Ohio | Public Utilities Commission

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

Case No.: 13-0330-EL-EEC

Mercantile Customer: AT&T Services Inc.

Electric Utility: The Cleveland Electric Illuminating Company

Program Title or Description: Energy Efficiency Upgrade

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: Mercantile Customer Information

Name:AT&T Services Inc.

Principal address:7537 Oxford Circle, Dublin, CA 94568

Address of facility for which this energy efficiency program applies:700 Huron Rd, Cleveland OH, 44115

Name and telephone number for responses to questions:Donna Day (925) 551-8123

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

- ☐ The customer uses more than seven hundred thousand kilowatt hours per year at the above facility. (Please attach documentation.)
- ☒ The customer is part of a national account involving multiple facilities in one or more states. (Please attach documentation.)

Section 2: Application Information

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

- ☐ Individually, without electric utility participation.
- ☒ Jointly with the electric utility.

B) The electric utility is: The Cleveland Electric Illuminating Company

C) The customer is offering to commit (check any that apply):

- ☐ Energy savings from the customer's 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 capacity savings 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 (check those that apply):

☒ 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)). **If Checked, Please see Exhibit 1 and Exhibit 2**

☐ 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):

_____.

☐ Behavioral or operational improvement.

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

1) If you checked the box indicating that the 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: 341308 kWh

2) If you checked the box indicating that the customer 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 any less efficient new equipment that was rejected in favor of the more efficient new equipment. **Please see Exhibit 1 if applicable**

3) If you checked the box indicating that the 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:

Annual savings: _____ kWh

Please describe the less efficient new equipment that was rejected in favor of the more efficient new equipment. **Please see Exhibit 1 if applicable**

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 (check the one 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?

12/31/12

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

48 kW

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 energy efficiency 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 $13,160. (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.)

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 the customer's ongoing efficiency program. (Attach documentation that establishes the ongoing nature of the program.) In order to continue the exemption beyond the initial 24 month period, the customer 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: **See Exhibit 3** (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 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 **See Exhibit 3**

The utility's program costs were **See Exhibit 3**

The utility's incentive costs/rebate costs were **See Exhibit 3**

Section 7: Additional Information

Please attach the following supporting documentation to this application:

- Narrative description of the program including, but not limited to, make, model, and year of any installed and replaced equipment.
- A copy of the formal declaration or agreement that commits the program or measure to the electric utility, including:
  1) any confidentiality requirements associated with the agreement;
  2) a description of any consequences of noncompliance with the terms of the commitment;
  3) a description of coordination requirements between the customer and the electric utility with regard to peak demand reduction;
  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,
  5) a commitment by the customer to provide an annual report on your energy savings and electric utility peak-demand reductions achieved.
- 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.

Ohio | Public Utilities Commission

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

Case No.: 13 - 0330 **-EL-EEC**

State of Ohio :

Donna Day, Affiant, being duly sworn according to law, deposes and says that:

1. I am the duly authorized representative of:

   AT&T Services, Inc.
   [insert customer or EDU company name and any applicable name(s) doing business as]

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.

Donna Day Sr Energy Manager
Signature of Affiant & Title
Donna Sue Day

Sworn and subscribed before me this _____ day of _____, _____Month/Year

_____ _____
Signature of official administering oath Print Name and Title

My commission expires on _____

NEHA DHIR
COMM. # 1953895
NOTARY PUBLIC • CALIFORNIA
ALAMEDA COUNTY
MY COMM. EXP. September 25, 2015
TUP1 TUP1

State of California
County of Alameda

Subscribed and sworn (or affirmed) before me on this 27 day of Oct 2011
by Donna Sue Day
proved to me on the basis of satisfactory evidence to be the person(s) who appeared before me.

Signature Name

Exhibit 1

Customer Legal Entity Name: AT&T Services Inc.

Site Address: AT&T Services Inc.
Principal Address: 700 Huron Rd

Project No.	Project Name	Narrative description of your program including, but not limited to, make, model, and year of any installed and replaced equipment:	Description of methodologies, protocols and practices used in measuring and verifying project results	What date would you have replaced your equipment if you had not replaced it early? Also, please explain briefly how you determined this future replacement date.	Please describe the less efficient new equipment that you rejected in favor of the more efficient new equipment.
1	AT&T #L23148	AT&T conducted a lighting retrofit of linear flourescent fixtures.	Lighting Worksheet was used to calculate savings between existing and proposed equipment. See attached worksheet (ATT_CEI (13-0330) - Lighting Project Cash Rebate Form).	The estimated remaining useful service life of the fixtures was approximately 1 year.	N/A

Exhibit 2

Customer Legal Entity Name: AT&T Services Inc.
Site Address: AT&T Services Inc.
Principal Address: 700 Huron Rd

	Unadjusted Usage, kwh (A)	Weather Adjusted Usage, kwh (B)	Weather Adjusted Usage with Energy Efficiency Addbacks, kwh (c) *Note 1*
2011	12,579,792	12,579,792	12,579,792
Average	**12,579,792**	**12,579,792**	**12,579,792**

Project Number	Project Name	In-Service Date	Project Cost $	50% of Project Cost $	KWh Saved/Year (D) counting towards utility compliance	KWh Saved/Year (E) eligible for incentive	Utility Peak Demand Reduction Contribution, KW (F)	Prescriptive Rebate Amount (G) $	Eligible Rebate Amount (H) $ *Note 2*	Commitment Payment $
1	AT&T #L23148	12/31/2012	$157,618	$78,809	341,308	341,308	48	$17,547	$13,160	
					-	-	-			
					-	-	-			
					-	-	-			
					-	-	-			
					-	-	-			
					-	-	-			
		Total	**$157,618**		**341,308**	**341,308**	**48**	**$17,547**	**$13,160**	**$0**

Docket No. 13-0330
Site: 700 Huron Rd

Notes
(1) Customer's usage is adjusted to account for the effects of the energy efficiency programs included in this application. When applicable, such adjustments are prorated to the in-service date to account for partial year savings.

(2) The eligible rebate amount is based upon 75% of the rebates offered by the FirstEnergy Commercial and Industrial Energy Efficiency programs or 75% of $0.08/kWh for custom programs for all energy savings eligible for a cash rebate as defined in the PUCO order in Case NO.10-834-EL-EEC dated 9/15/2010, not to exceed the lesser of 50% of the project cost or $250,000 per project. The rebate also cannot exceed $500,000 per customer per year, per utility service territory.

Exhibit 3 Utility Cost Test

UCT = Utility Avoided Costs / Utility Costs

Project	Total Annual Savings, MWh (A)	Utility Avoided Cost $/MWh (B)	Utility Avoided Cost $ (C)	Utility Cost $ (D)	Cash Rebate $ (E)	Administrator Variable Fee $ (F)	Total Utility Cost $ (G)	UCT (H)
1	341	$ 308	$ 105,218	$ 4,050	$13,160		$ 17,210	**6.1**
Total	**341**	**$ 308**	**105,218**	**4,050**	**$13,160**	**$0**	**17,210**	**6.1**

Notes

(A) From Exhibit 2, = kWh saved / 1000

(B) This value represents avoided energy costs (wholesale energy prices) from the Department of Energy, Energy Information Administration's 2009 Annual Energy Outlook (AEO) low oil prices case. The AEO represents a national average energy price, so for a better representation of the energy price that Ohio customers would see, a Cinergy Hub equivalent price was derived by applying a ratio based on three years of historic national average and Cinergy Hub prices.This value is consistent with avoided cost assumptions used in EE&PDR Program Portfolio and Initial Benchmark Report, filed Dec 15, 2009 (See Section 8.1, paragraph a).

(C) = (A) * (B)

(D) Represents the utility's costs incurred for self-directed mercantile applications for applications filed and applications in progress. Includes incremental costs of legal fees, fixed administrative expenses, etc.

(E) This is the amount of the cash rebate paid to the customer for this project.

(F) Based on approximate Administrator's variable compensation for purposes of calculating the UCT, actual compensation may be less.

(G) = (D) + (E) + (F)

(H) =(C) / (G)

AT&T Services Inc. ~ AT&T Services Inc.
Docket No. 13-0330

Site: 700 Huron Rd

Lighting Inventory Form

Applicant Name:

Facility Name:

Date:

Lighting Zone number: Lighting Zone 2

Instructions: Please use one line for each fixture type in a room or area

For existing or proposed control, choose OCC for Occupancy Sensor, DAY for photosensor, HI-Lo for 3-level sensors or NONE for none. Controls in spaces where existing controls exist do not qualify.

The total of Column S, the quantities of CFLs and exit signs in Column M, and the quantities of sensors in Column R, will be used to calculate your incentive on the NonStandard Lighting form.

	PROJECT BASIC INFORMATION								PRE-INSTALLATION (RETROFIT)					BASELINE (NEW CONSTRUCTION)				POST-INSTALLATION							Energy Calculations									
Line Item	New Construction or Retrofit	Building Address	Floor	Area Description	Space Description	Interior or Exterior Fixture	Predominant Space Type	Exterior Lighting Description (Exterior Lighting Only)	Area Cooling	Pre Fixture Qty	Pre Fixture Code	Pre Watts / Fixture (W)	Pre kW / Space (kW)	Existing Control (drop down)	Existing Sensor Quantity (When applicable)	Units e.g. Square Feet (ft²) If multiple fixture types are used, please only enter the total once/instance/qty once per space.	Lighting Power Density (Watt/ft)	Baseline kW Space (kW)	Post Fixture Qty	Post Fixture Code	Post Watts/ Fixture (W)	Post kW / Space (kW)	Are Occupancy Sensors Required by Code?	Proposed Control (drop down)	Proposed Sensor Quantity (When applicable)	Change in Connected Load (kW)	Applicant Coincidence Factor (CF) Estimate	Coincidence Factor	Interactive Factor (Interior)	Interactive Factor (energy)	Pre Controls Factor	Post Controls Factor	Demand Savings (kW)	Applicant Equivalent Full Load Hours (EFLH) Estimate	Prescribed Equivalent Full Load Hours	Annual kWh Saved	Post Fixture Cut Sheet Number
e.g.	Retrofit	400 North Street	2	Office	Other	Interior	Office - Small		Cooled Space	3	F48EL	112	0.34	NONE					3	CFT5D1-4H	56	0.17	No	OCC	3	0.17	84%	84%	24%	12%	0%	20%	0.19	2,808	3,435	646	1
e.g.	New Construction	Example	1	Restaurant	Conference, Meeting or Training Room	Exterior	Retail - Small	Building facadine (linear ft based)	Cooled Space	600	Linear ft	3.6	1.68	DAY					5	Example Cut Sheet 2	25	0.13	Yes	DAY	5	2.75	88%	88%	24%	12%	0%	0%	2.08	8,760	3,065	6,017	14
1	Retrofit	3100 Navarre Ave		Office	Other	Interior	Office - Large		Cooled Space	172	FU16E	42	7.48	NONE					172	FU31L-R	27	4.67	No	OCC	39	2.77		84%	24%	12%	0%	20%	3.12	8,760	8,765	40,906	
2	Retrofit	3100 Navarre Ave		Office	Other	Interior	Office - Large		Cooled Space	129	F48SE	172	22.18	NONE					129	F40SDE1L	96	12.38	No	OCC	31	9.80		84%	24%	12%	0%	20%	11.04	8,760	8,760	122,640	
3	Retrofit	3100 Navarre Ave		Office	Other	Interior	Office - Large		Cooled Space	28	F40SE	130	3.64	NONE					28	F40SDE1L	72	1.87	No	OCC	7	1.68		84%	24%	12%	0%	20%	1.87	3,120	3,120	7,772	
4	Retrofit	3100 Navarre Ave		Office	Other	Interior	Office - Large		Cooled Space	827	F42SE	86	71.12	NONE					827	F42SDE1L	48	39.70	No	OCC	117	31.42		84%	24%	12%	0%	20%	35.37	3,120	3,120	151,429	
5	Retrofit	3100 Navarre Ave		Office	Other	Interior	Office - Large		Cooled Space	77	F41SE	95	7.31	NONE					77	F41SDE1L	36	2.69	No	OCC	17	4.62		84%	24%	12%	0%	20%	3.68	3,120	3,120	9,568	
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Lighting Form

PROJECT BASIC INFORMATION										PRE-INSTALLATION (RETROFIT)						BASELINE (NEW CONSTRUCTION)				POST-INSTALLATION							Energy Calculations										Post Fixture Cut Sheet Number
Line Item	New Construction or Retrofit	Building Address	Floor	Area Description	Space Description	Interior or Exterior Fixture	Predominant Space Type	Exterior Lighting Description (Exterior Lighting Only)	Area Cooling	Pre Fixture Qty	Pre Fixture Code	Pre Watts / Fixture (W)	Pre kW / Space (kW)	Existing Control drop-down	Existing Sensor Quantity Where applicable	Units e.g. Square Feet (pf) If multiple fixture types are used, please only enter the total area/intensity once per space.	Lighting Power Density (Watts)	Baseline kW / Space (kW)	Post Fixture Qty	Post Fixture Code	Post Watts / Fixture (W)	Post kW / Space (kW)	Are Occupancy Sensors Required by Code?	Proposed Control drop-down	Proposed Sensor Quantity Where applicable	Change in Connected Load (kW)	Applicant Coincidence Factor (CF) Estimate	Coincidence Factor	Interactive Factor (demand)	Interactive Factor (energy)	Pre Controls Factor	Post Controls Factor	Demand Savings (kW)	Applicant Equivalent Full Load Hours (EFLH) Estimate	Prescribed Equivalent Full Load Hours	Annual kWh Saved	
151													0.00	NONE								0.00		NONE		0.00										0	
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Totals										1,232			108.13						1,232			60.63				47.51						53.08		5,376	245,988	

Project Estimated Annual Savings Summary

Lighting

Estimated Annual kWh Savings	341,308
Total Change in Connected Load	47.51

Annual Estimated Cost Savings	$34,130.80
Annual Operating Hours	5,376

Interior Lighting Incentive @ $0.05/kWh (excluding retrofit CFLs, sensors, or LED exit signs)	$12,271.70
Exterior Lighting Incentive @ $0.05/kWh (excluding retrofit CFLs, sensors, or LED exit signs)	$0.00
Total retrofit CFL Incentive @ $1/screw-in CFL lamp; $15/hard-wired CFL lamp (includes all retrofit CFLs, both interior and exterior)	$0.00
Total retrofit LED Exit Incentive @ $10/exit sign	$0.00
Total Lighting Controls Incentive @ $25/occupancy sensor and $25/daylight sensor (includes all Lighting Controls, both interior and exterior)	$5,275.00

Total Calculated Incentive	$17,546.70

Total Fixture Quantity excluding retrofit CFLs and LED Exit Signs	1232
Total Lamp Quantity for retrofit Screw-In CFLs	0

Total Lamp Quantity for retrofit Hard-Wired CFLs	0
Total Fixture Quantity for retrofit LED Exit Signs	0
Total Quantity for Occupancy Sensors	211
Total Quantity for Daylight Sensors	0

Please briefly describe how you estimated your coincidence factor (CF) and applicant equivalent full-load hours (EFLH) for facility type “Other” indicated on the Lighting Form tab

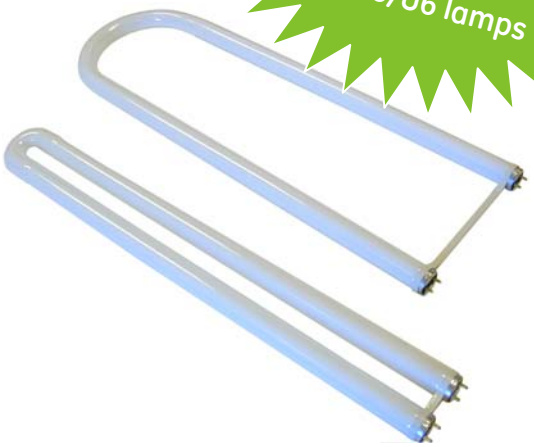
Demand Savings (For Internal Use Only)	53.48

GE
Lighting

ULTRA
T8 WATT-MISER®
MOD-U-LINE®

New Mod-U-Line Watt-Miser® saves 6% Energy vs. standard F32T8/U6 lamps

T8 Mod-U-Line® Ecolux® Lamps



Save up to $5.40 per fixture with Watt-Miser® version

- Reduce energy costs 6% with Watt-Miser®
- Environmentally conscious: TCLP compliant
- Three solutions to meet your needs

F32T8/SPX/U6/WM/ECO

- 2800 initial lumens vs. 2700 lumens for standard T8/U6 lamp
- 18,000 hour rated life on IS ballast at 3 hours/start
- Excellent color rendering, SPX lamp with CRI = 85
- Mod-U-Line® lamp with 6" leg spacing

F32T8/SPX/U6/ECO

- Excellent color rendering, SPX lamp with CRI = 85
- 20,000 hour rated life on IS ballast at 3 hours/start
- Mod-U-Line® lamp with 6" leg spacing

F31T8/SPX/U/ECO

- Mod-U-Line lamp with 1-5/8" leg spacing
- Environmentally conscious: TCLP compliant
- 24,000 hour rated life on IS ballast at 3 hours/start

Relamp Existing F32T8/SP/U6 with F32T8/SPX/U6/WM/ECO

System Watts Saved: 3 Lamps per Fixture: 2

	Ballast Factor	System Watts	Initial System Lumens
F32T8/U6	.77	51	4158
F32T8/U6/WM	.77	48	4312

	Operating Hours / Year			Over Lamp Life
KWH Rate	4000	5500	8760	8000
$ 0.060	$ 0.72	$ 0.99	$ 1.58	$ 3.24
$ 0.080	$ 0.96	$ 1.32	$ 2.10	$ 4.32
$ 0.100	$ 1.20	$ 1.65	$ 2.63	$ 5.40
$ 0.120	$ 1.44	$ 1.98	$ 3.15	$ 6.48

imagination at work

AVAILABLE THROUGH
GRAINGER®
FOR THE ONES WHO GET IT DONE

T8 Mod-U-Line® Ecolux® Specs

T8 U6 Watt-Miser Ecolux

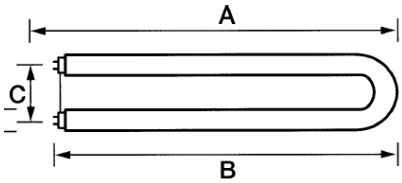
Grainger Item #	GE Product Code	Description	Case Qty	Nominal Watts	Rated Life 3hrs/start	Lumens Initial	Lumens Mean	Color Temp (K)	CRI	Nominal Length (in.)	Maximum Overall Length (in.) (A)	Max Base Face to Top of Lamp (in.) (B)	Leg Spacing (in.) (C)
2ETT4	72114	F32T8/SPX30/U6/WM/ECO	12	30	18,000	2,800	2,632	3000	85	22.5	23.0	22.6	6.0
2ETT5	72115	F32T8/SPX35/U6/WM/ECO	12	30	18,000	2,800	2,632	3500	85	22.5	23.0	22.6	6.0
2ETT6	72116	F32T8/SPX41/U6/WM/ECO	12	30	18,000	2,800	2,632	4100	85	22.5	23.0	22.6	6.0

T8 U6 SPX Ecolux

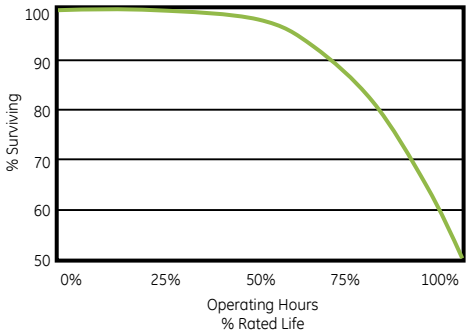
Grainger Item #	GE Product Code	Description	Case Qty	Nominal Watts	Rated Life 3hrs/start	Lumens Initial	Lumens Mean	Color Temp (K)	CRI	Nominal Length (in.)	Maximum Overall Length (in.) (A)	Max Base Face to Top of Lamp (in.) (B)	Leg Spacing (in.) (C)
2ETT1	72111	F32T8/SPX30/U6/ECO	12	32	20,000	2,850	2,622	3000	85	22.5	23.0	22.6	6.0
2ETT2	72112	F32T8/SPX35/U6/ECO	12	32	20,000	2,850	2,622	3500	85	22.5	23.0	22.6	6.0
2ETT3	72113	F32T8/SPX41/U6/ECO	12	32	20,000	2,850	2,622	4100	85	22.5	23.0	22.6	6.0

T8 U1 5/8 Ecolux

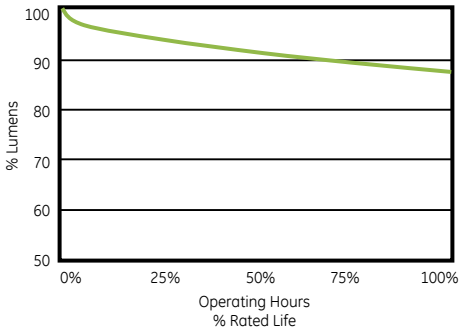
Grainger Item #	GE Product Code	Description	Case Qty	Nominal Watts	Rated Life 3hrs/start	Lumens Initial	Lumens Mean	Color Temp (K)	CRI	Nominal Length (in.)	Maximum Overall Length (in.) (A)	Max Base Face to Top of Lamp (in.) (B)	Leg Spacing (in.) (C)
2ETT7	72117	F31T8/SPX30/U/ECO	15	31	24,000	2,775	2,636	3000	85	22.5	23.0	22.6	1.625
2ETT8	72118	F31T8/SPX35/U/ECO	15	31	24,000	2,775	2,636	3500	85	22.5	23.0	22.6	1.625
2ETT9	72119	F31T8/SPX41/U/ECO	15	31	24,000	2,775	2,636	4100	85	22.5	23.0	22.6	1.625



Life Expectancy

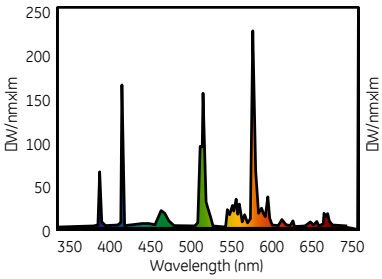


Lumen Maintenance

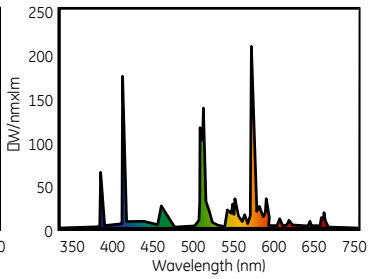


Information provided is subject to change without notice. Please verify all details with GE. All values are design or typical values when measured under laboratory conditions, and GE makes no warranty or guarantee, express or implied, that such performance will be obtained under end-use conditions.

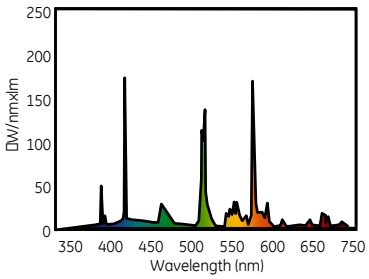
Spectral Power Distribution (3000K)



Spectral Power Distribution (3500K)



Spectral Power Distribution (4100K)



For additional product and application information, please consult GE's Website: www.gelighting.com

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GE Lighting

Product Catalog
for professionals

Products > 66472

66472 – F28T8/XL/SPP41/ECO

F28T8/XLSPP41ECO-T8-SPP NEW TECHNICAL LAMPS

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GENERAL CHARACTERISTICS

Lamp type	Linear Fluorescent - Straight Linear
Bulb	T8
Base	Medium Bi-Pin (G13)
Primary Application	Energy Saving
Rated Life	40000 hrs
Rated Life (instant start) @ Time	20000.0 h @ 3.0 h 28000.0 h @ 12.0 h
Rated Life (rapid start) @ Time	40000.0 h @ 3.0 h 45000.0 h @ 12.0 h
Bulb Material	Sodalime glass

Base

View Larger

PHOTOMETRIC CHARACTERISTICS

Initial Lumens	2600
Mean Lumens	2440
Nominal Initial Lumens per Watt	93
Color Temperature	4100 K
Color Rendering Index (CRI)	80

ADDITIONAL RESOURCES

Catalogs
Testimonials
Disposal Policies & Recycling Information

ELECTRICAL CHARACTERISTICS

Wattage	28

DIMENSIONS

Maximum Overall Length (MOL)	48.0000 in (1219.2 mm)
Bulb Diameter (DIA)	1.0000 in (25.4 mm)

PRODUCT INFORMATION

Product Code	66472
Description	F28T8/XL/SPP41/ECO
Standard Package	Case
Standard Package GTIN	10043168664728
Standard Package Quantity	36
Sales Unit	Unit
No Of Items Per Sales Unit	1
UPC	043168664721

Return To Top

Ordering Guide and System Wattage

There's a combination of GE UltraMax™ ballasts and T8 lamps that can make virtually any lighting system perform better. The chart below lets you see for yourself.

Starting	Ballast Factor	# Lamps	GE UltraMax Ballasts			F32T8 Input Watts			F32T8/WM Input Watts			F28T8/UMX Input Watts †	Units Per Case
			Product Code	Description	Input Voltage	Input Watts†	In Fixture△ Open	In Fixture△ Enclosed	Input Watts†	In Fixture△ Open	In Fixture△ Enclosed		
Instant Start	Low	1	49706	GE-132-MAX-L/Ultra	Multi-Volt 120	25	24	24	24	23	23	22	10
					277	25	24	24	24	23	23	22	
		2	49707	GE-232-MAX-L/Ultra	Multi-Volt 120	48	48	47	46	46	45	44	10
					277	48	48	47	46	46	45	44	
		3	49708	GE-332-MAX-L/Ultra	Multi-Volt 120	73	72	71	69	68	67	65	10
					277	72	71	70	68	67	66	65	
		4	49709	GE-432-MAX-L/Ultra	Multi-Volt 120	97	95	93	92	90	88	87	10
					277	96	93	92	91	89	87	86	
	Normal	1	49771	GE-132-MAX-N/Ultra	Multi-Volt 120	28	28	27	27	26	26	25	10
					277	28	28	27	27	26	26	25	
		2	49772	GE-232-MAX-N/Ultra	Multi-Volt 120	54	54	53	53	52	51	49	10
					277	53	53	52	52	51	50	48	
		3	49773	GE-332-MAX-N/Ultra	Multi-Volt 120	82	80	78	78	77	74	72	10
					277	80	78	77	77	75	73	71	
		4	49774	GE-432-MAX-N/Ultra	Multi-Volt 120	109	105	103	105	101	98	98	10
					277	107	103	101	103	99	97	96	
	High	2	49775	GE-232-MAX-H/Ultra	Multi-Volt 120	74	71	69	71	69	67	66	10
					277	73	70	68	70	68	66	65	
		3	49776	GE-332-MAX-H/Ultra	Multi-Volt 120	111	105	102	106	102	97	98	10
					277	109	103	100	104	100	96	96	
		4	49777	GE-432-MAX-H/Ultra	Multi-Volt 120	151	TBD	TBD	145	TBD	TBD	133	10
					277	147	TBD	TBD	141	TBD	TBD	131	
			GE UltraMax Ballasts			F96T8 Input Watts			F96T8/WM Input Watts			F96T8/WM Plus Input Watts	Units Per Case
			Product Code	Description	Input Voltage	Input Watts†	In Fixture△ Open	In Fixture△ Enclosed	Input Watts†	In Fixture△ Open	In Fixture△ Enclosed		
	Normal	1	49766	GE-159-MAX-N/Ultra	Multi-Volt 120	54	TBD	TBD	51	TBD	TBD	53	10
					277	53	TBD	TBD	51	TBD	TBD	52	
		2	49767	GE-259-MAX-N/Ultra	Multi-Volt 120	107	TBD	TBD	102	TBD	TBD	106	10
					277	105	TBD	TBD	100	TBD	TBD	104	

† Denotes standard laboratory non-fixture open bench testing.

△ In fixture watts represent typical field operating conditions with ballast and lamps in fixture/luminaire. Open fixture denotes non-lensed fixture/luminaire. Enclosed fixture denotes lensed fixture/luminaire.

www.gelighting.com<Commercial Products><Ballasts>

GE Lighting

TRANSFORMING THE POWER OF LIGHT™

GE Lighting Web Center

GE is taking the lead in developing innovative uses of e-business technology to provide to you product and application information that can help you achieve your business goals. From interactive catalogs that deliver lamp and system performance information to Design Wizards that help in lamp and ballast selection and application, GELighting.com is the lighting site you will want to visit frequently.

www.GELighting.com

16233 (10/06) Printed in the USA

UltraStart® System Information

Ballast Description	Lamps		PC 10 PK	Input Volts	Line Current	Input Watts	Ballast Factor	Initial System Lumens	Lumens / Watt	Ballast Efficiency Factor (BEF)
	Type	# Lamps								
GE132-MVPS-L	F32T8/HL	1	75952	120/277	.22/.10	25	0.72	2232	89	2.88
	F32T8/WM				.20/.09	23	0.71	2024	88	3.09
	F28				.19/.09	22	0.71	1953	89	3.23
	F32T8/25W				.18/.08	21 / 20	0.71	1775	85	3.56
GE132-MVPS-N	F32T8/HL	1	75953	120/277	.26/.12	30	0.89	2759	92	2.97
	F32T8/WM				.24/.11	28	0.87	2480	89	3.11
	F28				.22/.10	26	0.87	2393	92	3.35
	F32T8/25W				.21/.1	24	0.86	2150	90	3.58
GE132-MVPS-H	F32T8/HL	1	75954	120/277	.35/.15	39	1.18	3658	94	3.03
	F32T8/WM				.31/.14	36	1.16	3306	92	3.22
	F28				.29/.13	33	1.16	3190	97	3.52
	F32T8/25W				.27/.12	31	1.15	2875	93	3.71
GE232-MVPS-XL	F32T8/HL	2	29671	120/277	.39/.19	45/44	0.60	3720	83	1.81
	F32T8/WM				.24/.12	42	0.59	3363	80	1.40
	F28				.15/.12	39	0.59	3245	83	1.51
	F32T8/25W					36	0.59	2950	82	1.64
GE232-MVPS-L	F32T8/HL	2	96720	120/277	.40/.18	47	0.71	4402	94	1.51
	F32T8/WM				.37/.17	44	0.71	4047	92	1.61
	F28				.34/.15	41	0.71	3905	95	1.73
	F32T8/25W					37/36	0.65	3250	88	1.81
GE232PS347L	F32T8/HL	2	62721	347	0.14	47	0.71	4402	94	1.51
	F32T8/WM				0.13	43	0.71	4047	94	1.65
	F28T8				0.12	40	0.71	3905	98	1.78
	F32T8/25W				0.11	37	0.71	3550	96	1.92
GE232-MVPS-N	F32T8/HL	2	96714	120/277	.49/.18	59/58	0.89	5518	94	1.53
	F32T8/WM				.45/.20	55/54	0.88	5016	91	1.63
	F28				.42/.19	51/50	0.88	4840	95	1.76
	F32T8/25W					45/44	0.86	4300	96	1.95
GE232PS347-N	F32T8/HL	2	62723	347	0.17	57	0.88	5456	96	1.54
	F32T8/WM				0.16	54	0.88	5016	93	1.63
	F28T8				0.15	50	0.88	4840	97	1.76
	F32T8/25W				0.14	46	0.88	4400	96	1.91
GE232-MVPS-H	F32T8/HL	2	29675	120/277	.64/.29	75/74	1.15	7130	95	1.55
	F32T8/WM				.60/.27	69	1.14	6498	94	1.65
	F28				.54/.25	63/62	1.11	6105	97	1.79
	F32T8/25W					58/57	1.10	5500	95	1.93
GE232PS347-H	F32T8/HL	2	62726	347	0.22	74	1.18	7316	99	1.59
	F32T8/WM				0.21	69	1.16	6612	96	1.68
	F28T8				0.19	62	1.13	6215	100	1.82
	F32T8/25W				0.17	58	1.09	5450	94	1.88
GE332-MVPS-XL	F32T8/HL	3	29672	120/277	.49/.22	67/66	0.60	5580	83	0.91
	F32T8/WM				.53/.24	61/60	0.59	5045	83	0.98
	F28				.49/.22	57/56	0.58	4785	84	1.04
	F32T8/25W					53/52	0.58	4350	82	1.12
GE332-MVPS-L	F32T8/HL	3	96721	120/277	.61/.27	69	0.71	6603	96	1.03
	F32T8/WM				.54/.24	63/62	0.69	5900	94	1.11
	F28				.49/.22	58	0.69	5693	98	1.19
	F32T8/25W					57/56	0.66	4950	87	1.18
GE332PS347-L	F32T8/HL	3	63041	347	0.21	70	0.71	6603	94	1.01
	F32T8/WM				0.20	66	0.71	6071	92	1.08
	F28T8				0.18	60	0.71	5858	98	1.18
	F32T8/25W				0.17	56	0.71	5325	95	1.27
GE332-MVPS-N	F32T8/HL	3	96715	120/277	.72/.31	86/84	0.89	8277	96	1.06
	F32T8/WM				.67/.29	80/79	0.89	7610	95	1.13
	F28				.61/.27	73/72	0.84	6930	95	1.17
	F32T8/25W					67/66	0.84	6300	94	1.27
GE332PS347-N	F32T8/HL	3	62724	347	0.25	83	0.88	8184	99	1.06
	F32T8/WM				0.23	77	0.88	7524	98	1.14
	F28T8				0.21	70	0.88	7260	104	1.26
	F32T8/25W				0.19	65	0.88	6600	102	1.35
GE332-MVPS-H	F32T8/HL	3	29676	120/277	.95/.41	110/108	1.15	10695	97	1.06
	F32T8/WM				.88/.39	102/100	1.14	9747	96	1.14
	F28				.79/.35	92/91	1.10	9075	99	1.21
	F32T8/25W					87/86	1.09	8175	94	1.27
GE332PS347-H	F32T8/HL	3	62727	347	0.33	110	1.18	10974	100	1.07
	F32T8/WM				0.30	102	1.16	9918	97	1.14
	F28T8				0.28	94	1.13	9323	99	1.20
	F32T8/25W				0.25	83	1.10	8250	99	1.33
GE432-MVPS-L	F32T8/HL	4	71832	120/277	.77/.32	90/88	0.71	8804	98	0.81
	F32T8/WM				.71/.30	85/83	0.69	7866	93	0.83
	F28				.64/.28	77/76	0.68	7480	97	0.89
	F32T8/25W					74/73	0.67	6700	91	0.92
GE432PS347-L	F32T8/HL	4	62722	347	0.27	88	0.71	8804	100	0.81
	F32T8/WM				0.25	83	0.71	8094	98	0.86
	F28T8				0.23	76	0.71	7810	103	0.94
	F32T8/25W				0.21	69	0.71	7100	103	1.03
GE432-MVPS-N	F32T8/HL	4	96716	120/277	.97/.41	114/112	0.89	11036	97	0.79
	F32T8/WM				.89/.36	105/103	0.86	9804	93	0.83
	F28				.82/.35	96/95	0.83	9130	95	0.87
	F32T8/25W					87/85	0.83	8300	95	0.98
GE432PS347-N	F32T8/HL	4	62725	347	0.33	109	0.88	10912	100	0.81
	F32T8/WM				0.31	103	0.88	10032	97	0.85
	F28T8				0.27	91	0.88	9680	106	0.97
	F32T8/25W				0.24	80	0.88	8800	110	1.10
GE432-MVPS-H	F32T8/HL	4	74476	120/277	1.27/.55	147/144	1.16	14384	98	0.81
	F32T8/WM				1.20/.52	139/136	1.15	13110	94	0.85
	F28				1.08/.47	125/123	1.12	12320	99	0.91
	F32T8/25W					112/111	1.12	11200	100	1.01

*Power Factor > .98, THD < 10%, (See application data sheet on GELighting.com for PF and THD with specific voltage and lamp applications) All UltraStart® T8 Ballasts have N-1 Lamp Rating
Electrical Testing completed to ANSI requirements in open fixture at 25°C. GE UltraStart® ballasts also operate F17T8, F17T8/WM, F25T8, F25T8/WM and F40T8 lamps

Transforming the POWER of Light™ **GE National Customer Service Center 1-888-GEBALLAST (432-2552)**

66124 08/2011 Printed in USA

sensorswitch®

CM 10

EXTENDED RANGE 360º SENSOR
CEILING MOUNT • LOW VOLTAGE • PASSIVE INFRARED (PIR)

SPECIFICATIONS

FEATURES
- 100% Digital PIR Detection, Excellent RF Immunity
- 360º Coverage Pattern
- Push-Button Programmable
- Adjustable Time Delays
- No Field Calibration or Sensitivity Adjustments Required
- Convenient Test Mode
- 100 hr Lamp Burn-in Timer
- Green LED Indicator

LAMPMAXIMIZER® TECHNOLOGY
- Protects Lamp Life while Maximizing Energy Savings
- Minimum On Timer (15 min default)
- Occ. Time Delay (10 min defatult)
- LampMaximizer+ Mode - Optimizes Lamp Life & Energy Savings (disabled by default)
- Switch Counter (in 1000's)
- Total Lamp On Time (in khrs)

PHYSICAL SPECS

SIZE 4.55" Dia. (11.56 cm)
1.55" Deep (3.94 cm)
WEIGHT 6 oz
MOUNTING
Ceiling Tile Surface
3.5" Octagon Box
Single Gang Handy Box
COLOR White

ELECTRICAL SPECS

OPERATING VOLTAGE
12-24 VAC/VDC
CURRENT DRAW
Standard, 4 mA
w/ **R** option, 16 mA
DIMMING LOAD Sinks < 20mA;
~40 Ballasts @ .5mA each
RECOMMENDED POWER PACK
PP20

ENVIRONMENTAL SPECS

OPERATING TEMP
14º to 160º F (-10º to 71º C)
STORAGE TEMP
-14º to 160º F (-26º to 71º C)
RELATIVE HUMIDITY
20 to 90% non-condensing
SILICONE FREE
ROHS COMPLIANT

OVERVIEW

The **CM 10** Series Extended Range 360º occupancy sensor incorporates Passive Infrared (PIR) technology into an attractive and economical sensor to provide maximum viewing from the ceiling. When mounted at 9 ft (2.74 m), this sensor views up to 28 ft (8.53 m) in all directions. Its circular coverage pattern is designed for walking motions; making it ideal for T-shaped intersections in corridors, or other areas where wall mounting a sensor is not practical. A long hallway, for example, may require a **HW13** Series Hallway sensor at each end, with **CM 10**'s mounted in the center to fill in the distance. Low ceiling heights are also best covered by the **CM 10**. For example, when mounted at only 7 ft (2.13 m), the height of pick aisles in many distribution centers, the **CM 10** provides a 32 ft (9.75 m) diameter pattern of coverage. In applications where detection of minor motion is also required, use the **CM PDT 10** Series Dual Technology sensor.

SENSOR OPERATION

The sensor detects changes in the infrared energy given off by occupants as they move within the field-of-view. When occupancy is detected, a DC output goes high and can drive up to 200 mA of connected load. The sensor is powered with 12-24 VAC/VDC and typically operates with a **PP20** or **MP20** power pack, enabling complete 20 Amp circuits to be controlled. This innovative sensor requires no field calibration or sensitivity adjustments.

LAMPMAXIMIZER®

This sensor also contains patent pending LampMaximizer technology that allows users to aggressively target energy savings while still protecting lamp life. A minimum on timer, factory set at 15 minutes, helps preserve lamp life by eliminating all lamp cycles shorter than lamp warranties specify.

A standard occupancy time delay is also present that ensures lights turn off (assuming minimum on timer has elapsed) if no occupancy is detected. This timer is factory set at 10 minutes to promote energy savings, but is adjustable between 30 seconds and 20 minutes. These adjustments can be done manually, through the units push-button, or automatically every two weeks through an advanced mode, called LampMaximizer+, that determines the optimum time delay in order to maximize both lamp life and energy savings. Additionally, this sensor maintains statistics on total lamp on time and number of cycles.

OPTIONS

LOW VOLTAGE RELAY (R)
- Enables sensors to interface with other systems (e.g., BMS, lighting panels)
- Provides dry contact closure via a SPDT, 1 Amp, 40 Volt relay
- Only one relay needed per zone
- Changes state when all connected sensors register unoccupied
- Relay requires sensor power to function

OCCUPANCY CONTROLLED DIMMING (D)
- Provides dimming output to control 0-10 VDC dimmable ballasts
- Provides a second occupancy time-out period that enables the lights to go to a dim setting before turning off
- Adjustable max/min dim setting
- Only one sensor per zone needs to have dimming output

PHOTOCELL (P)
- Auto set-point calibration
- Two selectable modes of operation
- On/Off mode: Photocell has full control during periods of occupancy
- Inhibit mode: Photocell can prevent lights from turning on if adequate daylight is available, but cannot turn lights off

PHOTOCELL W/ DIMMING (ADC)
- Photocell within sensor maintains total room light level by controlling levels of 0-10 VDC dimmable ballasts
- Photocell also has full on/off control during periods of occupancy
- Provides a second occupancy time-out period that enables the lights to go to a dim setting before turning off

Note: LampMaximizer+ features not available with ADC option

LOW TEMP/HIGH HUMIDITY (LT)
- Sensor is corrosion resistant to moisture
- Operates down to -40º F/C

c UL US LISTED

TITLE 24
MADE in U.S.A.
5 YEAR WARRANTY

ORDERING INFO

CM 10 [RELAY] [DIMMING/PHOTOCELL] [TEMP/HUMIDITY]

RELAY

Blank = None
R = Low Voltage Relay

DIMMING / PHOTOCELL *CHOOSE ONE ONLY*

Blank = None
D = Occupancy Controlled Dimming
P = Photocell
ADC = Photocell w/ Dimming

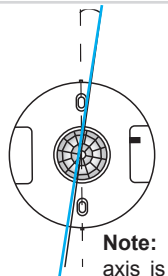
TEMP/HUMIDITY

Blank = Standard
LT = Low Temp

COVERAGE PATTERN

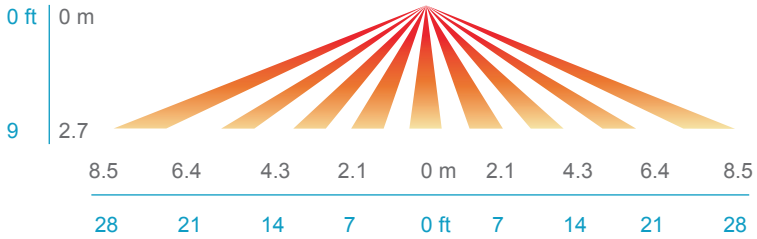
10 EXTENDED RANGE LENS

- Best choice for large motion (e.g. walking) detection
- Viewing angle of 67º in a 360º conical shaped pattern
- Provides 28 ft (8.53 m) radial coverage when mounted to standard 9 ft (2.74 m) ceiling
- 7 to 15 ft (2.13 to 4.57 m) mounting heights provide 16 to 36 ft (4.88 to 10.97 m) radial coverage

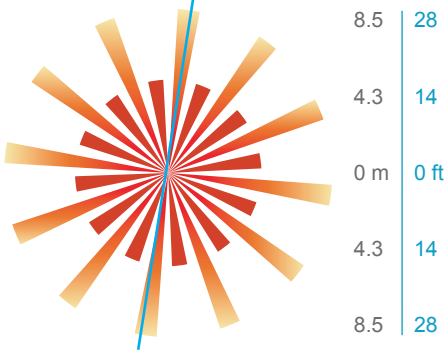


Note: Sensor's screw axis is offset 7.5º from a long detection segment

SIDE VIEW



TOP VIEW



WIRING (DO NOT WIRE HOT)

STANDARD WIRING

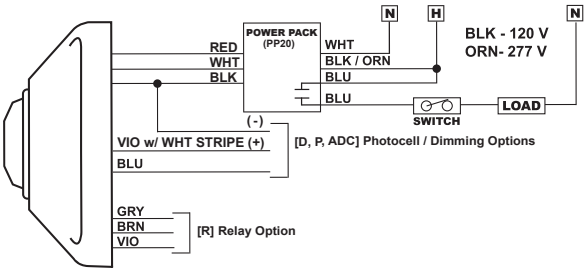
RED - Power Input (12-24 VAC/VDC)
BLACK - Common
WHITE - Occupancy State (high VDC for occupied)

PHOTOCELL/DIMMING OPTIONS (D, P, ADC)

BLUE - Direct output to power pack for providing photocell control and/or secondary dim time out. Output is high VDC with occupancy & low light. Output also held high during secondary dim time out. For multi-level control, use two power packs and connect White wire to primary load and Blue to daylight load.

VIOLET w/ WHITE STRIPE - Connect to 0-10 VDC control wire (typically Violet) from 0-10 VDC dimmable ballast

GRAY from Ballast - Connect to sensor Black wire

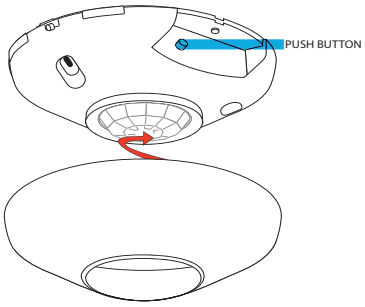


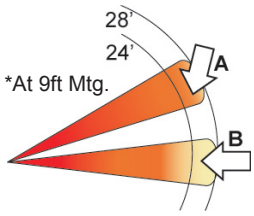
RELAY OPTION (R)

GRAY / BROWN - Connected during occupied state
VIOLET / BROWN - Connected during unoccupied state
Note: Relay is energized during unoccupied state

INSTALLATION

- Mount sensor directly to a ceiling tile or a metallic grid (two self-tapping screws provided).
- Sensor's mounting holes also align with 3.5" octagon or single gang handy box (screws not provided).
- Sensor will detect motions crossing segments more effectively than motions parallel to beams.
- For optimal detection, position sensor such that segments are crossed upon entrance and unable to view outside the space.





A: When walking across beam, detection will occur at approximately 28 feet. (8.53 m)
B: When walking into beam, detection will occur at approximately 24 feet. (7.32 m)

PROGRAMMING

Refer to instruction card IC7.001 for default settings and directions on programming the sensor via the push-button.

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HW13

HALLWAY SENSOR
WALL MOUNT • LOW VOLTAGE • PASSIVE INFARED (PIR)

SPECIFICATIONS

FEATURES
PIR Occupancy Detection
Coverage up to 130 ft (39.62 m).
Programmable w/o removing cover
Adjustable Time Delay
100 Hr. Lamp Burn-In Timer Mode
Green LED Indicator

PHYSICAL SPECS
SIZE 3.0” H x 3.6” W x 1.75” D (7.62 cm x 9.14 cm x 4.45 cm)
WEIGHT 4 oz
MOUNTING Directly to wall or from ceiling using **WV BR** bracket.
COLOR White

ELECTRICAL SPECS
OPERATING VOLTAGE
12-24 VAC/VDC
CURRENT DRAW
Standard, 4 mA
w/ **R** option, 16 mA
RECOMMENDED POWER PACK
PP20

ENVIRONMENTAL SPECS
OPERATING TEMP
14º to 160º F (-10º to 71º C)
STORAGE TEMP
-14º to 160º F (-26º to 71º C)
RELATIVE HUMIDITY
20 to 90% non-condensing

OTHER
UL and CUL Listed
Title 24 Compliant
5 Year Warranty
Made in the U.S.A.

Long narrow PIR detection for control of hallway lighting is provided by the **HW13** Series sensor. Typically applied in pairs and mounted at either end of a long corridor, the **HW13** detects occupants entering the hallway up to 130 ft (39.62 m) away. Detection at these distances is for entrances at right angles to the beam pattern. The **HW13** may also be used with other low voltage sensors to adequately view a space. For example, a **CM 10** ceiling sensor may be in a vestibule at one end while the **HW13** is at the other. The **HW13** is best mounted at 7 ft (2.13 m).

SENSOR OPERATION
The sensor detects changes in the infrared energy given off by occupants as they move within the field-of-view. When occupancy is detected, a DC output goes high and can drive up to 200 mA of connected load. The sensor is powered with 12-24 VAC/VDC and typically operates with a **PP20** or **MP20** power pack, enabling complete 20 Amp circuits to be controlled. An internal timer, factory set at 10 minutes, keeps the lights on during brief periods of inactivity. This timer is push-button programmable from 30 seconds to 20 minutes, and is reset every time occupancy is re-detected. This state-of-the-art design requires no field calibration or sensitivity adjustments.

OPTIONS

LOW VOLTAGE RELAY (R)
- Enables low voltage sensors to interface with other systems
- Provides dry contact closure via a SPDT, 1 amp, 40 Volt relay.
- Only one relay needed per zone
- Changes state when all connected sensors register unoccupied
- Relay requires sensor power to function

PHOTOCELL (P)
- Auto set-point calibration
- Two selectable modes of operation
- On/Off mode: Photocell has full control during periods of occupancy
- Inhibit mode: Photocell can prevent lights from turning on if adequate daylight is available, but cannot turn lights off

LOW TEMP/HIGH HUMIDITY (LT)
- Sensor is corrosion resistant to moisture
- Operates down to -40º F/C

ORDERING INFO

HW13 [RELAY] [PHOTOCELL] [TEMP/HUMIDITY]

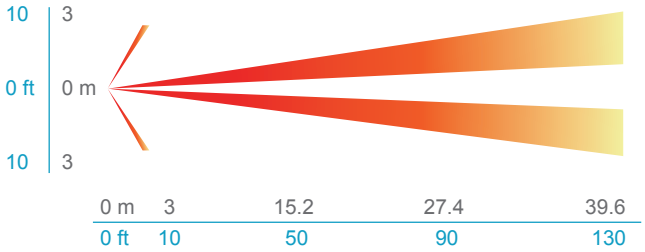
RELAY	PHOTOCELL	TEMP/HUMIDITY
Blank = None	Blank = None	Blank = Standard
R = Low Voltage Relay	P = Photocell	LT = Low Temp

COVERAGE PATTERN

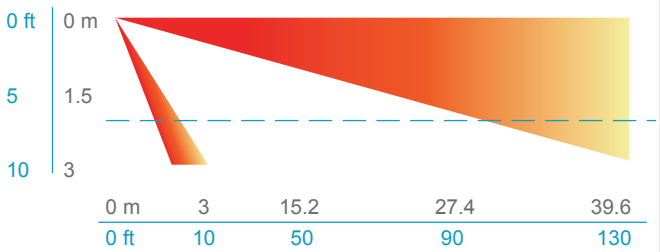
13 HALLWAY VIEW LENS

- Large motion (e.g. **walking**) detection up to 70 ft (21.34 m).
- Designed for 7 ft (2.13 m) high mounting at end of hall.
- Recommended for use in pairs with one at either end of hallway.

TOP VIEW



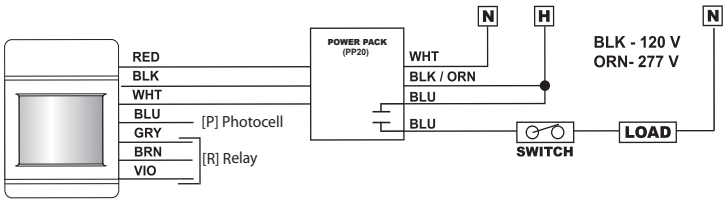
SIDE VIEW



WIRING (DO NOT WIRE HOT)

STANDARD WIRING

RED - Power Input (12-24 VAC/VDC)
BLACK - Common
WHITE - Output (high VDC for occupancy)



RELAY OPTION (R)

GRAY/BROWN - Connected during occupied state
VIOLET/BROWN - Connected during unoccupied state
Note: Relay is energized during unoccupied state.

PHOTOCELL OPTION (P)

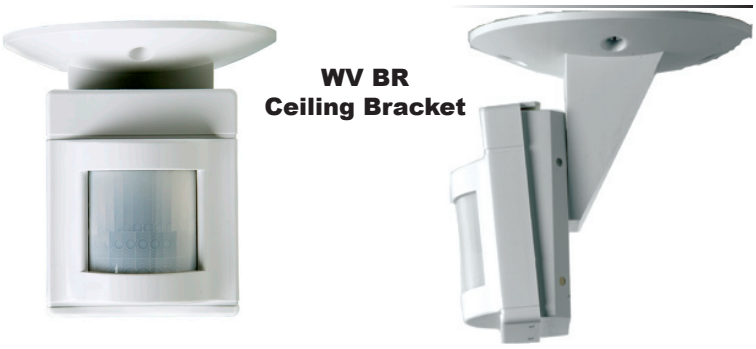
BLUE - Use in place of White ouput wire. Photocell output is high VDC with occupancy & low light. For multi-level control, use two power packs and connect White to primary load and Blue to daylight load.

INSTALLATION

- The **HW13** has three tilt adjustments.
- At 7 ft (2.13 m) mounting, the sensor should be installed fully vertical.
- At higher mounting heights, the sensor may be tilted.

CEILING MOUNT BRACKET (WV BR)

The **WV BR** Ceiling Mount Bracket allows the **HW13** to be mounted for conditions where mouting to the wall is not possible. **Note:** View shown is when the sensor is installed vertically. Tilting will aim view pattern down.



PROGRAMMING

Refer to included instruction card for default settings and directions on programming the sensor via the push-button.

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WARRANTY: Sensor Switch, Inc. warrants these products to be free of defects in manufacture and workmanship for a period of 60 months. Sensor Switch, Inc., upon prompt notice of such defect, will, at its option, provide a Returned Material Authorization number and repair or replace returned product.
LIMITATIONS AND EXCLUSIONS: This Warranty is in full lieu of all other representation and expressed and implied warranties (including the implied warranties of merchantability and fitness for use) and under no circumstances shall Sensor Switch, Inc. be liable for any incidental or consequential property damages or losses.

T045-004P

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WSD

WALL SWITCH DECORATOR SENSOR
LINE VOLTAGE • PASSIVE INFRARED (PIR)

SPECIFICATIONS

FEATURES
- PIR Occupancy Detection
- Self-Contained Relay - No Power Pack Needed
- Interchangeable Hot & Load Wires - Impossible to Wire Backwards
- No Neutral Connection Required
- Small Motion Detection to 20 ft (6.10 m)
- Self-Grounding Mounting Strap
- No Minimum Load
- Push-Button Programmable w/o Removing the Switch Plate
- Adjustable Time Delay
- 3-way & 4-way Switching
- Green LED Indicator

PHYSICAL SPECS
- SIZE 4.2”H x 1.8”W x 1.5”D (10.67cm x 4.57cm x 3.81cm)
- WEIGHT 5 oz
- MOUNTING Single Gang Switch Box
- MOUNTING HEIGHT 30-48 in (76.2-121.9 cm)
- COLORS White, Ivory, Gray Almond, Black

ELECTRICAL SPECS
- MAXIMUM LOAD
  - 800 W @ 120 VAC
  - 1200 W @ 277 VAC
  - 1500 W @ 347 VAC
- MINIMUM LOAD None
- MOTOR LOAD 1/4 HP
- FREQUENCY 50/60 Hz (timers are 1.2x for 50 Hz)

ENVIRONMENTAL SPECS
- OPERATING TEMP 14º to 160º F (-10º to 71º C)
- STORAGE TEMP -14º to 160º F (-26º to 71º C)
- RELATIVE HUMIDITY 20 to 90% non-condensing

OTHER
- UL and CUL Listed
- Title 24 Compliant
- 5 Year Warranty
- Made in the U.S.A.

The **WSD** is a stylish, easy to install, and simple to use Wall Switch Decorator style Passive Infrared (PIR) sensor. It is ideal for private offices, copy rooms, closets, or any small enclosed space without obstructions. A user programmable time delay ensures that once the room is vacated the sensor will time out and turn off the lights. Additionally, the **WSD** sensor has several On Modes and Switch Modes that can be programmed using the front push-button. For rooms with obstructions, the Dual Technology **WSD PDT** Series sensor is recommended.

SENSOR OPERATION & MODES

The sensor detects changes in the infrared energy given off by occupants as they move within the field-of-view. When occupancy is detected, a self-contained relay switches the connected lighting load on. The sensor is line powered and switches line voltage (see specifications). A timer, factory set at 10 minutes, keeps the lights on during brief periods of inactivity. This timer is push-button programmable from 30 seconds to 20 minutes, and resets every time occupancy is re-detected. This state-of-the-art design requires no field calibration or sensitivity adjustments.

ON MODES

AUTOMATIC ON (default) - Lights come on when occupancy is detected.

MANUAL ON - Requires the occupant manually turn on lights via the push-button.

REDUCED TURN ON - Sensor is initially set to only detect large motions, effectively ignoring PIR signals reflected off of surfaces, while still sensing occupants when they enter the room. Once lights are on, the sensor returns to maximum sensitivity.

SWITCH MODES

PREDICTIVE OFF MODE (default) - This mode allows occupants to turn lights off via the switch without losing the convenience of having the lights automatically turn on when they re-enter the room. Pressing the switch turns the lights off and temporarily disables the occupancy detection in the sensor. After a short exit time delay, the occupancy detection reactivates and monitors for an additional grace period. If no occupancy is detected, the zone will remain in Automatic On operation. If occupancy is detected, the zone will go to a Permanent Off mode, requiring the switch to be pressed again in order to turn the lights on and restore the sensor to Automatic On operation.

PERMANENT OFF - Pressing the switch turns the lights and the sensor off. Lights will not come on until switch is pressed again.

SWITCH DISABLE - Prevents user from manually turning off the lights via the push-button. Button can still be utilized for programming.

OPTIONS

VANDAL-RESISTANT LENS (V)
- Ideal for high abuse or public areas, where occupants simply come and go
- Decreases detection range by 50%

INHIBIT PHOTOCELL (P)
- Auto set-point calibration
- Photocell prevents lights from turning on if adequate daylight is available, but does not turn lights off

347 VAC (347)
- Allows sensor to be powered from and switch 347 VAC
- Wall Plate Provided

COLOR
- White, Ivory, Gray, Almond, Black
- Wall Plate Provided

LOW TEMP/HIGH HUMIDITY (LT)
- Sensor is corrosion resistant
- Operates down to -40º F/C

ORDERING INFO

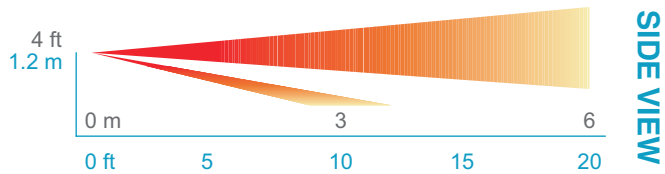
WSD [LENS] [PHOTOCELL] [VOLTAGE] [COLOR] [TEMP/HUMIDITY]

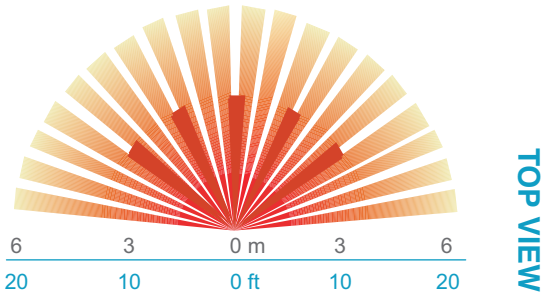
LENS	PHOTOCELL	VOLTAGE	COLOR	TEMP/HUMIDITY
Blank = None	Blank = None	Blank = 120/277 VAC	WH = White	Blank = Standard
V = Vandal Resistant	P = Photocell	347 = 347 VAC	IV = Ivory	LT = Low Temp
			GY = Gray	
			AL = Almond	
			BK = Black	

COVERAGE PATTERN

WSD WALL SWITCH DECORATOR LENS

- Small motion (e.g. hand movements) detection up to 20 ft (6.10 m)
- Large motion (e.g. walking) detection up to 50 ft (15.24 m)
- Wall-to-Wall coverage





WIRING (DO NOT WIRE HOT)

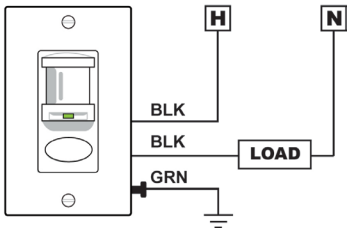
STANDARD WIRING

BLACK* - Line Input
BLACK* - Load Output
} *BLACK wires can be reversed
GREEN SCREW - Ground (required connection)

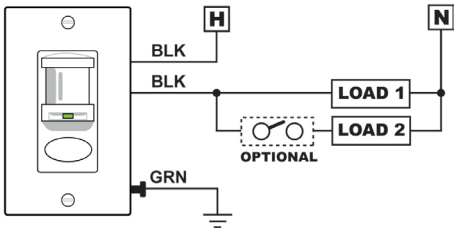
347 VAC OPTION (347)

Black wires are replaced w/ Red wires

STANDARD CONFIGURATION



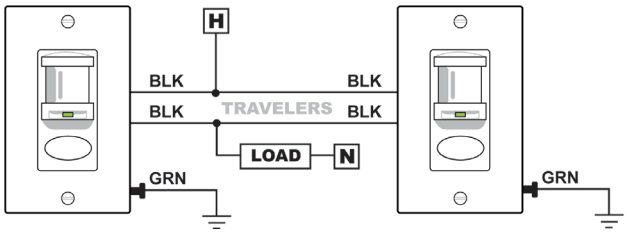
BI-LEVEL CONFIGURATION

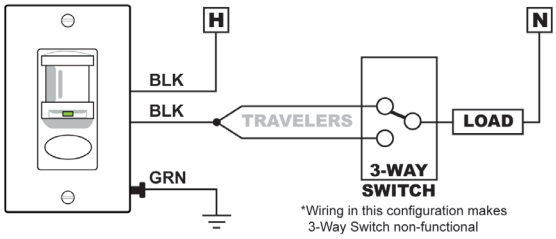


Note: Connection to Ground required for sensor to function

3-WAY CONFIGURATIONS

Travelers are used to wire sensors (or sensor and 3-way switch)





Note: Connection to Ground required for sensor to function

WARNING

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

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T059-004-P

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WSD PDT

WALL SWITCH DECORATOR SENSOR
LINE VOLTAGE • PASSIVE DUAL TECHNOLOGY (PDT)

SPECIFICATIONS

FEATURES
- Patented Dual Technology with PIR / Microphonics™ Detection
- Self-Contained Relay - No Power Pack Needed
- Interchangeable Hot & Load Wires - Impossible to Wire Backwards
- No Neutral Required / No Minimum Load
- Small Motion Detection to 20 ft (6.10 m)
- Self-Grounding Mounting Strap
- Compatible w/ Electronic & Magnetic Ballasts, CFLs, & Incandescents
- Push-Button Programmable w/o Removing the Switch Plate
- Adjustable Time Delay
- LampMaximizer® Minimum On Time (disabled by default)
- Non-Volatile Settings Memory
- Green LED Indicator

PHYSICAL SPECS
- SIZE (not including mounting strap) 2.74"H x 1.68"W x 1.63"D (6.96cm x 4.27cm x 4.14cm)
- WEIGHT 5 oz
- MOUNTING Single Gang Switch Box
- MOUNTING HEIGHT 30-48 in (76.2-121.9 cm)
- COLORS White, Ivory, Gray, Lt. Almond, Black

ELECTRICAL SPECS
- MAXIMUM LOAD
  - 800 W @ 120 VAC
  - 1200 W @ 277 VAC
  - 1500 W @ 347 VAC
- MINIMUM LOAD None
- MOTOR LOAD 1/4 HP
- FREQUENCY 50/60 Hz (timers are 1.2x for 50 Hz)

ENVIRONMENTAL SPECS
- OPERATING TEMP 14º to 160º F (-10º to 71º C)
- STORAGE TEMP -14º to 160º F (-26º to 71º C)
- RELATIVE HUMIDITY 20 to 90% non-condensing
- SILICONE FREE
- ROHS COMPLIANT

OVERVIEW

The **WSD PDT** Series is a Wall Switch Decorator style Passive Dual Technology (PDT) occupancy sensor. The combination of Passive Infrared and patented Microphonics™ detection allows this sensor to literally see & hear occupants. It is ideal for restrooms with stalls, private offices where occupant turns their back to the sensor, or rooms with obstructions.

SENSOR OPERATION

Sensors with Passive Dual Technology (PDT) first see motion using Passive Infrared (PIR) detection and then engage Microphonics™ to hear sounds that indicate continued occupancy. This patented technology uses automatic gain control (AGC) to dynamically self adapt a sensor to its environment by filtering out constant background noise and detecting only noises typical of human activity. When occupancy is detected, the relay switches the connected load on as dictated by the sensor's operational settings.

An internal timer keeps the lights on during brief periods of inactivity and turns the lights off when it expires. The default time delay is 10 minutes. This timer is programmable from 30 seconds to 20 minutes, and is reset every time occupancy is re-detected. Patent pending LampMaximzer technology is also present in this sensor, providing an additional minimum on time (disabled by default) to be used if desired. Finally, as an added safety measure, a 10 second grace period allows the lights to be voice reactivated after initially shutting off. This state-of-the-art design requires no field calibration or sensitivity adjustments.

ON MODES

AUTOMATIC ON (default) - Lights come on when occupancy is detected.
MANUAL ON - Requires the occupant manually turn on lights via the push-button.
REDUCED TURN ON - Sensor is initially set to only detect large motions, effectively ignoring PIR signals reflected off of surfaces, while still sensing occupants when they enter the room. Once lights are on, the sensor returns to maximum sensitivity.

SWITCH MODES

PREDICTIVE OFF MODE (default) - This mode allows occupants to turn lights off via the switch without losing the convenience of having the lights automatically turn on when they re-enter the room. Pressing the switch turns the lights off and temporarily disables the occupancy detection in the sensor. After a short exit time delay, the occupancy detection reactivates and monitors for an additional grace period. If no occupancy is detected, the zone will remain in Automatic On operation. If occupancy is detected, the zone will go to a Permanent Off mode, requiring the switch to be pressed again in order to turn the lights on and restore the sensor to Automatic On operation.
PERMANENT OFF - Pressing the switch turns the lights and the sensor off. Lights will not come on until switch is pressed again.
SWITCH DISABLE - Prevents user from manually turning off the lights via the push-button. Button can still be utilized for programming.

OPTIONS

VANDAL-RESISTANT LENS (V)
- Ideal for high abuse or public areas
- Decreases detection range by 50%

INHIBIT PHOTOCELL (P)
- Auto set-point calibration
- Photocell prevents lights from turning on if adequate daylight is available, but does not turn lights off

347 VAC (347)
- Allows sensor to be powered from and switch 347 VAC
- Wall plate provided (Ivory & White only)

COLOR
- White, Ivory, Gray, Lt. Almond, Black
- Wall plate provided
- Must be specified when ordered

LOW TEMP/HIGH HUMIDITY (LT)
- Sensor is corrosion resistant
- Operates down to -4º F(-20ºC)

c UL US LISTED

TITLE 24
ASSEMBLED in U.S.A.
5 YEAR WARRANTY

ORDERING INFO

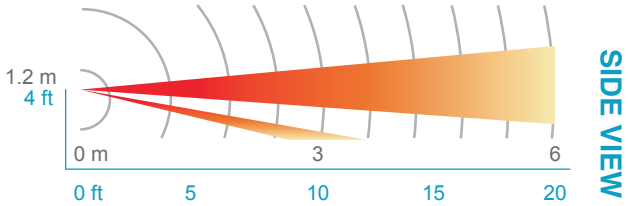
WSD PDT [LENS] [PHOTOCELL] [VOLTAGE] [COLOR] [TEMP/HUMIDITY]

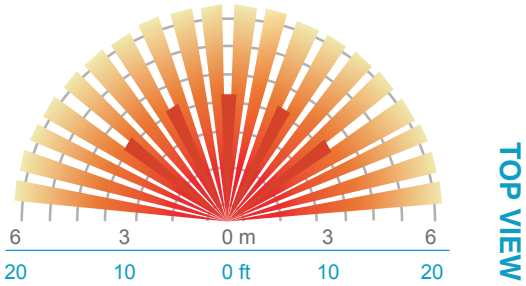
LENS	PHOTOCELL	VOLTAGE	COLOR	TEMP/HUMIDITY
Blank = Standard	Blank = None	Blank = 120/277 VAC	WH = White	Blank = Standard
V = Vandal Resistant	P = Photocell	347 = 347 VAC	IV = Ivory	LT = Low Temp
			GY = Gray	
			AL = Lt. Almond	
			BK = Black	

COVERAGE PATTERN

WALL SWITCH DECORATOR LENS W/ MICROPHONICS™

- Small motion (e.g. hand movements) detection up to 20 ft (6.10 m)
- Large motion (e.g. walking) detection up to 50 ft (15.24 m)
- Wall-to-Wall coverage
- Microphonics™ provides overlapping detection of human activity over the complete PIR coverage area
- Advanced filtering is utilized to prevent non-occupant noises from keeping the lights on





WIRING (DO NOT WIRE HOT)

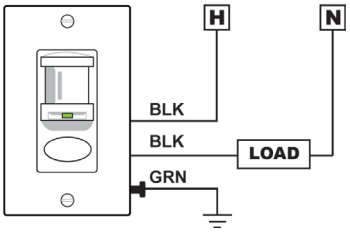
STANDARD WIRING

BLACK* - Line Input
BLACK* - Load Output
} *BLACK wires can be reversed
GREEN SCREW - Ground (required connection)

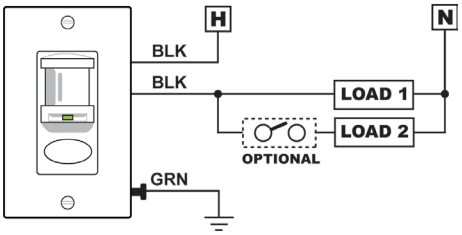
347 VAC OPTION (347)

Black wires are replaced w/ Red wires

STANDARD CONFIGURATION



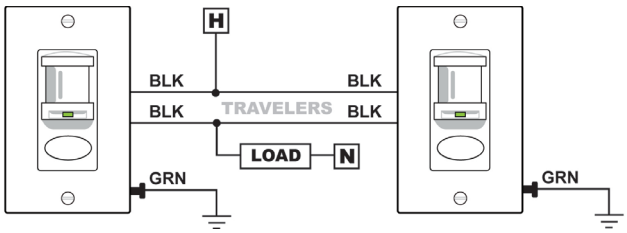
BI-LEVEL CONFIGURATION

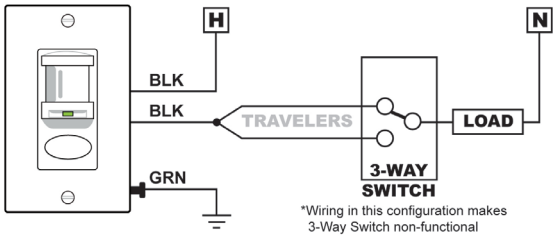


Note: Connection to Ground required for sensor to function

3-WAY WIRING CONFIGURATIONS

Travelers are used to wire sensors (or sensor and 3-way switch) in parallel.





Note: Connection to Ground required for sensor to function

PROGRAMMING

Refer to included instruction card IC2.002 for default settings and directions on programming the sensor via the push-button.

WARNING

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

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TS-WSD-005A

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Mercantile Customer Project Commitment Agreement
Cash Rebate Option

THIS MERCANTILE CUSTOMER PROJECT COMMITMENT AGREEMENT ("Agreement") is made and entered into by and between The Cleveland Electric Illuminating Company, its successors and assigns (hereinafter called the "Company") and AT&T Services, Inc., Taxpayer ID No. 74-2782655 its permitted successors and assigns (hereinafter called the "Customer") (collectively the "Parties" or individually the "Party") and is effective on the date last executed by the Parties as indicated below.

WITNESSETH

WHEREAS, the Company is an electric distribution utility and electric light company, as both of these terms are defined in R.C. § 4928.01(A); and

WHEREAS, Customer is a mercantile customer, as that term is defined in R.C. § 4928.01(A)(19), doing business within the Company's certified service territory; and

WHEREAS, R.C. § 4928.66 (the "Statute") requires the Company to meet certain energy efficiency and peak demand reduction ("EE&PDR") benchmarks; and

WHEREAS, when complying with certain EE&PDR benchmarks the Company may include the effects of mercantile customer-sited EE&PDR projects; and

WHEREAS, Customer has certain customer-sited demand reduction, demand response, or energy efficiency project(s) as set forth in attached Exhibit 1 (the "Customer Energy Project(s)") that it desires to commit to the Company for integration into the Company's Energy Efficiency & Peak Demand Reduction Program Portfolio Plan ("Company Plan") that the Company will implement in order to comply with the Statute; and

WHEREAS, the Customer, pursuant to the Public Utilities Commission of Ohio's ("Commission") September 15, 2010 Order in Case No. 10-834-EL-EEC, desires to pursue a cash rebate of some of the costs pertaining to its Customer Energy Project(s) ("Cash Rebate") and is committing the Customer Energy Project(s) as a result of such incentive.

WHEREAS, Customer's decision to commit its Customer Energy Project(s) to the Company for inclusion in the Company Plan has been reasonably encouraged by the possibility of a Cash Rebate.

WHEREAS, in consideration of, and upon receipt of, said cash rebate, Customer will commit the Customer Energy Project(s) to the Company and will comply with all other terms and conditions set forth herein.

NOW THEREFORE, in consideration of the mutual promises set forth herein, and for other good and valuable consideration, the receipt and sufficiency of which is hereby acknowledged, the parties, intending to be legally bound, do hereby agree as follows:

1. **Customer Energy Projects.** Customer hereby commits to the Company and Company accepts for integration into the Company Plan the Customer Energy Project(s) set forth on attached Exhibit 1. Said commitment shall be for the life of the Customer Energy Project(s). Company will incorporate said project(s) into the Company Plan to the extent that such projects qualify. In so committing, and as evidenced by the affidavit attached hereto as Exhibit A, Customer acknowledges that the information provided to the Company about the Customer Energy Project(s) is true and accurate to the best of its knowledge.

a. By committing the Customer Energy Project(s) to the Company, Customer acknowledges and agrees that the Company shall control the use of the kWh and/or kW reductions resulting from said projects for purposes of complying with the Statute. By committing the Customer Energy Project(s), Customer further acknowledges and agrees that the Company shall take ownership of the energy efficiency capacity rights associated with said Project(s) and shall, at its sole discretion, aggregate said capacity into the PJM market through an auction. Any proceeds from any such bids accepted by PJM will be used to offset the costs charged to the Customer and other of the Company's customers for compliance with state mandated energy efficiency and/or peak demand requirements

b. The Company acknowledges that some of Customer's Energy Projects contemplated in this paragraph may have been performed under certain other federal and/or state programs in which certain parameters are required to be maintained in order to retain preferential financing or other government benefits (individually and collectively, as appropriate, "Benefits"). In the event that the use of any such project by the Company in any way affects such Benefits, and upon written request from the Customer, Company will release said Customer's Energy Project(s) to the extent necessary for Customer to meet the prerequisites for such Benefits. Customer acknowledges that such release (i) may affect Customer's cash rebate discussed in Article 3 below; and (ii) will not affect any of Customer's other requirements or obligations.

c. Any future Customer Energy Project(s) committed by Customer shall be subject to a separate application and, upon approval by the Commission, said projects shall become part of this Agreement.

d. Customer will provide Company or Company's agent(s) with reasonable assistance in the preparation of the Commission's standard joint application for approval of this Agreement ("Joint Application") that will be filed with the Commission, with such Joint Application being consistent with then current Commission requirements.

e. Upon written request and reasonable advance notice, Customer will grant employees or authorized agents of either the Company or the Commission reasonable, pre-arranged access to the Customer Energy Project(s) for purposes of measuring and verifying energy savings and/or peak demand reductions resulting from the Customer Energy Project(s). It is expressly agreed that consultants of either the Company or the Commission are their respective authorized agents.

2. **Joint Application to the Commission.** The Parties will submit the Joint Application using the Commission's standard "Application to Commit Energy Efficiency/Peak Demand Reduction Programs" ("Joint Application") in which they will seek the Commission's approval of (i) this Agreement: (ii) the commitment of the Customer Energy Project(s) for inclusion in the Company Plan; and (iii) the Customer's Cash Rebate.

The Joint Application shall include all information as set forth in the Commission's standard form which, includes without limitation:

i. A narrative description of the Customer Energy Project(s), including but not limited to, make, model and year of any installed and/or replaced equipment;
ii. A copy of this Agreement; and
iii. A description of all methodologies, protocols, and practices used or proposed to be used in measuring and verifying program results.

3. **Customer Cash Rebate.** Upon Commission approval of the Joint Application, Customer shall provide Company with a W-9 tax form, which shall at a minimum include Customer's tax identification number. Within the greater of 90 days of the Commission's approval of the Joint Application or the completion of the Customer Energy Project, the Company will issue to the Customer the Cash Rebate in the amount set forth in the Commission's Finding and Order approving the Joint Application.

    a. Customer acknowledges: i) that the Company will cap the Cash Rebate at the lesser of 50% of Customer Energy Project(s) costs or $250,000; ii) the maximum rebate that the Customer may receive per year is $500,000 per Taxpayer Identification Number per utility service territory; and iii) if the Customer Energy Project qualifies for a rebate program approved by the Commission and offered by the Company, Customer may still elect to file such project under the Company's mercantile customer self direct program, however the Cash Rebate that will be paid shall be discounted by 25%; and

    b. Customer acknowledges that breaches of this Agreement, include, but are not limited to:

        i. Customer's failure to comply with the terms and conditions set forth in the Agreement, or its equivalent, within a reasonable period of time after receipt of written notice of such non-compliance;

        ii. Customer knowingly falsifying any documents provided to the Company or the Commission in connection with this Agreement or the Joint Application.

    c. In the event of a breach of this Agreement by the Customer, Customer agrees and acknowledges that it will repay to the Company, within 90 days of receipt of written notice of said breach, the full amount of the Cash Rebate paid under this Agreement. This remedy is in addition to any and all other remedies available to the Company by law or equity.

4. **Termination of Agreement.** This Agreement shall automatically terminate:

    a. If the Commission fails to approve the Joint Agreement;

    b. Upon order of the Commission; or

    c. At the end of the life of the last Customer Energy Project subject to this Agreement.

    Customer shall also have an option to terminate this Agreement should the Commission not approve the Customer's Cash Rebate, provided that Customer provides the Company with written notice of such termination within ten days of either the Commission issuing a final appealable order or the Ohio Supreme Court issuing its opinion should the matter be appealed.

5. **Confidentiality.** Each Party shall hold in confidence and not release or disclose to any person any document or information furnished by the other Party in connection with this Agreement that is designated as confidential and proprietary ("Confidential Information"), unless: (i) compelled to disclose such document or information by judicial, regulatory or administrative process or other provisions of law; (ii) such document or information is generally available to the public; or (iii) such document or information was available to the receiving Party on a non-confidential basis at the time of disclosure.

    a. Notwithstanding the above, a Party may disclose to its employees, directors, attorneys, consultants and agents all documents and information furnished by the other Party in connection with this Agreement, provided that such employees, directors, attorneys,

consultants and agents have been advised of the confidential nature of this information and through such disclosure are deemed to be bound by the terms set forth herein.

b. A Party receiving such Confidential Information shall protect it with the same standard of care as its own confidential or proprietary information.

c. A Party receiving notice or otherwise concluding that Confidential Information furnished by the other Party in connection with this Agreement is being sought under any provision of law, to the extent it is permitted to do so under any applicable law, shall endeavor to: (i) promptly notify the other Party; and (ii) use reasonable efforts in cooperation with the other Party to seek confidential treatment of such Confidential Information, including without limitation, the filing of such information under a valid protective order.

d. By executing this Agreement, Customer hereby acknowledges and agrees that Company may disclose to the Commission or its Staff any and all Customer information, including Confidential Information, related to a Customer Energy Project, provided that Company uses reasonable efforts to seek confidential treatment of the same.

6. **Taxes.** Customer shall be responsible for all tax consequences (if any) arising from the payment of the Cash Rebate.

7. **Notices.** Unless otherwise stated herein, all notices, demands or requests required or permitted under this Agreement must be in writing and must be delivered or sent by overnight express mail, courier service, electronic mail or facsimile transmission addressed as follows:

If to the Company:

FirstEnergy Service Company
76 South Main Street
Akron, OH 44308
Attn: Victoria Nofziger
Telephone: 330-384-4684
Fax: 330-761-4281
Email: vmnofziger@firstenergycorp.com

If to the Customer:

AT&T Corp. Real Estate
7537 Oxford Circle
Dublin, CA 94568
Attn:Donna Day
Telephone:925-551-8123
Fax:
Email:donnaday@att.com

or to such other person at such other address as a Party may designate by like notice to the other Party. Notice received after the close of the business day will be deemed received on the next business day; provided that notice by facsimile transmission will be deemed to have been received by the recipient if the recipient confirms receipt telephonically or in writing.

8. **Authority to Act.** The Parties represent and warrant that they are represented by counsel in connection with this Agreement, have been fully advised in connection with the execution thereof, have taken all legal and corporate steps necessary to enter into this Agreement, and that the undersigned has the authority to enter into this Agreement, to bind the Parties to all provisions herein and to take the actions required to be performed in fulfillment of the undertakings contained herein.

9. **Non-Waiver.** The delay or failure of either party to assert or enforce in any instance strict performance of any of the terms of this Agreement or to exercise any rights hereunder conferred, shall not be construed as a waiver or relinquishment to any extent of its rights to assert or rely upon such terms or rights at any later time or on any future occasion.

10. **Entire Agreement.** This Agreement, along with related exhibits, and the Company's Rider DSE, or its equivalent, as amended from time to time by the Commission, contains the Parties' entire understanding with respect to the matters addressed herein and there are no verbal or collateral representations, undertakings, or agreements not expressly set forth herein. No change in, addition to, or waiver of the terms of this Agreement shall be binding upon any of the Parties unless the same is set forth in writing and signed by an authorized representative of each of the Parties. In the event of any conflict between Rider DSE or its equivalent and this document, the latter shall prevail.

11. **Assignment.** Customer may not assign any of its rights or obligations under this Agreement without obtaining the prior written consent of the Company, which consent will not be unreasonably withheld. No assignment of this Agreement will relieve the assigning Party of any of its obligations under this Agreement until such obligations have been assumed by the assignee and all necessary consents have been obtained.

12. **Severability.** If any portion of this Agreement is held invalid, the Parties agree that such invalidity shall not affect the validity of the remaining portions of this Agreement, and the Parties further agree to substitute for the invalid portion a valid provision that most closely approximates the economic effect and intent of the invalid provision.

13. **Governing Law.** This Agreement shall be governed by the laws and regulations of the State of Ohio, without regard to its conflict of law provisions.

14. **Execution and Counterparts.** This Agreement may be executed in multiple counterparts, which taken together shall constitute an original without the necessity of all parties signing the same page or the same documents, and may be executed by signatures to electronically or telephonically transmitted counterparts in lieu of original printed or photocopied documents. Signatures transmitted by facsimile shall be considered original signatures.

IN WITNESS WHEREOF, the Parties hereto have caused this Agreement to be executed by their duly authorized officers or representatives as of the day and year set forth below.

Please Select Operating Company_ The Cleveland Electric Illuminating Company
(Company)

By: _____

Title: V.P. Of Energy Efficiency

Date: 12-31-12

AT&T, Inc._
(Customer)

By: _____ SIGN HERE

Title: Executive Director of Corporate Energy

Date: 11-7-12

Affidavit of AT&T Services, Inc. – Exhibit _A _

STATE OF OHIO)
) SS: 74-2782655
COUNTY OF Cuyahoga)

I, John Schinter ,being first duly sworn in accordance with law, deposes and states as follows:

1. I am the Executive Director of Corporate Energy of AT&T Services, Inc. ("Customer") As part of my duties, I oversee energy related matters for the Customer.
2. The Customer has agreed to commit certain energy efficiency projects to The Cleveland Electric Illuminating Company ("Company"), which are the subject of the agreement to which this affidavit is attached ("Project(s)").
3. In exchange for making such a commitment, the Company has agreed to provide Customer with Cash ("Incentive"). This Incentive was a critical factor in the Customer's decision to go forward with the Project(s) and to commit the Project(s) to the Company.
4. All information related to said Project(s) that has been submitted to the Company is true and accurate to the best of my knowledge.

FURTHER AFFIANT SAYETH NAUGHT.

SIGN HERE

Sworn to before me and subscribed in my presence this 7th day of Nov, 2012

Denise Fowler
Notary

OFFICIAL SEAL
DENISE FOWLER
Notary Public - State of Illinois
My Commission Expires Nov 1, 2015

Version 9.11.12

This foregoing document was electronically filed with the Public Utilities

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in

Case No(s). 13-0330-EL-EEC

Summary: Application to Commit Energy Efficiency/Peak Demand Reduction Programs of The Cleveland Electric Illuminating Company and AT&T Services Inc. electronically filed by Ms. Jennifer M. Sybyl on behalf of The Cleveland Electric Illuminating Company and AT&T Services Inc.