRICT TRANSFORMATION**Catalog Number:**

034SUSSW

Notes:

Type:**A17**

LSC14-37947

O3 | allège³

elements

omni-direct



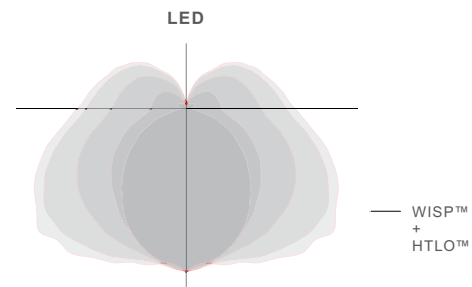
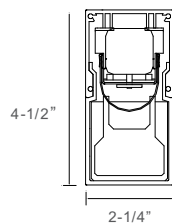
suspended



ceiling



wall



2', 3', 4' individual

8' individual

12' individual

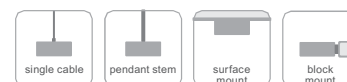
16' joined

20' joined

24' joined

| LED | 1 board in cross | |
|----------|------------------|-----------|
| per foot | watts/ft | lumens/ft |
| LS | 5 | 600 |
| LH | 10 | 1200 |

Lumens at board at 4000K.
Consult IES files online for delivered lumens.
Specifications subject to change.

Available Light Platforms:**Available Mounting:**

Contractor: Vaughn Industries

Job Name: OSU NRD Building I

Submitted by Lighting Systems of Columbus

**Job Name:**OHIO STATE UNIVERSITY NORTH RESIDENTIAL
DISTRICT TRANSFORMATION**Catalog Number:**

O34SUSSW

Notes:

Type:**A17**

LSC14-37947

O3 | allège³

project

type

quantity

interior**Mounting:**

Single Cable: (1) 4', 1mm stainless steel aircraft cable w/ fully adjustable grippers and locking device. 5' plastic-coated, silver-braided, flexible cord. Satin white, square canopy is standard.

Pendant/Stem: 3/8" stem and round canopy, painted white. Indicate pendant length. If specified for earthquake zone, a-light will provide swivel canopies.

Wall Blocks: Precisely milled aluminum block mounts provide minimalistic appearance. 3/8", 1/2", 1" or 2" deep. ADA compliant with 3/8", 1/2" or 1" blocks. (2) blocks provided per fixture, lengths 8ft or less; (3) blocks per 12ft. Direct-to-wall mounting is not available due to lens proximity to wall.

Ceiling/Surface Mount: Fixture mounts directly to ceiling, power connects inside fixture using BX or MX style wiring.

Lengths:

All length dimensions are nominal, used for general length identification purposes. Actual lengths may vary by several inches. Lengths to 12' are individual fixtures and do not connect. Lengths beginning with "R" designate standard, nominal rows comprised of 4' and/or 8' sections. 3/8" mid plate joiners are visible between sections.

Specify all modifications with the "integrations" specification sheet: nominal lengths other than the standards available here, rows longer than 24', exact lengths, span mount, mullion mount, etc.

LED:

5yr warranty. >60,000hr LED life. Tested to LM-79 and LM-80. See wattage/lumen table for specifications per foot. All specifications are subject to change.

T5/T5HO:

Single lamp in cross section. Program start is factory standard.

T8:

Single lamp in cross section. Instant start is factory standard: choose low <0.8BF; standard 0.8-1.0BF; high >1.0BF. Specify if program start or custom ballast factor is required.

Construction:

60% recycled aluminum extruded housing. Precision milled endcaps. 180° omni-directional 3D lens.

Finish:

Electrostatically applied powder coat finish.

Listing:

UL/CUL. Damp Location.

Companion Luminaires:

O2 sconce

Legend:

1. Emergency ballast not applicable on lengths 3ft or less.
2. Standard multi-circuiting: see fixture chart below.

Series: **O3****Dimension:**

**advise
length ?**

| | |
|-----------------|-----|
| nominal 2' | 2 |
| nominal 3' | 3 |
| nominal 4' | 4 |
| nominal 8' | 8 |
| nominal 12' | 12 |
| nominal 16' row | R16 |
| nominal 20' row | R20 |
| nominal 24' row | R24 |

Lamping:

| | |
|------------------------|-----|
| LED standard output | LS |
| LED high output | LH |
| T5 (1) | S |
| T5HO (1) | H |
| T8 (1) low output | T8L |
| T8 (1) standard output | T8S |
| T8 (1) high output | T8H |

LED Temp (if applicable):

| | |
|-------|----|
| 3000k | 30 |
| 3500k | 35 |
| 4000k | 40 |

Voltage:

| | |
|-----------------------|---|
| universal 120V - 277V | U |
| 120V | 1 |
| 277V | 2 |
| 347V | 3 |

Optics:

| | |
|--------------------|----|
| WISP™ lens | S |
| WISP™ + HTLO™ lens | SH |

Mounting:

| | |
|---|------|
| single aircraft cable | S |
| pendant / rigid stem - indicate stem length | P__ |
| pendant / rigid stem for earthquake zone - indicate stem length | PV__ |
| wall mount blocks 1" | M1 |
| wall mount blocks 2" | M2 |
| wall mount blocks 3/8" | M3 |
| wall mount blocks 1/2" | M5 |
| ceiling/surface mount | F |

Finish:


| | |
|-------------------------|---|
| a-lightanium™ | T |
| satin white | W |
| satin black | B |
| textured eggshell white | E |
| other - specify RAL# | O |

Options:

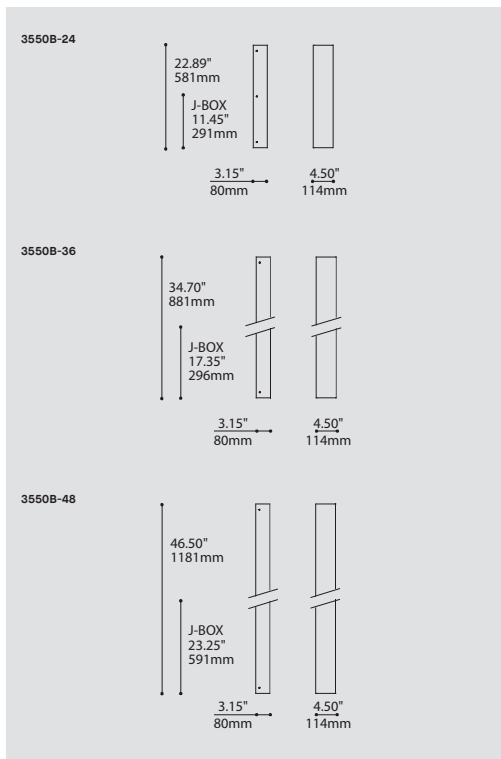
| | |
|---|---|
| dimming - specify manufacturer, model/series and voltage | D |
| emergency (fluorescent only) - specify model/series or lumens | E |
| external fusing | F |
| multi-circuit | M |
| new york city code | N |

Multi-circuit standards

| | |
|------------|--|
| 2, 3', 4': | |
| 8': | |

| | | | |
|--|---|---|------|
|  | Project 14-16183-14 Date 10/29/2014 Contractor: Vaughn Industries OSU NRD1 BUILDING | Catalog Number 3550B-48 2XF.T5.28 120V-FRO | Type |
| | Submitted By LIGHTING UNLIMITED INC | Notes | A18 |

DOUBLE FLARE 3550B



| ORDERING SPECIFICATION | SPÉCIFICATION DE COMMANDE | CODE |
|---|--|-----------|
| MODEL MODÈLE | | 3550B |
| 3550B DOUBLE FLARE | | |
| LUMINAIRE LENGTH LONGUEUR DU LUMINAIRE | | 48 |
| 24 24" | | |
| 36 36" | | |
| 48 48" | | |
| LIGHT SOURCE SOURCE LUMINEUSE | | 2XF.T5.28 |
| (WATTAGE, LAMP TYPE, LAMP FORM, BASE TYPE, OTHER INFO) | | |
| 3550B-24 | | |
| 2XF.T5.14 | 14W X 2, T5 | |
| 2XF.T5.24 | 24W X 2, T5 HO | |
| 3550B-36 | | |
| 2XF.T5.21 | 21W X 2, T5 | |
| 2XF.T5.39 | 39W X 2, T5 HO | |
| 3550B-48 | | |
| 2XF.T5.28 | 28W X 2, T5 | |
| 2XF.T5.54 | 54W X 2, T5 HO | |
| VOLTAGE VOLTAGE | | 120V |
| 120V 120 VOLT | | |
| 277V 277 VOLT | | |
| 347V* 347 VOLT | | |
| *ONLY AVAILABLE WITH 2XF.T5.54 (NON-DIMMING BALLAST) | | |
| DIMMING OPTION OPTION DE GRADATION | | |
| AVAILABLE WITH 2XF.T5.24 AND 2XF.T5.54 | | |
| DM1 | ADVANCE MARK 10 ELECTRONIC DIMMING BALLAST | |
| AVAILABLE WITH 2XF.T5.14, 2XF.T5.21, 2XF.T5.28 AND 2XF.T5.54 | | |
| DM7 | ADVANCE MARK 7 ELECTRONIC DIMMING BALLAST | |
| AVAILABLE WITH ALL LIGHT SOURCES | | |
| D3D | LUTRON HI-LUME 3D ELECTRONIC DIMMING BALLAST (ECOSYSTEM DIGITAL LINK WIRING) | |
| D33 | LUTRON HI-LUME 3D ELECTRONIC DIMMING BALLAST (3-WIRE WIRING) | |
| EMERGENCY BATTERY BATTERIE D'URGENCE | | |
| AVAILABLE WITH ALL LIGHT SOURCES, 120V OR 277V ONLY NOT AVAILABLE WITH A DIMMING BALLAST | | |
| EM | EMERGENCY BATTERY | |
| STRUCTURE FINISH FINI STRUCTURE | | FRO |
| FRO FROSTED | | |

PRODUCT CHARACTERISTICS CARACTÉRISTIQUES DU PRODUIT



| | |
|-------------------|--|
| DESIGN: | Modern rectangular profile available in three lengths and updated performance. ADA compliant. |
| LIGHT SOURCE: | Highly efficient fluorescent T5 and T5 HO light sources. Dimming and emergency available. Structure in extruded aluminum & die-stamped steel. Injection moulded plastic end caps. |
| DIFFUSER: | Machined & frosted acrylic housing with snap-fit, extruded micro-prism acrylic lens. |
| CERTIFIED: | c-UL-us |
| CONCEPTION: | Profil carré et contemporain plus performant offert en trois longueurs. Conforme à la norme ADA. |
| SOURCE LUMINEUSE: | T5 et T5 HO à haute performance; ballasts à gradation et d'urgence disponibles. |
| STRUCTURE: | Structure en acier extrudé et en acier embouti. Embouts injectés en plastique. |
| DIFFUSEUR: | Boîtier d'acrylique usiné et givré avec fixé par enclenchement, lentille extrudée en acrylique avec micro-prismes. |
| CERTIFIÉ: | c-UL-us |

FAMILY FAMILLE



74040B



3550B



SPECIFICATION

Contractor: Vaughn Industries

Job Name: OSU NRDOT Building I

Submitted by Lighting Systems of Columbus

**Job Name:**OHIO STATE UNIVERSITY NORTH RESIDENTIAL
DISTRICT TRANSFORMATION**Catalog Number:**

P2851-09

Notes:

Type:**A40**

LSC14-37947



Incandescent

Alexa

Close-To-Ceiling

Type _____

-09

P2851

**Finish**Catalog
No.Brushed
Nickel

Lamping

Dimensions (Inches)

A

B

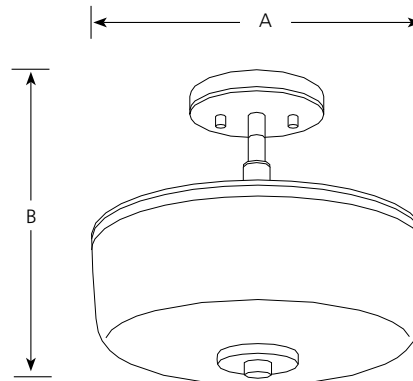
P2851

-09

2 (m) 100w

12-1/4

11

**Specifications:**General

- White linen glass bowl: 12-1/4" dia., 4-1/2" ht.
- A crisp, clear edge accent strip complements the etched and clear glass
- Plated Brushed Nickel (-09) finish
- Steel construction
- Companion Bath and Vanity, Chandelier, Close-to-ceiling, Hall and Foyer, Pendant, Wall bracket, fixtures are available

Mounting

- Ceiling mount
- Canopy covers a standard 4" hexagonal recessed outlet box
- Mounting strap for outlet box included

Electrical

- Medium base ceramic sockets
- Pre-wired

Labeling

- UL-CUL Dry location listed

Progress Lighting
701 Millennium Blvd.
Greenville, South Carolina
29607

www.progresslighting.com

Rev. 08/13

Contractor: Vaughn Industries

Job Name: OSU NRD Building I

Submitted by Lighting Systems of Columbus

**Job Name:**OHIO STATE UNIVERSITY NORTH RESIDENTIAL
DISTRICT TRANSFORMATION**Catalog Number:**

44 0902

Notes:

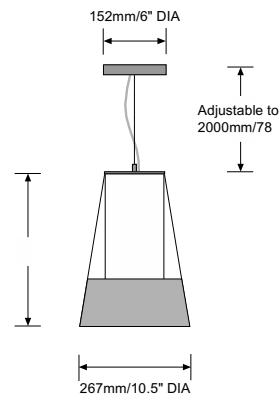
Type:**A45**

LSC14-37947

KIORA**A SPECIFY LAMP/LUMINAIRE TYPE**

| Code: | Lamp: | Weight: | Photometry: |
|---------|--------------------|-------------|--------------|
| 44 0902 | 1 x 26/32/42W PL-T | 2.0Kg/4.4lb | File# 440902 |
| 44 0903 | 1 x 57W PL-T | 2.0Kg/4.4lb | File# 440903 |

Example Specification Code: 44 0902

INTERIOR
PENDANTS

WWW.BETACALCO.COM | © 2011 BETA-CALCO INC.

75

Contractor: Vaughn Industries

Job Name: OSU NRDT Building I

Submitted by Lighting Systems of Columbus

**Job Name:**OHIO STATE UNIVERSITY NORTH RESIDENTIAL
DISTRICT TRANSFORMATION**Catalog Number:**

44 0902 LP32T35KSYL FSDFI

Notes:

Type:**A45**

LSC14-37947



GENERAL SPECIFICATION

Outer diffuser: Injection moulded clear acrylic with an etched lower band.

Internal diffuser: Injection moulded opal acrylic.

Suspension: Single stainless steel cable.

Power cable: Silver braided.

Canopy finish: White powder coated paint.

Reflector: Aluminum, frosted finish with vertical facets.

Ballasts: HPF, high frequency electronic ballasts for multiple types and voltages 120-277V.

Mechanical: Mounts directly to a junction box (by others) hardware (by others).

Approvals: ETL.



MULTI-ARM
Page 206

Contractor: Vaughn Industries

Job Name: OSU NRDT Building I

Submitted by Spectrum Lighting, Inc.



Job Name:
OSU - NRDT BUILDINGS

Catalog Number:
FGR-G-W-1-42TT-S-120-C144-NA

Notes:

Type:
A74

SPEC14-5147

Groove™ G
FLUORESCENT



white prismatic

clear prismatic with
metalized interior

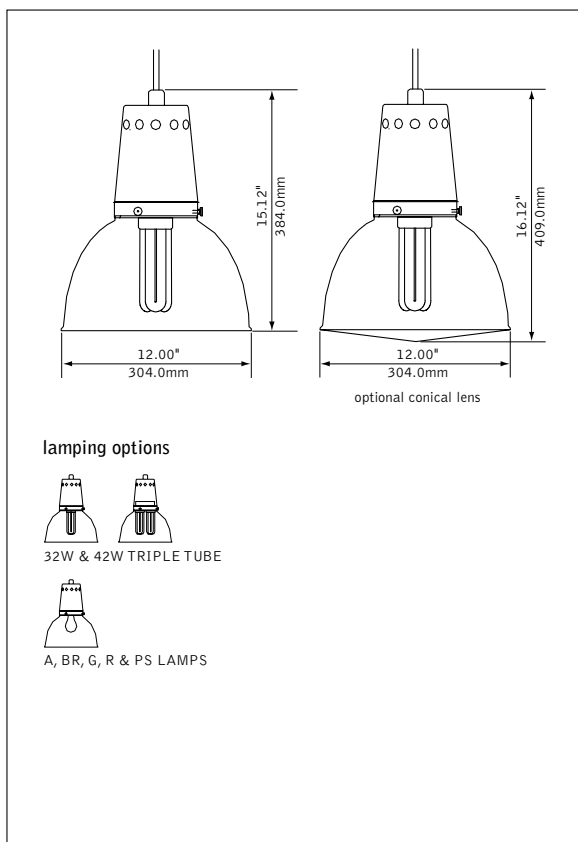
clear prismatic

frosted green
diffusion diskfrosted white
diffusion disk

conical lens



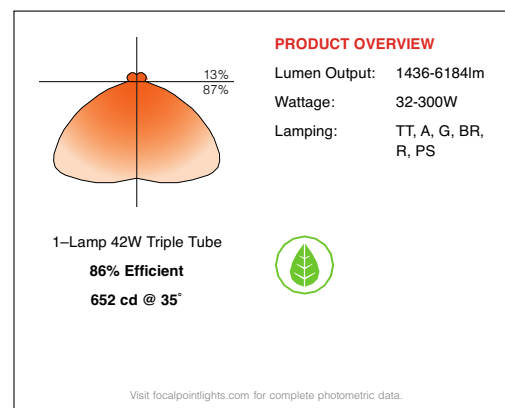
sconce companion

DIMENSIONAL DATA**FEATURES**

Pendant mount decorative luminaire available with compact fluorescent or incandescent lamps

Housing and canopy are high quality spun aluminum with acrylic refractor.

Ideally suited for retail, hospitality, lobbies, corridors, open ceiling areas and other specialty applications.

PERFORMANCE

Contractor: Vaughn Industries

Job Name: OSU NRDT Building L

Submitted by Spectrum Lighting, Inc.



Job Name:
OSU - NRDT BUILDINGS

Catalog Number:
FGR-G-W-1-42TT-S-120-C144-NA

Notes:

Type:

A74

SPEC14-5147

fixture:

project:

SPECIFICATIONS**Construction**

Housing and canopy are each one-piece precision-spun 14Ga. aluminum. Housing: 7.62"H x 12" Dia. Canopy: 1.32"H x 4.52" Dia. stepped design with #8-32 recessed set screw. Weight: 10 lbs.

Optic

Molded acrylic prismatic refractor: 7.47"H x 12.00"Dia. aperture with fluted pattern. Optional frosted green or white acrylic diffusion disk with polished edges is retained by aluminum fasteners and (3) #8-32 thumb screws. Optional conical lens with stainless steel clamp band.

Electrical

Luminaires are pre-wired for single circuit with thermally protected Class "P" electronic ballast. Factory installed decorative metal braided power cord is included. White SJT power cord supplied for 347V. 144" cord is provided on all luminaires and may be cut to length in field. Incandescent: Medium base porcelain socket. For lamp types A, BR, G, R, and PS types. Fluorescent Lamp: One or two lamp triple tube compact fluorescent, 4-pin, 32W (GX24q-3) or 42W (GX24q-4). Optional dimming ballasts available. Consult factory for specifications and availability.

Labels

UL listed.

Finish

Luminaire housing and canopy are clear anodized with polished satin finish.

ORDERING**Luminaire Series****FGR**

Groove FGR

Profile**G**

Profile G

Shielding

Clear Prismatic Refractor C

W

Clear Prismatic Refractor with Metallized Interior M

White Prismatic Refractor W

(Contact factory for additional reflector colors)

Lamp Quantity**1**

One Lamp 1

Two Lamp 2

(CFL only)

Lamp Type**42TT**

32w. Triple Tube, GX24q-3 32TT

42w. Triple Tube, GX24q-4 42TT

120V Only, 60W Max., A15-Med A15

120V Only, 100W Max., A19-Med A19

120V Only, 100W Max., A21-Med A21

120V Only, 200W, A23-Med A23

120V Only, 60W, G25-Med G25

120V Only, 60W, G30-Med G30

120V Only, 150W, G40-Med G40

120V Only, 65W, BR30-Med BR30

120V Only, 125W, BR40-Med BR40

120V Only, 50W, R20-Med R20

120V Only, 75W, R25-Med R25

120V Only, 110W, R30-Med R30

120V Only, 300W, R40-Med R40

120V Only, 300W, PS25-Med PS25

120V Only, 300W, PS30-Med PS30

(Consult factory for wattages not listed)

Ballast**S**

Electronic Program Start<10% THD S

Electronic Dimming Ballast* D

(Fluorescent lamps only)

Voltage**120**

120 Volt 120

277 Volt 277

347 Volt 347

Suspension**C144**

Cable, Straight Feed C144

(144" cable, cut in field)

Factory Options

Frosted Green Diffusion Disk GD

Frosted White Diffusion Disk WD

Conical Lens CL

(Conical lens not available with 2-lamp dimming)

(Fluorescent lamps only)

Include 3000K Lamp* L830

Include 3500K Lamp* L835

Include 4100K Lamp* L841

(fluorescent lamps only)

Finish**NA**

Natural Anodized NA

(contact factory for paint color options)

Contractor: Vaughn Industries

Job Name: OSU NRDT Building I

Submitted by Spectrum Lighting, Inc.



Job Name:
OSU - NRDT BUILDINGS

Catalog Number:
FGR-G-W-1-42TT-S-120-C144-NA

Notes:

Type:
A74

SPEC14-5147

Groove™ G

FLUORESCENT

FGR-G-W-1-42TT-S-120-C144-NA

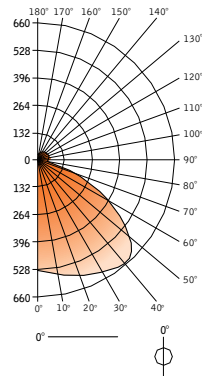
Filename: FGRGW142.IES

Lumens: 2751lm

Test #: 12129.0

Efficiency: 86%

CANDELPWER DISTRIBUTION



| Vertical Angle | Horizontal Angle | Zonal Lumens |
|----------------|------------------|--------------|
| 0° | 540 | |
| 5° | 552 | 53 |
| 15° | 588 | 167 |
| 25° | 618 | 286 |
| 35° | 652 | 409 |
| 45° | 651 | 504 |
| 55° | 508 | 456 |
| 65° | 320 | 318 |
| 75° | 144 | 153 |
| 85° | 58 | 63 |
| 90° | 45 | |
| 95° | 48 | 52 |
| 105° | 54 | 57 |
| 115° | 57 | 57 |
| 125° | 59 | 53 |
| 135° | 57 | 44 |
| 145° | 58 | 36 |
| 155° | 55 | 26 |
| 165° | 50 | 14 |
| 175° | 42 | 4 |
| 180° | 37 | |

LUMEN SUMMARY

| Zone | Lumens | % Lamp | % Fixture |
|------------------------|--------|--------|-----------|
| 0-30° | 505 | 15.8 | 18.4 |
| 0-40° | 2408 | 75.2 | 87.5 |
| 90°-130° | 219 | 6.8 | 7.9 |
| 90°-180° | 343 | 10.7 | 12.5 |
| Total Luminaire 0-180° | 2751 | 86.0 | 100.0 |

LUMINANCE DATA (cd/m²)

| Vertical Angle | 0° |
|----------------|------|
| 45° | 6742 |
| 55° | 5484 |
| 65° | 3729 |
| 75° | 1885 |
| 85° | 886 |

CO-EFFICIENTS OF UTILIZATION

| Floor | 70 | 50 | 30 | 10 | 70 | 50 | 30 | 10 | 20 | 50 | 30 | 10 | 00 |
|---------|-----|-----|-----|-----|----|----|----|----|----|----|----|----|----|
| Ceiling | 70 | 50 | 30 | 10 | 70 | 50 | 30 | 10 | 50 | 10 | 50 | 10 | 00 |
| Wall | 100 | 100 | 100 | 100 | 96 | 96 | 96 | 90 | 90 | 83 | 83 | 78 | 75 |
| RCR 0 | 100 | 100 | 100 | 100 | 96 | 96 | 96 | 90 | 90 | 83 | 83 | 78 | 75 |
| 1 | 91 | 87 | 84 | 80 | 88 | 84 | 78 | 79 | 74 | 74 | 70 | 69 | 66 |
| 2 | 83 | 76 | 71 | 66 | 80 | 74 | 64 | 69 | 61 | 65 | 58 | 61 | 55 |
| 3 | 76 | 67 | 60 | 55 | 73 | 65 | 54 | 61 | 51 | 57 | 49 | 54 | 47 |
| 4 | 69 | 59 | 52 | 46 | 66 | 57 | 45 | 54 | 43 | 51 | 42 | 48 | 40 |
| 5 | 63 | 52 | 44 | 38 | 60 | 50 | 38 | 47 | 36 | 44 | 35 | 42 | 34 |
| 6 | 57 | 46 | 38 | 33 | 55 | 44 | 32 | 42 | 31 | 39 | 30 | 37 | 29 |
| 7 | 52 | 41 | 33 | 28 | 50 | 39 | 27 | 37 | 26 | 35 | 25 | 33 | 24 |
| 8 | 48 | 36 | 29 | 24 | 46 | 35 | 23 | 33 | 22 | 31 | 21 | 29 | 21 |
| 9 | 44 | 32 | 25 | 20 | 42 | 31 | 20 | 29 | 19 | 28 | 18 | 26 | 17 |
| 10 | 41 | 29 | 22 | 17 | 39 | 28 | 17 | 26 | 16 | 25 | 16 | 23 | 15 |


Numbers indicate percentage values of reflectivity.

Go to www.focalpointlights.com for additional photometric data.

note: Photometric testing performed in an independent lab with standard lamps and ballasts. Lamp and ballast type and configuration will affect photometric performance.

Date Submitted: Sept. 2, 2015

Distributor: C.E.D. Columbus, Oh 43207

| | | | |
|--|--|--|-------------|
|  | Project 14-16183-14 Date 10/29/2014 Contractor: Vaughn Industries OSU NRD Building Submitted By LIGHTING UNLIMITED INC | Catalog Number L5257 Job Name: OSU NRD Building L Notes | Type A75 |
|--|--|--|-------------|

LIMBURG Collection

Pendant luminaires for fluorescent lamps

Material: Housing and canopy constructed of aluminum with a painted silver RAL 9006 finish and black cable.

Glass: Crystal glass with light-diffusing texture, satin matte finish, and screw neck.

Reflector: Anodized specular reflector of pure aluminum.

Electrical: One (1) 26W triple 4-pin GX24q-3 base compact fluorescent lamp (by others). GX24q-3 4-pin socket and electronic ballast, 120V or 277V – specify.

Installation: Mounts directly to standard 4" octagonal wiring box.

U.L. listed, suitable for damp locations.

Please note: Rod suspension ϕ .31".



| lamp | lumen | A | B | L |
|---------------------------|-------|-------|--------|----|
| L5257 1 26 W CF triple-4p | 1800 | 7 1/4 | 12 5/8 | 79 |

BEGA/US

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

© copyright BEGA/US 2006
Revised 4/06

Date Submitted: Sept. 2, 2015

Distributor: C.E.D. Columbus, Oh 43207

Contractor: Vaughn Industries

Job Name: OSU NRD Building I

Submitted by Lighting Systems of Columbus

**Job Name:**OHIO STATE UNIVERSITY NORTH RESIDENTIAL
DISTRICT TRANSFORMATION**Catalog Number:**

112252MC9MWHMP

Notes:

Type:**A77**

LSC14-37947



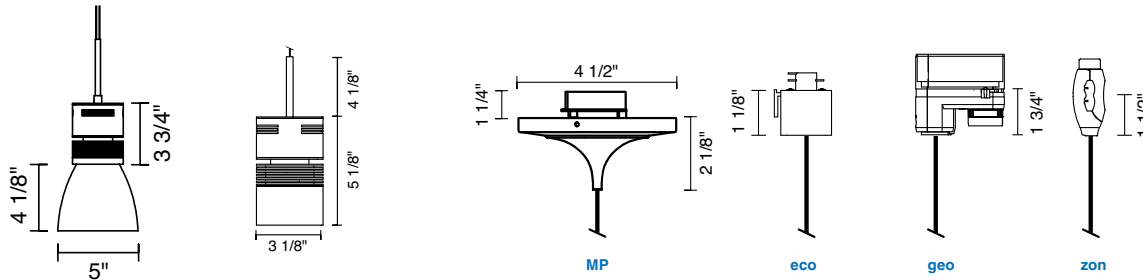
Job Name:

Contact:

Ordering Code:

Fixture Type:

Z15 LED Pendant Cylinder

BRUCK
LEDRAbrands**Applications**

The Z15 Pendant Cylinder with Chroma technology provides energy efficient light using a cold remote phosphor module by XICATO® with an industry best SDCM of 1 x 2 Macadam ellipses. The housing is machined aluminum and seconds as its heat sink and driver housing. It is offered in matte chrome, white and black with either snoot aperture or white or blue frosted glass shade optic. The Z15 Pendant Cylinder is fully dimmable and offered in 4 color temperatures. The 3" Z15 Pendant Cylinder carries a 5 year NO COLOR SHIFT AND FIXTURE WARRANTY.

LED Performance

LED: Patented Cold Remote Phosphor, XICATO®
SDCM: 1 x 2 MacAdam Ellipse, +/- 50 Kelvin
CCT: 2700k, 3000k, 3500k, or 4000k
CRI: >80 - typically 82, >95 - typically 97
LIFE: 85% at 50k hrs based on LM-80 testing
 5 year "no color shift" warranty

| | lumens | +82 CRI | +97 CRI |
|----------------|--------|---------|---------|
| 700lm | | | 15W |
| 1000 lm | | 15W | |

Housing

Machined aluminum housing with white, matte chrome, or black finish. Optional cast glass shade.

Mounting

Pendant provided with a cable length of 60". Canopy over a 3" - 4" recessed round junction box. Optional Track mounting: Global Trac Systems, GEO track and ECO track, Halo® Power Trac track, and Zonyx track.

Reflector

Reflectors are provided with computer designed, lamp specific, post Alzak anodized reflectors of pure aluminum (99.98%). Available in Specular aluminum (SA) to provide glare and iridescence free performance.

LiteOptics / Accessories

Optical attachments allow for tool-less access to LED components and reflector. Ease of maintenance with field interchangeable optics when performance variations and lighting requirements of the space change. Optional dust protective lens provided on snoot aperture.

Electrical / LED Driver

120Vac input, 50/60Hz, 15W, 16VA. Electronic 120V driver. Trailing Edge (ELV) dimming. *Consult factory for other voltage options.

Listings

ETLus Listed to UL1598 (suitable for dry and damp locations),

UL1574 (track suitable for dry locations only)

cETL Listed to CSA C22.2 #250.0 and #9.0

Made in the USA - meets the requirements of the Buy American provision within the ARRA.

Ordering Codes

Follow the steps to specify your luminaire,

example: **112 - 250 - mc - 2a - m - zonmc**

| 1 Light Source | 2 Shade | 3 Finish | 4 Color Temperature | 5 Reflector / Glass* | 6 Mounting Option |
|----------------|-------------------------------------|--|--|---|--|
| 112 LED | 250 252 with glass | bk black mc matte chrome wh white | 2 >80 CRI, 2700k, 1000lm 2a >95 CRI, 2700k, 700lm 3 >80 CRI, 3000k, 1000lm 3a >95 CRI, 3000k, 700lm 3V >80 CRI, 3000k Vibrant, 1000lm 9 >80 CRI, 3500k, 1000lm 9a >95 CRI, 3500k, 700lm 4 >80 CRI, 4000k, 1000lm 4a >95 CRI, 4000k, 700lm | fl flood, 60° m medium, 40° s spot, 20° bl blue wh white | MP 4" Kiss Canopy ecobk ECO/Halo black ecosv ECO/Halo matte silver ecowh ECO/Halo white geobk GEO black geosv GEO matte silver geowh GEO white zonmc Zonyx matte chrome |

NOTES:

*specify reflector degree for 250 only

*specify glass color for 252 glass only

Contractor: Vaughn Industries

Job Name: OSU NRD T Building I

Submitted by Lighting Systems of Columbus

**Job Name:**OHIO STATE UNIVERSITY NORTH RESIDENTIAL
DISTRICT TRANSFORMATION**Catalog Number:**

112252MC9MWHMP

Notes:

Type:**A77**

LSC14-37947



Job Name:

Contact:

Ordering Code:

Fixture Type:

**250** no shade, standard**252 - bl** blue glass shade**252 - wh** white glass shade

Snout



Louver



Barn Doors



Lens Options

| Accessory Code | Accessory Code* | Accessory Code** | Accessory Code* |
|--|---------------------|-----------------------|--|
| 900300bk black 900300mc matte chrome 900300wh white | 900310 black | 900305bk black | 900321 diffuser lens 900322 frosted lens 900320 linear lens |

NOTES:*Accessories available for **250** Snout aperture only.**Requires **900300** Snout Accessory.

Contractor: Vaughn Industries

Job Name: OSU NRDOT Building I

Submitted by Lighting Systems of Columbus

**Job Name:**OHIO STATE UNIVERSITY NORTH RESIDENTIAL
DISTRICT TRANSFORMATION**Catalog Number:**

112252MC9MWHMP

Notes:

Type:**A77**

LSC14-37947

LED Driver**LP1020-xx Series****Switch-Mode LED Driver**

| | |
|-------------------|---------------|
| Total Power | 20 Watts |
| Input Voltages | 100 ~ 277 VAC |
| Number of Outputs | One |

Product Specifications

ANZ#: Z095k, September 7, 2011

SPECIAL FEATURES

- UL1310, Class 2 and UL879 recognized
- Single output, constant current or constant voltage design
- IP66 compliant
- Suitable for dry and damp locations
- Designed for outdoor or indoor applications
- Suitable in standard electrical junction boxes
- ELV (trailing-edge) dimmable - Optional
- Active PFC reduces power consumption

ENVIRONMENTAL

Operating temperature: -30 to 50 °C
(De-rating : 2% per °C from 50~70°C)
Storage temperature: -40 to +85 °C
Humidity (Non-Condensing): 5% to 95%
Cooling: Convection
Vibration Frequency: 5 to 50 Hz
MTBF: >100,000 Hours at full load and 25°C ambient conditions (MIL-217F)
EMC: Compliant to 47CFR, Part 2, Part 15 and Cisp PUB, 22 Class B

Acoustic Noise: Less than 24db (20~20K Hz)

ELECTRICAL SPECIFICATIONS

| | |
|------------------|--|
| Input range | 100 ~ 304 VAC |
| Frequency | 47 to 63 Hz |
| PF and THD | > 0.92 at full load, 115VAC; <20% full load, 230VAC |
| Crest Factor | 1.5 max. |
| Inrush current | 10.0 Amps maximum at 230VAC, cold start, 25° C |
| Input current | 0.3 Amps maximum at 115VAC |
| Efficiency | 85% typical at maximum load |
| EMI filtering | 47CFR, Part 2, Part 15 and Cisp PUB, 22 Class B |
| Maximum power | 20W |
| Current Accuracy | ±1% (when applicable) |
| Load regulation | ±3% |
| Leakage Current | 300uA typ. |
| Hold up time | Half cycle minimum at 120 VAC and 80% of rated load |
| Protection | Over-voltage, Over current and Short circuit protection; Auto-recovery |

SAFETY

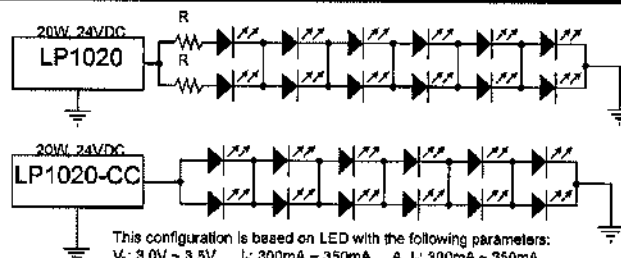
| | |
|-----|--------------------------------------|
| UL | UL1310, Class 2 and UL879 recognized |
| cUL | UL1310, Class 2 and UL879 recognized |
| CE | |

Note: 52VDC output is not cUL recognized

| Model Number | Constant Voltage Mode | | | Model Number | Constant Current Mode | | |
|--------------|-----------------------|--------|-------|-----------------|-----------------------|-----------|-------|
| | V (DC) | A (mA) | Watts | | V (DC) | mA(Max.) | Watts |
| LP1020-36 | 36, ±5% | 550 | 20 | LP1020-36-Cxxxx | 18~36 | 550, ±5% | 20 |
| LP1020-22 | 22, ±5% | 910 | 20 | LP1020-22-Cxxxx | 12~22 | 910, ±5% | 20 |
| LP1020-17 | 17, ±5% | 1250 | 21 | LP1020-17-Cxxxx | 9~17 | 1250, ±5% | 20 |
| LP1020-13 | 13, ±5% | 1540 | 20 | LP1020-13-Cxxxx | 7~13 | 1540, ±5% | 20 |
| LP1020-10 | 10, ±5% | 2000 | 20 | LP1020-10-Cxxxx | 7~10 | 2000, ±5% | 20 |

Note: The Constant Voltage models are not compatible with ELV dimmer

Note: The output current of Constant Current models are adjustable at factory from 50% ~ 100%.

RECOMMEND APPLICATION SCHEMATICS

This configuration is based on LED with the following parameters:
 V_f : 3.0V ~ 3.5V I_f : 300mA ~ 350mA A_f : 300mA ~ 350mA
 Recommended value for R is 20 ohm, 3W



MAGTECH INDUSTRIES CORP. 5625-A S. Arville, Las Vegas, NV 89118 Tel: 702-364-9998 Fax: 702-364-1562 www.magtechind.com Anz095k

Contractor: Vaughn Industries

Job Name: OSU NRD Building I

Submitted by Lighting Systems of Columbus

**Job Name:**OHIO STATE UNIVERSITY NORTH RESIDENTIAL
DISTRICT TRANSFORMATION**Catalog Number:**

112252MC9MWHMP

Notes:

Type:**A77**

LSC14-37947

MECHANICAL DRAWING**Model Information – Single DC output****LP1020-XX – Constant Voltage Model**

XX – Available Output Voltage, refer to chart above

LP1020-XXC (YYY) – Constant Current Model

C – Stands for Constant Current Model

XX – Available Output Voltage

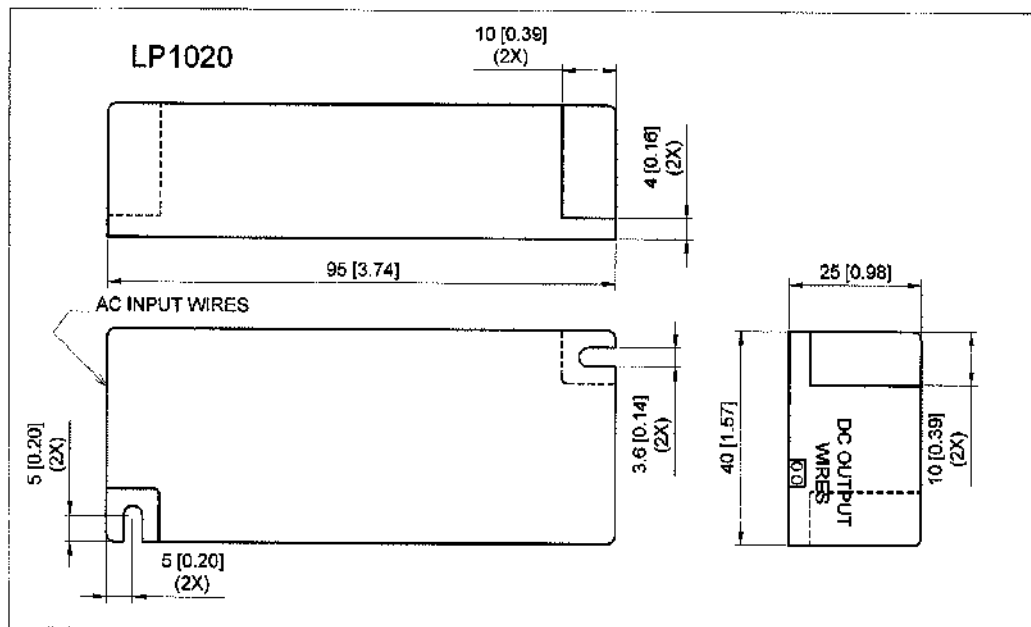
YYY – Available Constant Current Settings, 350mA or 700mA or 1050mA

AC input cable

AWG #20, two conductors UL PLTC type or equiv.

DC output cable

AWG #20, two conductors UL PLTC type or equiv.



MAGTECH INDUSTRIES CORP. 5625-A S. Arville, Las Vegas, NV 89118 Tel: 702-364-9998 Fax: 702-364-1562 www.magtechind.com Anz095k

Contractor: Vaughn Industries

PANEL LUMINAIRE

LM22 - 2 X 2 LIGHT PANEL SERIES

FEATURES

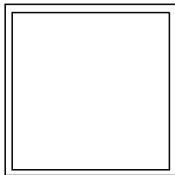
CONSTRUCTION

- Side lit design for an ultra thin profile
- IC rated, IP44-suitable for damp or dry locations
- Wide beam angle (120°) for better spacing
- CE and cULus rated
- RoHS compliant
- 5 year warranty (standard)

ELECTRICAL

- Dimmable (via driver or using PWM) ⁽¹⁾
- Constant voltage design allows for multiple lights per driver
- LM-80 and LM-79 available
- Panels should be placed within 50 feet of driver
- Rated at 60W max AC power (51W DC) ⁽²⁾

2X2



| | |
|--------------|------------------|
| Project Name | OSU - NRD |
| Date | |
| Type | B1 |



| | |
|------------------|---------------------|
| TILT Part Number | L GM 22 35 W |
| TILT Driver | LD60 |

| LUMEN PACKAGES (2X2) ⁽³⁾ | | | | | |
|-------------------------------------|---------------------------|------|------|------|------|
| CCT | 50,000 hours (L70) | | | | |
| | STANDARD 90+ CRI, R9 > 50 | | | | |
| | | | | | |
| 5000k | Lumens | 4700 | 4157 | 3736 | 2775 |
| | LPW | 74.1 | 79.2 | 82 | 87.5 |
| 4000k | Lumens | 4550 | 4298 | 3837 | 2847 |
| | LPW | 77.3 | 78.4 | 80.4 | 87.7 |
| 3500k | Lumens | 4225 | 3829 | 3426 | 2542 |
| | LPW | 72.5 | 75.2 | 77.4 | 84.8 |
| 3000k | Lumens | 3900 | 3360 | 3016 | 2237 |
| | LPW | 67.6 | 71.5 | 73.9 | 81.4 |

ORDERING INFORMATION

| L | GM | 22 | 50 | W |
|------------------|------------------------|---------------------|--|--|
| Fixture Type | Mounting Type | Size | CCT | Frame Color ⁽⁴⁾ |
| L - Light | GM - Grid Mount | 22 - 2' x 2' | 50 - 5,000K 40 - 4,000K 35 - 3,500K 30 - 3,000K | W - White B - Black S - Silver + - special order |

USE WITH

| Driver | |
|--------|----------|
| LD60 | LD60PE7 |
| LD60P | LD90PE7 |
| LD90 | LD100PE7 |
| LD100P | |

DRIVER SPECIFICATION

NOTE on DRIVERS: UL 8750, short circuit, over current, over voltage, and over temperature protection
UL recognized and CE rated, RoHS compliant
Class II, SELV, IP67

| Model ⁽⁵⁾ | Size in Inches (LxWxH) | AC Input | DC Output | Dimming ⁽⁹⁾ | Temp | Max Fixtures ⁽⁸⁾ |
|----------------------|------------------------|-----------|-----------|------------------------|------------|-----------------------------|
| LD60 | 6.50 x 1.63 x 1.26 | 90 - 305V | 60W | I-10V | -40C - 60C | 1 |
| LD60P | 12.50 x 2.38 x 1.50 | 90 - 305V | 60W | I-10V | -40C - 70C | 1 |
| LD90 | 6.34 x 2.40 x 1.26 | 90 - 305V | 90W | I-10V | -40C - 60C | 1 |
| LD100P | 14.50 x 2.63 x 1.58 | 90 - 305V | 100W | I-10V | -40C - 60C | 2 |

| Emergency ⁽⁷⁾ | Size in Inches (LxWxH) | AC Input | Output ⁽⁶⁾ | Lumens | Temp | Max Fixtures ⁽⁸⁾ |
|--------------------------|------------------------|-----------|-----------------------|-----------|----------|-----------------------------|
| LD60PE7 | 13.00 x 5.50 x 1.75 | 90 - 305V | 7W for 90 mins | 400 - 600 | 0C - 50C | 1 |
| LD90PE7 | 13.00 x 5.50 x 1.75 | 90 - 305V | 7W for 90 mins | 400 - 600 | 0C - 50C | 1 |
| LD100PE7 | 13.00 x 5.50 x 1.75 | 90 - 305V | 7W for 90 mins | 400 - 600 | 0C - 50C | 2 |

NOTES (NUMBERS)

- (1) See driver or dimming product sheet for specific details
- (2) AC W used for circuit power, DC W used for driver circuit
- (3) Lumen packages provided using Dim Chip with driver
- (4) Colors other than white are custom
- (5) TILT drivers use a I-10V control but are compatible with most 0-10V control systems. For details specific to your system, contact us at 855.440.8458

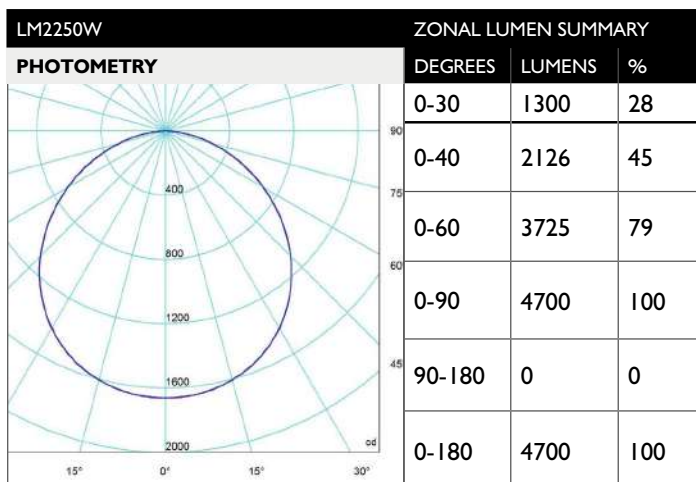
- (5) "P" designation after watt rating denotes Plenum Rated
- (6) Based on watt load of fixtures and driver output
- (7) See Product Sheet for Emergency Drivers
- (8) Safe amount of fixtures per driver



Contractor: Vaughn Industries

TILT PANEL LUMINAIRES LM22

PHOTOMETRIC CHARTS WITH TESTING DATA. CALL FOR SPECIFIC INFORMATION NOT LISTED HERE: 855.440.8458



| LUMINANCE SUMMARY CD./SQ.M. | |
|-----------------------------|---------------|
| ANGLE | MEAN CD./SQ.M |
| 45 | 4997 |
| 55 | 4708 |
| 65 | 4309 |
| 75 | 3742 |
| 85 | 2819 |

| | COEFFICIENT OF UTILIZATION | | | | | | | | |
|----|----------------------------|------|------|------|------|------|------|------|------|
| | 80% | | | 70% | | | 50% | | |
| | 70 | 50 | 30 | 70 | 50 | 30 | 70 | 50 | 30 |
| 0 | 1.19 | 1.19 | 1.19 | 1.16 | 1.16 | 1.16 | 1.11 | 1.11 | 1.11 |
| 1 | 1.09 | 1.05 | 1.01 | 1.07 | 1.03 | 0.99 | 0.98 | 0.95 | 0.92 |
| 2 | 1.00 | 0.92 | 0.86 | 0.98 | 0.90 | 0.85 | 0.87 | 0.82 | 0.78 |
| 3 | 0.91 | 0.81 | 0.74 | 0.89 | 0.80 | 0.73 | 0.77 | 0.71 | 0.66 |
| 4 | 0.84 | 0.73 | 0.65 | 0.82 | 0.72 | 0.64 | 0.69 | 0.62 | 0.57 |
| 5 | 0.78 | 0.65 | 0.56 | 0.75 | 0.64 | 0.56 | 0.62 | 0.55 | 0.49 |
| 6 | 0.71 | 0.58 | 0.50 | 0.69 | 0.57 | 0.49 | 0.56 | 0.48 | 0.43 |
| 7 | 0.66 | 0.52 | 0.44 | 0.64 | 0.51 | 0.43 | 0.50 | 0.42 | 0.37 |
| 8 | 0.61 | 0.47 | 0.39 | 0.59 | 0.47 | 0.39 | 0.45 | 0.38 | 0.33 |
| 9 | 0.56 | 0.43 | 0.35 | 0.55 | 0.42 | 0.35 | 0.41 | 0.34 | 0.29 |
| 10 | 0.52 | 0.39 | 0.31 | 0.51 | 0.39 | 0.31 | 0.38 | 0.31 | 0.26 |

NOTES

- Lifespan: 50,000 hrs (L70)
- LM79 and LM80 available upon request. Call 855.440.8458
- IES files available online at: laurenillumination.com/resources



Lauren Illumination is a Lauren International Company
©Lauren Illumination and ©TILT are registered trademarks of Lauren Illumination
2162 Reiser Avenue SE | New Philadelphia, OH 44663 P: 855.440.8458 | F: 330.339.1515
laurenillumination.com | laureninternational.com

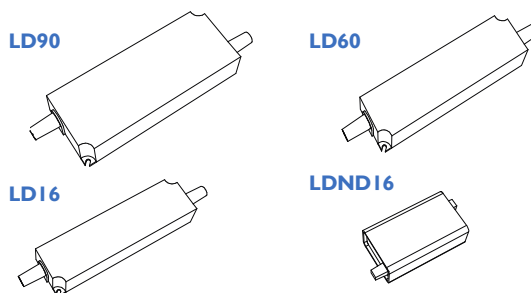
Contractor: Vaughn Industries

Job Name: OSU NRDT Building L

CONSTANT VOLTAGE DRIVERS

FEATURES

- 24V constant voltage power supply
- Protections include:
 - Short circuit / over current / over voltage / over temperature
- Class II power unit, SELV rated
- Built in active PFC function
- Dimmable (see chart below)
- UL recognized
- RoHS compliant
- CE rated
- 5-year warranty



| | |
|--------------|-------------------|
| Project Name | OSU - NRDT |
| Date | |
| Type | A1 |

T/LT

| | |
|------------------|-------------|
| TILT Part Number | LD60 |
|------------------|-------------|

Constant Voltage Driver Models:

| |
|-------------------------|
| LD90 |
| LD60 |
| LD16 |
| LDND16 (Non Dim) |

SPECIFICATIONS

| ALL PLENUM MODELS | LD60 | LD90 | LD16 | LDND16 (Non Dim) |
|---------------------------------------|--|-----------------|----------------|------------------|
| Length x Width (in) | 6.500" x 1.750" | 6.500" x 2.375" | 6.00" x 1.625" | 3.00" x 1.50" |
| Height (in) | 1.250" | 1.500" | 1.250" | 1.125" |
| IP Rating | IP67 | IP67 | IP30 | IP30 |
| DC output supply (W) | 60 | 90 | 16 | 16 |
| AC input voltage range | 90 - 305VAC | 90-305VAC | 90-305VAC | 90 - 264VAC |
| AC inrush current (max) Cold start | 75A @ 230VAC | 70A @ 230VAC | 50A @ 230VAC | 70A @ 230VAC |
| Safety standards | UL 8750 | UL 8750 | UL 8750 | UL 8750 |
| Protections | Short circuit/over current/over voltage/over temperature | | | |
| Thermal Operation | -40°C - 50°C | -40°C - 50°C | -40°C - 50°C | -40°C - 50°C |
| Thermal Shutdown | 75°C | 70°C | 70°C | 70°C |

FOR USE WITH

| LUMINAIRE | CV DRIVER | MAX # UNITS | CV DRIVER | MAX # UNITS | CV DRIVER | MAX # UNITS |
|-----------|--------------|-------------|-----------|-------------|-----------|-------------|
| LCLCV6 | LD16, LDND16 | 1 | LD60 | 5 | LD90 | 8 |
| LCLCV8 | LD16, LDND16 | 1 | LD60 | 4 | LD90 | 6 |
| LGM22 | LD16, LDND16 | 0 | LD60 | 1 | LD90 | 1 |
| LGM24 | LD16, LDND16 | 0 | LD60 | 0 | LD90 | 1 |
| LGM14 | LD16, LDND16 | 0 | LD60 | 1 | LD90 | 1 |

DIMMER COMPATIBILITY CHART

| BRAND | MODEL |
|-----------------|-----------------------------|
| TILT | WLVD |
| TILT | DIM CHIP (DC01, DC02, DC03) |
| LEVITON (0-10V) | IP-710* |
| LUTRON (0-10V) | DVSTV* |

***TILT drivers use a 1-10V control but are compatible with most 0-10V control systems.**
For details specific to your system, contact us at 855.440.8458

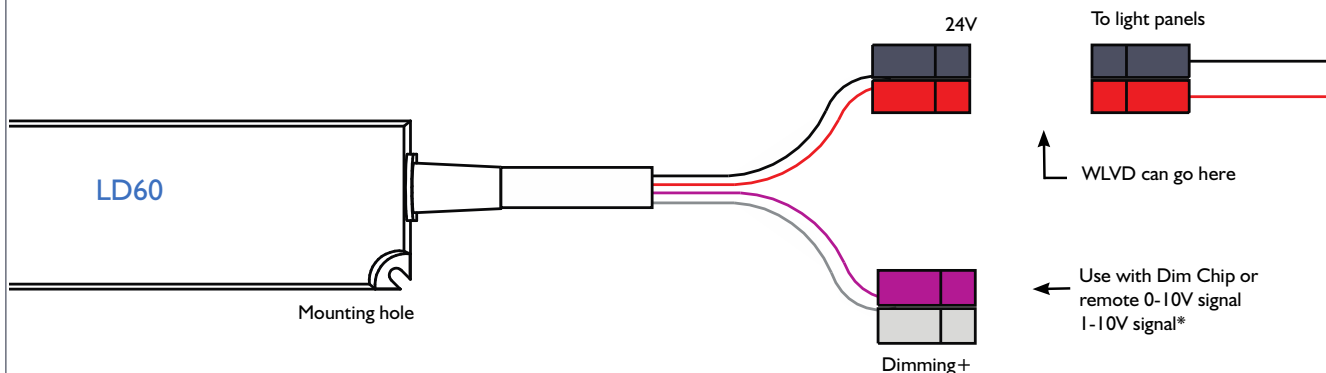


CONSTANT VOLTAGE DRIVERS LD90, LD60, LD16, LDND16

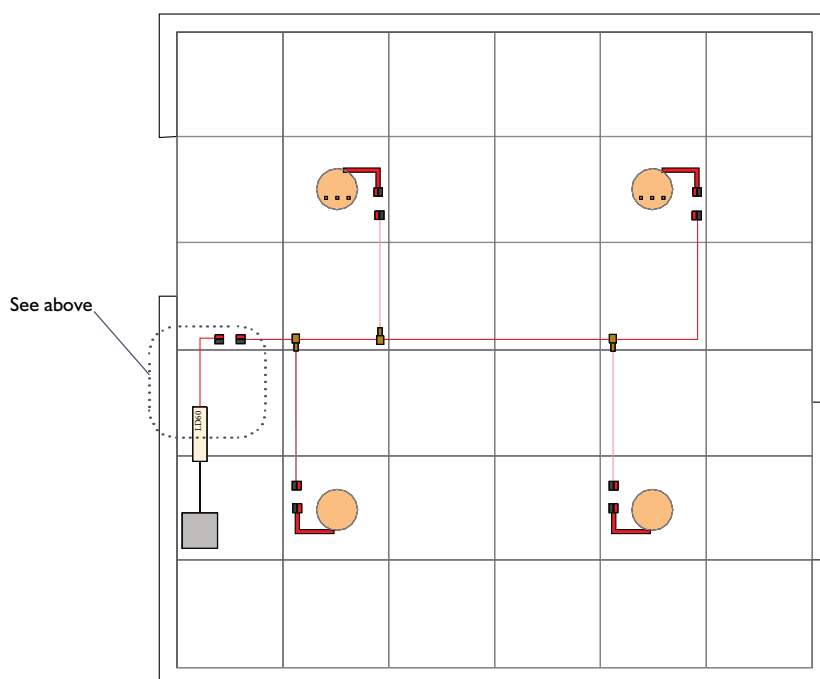
CONNECTING CONSTANT VOLTAGE DRIVERS - DC WIRING

CLOSE-UP DC WIRING DETAIL

SEE INSTALLATION MANUAL FOR APPROVED INSTALLATION METHODS AND OTHER DETAILS FOR ALL DRIVERS



SAMPLE ROOM LAYOUT WITH DRIVERS INSTALLED



NOTES

- Lights should be placed within 50 feet of driver
- Wattage load (lights) should not exceed wattage of driver
- + TILT drivers use 1-10V. They will accept 0-10V signals. Operation from 0-1V will depend on the system being used. For details specific to your system, call us at 855.440.8458



©TILT is a registered product brand of Lauren Illumination



Lauren Illumination is a Lauren International Company
2162 Reiser Avenue SE | New Philadelphia, OH 44663
P: 855.440.8458 | F: 330.339.1515
laurenillumination.com | laureninternational.com

Contractor: Vaughn Industries

Job Name: OSU NRD Building I

Submitted by Lighting Systems of Columbus

**Job Name:**OHIO STATE UNIVERSITY NORTH RESIDENTIAL
DISTRICT TRANSFORMATION**Catalog Number:**STE14-232G-MPO-EPUQHESPN-
FO835SYL

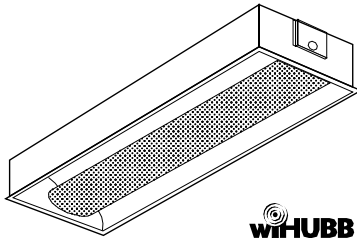
Notes:

Type:**B2**

LSC14-37947

Columbia
LIGHTING**STE14**

1' x 4' Stratus® Recessed Indirect / 1, 2, or 3-Lamp T5, T5HO, T8

**PROJECT INFORMATION**

Project Name _____

Type _____

Catalog No. _____

Date _____

CONSTRUCTION

Luminaire housing and end caps are die formed code gauge cold rolled steel. The sturdy reflector is stiffened with linear forms, profiled to a precision curve. Perforated basket with high transmission overlay for improved optical efficiency plus lamp obscuration. Basket and all reflective surfaces are finished after fabrication with unique formula high reflectivity matte white paint for soft, uniform indirect illumination.

Thermoplastic light traps snap into the housing at both ends of the basket to prevent light leaks. Basket hinges down for easy access to center wireway.

INSTALLATION

An access plate is furnished with each luminaire for fast wiring access from the plenum. No need to open fixture.

BALLASTS

Energy efficient, thermally protected, automatic resetting, Class P, high power factor, sound rated A, magnetic or electronic ballasts. CEE NEMA Premium compliant.

ELECTRICAL

Standard class "P", thermally protected, autoresetting HPF ballast, sound rated A. CEE NEMA Premium compliant. All ballast leads extend a minimum of 6" through access location. NEC/CEC-compliant ballast disconnect is standard.

CEILING COMPATIBILITY

NEC-compliant T-Bar clips supplied with all grid trim fixtures. See ceiling details on reverse. For type SG ceilings order G trim. Fixture will be regressed 3/8" from the face of the ceiling tee. For hard ceilings order G trim and FK flange accessory. Assemble then support FK accessory at the ceiling plane using tie wires (by others). Contact your Columbia representative for compatibility information for specific ceiling types or for continuous row applications in hard ceilings.

CERTIFICATION

All luminaires are built to UL 1598 standards and bear appropriate UL and cUL or CSA labels. Damp location labeling is standard. Emergency-equipped fixtures labeled UL 924.

- Precision optical design produces high efficiency in a high visual comfort architecturally styled direct/indirect distribution
- Custom perforated metal basket with high transmission lamp-obscuring overlay
- Optimized coating process and unique paint formulation provide exceptional reflectivity in a matte finish for a soft visual image and balanced basket and reflector illumination
- Completely recessed, provides a clean ceiling with uniform illumination at mounting heights as low as 8 feet
- Available for use with T8, T5 or T5HO linear fluorescent lamps
- Optional acrylic dust guard pivots to seal lamp compartment against contaminants especially for schools, medical facilities and public spaces
- Companion Louvered (STEL), side basket (STS) and pendant (STP) models available
- Available with exclusive wiHUBB technology preinstalled
 - Peer to peer, self-healing wireless mesh network
 - Integrated control system for 0-10VDC or step dimming, or On/Off

ORDERING INFORMATION**EXAMPLE STE14-232G-MPO-EU**

| STE | 14 | - | MPO | - | - | - |
|---|--|--|--------------------------|-------------------------|---|---|
| MODEL | NO. OF LAMPS IN CROSS SECTION | CEILING TYPE | SHIELDING | VOLTAGE | OPTIONS | |
| STE Stratus® E-Series Recessed Indirect | 1 One 2 Two 3 Three | G Grid Lay-in SM Surface Mount | MPO Metal Perf w/Overlay | U 120V-277V 347 347V | GLR Fast Blow Fuse GMF Slow Blow Fuse EL Emergency Battery Pack ELS Emergency Battery Pack, T5 DG Dust Guard Clear Acrylic NYC NYC Compliant NYCU NYC Compliant, Union Label WIH wiHUBB Enabled ¹ | |
| SIZE | LAMP TYPE | BALLAST | | | | |
| 14 1' x 4' | 28 4', T5: 28 Watt 32 4', T8: 32, 30, 28 or 25 Watt 54 4', T5HO: 54 or 51 Watt | E Electronic T8, Instant Start ED Electronic Dimming, T8 and T5 EP Electronic T5, T5HO or T8, Programmed Start | | | | |

EPUQHESPN - Sylvania Programmed Start Ballast

FO835SYL- Sylvania Lamps Installed

**ACCESSORIES
(ORDER SEPARATELY)****FK14** 1' x 4' Single Flange Kit¹ Not available with Surface Mount Ceiling Types

Page 1/2 Rev. 03/20/13

RECESSED ARCHITECTURAL / STE14

© 2013 Columbia Lighting, a division of Hubbell Lighting, Inc. Because of continuing product improvement programs, Columbia Lighting reserves the right to change specifications without notice. 701 Millennium Blvd. Greenville, SC 29607 / Tel 864.678.1000 / Website www.columbialighting.com



Contractor: Vaughn Industries

Job Name: OSU NRD Building I

Submitted by Lighting Systems of Columbus

**Job Name:**OHIO STATE UNIVERSITY NORTH RESIDENTIAL
DISTRICT TRANSFORMATION**Catalog Number:**STE14-232G-MPO-EPUQHEPSN-
FO835SYL

Notes: 2-F32T8/835 LAMPS INCLUDED

Type:**B2**

LSC14-37947

Columbia
LIGHTING

1' x 4' Stratus® Recessed Indirect / 1, 2, or 3-Lamp T5, T5HO, T8

STE14**PHOTOMETRIC DATA**

Test 3849 Test Date 2/4/11

LUMINAIRE DATA

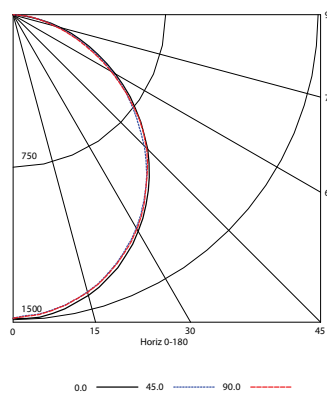
| | |
|--------------------------|--|
| Luminaire | STE14-232G-MPO-EU |
| Ballast | STE Stratus® E-Series, Recessed Architectural |
| Ballast Factor | 1 x 4 2-lamp with perforated metal basket and opal overlay |
| Lamp | B232IUNVHP-B |
| Lumens per Lamp | 0.88 |
| Watts | F28T8 |
| Shielding Angle | 2725 |
| Spacing Criterion | 47 |
| Luminous Opening in Feet | 0° = 90 90° = 90 |
| | 0° = 1.23 90° = 1.21 |
| | Length: 4.00 |
| | Width: 0.92 |
| | Height: 0.00 |

ZONAL LUMEN SUMMARY

| Zone | Lumens | % Lamp | % Fixt. |
|-------|--------|--------|---------|
| 0-30 | 1137 | 20.9 | 29.1 |
| 0-40 | 1842 | 33.8 | 47.2 |
| 0-60 | 3164 | 58.1 | 81.1 |
| 0-90 | 3903 | 71.6 | 100.0 |
| 0-180 | 3903 | 71.6 | 100.0 |

ENERGY DATA

| | |
|---|--|
| Total Luminaire Efficiency | 71.6% |
| Luminaire Efficacy Rating (LER) | 73 |
| IESNA RP-1-1993 Compliance | Noncompliant |
| Comparative Yearly Lighting Energy Cost per 1000 Lumens | \$3.29 based on 3000 hrs. and \$0.08 per KWH |

INDOOR CANDELA PLOT**AVG. LUMINANCE (Candela/Sq. Ft.)**

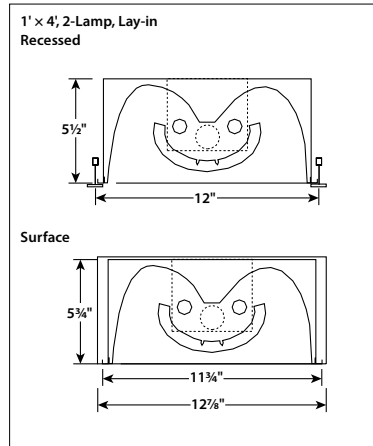
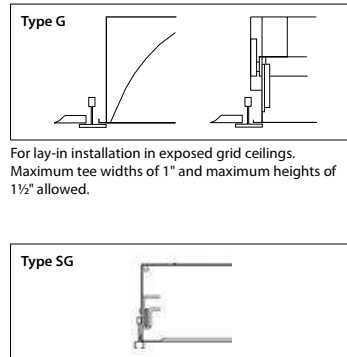
| | 0.0 | 22.5 | 45.0 | 67.5 | 90.0 |
|----|------|------|------|------|------|
| 0 | 4361 | 4361 | 4361 | 4361 | 4361 |
| 30 | 4151 | 4114 | 4087 | 4104 | 4107 |
| 40 | 3979 | 3914 | 3902 | 3898 | 3914 |
| 45 | 3872 | 3789 | 3773 | 3814 | 3843 |
| 50 | 3731 | 3640 | 3613 | 3704 | 3709 |
| 55 | 3585 | 3473 | 3488 | 3514 | 3493 |
| 60 | 3387 | 3264 | 3305 | 3270 | 3253 |
| 65 | 3177 | 2997 | 3066 | 3018 | 2983 |
| 70 | 2968 | 2771 | 2797 | 2720 | 2685 |
| 75 | 2712 | 2486 | 2475 | 2418 | 2396 |
| 80 | 2274 | 2173 | 2173 | 2139 | 2139 |
| 85 | 1510 | 1913 | 2114 | 2114 | 2114 |

COEFFICIENTS OF UTILIZATION (%)

| RC | 70 | 80 | 70 | 50 | 30 | 10 | 0 |
|----|----|----|----|----|----|----|----|
| RW | 70 | 50 | 30 | 10 | 0 | 0 | 0 |
| 1 | 78 | 75 | 72 | 69 | 76 | 73 | 70 |
| 2 | 71 | 65 | 61 | 57 | 69 | 64 | 60 |
| 3 | 65 | 58 | 52 | 47 | 63 | 57 | 51 |
| 4 | 60 | 51 | 45 | 40 | 58 | 50 | 45 |
| 5 | 55 | 46 | 40 | 35 | 53 | 45 | 39 |
| 6 | 51 | 41 | 35 | 31 | 49 | 41 | 35 |
| 7 | 47 | 38 | 31 | 27 | 46 | 37 | 31 |
| 8 | 44 | 34 | 28 | 24 | 43 | 34 | 28 |
| 9 | 41 | 32 | 26 | 22 | 40 | 31 | 26 |
| 10 | 39 | 29 | 24 | 20 | 38 | 29 | 23 |

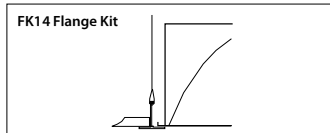
RCR = Room Cavity Ratio

RC = Effective Ceiling Cavity Reflectance RW = Wall Reflectance

DIMENSIONAL DATA**CEILING COMPATIBILITY**

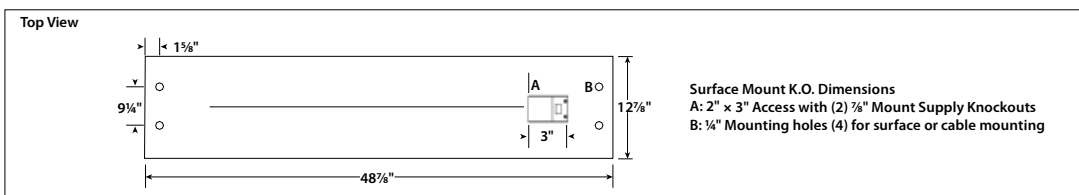
For lay-in installation in exposed grid ceilings. Maximum tee widths of 1" and maximum heights of 1 1/2" allowed.

For 3/8" slot grid type ceilings. Luminaire will be recessed 3/8" horizontal surface of the tee.



For hard ceiling applications, fixtures must be ordered with a flange kit that wires directly into the concealed ceiling opening for a clean finished appearance. For row configurations contact your local Columbia Representative.

Flange kit cut out dimension for single FK14 only: 12 1/2" x 48 3/8"



NOTE: All dimensions are in inches; dimensions and specifications are subject to change without notice. Please consult factory or check sample for verification.

Page 2/2 Rev. 03/20/13

RECESSED ARCHITECTURAL / STE14

© 2013 Columbia Lighting, a division of Hubbell Lighting, Inc. Because of continuing product improvement programs, Columbia Lighting reserves the right to change specifications without notice. 701 Millennium Blvd. Greenville, SC 29607 / Tel 864.678.1000 / Website www.columbialighting.com



Contractor: Vaughn Industries

Job Name: OSU NRDT Building I

Submitted by Lighting Systems of Columbus



| |
|------------------|
| Job Name: |
|------------------|

OHIO STATE UNIVERSITY NORTH RESIDENTIAL
DISTRICT TRANSFORMATION

Catalog Number:

ST824-232G-FSA12125-EPUQHEPSN-
PW-SLL-FO835SYL

Notes: 2-F32T8/835 LAMPS INCLUDED

Type:

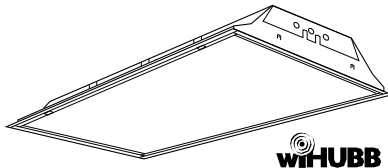
B5

LSC14-37947

Columbia
LIGHTING

ST824-2, ST824-3

2' x 4' Shallow Specification Troffer / 2 or 3-Lamp T5, T5HO, T8



FEATURES

- Optical performance designed for T8 and T5 lamp technology
- 2½" minimum spacing from bottom of lamp to bottom of lens
- Mechanical light seal
- Mitered corners on door present a clean uninterrupted appearance
- Spring loaded latches optional
- Rolled fixture edges reduce risk of injury during fixture handling and installation
- Integral T-Bar clips quickly secure fixture to grid system without the need for time consuming loose parts
- Snap-on ballast covers can be removed with lamps installed
- Corner hinging for easy insertion and removal of door frame from either side
- Optional flush or regressed aluminum shielding frames available with positive action or spring loaded latches
- Housing ends secured by unique corner interlock and screws
- Available with exclusive wiHUBB technology preinstalled
 - Peer to peer, self-healing wireless mesh network
 - Integrated control system for 0-10VDC or step dimming, or On/Off

PROJECT INFORMATION

Project Name

Catalog No.

Type

Date _____

HOUSING

Heavy gauge steel. Die formed for extra rigidity. Grid housings are designed for installation in standard 1½" T-Bar ceilings. Integral T-Bar clips are located in the end of the housing. Flanged housings for hard ceilings feature overlap flange trim and wing hangers.

BALLASTS

Energy efficient, thermally protected, automatic
resetting, Class P, high power factor, sound rated A,
magnetic or electronic ballasts. CEE NEMA Premium
compliant.

ELECTRICAL

Standard class "P," thermally protected, autoresetting HPF ballast, sound rated A. CEE NEMA Premium compliant. All ballast leads extend a minimum of 6" through access location. NEC/CEC-compliant ballast disconnect is standard.

FINISH

All parts are pre-painted with high gloss baked white enamel, minimum reflectance 86%, applied over iron phosphate pretreatment for maximum adhesion and resistance.

SHIELDING

100% clear prismatic acrylic, extruded and roll-embossed, diagonally oriented female prisms, unless otherwise specified.

CERTIFICATION

All luminaires are built to UL 1598 standards and bear appropriate UL and cUL or CSA labels. Damp location labeling is standard. Emergency-equipped fixtures labeled UL 924.

ORDERING INFORMATION

EXAMPLE ST824-232G-FSA12-EU-F0735-C388

| ST8 | | 24 | | | | | | | | | | | | | |
|--|--|---|--|---|--|---|--|---|--|--|--|--|--|--|--|
| MODEL | | NO. OF LAMPS | | CEILING TYPE | | SHIELDING | | VOLTAGE | | OPTIONS | | | | | |
| ST8 Shallow Specification Troffer | | 2 Two 3 Three | | G Inverted T-Bar (Std.) F Overlap Flange (4½" overall fixture height) | | A12 Pattern 12 Acrylic 0.100" Nominal (Standard) A12.12S Pattern 12 Acrylic 0.125" Nominal A19 Pattern 19 Acrylic 0.15" Male Prism PC1 Silver Parabolic Louver ⅛" × ⅛" × ⅛" PC2 Silver Parabolic Louver 1½" × 1½" × 1" | | U 120V-277V 347 347V | | F830 T8, 80CRI, 3000K Lamps, Furnished/Installed F835 T8, 80CRI, 3500K Lamps, Furnished/Installed F841 T8, 80CRI, 4100K Lamps, Furnished/Installed GLR Fast Blow Fuse EL Emergency Battery Pack PAF Paint After Fabrication SLL Spring Loaded Latches M59 Master/Satellite Pair w/9' Harness C388 ¾" Flex with 3 No. 18 Wires C384 ¾" Flex with 3 No. 14 Wires C488 ¾" Flex with 4 No. 18 Wires C424 ½" Flex with 4 No. 14 Wires M4R Miro®-4 Aluminum Reflector SAR Low Intensity Specular Alum Reflector NYC NYC Compliant NYCU NYC Compliant, Union Label WIH wiHUBB Enabled¹ CP Chicann Plenum | | | | | |
| SIZE 24 2' × 4' | | LAMP TYPE 28 4'; TS: 28 Watt 32 4'; T8: 32, 30, 28 or 25 Watt 54 4'; T5HO: 54 or 51 Watt | | DOOR STYLE FS Flush Steel FA Flush Aluminum RA Regressed Aluminum DS Premium Steel | | For more shielding see Options and Accessories. | | BALLAST E Electronic T8, Instant Start ELW 2-Lamp Electronic T8, 0.77 Ballast Factor, Low Wattage, Instant Start 3E 3-Lamp Electronic T8, Instant Start 3ELW 3-Lamp Electronic T8, 0.77 Ballast Factor, Low Wattage, Instant Start EP Electronic T5HO or T8, Programmed Start 3EP 3-Lamp Electronic T5HO or T8, Programmed Start | | | | | | | |
| EPUQHEPSN- Sylvania Programmed Start Ballast | | | | | | | | | | | | | | | |
| FO835SYL Sylvania Lamps Installed | | | | | | | | | | | | | | | |

¹ Not available with Surface Mount Ceiling Types


Page 1/2 Rev. 08/26/14

© 2014 Columbia Lighting, a division of Hubbell Lighting, Inc. Because of continuing product improvement programs, Columbia Lighting reserves the right to change specifications without notice. 701 Millennium Blvd, Greenville, SC 29607 / Tel. 864.678.1000 / Tech Support 864.678.1668 / Website www.columbialighting.com



LENSed TROFFERS / ST824-2, ST824-3

reserves the right to change
www.columbialighting.com



Date Submitted: Sept. 2, 2015

Distributor: C.E.D. Columbus, Oh 43207

Contractor: Vaughn Industries

Job Name: OSU NRDOT Building I

Submitted by Lighting Systems of Columbus

**Job Name:**OHIO STATE UNIVERSITY NORTH RESIDENTIAL
DISTRICT TRANSFORMATION**Catalog Number:**ST824-232G-FSA12125-EPUQHEPSN-
PW-SLL-FO835SYL

Notes: 2-F32T8/835 LAMPS INCLUDED

Type:**B5**

LSC14-37947

Columbia
LIGHTING

ST824-2, ST824-3
2' x 4' Shallow Specification Troffer / 2 or 3-Lamp T5, T5HO, T8
PHOTOMETRIC DATA

Test 12581 Test Date 1/08/03

LUMINAIRE DATA

| | |
|-------------------|---|
| Luminaire | ST824-332G-FSA12 ST8 Lensed Troffer 2' x 4' 3-Lamp with A12 Lens |
| Ballast | B3321120RH |
| Ballast Factor | 0.88 |
| Lamp | F32T8 |
| Lumens per Lamp | 2900 |
| Total Input Watts | 84 |
| Mounting | Recessed |
| Shielding Angle | N/A |
| Spacing Criterion | 0° = 1.24 90° = 1.35 |

AVG. LUMINANCE (Candela/Sq. M.)

| | 0.0 | 22.5 | 45.0 | 67.5 | 90.0 |
|-------------------------|------|------|------|------|------|
| Average Luminance Angle | 0 | 4282 | 4282 | 4282 | 4282 |
| 30 | 4165 | 4260 | 4415 | 4515 | 4538 |
| 40 | 3967 | 4106 | 4326 | 4471 | 4523 |
| 45 | 3767 | 3920 | 4154 | 4322 | 4387 |
| 50 | 3462 | 3637 | 3851 | 4009 | 4084 |
| 55 | 3075 | 3282 | 3478 | 3559 | 3616 |
| 60 | 2696 | 2863 | 3045 | 3079 | 3098 |
| 65 | 2338 | 2412 | 2528 | 2565 | 2572 |
| 70 | 2036 | 2005 | 1987 | 2122 | 2140 |
| 75 | 1838 | 1784 | 1659 | 1921 | 1909 |
| 80 | 1841 | 1761 | 1770 | 1903 | 1956 |
| 85 | 1967 | 1825 | 2002 | 1967 | 2038 |

ZONAL LUMEN SUMMARY

| Zone | Lumens | % Lamp | % Fixt. |
|-------|--------|--------|---------|
| 0-30 | 2213 | 25.4 | 30.0 |
| 0-40 | 3657 | 42.0 | 49.6 |
| 0-60 | 6242 | 71.7 | 84.7 |
| 0-90 | 7373 | 84.7 | 100.0 |
| 0-180 | 7373 | 84.7 | 100.0 |

COEFFICIENTS OF UTILIZATION (%)

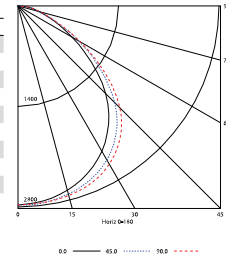
| RCR | RC | 80 | | | | 70 | | | | 50 | | | | 0 |
|-----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|
| | RW | 70 | 50 | 30 | 10 | 70 | 50 | 30 | 10 | 70 | 50 | 30 | 10 | 0 |
| | 1 | 93 | 89 | 86 | 83 | 91 | 87 | 84 | 81 | 84 | 81 | 79 | 72 | 61 |
| | 2 | 85 | 78 | 73 | 69 | 83 | 77 | 72 | 68 | 74 | 70 | 66 | 61 | 53 |
| | 3 | 78 | 69 | 63 | 58 | 76 | 68 | 62 | 57 | 66 | 60 | 56 | 53 | 45 |
| | 4 | 72 | 62 | 55 | 49 | 70 | 61 | 54 | 49 | 59 | 53 | 48 | 45 | 40 |
| | 5 | 66 | 55 | 48 | 43 | 64 | 55 | 48 | 43 | 53 | 47 | 42 | 39 | 35 |
| | 6 | 61 | 50 | 43 | 37 | 59 | 49 | 42 | 37 | 48 | 42 | 37 | 35 | 31 |
| | 7 | 57 | 45 | 38 | 33 | 55 | 45 | 38 | 33 | 44 | 37 | 33 | 31 | 27 |
| | 8 | 53 | 42 | 35 | 30 | 51 | 41 | 34 | 30 | 40 | 34 | 29 | 27 | 25 |
| 9 | 49 | 38 | 31 | 27 | 48 | 38 | 31 | 27 | 37 | 31 | 27 | 25 | 22 | |
| 10 | 46 | 35 | 29 | 24 | 45 | 35 | 28 | 24 | 34 | 28 | 24 | 22 | 20 | |

RCR = Room Cavity Ratio

RC = Effective Ceiling Cavity Reflectance RW = Wall Reflectance

ENERGY DATA

| | |
|---|--|
| Total Luminaire Efficiency | 84.7% |
| Luminaire Efficacy Rating (LER) | 77 |
| IESNA RP-1-1993 Compliance | Noncompliant |
| Comparative Yearly Lighting Energy Cost per 1000 Lumens | \$3.12 based on 3000 hrs. and \$0.08 per KWH |

INDOOR CANDELA PLOT**LUMINAIRE DATA**

| | |
|-------------------|---|
| Luminaire | ST824-232G-FSA12 ST8 Lensed Troffer 2' x 4' 2-Lamp with A12 Lens |
| Ballast | REL-2P32-5C |
| Ballast Factor | 0.88 |
| Lamp | F32T8 |
| Lumens per Lamp | 2900 |
| Total Input Watts | 58 |
| Shielding Angle | N/A |
| Spacing Criterion | 0° = 1.22 90° = 1.35 |

AVG. LUMINANCE (Candela/Sq. M.)

| | 0.0 | 22.5 | 45.0 | 67.5 | 90.0 |
|-------------------------|------|------|------|------|------|
| Average Luminance Angle | 0 | 3037 | 3037 | 3037 | 3037 |
| 30 | 2885 | 2962 | 3095 | 3208 | 3240 |
| 40 | 2619 | 2711 | 2877 | 3058 | 3104 |
| 45 | 2387 | 2524 | 2723 | 2878 | 2891 |
| 50 | 2184 | 2318 | 2537 | 2631 | 2643 |
| 55 | 1995 | 2062 | 2202 | 2261 | 2318 |
| 60 | 1767 | 1739 | 1745 | 1838 | 1952 |
| 65 | 1553 | 1418 | 1297 | 1494 | 1666 |
| 70 | 1485 | 1242 | 1047 | 1341 | 1540 |
| 75 | 1545 | 1259 | 1175 | 1354 | 1587 |
| 80 | 1601 | 1378 | 1352 | 1432 | 1699 |
| 85 | 1683 | 1559 | 1400 | 1577 | 1736 |

ZONAL LUMEN SUMMARY

| Zone | Lumens | % Lamp | % Fixt. |
|-------|--------|--------|---------|
| 0-30 | 1563 | 27.0 | 31.5 |
| 0-40 | 2561 | 44.2 | 51.6 |
| 0-60 | 4231 | 72.9 | 85.2 |
| 0-90 | 4967 | 85.6 | 100.0 |
| 0-180 | 4967 | 85.6 | 100.0 |

COEFFICIENTS OF UTILIZATION (%)

| RCR | RC | 80 | | | | 70 | | | | 50 | | | | 0 |
|-----|----|----|----|----|----|----|----|----|----|----|----|----|----|---|
| | RW | 70 | 50 | 30 | 10 | 70 | 50 | 30 | 10 | 50 | 30 | 10 | 0 | |
| | 1 | 94 | 90 | 87 | 84 | 92 | 88 | 85 | 82 | 85 | 82 | 80 | 73 | |
| | 2 | 86 | 79 | 74 | 70 | 84 | 78 | 73 | 69 | 75 | 71 | 67 | 62 | |
| | 3 | 79 | 71 | 64 | 59 | 77 | 69 | 63 | 58 | 67 | 62 | 57 | 54 | |
| | 4 | 73 | 63 | 56 | 51 | 71 | 62 | 55 | 50 | 60 | 54 | 49 | 46 | |
| | 5 | 67 | 57 | 49 | 44 | 65 | 56 | 49 | 44 | 54 | 48 | 43 | 41 | |
| | 6 | 62 | 51 | 44 | 39 | 61 | 50 | 44 | 39 | 49 | 43 | 38 | 36 | |
| | 7 | 58 | 47 | 39 | 34 | 56 | 46 | 39 | 34 | 45 | 38 | 34 | 32 | |
| | 8 | 54 | 43 | 36 | 31 | 53 | 42 | 35 | 31 | 41 | 35 | 31 | 29 | |
| 9 | 50 | 39 | 32 | 28 | 49 | 39 | 32 | 28 | 38 | 32 | 28 | 26 | | |
| 10 | 47 | 36 | 30 | 25 | 46 | 36 | 29 | 25 | 35 | 29 | 25 | 23 | | |

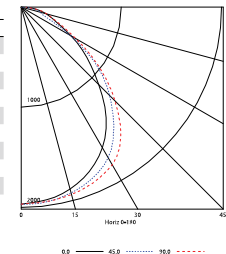
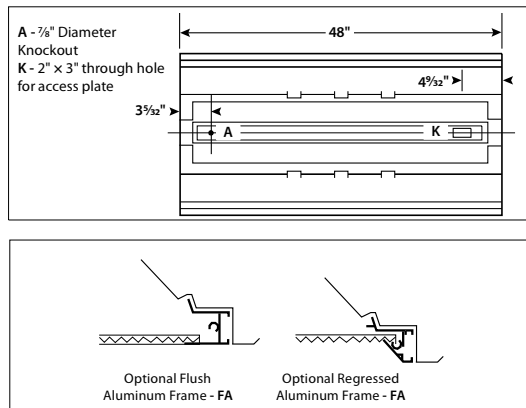
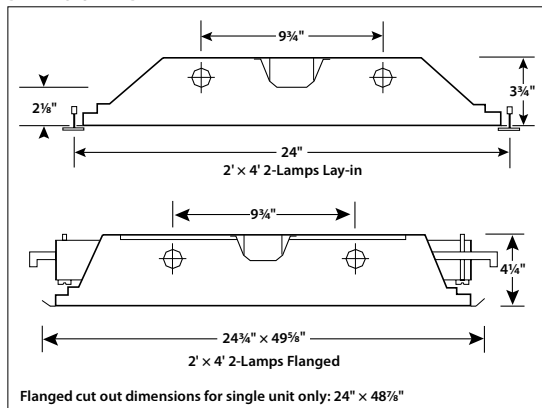
RCR = Room Cavity Ratio

RC = Effective Ceiling Cavity Reflectance RW = Wall Reflectance

ENERGY DATA

| | |
|---|--|
| Total Luminaire Efficiency | 85.6% |
| Luminaire Efficacy Rating (LER) | 75 |
| IESNA RP-1-1993 Compliance | Noncompliant |
| Comparative Yearly Lighting Energy Cost per 1000 Lumens | \$3.20 based on 3000 hrs. and \$0.08 per KWH |


Test 12583 Test Date 1/8/03

INDOOR CANDELA PLOT**DIMENSIONAL DATA****NOTE:** All dimensions are in inches; dimensions and specifications are subject to change without notice. Please consult factory or check sample for verification.

Page 2/2 Rev. 08/26/14

LENSED TROFFERS / ST824-2, ST824-3

© 2014 Columbia Lighting, a division of Hubbell Lighting, Inc. Because of continuing product improvement programs, Columbia Lighting reserves the right to change specifications without notice. 701 Millennium Blvd. Greenville, SC 29607 / Tel 864.678.1000 / Tech Support 864.678.1668 / Website www.columbialighting.com

| | | | | |
|--|--|----------------------------|--|------------|
|  | Project 14-16183-14 Date 10/29/2014 Contractor: Vaughn Industries OSU NRD BUILDING | Job Name: OSU NRD Building | Catalog Number 2AV G 2 17 MDR MVOLT GEB10PS LP835 | Type |
| | Submitted By LIGHTING UNLIMITED INC | Notes | | B15 |



FEATURES & SPECIFICATIONS

INTENDED USE — The Avante 2x2 is an indoor lighting luminaire for private and open offices, circulation areas, classrooms, libraries, cafeterias, airport ticketing and wait areas, and numerous other commercial applications. Static or air functions available. **Certain airborne contaminants can diminish integrity of acrylic.** [Click here for Acrylic Environmental Compatibility table for suitable uses.](#)

CONSTRUCTION — Housing is gloss white enamel on cold rolled steel. All edges hemmed or rounded.

All shieldings pivot on light traps and swing down for easy lamp access.

Molded light traps prevent light leaks between shielding and endplates.

All grid and screw slot units have built-in ceiling grid mounting clips. Grid air and screw slot air fixtures are supplied with screw-on tee bar clips.

OPTICS — Twin matte white polyester powder paint finished reflectors provide uniform light distribution. Optional low brightness diffuse aluminum stepped reflectors available.

All diffusers control direct light distribution and glare by shielding lamps from direct view.

Metal diffuser staggered round holes (MDR) 52% open perforated metal with .075" diameter holes backed with white acrylic diffuser.

Straight blade louver (SBL) sides of perforated metal with staggered round holes and solid blade louvered center. Sides and louver backed with white acrylic diffuser.

Metal diffuser aligned mini slots (MDM) 46% open perforated metal backed with white acrylic diffuser.

Acrylic diffuser prismatic lens (ADP) extruded acrylic lens backed with white acrylic diffuser.

Metal diffuser with center slots (MDC) 52% open metal, .075" diameter holes with 1" wide solid center. Slotted with 1/2" x 2" open slots. Diffuser is backed with white acrylic overlay.

ELECTRICAL — All ballasts supplied are class P, thermally protected, resetting, HPF, non-PCB, UL Listed, CSA certified. Ballasts are sound rated A. Standard combinations conform to UL 935. Luminaire is suitable for damp locations.

INSTALLATION — Trims available for standard 1" and 9/16" tee bar or screw slot grids.

Fixtures can be row mounted end-to-end.

Drywall ceiling adaptors available.

LISTINGS — UL Listed to US and Canadian safety standards. Chicago plenum approved and NYC approved (see Options).

Avante is covered by one or more of the following patents: 5,988,829; 399,586; 411,641; 413,402; 2,212,513; 87,513.

WARRANTY — 1-year limited warranty. Complete warranty terms located at

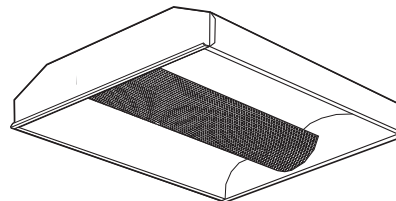
www.acuitybrands.com/CustomerResources/Terms_and_conditions.aspx

Actual performance may differ as a result of end-user environment and application.

Note: Specifications subject to change without notice.

Avante
Direct/Indirect Lighting

2AV 2'x2'



LINEAR FLUORESCENT

T8

1, 2 or 3 lamps

Specifications

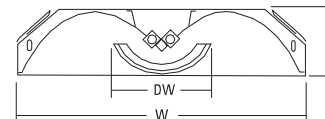
Length: 24 (61.0)

Width: 24 (61.0)

Diffuser width: 8 (20.3)

Depth: 5-1/2 (14.0)

5-7/8 (14.9) for air fixture



All dimensions are inches (centimeters) unless otherwise indicated.

ORDERING INFORMATION

For shortest lead times, configure product using **bolded options**.

Example: 2AV G 2 17 MDR MVOLT GEB10IS

| 2AV | G | | 3 | 17 | MDR | MVOLT | GEB10PS GLR LP835 |
|--------------------|-------------------------------------|---|-----------------------------|------------------------|---|--|---|
| Series | Trim type | Air function | Number of lamps | Lamp type | Diffuser | Voltage | Options |
| 2AV 2' wide | G Grid trim ST Screw slot | (blank) Static (no air function) A Air return/supply | 1 2 3 Not included | 17 17W T8 (24") | MDR Metal diffuser, round holes SBL Straight blade louver, round holes MDM Metal diffuser, mini slots ADP Acrylic dif-fuser, linear prismatic lens MDC Metal diffuser, round holes with large center slots ¹ Others available. | MVOLT² 347 Others available. | GEB10IS Electronic ballast, ≤ 10% THD, instant start GEB10PS Electronic ballast, ≤ 10% THD, programmed rapid start ADZT Advance "Mark VII" low voltage dimming ALG Acrylic litter guard ¹ EL14 Emergency battery pack (nominal 1400 lumens, see Life Safety section) GLR Internal fast-blow fuse ³ LP 835 Lamped. Specify lamp type and color PWS1836 6' prewire, 3/8" dia., 18-gauge, 3 wires NY3 New York City approved CP Chicago plenum approved APB Air pattern control blades (air only) ¹ <u>Reflector option</u> ASR Aluminum stepped reflector |

DGA22

Accessories: Order as separate catalog number.

DGA22 Drywall ceiling adapter, unit installation. Use G trim plus DGA accessory for fixture trim flange and fixture support in plaster or plasterboard ceilings.

Notes

1 Refer to options and accessories section for more detailed information.

2 MVOLT (120 - 277 volt).

3 Must specify voltage, 120 or 277.

FLUORESCENT

Date Submitted: Sept. 2, 2015

2AV-2X2 T8

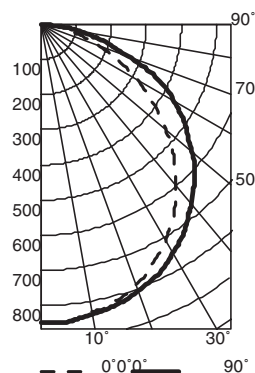
Distributor: C.E.D. Columbus, Oh 43207



Notes

B15

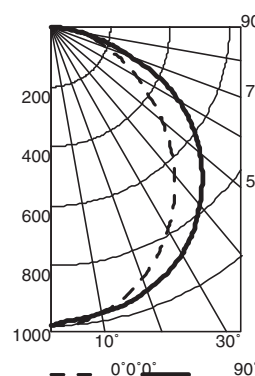
2AV G 3 17 MDR, (3) 17W T8 lamps, 1400 lumens per lamp, s/m 1.2 (along) 1.3 (across), test no. LTL9106



| Coefficients of Utilization | | | | | | | | | | | | | | | | | |
|-----------------------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|------------|---------------------|--------|-----------|--|
| CP Summary | | | pc | | | | | | | | | | | Zonal Lumen Summary | | | |
| | | | | 80% | | 20% | | | 50% | | | | | | | | |
| 0° | 90 | | pwr | 70% | 50% | 30% | 50% | 30% | 10% | 50% | 30% | 10% | Zone | Lumens | % Lamp | % Fixture | |
| 0° | 847 | 847 | 0 | 70 | 70 | 70 | 68 | 68 | 68 | 65 | 65 | 65 | 0° - 30° | 666 | 15.9 | 27.1 | |
| 5° | 847 | 850 | 1 | 64 | 61 | 58 | 60 | 57 | 55 | 57 | 55 | 54 | 0° - 40° | 1095 | 26.1 | 44.5 | |
| 15° | 816 | 826 | 2 | 58 | 53 | 49 | 52 | 48 | 45 | 50 | 47 | 44 | 0° - 60° | 1944 | 46.3 | 79.0 | |
| 25° | 752 | 786 | 3 | 53 | 47 | 42 | 46 | 41 | 38 | 44 | 40 | 37 | 0° - 90° | 2461 | 58.6 | 100.0 | |
| 35° | 659 | 714 | 4 | 48 | 41 | 36 | 40 | 36 | 32 | 39 | 35 | 31 | 90° - 180° | 0 | 0.0 | 0.0 | |
| 45° | 536 | 619 | 5 | 44 | 37 | 31 | 36 | 31 | 27 | 35 | 30 | 27 | 0° - 180° | 2461 | 58.6 | 100.0 | |
| 55° | 392 | 502 | 6 | 41 | 33 | 28 | 33 | 28 | 24 | 31 | 27 | 24 | | | | | |
| 65° | 241 | 366 | 7 | 38 | 30 | 25 | 29 | 25 | 21 | 29 | 24 | 21 | | | | | |
| 75° | 110 | 183 | 8 | 35 | 27 | 22 | 27 | 22 | 19 | 26 | 22 | 19 | | | | | |
| 85° | 26 | 39 | 9 | 33 | 25 | 20 | 25 | 20 | 17 | 24 | 20 | 17 | | | | | |
| 90 | 0 | 0 | 10 | 31 | 23 | 18 | 23 | 18 | 15 | 22 | 18 | 15 | | | | | |
| Efficiency: 58.6% | | | | | | | | | | | | | | | | | |

Efficiency: 58.6%

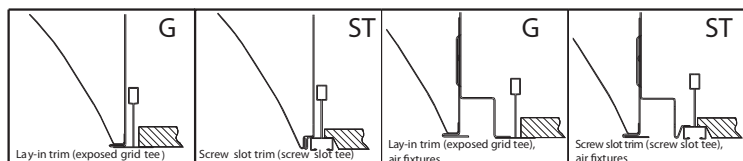
2AV G 3 17 SBL. (3) 17W T8 lamps, 1325 lumens per lamp, s/m 1.2 (along) 1.3 (across), test no. LTL10191



| Coefficients of Utilization | | | | | | | | | | | | | | | | |
|-----------------------------|------|------|----|-----|-----|-----|-----|-----|-----|-----|-----|------|---------------------|--------|-----------|-------|
| CP Summary | | | pf | 20% | | | | | | | | | Zonal Lumen Summary | | | |
| | | | | pc | 80% | | | 70% | | | 50% | | | | | |
| 0° | 90 | | pw | 70% | 50% | 30% | 30% | 10% | 10% | 30% | 10% | Zone | Lumens | % Lamp | % Fixture | |
| 0° | 1001 | 1001 | 0 | 83 | 83 | 83 | 81 | 81 | 81 | 78 | 78 | 78 | 0° - 30° | 768 | 19.3 | 27.6 |
| 5° | 997 | 985 | 1 | 76 | 73 | 70 | 71 | 68 | 66 | 68 | 66 | 64 | 0° - 40° | 1253 | 31.5 | 45.1 |
| 15° | 941 | 963 | 2 | 69 | 63 | 59 | 62 | 58 | 54 | 60 | 56 | 53 | 0° - 60° | 2199 | 55.3 | 79.1 |
| 25° | 846 | 914 | 3 | 63 | 56 | 50 | 55 | 49 | 45 | 52 | 48 | 44 | 0° - 90° | 2780 | 69.9 | 100.0 |
| 35° | 720 | 835 | 4 | 58 | 49 | 43 | 48 | 43 | 38 | 47 | 42 | 38 | 90° - 180° | 0 | 0.0 | 0.0 |
| 45° | 568 | 719 | 5 | 53 | 44 | 38 | 43 | 37 | 33 | 42 | 37 | 33 | 0° - 180° | 2780 | 69.9 | 100.0 |
| 55° | 404 | 581 | 6 | 49 | 40 | 33 | 39 | 33 | 29 | 38 | 32 | 28 | | | | |
| 65° | 267 | 403 | 7 | 45 | 36 | 30 | 35 | 30 | 25 | 34 | 29 | 25 | | | | |
| 75° | 143 | 188 | 8 | 42 | 33 | 27 | 32 | 27 | 23 | 31 | 26 | 23 | | | | |
| 85° | 34 | 36 | 9 | 40 | 30 | 24 | 30 | 24 | 20 | 29 | 24 | 20 | | | | |
| 90 | 0 | 0 | 10 | 37 | 28 | 22 | 27 | 22 | 19 | 27 | 22 | 18 | | | | |
| Efficiency: 69.9% | | | | | | | | | | | | | | | | |

Efficiency: 69.9%

| Ceiling Type | Appropriate Trim Type |
|---------------------------------|-----------------------|
| Exposed grid tee (1" and 9/16") | G |
| Concealed grid tee | G |
| Screw slot | ST |
| Plaster or plasterboard | G* |



*DGA accessory available to provide ceiling trim flange and fixture support for plaster or plasterboard ceiling. Recommended rough-in dimensions for DGA installation is 24-3/4" x 24-3/4" (Tolerance is +1/8", -0").



2AV-2X2 T8

Contractor: Vaughn Industries

Job Name: OSU NRD Building I

Submitted by Lighting Systems of Columbus

**Job Name:**OHIO STATE UNIVERSITY NORTH RESIDENTIAL
DISTRICT TRANSFORMATION**Catalog Number:**STE24-332G-MPO-3EPUQHEPSN-
FO835SYL

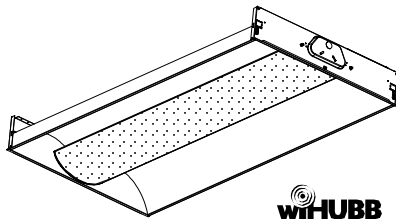
Notes: 3-F32T8/835 LAMPS INCLUDED

Type:**B17**

LSC14-37947

Columbia
LIGHTING**STE24-3**

2' x 4' Stratus® Recessed Indirect / 3-Lamp T5, T5HO, T8

**FEATURES**

- Precision optical design produces high efficiency in a high visual comfort architecturally styled direct/indirect distribution
- Custom perforated metal basket is backed by a high transmission lamp obscuring overlay
- Optimized coating process and unique paint formulation provide exceptional reflectivity in a matte finish for a soft visual image and balanced basket and reflector illumination
- Completely recessed, provides a clean ceiling with uniform illumination at mounting heights as low as 8 feet
- Available for use with T8, T5 or T5HO linear fluorescent lamps
- Optional acrylic dust guard pivots to seal lamp compartment against contaminants especially for schools, medical facilities and public spaces
- Companion Louvered (STEL), side basket (STS) and pendant (STP) models available
- Available with exclusive wiHUBB technology preinstalled
 - Peer to peer, self-healing wireless mesh network
 - Integrated control system for 0-10VDC or step dimming, or On/Off

PROJECT INFORMATION

Project Name _____

Type _____

Catalog No. _____

Date _____

CONSTRUCTION

Luminaire housing and end caps are die formed code gauge cold rolled steel. The sturdy reflector is stiffened with linear forms, profiled to a precision curve. Perforated basket with high transmission overlay for improved optical efficiency plus lamp obscuration. Basket and all reflective surfaces are finished after fabrication with unique formula high reflectivity matte white paint for soft, uniform indirect illumination.

Thermoplastic light traps snap into the housing at both ends of the basket to prevent light leaks. Basket hinges down for easy access to center wireway.

INSTALLATION

An access plate is furnished with each luminaire for fast wiring access from the plenum. No need to open fixture.

BALLASTS

Energy efficient, thermally protected, automatic resetting, Class P, high power factor, sound rated A, magnetic or electronic ballasts. CEE NEMA Premium compliant.

ELECTRICAL

Standard class "P", thermally protected, autoresetting HPF ballast, sound rated A. CEE NEMA Premium compliant. All ballast leads extend a minimum of 6" through access location. NEC/CEC-compliant ballast disconnect is standard.

CEILING COMPATIBILITY

NEC-compliant T-Bar clips supplied with all grid trim fixtures. See ceiling details on reverse. For type SG ceilings order G trim. Fixture will be regressed 3/8" from the face of the ceiling tee. For hard ceilings order G trim and FK flange accessory. Assemble then support FK accessory at the ceiling plane using tie wires (by others). Contact your Columbia representative for compatibility information for specific ceiling types or for continuous row applications in hard ceilings.

CERTIFICATION

All luminaires are built to UL 1598 standards and bear appropriate UL and cUL or CSA labels. Lamp location labeling is standard. Emergency-equipped fixtures labeled UL 924.

ORDERING INFORMATION**EXAMPLE STE24-332G-MPO-EU**

| STE | 24 | - | 3 | - | MPO | - | - | - | - |
|---|--------------|-----------------------------------|--------------------------|-------------------------|---|------------|--|---|---|
| MODEL | NO. OF LAMPS | CEILING TYPE | SHIELDING | VOLTAGE | OPTIONS | SIZE | LAMP TYPE | BALLAST | |
| STE Stratus® E-Series Recessed Indirect | 3 Three | G Grid Lay-in SM Surface Mount | MPO Metal Perf w/Overlay | U 120V-277V 347 347V | GLR Fast Blow Fuse GMF Slow Blow Fuse EL Emergency Battery Pack EL5 Emergency Battery Pack, T5 DG Dust Guard Clear Acrylic NYC NYC Compliant NYCU NYC Compliant, Union Label WIH wiHUBB Enabled ¹ | 24 2' x 4' | 28 4', T5: 28 Watt 32 4', T8: 32, 30, 28 or 25 Watt 54 4', T5HO: 54 or 51 Watt | E Electronic T8, Instant Start ED Electronic Dimming T8 and T5 (specify series) EP Electronic T5, T5HO, or T8, Programmed Start 3E 3-Lamp Electronic T8, Instant Start 3EP 3-Lamp Electronic T5, T5HO, Instant or T8 Programmed Start | |

3EPUQHEPSN - One 3 Lamp Sylvania Programmed Start Ballast

FO835SYL - Sylvania Lamps Installed

**ACCESSORIES
(ORDER SEPARATELY)**FK24 2' x 4' Single Flange Kit
(Shipped separately)¹ Not available with Surface Mount Ceiling Types

Contractor: Vaughn Industries

Job Name: OSU NRD Building I

Submitted by Lighting Systems of Columbus

**Job Name:**OHIO STATE UNIVERSITY NORTH RESIDENTIAL
DISTRICT TRANSFORMATION**Catalog Number:**STE24-332G-MPO-3EPUQHEPSN-
FO835SYL

Notes: 3-F32T8/835 LAMPS INCLUDED

Type:**B17**

LSC14-37947

Columbia
LIGHTING

STE24-3
2' x 4' Stratus® Recessed Indirect / 3-Lamp T5, T5HO, T8
PHOTOMETRIC DATA

Test ITL65805 Test Date 8/30/10

LUMINAIRE DATA

| | |
|-----------------------------|--|
| Luminaire | STE24-332G-MPO-3EU Stratus, Recessed/Architectural 2 x 4 3-lamp with perforated metal baslet and opal overlay |
| Ballast | ICN-3P32-SC |
| Ballast Factor | 0.88 |
| Lamp | F28T8 |
| Lumens per Lamp | 2750 |
| Watts | 71 |
| Shielding Angle | 0° = 0.90° = 0 |
| Spacing Criterion | 0° = 1.22 90° = 1.30 |
| Luminous Opening in Feet | Length: 3.93 Width: 1.88 Height: 0.00 |

ZONAL LUMEN SUMMARY

| Zone | Lumens | % Lamp | % Fixt. |
|-------|--------|--------|---------|
| 0-30 | 1750 | 21.2 | 26.9 |
| 0-40 | 2875 | 34.8 | 44.2 |
| 0-60 | 5130 | 62.2 | 78.8 |
| 0-90 | 6507 | 78.9 | 100.0 |
| 0-180 | 6507 | 78.9 | 100.0 |

ENERGY DATA

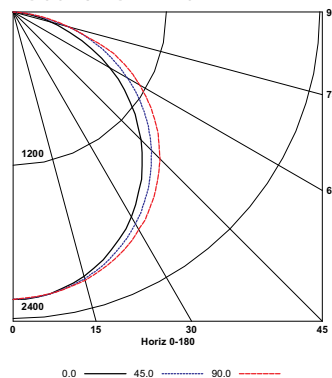
| | |
|--|--|
| Total Luminaire Efficiency | 78.9% |
| Luminaire Efficacy Rating (LER) | 81 |
| IESNA RP-1-1993 Compliance | Noncompliant |
| Comparative Yearly Lighting Energy Cost per 1000 Lumens | \$2.96 based on 3000 hrs. and \$0.08 per KWH |

COEFFICIENTS OF UTILIZATION (%)

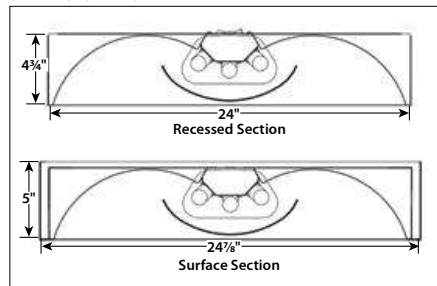
| RCR | 80 | | | | 70 | | | | 50 | | | | 0 | | | |
|-----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|
| | RW | 70 | 50 | 30 | 10 | 70 | 50 | 30 | 10 | 50 | 30 | 10 | 0 | 30 | 10 | 0 |
| 1 | 86 | 82 | 79 | 76 | 84 | 80 | 77 | 74 | 72 | 66 | 63 | 60 | 55 | 50 | 46 | 42 |
| 2 | 78 | 71 | 66 | 61 | 76 | 70 | 65 | 61 | 57 | 63 | 59 | 55 | 50 | 46 | 42 | 39 |
| 3 | 71 | 63 | 56 | 51 | 69 | 61 | 55 | 50 | 45 | 54 | 50 | 46 | 42 | 39 | 35 | 31 |
| 4 | 65 | 55 | 48 | 43 | 63 | 54 | 48 | 43 | 38 | 47 | 42 | 39 | 35 | 31 | 27 | 23 |
| 5 | 60 | 49 | 42 | 37 | 58 | 48 | 42 | 37 | 32 | 41 | 36 | 32 | 28 | 24 | 20 | 16 |
| 6 | 55 | 44 | 37 | 32 | 53 | 44 | 37 | 32 | 27 | 36 | 32 | 28 | 24 | 20 | 16 | 12 |
| 7 | 51 | 40 | 33 | 28 | 50 | 40 | 33 | 28 | 23 | 32 | 28 | 24 | 20 | 16 | 12 | 9 |
| 8 | 47 | 37 | 30 | 25 | 46 | 36 | 30 | 25 | 20 | 29 | 25 | 21 | 17 | 13 | 9 | 6 |
| 9 | 44 | 34 | 27 | 23 | 43 | 33 | 27 | 23 | 18 | 26 | 22 | 18 | 14 | 10 | 7 | 4 |
| 10 | 42 | 31 | 25 | 21 | 41 | 31 | 25 | 21 | 16 | 24 | 20 | 16 | 12 | 8 | 5 | 3 |

RCR = Room Cavity Ratio

RC = Effective Ceiling Cavity Reflectance RW = Wall Reflectance

INDOOR CANDELA PLOT**AVG. LUMINANCE (Candela/Sq. M.)**

| | 0.0 | 22.5 | 45.0 | 67.5 | 90.0 |
|----|------|------|------|------|------|
| 0 | 3275 | 3275 | 3275 | 3275 | 3275 |
| 30 | 3110 | 3142 | 3220 | 3285 | 3307 |
| 40 | 2986 | 3058 | 3174 | 3307 | 3330 |
| 45 | 2917 | 3000 | 3158 | 3309 | 3350 |
| 50 | 2824 | 2926 | 3125 | 3300 | 3359 |
| 55 | 2700 | 2832 | 3078 | 3289 | 3358 |
| 60 | 2538 | 2719 | 3010 | 3255 | 3339 |
| 65 | 2330 | 2603 | 2923 | 3254 | 3289 |
| 70 | 2011 | 2415 | 2794 | 3088 | 3016 |
| 75 | 1790 | 2184 | 2550 | 2561 | 2561 |
| 80 | 1460 | 1913 | 1905 | 2156 | 2114 |
| 85 | 919 | 1170 | 1438 | 1504 | 1504 |

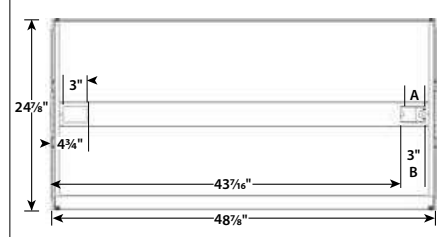
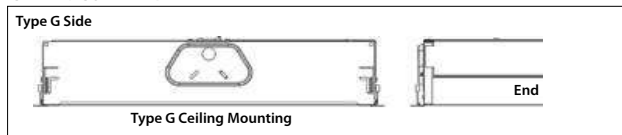
DIMENSIONAL DATA**Top View**

Surface Mount K.O. Dimensions

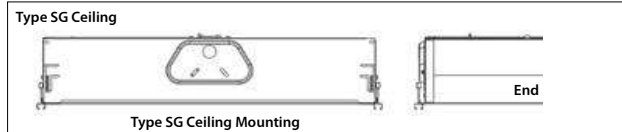
A: 7/8" K.O.

B: 2" x 3" Access (Cover Removed)

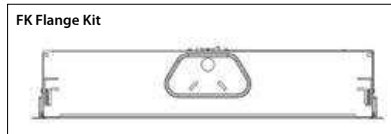
C: 2" x 3" Rectangular Knockout

**CEILING COMPATIBILITY**

For lay-in installation in exposed grid ceilings. Maximum tee widths of 1" and maximum heights of 1 1/2" allowed.



For 1/2" slot grid type ceilings. Luminaire will be recessed 3/8" horizontal surface of the tee.



For hard ceiling applications, fixtures must be ordered with a flange kit that wires directly into the concealed ceiling opening for a clean finished appearance. For row configurations contact your local Columbia Representative.


Flange kit cut out dimension for single FK22 only: 24 1/8" x 48 7/8"

NOTE: All dimensions are in inches; dimensions and specifications are subject to change without notice. Please consult factory or check sample for verification.

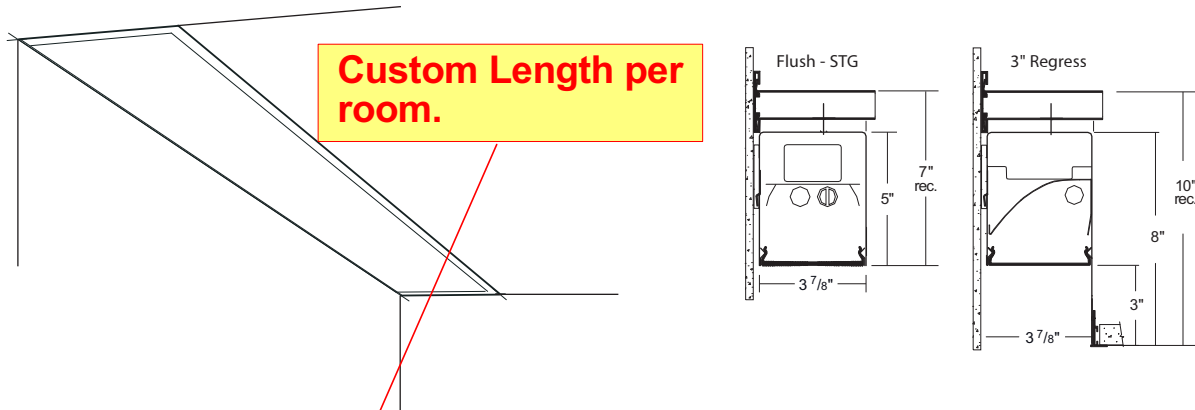
Page 2/2 Rev. 03/20/13

RECESSED ARCHITECTURAL / STE24-3

© 2013 Columbia Lighting, a division of Hubbell Lighting, Inc. Because of continuing product improvement programs, Columbia Lighting reserves the right to change specifications without notice. 701 Millennium Blvd. Greenville, SC 29607 / Tel 864.678.1000 / Website www.columbialighting.com

| | | | |
|--|--|---|------|
|  | Project 14-16183-14 Date 10/29/2014 Contractor: Vaughn Industries | Catalog Number P43-PSTD-FLSH-2T8-04'-BLW-TMW-D1G-SC-WTW-120-X1 | Type |
| | Submitted By LIGHTING UNLIMITED INC | Notes | B24 |

P43 Perimeter Cove & Perimeter



| series/ style | lens position | Lamp Rows | nominal length | shielding | trim color | distribution | circuit- ing | mount- ing | voltage | ceiling system | options |
|--|-------------------------------|-------------------------|---|--|------------------------------------|--|-----------------------------------|------------------------|----------------|---|---|
| P43-PSTD | FLSH | 1T8 | 04' | BLW | TMW | D1G | SC | WTW | 120 | X1 | |
| PSTD standard | FLSH flush lens | 1T8 | 02' | AWW acrylic wall wash lens (use D1G or D1R dist) | TMW' textured matte white | D1 direct | SC single circuit | WTW wall to wall | 120 | X1 exposed T-Bar | EML' emergency battery (600-700 lumens) |
| PSTG staggered (N/A D1R) (1 lamp only) | REG3 3" regress lens | 2T8 (N/A PSTG) | 03' | | | D1G' asymmetric 5" wall grazer | DC dual circuit (2 lamp) | LP light pocket | 277 | | EMH' emergency battery (1100-1400 lumens) |
| | | 1T5/HO | 06' | AWG acrylic wall graze lens (use D1S, STG only) | YGW gloss white | D1S asymmetric with grazer (STG only) | | | 347 | X3B hard ceiling (overlapping flange) | DM dimming, specify manufacturer, voltage, and other requirements |
| | | 2T5/HO (N/A PSTG) | 08' | | Y_ premium Color | D1R' asymmetric to room (15') (N/A REG3) (N/A STG) | | | UNV 120-277 | X6 slot grid | RSE rapid-start electronic |
| | | | R_' *row length | SAL satin acrylic lens | CC custom color | *1 lamp only, must use AWW lens | | | | X7 hard ceiling (concealed flange) | 10THD ballast w/ < 10% total harmonic distortion |
| | | | LED or staggered recom- mended beyond 8" to avoid socket shadow | OPL opal frost acrylic lens | *standard | | | | | | B_ specify ballast, manu- facturer & catalog # |
| | | | | PRA prismatic acrylic lens | | | | | | | FH fixture fusing (slow blow) |
| | | | | SPL silver parabolic louver | | | | | | | C2 90° 2-way corner w/ acrylic lens, lit corners on STG & D1G/D1R only |
| | | | | BLA bladed louver- anodized | | | | | | | QC quick-connect circuit assemblies |
| | | | | BLW bladed louver - white | | | | | | | *consult factory |

Features A narrow 4" wide recessed perimeter lighting system in either a standard or a staggered lamp configuration for single T8 or T5/HO lamp rows to provide continuous lighting without socket shadows along the entire row length. Standard lamping for 2T5 or T5HO lamp rows have off-set lamps within modular rows to mitigate socket shadows. T8 lamps in standard configuration are end to end in modular rows and are not offset.

Construction The housing, available in 2-, 3-, 4-, 6- or 8-foot standard lengths, is made of die-formed 20-gauge steel. Louver material is semispecular, low iridescent aluminum. Snap-in prismatic lens is clear extruded acrylic. Snap-in satin acrylic lens is clear frost extruded acrylic with a matte finish for soft, even light transmission. AWW lens is designed with micro prisms for optical performance and **MUST** be used for D1G wall graze.

NOTE: All D1G/D1R & PSTG include gear trays.

Finish The standard housing and trim color is textured matte white (TMW) using polyester powder paint.

Electrical T8 fixtures have instant-start electronic ballasts with less than 20% THD. T5 and T5HO fixtures have programmed start electronic ballast with less than 10% THD. Fixtures are U.L. Damp labeled (non-emergency) and I.B.E.W. manufactured. Maximum ballast size available on non-staggered models: 2 3/8" width x 1 1/4" height. Maximum ballast size available on staggered models: 1 3/4" width x 1 1/4" height.

Mounting Fixture is to be recessed-mounted into exposed T-bar or hard ceiling applications.

Project 14-16183-14 Date 10/29/2014
Contractor: Vaughn IndustriesCatalog Number
Job Name: OSU NRD Building
P43-STD-FLOOR-215-04-BLW-TMW-D1G-SC-WTW-120-X1

Type

Submitted By
LIGHTING UNLIMITED INC

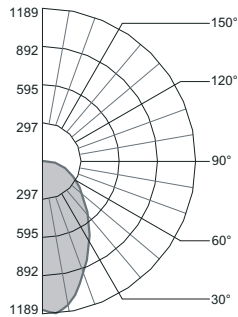
Notes

B24

Cove & Perimeter **P43 Perimeter**

photometric data

P43-STD-REG3-1T5HO-AWW-D1G Candlepower Summary

Report #LL108u0714R01 D=100% I=0.0%
Spacing Criteria: Along 1.00; Across 1.16Delivered Lumens: 2011
Input Watts: 32.55
Efficiency: 77.30%

Zonal Lumen Summary

| Zone% | % Lamp | % Luminaire |
|--------|--------|-------------|
| 0-90 | 76.00 | 98.20 |
| 90-180 | 1.40 | 1.80 |

Candlepower Summary

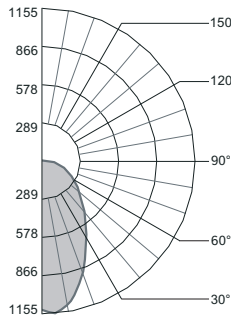
| Vertical Angle | Horizontal Angle | | | | |
|----------------|------------------|-------|------|-------|------|
| | 0° | 22.5° | 45° | 67.5° | 90° |
| 0 | 1159 | 1159 | 1159 | 1159 | 1159 |
| 5 | 1189 | 1184 | 1181 | 1173 | 1150 |
| 10 | 1136 | 1139 | 1155 | 1159 | 1127 |
| 15 | 1038 | 1050 | 1089 | 1122 | 1090 |
| 20 | 928 | 942 | 995 | 1060 | 1037 |
| 25 | 826 | 839 | 890 | 978 | 970 |
| 30 | 729 | 740 | 784 | 879 | 888 |
| 35 | 635 | 646 | 682 | 770 | 793 |
| 40 | 546 | 557 | 587 | 659 | 687 |
| 45 | 466 | 474 | 499 | 552 | 576 |
| 50 | 395 | 401 | 418 | 454 | 466 |
| 55 | 341 | 345 | 354 | 377 | 376 |
| 60 | 287 | 289 | 290 | 300 | 288 |
| 65 | 240 | 240 | 234 | 230 | 201 |
| 70 | 197 | 195 | 186 | 170 | 147 |
| 75 | 154 | 152 | 141 | 120 | 95 |
| 80 | 113 | 110 | 99 | 79 | 54 |
| 85 | 73 | 69 | 59 | 46 | 24 |
| 90 | 35 | 33 | 28 | 15 | 9 |

Coefficients of Utilization (%)

| Floor Ceiling Wall | effective floor cavity reflectance = .20 | | | | |
|--------------------------|--|----|----|----|----|
| | 80 | 70 | 50 | 30 | 10 |
| 70 | 50 | 30 | 10 | 70 | 50 |
| 30 | 10 | 70 | 50 | 30 | 10 |
| 10 | 70 | 50 | 30 | 10 | 70 |
| 0 | 92 | 92 | 92 | 89 | 89 |
| 1 | 85 | 81 | 78 | 76 | 74 |
| 2 | 78 | 72 | 67 | 63 | 61 |
| 3 | 72 | 64 | 59 | 54 | 50 |
| 4 | 66 | 58 | 52 | 47 | 44 |
| 5 | 61 | 52 | 46 | 41 | 37 |
| 6 | 57 | 48 | 41 | 37 | 34 |
| 7 | 53 | 44 | 37 | 33 | 30 |
| 8 | 50 | 40 | 34 | 30 | 27 |
| 9 | 47 | 37 | 31 | 27 | 24 |
| 10 | 44 | 35 | 29 | 25 | 22 |

photometric data

P43-STD-REG3-1T5-04-AWG-D1S Candlepower Summary

Report #Lo81404201 D=97.30% I=2.70%
Spacing Criteria: Along 1.2; Across .90Delivered Lumens: 1745
Input Watts: 34.42
Efficiency: 51%

Zonal Lumen Summary

| Zone% | Lumens | % Luminaire |
|--------|---------|-------------|
| 0-90 | 1697.28 | 97.30 |
| 90-180 | 47.89 | 2.70 |

Candlepower Summary

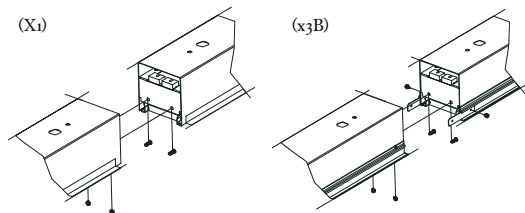
| Vertical Angle | Horizontal Angle | | | | |
|----------------|------------------|------|------|------|------|
| | 0° | 25° | 45° | 65° | 90° |
| 0 | 1131 | 1131 | 1131 | 1131 | 1131 |
| 5 | 1144 | 1144 | 1146 | 1148 | 1120 |
| 10 | 1042 | 1066 | 1107 | 1132 | 1102 |
| 15 | 887 | 930 | 1008 | 1091 | 1080 |
| 20 | 726 | 770 | 870 | 1010 | 1035 |
| 25 | 640 | 656 | 731 | 908 | 984 |
| 30 | 590 | 593 | 627 | 794 | 912 |
| 35 | 535 | 543 | 555 | 669 | 821 |
| 40 | 481 | 486 | 492 | 562 | 705 |
| 45 | 424 | 428 | 431 | 472 | 578 |
| 50 | 376 | 376 | 375 | 398 | 452 |
| 55 | 333 | 331 | 322 | 328 | 341 |
| 60 | 302 | 295 | 282 | 273 | 257 |
| 65 | 271 | 260 | 239 | 216 | 178 |
| 70 | 238 | 229 | 202 | 171 | 116 |
| 75 | 210 | 197 | 168 | 131 | 71 |
| 80 | 178 | 166 | 136 | 96 | 37 |
| 85 | 142 | 132 | 105 | 67 | 13 |
| 90 | 98 | 90 | 71 | 42 | 0 |

Coefficients of Utilization (%)

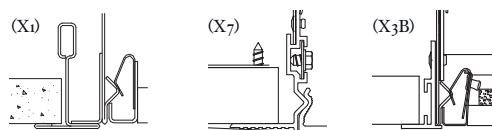
| Floor Ceiling Wall | effective floor cavity reflectance = .20 | | | | |
|--------------------------|--|------|------|------|------|
| | 80 | 70 | 50 | 30 | 10 |
| 70 | 50 | 30 | 10 | 70 | 50 |
| 30 | 10 | 70 | 50 | 30 | 10 |
| 10 | 70 | 50 | 30 | 10 | 70 |
| 0 | 1181 | 1181 | 1181 | 1151 | 1151 |
| 1 | 1091 | 1041 | 1009 | 971 | 941 |
| 2 | 1009 | 931 | 861 | 811 | 781 |
| 3 | 921 | 831 | 751 | 691 | 641 |
| 4 | 851 | 751 | 671 | 601 | 541 |
| 5 | 791 | 681 | 591 | 531 | 471 |
| 6 | 741 | 621 | 541 | 471 | 421 |
| 7 | 691 | 571 | 491 | 431 | 371 |
| 8 | 651 | 521 | 451 | 391 | 331 |
| 9 | 611 | 491 | 411 | 361 | 301 |
| 10 | 581 | 451 | 381 | 331 | 271 |

installation

Adjoining Detail



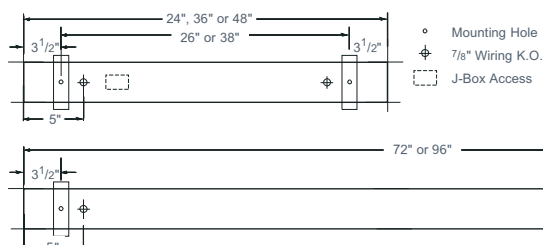
Ceiling Systems




Framing Dimensions X3B & X7

Add 1/2" in fixture width, Add 5/8" in fixture length.

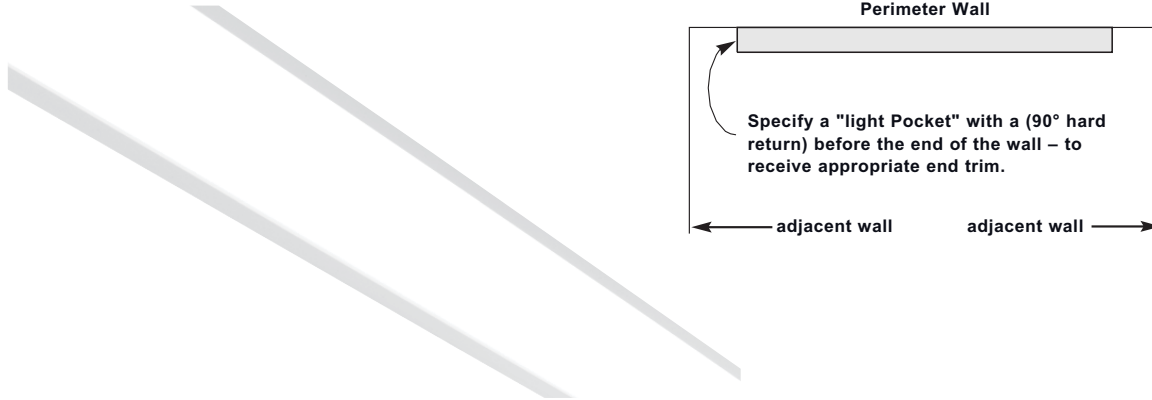
Mounting Locations



| | | | |
|--|--|---|------------------------|
|  | Project 14-16183-14 Date 10/29/2014 Contractor: Vaughn Industries Submitted By LIGHTING UNLIMITED INC | Catalog Number P43-PSTD-FLSH-218-04-BLW-TMW-D1G-SC-WTW-120-X1 Job Name: OSU NRD Building Notes | Type B24 |
|--|--|---|------------------------|

P43 Perimeter Cove & Perimeter

Frosted



1 lamp Staggered System (STG)

Typical Row Examples - Lamp quantities and wattages are dependant on row size.

T5/T5HO - (3) 3' 21w or 39w lamps - Gear Trays: (1) 3' and 1 (6') Telescoping



T5/T5HO - (2) 3' 21w or 39w lamps and (2) 4' 28w or 54w lamps - Gear Trays: (1) 6' and 1 (8') Telescoping



T5/T5HO - (1) 3' 21w or 39w lamps and (5) 4' 28w or 54w lamps - Gear Trays: (1) 3', (1) 4', (1) 8' & (1) 8' Telescoping



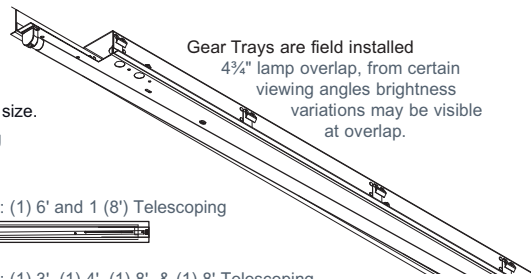
T8 - (3) 3' 25w lamp - Gear Tray: (1) 8' individual



T8 - (3) 3' 25w and (1) 32w lamps - Gear Trays (1) 3', (1) 4' and (1) 6', Telescoping



T8 - (2) 3' 25w lamps and (4) 32w lamps - Gear Trays (2) 8' and (1) 6' Telescoping



Standard System

Typical Row Examples

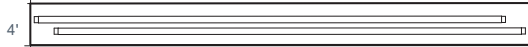
2T8 lamp rows



2T5 or 2T5HO lamp rows



2T5 or 2T5HO lamp rows



Factory supplied submittal drawing will be provided. Lamps are not supplied.

Prudential reserves the right to change design specifications or materials without notice.

Contractor: Vaughn Industries

Job Name: OSU NRD Building I

Submitted by Lighting Systems of Columbus

**Job Name:**OHIO STATE UNIVERSITY NORTH RESIDENTIAL
DISTRICT TRANSFORMATION**Catalog Number:**TMC-320-FL-1-T5 28W-SQHFR
SURFACE MOUNT -4' BL-120

Notes:

Type:**B25**

LSC14-37947

**Project****Notes**

Configure product using standard options.
For other custom options contact Voigt.
Example: SQOP, 1-T8-17,DWM, 4',WH,120,PHC



Surface Mount Shown



Surface Mount Shown



Aircraft Cable Mount Shown



Stem Mount Shown

COMMERCIAL

Model Timo Mini

- Lo-Profile Linear Fluorescent
- T5/T8 Lamping
- Shure Seal Powder Coat Finish - For long lasting finish
- Optional Integral battery back up
- Wet Location Rated
- Optional Vandal Proof

Applications:

- Offices • Corridors • Stairwells • Retail • Garage
- Shure Seal Finish**

| fixture Series | lamp | lens | suspension | length | finish | voltage | options |
|--|--|-----------------------------------|--|---|---|------------|---|
| TMC-320-FL-1T5-28W-4'-SQHFR (Surface Mount) - 4' 1 BL -120 | | | | | | | PHC |
| TMC-320-FL | 1-T8-17w 1-T8-25w 1-T828w 1-T832w 1-T5-28w 1-5415HO Note: Fixture is single lamp cross section | SQHFR-High performance frost lens | FWM-wall mount with arm-std extension 1". SRM-Semi Recess Mount SC- Swivel Canopy W/Stem (Specify Length) RC- Rigid Canopy W/Stem (Specify Length) AC- Air-Craft Cable (Specify Length) For other contact Voigt | Specify length of fixture: 4' 8' Other | WH-White BL-Black DB-Dark Bronze SIL-silver Custom available check with factory | 120 277 | PHC-Photo Sensor OCC-Occupancy Sensor F-Fuse VP-Vandal Proof |

Contractor: Vaughn Industries

Job Name: OSU NRD Building I

Submitted by Lighting Systems of Columbus

**Job Name:**OHIO STATE UNIVERSITY NORTH RESIDENTIAL
DISTRICT TRANSFORMATION**Catalog Number:**TMC-320-FL-1-T5 28W-SQHFR
SURFACE MOUNT -4' BL-120

Notes:

Type:**B25**

LSC14-37947

TIMO MINI

Timo Mini

- Lo-Profile Linear Fluorescent
- T5/T8 Lamping Exclusive
- Shure Seal Powder Coat Finish - For long lasting finish
- Optional Integral battery back up
- Wet Location Rated

Applications:

- Offices • Corridors • Stairwells • Retail • Garage

Shure Seal Finish

Surface Mount Shown



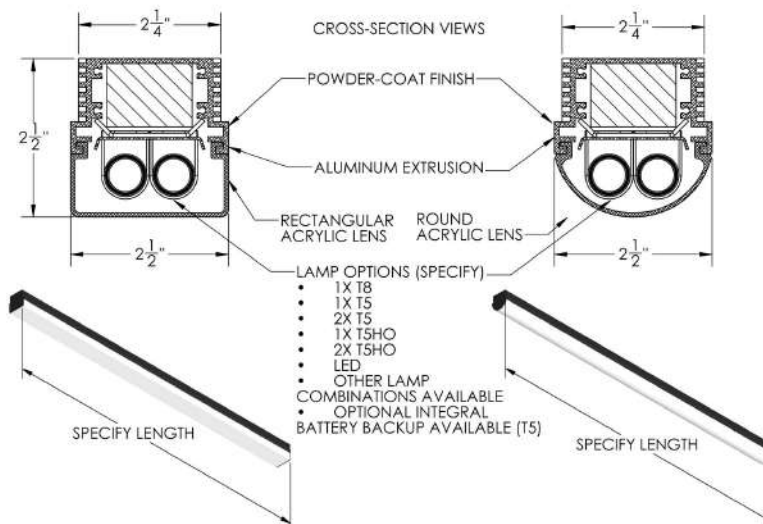
Surface Mount Shown



Aircraft Cable Mount Shown



Stem Mount Shown



Contractor: Vaughn Industries

Job Name: OSU NRD Building I

Submitted by Lighting Systems of Columbus

Lighting Systems
of Columbus, Inc.**Job Name:**OHIO STATE UNIVERSITY NORTH RESIDENTIAL
DISTRICT TRANSFORMATION**Catalog Number:**

KL4-232-U-EPUQHEPSN-KHC

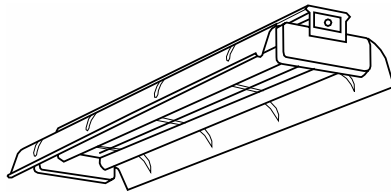
Notes:

Type:**C8**

LSC14-37947

Columbia
LIGHTING**KL BI-PIN**

Premium Industrial / 2, 3, or 4-Lamp T5, T5HO, T8

**FEATURES**

- Available in 4' and 8' lengths
- Reflectors have 15% uplight
- Spring loaded turret lampholders
- 6" lamp spacing
- For individual or continuous row mounting
- Channel ends double as joiners
- Full depth end closures available
- T5/T5HO versions feature rotating locking sockets without turrets

PROJECT INFORMATION

Project Name _____

Type _____

Catalog No. _____

Date _____

CONSTRUCTION

Heavy steel housing with longitudinal reinforcing ribs for extra strength. Reflector die-embossed with transverse ribs for maximum rigidity. Solid top or 15% uplight versions with extruded openings available.

FINISH

White painted parts are treated with a five stage phosphate bonding process and finished with a high reflectance baked enamel.

ELECTRICAL

Standard class "P", thermally protected, auto-resetting HPF ballast, sound rated A. All ballast leads extend a minimum of 6" through access location. NEC/CEC-compliant ballast disconnect is standard.

CERTIFICATION

All luminaires are built to UL 1598 standards and bear appropriate UL and cUL or CSA labels. Damp location labeling is standard. Emergency-equipped fixtures labeled UL 924.

ORDERING INFORMATION**EXAMPLE KL4-232-U-EU-GLR-PAF**

| KL | SIZE | NO. OF LAMPS IN CROSS SECTION | LAMP TYPE | REFLECTOR TYPE | VOLTAGE | OPTIONS |
|---------------------------------------|-----------------------|-----------------------------------|--|--|---|---|
| MODEL KL Premium Industrial | 4' 4" 8' 8" | 2 Two 3 Three 4 Four | 28 4' T5: 28 Watt 32 4', T8: 32, 30, 28 or 25 Watt 54 4', T5HO: 54 or 51 Watt | U Apertured Reflector for Uplight (Standard) ST Solid Top (No Uplight) SLR Specular Reflector with Uplight SLRST Specular Reflector Solid Top | U 120V-277V 347 347V | GLR Fast Blow Fuse GMF Slow Blow Fuse EL Emergency Battery Pack BC Branch Circuit Plug-on Wiring System (See options section for details.) PAF Paint After Fabrication NYC NYC Compliant NYCU NYC Compliant, Union Label |
| | | | | | BALLAST | ACCESSORIES (ORDER SEPARATELY) |
| | | | | | E Electronic T8, Instant Start 4E 4-Lamp Electronic T8, Instant Start EP Electronic T8, Program Start 4EP 4-Lamp Electronic T8, Program Start For others available, see Ballast Options | KZT Zip Tie Hanger - 1 1/2" spacer on T-bar ceiling KTH Slide Clamp Tong Hanger S18 18" Stem, canopy and 8" aligner SS18 18", 45° Swivel Stem & Canopy KHC 24" Chain Hanging Assembly KLEC Full Depth End Closure KLWG4 Wire Guard 4" Ig. - 2 required per 8' fixture KLEGG White Straight Blade Egg Crate Louver 4" - 2 required per 8' fixture |

EPUQHEPSN- Sylvania Programmed Start Ballast

Contractor: Vaughn Industries

Job Name: OSU NRDT Building I

Submitted by Lighting Systems of Columbus

**Job Name:**OHIO STATE UNIVERSITY NORTH RESIDENTIAL
DISTRICT TRANSFORMATION**Catalog Number:**

KL4-232-U-EPUQHEPSN-GLR KHC

Notes:

Type:**C8**

LSC14-37947

Columbia
LIGHTING

KL BI-PIN

Premium Industrial / 2, 3, or 4-Lamp T5, T5HO, T8

PHOTOMETRIC DATA**LUMINAIRE DATA**

| | |
|--------------------------|--|
| Luminaire | KL4-232-OCT-PAF |
| Ballast | KL Industrial |
| Ballast Factor | 1' x 4' 2-Lamp Industrial with Apertured White Reflector |
| Lamp | R2P32 |
| Lumens per Lamp | 0.95 |
| Watts | FO32/41K |
| Shielding Angle | 2900 |
| Spacing Criterion | 74 |
| Luminous Opening in Feet | N/A |
| | 0° = 1.27 90° = 1.30 |
| | Length: 4.00 |
| | Width: 1.02 |
| | Height: 0.00 |

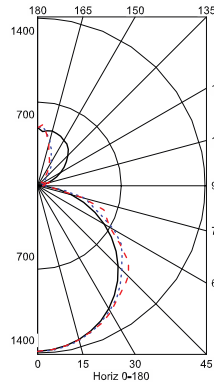
ZONAL LUMEN SUMMARY

| Zone | Lumens | % Lamp | % Fixt. |
|--------|--------|--------|---------|
| 0-30 | 1090 | 18.8 | 20.9 |
| 0-40 | 1807 | 31.1 | 34.7 |
| 0-60 | 3314 | 57.1 | 63.6 |
| 0-90 | 4396 | 75.8 | 84.3 |
| 90-120 | 179 | 3.1 | 3.4 |
| 90-130 | 263 | 4.5 | 5.0 |
| 90-150 | 518 | 8.9 | 9.9 |
| 90-180 | 817 | 14.1 | 15.7 |
| 0-180 | 5212 | 89.9 | 100.0 |

Test 10183 Test Date 1/8/03

ENERGY DATA

| | |
|---|--|
| Total Luminaire Efficiency | 89.9% |
| Luminaire Efficacy Rating (LER) | 67 |
| IESNA RP-1-1993 Compliance | Non-Compliant |
| Comparative Yearly Lighting Energy Cost per 1000 Lumens | \$3.58 based on 3000 hrs. and \$0.08 per KWH |

INDOOR CANDELA PLOT**AVG. LUMINANCE (Candela/Sq. M.)**

| Average Luminance Angle | 0.0 | 22.5 | 45.0 | 67.5 | 90.0 |
|-------------------------|------|------|------|------|------|
| 0 | 3654 | 3654 | 3654 | 3654 | 3654 |
| 30 | 3616 | 3622 | 3671 | 3726 | 3717 |
| 40 | 3578 | 3595 | 3706 | 3788 | 3833 |
| 45 | 3544 | 3582 | 3712 | 3921 | 4000 |
| 50 | 3509 | 3579 | 3776 | 4104 | 4059 |
| 55 | 3459 | 3569 | 3923 | 3905 | 3827 |
| 60 | 3387 | 3493 | 3894 | 3704 | 3667 |
| 65 | 3296 | 3477 | 3652 | 3839 | 3964 |
| 70 | 3155 | 3595 | 3718 | 4327 | 4536 |
| 75 | 2956 | 3374 | 4210 | 4353 | 3955 |
| 80 | 2674 | 3464 | 3342 | 2370 | 2355 |
| 85 | 2149 | 2967 | 2876 | 2785 | 2815 |

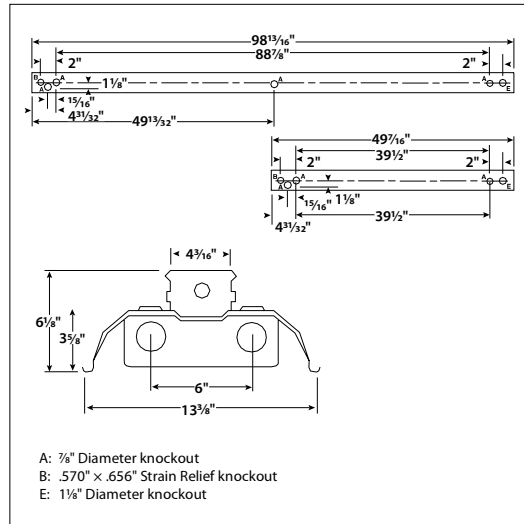
COEFFICIENTS OF UTILIZATION (%)

| RC | 80 | 70 | 50 | 30 | 10 | 70 | 50 | 30 | 10 | 50 | 30 | 10 | 0 |
|----|----|----|----|----|----|----|----|----|----|----|----|----|---|
| RW | 70 | 50 | 30 | 10 | 70 | 50 | 30 | 10 | 50 | 30 | 10 | 0 | |
| 1 | 94 | 90 | 86 | 82 | 90 | 86 | 83 | 79 | 80 | 77 | 74 | 62 | |
| 2 | 85 | 78 | 71 | 66 | 81 | 75 | 69 | 64 | 69 | 64 | 61 | 51 | |
| 3 | 77 | 68 | 60 | 54 | 74 | 65 | 58 | 53 | 60 | 55 | 50 | 42 | |
| 4 | 71 | 60 | 52 | 46 | 67 | 58 | 50 | 45 | 53 | 47 | 42 | 36 | |
| 5 | 65 | 53 | 45 | 39 | 62 | 51 | 44 | 38 | 48 | 41 | 36 | 31 | |
| 6 | 60 | 48 | 39 | 34 | 57 | 46 | 38 | 33 | 43 | 36 | 32 | 27 | |
| 7 | 55 | 43 | 35 | 30 | 53 | 42 | 34 | 29 | 39 | 32 | 28 | 24 | |
| 8 | 51 | 39 | 31 | 26 | 49 | 38 | 31 | 26 | 35 | 29 | 25 | 21 | |
| 9 | 48 | 36 | 28 | 23 | 46 | 35 | 28 | 23 | 33 | 26 | 22 | 19 | |
| 10 | 45 | 33 | 26 | 21 | 43 | 32 | 25 | 21 | 30 | 24 | 20 | 17 | |

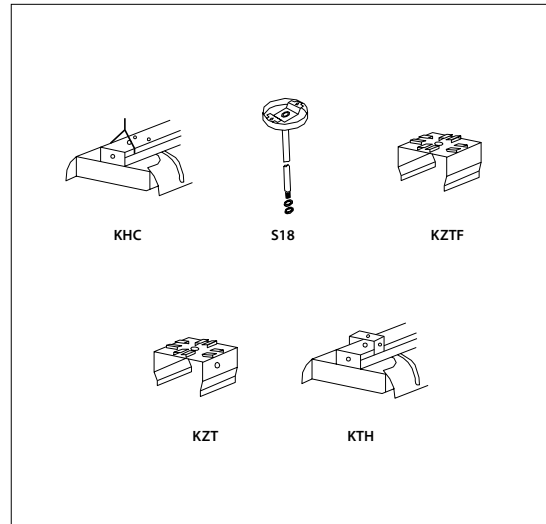
RCR = Room Cavity Ratio

RC = Effective Ceiling Cavity Reflectance RW = Wall Reflectance

0.0 ——— 45.0 - - - - - 90.0 - - - - -

DIMENSIONAL DATA

A: 7/8\" Diameter knockout
 B: .570\" x .656\" Strain Relief knockout
 E: 1/8\" Diameter knockout

MOUNTING ACCESSORIES**NOTE:** All dimensions are in inches; dimensions and specifications are subject to change without notice. Please consult factory or check sample for verification.

Contractor: Vaughn Industries

Job Name: OSU NRD Building I

Submitted by Lighting Systems of Columbus

**Job Name:**OHIO STATE UNIVERSITY NORTH RESIDENTIAL
DISTRICT TRANSFORMATION**Catalog Number:**

CAD124-T817NUNV-B01X7

Notes:

Type:**D2**

LSC14-37947

**CAD
Cadillac**

Premium-Grade Surface-Mounted Cube Light With Opal Lens Retained By Spring Loaded Ends

| |
|---------|
| Project |
| Type |
| Date |
| Cat # |

Application Features

Premium-grade, surface-mounted ceiling/wall luminaire. For use with indoor applications where low-glare illumination is required. End caps are spring loaded for a clean look and allow for easy access to fixture for servicing or relamping.

**Specifications****Optical System**

Standard diffuser is soft matt white opal acrylic designed for even and low-glare illumination.

Mounting

Mounting holes are provided. Mounts over electrical junction box.

Construction

Die and brake-formed, heavy-gauge steel housing assembly. Spot-welded for rigidity and clean appearance. End-caps are spring loaded.

Finish

White, polyester powder painted housing. High-reflective coated surface for improved efficiency.

Electrical

Rotary lampholders ensure positive lamp retention. Sufficient knockouts are provided for connections and through wiring.

Approvals

Approved to CSA and UL standards.

Features

- Heavy-duty construction
- Available with 1 or 2 lamps (T5 and T8 configurations)
- Easy re-lamping and re-ballasting
- Row-mountable (requires a joiner bracket)
- Soft matt white opal acrylic wrap-around diffuser

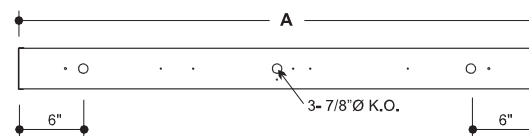
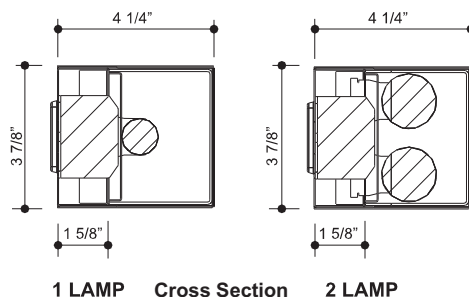
Options & Adders

- Multi-level switching
- Dimmable and Emergency ballast
- Radio interference filter (120V - 277V)
- Prismatic acrylic overlay
- Convenience outlet
- Pull chain switch

Applications

- Corridors
- Utility Areas
- Vanities

ARCHITECTURAL LIGHTING

Dimensions**Back View**

| MODEL | | NOMINAL LENGTH | Length A (in.) |
|--------|--------|----------------|----------------|
| 1 LAMP | 2 LAMP | | |
| 115 | 215 | 15" | 15 1/16" |
| 118 | 218 | 18" | 18 1/16" |
| 124 | 224 | 24" | 24 1/16" |
| 136 | 236 | 36" | 36 1/16" |
| 148 | 248 | 48" | 48 1/16" |

Contractor: Vaughn Industries

Job Name: OSU NRD Building I

Submitted by Lighting Systems of Columbus

**Job Name:**OHIO STATE UNIVERSITY NORTH RESIDENTIAL
DISTRICT TRANSFORMATION**Catalog Number:**

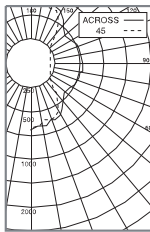
CAD124-T817NUNV-B01X7

Notes:

Type:**D2**

LSC14-37947

| |
|---------|
| Project |
| Type |
| Date |
| Cat # |

**CAD
Cadillac**Premium-Grade Surface-Mounted Cube Light With Opal Lens
Retained By Spring Loaded Ends**Photometrics** - CAD248T832N120 - Efficiency 75.3%**Candle Distribution****Luminance Summary-CD. / SQ. M.**

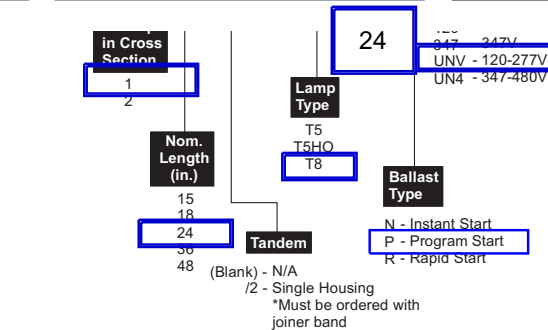
| ANGLE | ALONG | 45 | ACROSS |
|-------|-------|-------|--------|
| 45 | 4861 | 5676 | 7099 |
| 55 | 3145 | 5033 | 8420 |
| 65 | 2225 | 5906 | 12423 |
| 75 | 2074 | 9783 | 21195 |
| 85 | 1715 | 28657 | 64856 |

Candle Power Summary

| ZONE | LUMENS | % LAMP | % LUMINAIRE |
|----------|---------|--------|-------------|
| 0 - 30 | 506.80 | 8.60 | 11.40 |
| 0 - 40 | 827.80 | 14.00 | 18.60 |
| 0 - 60 | 1388.80 | 23.50 | 31.30 |
| 0 - 90 | 2210.50 | 37.50 | 49.80 |
| 40 - 90 | - | - | - |
| 60 - 90 | 821.7 | 13.90 | 18.50 |
| 90 - 180 | 2232.60 | 37.80 | 50.30 |
| 0 - 180 | 4443.10 | 75.30 | 100.00 |

Ordering

ARCHITECTURAL LIGHTING

**Example:**

CAD248-T832PUNV-P12

Lamp Watts

| Length | T5 | T5HO | T8 |
|--------|----|------|----|
| 15 | - | - | 14 |
| 18 | - | - | 17 |
| 24 | 14 | 24 | 17 |
| 36 | 21 | 39 | 25 |
| 48 | 28 | 54 | 32 |

Other options may be available consult factory.
Specifications and data subject to change without notice.
☐ B01 Ballast Disconnect - In-line Power Disconnect
(CSA UL Listed For Voltages above 150V)

- ☐ B02 Dimming Addressable Digital (dali)
☐ B03 Dimming Low Voltage (0-10v)
☐ B04 Dimming Line Voltage
☐ B08 Ballast - High Ballast Factor
☐ B09 Ballast - Low Ballast Factor
☐ B30 Emergency Lighting Battery Pack Specification Grade
☐ B33 Emergency Lighting Battery Pack 1-lamp
☐ B34 Emergency Lighting Battery Pack 2-lamp

Finish Options (white is standard)
☐ F01 Black
Packaging Options (select one only)
☐ K0 Pack Bulk/ Pallet Packed and/or Wrapped
Mounting Options
☐ M15 Mounting Joiner Band
Lens and Shielding Options

(opal white acrylic is standard)

☐ P12 Lens Prismatic Acrylic - P12
Switch Options (select one only)

- ☐ S1 Switch Pull-chain
☐ S2 Switch Pull-chain three-way
☐ S5 Switch Toggle
☐ S6 Switch Turn

Wiring Options

- ☐ V02 Convenience Outlet
☐ V25 Radio Frequency Filter

Approval and Rating Options
☐ X7 Dual CSA and USA Markets

Sylvania QHE Ballast

Contractor: Vaughn Industries

Job Name: OSU NRD Building I

Submitted by Lighting Systems of Columbus

**Job Name:**OHIO STATE UNIVERSITY NORTH RESIDENTIAL
DISTRICT TRANSFORMATION**Catalog Number:**

CAD136-T825NUNV-B01K2S6X7

Notes:

Type:**D3**

LSC14-37947

**CAD
Cadillac**

Premium-Grade Surface-Mounted Cube Light With Opal Lens Retained By Spring Loaded Ends

| |
|---------|
| Project |
| Type |
| Date |
| Cat # |

Application Features

Premium-grade, surface-mounted ceiling/wall luminaire. For use with indoor applications where low-glare illumination is required. End caps are spring loaded for a clean look and allow for easy access to fixture for servicing or relamping.

**Specifications****Optical System**

Standard diffuser is soft matt white opal acrylic designed for even and low-glare illumination.

Mounting

Mounting holes are provided. Mounts over electrical junction box.

Construction

Die and brake-formed, heavy-gauge steel housing assembly. Spot-welded for rigidity and clean appearance. End-caps are spring loaded.

Finish

White, polyester powder painted housing. High-reflective coated surface for improved efficiency.

Electrical

Rotary lampholders ensure positive lamp retention. Sufficient knockouts are provided for connections and through wiring.

Approvals

Approved to CSA and UL standards.

Features

- Heavy-duty construction
- Available with 1 or 2 lamps (T5 and T8 configurations)
- Easy re-lamping and re-ballasting
- Row-mountable (requires a joiner bracket)
- Soft matt white opal acrylic wrap-around diffuser

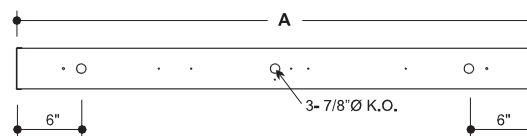
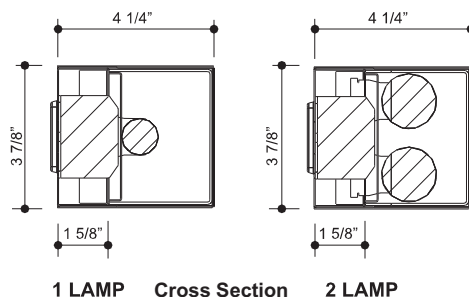
Options & Adders

- Multi-level switching
- Dimmable and Emergency ballast
- Radio interference filter (120V - 277V)
- Prismatic acrylic overlay
- Convenience outlet
- Pull chain switch

Applications

- Corridors
- Utility Areas
- Vanities

ARCHITECTURAL LIGHTING

Dimensions**Back View**

| MODEL | | NOMINAL LENGTH | Length A (in.) |
|--------|--------|----------------|----------------|
| 1 LAMP | 2 LAMP | | |
| 115 | 215 | 15" | 15 1/16" |
| 118 | 218 | 18" | 18 1/16" |
| 124 | 224 | 24" | 24 1/16" |
| 136 | 236 | 36" | 36 1/16" |
| 148 | 248 | 48" | 48 1/16" |

Contractor: Vaughn Industries

Job Name: OSU NRD Building I

Submitted by Lighting Systems of Columbus

**Job Name:**OHIO STATE UNIVERSITY NORTH RESIDENTIAL
DISTRICT TRANSFORMATION**Catalog Number:**

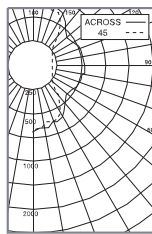
CAD136-T825NUNV-B01K2S6X7

Notes:

Type:**D3**

LSC14-37947

| |
|---------|
| Project |
| Type |
| Date |
| Cat # |

**CAD
Cadillac**Premium-Grade Surface-Mounted Cube Light With Opal Lens
Retained By Spring Loaded Ends**Photometrics** - CAD248T832N120 - Efficiency 75.3%**Candle Distribution****Luminance Summary-CD. / SQ. M.**

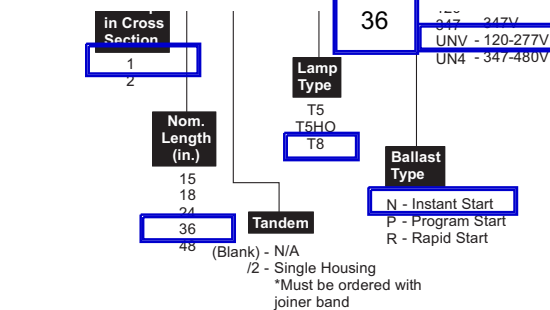
| ANGLE | ALONG | 45 | ACROSS |
|-------|-------|-------|--------|
| 45 | 4861 | 5676 | 7099 |
| 55 | 3145 | 5033 | 8420 |
| 65 | 2225 | 5906 | 12423 |
| 75 | 2074 | 9783 | 21195 |
| 85 | 1715 | 28657 | 64856 |

Candle Power Summary

| ZONE | LUMENS | % LAMP | % LUMINAIRE |
|----------|---------|--------|-------------|
| 0 - 30 | 506.80 | 8.60 | 11.40 |
| 0 - 40 | 827.80 | 14.00 | 18.60 |
| 0 - 60 | 1388.80 | 23.50 | 31.30 |
| 0 - 90 | 2210.50 | 37.50 | 49.80 |
| 40 - 90 | - | - | - |
| 60 - 90 | 821.7 | 13.90 | 18.50 |
| 90 - 180 | 2232.60 | 37.80 | 50.30 |
| 0 - 180 | 4443.10 | 75.30 | 100.00 |

Ordering

ARCHITECTURAL LIGHTING


☐ B01 Ballast Disconnect - In-line Power Disconnect
(80A UL Listed For Voltages above 150V)

- ☐ B02 Dimming Addressable Digital (dali)
☐ B03 Dimming Low Voltage (0-10v)
☐ B04 Dimming Line Voltage
☐ B08 Ballast - High Ballast Factor
☐ B09 Ballast - Low Ballast Factor
☐ B30 Emergency Lighting Battery Pack Specification Grade
☐ B33 Emergency Lighting Battery Pack 1-lamp
☐ B34 Emergency Lighting Battery Pack 2-lamp

Finish Options (white is standard)
☐ F01 Black
Packaging Options (select one only)
☐ K0 Pack Bulk/ Pallet Packed and/or Wrapped
Mounting Options
☐ M15 Mounting Joiner Band
Lens and Shielding Options

(opal white acrylic is standard)

☐ P12 Lens Prismatic Acrylic - P12
Switch Options (select one only)

- ☐ S1 Switch Pull-chain
☐ S2 Switch Pull-chain three-way
☐ S5 Switch Toggle
☐ S6 Switch Turn

Wiring Options

- ☐ V02 Convenience Outlet
☐ V25 Radio Frequency Filter

Approval and Rating Options
☐ X7 Dual CSA and USA Markets
Example:

CAD248-T832PUNV-P12

Lamp Watts

| Length | Nominal Lamp Watts | | |
|--------|--------------------|------|----|
| | T5 | T5HO | T8 |
| 15 | - | - | 14 |
| 18 | - | - | 15 |
| 24 | 14 | 24 | 17 |
| 36 | 21 | 39 | 25 |
| 48 | 28 | 54 | 32 |

Other options may be available consult factory.
Specifications and data subject to change without notice.

Sylvania - QHE2x32 Ballast

K2- 2 fixtures packaged together.

Contractor: Vaughn Industries

Job Name: OSU NRDT Building I

Submitted by Spectrum Lighting, Inc.



Job Name:
OSU - NRDT BUILDINGS

Catalog Number:
5010-48-WEC-232L-UNV-ELBPR

Notes:

Type:
D5

SPEC14-5147

5010



Economical bath and vanity luminaire is available in a variety of lamp and ballast combinations to ensure just the right light for the task.

STANDARD SPECIFICATIONS

HOUSING: Steel, white painted finish with chrome plated or white painted endcaps

DIFFUSER: White acrylic

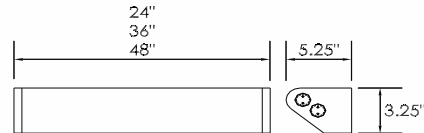
BALLAST: 120-277V HPF Electronic

LAMP: Linear fluorescent (T8)

PROJECT:

MODEL #:

FIXTURE TYPE:



ORDERING INFORMATION

5010-48-WEC-232L-UNV-ELBPR

2. SIZE

24 L: 24"
36 L: 36"
48 L: 48"

3. WATTAGE

24 SIZE

17L 1-17W T8, elec. HPF
217L 2-17W T8, elec. HPF

36 SIZE

25L 1-25W T8, elec. HPF
225L 2-25W T8, elec. HPF

48 SIZE

32L 1-32W T8, elec. HPF
232L 2-32W T8, elec. HPF

4. ENDCAPS

CFC Chrome
WEC White

5. AVAILABLE OPTIONS

BAC Buy American Compliant
BBI Integral Battery Backup
BBIC Integral Battery Backup, Cold Weather (36 or 48 size only)
CO Convenience Outlet (120v)
ES4 ENERGY STAR® (elec., HPF) (120v only)
PC Pull Chain (120 volt)

ELBPR = ELECTRONIC
BALLAST PROGRAM RAPID
START TO BE INSTALLED

Contractor: Vaughn Industries

Job Name: OSU NRDT Building L

HALO®**Description**

The Halo RL560 is a complete LED Baffle-Trim Module for 5" and 6" aperture recessed downlights; suitable for new construction, remodel and retrofit installation. The RL560 is cULus Listed for use with Halo and All-Pro, and is UL Classified for use with other compatible 5" and 6" housings. The RL560 with integral LED driver offers 120 volt dimming capability. The RL560 lens provides uniform illumination and wet location listing. Precision construction makes any housing AIR-TITE for added HVAC savings and code compliance.

| | | |
|-------------|----------------------------|-----------------|
| Catalog # | H750ICAT RL560WH683 | Type |
| Project | RL56TRIMSN | F2 + F11 |
| Comments | OSU - NRDT | Date |
| Prepared by | | |

Specification Features**MECHANICAL****Module - Trim**

- Module construction includes LED, heat sink, reflector, lens, baffle and trim ring
- Regressed baffle
- Heat sink designed to conduct heat away from the LED keeping the junction temperatures below specified maximums, even when installed in insulated ceiling environments
- Designer trim finish options (sold separately)
 - White (Paintable) Trim Ring
 - Satin Nickel Trim Ring
 - Tuscan Bronze Trim Ring

Lens

- Regressed lens
- Impact-resistant polycarbonate
- Convex form for lamp-like appearance
- High lumen transmission
- Diffusing for even illumination

Mounting

- Push-N-Twist universal installation clips
- Pre-installed clips designed to fit industry standard 5" and 6" recessed housings

Housing Compatibility

See Housing Compatibility

LED

- Color Temperature (CCT)* Options: 2700K, 3000K, 3500K, and 4000K
- CRI options: 80 and 90†
 - 90 CRI can be used for California Title 24 compliance/certified to Title 20
 - 80 CRI can be used to comply with California Title 24 Non-Residential Lighting Controls requirements as an LED luminaire

LED Chromaticity

- A tight chromaticity specification ensures LED color uniformity,

sustainable Color Rendering Index (CRI) and Correlated Color Temperature (CCT) over the useful life of the LED

- LED chromaticity of 3 SDCM exceeds ENERGY STAR® color standards per ANSI C78.377- 2008
- 90 CRI model features high color performance with R9 greater than 50
- Every Halo LED is quality tested, measured, and serialized in a permanent record to register lumens, wattage, CRI and CCT
- Halo LED serialized testing and measurement ensures color and lumen consistency on a per-unit basis, and validates long-term product consistency over time

ELECTRICAL**Power Connections**

- LED connector is a non-screw base luminaire disconnect offering easy installation with the matching Halo 5" and 6" LED housings
- LED Connector meets California Title-24 high efficacy luminaire requirement for a non-screw base socket, and where required to qualify as a high efficacy luminaire
- The included E26 medium screw-base Edison adapter provides easy retrofit of incandescent housings (see Housing Compatibility)

Ground Connection

Separate grounding cable included on the module for attachment to the housing during installation.

LED Driver

- Integral to the housing, 120V 50/60 Hz constant current dimmable driver provides high-efficiency operation
- Driver meets FCC 47CFR Part 15 EMI/RFI consumer limits for use in residential and commercial installations
- Driver features high power factor and low THD and has integral thermal protection in the event of over

temperature or internal failure

- If dimming is not required the fixture can be operated from a standard wall switch

Dimming

- Designed for continuous dimming capability to nominally 5% with many 120V Leading Edge (LE) and Trailing Edge (TE) Phase Control dimmers. (Dimmers with low end trim adjustment offer greater assurance of achieving 5% level.)
- Consult dimmer manufacturer for compatibility and conditions of use

Note: some dimmers require a neutral in the wallbox.

Warranty

Cooper Lighting provides a five year limited warranty on RL56 LED.

Compliance**Labels**

- UL/cUL Listed 1598 Luminaire (with listed housings)
- UL Classified (with other housings - see Housing Compatibility)
- UL/cUL Listed for Damp Location
- UL/cUL Listed for Wet Location - Shower Applications
- IP56 Ingress Protection rated
- May be installed in housings in direct contact with insulation** and combustible material

Compliance

- Airtight certified per ASTM E283 (not exceeding 2.0 CFM under 57 Pascals pressure difference)
- 90 CRI: Can be used to comply with California Title 24 High Efficacy requirements. Certified to California Title 20 Appliance Efficiency Database.*
- 80 CRI: Can be used to comply with California Title 24 Non-Residential Lighting Controls requirements as an LED luminaire
- Can be used for International Energy Conservation Code (IECC) high efficiency luminaire compliance.

**RL560WH6+**

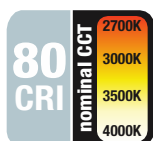
White

600 Series 5/6-Inch LED Recessed Retrofit Module-Trim

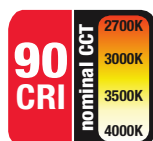
80CRI**2700K, 3000K,
3500K, 4000K****90CRI****2700K, 3000K,
3500K, 4000K**

**FOR USE IN
INSULATED CEILING
AND NON- INSULATED
CEILING RATED
HOUSINGS**

**HIGH-EFFICACY LED
WITH INTEGRAL
DRIVER - DIMMABLE**



Refer to ENERGY STAR® Certified Products List.
Can be used to comply with California Title 24 Non-Residential Lighting Controls requirements as a LED Luminaire.



Refer to ENERGY STAR® Certified Products List.
Can be used to comply with California Title 24 High Efficacy requirements.
Certified to California Title 20 Appliance Efficiency Database.

* Refer to ENERGY STAR® Certified Products List and CEC (T20) Appliance Database for listings.

** Not for use with housings in direct contact with spray foam insulation.

† See ordering information table for available models.

Cooper Lightingby **ETN**

Date Submitted: Sept. 2, 2015

Distributor: C.E.D. Columbus, Oh 43207

TD518004EN
March 25, 2015

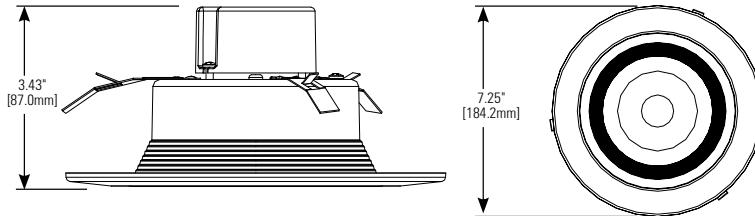
RL56 LED System
600 Series
Contractor: Vaughn Industries

Specification Features Continued

- Can be used for Washington State Energy Code compliance
- ENERGY STAR® Certified luminaire - consult ENERGY STAR® Certified Product List*
- EMI/RFI per FCC 47CFR Part 15 Class B Consumer limits, suitable for use in residential and commercial installations
- Contains no mercury or lead and RoHS compliant.
- Photometric testing in accordance with IES LM-79
- Lumen maintenance projections in accordance with IES LM-80 and TM-21

TYPES F2 + F11

RL56 Dimensions



Energy Data

RL56 Series (Values at non-dimming line voltage)

Minimum Starting Temp: -30°C (-22°F)

EMI/RFI: FCC Title 47 CFR, Part 15, Class B (Consumer)

Sound Rating: Class A

Input Voltage: 120V

Power Factor: >0.90

Input Frequency: 60Hz

THD: <20%

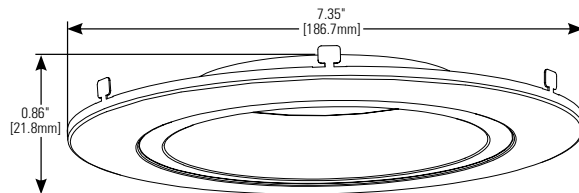
Input Power: 10.5W - RL560WH6827, RL560WH6927, RL560WH6930, RL560WH6935
10W - RL560WH6940, RL560WH6940R, RL560WH6940C
9.4W - RL560WH6830, RL560WH6835
9W - RL560WH6840, RL560WH6840R, RL560WH6840C

Input Current: 0.15A

Maximum IC (Insulated Ceiling) Ambient Continuous Operating Temperature: 25°C (77°F)

Maximum Non-IC Ambient Continuous Operating Temperature 40°C (104°F)

Designer Trim Dimensions



RL56TRMWH
White (Paintable)



RL56TRMTBZ
Tuscan Bronze



RL56TRMSN
Satin Nickel



E26 Screw base adapter for retrofit (included)

Ordering Information

Sample Number: **RL560WH6827-RL56TRMWH**

Complete unit includes a RL56 Baffle-Trim LED Module and a 5" or 6" compatible housing, ordered separately. Optional accessory designer trim ring ordered separately.

RL56 600 Series

80 CRI

RL560WH6827= 5"/6" Retrofit Baffle - Trim LED Module, 80CRI, 2700K, Matte White

RL560WH6830= 5"/6" Retrofit Baffle - Trim LED Module, 80CRI, 3000K, Matte White

RL560WH6835= 5"/6" Retrofit Baffle - Trim LED Module, 80CRI, 3500K, Matte White

RL560WH6840= 5"/6" Retrofit Baffle - Trim LED Module, 80CRI, 4000K, Matte White

90 CRI

RL560WH6927= 5"/6" Retrofit Baffle - Trim LED Module, 90CRI, 2700K, Matte White

RL560WH6930= 5"/6" Retrofit Baffle - Trim LED Module, 90CRI, 3000K, Matte White

RL560WH6935= 5"/6" Retrofit Baffle - Trim LED Module, 90CRI, 3500K, Matte White

RL560WH6940= 5"/6" Retrofit Baffle - Trim LED Module, 90CRI, 4000K, Matte White

Accessory (Order Separately)

RL56TRMSN=5/6" Satin Nickel Trim Ring

RL56TRMTBZ=5/6" Tuscan Bronze Trim Ring

RL56TRMWH=5/6" White Paintable Trim Ring

RL56CLIP=Replacement kit of 5" and 6" Friction Clips for retrofitting into an existing housing without torsion spring receiving brackets. (One set of clips included with the unit.)

OT400P=Oversize Flat White Metal Trim Ring 6" I.D. x 9-1/4" O.D. (ring slips behind RL56 ring, in stepped configuration)

OT403P=Oversize White Plastic Trim Ring 6" I.D. x 8" O.D. (ring slips behind RL56 ring, in stepped configuration)

TRM690WH=Oversize Matte White Metal Trim Ring. Designed for RL560 ring to inset into oversize ring for an even (non-stepped) trim surface

HE26LED=Replacement screw base adapter (one included with unit)

Housing Compatibility

RL56 Series LED Retrofit is UL Classified for retrofit in the follow 5/6" recessed housings:

The RL Series LED light module - trim combination is cULus Listed or UL Classified for use with any 5/6" diameter recessed housing constructed of steel or aluminum with an internal volume that exceeds 107.9 in³ in addition to those noted above.

TYPES F2 + F11**HOUSINGS - Halo and All-Pro UL Listed Compatibility****Compatible Halo LED Housings with LED luminaire connector (high efficacy compliant - Title 24, IECC, WSEC)**

| Recessed Can Size | Catalog Number | Description |
|-------------------|----------------|--|
| 5" | H550ICAT | 5" LED, Insulated Ceiling, AIR-TITE, New Construction Housing |
| | H550RICAT | 5" LED, Insulated Ceiling, AIR-TITE, Remodel Housing |
| | H750ICAT | 6" LED, Insulated Ceiling, AIR-TITE, New Construction Housing |
| 6" | H750RICAT | 6" LED, Insulated Ceiling, AIR-TITE, Remodel Housing |
| | H750T | 6" LED, Non-IC, AIR-TITE, New Construction Housing |
| | H750RINTD010 | 6" LED, Non-IC, AIR-TITE, Remodel International Housing |
| | H750TCP | 6" LED, Non-IC, New Construction/Remodel Chicago Plenum Housing |
| | H2750ICAT | 6" LED, Shallow, Insulated Ceiling, AIR-TITE, New Construction Housing |

Compatible Halo Incandescent E26 Screwbase Housings

| | | |
|-----------|-----------|--|
| 5" | H5ICAT | 5" Insulated Ceiling, AIR-TITE New Construction Housing |
| | H5RICAT | 5" Insulated Ceiling, AIR-TITE Remodel Housing |
| | H5T | 5" Non-IC, New Construction Housing |
| | H5RT | 5" Non-IC, Remodel Housing |
| | H5TM | 5" Non-IC, New Construction Housing (metric version - Canada) |
| | H25ICAT | 5" Shallow, Insulated Ceiling, AIR-TITE New Construction |
| 6" | H7ICAT | 6" Insulated Ceiling, AIR-TITE New Construction Housing |
| | H7RICAT | 6" Insulated Ceiling, AIR-TITE Remodel Housing |
| | H7ICT | 6" Insulated Ceiling, New Construction Housing |
| | H7RICT | 6" Insulated Ceiling, Remodel Housing |
| | H7ICATNB | 6" Insulated Ceiling, AIR-TITE New Construction Housing, No Socket Bracket |
| | H7ICTNB | 6" Insulated Ceiling, New Construction Housing, No Socket Bracket |
| | H7T | 6" Non-IC, New Construction Housing |
| | H7RT | 6" Non-IC, Remodel Housing |
| | H7TNB | 6" Non-IC, New Construction Housing, No Socket Bracket |
| | H7TCP | 6" Non-IC, Chicago Plenum, New Construction/Remodel Housing |
| | H7UICT | 6" Insulated Ceiling, Universal New Construction Housing |
| | H7UICAT | 6" Insulated Ceiling, Universal, AIR-TITE, New Construction Housing |
| | H27ICAT | 6" Shallow, Insulated Ceiling, AIR-TITE New Construction Housing |
| | H27RICAT | 6" Shallow, Insulated Ceiling, AIR-TITE Remodel Housing |
| | H27ICT | 6" Shallow, Insulated Ceiling, New Construction Housing |
| | H27RICT | 6" Shallow, Insulated Ceiling, Remodel Housing |
| | H27T | 6" Shallow, Non-IC, New Construction Housing |
| | H27RT | 6" Shallow, Non-IC, Remodel Housing |
| | ML7BXRFK | 6" Retrofit Enclosure, Non-IC, BX Whip |
| | ML7E26RFK | 6" Retrofit Enclosure, Non-IC, E26 Screw base Interface |

All-Pro Compatible Incandescent E26 Screwbase Housings

| | | |
|-----------|-----------|--|
| 5" | EI500AT | 5" Insulated Ceiling, AIR-TITE New Construction Housing |
| | EI500RAT | 5" Insulated Ceiling, AIR-TITE Remodel Housing |
| | ET500 | 5" Non-IC, New Construction Housing |
| | ET500R | 5" Non-IC, Remodel Housing |
| 6" | EI700AT | 6" Insulated Ceiling, AIR-TITE New Construction Housing |
| | EI700RAT | 6" Insulated Ceiling, AIR-TITE Remodel Housing |
| | EI700 | 6" Insulated Ceiling, New Construction Housing |
| | EI700R | 6" Insulated Ceiling, Remodel Housing |
| | EI700ATNB | 6" Insulated Ceiling, AIR-TITE New Construction Housing, No Socket Bracket |
| | EI700NB | 6" Insulated Ceiling, New Construction Housing, No Socket Bracket |
| | EI700U | 6" Insulated Ceiling, Universal New Construction Housing |
| | EI700UAT | 6" Insulated Ceiling, Universal, AIR-TITE, New Construction Housing |
| | ET700 | 6" Non-IC, New Construction Housing |
| | ET700R | 6" Non-IC, Remodel Housing |
| | EI2700AT | 6" Shallow, Insulated Ceiling, AIR-TITE New Construction Housing |
| | EI2700 | 6" Shallow, Insulated Ceiling, New Construction Housing |
| | EI2700R | 6" Shallow, Insulated Ceiling, AIR-TITE Remodel Housing |
| | ET2700 | 6" Shallow, Non-IC, New Construction Housing |
| | ET2700R | 6" Shallow, Non-IC, Remodel Housing |

RL56 LED System
600 Series

Contractor: Vaughn Industries

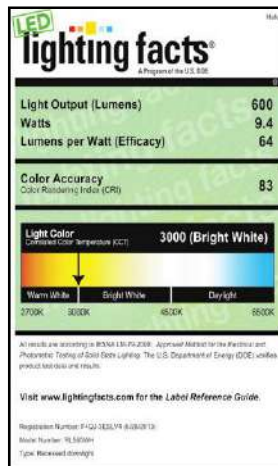
Job Name: OSU NRD Building L

Lighting Facts

RL560WH6827
 2700K Source



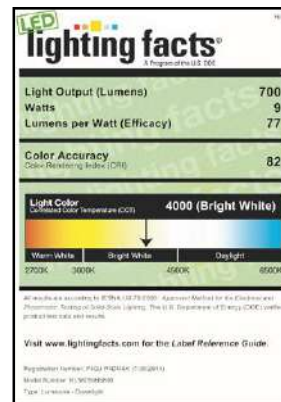
RL560WH6830
 3000K Source



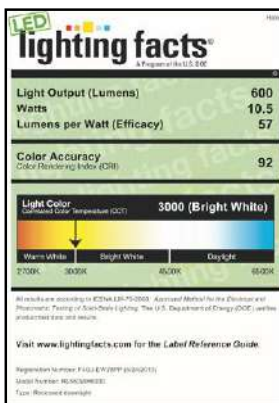
RL560WH6835
 3500K Source



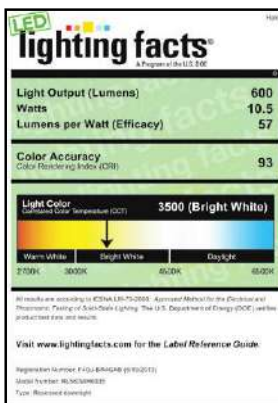
RL560WH6840
 4000K Source



RL560WH6930
 3000K Source



RL560WH6935
 3000K Source



RL560WH6940
 4000K Source



Cooper Lighting
 by **EATON**

Date Submitted: Sept. 2, 2015

Eaton's Cooper Lighting Business
 1121 Highway 74 South
 Peachtree City, GA 30269
 P: 770-486-4800
www.eaton.com/lighting

© 2015 Eaton
 All Rights Reserved
 Printed in USA
 Publication No. TD518004EN
 March 25, 2015

Eaton is a registered trademark.

Product availability, specifications,
 and compliances are subject to
 change without notice.

Distributor: C.E.D. Columbus, Oh 43207

Contractor: Vaughn Industries

DOWNLIGHTS

LCLCV6 - 6" DOWNLIGHT SERIES

FEATURES

CONSTRUCTION

- Side lit design for an ultra thin profile
- IC rated, IP44-suitable for damp or dry locations
- Wide beam angle (120°) for better spacing
- CE and cULus rated
- RoHS compliant
- 5 year warranty (standard)

ELECTRICAL

- Dimmable (via driver or using PWM) ⁽¹⁾
- Constant voltage design allows for multiple lights per driver
- LM-80 and LM-79 available
- Downlights should be placed within 50 feet of driver
- Rated at 12W max AC power (10W DC) ⁽²⁾

| | |
|--------------|----------------|
| Project Name | OSU NRD |
| Date | |
| Type | F12 |



| | |
|------------------|---------------------|
| TILT Part Number | LCL CV 6 35W |
| TILT Driver | LDND16 |

| LUMEN PACKAGES (6" DOWNLIGHT) ⁽³⁾ | | | | |
|--|--------------------------|------|------|------|
| CCT | 50,000 hours (L70) | | | |
| | STANDARD 90+ CRI, R9 >50 | | | |
| 5000k | Lumens | 750 | 696 | 439 |
| | LPW | 62.3 | 63.6 | 65.6 |
| 4000k | Lumens | 700 | 550 | 352 |
| | LPW | 56.1 | 59.5 | 61.3 |
| 3500k | Lumens | 675 | 514 | 329 |
| | LPW | 53.3 | 57.2 | 58.9 |
| 3000k | Lumens | 650 | 478 | 306 |
| | LPW | 50.6 | 54.8 | 56.4 |

ORDERING INFORMATION

| Fixture Type | Distribution Type | Size | CCT | Frame Color ⁽⁴⁾ |
|--------------------|------------------------------|---------------|--|---|
| LCL - Light | CV - Constant Voltage | 6 - 6" | 50 - 5,000K 40 - 4,000K 35 - 3,500K 30 - 3,000K | W - White B - Black ⁺ S - Silver ⁺ ⁺ - special order |

USE WITH

| Driver | |
|--------|----------|
| LDND16 | LD16PE7 |
| LD16 | LD60PE7 |
| LD60 | LD90PE7 |
| LD60P | LD100PE7 |
| LD90 | |
| LD100P | |

DRIVER SPECIFICATION

NOTE on DRIVERS: UL 8750, short circuit, over current, over voltage, and over temperature protection
UL registered and CE rated, RoHS compliant
Class II, SELV, IP67

| Model ⁽⁵⁾ | Size in Inches (LxWxH) | AC Input | DC Output | Dimming ⁽⁶⁾ | Temp | Max Fixtures ⁽⁸⁾ |
|----------------------|------------------------|-------------|-----------|------------------------|------------|-----------------------------|
| LDND16 | 3.00" x 1.50" | 90 - 264VAC | 16W | I-10V | -40C - 60C | 1 |
| LD16 | 6.00" x 1.625" | 90 - 305VAC | 16W | I-10V | -40C - 60C | 1 |
| LD60 | 6.50 x 1.63 x 1.26 | 90 - 305V | 60W | I-10V | -40C - 60C | 5 |
| LD60P | 12.50 x 2.38 x 1.50 | 90 - 305V | 60W | I-10V | -40C - 70C | 5 |
| LD90 | 6.34 x 2.40 x 1.26 | 90 - 305V | 90W | I-10V | -40C - 60C | 8 |
| LD100P | 14.50 x 2.63 x 1.58 | 90 - 305V | 100W | I-10V | -40C - 60C | 8 |

| Emergency ⁽⁷⁾ | Size in Inches (LxWxH) | AC Input | Output ⁽⁶⁾ | Lumens | Temp | Max Fixtures ⁽⁸⁾ |
|--------------------------|------------------------|-----------|-----------------------|-----------|----------|-----------------------------|
| LD16PE7 | 13.00 x 5.50 x 1.75 | 90 - 305V | 7W for 90 mins | 400 - 600 | 0C - 50C | 1 |
| LD60PE7 | 13.00 x 5.50 x 1.75 | 90 - 305V | 7W for 90 mins | 400 - 600 | 0C - 50C | 4 |
| LD90PE7 | 13.00 x 5.50 x 1.75 | 90 - 305V | 7W for 90 mins | 400 - 600 | 0C - 50C | 8 |
| LD100PE7 | 13.00 x 5.50 x 1.75 | 90 - 305V | 7W for 90 mins | 400 - 600 | 0C - 50C | 8 |

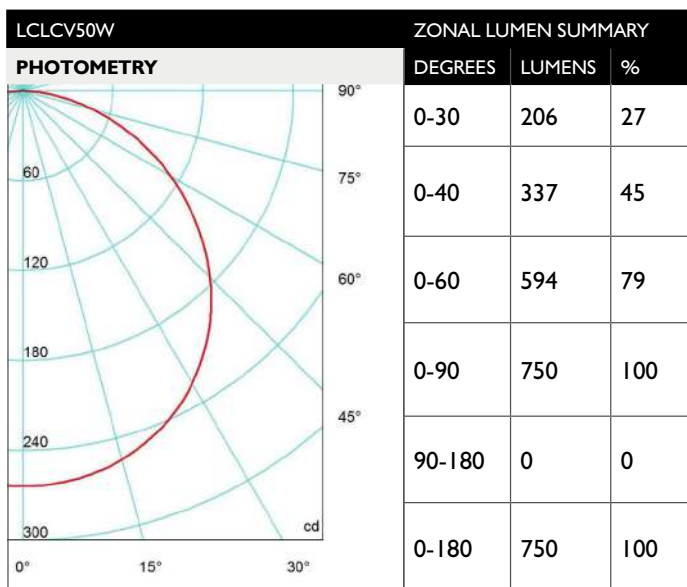
NOTES (NUMBERS)

- (1) See driver or dimming product sheet for specific details
- (2) AC W used for circuit power, DC W used for driver circuit
- (3) Lumen packages provided using Dim Chip with driver
- (4) Colors other than white are custom
- (5) "P" designation after watt rating denotes Plenum Rated
- (6) Based on watt load of fixtures and driver output
- (7) See Product Sheet for Emergency Drivers
- (8) Safe amount of fixtures per driver
- (9) TILT drivers use a I-10V control but are compatible with most 0-10V control systems. For details specific to your system, contact us at 855.440.8458



TILT DOWNLIGHT SERIES LCLCV6

PHOTOMETRIC CHARTS WITH TESTING DATA. CALL FOR SPECIFIC INFORMATION NOT LISTED HERE: 855.440.8458



| LUMINANCE SUMMARY CD./SQ.M. | |
|-----------------------------|-------|
| ANGLE | ALONG |
| 45 | 18713 |
| 55 | 17704 |
| 65 | 16293 |
| 75 | 14151 |
| 85 | 10051 |

| | COEFFICIENT OF UTILIZATION | | | | | | | | |
|----|----------------------------|------|------|------|------|------|------|------|------|
| | 80% | | | 70% | | | 50% | | |
| | 70 | 50 | 30 | 70 | 50 | 30 | 50 | 30 | 10 |
| 0 | 1.19 | 1.19 | 1.19 | 1.16 | 1.16 | 1.16 | 1.11 | 1.11 | 1.11 |
| 1 | 1.10 | 1.05 | 1.01 | 1.07 | 1.03 | 0.99 | 0.99 | 0.96 | 0.93 |
| 2 | 1.00 | 0.93 | 0.87 | 0.98 | 0.91 | 0.85 | 0.87 | 0.83 | 0.78 |
| 3 | 0.92 | 0.82 | 0.74 | 0.90 | 0.80 | 0.73 | 0.78 | 0.72 | 0.66 |
| 4 | 0.85 | 0.73 | 0.65 | 0.83 | 0.72 | 0.65 | 0.70 | 0.63 | 0.58 |
| 5 | 0.78 | 0.66 | 0.57 | 0.76 | 0.64 | 0.56 | 0.62 | 0.55 | 0.50 |
| 6 | 0.72 | 0.59 | 0.50 | 0.70 | 0.58 | 0.50 | 0.56 | 0.49 | 0.43 |
| 7 | 0.66 | 0.53 | 0.44 | 0.64 | 0.52 | 0.44 | 0.50 | 0.43 | 0.38 |
| 8 | 0.61 | 0.48 | 0.39 | 0.60 | 0.47 | 0.39 | 0.46 | 0.38 | 0.33 |
| 9 | 0.57 | 0.43 | 0.35 | 0.55 | 0.43 | 0.35 | 0.41 | 0.34 | 0.29 |
| 10 | 0.53 | 0.40 | 0.31 | 0.51 | 0.39 | 0.31 | 0.38 | 0.31 | 0.26 |

NOTES

- Lifespan: 50,000 hrs (L70)
- LM79 and LM80 available upon request. Call 855.440.8458
- IES files available online at: laurenillumination.com/resources



Lauren Illumination is a Lauren International Company.
©Lauren Illumination and ©TILT are registered trademarks of Lauren Illumination
2162 Reiser Avenue SE | New Philadelphia, OH 44663 P: 855.440.8458 | F: 330.339.1515
laurenillumination.com | laureninternational.com

Contractor: Vaughn Industries

Job Name: OSU NRD Building I

Submitted by Lighting Systems of Columbus

**Job Name:**OHIO STATE UNIVERSITY NORTH RESIDENTIAL
DISTRICT TRANSFORMATION**Catalog Number:**

WMR-42F1-PC

Notes: LAMP INCLUDED

Type:**K1**

LSC14-37947

WM SERIESCOMPACT
WALL SCONCE

| Cat. # | | Approvals |
|--------|------|-----------|
| Job | Type | |
| | | |

**APPLICATIONS**

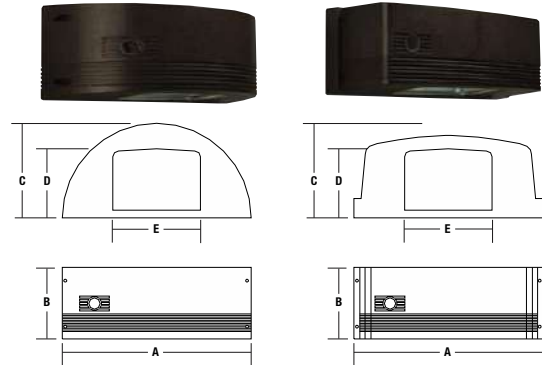
- Accent wall sconces for mounting heights on 8-12 ft.

SPECIFICATIONS

- Shipped as full cutoff downlight
 - Units have an internal shield that when removed allows up/down distribution
- UV stabilized polycarbonate front is decorative yet rugged.
- Die cast housing provides rigid mounting and dissipates ballast/lamp heat.
- Silicone gasket seals out moisture and insects.
- Fluorescent units feature 120V photocontrol for dusk to dawn energy saving control.
- 70 watt pulse start units have Tri-Tap® ballast (120, 277, 347V) and are shipped less photocontrol. PBT-1 or PBT-234 may be field installed if photocontrol is desired.
- All units include lamp(s).

LISTINGS

- All units are UL 1598 listed for USA and Canada.



| | A | B | C | D | E |
|------------|----------------------------------|---------------------------------|----------------------------------|-----------------------------------|-----------------------------------|
| WMR | 14 ⁵ / ₈ " | 5 ¹ / ₂ " | 7 ⁵ / ₁₆ " | 4 ¹³ / ₁₆ " | 6 ¹¹ / ₁₆ " |
| | 370 mm | 140 mm | 185 mm | 121 mm | 170 mm |
| WMS | 14 ⁵ / ₈ " | 5 ¹ / ₂ " | 6 ⁵ / ₁₆ " | 4 ¹³ / ₁₆ " | 6 ¹¹ / ₁₆ " |
| | 370 mm | 140 mm | 160 mm | 121 mm | 170 mm |

ORDERING INFORMATION

| Catalog Number ¹ | Shape | Wattage | Voltage | Photocontrol | Weight | |
|-----------------------------|--------|-------------------|---------------|--------------|--------|-------|
| | | Radius Style | | | lbs | (kg) |
| WMR-213F1-PC | Radius | 2X13 FLU | 120 | Yes | 6.5 | 2.9 |
| WMR-42F1-PC | Radius | 42 FLU | 120 | Yes | 6.0 | (2.7) |
| WMR-70P6 | Radius | 70 PS | 120, 277, 347 | No | 11.0 | (5.0) |
| | | Soft Square Style | | | | |
| WMS-213F1-PC | Square | 2X13 FLU | 120 | Yes | 6.5 | (2.9) |
| WMS-42F1-PC | Square | 42 FLU | 120 | Yes | 6.0 | (2.7) |
| WMS-70P6 | Square | 70 PS | 120, 277, 347 | No | 11.0 | (5.0) |

¹ All units have molded-in dark bronze finish and include lamps.

Due to our continued efforts to improve our products, product specifications are subject to change without notice.



Hubbell Outdoor Lighting • 701 Millennium Boulevard • Greenville, SC 29607 • PHONE: 864-678-1000

For more information visit our web site: www.hubbell-ltg.com

Date Submitted: Sept. 2, 2015

Distributor: C.E.D. Columbus, Oh 43207

Contractor: Vaughn Industries

Job Name: OSU NRD Building I

Submitted by Lighting Systems of Columbus

**Job Name:**OHIO STATE UNIVERSITY NORTH RESIDENTIAL
DISTRICT TRANSFORMATION**Catalog Number:**

WMR-42F1-PC

Notes: LAMP INCLUDED

Type:**K1**

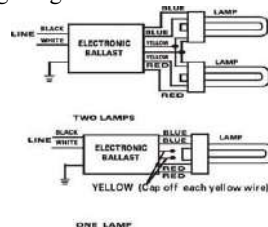
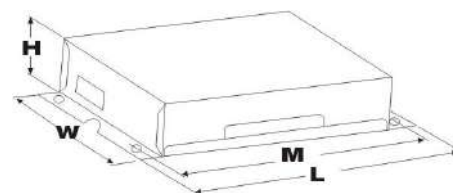
LSC14-37947

**ANTRON ELECTRONICS CO. LTD.**[CSS-UV42PS@277V](#)

| | |
|-----------------|-------------|
| Ballast Type | Electronic |
| Starting Method | Rapid Start |
| Lamp Connection | Series |
| Input Voltage | 120-277 |
| Input Frequency | 60HZ |
| Status | Active |
| Safety Approval | UL/CUL |

ELECTRICAL SPECIFICATIONS

| Lamp Type | NO. of Lamps | Rated Lamp Watts | Min Start Temp (°F/°C) | Input Current (Amps) | Input Power (ANSI Watts) | Ballast Factor | MAX THD % | Power Factor | MAX Lamp Current Crest Factor | BEF |
|-----------|--------------------|------------------------|------------------------------|----------------------------|--------------------------------|-------------------|-----------------|-----------------|-------------------------------------|------|
| PLT26W | 2 | 26 | -22/-30 | 0.18 | 53 | 0.86 | 15 | 0.99 | 1.7 | 1.62 |
| PLT42W | 1 | 42 | -22/-30 | 0.14 | 39 | 0.8 | 15 | 0.98 | 1.7 | 2.05 |
| PLT32W | 1 | 32 | -22/-30 | 0.11 | 30 | 0.8 | 15 | 0.98 | 1.7 | 2.67 |
| PLT26W | 1 | 26 | -22/-30 | 0.1 | 27 | 0.88 | 15 | 0.98 | 1.7 | 3.26 |
| PLL40W | 1 | 40 | -22/-30 | 0.13 | 37 | 0.78 | 15 | 0.98 | 1.7 | 2.11 |
| PLL39W | 1 | 39 | -22/-30 | 0.11 | 29 | 0.49 | 15 | 0.98 | 1.7 | 1.69 |
| PLL36W | 1 | 36 | -22/-30 | 0.1 | 28 | 0.73 | 15 | 0.98 | 1.7 | 2.61 |
| PLL24W | 1 | 24 | -22/-30 | 0.08 | 22 | 0.8 | 30 | 0.95 | 1.7 | 3.64 |
| 2D28W | 1 | 28 | -22/-30 | 0.1 | 28 | 0.67 | 15 | 0.98 | 1.7 | 2.39 |

Wiring Diagram**Enclosure****Standard Lead Length(inch/cm)**

| | in. | cm. | | in. | cm. |
|--------|-----|-----|--------------|-----|-----|
| Black | | | Yellow/Blue | | |
| White | | | Blue/White | | |
| Blue | | | Brown | | |
| Red | | | Orange | | |
| Yellow | | | Orange/Black | | |
| Gray | | | Black/White | | |

| Over All(L) | Width(W) | Height(H) | Mounting(M) |
|-------------|----------|-----------|-------------|
| 13.3cm | 6.3cm | 3cm | 12.3cm |
| 5.36" | 2.48 | 1.18 | 4.84 |



Revised 03/22/2004

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

Contractor: Vaughn Industries

Job Name: OSU NRD Building L



Product Number: 20720

Order Abbreviation: CF23EL/MICRO/835/RP3

General Description: 23W Compact Fluorescent Micro Mini with integral 120V ballast medium screw base color temperature 3500K 82 CRI 10,000 hour life

Price: 7.94 USD

Quantity:

1
EA

10

Job: OSU - NRD
Lamp for Types:
A40

| Product Information | |
|------------------------------|-------------------------------|
| Abbrev. With Packaging Info. | CF23ELMICRO835RP3 18/CS 3/SKU |
| Average Rated Life (hr) | 10000 |
| Base | Medium |
| Bulb | MICROMINI |

Product Details

Page 2 of 2



Footnotes

- Approximate initial lumens after 100 hours operation.
- Minimum starting temperature for DULUX EL lamps is 0° F, unless otherwise specified in product literature. .
- DULUX ELs meet CSA, FCC and UL requirements.
- Caution: DULUX EL units cannot be used on dimming circuits (unless the lamp is labeled dimmable), emergency exit fixtures or lights, electronic timers, photocells, lighted switches or any other switches that do not meet UL20 Sec. 7.6.15. In outdoor applications, use only in enclosed fixtures to avoid exposure to weather. Use only on 120V, 60 Hz circuits. Never disassemble or modify lamp. Install or remove unit from fixture by grasping plastic base. Best performance achieved when operated at 77degrees F (25 degrees C). 40 Watt lamp is designed for base down orientation only
- The life ratings of fluorescent lamps are based on 3 hr. burning cycles under specified conditions and with ballast meeting ANSI specifications. If burning cycle is increased, there will be a corresponding increase in the average hours life.
- Minimum starting temperature for DULUX EL lamps is 0 degrees F
- Rule of Thumb for Compact Fluorescent Lamps: Divide wattage of incandescent lamp by 4 to determine approximate wattage of compact fluorescent lamp that will provide similar light output.



2101 S High St. Columbus, Ohio 43207
Phone: 614/445-8871 Fax: 614/445-8871

www.sylvania.com

DULUX® T/E/IN ECOLOGIC® 4-Pin Amalgam Compact Fluorescent Lamps

Job: OSU - NRD
Lamps for Types:
CF26DTEIN835ECO - TYPES A75
CF32DTEIN835ECO - TYPES A45
CF42DTEIN835ECO - A74 + K1

Key Features & Benefits

- Improved lumen output vs. non-amalgam triple tube lamps
 - Maintains 90% lumens from 40° to 140°F ambient
- Long 12,000 to 16,000 hour average rated life
- Fast run-up to full brightness
- ECOLOGIC passes Federal TCLP Test*
- RoHS compliant
- Operates electronic ballasts systems
 - Flicker-free starting and dimmable
 - Compatible with QUICKTRONIC® PROStart CF
- High luminous efficacy
- Rare earth tri-phosphor with 82 CRI
- Less power consumption than incandescent of comparable light output

SYLVANIA DULUX T/E/IN compact fluorescent lamps are ideal for use in a wide range of commercial and residential applications. They are designed to be operated on energy efficient electronic and dimming ballasts.

SYLVANIA DULUX T/E/IN lamps are long-life, energy-saving alternatives for incandescent lamps. Amalgam technology provides higher lumens over a much wider temperature range than non-amalgam lamps. The triple tube configuration of these lamps allows for single-lamp luminaire designs with improved efficacy and photometric performance.

ECOLOGIC® is a comprehensive program of OSRAM SYLVANIA focused on addressing environmental issues at all stages of lamp life.



* Regulations may vary. Check your local and state regulations.

Product Offering

| Lamp | Wattage | CCT |
|-------------|---------|----------------------------|
| CF18DT/E/IN | 18 | 2700K, 3000K, 3500K, 4100K |
| CF26DT/E/IN | 26 | 2700K, 3000K, 3500K, 4100K |
| CF32DT/E/IN | 32 | 2700K, 3000K, 3500K, 4100K |
| CF42DT/E/IN | 42 | 2700K, 3000K, 3500K, 4100K |
| CF57DT/E/IN | 57 | 3000K, 3500K, 4100K |

Application Information

Applications

- Recessed downlights
- Surface mounted luminaires
- Wall sconces

Application Notes

1. 4-pin lamps are designed for use with programmed rapid start ballasts. Not recommended for use with IS ballasts.
2. Minimum starting temperature depends on ballast.
3. Rule of thumb: to estimate the appropriate compact fluorescent lamp wattage, divide the incandescent wattage by 4.
4. Equipment manufacturers are advised to consult ANSI and IEC standards for the maximum allowable dimensions and temperature to insure compatibility with similar products.
5. QUICKTRONIC PROStart CF electronic ballasts are UCSA Certified and FCC 47CFR Part 18 Consumer Rated.
6. For horizontal operation, install lamp with etch facing down.
7. QUICKTRONIC ballasts feature QUICKSENSE® circuitry for end-of-life protection required by NEMA.

Contractor: Vaughn Industries

**Job: OSU - NRD
Lamp for Fixtures Types:
A45, A74, A75, K1**



2101 S High St. Columbus, Ohio 43207
Phone: 614/445-8871 Fax: 614/445-8871

Ordering Information

| Item Number | Ordering Abbreviation | NEMA Generic Designation | Base | Watts | Volts ¹ | Amps ¹ | Initial Lumens | Mean Lumens ² | CCT | CRI | Avg. Rated Life (hrs.) ³ |
|-------------|-----------------------|--------------------------|---------|-------|--------------------|-------------------|----------------|--------------------------|-------|-----|-------------------------------------|
| 20875 | CF18DT/E/IN/827/ECO | CFTR18W/GX24q/27 | GX24q-2 | 18 | 80 | .210 | 1,200 | 1,032 | 2700K | 82 | 12,000 |
| 20876 | CF18DT/E/IN/830/ECO | CFTR18W/GX24q/30 | GX24q-2 | 18 | 80 | .210 | 1,200 | 1,032 | 3000K | 82 | 12,000 |
| 20877 | CF18DT/E/IN/835/ECO | CFTR18W/GX24q/35 | GX24q-2 | 18 | 80 | .210 | 1,200 | 1,032 | 3500K | 82 | 12,000 |
| 20878 | CF18DT/E/IN/841/ECO | CFTR18W/GX24q/41 | GX24q-2 | 18 | 80 | .210 | 1,200 | 1,032 | 4100K | 82 | 12,000 |
| 20879 | CF26DT/E/IN/827/ECO | CFTR26W/GX24q/27 | GX24q-3 | 26 | 80 | .300 | 1,800 | 1,548 | 2700K | 82 | 16,000 |
| 20880 | CF26DT/E/IN/830/ECO | CFTR26W/GX24q/30 | GX24q-3 | 26 | 80 | .300 | 1,800 | 1,548 | 3000K | 82 | 16,000 |
| 20881 | CF26DT/E/IN/835/ECO | CFTR26W/GX24q/35 | GX24q-3 | 26 | 80 | .300 | 1,800 | 1,548 | 3500K | 82 | 16,000 |
| 20882 | CF26DT/E/IN/841/ECO | CFTR26W/GX24q/41 | GX24q-3 | 26 | 80 | .300 | 1,800 | 1,548 | 4100K | 82 | 16,000 |
| 20883 | CF32DT/E/IN/827/ECO | CFTR32W/GX24q/27 | GX24q-3 | 32 | 100 | .320 | 2,400 | 2,064 | 2700K | 82 | 16,000 |
| 20884 | CF32DT/E/IN/830/ECO | CFTR32W/GX24q/30 | GX24q-3 | 32 | 100 | .320 | 2,400 | 2,064 | 3000K | 82 | 16,000 |
| 20885 | CF32DT/E/IN/835/ECO | CFTR32W/GX24q/35 | GX24q-3 | 32 | 100 | .320 | 2,400 | 2,064 | 3500K | 82 | 16,000 |
| 20886 | CF32DT/E/IN/841/ECO | CFTR32W/GX24q/41 | GX24q-3 | 32 | 100 | .320 | 2,400 | 2,064 | 4100K | 82 | 16,000 |
| 20887 | CF42DT/E/IN/827/ECO | CFTR42W/GX24q/27 | GX42q-3 | 42 | 135 | .320 | 3,200 | 2,752 | 2700K | 82 | 16,000 |
| 20888 | CF42DT/E/IN/830/ECO | CFTR42W/GX24q/30 | GX24q-4 | 42 | 135 | .320 | 3,200 | 2,752 | 3000K | 82 | 16,000 |
| 20871 | CF42DT/E/IN/835/ECO | CFTR42W/GX24q/35 | GX24q-4 | 42 | 135 | .320 | 3,200 | 2,752 | 3500K | 82 | 16,000 |
| 20890 | CF42DT/E/IN/841/ECO | CFTR42W/GX24q/41 | GX24q-4 | 42 | 135 | .320 | 3,200 | 2,752 | 4100K | 82 | 16,000 |
| 20896 | CF57DT/E/IN/830/ECO | CFTR57W/GX24q/30 | GX24q-5 | 57 | 182 | .320 | 4,300 | 3,698 | 3000K | 82 | 12,000 |
| 20897 | CF57DT/E/IN/835/ECO | CFTR57W/GX24q/35 | GX24q-5 | 57 | 182 | .320 | 4,300 | 3,698 | 3500K | 82 | 12,000 |
| 20899 | CF57DT/E/IN/841/ECO | CFTR57W/GX24q/41 | GX24q-5 | 57 | 182 | .320 | 4,300 | 3,698 | 4100K | 82 | 12,000 |

Notes:

1. Measured on high-frequency ballast
2. Measured at 40% of rated life.
3. Based on 3 hours per start. Number of operating hours when half have failed and half are still functional.

Ordering Guide

| CF | 26 | DT | / | E | / | IN | / | 835 | / | ECO |
|------------------------|----------------------------------|------------------|---|-----------------------|---|---------|---|--|---|-----------|
| Compact Fluorescent | Wattage 18, 26, 32, 42, 57 | DULUX® Triple | | Electronic Ballast | | Amalgam | | 8 = 82 CRI 27=2700K CCT 30=3000K CCT 35=3500K CCT 41=4100K CCT | | ECOLOGIC® |

System Comparison

Compact Fluorescent vs. Incandescent

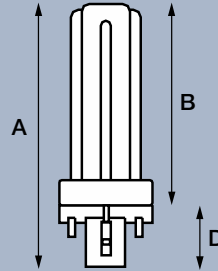
| Lamp Type | Rated Lamp Life (hrs.) | System Lumens | System Wattage | System LPW | Energy Savings* |
|------------------------------------|------------------------|---------------|----------------|------------|-----------------|
| 100W Incandescent | 750 | 1,710 | 100 | 17 | — |
| DULUX T/E/IN 26W w/QUICKTRONIC® CF | 18,000 | 1,800 | 28 | 64 | \$115 |
| 150W Incandescent | 750 | 2,740 | 150 | 18.5 | — |
| DULUX T/E/IN 42W w/QUICKTRONIC CF | 16,000 | 3,200 | 46 | 70 | \$66 |

* Based on an energy cost of \$0.10/kWh over the life of the lamp.

Contractor: Vaughn Industries

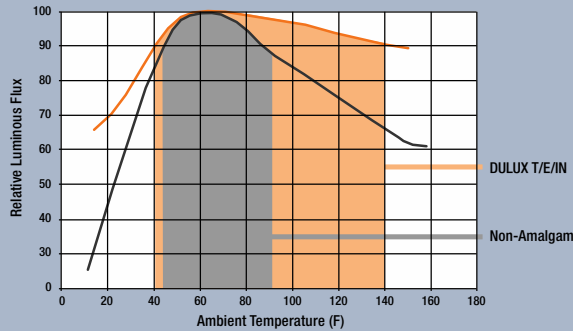
Lamp Dimensions

| | (A) MOL [in. (mm)] | (B) Max. Base Face to Top of Lamp [in. (mm)] | (C) Max. Base Width [in. (mm)] | (D) Guide Post Length [in. (mm)] |
|-------------|--------------------------|--|--------------------------------------|--|
| CF18DT/E/IN | 4.37 (111) | 3.74 (95) | 1.90 (48) | 0.62 (16) |
| CF26DT/E/IN | 4.96 (126) | 4.33 (110) | 1.90 (48) | 0.62 (16) |
| CF32DT/E/IN | 5.59 (142) | 4.96 (126) | 1.90 (48) | 0.62 (16) |
| CF42DT/E/IN | 6.42 (163) | 5.78 (147) | 1.90 (48) | 0.62 (16) |
| CF57DT/E/IN | 7.76 (197) | 7.13 (181) | 1.90 (48) | 0.62 (16) |

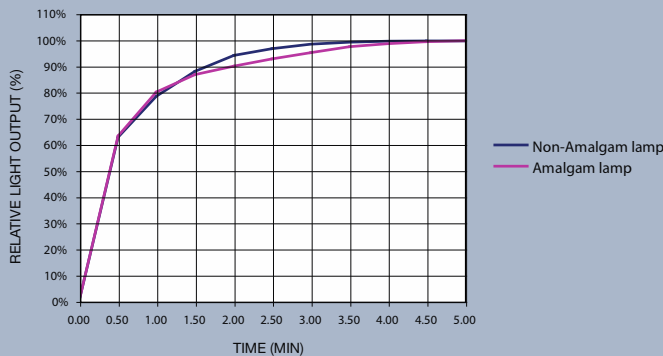


Technical Information

90% Lumen Performance Range
DULUX T/E/IN vs. Non-Amalgam Lamps



Lumen Run-Up Comparison



Related Literature

For maximum energy savings consider pairing with the following electronic ballast:

Ballast Technology Applications & Specification Guide (Literature Code: ECS-Electronic2009)

QUICK 60+® System Warranty (Literature Code: ECS140)

Sample Specification

Lamp(s) shall be (a) DULUX® (CF18DT/E/IN, CF26DT/E/IN, CF32DT/E/IN, CF42DT/E/IN or CF57DT/E/IN) ECOLOGIC® lamps and pass existing Federal TCLP limits. Lamp(s) shall have an average rated life of 12,000 to 16,000 hours, a correlated color temperature of (2700K, 3000K, 3500K or 4100K), and a CRI of 82. Lamps shall have a (GX24q-2, -3, -4 or -5) plug-in, 4-pin base and be suitable for use on electronic and dimming ballasts. Lamps shall be operated by QUICKTRONIC® ballasts. Both lamps and ballasts are covered by the QUICK 60+® system warranty.

United States

OSRAM SYLVANIA

100 Endicott Street
Danvers, MA 01923
1-800-LIGHTBULB

Trade

Phone: 800-255-5042
Fax: 800-255-5043

National Accounts

Phone: 800-562-4671
Fax: 800-562-4674

OEM/Special Markets

Phone: 800-762-7191
Fax: 800-762-7192

Retail

Phone: 800-842-7010
Fax: 800-842-7011

SYLVANIA Lighting Services

Phone: 800-323-0572
Fax: 800-537-0784

Display/Optic

Phone: 888-677-2627
Fax: 855-543-1043

Canada

OSRAM SYLVANIA LTD.

2001 Drew Road
Mississauga, ON L5S 1S4
1-800-LIGHTBULB

Trade

Phone: 800-263-2852
Fax: 800-667-6772

OEM/Special Markets/Display/Optic

Phone: 800-265-2852
Fax: 800-667-6772

Retail

Phone: 800-720-2852
Fax: 800-667-6772

SYLVANIA Lighting Services

Phone: 800-663-4268
Fax: 866-239-1278

Mexico

OSRAM MEXICO

Tultitlan/Edo de Mexico
Phone: 011-52-55-58-99-18-50

ENCELIUM Technologies

United States

Phone: 201-928-2400
Fax: 201-928-4028

Canada

Phone: 905-731-7678
Fax: 905-731-1401

www.sylvania.com

[/sylvania](#)

[/sylvania](#)

SYLVANIA, ECOLOGIC, ECO, QUICK 60+ and QUICKSENSE are registered trademarks of OSRAM SYLVANIA Inc.
SEE THE WORLD IN A NEW LIGHT is a registered trademark of OSRAM SYLVANIA Inc.
QUICKTRONIC and DULUX are registered trademarks of OSRAM GmbH.
Specifications subject to change without notice.

CF055R3

Date Submitted: Sept. 2, 2015

Distributor: C.E.D. Columbus, Oh 43207

Contractor: Vaughn Industries

Job Name: OSU NRDT Building L

www.sylvania.com

OCTRON® 800 ECOLOGIC® Fluorescent Lamps

Job: OSU NRDT
Lamp for Types:
FO17/835/ECO - TYPE B15, D2
FO25/835/ECO - TYPE D3
FO32/835/ECO - TYPES A7, A8, A9,
A14, B2, B5, B17, B24, C8, D5

Key Features & Benefits

- Passes Federal TCLP test*
- Energy efficient T8 lamp
- Made in the USA
- Lead free
- RoHS compliant
- Compatible with QUICKTRONIC® electronic ballasts
- QUICK 60+® System Warranty

ECOLOGIC® is a comprehensive program of OSRAM SYLVANIA focused on addressing environmental issues at all stages of lamp life.

* Regulations may vary. Check your local and state regulations.



This light source meets restrictions on hazardous substances.



OCTRON 800 ECOLOGIC T8 lamps offer a high quality solution for general purpose fluorescent lighting applications where color is important. These lamps are available in a wide range of color temperatures: 3000K, 3500K, 4100K and 5000K that feature improved color rendering and lumen maintenance when compared to 700 series lamps. When paired with QUICKTRONIC electronic ballasts, these systems are a good alternative to T12 fluorescent systems and are covered by the comprehensive QUICK 60+ system warranty.

Product Offering

| Ordering Abbreviation | Wattage | Lumens | CRI |
|-----------------------|---------|--------|-----|
| FO17/800/ECO | 17 | 1350 | 82 |
| FO25/800/ECO | 25 | 2150 | 82 |
| FO32/800/ECO | 32 | 2950 | 85 |
| FO40/800/ECO | 40 | 3650 | 82 |
| FO96/800/ECO | 96 | 5900 | 82 |

Application Information

Applications

- Cove
- Recessed troffer
- Strip light fixture
- Valance

Application Notes

1. Lamps starting down to -20°F (dependent on ballast)
2. Operation below 50°F may affect lumen output or lamp operation.
3. For cold temperature applications, use in enclosed fixture or use tube to maximize lamp performance.
4. For rapid start operation, check with ballast manufacturer for ground plane requirement.
5. For maximum energy savings, operate on electronic instant start ballast.



2101 S High St. Columbus, Ohio 43207
Phone: 614/445-8871 Fax: 614/445-8871

Contractor: Vaughn Industries

Ordering Information

| Item Number | Ordering Abbreviation | Nominal Length | Initial Lumens | Mean Lumens ¹ | Instant Start | | Programmed Rapid Start | | CCT | CRI |
|-------------|-----------------------|----------------|----------------|--------------------------|---------------|---------------|------------------------|---------------|-------|-----|
| | | | | | 3 hrs/ start | 12 hrs/ start | 3 hrs/ start | 12 hrs/ start | | |
| 22135 | F017/830/ECO | 24 | 1,350 | 1,269 | 24,000 | 28,000 | 30,000 | 36,000 | 3000K | 82 |
| 22136 | F017/835/ECO | 24 | 1,350 | 1,269 | 24,000 | 28,000 | 30,000 | 36,000 | 3500K | 82 |
| 22137 | F017/841/ECO | 24 | 1,350 | 1,269 | 24,000 | 28,000 | 30,000 | 36,000 | 4100K | 82 |
| 22138 | F025/830/ECO | 36 | 2,150 | 2,021 | 24,000 | 28,000 | 30,000 | 36,000 | 3000K | 82 |
| 22139 | F025/835/ECO | 36 | 2,150 | 2,021 | 24,000 | 28,000 | 30,000 | 36,000 | 3500K | 82 |
| 22140 | F025/841/ECO | 36 | 2,150 | 2,021 | 24,000 | 28,000 | 30,000 | 36,000 | 4100K | 82 |
| 21777 | F032/830/ECO | 48 | 2,950 | 2,773 | 24,000 | 28,000 | 30,000 | 36,000 | 3000K | 85 |
| 21779 | F032/835/ECO | 48 | 2,950 | 2,773 | 24,000 | 28,000 | 30,000 | 36,000 | 3500K | 85 |
| 21781 | F032/841/ECO | 48 | 2,950 | 2,773 | 24,000 | 28,000 | 30,000 | 36,000 | 4100K | 85 |
| 22143 | F032/850/ECO | 48 | 2,950 | 2,773 | 24,000 | 28,000 | 30,000 | 36,000 | 5000K | 80 |
| 22144 | F040/830/ECO | 60 | 3,650 | 3,431 | 24,000 | 28,000 | 30,000 | 36,000 | 3000K | 82 |
| 22145 | F040/835/ECO | 60 | 3,650 | 3,431 | 24,000 | 28,000 | 30,000 | 36,000 | 3500K | 82 |
| 22146 | F040/841/ECO | 60 | 3,650 | 3,431 | 24,000 | 28,000 | 30,000 | 36,000 | 4100K | 82 |
| 22147 | F096/830/ECO | 96 | 5,900 | 5,428 | 18,000 | 24,000 | | | 3000K | 82 |
| 22148 | F096/835/ECO | 96 | 5,900 | 5,428 | 18,000 | 24,000 | | | 3500K | 82 |
| 22149 | F096/841/ECO | 96 | 5,900 | 5,428 | 18,000 | 24,000 | | | 4100K | 82 |
| 22173 | F096/850/ECO | 96 | 5,900 | 5,428 | 18,000 | 24,000 | | | 5000K | 82 |

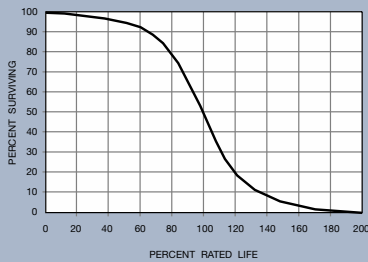
1. Mean lumens measured at 40% of rated life.

Ordering Guide

| F0 | 32 | / | 8 | 35 | / | ECO |
|-------------|----------------------------|---|---------------|----------------|---|----------|
| Fluorescent | Wattage: | | 8 = 80-85 CRI | 30 = 3000K CCT | | ECOLOGIC |
| OCTRON | 17, 25, 32, 40 or 96 watts | | | 35 = 3500K CCT | | |
| | | | | 41 = 4100K CCT | | |
| | | | | 50 = 5000K CCT | | |

Technical Information

Typical Fluorescent Lamp Mortality



Related Literature

For maximum energy savings consider pairing with the following electronic ballast:

Ballast Technology Applications & Specification Guide (Literature Code: ECS-Electronic2009)

QUICK 60+® System Warranty (Literature Code: ECS140)



2101 S High St. Columbus, Ohio 43207
Phone: 614/445-8871 Fax: 614/445-8871

SYLVANIA is a registered trademark of OSRAM SYLVANIA Inc.
SEE THE WORLD IN A NEW LIGHT is a registered trademark of OSRAM SYLVANIA Inc.
OCTRON, ECOLOGIC and QUICK 60+ are registered trademarks of OSRAM SYLVANIA Inc.
QUICKTRONIC is a registered trademark of OSRAM GmbH.

FL085R1 11/10

Date Submitted: Sept. 2, 2015

Job: OSU NRD
Lamp for Types:
**A7, A8, A9, A14,
B2, B5, B15, B17, B24
C8, D2, D3, D5**

Sample Specification

Lamp(s) shall be an OCTRON® ECOLOGIC® lamp(s) (F017/ECO, F025/ECO, F032/ECO, F040/ECO and F096/ECO) having medium bi-pin bases. Lamp(s) shall be designed to pass the Federal TCLP test in force at the time of manufacture. Lamp(s) shall have a correlated color temperature of (3000K, 3500K, 4100K or 5000K) and a CRI of (80, 82 or 85). The OCTRON lamp(s) shall be operated on dedicated QUICKTRONIC® ballast(s) with complete system warranty from one manufacturer covering lamp(s) and ballast(s).

United States
OSRAM SYLVANIA
100 Endicott Street
Danvers, MA 01923

Trade
Phone: 1-800-255-5042
Fax: 1-800-255-5043

National Accounts
Phone: 1-800-562-4671
Fax: 1-800-562-4674

OEM/Special Markets
Phone: 1-800-762-7191
Fax: 1-800-762-7192

Display/Optic
Phone: 1-888-677-2627
Fax: 1-800-762-7192

Canada
OSRAM SYLVANIA LTD.
2001 Drew Road
Mississauga, ON L5S 1S4

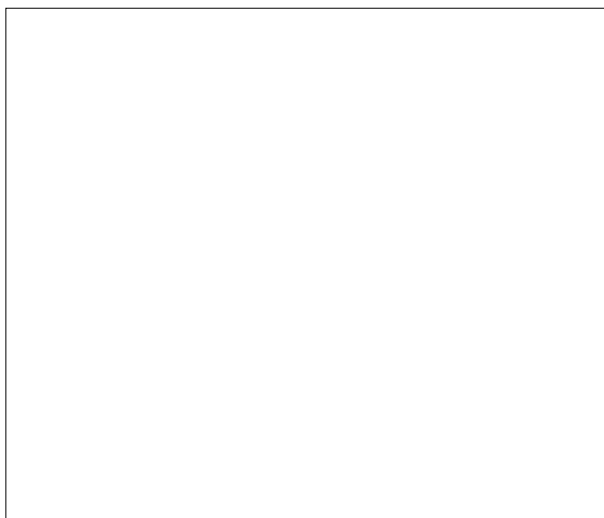
Trade
Phone: 1-800-263-2852
Fax: 1-800-667-6772

OEM/Special Markets/Display/Optic
Phone: 1-800-265-2852
Fax: 1-800-667-6772

www.sylvania.com

Distributor: C.E.D. Columbus, Oh 43207

OSU NRDT FP28/835/ECO Types: A16, A17, A18, B25



PENTRON ECOLOGIC T5 lamps offer a high quality lighting solution for linear fluorescent applications where luminaire design flexibility is important. These lamps are available in 2, 3, 4 and 5-foot lengths and offer a wide range of color temperatures: 2700K, 3000K, 3500K, 4100K, 5000K and 6500K. When paired with a QUICKTRONIC® T5 ballast, these systems are covered by the comprehensive QUICK 60+® system warranty.

Key Features & Benefits

- High Performance T5 lamps
 - Up to 104 LPW
 - 95% lumen maintenance
 - Peak lumen output at 35°C (95°F)
 - Dimmable
 - Ideal for occupancy sensor applications
- Up to 36,000 hours lamp life
- TCLP and RoHS compliant
- Made in the USA
- Lead free glass
- Greater luminaire design flexibility
- Nominal 2', 3', 4', and 5'
- QUICK 60+ system warranty offered when paired with QUICKTRONIC T5 electronic ballast

ECOLOGIC® is a comprehensive program of OSRAM SYLVANIA focused on addressing environmental issues at all stages of lamp life.

* Regulations may vary. Check your local and state regulations.



Product Offering

| Ordering Abbreviation | Watts | CCT |
|-----------------------|-------|--|
| FP14/800/ECO | 14 | 3000K, 3500K, 4100K, 6500K |
| FP21/800/ECO | 21 | 3000K, 3500K, 4100K, 6500K |
| FP28/800/ECO | 28 | 2700K, 3000K, 3500K, 4100K, 5000K, 6500K |
| FP35/800/ECO | 35 | 3000K, 3500K, 4100K |

Application Information

Applications

- Cove and valance
- Direct / indirect luminaires
- Facade luminaires
- Low profile surface mount
- Shallow recessed fixtures
- Showcase
- Signage

Application Notes

1. PENTRON ECO lamps are about 2" shorter than T8 & T12 Bi-Pin lamps.
2. Miniature Bi-Pin bases will not install into T8 & T12 sockets.
3. Miniature Bi-Pin bases require UL Listed 600 Volt rated sockets.
4. Requires high frequency programmed rapid start electronic ballasts for T5s equipped with end-of-life sensing circuit.
5. PENTRON ECO operates at same current for uniform color and brightness between nominal 2', 3', 4', and 5' lengths.
6. Apply thermal factor in calculations for use in exterior or unheated applications.



2101 S High St. Columbus, Ohio 43207
Phone: 614/445-8871 Fax: 614/445-8871

ectronic instant start ballast.

Contractor: Vaughn Industries

Job Name: OSU NRDT Building L

Job: OSU NRDT
Lamp for Types:

A16, A17, A18, B25



Ordering Information

| Item Number | Ordering Abbreviation | Base | Watt | Nominal Length (in) | Initial Lumens @ 25°C | Mean Lumens @ 25°C | Initial Lumens @ 35°C | Mean Lumens @ 35°C | Programmed 3 hrs/start | Rapid Start 12 hrs/start | CCT | CRI |
|-------------|-----------------------|------------------|------|---------------------|-----------------------|--------------------|-----------------------|--------------------|------------------------|--------------------------|-------|-----|
| 20907 | FP14/830/ECO | Miniature Bi-Pin | 14 | 24 | 1,200 | 1,140 | 1,350 | 1,285 | 25,000 | 28,000 | 3000K | 85 |
| 20908 | FP14/835/ECO | Miniature Bi-Pin | 14 | 24 | 1,200 | 1,140 | 1,350 | 1,285 | 25,000 | 28,000 | 3500K | 85 |
| 20914 | FP14/841/ECO | Miniature Bi-Pin | 14 | 24 | 1,200 | 1,140 | 1,350 | 1,285 | 25,000 | 28,000 | 4100K | 85 |
| 20988 | FP14/865/ECO | Miniature Bi-Pin | 14 | 24 | 1,100 | 1,045 | 1,300 | 1,235 | 25,000 | 28,000 | 6500K | 85 |
| 20919 | FP21/830/ECO | Miniature Bi-Pin | 21 | 36 | 1,900 | 1,805 | 2,100 | 1,995 | 25,000 | 28,000 | 3000K | 85 |
| 20921 | FP21/835/ECO | Miniature Bi-Pin | 21 | 36 | 1,900 | 1,805 | 2,100 | 1,995 | 25,000 | 28,000 | 3500K | 85 |
| 20924 | FP21/841/ECO | Miniature Bi-Pin | 21 | 36 | 1,900 | 1,805 | 2,100 | 1,995 | 25,000 | 28,000 | 4100K | 85 |
| 20989 | FP21/865/ECO | Miniature Bi-Pin | 21 | 36 | 1,750 | 1,665 | 2,000 | 1,900 | 25,000 | 28,000 | 6500K | 85 |
| 20975 | FP28/827/ECO | Miniature Bi-Pin | 28 | 48 | 2,600 | 2,470 | 2,900 | 2,755 | 30,000 | 36,000 | 2700K | 85 |
| 20868 | FP28/830/ECO | Miniature Bi-Pin | 28 | 48 | 2,600 | 2,470 | 2,900 | 2,755 | 30,000 | 36,000 | 3000K | 85 |
| 20901 | FP28/835/ECO | Miniature Bi-Pin | 28 | 48 | 2,600 | 2,470 | 2,900 | 2,755 | 30,000 | 36,000 | 3500K | 85 |
| 20902 | FP28/841/ECO | Miniature Bi-Pin | 28 | 48 | 2,600 | 2,470 | 2,900 | 2,755 | 30,000 | 36,000 | 4100K | 85 |
| 22203 | FP28/850/ECO | Miniature Bi-Pin | 28 | 48 | 2,545 | 2,420 | 2,840 | 2,700 | 30,000 | 36,000 | 5000K | 85 |
| 20990 | FP28/865/ECO | Miniature Bi-Pin | 28 | 48 | 2,400 | 2,280 | 2,750 | 2,615 | 30,000 | 36,000 | 6500K | 85 |
| 20925 | FP35/830/ECO | Miniature Bi-Pin | 35 | 60 | 3,300 | 3,135 | 3,650 | 3,470 | 25,000 | 28,000 | 3000K | 85 |
| 20926 | FP35/835/ECO | Miniature Bi-Pin | 35 | 60 | 3,300 | 3,135 | 3,650 | 3,470 | 25,000 | 28,000 | 3500K | 85 |
| 20927 | FP35/841/ECO | Miniature Bi-Pin | 35 | 60 | 3,300 | 3,135 | 3,650 | 3,470 | 25,000 | 28,000 | 4100K | 85 |

Ordering Guide

| FP | 14 | / | 8 | 30 | / | ECO® |
|----------------------------|---------------------------------------|---|------------|--|---|-----------|
| Fluorescent PENTRON® T5 | Wattage: 14, 21, 28 or 35 watts | | 8 = 85 CRI | 27 = 2700K CCT, 30 = 3000K CCT 35 = 3500K CCT, 41 = 4100K CCT 50 = 5000K CCT, 65 = 6500K CCT | | ECOLOGIC® |

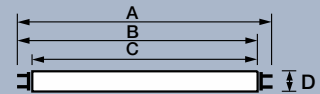


2101 S High St. Columbus, Ohio 43207
Phone: 614/445-8871 Fax: 614/445-8871

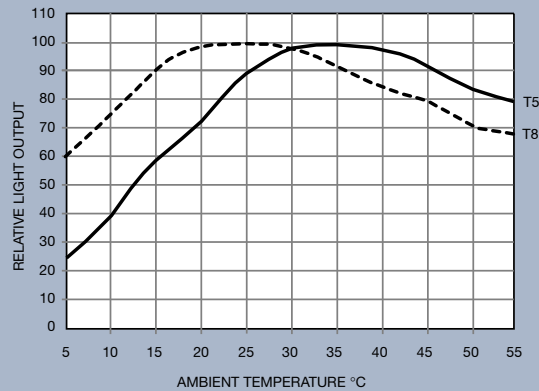
Technical Information

Dimensions

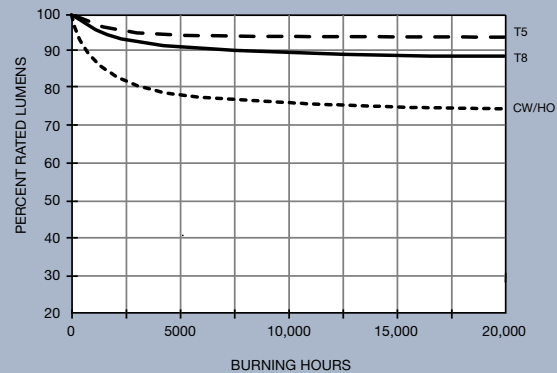
| Ordering Abbreviation | (A) Max. Overall Length mm (in.) | (B) Base Face to Opposite Pin mm (in.) | (C) Base Face to Base Face mm (in.) | (D) Max. Outside Diameter mm (in.) |
|-----------------------|-------------------------------------|---|--|---------------------------------------|
| FP14 | 563.2 (22.17) | 553.7 - 556.1 (21.80 - 21.89) | 547.1 - 549.0 (21.54 - 21.61) | 17.0 (0.67) |
| FP21 | 863.2 (33.89) | 853.7 - 856.1 (33.61 - 33.70) | 847.1 - 849.0 (33.35 - 33.43) | 17.0 (0.67) |
| FP28 | 1163.2 (45.80) | 1153.7 - 1156.1 (45.42 - 45.52) | 1147.1 - 1149.0 (45.16 - 45.24) | 17.0 (0.67) |
| FP35 | 1463.2 (57.61) | 1453.7 - 1456.1 (57.23 - 57.33) | 1447.1 - 1449.0 (56.97 - 57.05) | 17.0 (0.67) |



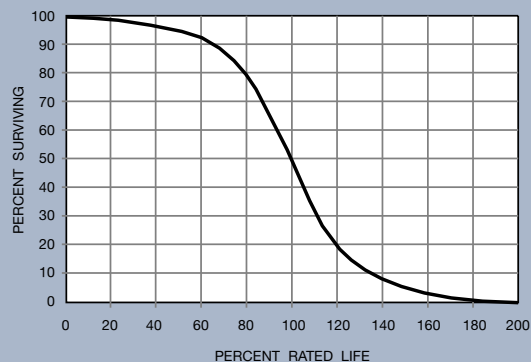
Lumen Output vs. Temperature T8/T5



Fluorescent Lamp Lumen Maintenance



Typical Fluorescent Lamp Mortality



Related Literature

For optimum system performance and warranty pair with QUICKTRONIC® electronic ballast systems:

Ballast Technology Applications & Specification Guide (Literature Code: ECS-Electronic2009)

QUICK 60+® System Warranty (Literature Code: ECS140)

Contractor: Vaughn Industries

www.sylvania.com

QUICKTRONIC® PROStart® T5 **Universal Voltage Systems**

Job: OSU - NRDT
Ballast for Types
A16, A17, A18, B25

Type CC

Programmed Rapid Start
Normal Ballast Factor



High Efficiency Series

QHE T5 PSN

Lamp / Ballast Guide

28W T5 – PENTRON® lamps
1 or 2 lamp QHE2x28T5/UNV PSN

Primary Lamp Type:
FP28

Also operates:
FP14, FP21, FP35

Two lamp fixed output model can be wired for one lamp operation.

SYLVANIA QUICKTRONIC High Efficiency (QHE) PROStart T5 Universal Voltage electronic ballasts operate PENTRON T5 lamps saving >2 watts as compared to standard T5 ballasts.

QUICKTRONIC PROStart T5 ballasts feature programmed rapid start lamp starting and operation which provides optimum conditions to deliver up to 100,000 switching cycles for use on occupancy sensors and building control systems.

QUICKTRONIC PROStart T5 ballasts are RoHS compliant and feature lead-free solder, printed circuit boards and manufacturing process.

Setting the standard for quality, QUICKTRONIC PROStart T5 systems are covered by the QUICK 60+® warranty, the first and most comprehensive system warranty in the industry.



Key System Features

- **High Efficiency Systems over 90% efficient**
- Universal voltage (120-277V)
- Low-profile (0.87" High)
- 1.0 Ballast factor (see table)
- QUICKSENSE® ballast technology (end-of-lamp-life sensing)
- PROStart programmed rapid start
- Min. starting temperature
 - -20°F (-29°C)
- Operates at >42 kHz to reduce potential interference with infrared control systems
- Meet the most demanding utility rebate standards
- UL Type CC rated
- RoHS compliant
- Lead-free solder, printed circuit board and manufacturing process



Application Information

SYLVANIA QUICKTRONIC PS ballasts are ideally suited for:

- Commercial
- Retail
- Hospitality
- Institutional
- New construction
- Direct lighting
- Indirect lighting
- Surface mount
- Cove lighting

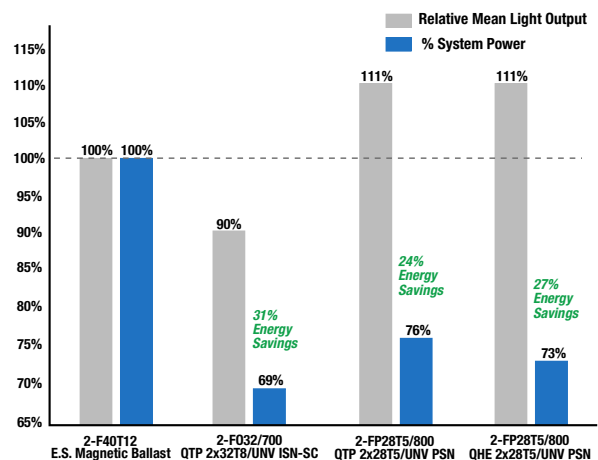
System Information

SYLVANIA QUICKTRONIC PS T5 High Efficiency (QHE) System advantages:

- Operate from 120V through 277V
 - Eliminates "wrong voltage" errors
 - Reduces inventory by 50%
- Utilizes Programmed Rapid Start operation for:
 - Highest System Efficacy
 - Longer Life
 - Over 100,000 switching cycles for occupancy sensor and building control systems applications

QUICKSENSE ballast technology helps to protect against overheated bases and sockets, as well as cracking of the glass wall, and uses dynamic end-of-lamp-life sensing to avoid false shutdowns caused by some static sensing methods. QUICKSENSE ballast technology will auto reset when the end-of-life lamps are replaced with new ones.

| System Type (2-lamp) | Input Power (W) | Initial System Lumens | Initial System Efficacy (LPW) | Mean System Lumens | Relative Mean Light Output | Energy Savings (%) |
|---------------------------------|-----------------|-----------------------|-------------------------------|--------------------|----------------------------|--------------------|
| 2-F40T12 ES Mag. Ballast | 86 | 5795 | 67 | 4925 | 100% | Baseline |
| 2-F032/700 QTP2x32T8/UNV ISN-SC | 59 | 4930 | 84 | 4435 | 90% | 31% |
| 2-FP28T5/800 QTP2x28T5/UNV PSN | 65 | 5800 | 89 | 5395 | 111% | 24% |
| 2-FP28T5/800 QHE2x28T5/UNV PSN | 63 | 5800 | 92 | 5395 | 111% | 27% |



ECS421 - 6-13

Date Submitted: Sept. 2, 2015

SEE THE WORLD IN A NEW LIGHT



Distributor: C.E.D. Columbus, Oh 43207

Contractor: Vaughn Industries

Job Name: OSU NRDT Building L

Job: OSU - NRDT

Ballast for Types: A16, A17, A18, B2

Normal Ballast Factor

T5 PROStart®

High Efficiency

Performance Guide

Data based upon SYLVANIA PENTRON® lamps shown. QUICKTRONIC® ballasts are also compatible with other lamp manufacturers equivalent lamp types that meet ANSI specifications.

Specifications⁴

Starting Method: Programmed

Rapid Start

Ballast Factor: 1.00 (see table)

Circuit Type: Series

Lamp Frequency: >42 kHz

Lamp CCF: Less than 1.6

Starting Temp: -20°F (-29°C)⁵

Input Frequency: 50/60 Hz

Low THD: <10%

Power Factor: >98%

Voltage Range: ±10% of 120-277V
rated line (108-305V)

UL Type CC rated

UL Listed Class P, Type 1, Outdoor

CSA Certified

70°C Max Case Temperature

FCC 47CFR Part 18 Non-Consumer

Class A Sound Rating

ANSI C62.41 Cat. A Transient Protection

QUICKSENSE Dynamic End-of-

Lamp-Life Sensing

Remote Mounting (Max. wire length
from ballast case to lampholder):

up to 18 feet. Remote red leads up

to 18 feet. Keep blue leads <10 feet.

RoHS Compliant⁶⁴ Data based on PENTRON 28W lamp
types for primary ballast application.⁵ Operation below 50°F (10°C) may affect light
output or lamp operation – see
“Low Temp. Starting” definition.⁶ Complies with European Union Restriction of
Hazardous Substances Directive.

System Life / Warranty

QUICKTRONIC products are covered by the QUICK 60+® warranty, a comprehensive lamp and ballast system warranty. For additional details, refer to the QUICK 60+ warranty bulletin.

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

Specifications subject to change without notice.

QHE T5 PSN

©2013 OSRAM SYLVANIA

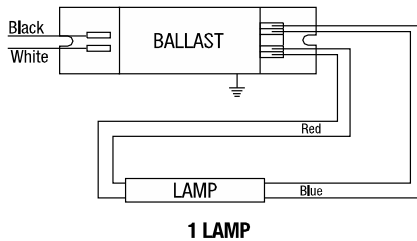
High Efficiency Type CC & Universal Voltage (120-277V)



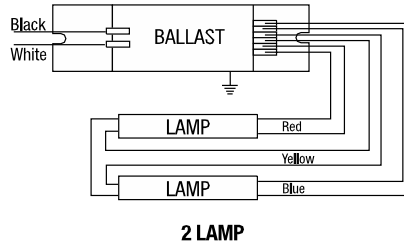
| Item Number | OSRAM SYLVANIA Description | Input Current (AMPS) | Lamp ¹ Type | Rated ¹ Lumens (lm) | No. of Lamps | Ballast ¹ Factor (BF) | System ¹ Lumens | Mean ¹ Lumens | Input ¹ Power (W) | | System ³ Efficacy (lm/W) | BEF ² |
|----------------------|--|----------------------|------------------------|--------------------------------|--------------|----------------------------------|----------------------------|--------------------------|------------------------------|----|-------------------------------------|------------------|
| 51473 ☼ (51472) ☼ | QHE2x28T5/UNV PSN 20-pack (without leads) 10-pack (with leads) | 0.55/0.23 | FP28T5 | 2900 | 2 | 1.00 | 5800 | 5395 | 63 | 62 | 94 | 1.61 |
| | | 0.68/0.29 | FP35T5 | 3650 | 2 | 0.99 | 7225 | 6720 | 80 | 78 | 93 | 1.27 |
| | | 0.39/0.18 | FP21T5 | 2100 | 2 | 1.01 | 4240 | 3945 | 47 | 46 | 92 | 2.20 |
| | | 0.27/0.13 | FP14T5 | 1350 | 2 | 1.03 | 2780 | 2585 | 32 | 32 | 87 | 3.22 |
| | | 0.27/0.12 | FP28T5 | 2900 | 1 | 1.00 | 2900 | 2695 | 33 | 32 | 91 | 3.13 |
| | | 0.34/0.15 | FP35T5 | 3650 | 1 | 1.02 | 3725 | 3460 | 41 | 40 | 93 | 2.55 |
| | | 0.21/0.10 | FP21T5 | 2100 | 1 | 1.04 | 2185 | 2030 | 25 | 24 | 91 | 4.33 |
| | | 0.15/0.07 | FP14T5 | 1350 | 1 | 1.03 | 1390 | 1295 | 17 | 17 | 82 | 6.06 |

¹ At 35°C lamp ambient temperature.² Ballast Efficiency Factor (BEF) shown = (Ballast Factor x 100) divided by Input Power (Note: calculation based on lowest wattage value).³ System Efficacy calculation based on lowest input power value.

Ⓢ Preliminary specifications. Please contact OSRAM SYLVANIA for additional information.



1 LAMP



2 LAMP

Dimensions:

Model QHE2x28T5/UNV PSN enclosure size:

Overall: 14.17"L x 1.18"W x 0.87"H (360mm L x 30mm W x 22mm H)

Mounting: 13.74" (349mm)

Wiring:

51473: Push-in connectors

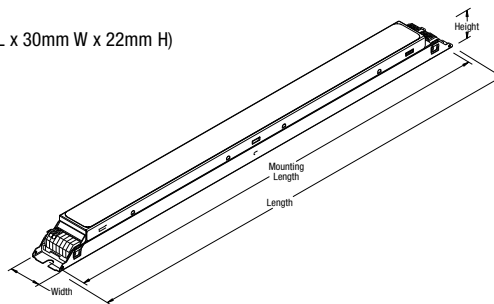
51472: Push-in connectors with leads

Use 18AWG solid copper wire only

Product Weight:

51473: 0.68 lb (0.30kg) each (approx.)

51472: 0.88 lb (0.40kg) each (approx.)



Item Number _____ 51473 QHE 2 x 28T5 / UNV PSN _____ Starting/Ballast Factor
QUICKTRONIC High Efficiency _____ Line Voltage (120-277V)
Number of Lamps (2) _____ Primary Lamp Wattage

www.sylvania.com

QUICKTRONIC® PROStart® T8 Parallel Operation Systems

Ballast for Types:

A7, A8, A14, B2, B5, B15, B17, B24,

C8, D2, D3, D5

Type CC, Lamp Striation Control

Parallel Operation

Normal Ballast Factor



High Efficiency Series

QHE T8 PSN

Lamp / Ballast Guide

Primary Systems

- 32W T8 - OCTRON® lamps
- 1-lamp QHE 1x32T8/UNV PSN-MC
- 2-lamp QHE 2x32T8/UNV PSN-MC
- 3-lamp QHE 3x32T8/UNV PSN-SC
- 4-lamp QHE 4x32T8/UNV PSN-SC

Also operates:

F030/SS, F028/SS, F025/SS, FB032, FB031, FB030/SS, FB029/SS, F025, F017, FB024 & FB016

F40T8 operation:

1 lamp on 2L ballast; 2 lamps on 3L ballast; 3 lamps on 4L ballast

SYLVANIA QUICKTRONIC High Efficiency PROStart programmed rapid start electronic T8 ballast family offers several major advantages:

- **High Efficiency:** Operate 32W linear and U-bend equivalent T8 lamps, saving >2 watts as compared to standard T8 programmed rapid start ballasts.
- **Parallel Circuitry:** keeps remaining lamps lit if one or more go out.
- **Lamp Striation Control (LSC):** T8 energy saving lamps should be operated above 60°F, but under certain conditions, the lamps may striate. LSC circuitry will minimize or eliminate this condition in most applications. (Please consult lamp manufacturers for additional details.)
- **Micro-Can Enclosure:** the 1 & 2-lamp models are in the micro-can enclosure. This allows the ballast to fit in very small profile fixtures where standard can T8 ballasts are too large.
- **NEMA Premium Electronic Ballast Program and RoHS compliant:** These ballasts feature lead-free solder, printed circuit boards and manufacturing. The NEMA Premium Electronic Ballast Program promotes the use of



Key System Features

- **High Efficiency Systems** over 90% efficient
- NEMA Premium Electronic Ballast Program compliant
- PROStart programmed rapid start
 - Extends lamp life
- **Parallel operation** (one lamp out, remaining lamps stay lit)
- Normal ballast factor: 0.88
- UL Type CC
- LSC (Lamp Striation Control)
- Universal input voltage (120-277V)
- Minimum starting temperature:
 - -20°F (-29°C) for T8 lamps
 - 60°F (16°C) for energy saving T8 lamps
- RoHS compliant
- Lead-free solder, printed circuit board and manufacturing process



Application Information

SYLVANIA QUICKTRONIC PROStart T8 ballasts

are ideally suited for:

- Any application where extended lamp life is required to reduce maintenance costs
- Occupancy sensors
- Energy retrofits
- Building control systems

System Information

SYLVANIA QUICKTRONIC High Efficiency (QHE) System advantages:

- Operate from 120V through 277V
 - Eliminates "wrong voltage" errors
 - Reduces inventory by 50%
- Utilize Programmed Rapid Start operation for
 - Longer lamp life
 - Over 100,000 switching cycles for occupancy sensor and building control systems
- Operate at >42 kHz to reduce potential interference with infrared control systems

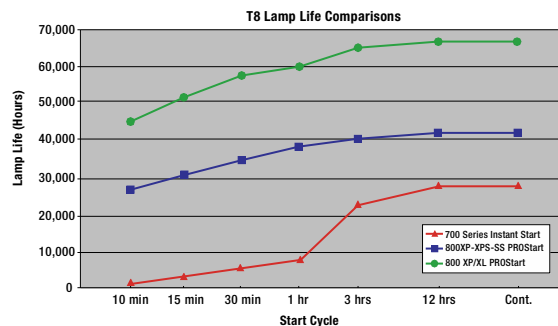
high efficiency T8 electronic ballasts by meeting or exceeding the Ballast Efficiency Factors, (BEF) established by the CEE, (Consortium for Energy Efficiency). For additional details on this program go to: www.cee1.org or www.nema.org

- **Longer lamp life:** PROStart technology extends lamp life compared to instant start models for long or short switching cycles, which is ideal for reducing maintenance costs or for saving energy

when using occupancy sensors.

- **UL Type CC compliant:** ballasts utilize a micro-controller based circuit to reduce arcing caused by loose connections or improper lamp pin-to-socket connections.
- **QUICK 60+® System Warranty:** Setting the standard for quality the system is covered by the first and most comprehensive warranty in the industry.

| Lamp & Ballast Type | Input Power (W) | Initial Lumens | Initial LPW | Mean System Lumens | Relative Mean Light Output | % Energy Savings |
|-------------------------------------|-----------------|----------------|-------------|--------------------|----------------------------|------------------|
| 3-F032/700 QTP3x32T8/UNV ISN-SC | 86 | 6865 | 80 | 6310 | 100% | 0% |
| 3-F032/800/XP® QHE3x32T8/UNV PSN-SC | 82 | 7920 | 97 | 7445 | 118% | 5% |
| 3-F028/SS QHE3x32T8/UNV PSN-SC | 72 | 7195 | 100 | 6760 | 107% | 16% |
| 3-F025/SS QHE3x32T8/UNV PSN-SC | 66 | 6535 | 99 | 6140 | 97% | 23% |



ECS413 - 6-13

Date Submitted: Sept. 2, 2015

SEE THE WORLD IN A NEW LIGHT



Distributor: C.E.D. Columbus, Oh 43207

Contractor: Vaughn Industries

Job Name: OSU NRDT Building L

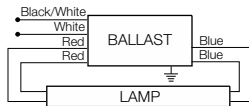
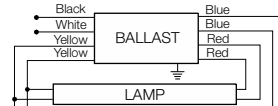
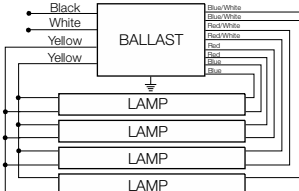
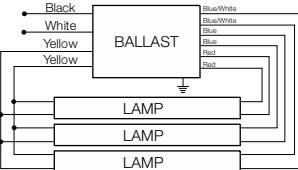
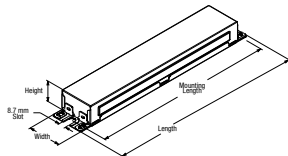
**Job: OSU NRDT
Ballast for Types:****High Efficiency Parallel Wired, Type CC, Lamp Striation Control (120-277V)**

| Item Number | OSRAM SYLVANIA Description | Input Current (AMPS) | Lamp Type | Rated Lumens (lm) | No. of Lamps | Ballast Factor (BF) | Initial System Lumens | Mean System Lumens | Input Power (W) 120V 277V | System Efficacy ¹ (lm/W) | BEF ² |
|--------------|---|----------------------|-----------|-------------------|--------------|---------------------|-----------------------|--------------------|---------------------------|-------------------------------------|------------------|
| 51397 51398 | QHE1x32T8/UNV PSN-MC Banded 10-Pack Pallet Pack | 0.26/0.11 | F032/700 | 2600 | 1 | 0.88 | 2290 | 2105 | 30 29 | 79 | 3.03 |
| | | 0.26/0.11 | F032XPS® | 3100 | 1 | 0.88 | 2730 | 2565 | 30 29 | 94 | 3.03 |
| | | 0.26/0.11 | F032XP/XL | 2950 | 1 | 0.88 | 2595 | 2440 | 30 29 | 90 | 3.03 |
| | | 0.24/0.10 | F030/SS | 2850 | 1 | 0.88 | 2510 | 2360 | 28 26 | 97 | 3.38 |
| | | 0.22/0.10 | F028/SS | 2725 | 1 | 0.88 | 2400 | 2255 | 26 25 | 96 | 3.52 |
| | | 0.20/0.09 | F025/SS | 2475 | 1 | 0.88 | 2180 | 2045 | 23 23 | 95 | 3.83 |
| 51408 51409 | QHE2x32T8/UNV PSN-MC Banded 10-Pack Pallet Pack | 0.48/0.21 | F032/700 | 2600 | 2 | 0.88 | 4575 | 4205 | 57 55 | 83 | 1.60 |
| | | 0.48/0.21 | F032XPS | 3100 | 2 | 0.88 | 5455 | 5130 | 57 55 | 99 | 1.60 |
| | | 0.48/0.21 | F032XP/XL | 2950 | 2 | 0.88 | 5190 | 4980 | 57 55 | 94 | 3.03 |
| | | 0.46/0.20 | F030/SS | 2850 | 2 | 0.88 | 5015 | 4715 | 55 53 | 95 | 1.66 |
| | | 0.43/0.18 | F028/SS | 2725 | 2 | 0.88 | 4795 | 4510 | 51 50 | 96 | 1.76 |
| | | 0.38/0.16 | F025/SS | 2475 | 2 | 0.88 | 4355 | 4095 | 45 44 | 99 | 2.00 |
| 51413 51414 | QHE3x32T8/UNV PSN-SC Banded 10-Pack Pallet Pack | 0.69/0.29 | F032/700 | 2600 | 3 | 0.88 | 6865 | 6310 | 83 82 | 84 | 1.07 |
| | | 0.69/0.29 | F032XPS | 3100 | 3 | 0.88 | 8185 | 7695 | 83 82 | 100 | 1.07 |
| | | 0.69/0.29 | F032XP/XL | 2950 | 3 | 0.88 | 7790 | 7320 | 83 82 | 95 | 3.03 |
| | | 0.68/0.28 | F030/SS | 2850 | 3 | 0.88 | 7525 | 7075 | 80 78 | 96 | 1.13 |
| | | 0.62/0.27 | F028/SS | 2725 | 3 | 0.88 | 7195 | 6760 | 73 72 | 100 | 1.22 |
| | | 0.56/0.24 | F025/SS | 2475 | 3 | 0.88 | 6535 | 6140 | 67 66 | 99 | 1.33 |
| 51418 51419 | QHE4x32T8/UNV PSN-SC Banded 10-Pack Pallet Pack | 0.93/0.39 | F032/700 | 2600 | 4 | 0.88 | 9150 | 8415 | 111 108 | 85 | 0.81 |
| | | 0.93/0.39 | F032XPS | 3100 | 4 | 0.88 | 10,910 | 10,255 | 111 108 | 101 | 0.81 |
| | | 0.93/0.39 | F032XP/XL | 2950 | 4 | 0.88 | 10,385 | 9760 | 111 108 | 94 | 3.03 |
| | | 0.89/0.38 | F030/SS | 2850 | 4 | 0.88 | 10,030 | 9430 | 105 103 | 97 | 0.85 |
| | | 0.83/0.35 | F028/SS | 2725 | 4 | 0.88 | 9590 | 9015 | 98 95 | 101 | 0.93 |
| | | 0.77/0.33 | F025/SS | 2475 | 4 | 0.88 | 8710 | 8190 | 91 89 | 98 | 0.99 |

Banded Pack contains 10 pieces each, (add "-B" to description). Pallet Pack contains 840 pieces, (add "-PAL" to description).

¹ System Efficacy is based on the lowest Input Power² BEF (Ballast Efficiency Factor) shown = (Ballast Factor x 100) divided by Input Power (Note: calculation based on lowest input power)

© Preliminary specifications. Please contact OSRAM SYLVANIA for additional information.

1 lamp**2 lamp**Note: For 1L application, individually cap both RED leads.
Insulate to 600 volts.**4 lamp**Note: For 3L application, individually cap both RED leads.
For 2L application, individually cap both RED and BLUE leads.
For 1L application, individually cap both RED, BLUE and Red/White leads.
For lamps approved for 1L operation, see QUICKSYSTEMS.
Insulate to 600 volts.**Installation Notes** Lamp wiring for 3 & 4 lamp QHE PSX "parallel" models vary from QTP series models. Be sure to wire ballasts per label/schematics shown on this bulletin.**3 lamp**Note: For 2L application, individually cap both RED leads.
For 1L operation, individually cap both RED and BLUE leads.
Insulate to 600 volts."SC" Overall: 9.5" L x 1.68" W x 1.18" H
"MC" Overall: 9.5" L x 1.30" W x 1.00" H
Mounting: 8.90"**Product Weight:**QHE1xPSN & QHE2xPSN: 0.66 lbs. each
QHE3xPSN & QHE4xPSN: 1.27 lbs. each**Wiring:**

Leads only (no connectors provided)

| | | | |
|-----------------------------|-------|-----------------------------|-------------------------|
| Item Number | 51408 | QHE 2 x 32T8 / UNV PSN - MC | Case Size |
| QUICKTRONIC High Efficiency | | | Starting/Ballast Factor |
| Number of Lamps | | | Line Voltage (120-277V) |
| | | | Primary Lamp Wattage |

Normal Ballast Factor**T8 PROStart®**
High Efficiency**Performance Guide**

Data based upon SYLVANIA OCTRON® lamps shown. QUICKTRONIC® QHE PROStart ballasts are also compatible with other lamp manufacturers equivalent lamp types that meet ANSI specifications.

QHE PROStart ballasts will operate F32 (and the SUPERSAVER® & U-Bend equivalent) T8 lamps. Complete performance data is available in the QUICKSYSTEMS section of the SYLVANIA Ballast Technology & Specification Guide.

Specifications

Data based on F32T8

Starting Method: Programmed Rapid Start

Ballast Factor: 0.88

Circuit Type: Parallel

Lamp Frequency: >42 kHz

Lamp CCF: Less than 1.7

Starting Temp:³

-20°F (-29°C) for OCTRON T8 lamps;

60°F (16°C) for SUPERSAVER® T8 lamps

Input Frequency: 50/60 Hz

Low THD: <10%

Power Factor: >98%

Voltage Range: ±10% of 120-277V rated line (108-305V)

UL Listed Class P, Type 1 Outdoor

UL Type CC Rated

Lamp Striation Control (LSC)

CSA Certified (where applicable)

70°C Max. Case Temperature

FCC 47 CFR Part 18 Non-Consumer

Class A Sound Rating

NEMA Premium Electronic Ballast

Program compliant

RoHS compliant⁴

ANSI C62.41 Cat. A Transient Protection

GFCI & emergency ballast compatible

Remote Mounting (Max wire length from ballast case to lampholder):

- 20 ft: full wattage T8s
- 10 ft: energy saving T8s
- 4 ft: 25W energy saving T8s

³ Operation below 50°F (10°C) may affect light output or lamp operation – see "Low Temp. Starting" definition.⁴ Complies with European Union Restriction of Hazardous Substances Directive.**System Life / Warranty**

QUICKTRONIC products are covered by the QUICK 60+® warranty, a comprehensive lamp and ballast system warranty. For additional details, refer to the QUICK 60+ warranty bulletin.

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

Specifications subject to change without notice.

SYLVANIA, the system solution, OCTRON, XP, XPS, SUPERSAVER, PROStart, and QUICK 60+ are registered trademarks of OSRAM SYLVANIA Inc.
SEE THE WORLD IN A NEW LIGHT is a trademark of OSRAM SYLVANIA Inc. QUICKTRONIC is a registered trademark of OSRAM GmbH.

the system solution®



Contractor: Vaughn Industries

Job Name: OSU NRD Building L

Job: OSU - NRD

Ballast for Types:

A45, A74, A75, K1

www.sylvania.com

QUICKTRONIC® PROStart® CF Universal Dual Entry Systems



**<10% THD Electronic T4 Compact Fluorescent
Programmed Rapid Start Systems
Normal Ballast Factor**

Professional Series

CF DUAL ENTRY

Lamp / Ballast Guide

Primary Systems

13W T4 – DULUX D/E, T/E lamps
1-lamp or 2-lamp QTP1/2x13CF/UNV

18W T4 – DULUX D/E, T/E lamps
1-lamp or 2-lamp QTP1/2x18CF/UNV

26W T4 – DULUX D/E, T/E lamps
1-lamp QTP2x26CF/UNV
2-lamp QTP2x26CF/UNV

32 or 42W T4 – DULUX T/E lamps
1-lamp QTP2x26CF/UNV
2-lamp QTP2x26/32/42CF/UNV

57W or 70W T4 – DULUX T/E lamp
1-lamp QTP2x26/32/42CF/UNV

For other lamp types, refer to the Performance Guide section on the next page.

SYLVANIA QUICKTRONIC PROStart CF ballasts operate DULUX® D/E and T/E lamps with full lumen output and optimal system performance.

QUICKTRONIC CF ballasts feature one mounting style of low profile, lightweight enclosures to provide simple assembly for any fixture application.

Universal input voltage (120–277V) and multi-lamp multi-watt capability allow for fewer SKUs to support a wide range of applications.

Dual entry, color coded connectors located on the side and bottom allow for increased mounting flexibility with one ballast and also increased ease of installation.

These ballasts are RoHS compliant and feature lead-free solder, printed circuit boards and manufacturing process.



Setting the standard for quality, QUICKTRONIC PROStart CF Systems are covered by our QUICK 60+ warranty, the first and most comprehensive system warranty in the industry.



Key System Features

- Universal Input Voltage (120–277V)
- Dual entry, color coded connectors
- PROStart Ballasts program rapid start
- QUICKSENSE ballast technology
- High Power Factor
- Low Harmonic Distortion
- Small size and lightweight
- Metal enclosure
- UL, CSA, FCC
- QUICK 60+ warranty
- RoHS compliant
- Lead-free solder, printed circuit board and manufacturing process



Application Information

SYLVANIA QUICKTRONIC CF ballasts

are ideally suited for:

- Recessed downlights
- Wall sconces
- Ceiling fixtures
- Commercial
- Retail, hospitality, institutional

System Information

PROStart programmed rapid start is the optimum starting method, providing up to 100,000 switching cycles for use on occupancy sensors and building control systems.

QUICKSENSE® end-of-lamp-life sensing technology helps to protect against overheated bases and sockets, as well as cracking of the glass wall. QUICKSENSE ballast technology uses dynamic end-of-lamp-life sensing to avoid false shutdowns caused by some static sensing methods and will auto-reset when the end-of-life lamps are replaced with new ones.

QUICKTRONIC CF ballasts come with wire-trap connectors for quick and easy installation.



Small Metal Case

Dual Entry Metal with and without PEM Studs
Side & Bottom Mount Capabilities

QTP2x26/32/42CF/UNV Metal Case Models



Dual Entry Metal with and without PEM Studs
Side & Bottom Mount Capabilities

ECS433 - 6-13

SEE THE WORLD IN A NEW LIGHT



Date Submitted: Sept. 2, 2015

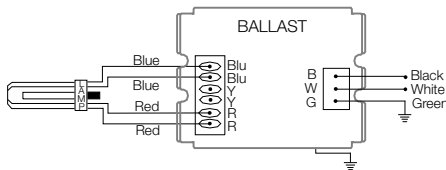
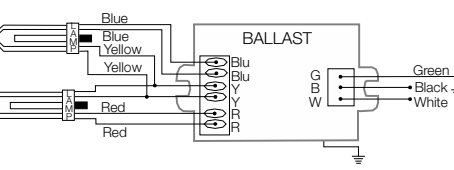
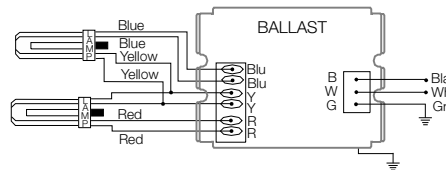
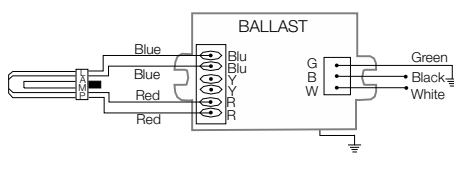
Distributor: C.E.D. Columbus, Oh 43207

Contractor: Vaughn Industries

Job Name: OSU NRDT Building L

**Job: OSU - NRDT
Ballast for Types:****Universal Voltage (120-277V)**

| Item Number | Description ³ | Input Current (AMPS) | Lamp ¹ Type | Rated ² Lumens (lm) | No. of Lamps | Ballast Factor (BF) | System Lumens | Mean Lumens | Input Power (Watts) | System Efficacy (lm/W) | BEF ⁴ |
|-------------|--|-------------------------------------|------------------------|--------------------------------|--------------|---------------------|---------------|-------------|---------------------|------------------------|------------------|
| 51818 | QTP1/2x13CF/UNV DM | 0.25/0.11 | 13W DD/E,T/E | 900 | 1 | 1.00 | 900 | 775 | 16 | 56 | 6.25 |
| | | | 13W DD/E,T/E | 900 | 2 | 1.00 | 1800 | 1550 | 29 | 62 | 3.45 |
| 51823 | QTP1/2x18CF/UNV DM | 0.32/0.14 | 18W DD/E,T/E | 1200 | 1 | 1.00 | 1200 | 1030 | 20 | 60 | 5.00 |
| | | | 18W DD/E,T/E | 1200 | 2 | 1.00 | 2400 | 2065 | 38 | 63 | 2.63 |
| 51833 | QTP2x26CF/UNV DM QTP2x26CF/UNV DM PEM | 0.50/0.22 | 26W DD/E,T/E | 1800 | 1 | 1.00 | 1800 | 1550 | 28 | 64 | 3.57 |
| | | | 26W DD/E,T/E | 1800 | 2 | 1.00 | 3600 | 3095 | 54 | 67 | 1.85 |
| 51898 | | | 32W DT/E | 2400 | 1 | 0.98 | 2350 | 2025 | 35 | 67 | 2.80 |
| | | | 42W DT/E | 3200 | 1 | 0.96 | 3070 | 2640 | 45 | 68 | 2.13 |
| 51843 | QTP2x26/32/42CF/UNV DM QTP2x26/32/42CF/UNV DM PEM | 0.90/0.40 0.53/0.23 0.57/0.25 | 26W DT/E | 1800 | 2 | 1.02 | 3670 | 3155 | 54 | 68 | 1.89 |
| | | | 32W DT/E | 2400 | 2 | 0.96 | 4610 | 3965 | 69 | 67 | 1.39 |
| | | | 42W DT/E | 3200 | 2 | 0.95 | 6080 | 5230 | 94 | 65 | 1.01 |
| | | | 57W DT/E | 4300 | 1 | 1.00 | 4300 | 3700 | 62 | 69 | 1.61 |
| | | | 70W DT/E | 5200 | 1 | 0.92 | 4780 | 4115 | 71 | 67 | 1.30 |

¹ Also compatible with other manufacturers' equivalent 4 pin lamp types that meet ANSI specifications.² Rated lamp lumens and performance data based on DULUX T/E series 4 pin lamps.³ Data is for all models within the brackets. The maximum input current is shown for maximum input power.⁴ Ballast Efficiency Factor (BEF) shown = (Ballast Factor x 100) divided by Input Power (Note: calculation based on lowest wattage value).**Metal Case (51843 & 51863)****Small Metal Case (51818, 51823, 51833 & 51898)****Dimensions:**

Metal case (51843 & 51863): 4.95" L x 2.93" W x 1.35" H

Small Metal case (51818, 51823, 51833 & 51898): 4.95" L x 2.37" W x 1.10" H

Mounting: Utilize flanges (4.57" L), or (2) #8-32 x 0.375" Long

PEM studs on 2" centers

Packaging:

Quantity: 20 pieces per case

16 pieces per case for Item Number 51898

18 pieces per case for Item Number 51863

Weight: 0.40 lbs ea. (Small Metal case)

0.90 lbs ea. (Metal case)

Wiring:

Push-in connectors (no leads provided)

Use 18AWG solid copper wire only

Item Number **51843** QTP 2 x 26/32/42 CF / UNV DM Case Type (Dual Mount)
QUICKTRONIC PROFESSIONAL Line Voltage (120-277V)
Number of Lamps (1, 2) Primary Lamp Wattage

Normal Ballast Factor**CF** PROStart®**Professional Series****Performance Guide**

QTP 2x26CF/UNV models also operates:

1-lamp: CF28/2D, CF38/2D, FPC40/T5, FT40DL

1- or 2-lamp: FPC22/T5, FT24DL, FT24DF

2-lamp: CF13DSE, FT18DL, FT18DF, CF21/2D

QTP 2x26/32/42CF/UNV models also operates:

2-lamp: FT36DL, FT40DL, FPC40/T5

1+1: FPC22/T5 / FPC40/T5

Specifications**Starting Method:** Programmed Rapid Start**Circuit Type:** Series**Lamp Frequency:** >42 kHz**Lamp CCF:** Less than 1.7**Starting Temp:** -5°F/-20°C min.⁵**Input Frequency:** 50/60 Hz**Low THD:** <10%**Power Factor:** >98%**Voltage Range:** ±10% of 120-277V
rated line (108-305V)

UL Listed Class P, Type 1 Outdoor

CSA or C/UL Certified

75°C Max Case Temp. (5 yr. warranty)

80°C Max Case Temp. (3 yr. warranty)

FCC 47CFR Part 18 Non-Consumer

Sound Rated A

RoHS Compliant⁶

ANSI C62.41 Cat. A Transient Protection

Dynamic End-of-Lamp-Life Sensing

Remote Mounting (Max. wire length from ballast case to lampholder): up to 15 feet for one lamp and up to 6 feet for two lamp.

⁵ Operation below 50°F (10°C) may affect light output or lamp operation – see Low Temperature Starting definition.⁶ Complies with European Union Restriction of Hazardous Substances Directive (Directive EC 2002/95)**System Life / Warranty**QUICKTRONIC products are covered by the QUICK 60+[®] warranty, a comprehensive lamp and ballast system warranty. For additional details, refer to the QUICK 60+ warranty bulletin.

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

Specifications subject to change without notice.

©2013 OSRAM SYLVANIA

SYLVANIA, the system solution, DULUX, QUICKSENSE, PROStart, and QUICK 60+ are registered trademarks of OSRAM SYLVANIA Inc. SEE THE WORLD IN A NEW LIGHT is a trademark of OSRAM SYLVANIA Inc. QUICKTRONIC is a registered trademark of OSRAM GmbH.

Date Submitted: Sept. 2, 2015

Distributor: C.E.D. Columbus, Oh 43207

LIMBURG Collection

Type: **A75**
LIMBURG Product #: **L5287**
Project: **OSU NRDT**
Voltage: **120V**

Diffuse pendant luminaires for halogen lamps

Material: Housing, canopy, and rod suspension constructed of aluminum with a painted silver RAL 9006 (L5287) or polished stainless steel (L5483) finish.

Glass: Hand blown, three-ply opal glass with satin matte finish and screw neck. Glass is open on bottom. Minimum 75% transmission. Luminaire efficiency: 89.7%.

Electrical: One (1) 26 W, 32 W, or 42 W triple 4-pin GX24q-4 base compact fluorescent lamp (by others). GX24q-4 4-pin socket and electronic ballast, with universal voltage, 120 V through 277 V.

Installation: Mounts directly to standard 4" octagonal wiring box.

U.L. listed, suitable for damp locations.

Please note: Rod suspension ϕ .39".

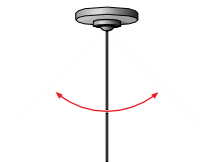
Weight: 6.6 lbs.

L = overall length of luminaire

Mounting options:

588 45° swivel canopy

Shallow 45° swivel canopy is designed for stem mounted pendants and is ideal for use on sloped ceilings and in seismic areas.



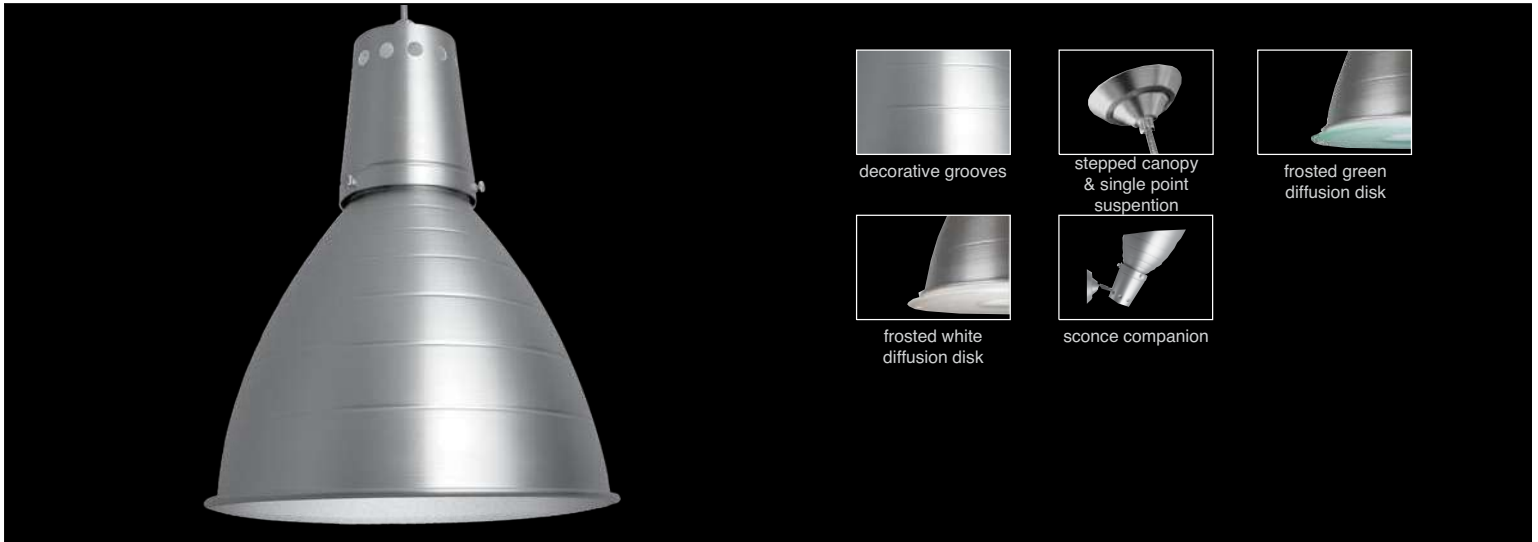
| Silver | Polished S/steel | Lamp | Lumen | A | B | L |
|---------------|---------------------|---------------------|-------|-------------------------------|--------------------------------|----|
| L 5287 | L 5483 | 1 42 W CF triple-4p | 3200 | 8 ⁵ / ₈ | 15 ¹ / ₂ | 72 |

Contractor: Vaughn Industries

Job Name: OSU NRD T DORMS: F, I, L

Groove™ E
FLUORESCENT

OSU NRD T DORM: F
TYPE: A73
FGR E 1 32TT S 120 C144 NA

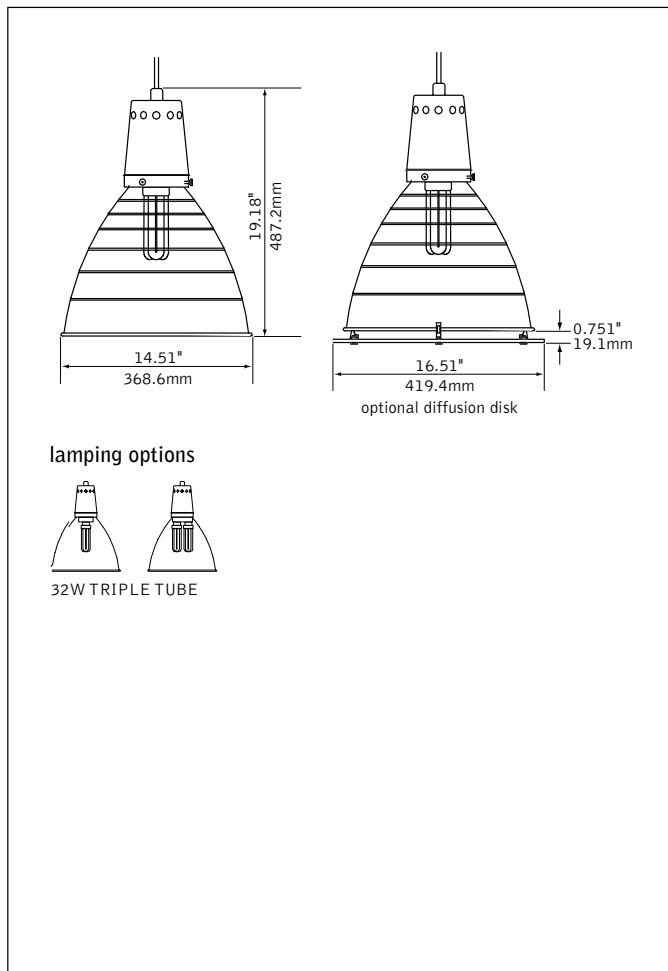


decorative grooves

stepped canopy
& single point
suspensionfrosted green
diffusion diskfrosted white
diffusion disk

sconce companion

DIMENSIONAL DATA



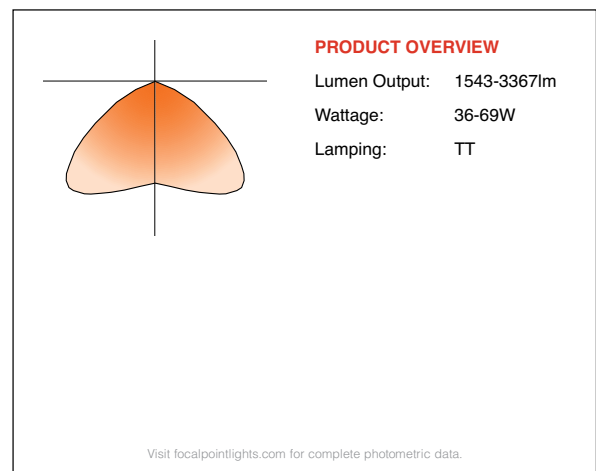
FEATURES

Pendant mount decorative compact fluorescent luminaire.

Housing, reflector and canopy are spun with high quality aluminum.

Ideally suited for retail, hospitality, lobbies, corridors, open ceiling areas and other specialty applications.

PERFORMANCE



fixture: Contractor: Vaughn Industries
project:

Job Name: OSU NRDT DORMS: F, I, L

OSU NRDT DORM: F
TYPE: A73

SPECIFICATIONS

Construction

Housing, reflector and canopy are each one-piece precision-spun 14Ga. aluminum.
Housing: 7.62"H x 5.25" Dia. Reflector: 12.35"H x 14.51" Dia. aperture with grooved cylindrical pattern. Canopy: 1.32"H x 4.52" Dia. stepped design with #8-32 recessed set screw. Weight: 10 lbs.

Optic

14Ga. anodized aluminum reflector with diffuse satin matte surface for lamp image reduction. Optional frosted green or white acrylic diffusion disk with polished edges are retained by aluminum fasteners and (3) #8-32 thumb screws.

Electrical

Luminaires are pre-wired for single circuit with thermally protected Class "P" electronic ballast. Factory installed decorative metal braided power cord is included. White SJT power cord supplied for 347V. 144" cord is provided on all luminaires and may be cut to length in field. One or two lamp triple tube compact fluorescent, 4-pin, 32W (GX24q-4).

Labels

UL listed.

Finish

Luminaire housing, reflector and canopy are clear anodized with polished satin finish. Reflector interior has matte diffuse finish.

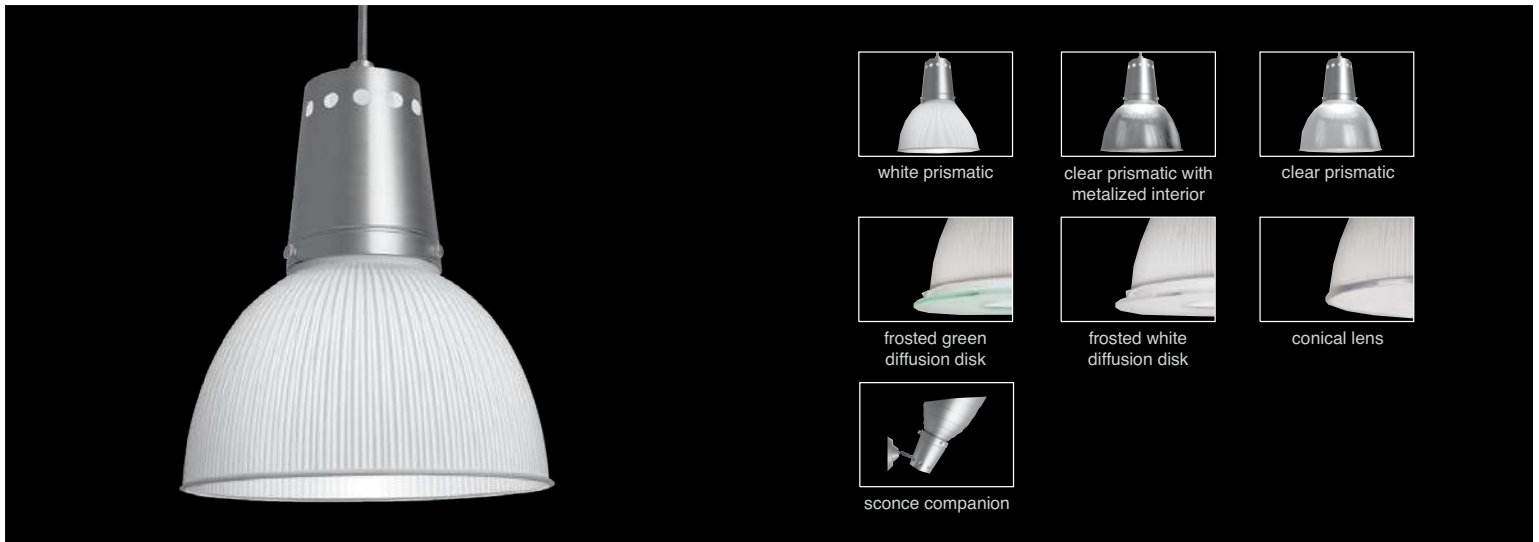
| | | |
|------------------------------|------|-------------|
| ORDERING | | |
| Luminaire Series | | FGR |
| Groove | FGR | |
| Profile | | E |
| Profile | E | |
| Lamp Quantity | | |
| One Lamp | 1 | |
| Two Lamp | 2 | |
| Lamp Type | | 32TT |
| 32w. Triple Tube, GX24q-3 | 32TT | |
| Ballast | | S |
| Electronic <15% THD | S | |
| Voltage | | |
| 120 Volt | 120 | |
| 277 Volt | 277 | |
| 347 Volt | 347 | |
| Suspension | | C144 |
| Cable, Straight Feed | C144 | |
| (144" cable, cut in field) | | |
| Factory Options | | |
| Frosted Green Diffusion Disk | GD | |
| Frosted White Diffusion Disk | WD | |
| Include 3000K Lamp* | L830 | |
| Include 3500K Lamp* | L835 | |
| Include 4100K Lamp* | L841 | |
| Finish | | NA |
| Natural Anodized | NA | |

(Contact factory for paint color options)

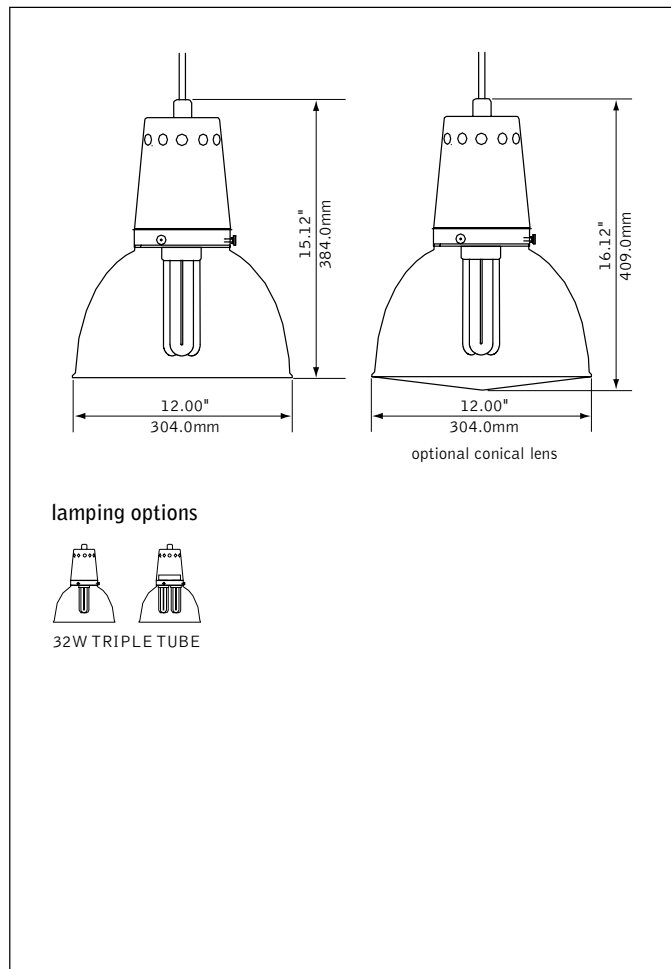
Contractor: Vaughn Industries

Groove™ G
FLUORESCENT

OSU - NRDT
DORMS: F, I, L
TYPE: A74
FGR G W 1 32TT S 120 C144 NA



DIMENSIONAL DATA



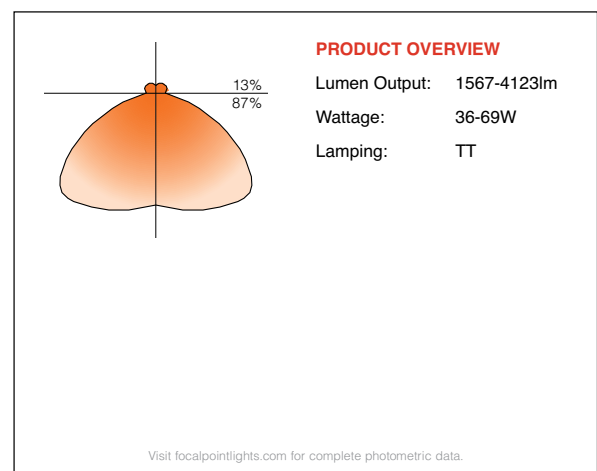
FEATURES

Pendant mount decorative compact fluorescent luminaire.

Housing and canopy are high quality spun aluminum with acrylic refractor.

Ideally suited for retail, hospitality, lobbies, corridors, open ceiling areas and other specialty applications.

PERFORMANCE



fixture:

Contractor: Vaughn Industries
project:

Job Name: OSU NRDT Dorms: F, I, L

OSU NRDT - Dorms: F, I, L Fixture Type A74

SPECIFICATIONS

Construction

Housing and canopy are each one-piece precision-spun 14Ga. aluminum. Housing: 7.62"H x 12" Dia. Canopy: 1.32"H x 4.52" Dia. stepped design with #8-32 recessed set screw. Weight: 10 lbs.

Optic

Molded acrylic prismatic refractor: 7.47"H x 12.00"Dia. aperture with fluted pattern. Optional frosted green or white acrylic diffusion disk with polished edges is retained by aluminum fasteners and (3) #8-32 thumb screws. Optional conical lens with stainless steel clamp band.

Electrical

Luminaires are pre-wired for single circuit with thermally protected Class "P" electronic ballast. Factory installed decorative metal braided power cord is included. White SJT power cord supplied for 347V. 144" cord is provided on all luminaires and may be cut to length in field. One or two lamp triple tube compact fluorescent, 4-pin, 32W (GX24q-3).

Labels

UL listed.

Finish

Luminaire housing and canopy are clear anodized with polished satin finish.

ORDERING

Luminaire Series

Groove FGR

FGR

Profile

Profile G

G

Shielding

Clear Prismatic Refractor C

Clear Prismatic Refractor

with Metallized Interior M

White Prismatic Refractor W

(Contact factory for additional reflector colors)

Lamp Quantity

One Lamp 1

Two Lamp 2

Lamp Type

32w. Triple Tube, GX24q-3 32TT

32TT

Ballast

Electronic <15% THD S

S

Voltage

120 Volt 120

277 Volt 277

347 Volt 347

Suspension

Cable, Straight Feed C144

C144

(144" cable, cut in field)

Factory Options

Frosted Green Diffusion Disk GD

Frosted White Diffusion Disk WD

Conical Lens CL

Include 3000K Lamp* L830

Include 3500K Lamp* L835

Include 4100K Lamp* L841

Finish

Natural Anodized NA

NA

(Contact factory for paint color options)

This foregoing document was electronically filed with the Public Utilities

Commission of Ohio Docketing Information System on

10/9/2018 11:59:00 AM

in

Case No(s). 18-0812-EL-EEC

Summary: Application Ohio State University and Ohio Power Company for approval of a special arrangement agreement with a mercantile customer electronically filed by Mr. Steven T Nourse on behalf of Ohio Power Company