



Case No.: 13-0575 **-EL-EEC**

Mercantile Customer: Wal-Mart Stores, Inc.

Electric Utility: The Cleveland Electric Illuminating Company

**Program Title or
Description:** Project 1 - New Construction Lighting
Project 2 - High Efficiency HVAC System
Project 3 - High Efficiency Refrigerated Cases

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 to 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: Wal-Mart Store #2073 Brooklyn

Principal address: Sam Walton Development Complex 2001 S.E. 10th Street Bentonville, AR 72716-5530

Address of facility for which this energy efficiency program applies: 10000 Brookpark Rd., Cleveland, Ohio 44130

Name and telephone number for responses to questions: Richard Mynatt 479-277-9086

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):
4/3/2012, 8/29/2012 and 10/16/2012.
- ☐ 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: ____ 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: 546,998 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?

4/3/2012 - See Exhibit 2A

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

See Exhibit 2A - 161 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 \$25,316.00. (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.



Public Utilities Commission

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

Case No.: 13 - 0575 -EL-EEC

State of Ohio :

Debra James , Affiant, being duly sworn according to law, deposes and says that:

1. I am the duly authorized representative of:

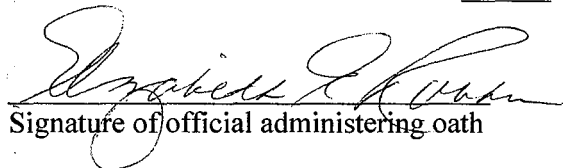
Wal-Mart Stores, Inc.

[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.

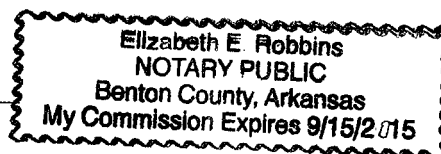

Signature of Affiant & Title

Sworn and subscribed before me this 26th day of March, 2013 Month/Year


Signature of official administering oath

Elizabeth E Robbins
Print Name and Title Portfolio Coordinator

My commission expires on 9/15/2015



Customer Legal Entity Name: Wal-Mart Stores, Inc.

Site Address: Wal-Mart Store #2073 Brooklyn

Principal Address: 10000 Brookpark 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	New Construction Lighting	This is an expansion/remodel project. The existing Wal-Mart store was converted to a Super Wal-Mart with a new grocery department. 2 and 4 lamp 4' T8 fluorescent fixtures with high-efficiency electronic ballasts were installed throughout the new addition. 455 new fluorescent T8 fixtures were installed in the new grocery sales floor area. The 25 incandescent exit signs in the existing portion of the building were upgraded to LED. 17 of the 42 LED exit signs were installed in the new addition and are not included in the scope of this application.	See the attached non-standard lighting calculator "WM 2073_P1_Nonstandard_Lighting_Calculator.xls".	N/A	High-efficiency, NEMA premium electronic ballasts and high performance T8 lamps were installed throughout the sales floor area instead of the standard electronic T8 ballasts and standard 32 watt lamps.
2	High Efficiency HVAC System	40 new, high-efficiency roof top units were installed in the existing facility as part of a complete store remodel project. 3, 5 and 10 ton Lennox SG series packaged roof top units were installed to provide ambient cooling and heating throughout the store. The new roof-top units deliver the same amount of cooling capacity to the space, except they use less energy than the existing units.	Please see the attached HVAC energy savings calculations "WM 2073_P2_HVAC Savings Calculations.pdf".	2 to 3 years. The decision to upgrade the roof top units was made to reduce energy use, increase customer comfort and to reduce maintenance costs.	N/A
3	High Efficiency Refrigerated Cases	Refrigerated cases were installed with LED case lighting and electrically commutated evaporator motors. The standard cases feature T8 fluorescent lighting and shaded pole motors. As part of a company-wide initiative to reduce energy use, high efficiency cases were installed. The following cases were installed: (4) 12' O5DM beer cases, (7) ONRZH 2DR cases, (3) ONRZH 3DR cases, (5) ONRZH 4DR cases, (12) ONRZH 5DR cases, (1) ONRIZH 4DR BTB, (3) ONRIZH 5DR BTB.	See the attached calculation sheet "WM 2073_P3_Refrigerated Cases Calculations.pdf" for the estimated annual energy savings. The estimated annual energy savings was calculated by comparing the standard case's energy use with the high efficiency version that was installed.	N/A	The standard refrigerated cases feature fluorescent T8 lighting and evaporator fans with shaded-pole motors.

Docket No. 13-0575

Site: 10000 Brookpark Rd.

Exhibit 2

Customer Legal Entity Name: Wal-Mart Stores, Inc.

Site Address: Wal-Mart Store #2073 Brooklyn

Principal Address: 10000 Brookpark Rd.

	Unadjusted Usage, kwh (A)	Weather Adjusted Usage, kwh (B)	Weather Adjusted Usage with Energy Efficiency Addbacks, kwh (C) <i>Note 1</i>
2011	2,180,977	2,180,977	2,180,977
Average	2,180,977	2,180,977	2,180,977

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) \$ <i>Note 2</i>	Commitment Payment \$
1	New Construction Lighting	08/29/2012	\$110,659	\$55,330	326,291	326,291	33	\$16,099	\$12,074	
2	High Efficiency HVAC System	04/03/2012	\$260,805	\$130,403	107,215	107,215	115	\$8,577	\$6,433	
3	High Efficiency Refrigerated Cases	10/16/2012	\$312,409	\$156,205	113,492	113,492	13	\$9,079	\$6,809	
					-	-	-			
					-	-	-			
					-	-	-			
					-	-	-			
Total			\$683,873		546,998	546,998	161	\$33,755	\$25,316	\$0

Docket No. 13-0575

Site: 10000 Brookpark 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	326	\$ 308	\$ 100,589	\$ 1,350	\$12,074	\$3,263	\$ 16,687	6.0
2	107	\$ 308	\$ 33,052	\$ 1,350	\$6,433	\$1,072	\$ 8,855	3.73
3	113	\$ 308	\$ 34,987	\$ 1,350	\$6,809	\$1,135	\$ 9,294	3.76
Total	547	\$ 308	168,629	4,050	\$25,316	\$5,470	34,836	4.8

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)

Wal-Mart Stores, Inc. ~ Wal-Mart Store #2073 Brooklyn
Docket No. 13-0575

Site: 10000 Brookpark Rd.

Lighting Form

Lighting Inventory Form

Applicant Name:	Wal-Mart
Facility Name:	Wal-Mart Store #2073 Brooklyn, Ohio
Date:	3/26/2013
Lighting Zone (indicate only):	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, DAYLTG for photosensor, or NONE for none. Controls must save energy to 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.

[illegible]

Lighting Form

[illegible]

Project Estimated Annual Savings Summary

Lighting

Estimated Annual kWh Savings	326,291
Total Change in Connected Load	33.26

Annual Estimated Cost Savings	\$32,629.10
Annual Operating Hours	8,760

Interior Lighting Incentive @ \$0.05/kWh (excluding retrofit CFLs, sensors, or LED exit signs)	\$15,848.50
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	\$250.00
Total Lighting Controls Incentive @ \$25/occupancy sensor and \$25/daylight sensor (includes all Lighting Controls, both interior and exterior)	\$0.00

Total Calculated Incentive	\$16,098.50
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Total Fixture Quantity excluding retrofit CFLs and LED Exit Signs	455
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	25
Total Quantity for Occupancy Sensors	0
Total Quantity for Daylight Sensors	0

<p>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</p> <p>This location is open 24 hours per day, 7 days per week.</p>
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Demand Savings (For Internal Use Only)	44.56
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Store Finder

Store Details

Walmart
10000 Brookpark Rd
Cleveland, OH 44130

[View Local Ad for This Store](#)
[Directions](#)

site to store Available (See pickup hours below)



SNAP accepted here.

[Make This My Store](#) [Learn More](#)

Please note: Store hours are subject to change. Please contact the store for their current hours of operation.

Store Phone
(216) 741-7340

Store Hours
• Open 24 Hours

At This Location

- Tire & Lube
- Pharmacy
- Vision Center
- Garden Center
- Canopy Home Collection
- Cell Phones, Plans & More
- Photo Center
- 1-Hour Photo Center
- Same Day Pickup Photo Center
- Portrait Studio
- Portrait Studio
- Site to StoreSM
- Pay In Person
- L.e.i. Apparel

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Pharmacy Phone
(216) 741-7386

Pharmacy Hours

- Monday - Friday :
9: 00 am - 9: 00 pm
- Saturday:
9: 00 am - 7: 00 pm
- Sunday:
10: 00 am - 6: 00 pm

Site to StoreSM Hours

- Monday - Friday :
10: 00 am - 10: 00 pm
- Saturday:
10: 00 am - 10: 00 pm
- Sunday:
10: 00 am - 10: 00 pm

Photo Center Phone
(216) 741-6977

Vision Center Phone
(216) 741-6786

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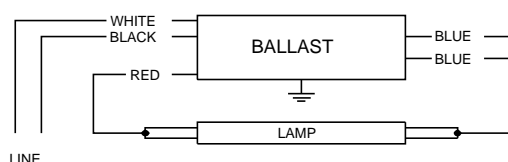
Electrical Specifications

IOP-2P32-SC@120V

Brand Name	OPTANIUM
Ballast Type	Electronic
Starting Method	Instant Start
Lamp Connection	Parallel
Input Voltage	120-277
Input Frequency	50/60 HZ
Status	Active

Lamp Type	Num. 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	B.E.F .
* F32T8	1	32	-20/-29	0.30	35	1.05	10	0.99	1.5	3.00
F32T8	2	32	-20/-29	0.47	55	0.87	10	0.99	1.6	1.58

Wiring Diagram



Diag. 68

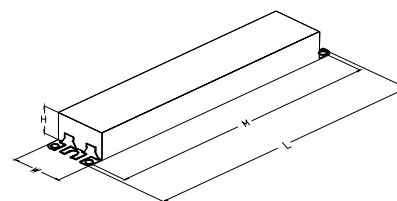
Insulate unused blue lead for 1000V

The wiring diagram that appears above is for the lamp type denoted by the asterisk (*)

Standard Lead Length (inches)

	in.	cm.		in.	cm.
Black	25	63.5	Yellow/Blue		0
White	25	63.5	Blue/White		0
Blue	31	78.7	Brown		0
Red	37	94	Orange		0
Yellow		0	Orange/Black		0
Gray		0	Black/White		0
Violet		0	Red/White		0

Enclosure



Enclosure Dimensions

OverAll (L)	Width (W)	Height (H)	Mounting (M)
9.50 "	1.7 "	1.18 "	8.90 "
9 1/2	1 7/10	1 9/50	8 9/10
24.1 cm	4.3 cm	3 cm	22.6 cm

Revised 03/03/2010



Data is based upon tests performed by Philips Lighting Electronics N.A. in a controlled environment and is representative of relative performance. Actual performance can vary depending on operating conditions. Specifications are subject to change without notice. All specifications are nominal unless otherwise noted.

PHILIPS LIGHTING ELECTRONICS N.A.

10275 WEST HIGGINS ROAD • ROSEMONT, IL 60018

Tel: 800-322-2086 • Fax: 888-423-1882 • www.philips.com/advance

Customer Support/Technical Service: 800-372-3331 • OEM Support: 866-915-5886



2011, December 20
data subject to change

High performance, extra low mercury

Advantage™ T8

Philips Advantage T8 lamps offer high lumen output in an environmentally responsible lamp.

Benefits

- Reduced impact on the environment without sacrificing performance.
- 36 month warranty period.
- Sustainable lighting solution - low mercury.

Features

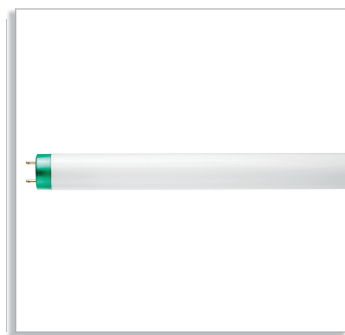
- High lumens enable multiple system options to maximize energy savings and reduce lighting costs.
- Fully dimmable without burn-in.
- Better for the environment.
- Only 1.7mg of mercury with ALTO II Technology.
- Available in 17,25, and 32 watt with 3000, 3500, 4100 & 5000 Color Temperatures.

Application

- Ideal for applications requiring maximum light output.

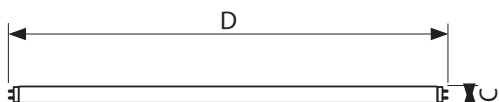
PHILIPS
sense and simplicity

Related products



G13, T8

Dimensional drawing

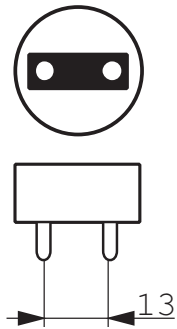


G13, T8

General Characteristics

Order code	Full product name	Bulb	Base	Energy Saving	Rated Avg Life [12-Hr Prog St]	Rated Avg Life [12-Hr Inst St]	Rated Avg Life [3-Hr Prog St]	Rated Avg Life [3-Hr Inst St]
927850083101	F17T8 ADV830 ALTO	T8	Medium Bi-Pin	Energy Saving	36000	30000	30000	24000
927850083601	F17T8 ADV835 ALTO	T8	Medium Bi-Pin	Energy Saving	36000	30000	30000	24000
927850084201	F17T8 ADV841 ALTO	T8	Medium Bi-Pin	Energy Saving	36000	30000	30000	24000
927850085101	F17T8 ADV850 ALTO	T8	Medium Bi-Pin	Energy Saving	36000	30000	30000	24000
927851083101	F25T8 ADV830 ALTO	T8	Medium Bi-Pin	Energy Saving	36000	30000	30000	24000
927851083601	F25T8 ADV835 ALTO	T8	Medium Bi-Pin	Energy Saving	36000	30000	30000	24000
927851084201	F25T8 ADV841 ALTO	T8	Medium Bi-Pin	Energy Saving	36000	30000	30000	24000
927851085101	F25T8 ADV850 ALTO	T8	Medium Bi-Pin	Energy Saving	36000	30000	30000	24000
927869783101	F32T8 ADV830 ALTO	T8	Medium Bi-Pin	Energy Saving	36000	30000	30000	24000
927869783601	F32T8 ADV835 ALTO	T8	Medium Bi-Pin	Energy Saving	36000	30000	30000	24000
927869784201	F32T8 ADV841 ALTO	T8	Medium Bi-Pin	Energy Saving	36000	30000	30000	24000
927869785101	F32T8 ADV850 ALTO	T8	Medium Bi-Pin	Energy Saving	36000	30000	30000	24000

Installation diagrams



G13

Light Technical Characteristics

Order code	Full product name	Color Code	Color Designation	Lumens (Brightness)	Color Rendering Index	Color Temperature	Design Mean Lumens
927850083101	F17T8 ADV830 ALTO	Advantage 830	Advantage 830	1450	85	3000	1405
927850083601	F17T8 ADV835 ALTO	Advantage 835	Advantage 835	1450	85	3500	1405
927850084201	F17T8 ADV841 ALTO	Advantage 841	Advantage 841	1450	85	4100	1405
927850085101	F17T8 ADV850 ALTO	Advantage 850	Advantage 850	1350	82	5000	1310
927851083101	F25T8 ADV830 ALTO	Advantage 830	Advantage 830	2250	85	3000	2185
927851083601	F25T8 ADV835 ALTO	Advantage 835	Advantage 835	2250	85	3500	2185
927851084201	F25T8 ADV841 ALTO	Advantage 841	Advantage 841	2250	85	4100	2185
927851085101	F25T8 ADV850 ALTO	Advantage 850	Advantage 850	2175	82	5000	2110
927869783101	F32T8 ADV830 ALTO	Advantage 830	Advantage 830	3100	85	3000	3000
927869783601	F32T8 ADV835 ALTO	Advantage 835	Advantage 835	3100	85	3500	3000
927869784201	F32T8 ADV841 ALTO	Advantage 841	Advantage 841	3100	85	4100	3000
927869785101	F32T8 ADV850 ALTO	Advantage 850	Advantage 850	3025	82	5000	2935

Electrical Characteristics

Order code	Full product name	Energy Used
927850083101	F17T8 ADV830 ALTO	17
927850083601	F17T8 ADV835 ALTO	17
927850084201	F17T8 ADV841 ALTO	17
927850085101	F17T8 ADV850 ALTO	17
927851083101	F25T8 ADV830 ALTO	25
927851083601	F25T8 ADV835 ALTO	25
927851084201	F25T8 ADV841 ALTO	25
927851085101	F25T8 ADV850 ALTO	25
927869783101	F32T8 ADV830 ALTO	32
927869783601	F32T8 ADV835 ALTO	32
927869784201	F32T8 ADV841 ALTO	32
927869785101	F32T8 ADV850 ALTO	32

Environmental Characteristics

Order code	Full product name	Mercury (Hg) Content	Picogram per Lumen Hour
927850083101	F17T8 ADV830 ALTO	1.7	50
927850083601	F17T8 ADV835 ALTO	1.7	50
927850084201	F17T8 ADV841 ALTO	1.7	50
927850085101	F17T8 ADV850 ALTO	1.7	54
927851083101	F25T8 ADV830 ALTO	1.7	32
927851083601	F25T8 ADV835 ALTO	1.7	32
927851084201	F25T8 ADV841 ALTO	1.7	32
927851085101	F25T8 ADV850 ALTO	1.7	34
927869783101	F32T8 ADV830 ALTO	1.7	24
927869783601	F32T8 ADV835 ALTO	1.7	24

Order code	Full product name	Mercury (Hg) Content	Picogram per Lumen Hour
927869784201	F32T8 ADV841 ALTO	1.7	24

Order code	Full product name	Mercury (Hg) Content	Picogram per Lumen Hour
927869785101	F32T8 ADV850 ALTO	1.7	24



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www.philips.com/lighting

2011, December 20
data subject to change



IOP-2P32-SC@120V	
Brand Name	OPTANIUM
Ballast Type	Electronic
Starting Method	Instant Start
Lamp Connection	Parallel
Input Voltage	120-277
Input Frequency	50/60 HZ
Status	Active

Electrical Specifications

Notes:

Section I - Physical Characteristics

- 1.1 Ballast shall be physically interchangeable with standard electromagnetic or standard electronic ballasts, where applicable.
- 1.2 Ballast shall be provided with integral leads color-coded per ANSI C82.11.

Section II - Performance Requirements

- 2.1 Ballast shall be _____ (Instant or Programmed) Start.
- 2.2 Ballast shall provide Independent Lamp Operation (ILO) for Instant Start or Programmed Start Parallel ballasts allowing remaining lamp(s) to maintain full light output when one or more lamps fail.
- 2.3 Ballast shall contain auto restart circuitry in order to restart lamps without resetting power.
- 2.4 Ballast shall operate from 50/60 Hz input source of 120V through 277V with sustained variations of +/- 10% (voltage and frequency).
GOPA ballasts shall operate from an input source of 347V.
- 2.5 Ballast shall be high frequency electronic type and operate lamps at a frequency between 42 kHz and 52 kHz to avoid interference with infrared devices, eliminate visible flicker and avoid Article Surveillance System, such as anti-theft devices.
- 2.6 Ballast shall have a Power Factor greater than 0.98 for primary lamp.
- 2.7 Ballast shall have a minimum ballast factor for primary lamp application as follows: 0.77 for Low Watt, 0.87 for Normal Light Output, and 1.18 for High Light for Instant Start ballasts or 0.71 for Low Watt and 0.88 for Normal Light Output for Programmed Start ballasts.
- 2.8 Ballast shall provide for a Lamp Current Crest Factor of 1.7 or less.
- 2.9 Ballast input current shall have Total Harmonic Distortion (THD) of less than 10% when operated at nominal line voltage with primary lamp.
- 2.10 Ballast shall have a Class A sound rating for all 4-foot lamps and smaller.
- 2.11 Ballast shall have a minimum starting temperature of -29C (-20F) on Instant Start ballasts or -18C (0F) on Programmed Start ballasts for standard T8 lamps and 16C (60F) for energy-saving T8 lamps. Consult lamp manufacturer for temperature versus light output characteristics.
- 2.12 Ballast shall tolerate sustained open circuit and short circuit output conditions.
- 2.13 Ballast shall have lamp striation-reduction circuitry.
- 2.14 Programmed Start ballast shall provide lamp EOL protection circuitry.
- 2.15 Maximum remote distance for Energy Saving Lamps in Remote/Tandem applications is 6 feet for ICN, IOP, and IOPA Instant Start and Programmed Start models.

Section III - Regulatory Requirements

- 3.1 Ballast shall not contain any Polychlorinated Biphenyl (PCB).
- 3.2 Ballast shall be Underwriters Laboratories (UL) listed, Class P and Type 1 Outdoor; and Canadian Standards Association (CSA) certified where applicable.
- 3.3 Ballast shall comply with ANSI C62.41 Category A for Transient protection.
- 3.4 Ballast shall comply with ANSI C82.11 where applicable.
- 3.5 Ballast shall comply with the requirements of the Federal Communications Commission (FCC) rules and regulations, Title 47 CFR part 18, Non-Consumer (Class A) for EMI/RFI (conducted and radiated).
- 3.6 IOP and IOPA Ballasts shall meet NEMA Premium/CEE High Performance T8 Lighting System Specifications.
- 3.7 IOP ballasts shall comply with UL Type CC rating.
- 3.8 Ballast shall comply with NEMA 410 for in-rush current limits.
- 3.9 Ballast shall meet RoHS Compliance Standards

Section IV - Other

- 4.1 Ballast shall be manufactured in an ISO 9001 Qualified factory.
- 4.2 Ballast shall carry a five-year warranty from date of manufacture against defects in material or workmanship, including replacement, for operation at a maximum case temperature of 70C. Ballasts with a "90C" designation in their catalog number shall also carry a three-year warranty at maximum case temperature of 90C.

4.3 Manufacturer shall have a twenty-year history of producing electronic ballasts for the North American market.

Notes:

1. Energy-saving T8 lamps (25W, 28W or 30W) may experience lamp striations if operated on ballasts not rated for their use.

Revised 03/03/2010



Data is based upon tests performed by Philips Lighting Electronics N.A. in a controlled environment and is representative of relative performance. Actual performance can vary depending on operating conditions. Specifications are subject to change without notice. All specifications are nominal unless otherwise noted.

PHILIPS LIGHTING ELECTRONICS N.A.

10275 WEST HIGGINS ROAD · ROSEMONT, IL 60018

Tel: 800-322-2086 · Fax: 888-423-1882 · www.philips.com/advance

Customer Support/Technical Service: 800-372-3331 · OEM Support: 866-915-5886



T8

ELECTRONIC FLUORESCENT BALLASTS

For 32W Lamps

HIGH POWER FACTOR SOUND RATED A



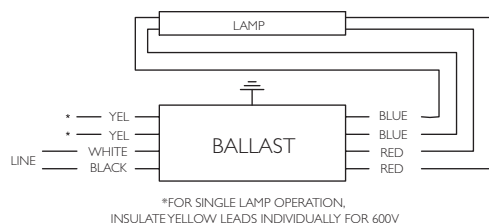
Electronic
Fluorescent Ballasts

No. of Lamps	Input Volts	Lamp Starting Method	Ballast Family	Catalog Number	Input Power ANSI (Watts)	Ballast Factor	Max. THD %	Line Current (Amps)	Min. Starting Temp. (°F/°C)	Dim.	Wiring Dia.	
F32T8, FBO31T8, F32T8/U6 (32W)												
4	120	IS	AmbiStar [‡]	REB-4P32-SC	103	0.81	125	1.57	0/-18	B	66	
	120-277	IS	Centium	ICN-4P32-N	112	0.88	10	0.94-0.41		-20/-29	N	66
			Optanium	IOP-4P32-LW-SC	96-94	0.77	10	0.81-0.35			B	
				IOPA-4P32-LW-N							N	
				IOP-4P32-SC	109-106	0.87	10	0.92-0.39			B	
				IOPA-4P32-N							N	
				IOPA-4P32-HL-90C-G							146-143	
				IOPA-4P32-HL-SC	150-146	1.18	10	1.26-0.54	B		71	
				PS	IOP-4PSP32-LW-SC	99	0.71	10	0.83-0.36	0/-18	B	178
					IOP-4PSP32-HL-G	TBD	1.18	10	TBD			177
					IOP-4PSP-LW-SC	99	0.71	10	0.83-0.36			138
					IOP-4S32-LW-SC	93-91	0.71	10	0.77-0.33			177
					IOP-4PSP32-SC	110	0.88	10	0.93-0.40			138
					IOP-4S32-SC	110	0.88	10	0.92-0.40			
	347	PS	Optanium	GOP-4PSP32-SC	114	0.88	10	0.33	0/-18	B	178	
		GOP-4PSP32-LW-SC		TBD	0.71	10	TBD	-20/-29			66	
		IS		GOPA-4P32-LW-SC	92	0.78	10		0.27			
		GOPA-4P32-SC		107	0.88	10	0.31					
	347/480	PS		HOP-4PSP32-HL-G	TBD	0.88/1.18	10	TBD	0/-18		178	

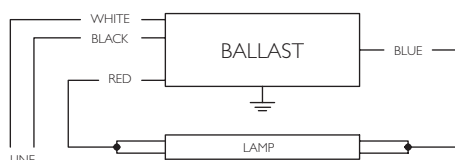
[‡] The above AmbiStar ballasts are normal power factor and labeled 'For Residential Use Only'



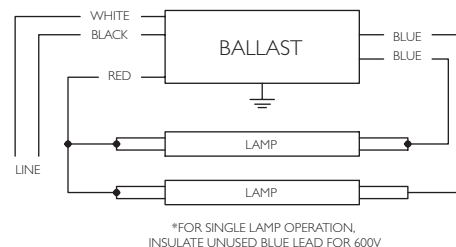
See pages I-2 and I-3 for specific SKU's that meet the NEMA Premium Standard



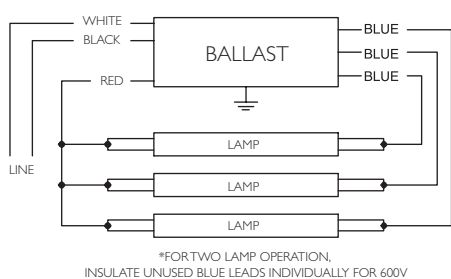
Diag. 39



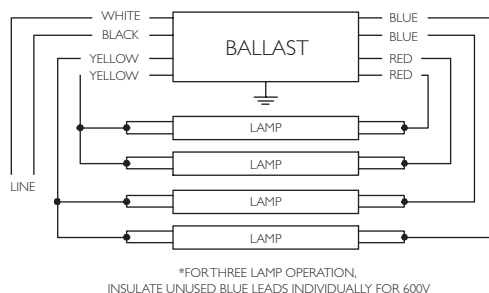
Diag. 63



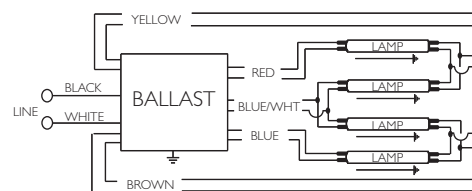
Diag. 64



Diag. 65



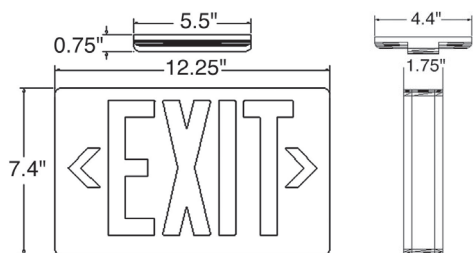
Diag. 66



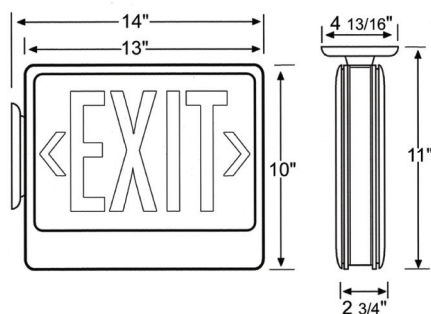
Diag. 138

Refer to page I-38 and I-39 for dimensions
Refer to page I-58 for additional wiring diagrams
Refer to pages 9-23 to 9-27 for lead lengths and shipping data

EX - LED EXIT



EX



EX with remote capacity

HOUSING

- Two sizes: Standard & Remote
- Injection Molded UL924 VO Flame Rated Thermoplastic
- Snap together Design
- Universal Face Design
- Damp Location Rated
- Replaceable Chevron Arrows
- Available in White or Black

ILLUMINATION

- L.E.D. source - available in long life, high output red or green
- Fully illuminated 6" letters with 3/4" stroke
- Low energy consumption with 2 watt red or 1 watt green LEDs

ELECTRONICS

- 120/277 Dual voltage
- Overload & short circuit protection
- Voltage surge & brown-out protection
- Solid-state constant current charger

BATTERY

- 6 Volt Ni-Cad Battery Standard on Non-Remote Units
- 6 Volt Lead Calcium Standard on Remote Capable Units
- Remote Capable Capacity up to 27 watts Optional.
- All Battery Options Fully Contained within the Fixture

MOUNTING

- Universal Mount with Canopy
- Universal J-Box Mounting Pattern

SELF-TEST/SELF-DIAGNOSTIC OPERATION (SD2)

- The circuit continuously monitors the operating condition of the AC power, battery supply voltage, emergency lamp continuity and charging circuit.
- If a failure is detected, visual status will occur immediately via the multi-colored LEDs. LED indicator(s) will illuminate until fault has been corrected.
- The SD2 also monitors the transfer circuit as well as performing automatic code compliant testing. The self-test will operate the equipment in emergency mode five minutes every 28 days. Also, a 90 minute full-function test is performed every six months.

CODE CONFORMANCE & STANDARDS

- UL 924 on Emergency Units
- N.E.C.
- OSHA
- N.F.P.A. Life Safety Code 101
- ETL listed 90min. run time/12 hr. recharge time

Wire guard available. Order separately.
See wire guard chart in Accessories section.

ORDERING INFORMATION

TYPICAL ORDER EXAMPLE: **EX R U WB WH SD2**

Prefix	Letter Color	Number of Faces	Battery	Housing	Options
EX - Exit Sign	R - Red G - Green	U - Universal (includes 2 face plates, back plate and mounting canopy)	LB - Less Battery WB - With Battery	WH - White BK - Black	SD2-Self Test / Self Diagnostics (not available on remote capable units) ¹ R12-12 Watts Remote Capacity R27-27 Watts Remote Capacity PK1-1' Pendant Kit PK2- 2' Pendant Kit PE12- 12" Pendant Extension FL-Flasher AA-Audible Alarm FA-Flasher / Audible Alarm DLT-Down Light ² IF-Alarm Interface & Flasher IFA-Alarm Interface / Flasher / Audible Alarm VL-Vandal Lens SF-Special Sign Face 2CI- 2 Circuit Input (not available on remote capable units) PG-polycarbonate guard (see chart)

1 - Not available without battery (LB) option. 2 - Not available with R12 or R27 option.



Ohio Edison • The Illuminating Company • Toledo Edison

Mercantile Customer Program - Custom Project Rebate Calculator

Project Name and Number:	Proj. 2 - High Efficiency HVAC System
Site Name:	Wal-Mart #2073 Brooklyn, OH
Completed by (Name):	MacDougall Pierce Construction
Date completed:	4/3/2012

Energy Conservation Measure	Annual Energy Savings kWh	Eligible Prescriptive Rebate Amount kWh * \$0.08
High Efficiency HVAC System	107,215	8577.21
Total Project Energy Savings kWh	107,215	
Total Custom Prescriptive Rebate Amount \$		\$ 8,577.21

Notes about this rebate calculation:

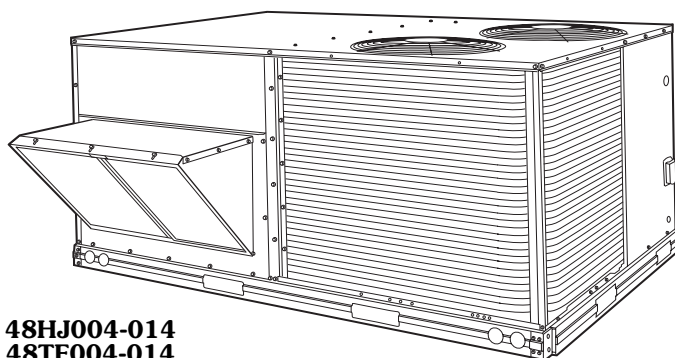
The annual energy use of the standard efficiency roof top units that were replaced were used as the baseline for the energy calculations. Cut sheets of the baseline equipment are attached to support the EER values used in the energy calculations. Please see the attached calculations "WM 2073_P2_HVAC Savings Calculations.pdf" for the estimated annual energy savings of the high-efficiency HVAC equipment.



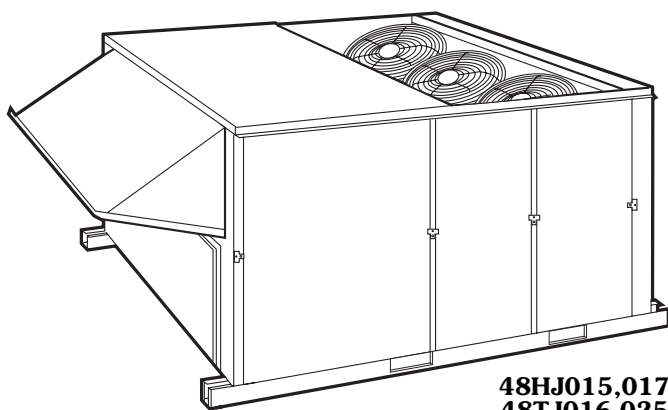
Product Data

WEATHERMAKER® 48TF004-014, 48TJ016-028 WEATHERMASTER® 48HJ004-028 Single-Package Rooftop Units Gas Heating/Electric Cooling

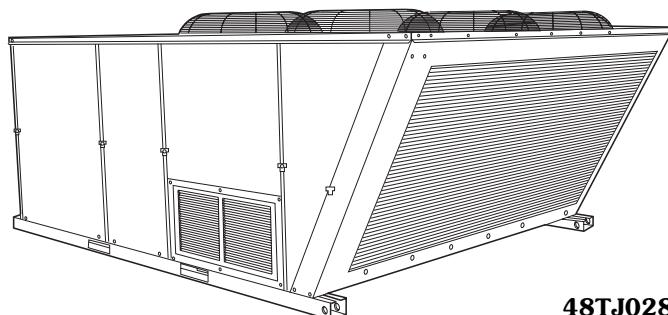
3 to 25 Nominal Tons



**48HJ004-014
48TF004-014**



**48HJ015,017
48TJ016-025**



48TJ028

Standard-Efficiency (TF,TJ) units and High-Efficiency (HJ). Gas heating with electric cooling rooftop units offer:

- Pre-painted galvanized steel cabinet for long life and quality appearance
- Commercial strength base rails with built-in rigging capability
- Convertible design for vertical or horizontal supply/return (004-014 only)
- Non-corrosive, sloped condensate drain pan, meets ASHRAE 62 (IAQ)
- Two-inch return-air filters
- A wide assortment of factory-installed options available, including high-static drives that provide additional performance range
- Optional factory-installed COBRA™ energy recovery unit (option on 48HJ004-014 units only)
- Factory-installed PremierLink™ digital communicating controls
- • Factory-installed optional gear driven EconoMi\$er IV (vertical return for sizes 004-012 only) for use with standard rooftop unit controls (includes CO₂ sensor control capability)
- Factory-installed optional gear driven EconoMi\$er2 (vertical return only) for use with PremierLink DDC controls (includes 4 to 20 mA actuator for demand control ventilation)
- Optional dehumidification package

Heat Options

- Exclusive integrated gas control board with diagnostics
- Alumagard™ heat exchanger coating
- Induced-draft fan for gas combustion
- Tubular, dimpled heat exchangers
- Natural gas
- LP conversion kits
- Low NO_x (size 004-006 only)
- Optional stainless steel heat exchangers.

ARI* capacity ratings



ARI* CAPACITY RATINGS — 48TF004-014

UNIT 48TF	NOMINAL TONS	NET COOLING CAPACITY (Btuh)	TOTAL kW	SEER†	EER**	SOUND RATING (dB)	IPLV††
004	3	35,000	4.0	9.7	8.7	81	N/A
005	4	47,000	5.3	9.7	8.8	81	N/A
006	5	57,000	6.7	9.7	8.5	81	N/A
007	6	72,000	8.0	—	9.0	81	N/A
008	7½	85,000	9.6	—	8.9	87	9.4
009	8½	98,000	10.9	—	9.0	87	9.0
012	10	117,000	13.0	—	9.0	88	9.4
014	12½	144,000	16.0	—	9.0	87	9.2

LEGEND

db — Dry Bulb
EER — Energy Efficiency Ratio
IPLV — Integrated Part-Load Values
SEER — Seasonal Energy Efficiency Ratio
wb — Wet Bulb

*Air Conditioning and Refrigeration Institute.

†The SEER values shown for sizes 004, 005, and 006 are for units with the standard direct drive motor; the SEER rating for these units with the optional belt drive motor is 10.0.

**ARI does not require EER ratings for units with capacity below 65,000 Btuh. For these units, the EER rating at ARI Standard conditions is provided for information only.

††The IPLV applies only to two-stage cooling units.

NOTES:

1. Rated in accordance with ARI Standards 210-94 for sizes 004-006) or 360-93 (for size 007-014).
2. ARI ratings are net values, reflecting the effects of circulating fan heat.
3. Ratings are based on:



Cooling Standard: 80 F db, 67 F wb indoor entering-air temperature and 95 F db air entering outdoor unit.

IPLV Standard: 80 F db, 67 F wb indoor entering-air temperature and 80 F db outdoor entering-air temperature.

ARI* capacity ratings (cont)



HEATING CAPACITIES AND EFFICIENCIES — 48TF004-014

208/230-1-60 — SINGLE-STAGE GAS HEAT

UNIT 48TF	INPUT CAPACITY		OUTPUT CAPACITY		TEMPERATURE RISE (°F)	MINIMUM HEATING AIRFLOW (CFM)	EFFICIENCY	
	1st Stage	2nd Stage	1st Stage	2nd Stage			AFUE (%)	Steady State (%)
E004	74,000	—	57,000	—	15-45	1180	80	80
F004	115,000	—	89,000	—	55-85	970	80	80
D005	74,000	—	57,000	—	15-45	1180	80	80
E005	115,000	—	91,000	—	35-65	1300	80	80
F005	150,000	—	118,000	—	50-80	1370	80	80
D006	74,000	—	57,000	—	15-45	1180	80	80
E006	115,000	—	91,000	—	35-65	1300	80	80
F006	150,000	—	118,000	—	50-80	1370	80	80

208/230-1-60 — SINGLE-STAGE GAS HEAT — LOW NO_x

UNIT 48TF	INPUT CAPACITY		OUTPUT CAPACITY		TEMPERATURE RISE (°F)	MINIMUM HEATING AIRFLOW (CFM)	EFFICIENCY	
	1st Stage	2nd Stage	1st Stage	2nd Stage			AFUE (%)	Steady State (%)
M004	60,000	—	49,000	—	20-50	910	80	80
N004	90,000	—	73,000	—	30-60	1130	80	80
L005	60,000	—	49,000	—	20-50	910	80	80
M005	90,000	—	73,000	—	30-60	1130	80	80
N005	120,000	—	98,000	—	40-70	1300	80	80
L006	60,000	—	49,000	—	20-50	910	80	80
M006	90,000	—	73,000	—	30-60	1130	80	80
N006	120,000	—	98,000	—	40-70	1300	80	80

208/230/460-3-60 — SINGLE-STAGE GAS HEAT — LOW NO_x

UNIT 48TF	INPUT CAPACITY		OUTPUT CAPACITY		TEMPERATURE RISE (°F)	MINIMUM HEATING AIRFLOW (CFM)	EFFICIENCY	
	1st Stage	2nd Stage	1st Stage	2nd Stage			AFUE (%)	Steady State (%)
M004	60,000	—	49,000	—	20-50	910	80	80
N004	90,000	—	73,000	—	30-60	1130	80	80
L005	60,000	—	49,000	—	20-50	910	80	80
M005	90,000	—	73,000	—	30-60	1130	80	80
N005	120,000	—	98,000	—	40-70	1300	80	80
L006	60,000	—	49,000	—	20-50	910	80	80
M006	90,000	—	73,000	—	30-60	1130	80	80
N006	120,000	—	98,000	—	40-70	1300	80	80

208/230/460/575-3-60 — SINGLE-STAGE GAS HEAT

UNIT 48TF	INPUT CAPACITY		OUTPUT CAPACITY		TEMPERATURE RISE (°F)	MINIMUM HEATING AIRFLOW (CFM)	EFFICIENCY	
	1st Stage	2nd Stage	1st Stage	2nd Stage			AFUE (%)	Steady State (%)
E004	74,000	—	59,200	—	15-45	1220	80	80
D005	74,000	—	59,200	—	15-45	1220	80	80
E005	115,000	—	92,000	—	35-65	1320	80	80
D006	74,000	—	59,200	—	15-45	1220	80	80
E006	115,000	—	92,000	—	35-65	1320	80	80
D007	74,000	—	59,200	—	15-45	1220	80	80
E007	115,000	—	92,000	—	35-65	1320	80	80
D008	125,000	—	100,000	—	20-50	1860	80	80
D009	125,000	—	100,000	—	20-50	1860	80	80

208/230/460/575-3-60 — 2-STAGE GAS HEAT

UNIT 48TF	INPUT CAPACITY		OUTPUT CAPACITY		TEMPERATURE RISE (°F)	MINIMUM HEATING AIRFLOW (CFM)	EFFICIENCY	
	1st Stage	2nd Stage	1st Stage	2nd Stage			AFUE (%)	Steady State (%)
F004	82,000	115,000	65,600	92,000	55-85	1010	80	80
F005	120,000	150,000	96,000	120,000	50-80	1390	80	80
F006	120,000	150,000	96,000	120,000	50-80	1390	80	80
F007	120,000	150,000	96,000	120,000	50-80	1390	80	80
E008	120,000	180,000	96,000	144,000	35-65	2060	80	80
F008	180,000	224,000	144,000	179,200	45-75	2180	80	80
E009	120,000	180,000	96,000	144,000	35-65	2060	80	80
F009	180,000	224,000	144,000	179,200	45-75	2180	80	80
D012	120,000	180,000	90,000	144,000	35-65	2060	80	80
E012	180,000	224,000	144,000	179,200	35-65	2510	80	80
F012	200,000	250,000	160,000	200,000	40-70	2650	80	80
D014	180,000	224,000	144,000	179,200	35-65	2510	80	80
E014	200,000	250,000	160,000	200,000	40-70	2650	80	80

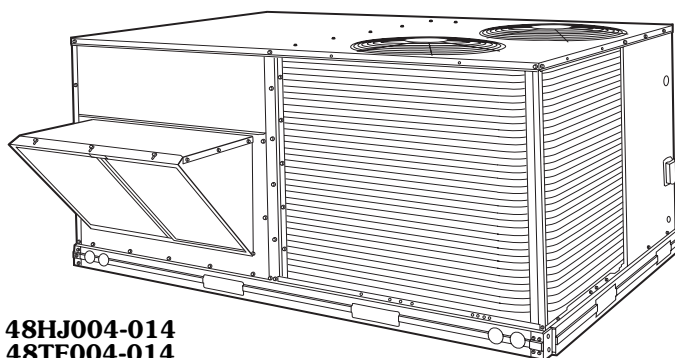
AFUE — Annual Fuel Utilization Efficiency



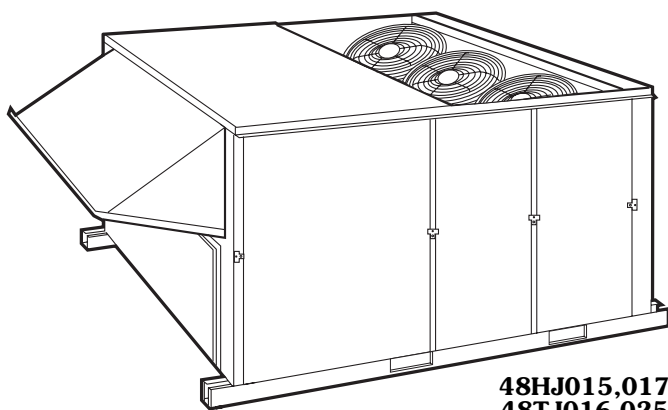
Product Data

WEATHERMAKER® 48TF004-014, 48TJ016-028 WEATHERMASTER® 48HJ004-028 Single-Package Rooftop Units Gas Heating/Electric Cooling

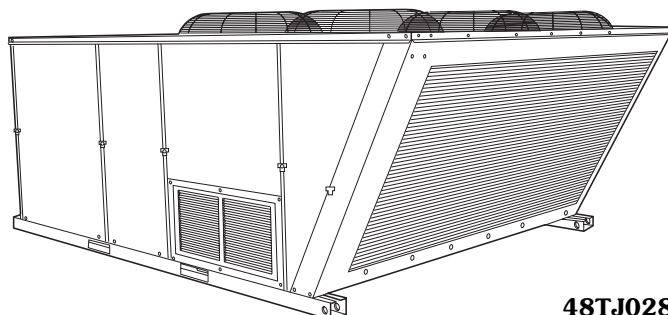
3 to 25 Nominal Tons



**48HJ004-014
48TF004-014**



**48HJ015,017
48TJ016-025**



48TJ028

Standard-Efficiency (TF,TJ) units and High-Efficiency (HJ). Gas heating with electric cooling rooftop units offer:

- Pre-painted galvanized steel cabinet for long life and quality appearance
- Commercial strength base rails with built-in rigging capability
- Convertible design for vertical or horizontal supply/return (004-014 only)
- Non-corrosive, sloped condensate drain pan, meets ASHRAE 62 (IAQ)
- Two-inch return-air filters
- A wide assortment of factory-installed options available, including high-static drives that provide additional performance range
- Optional factory-installed COBRA™ energy recovery unit (option on 48HJ004-014 units only)
- Factory-installed PremierLink™ digital communicating controls
- • Factory-installed optional gear driven EconoMi\$er IV (vertical return for sizes 004-012 only) for use with standard rooftop unit controls (includes CO₂ sensor control capability)
- Factory-installed optional gear driven EconoMi\$er2 (vertical return only) for use with PremierLink DDC controls (includes 4 to 20 mA actuator for demand control ventilation)
- Optional dehumidification package

Heat Options

- Exclusive integrated gas control board with diagnostics
- Alumagard™ heat exchanger coating
- Induced-draft fan for gas combustion
- Tubular, dimpled heat exchangers
- Natural gas
- LP conversion kits
- Low NO_x (size 004-006 only)
- Optional stainless steel heat exchangers.

ARI* capacity ratings



ARI* CAPACITY RATINGS — 48TF004-014

UNIT 48TF	NOMINAL TONS	NET COOLING CAPACITY (Btuh)	TOTAL kW	SEER†	EER**	SOUND RATING (dB)	IPLV††
004	3	35,000	4.0	9.7	8.7	81	N/A
005	4	47,000	5.3	9.7	8.8	81	N/A
006	5	57,000	6.7	9.7	8.5	81	N/A
007	6	72,000	8.0	—	9.0	81	N/A
008	7½	85,000	9.6	—	8.9	87	9.4
009	8½	98,000	10.9	—	9.0	87	9.0
012	10	117,000	13.0	—	9.0	88	9.4
014	12½	144,000	16.0	—	9.0	87	9.2

LEGEND

db — Dry Bulb
EER — Energy Efficiency Ratio
IPLV — Integrated Part-Load Values
SEER — Seasonal Energy Efficiency Ratio
wb — Wet Bulb

*Air Conditioning and Refrigeration Institute.

†The SEER values shown for sizes 004, 005, and 006 are for units with the standard direct drive motor; the SEER rating for these units with the optional belt drive motor is 10.0.

**ARI does not require EER ratings for units with capacity below 65,000 Btuh. For these units, the EER rating at ARI Standard conditions is provided for information only.

††The IPLV applies only to two-stage cooling units.

NOTES:

1. Rated in accordance with ARI Standards 210-94 for sizes 004-006) or 360-93 (for size 007-014).
2. ARI ratings are net values, reflecting the effects of circulating fan heat.
3. Ratings are based on:



Cooling Standard: 80 F db, 67 F wb indoor entering-air temperature and 95 F db air entering outdoor unit.

IPLV Standard: 80 F db, 67 F wb indoor entering-air temperature and 80 F db outdoor entering-air temperature.

ARI* capacity ratings (cont)



HEATING CAPACITIES AND EFFICIENCIES — 48TF004-014

208/230-1-60 — SINGLE-STAGE GAS HEAT

UNIT 48TF	INPUT CAPACITY		OUTPUT CAPACITY		TEMPERATURE RISE (°F)	MINIMUM HEATING AIRFLOW (CFM)	EFFICIENCY	
	1st Stage	2nd Stage	1st Stage	2nd Stage			AFUE (%)	Steady State (%)
E004	74,000	—	57,000	—	15-45	1180	80	80
F004	115,000	—	89,000	—	55-85	970	80	80
D005	74,000	—	57,000	—	15-45	1180	80	80
E005	115,000	—	91,000	—	35-65	1300	80	80
F005	150,000	—	118,000	—	50-80	1370	80	80
D006	74,000	—	57,000	—	15-45	1180	80	80
E006	115,000	—	91,000	—	35-65	1300	80	80
F006	150,000	—	118,000	—	50-80	1370	80	80

208/230-1-60 — SINGLE-STAGE GAS HEAT — LOW NO_x

UNIT 48TF	INPUT CAPACITY		OUTPUT CAPACITY		TEMPERATURE RISE (°F)	MINIMUM HEATING AIRFLOW (CFM)	EFFICIENCY	
	1st Stage	2nd Stage	1st Stage	2nd Stage			AFUE (%)	Steady State (%)
M004	60,000	—	49,000	—	20-50	910	80	80
N004	90,000	—	73,000	—	30-60	1130	80	80
L005	60,000	—	49,000	—	20-50	910	80	80
M005	90,000	—	73,000	—	30-60	1130	80	80
N005	120,000	—	98,000	—	40-70	1300	80	80
L006	60,000	—	49,000	—	20-50	910	80	80
M006	90,000	—	73,000	—	30-60	1130	80	80
N006	120,000	—	98,000	—	40-70	1300	80	80

208/230/460-3-60 — SINGLE-STAGE GAS HEAT — LOW NO_x

UNIT 48TF	INPUT CAPACITY		OUTPUT CAPACITY		TEMPERATURE RISE (°F)	MINIMUM HEATING AIRFLOW (CFM)	EFFICIENCY	
	1st Stage	2nd Stage	1st Stage	2nd Stage			AFUE (%)	Steady State (%)
M004	60,000	—	49,000	—	20-50	910	80	80
N004	90,000	—	73,000	—	30-60	1130	80	80
L005	60,000	—	49,000	—	20-50	910	80	80
M005	90,000	—	73,000	—	30-60	1130	80	80
N005	120,000	—	98,000	—	40-70	1300	80	80
L006	60,000	—	49,000	—	20-50	910	80	80
M006	90,000	—	73,000	—	30-60	1130	80	80
N006	120,000	—	98,000	—	40-70	1300	80	80

208/230/460/575-3-60 — SINGLE-STAGE GAS HEAT

UNIT 48TF	INPUT CAPACITY		OUTPUT CAPACITY		TEMPERATURE RISE (°F)	MINIMUM HEATING AIRFLOW (CFM)	EFFICIENCY	
	1st Stage	2nd Stage	1st Stage	2nd Stage			AFUE (%)	Steady State (%)
E004	74,000	—	59,200	—	15-45	1220	80	80
D005	74,000	—	59,200	—	15-45	1220	80	80
E005	115,000	—	92,000	—	35-65	1320	80	80
D006	74,000	—	59,200	—	15-45	1220	80	80
E006	115,000	—	92,000	—	35-65	1320	80	80
D007	74,000	—	59,200	—	15-45	1220	80	80
E007	115,000	—	92,000	—	35-65	1320	80	80
D008	125,000	—	100,000	—	20-50	1860	80	80
D009	125,000	—	100,000	—	20-50	1860	80	80

208/230/460/575-3-60 — 2-STAGE GAS HEAT

UNIT 48TF	INPUT CAPACITY		OUTPUT CAPACITY		TEMPERATURE RISE (°F)	MINIMUM HEATING AIRFLOW (CFM)	EFFICIENCY	
	1st Stage	2nd Stage	1st Stage	2nd Stage			AFUE (%)	Steady State (%)
F004	82,000	115,000	65,600	92,000	55-85	1010	80	80
F005	120,000	150,000	96,000	120,000	50-80	1390	80	80
F006	120,000	150,000	96,000	120,000	50-80	1390	80	80
F007	120,000	150,000	96,000	120,000	50-80	1390	80	80
E008	120,000	180,000	96,000	144,000	35-65	2060	80	80
F008	180,000	224,000	144,000	179,200	45-75	2180	80	80
E009	120,000	180,000	96,000	144,000	35-65	2060	80	80
F009	180,000	224,000	144,000	179,200	45-75	2180	80	80
D012	120,000	180,000	90,000	144,000	35-65	2060	80	80
E012	180,000	224,000	144,000	179,200	35-65	2510	80	80
F012	200,000	250,000	160,000	200,000	40-70	2650	80	80
D014	180,000	224,000	144,000	179,200	35-65	2510	80	80
E014	200,000	250,000	160,000	200,000	40-70	2650	80	80

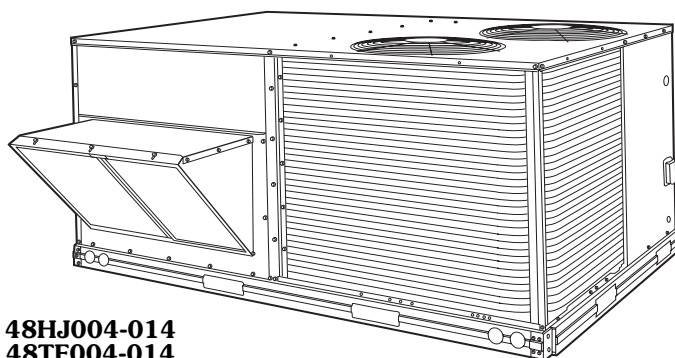
AFUE — Annual Fuel Utilization Efficiency



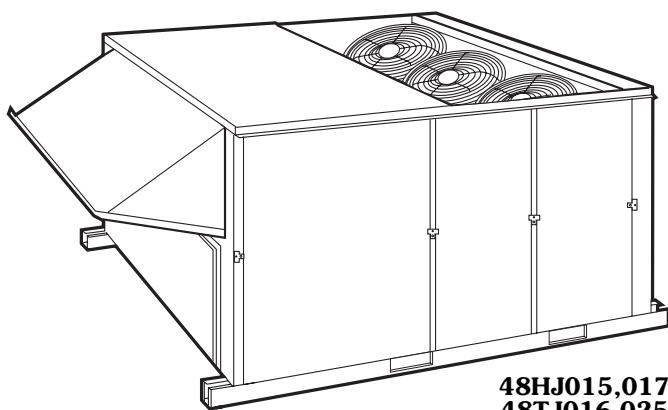
Product Data

WEATHERMAKER® 48TF004-014, 48TJ016-028 WEATHERMASTER® 48HJ004-028 Single-Package Rooftop Units Gas Heating/Electric Cooling

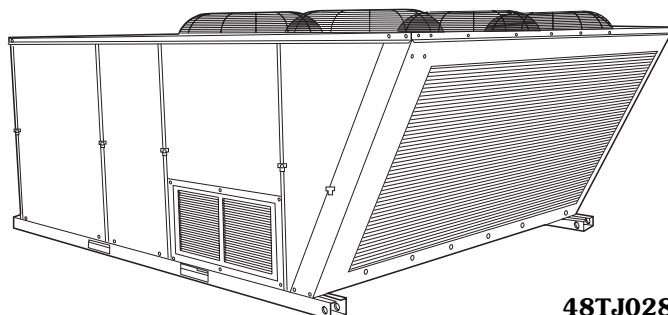
3 to 25 Nominal Tons



**48HJ004-014
48TF004-014**



**48HJ015,017
48TJ016-025**



48TJ028

Standard-Efficiency (TF,TJ) units and High-Efficiency (HJ). Gas heating with electric cooling rooftop units offer:

- Pre-painted galvanized steel cabinet for long life and quality appearance
- Commercial strength base rails with built-in rigging capability
- Convertible design for vertical or horizontal supply/return (004-014 only)
- Non-corrosive, sloped condensate drain pan, meets ASHRAE 62 (IAQ)
- Two-inch return-air filters
- A wide assortment of factory-installed options available, including high-static drives that provide additional performance range
- Optional factory-installed COBRA™ energy recovery unit (option on 48HJ004-014 units only)
- Factory-installed PremierLink™ digital communicating controls
- • Factory-installed optional gear driven EconoMi\$er IV (vertical return for sizes 004-012 only) for use with standard rooftop unit controls (includes CO₂ sensor control capability)
- Factory-installed optional gear driven EconoMi\$er2 (vertical return only) for use with PremierLink DDC controls (includes 4 to 20 mA actuator for demand control ventilation)
- Optional dehumidification package

Heat Options

- Exclusive integrated gas control board with diagnostics
- Alumagard™ heat exchanger coating
- Induced-draft fan for gas combustion
- Tubular, dimpled heat exchangers
- Natural gas
- LP conversion kits
- Low NO_x (size 004-006 only)
- Optional stainless steel heat exchangers.

ARI* capacity ratings



ARI* CAPACITY RATINGS — 48TF004-014

UNIT 48TF	NOMINAL TONS	NET COOLING CAPACITY (Btuh)	TOTAL kW	SEER†	EER**	SOUND RATING (dB)	IPLV††
004	3	35,000	4.0	9.7	8.7	81	N/A
005	4	47,000	5.3	9.7	8.8	81	N/A
006	5	57,000	6.7	9.7	8.5	81	N/A
007	6	72,000	8.0	—	9.0	81	N/A
008	7½	85,000	9.6	—	8.9	87	9.4
009	8½	98,000	10.9	—	9.0	87	9.0
012	10	117,000	13.0	—	9.0	88	9.4
014	12½	144,000	16.0	—	9.0	87	9.2

LEGEND

db — Dry Bulb
EER — Energy Efficiency Ratio
IPLV — Integrated Part-Load Values
SEER — Seasonal Energy Efficiency Ratio
wb — Wet Bulb

*Air Conditioning and Refrigeration Institute.

†The SEER values shown for sizes 004, 005, and 006 are for units with the standard direct drive motor; the SEER rating for these units with the optional belt drive motor is 10.0.

**ARI does not require EER ratings for units with capacity below 65,000 Btuh. For these units, the EER rating at ARI Standard conditions is provided for information only.

††The IPLV applies only to two-stage cooling units.

NOTES:

1. Rated in accordance with ARI Standards 210-94 for sizes 004-006) or 360-93 (for size 007-014).
2. ARI ratings are net values, reflecting the effects of circulating fan heat.
3. Ratings are based on:



Cooling Standard: 80 F db, 67 F wb indoor entering-air temperature and 95 F db air entering outdoor unit.

IPLV Standard: 80 F db, 67 F wb indoor entering-air temperature and 80 F db outdoor entering-air temperature.

ARI* capacity ratings (cont)



HEATING CAPACITIES AND EFFICIENCIES — 48TF004-014

208/230-1-60 — SINGLE-STAGE GAS HEAT

UNIT 48TF	INPUT CAPACITY		OUTPUT CAPACITY		TEMPERATURE RISE (°F)	MINIMUM HEATING AIRFLOW (CFM)	EFFICIENCY	
	1st Stage	2nd Stage	1st Stage	2nd Stage			AFUE (%)	Steady State (%)
E004	74,000	—	57,000	—	15-45	1180	80	80
F004	115,000	—	89,000	—	55-85	970	80	80
D005	74,000	—	57,000	—	15-45	1180	80	80
E005	115,000	—	91,000	—	35-65	1300	80	80
F005	150,000	—	118,000	—	50-80	1370	80	80
D006	74,000	—	57,000	—	15-45	1180	80	80
E006	115,000	—	91,000	—	35-65	1300	80	80
F006	150,000	—	118,000	—	50-80	1370	80	80

208/230-1-60 — SINGLE-STAGE GAS HEAT — LOW NO_x

UNIT 48TF	INPUT CAPACITY		OUTPUT CAPACITY		TEMPERATURE RISE (°F)	MINIMUM HEATING AIRFLOW (CFM)	EFFICIENCY	
	1st Stage	2nd Stage	1st Stage	2nd Stage			AFUE (%)	Steady State (%)
M004	60,000	—	49,000	—	20-50	910	80	80
N004	90,000	—	73,000	—	30-60	1130	80	80
L005	60,000	—	49,000	—	20-50	910	80	80
M005	90,000	—	73,000	—	30-60	1130	80	80
N005	120,000	—	98,000	—	40-70	1300	80	80
L006	60,000	—	49,000	—	20-50	910	80	80
M006	90,000	—	73,000	—	30-60	1130	80	80
N006	120,000	—	98,000	—	40-70	1300	80	80

208/230/460-3-60 — SINGLE-STAGE GAS HEAT — LOW NO_x

UNIT 48TF	INPUT CAPACITY		OUTPUT CAPACITY		TEMPERATURE RISE (°F)	MINIMUM HEATING AIRFLOW (CFM)	EFFICIENCY	
	1st Stage	2nd Stage	1st Stage	2nd Stage			AFUE (%)	Steady State (%)
M004	60,000	—	49,000	—	20-50	910	80	80
N004	90,000	—	73,000	—	30-60	1130	80	80
L005	60,000	—	49,000	—	20-50	910	80	80
M005	90,000	—	73,000	—	30-60	1130	80	80
N005	120,000	—	98,000	—	40-70	1300	80	80
L006	60,000	—	49,000	—	20-50	910	80	80
M006	90,000	—	73,000	—	30-60	1130	80	80
N006	120,000	—	98,000	—	40-70	1300	80	80

208/230/460/575-3-60 — SINGLE-STAGE GAS HEAT

UNIT 48TF	INPUT CAPACITY		OUTPUT CAPACITY		TEMPERATURE RISE (°F)	MINIMUM HEATING AIRFLOW (CFM)	EFFICIENCY	
	1st Stage	2nd Stage	1st Stage	2nd Stage			AFUE (%)	Steady State (%)
E004	74,000	—	59,200	—	15-45	1220	80	80
D005	74,000	—	59,200	—	15-45	1220	80	80
E005	115,000	—	92,000	—	35-65	1320	80	80
D006	74,000	—	59,200	—	15-45	1220	80	80
E006	115,000	—	92,000	—	35-65	1320	80	80
D007	74,000	—	59,200	—	15-45	1220	80	80
E007	115,000	—	92,000	—	35-65	1320	80	80
D008	125,000	—	100,000	—	20-50	1860	80	80
D009	125,000	—	100,000	—	20-50	1860	80	80

208/230/460/575-3-60 — 2-STAGE GAS HEAT

UNIT 48TF	INPUT CAPACITY		OUTPUT CAPACITY		TEMPERATURE RISE (°F)	MINIMUM HEATING AIRFLOW (CFM)	EFFICIENCY	
	1st Stage	2nd Stage	1st Stage	2nd Stage			AFUE (%)	Steady State (%)
F004	82,000	115,000	65,600	92,000	55-85	1010	80	80
F005	120,000	150,000	96,000	120,000	50-80	1390	80	80
F006	120,000	150,000	96,000	120,000	50-80	1390	80	80
F007	120,000	150,000	96,000	120,000	50-80	1390	80	80
E008	120,000	180,000	96,000	144,000	35-65	2060	80	80
F008	180,000	224,000	144,000	179,200	45-75	2180	80	80
E009	120,000	180,000	96,000	144,000	35-65	2060	80	80
F009	180,000	224,000	144,000	179,200	45-75	2180	80	80
D012	120,000	180,000	90,000	144,000	35-65	2060	80	80
E012	180,000	224,000	144,000	179,200	35-65	2510	80	80
F012	200,000	250,000	160,000	200,000	40-70	2650	80	80
D014	180,000	224,000	144,000	179,200	35-65	2510	80	80
E014	200,000	250,000	160,000	200,000	40-70	2650	80	80

AFUE — Annual Fuel Utilization Efficiency

STRATEGOS[®]

COMMAND EFFICIENCY

*The most energy-efficient rooftop unit in the industry**

Commercial Packaged Rooftop Units
3- to 24-Ton Models

Up to 16.1 SEER,
Up to 14.3 EER and
Up to 16.8 IEER



LENNOX[®]

Innovation never felt so good.[®]

Our most innovative features are already built in.

Standard installed features:

- Circuit breakers
- Ground fault circuit interrupter (GFCI)
- Grille guard
- Thermal expansion valve (TXV)
- Compressor crankcase heater
- Freezestats
- High-pressure switch
- Low-pressure switch
- Filter driers
- MERV 7 filter

Prodigy® unit controller standard features:

- Over 200 customer-configuration parameters
- Over 100 diagnostic error codes
- Compressor time-off delay
- Compressors 1–4 runtime and cycle count
- Relative humidity input
- Thermostat bounce delay
- Return air temperature limit control
- Night setback mode
- Supply duct static pressure setpoint
- Smoke alarm mode
- CO₂ demand control ventilation ready
- “Strike-Three” critical alarm
 - Automatic reset
 - Low pressure
 - High pressure
 - Freezestat
 - Heat limit

Factory-installed options:

- 230/3/60, 460/3/60, 575/3/60 Volt
- Evaporator coil corrosion protection
- Condenser coil corrosion protection
- Stainless steel heat exchanger
- LPG/propane fuel supply
- Constant air volume supply fan
- Copper drain trap (20- and 24-ton only)
- Hail guard (20- and 24-ton only)
- MSAV® (multi-stage air volume) supply fan
- Manual outdoor air damper with hood
- Economizer with barometric relief, hood and global control
- Power exhaust fans with damper position control (10- and 20-ton only)
- Novar 2051 DDC
- CPC 810-3062 DDC
- Novar integration (requires Novar system gateway device)
- CPC integration (requires CPC system gateway device)
- Interoperability via BACnet or LonTalk® protocols
- Return smoke detector
- Supply smoke detector
- Dual/single enthalpy

Field-installed accessories:

- 14-inch bolt-together curb
- 24-inch bolt-together curb
- Novar 2051 DDC
- CPC 810-3062 DDC
- CO₂ sensor
- Thermostat
- Fresh-air tempering
- Coil guard
- Hail guard

THE STRATEGOS® ROOFTOP UNIT PRODUCT LINE PERFORMANCE SPECIFICATIONS

		COOLING DATA							HEATING INPUT			AIR SUPPLY RANGE				PHYSICAL DATA	
	Nominal Tonnage	Model	Supply Fan Type	Gross Cap. [Btuh]	ARI Rated Net Cap. [Btuh]	ARI Rated CFM	Full Load [EER]	Part Load [SEER or IEER]	Standard [Btuh]	Medium [Btuh]	High [Btuh]	CFM Min. Cool	CFM Min. Heat	CFM Max.	Static [in wg]	Dimensions H x W x L [inches]	Shipping Wt. [lbs.]
GAS/ELECTRIC UNITS	3	SGC036H4B	CAV	37,200	36,000	1,200	14.3	16.1	75	125	NA	900	926	2,500	1.1	42 x 83 x 73	1,018-1,063
	5	SGC060H4B	CAV	61,500	59,500	1,650	12.8	15.5	75	125	NA	1,500	800-1,235	2,500	1.1	42 x 83 x 73	1,042-1,087
	10	SGC120H4B	CAV	123,000	119,000	3,700	12.3	12.5	130	180	240	3,000	1,391-2,540	4,800	1.0	52 x 91 x 87	1,785-1,860
	10	SGC120H4M	MSAV	123,000	119,000	3,700	12.1	14.7	130	180	240	2,000-3,000	1,391-2,540	4,800	1.0	52 x 91 x 87	1,785-1,860
	20	SGC240H4B	CAV	242,000	236,000	6,500	12.6	14.2	260	360	480	6,000	2,782-5,079	9,600	1.2	66 x 91 x 146	3,000-3,275
	20	SGC240H4M	MSAV	242,000	236,000	6,500	12.6	16.6	260	360	480	4,000-6,000	2,782-5,079	9,600	1.2	66 x 91 x 146	3,000-3,275
	24	SGC288H4B	CAV	296,000	288,000	7,700	11.6	12.7	260	360	480	7,200	7,111	11,520	1.2	66 x 91 x 145	3,068-3,320
	24	SGC288H4M	MSAV	296,000	288,000	7,700	11.6	14.1	260	360	480	4,800-7,200	7,111	11,520	1.2	66 x 91 x 146	3,068-3,321
									KW Range								
ELEC./ELEC. UNITS	3	SCC036H4B	CAV	37,200	36,000	1,200	14.3	16.1	15	NA	NA	900	900	2,500	1.1	42 x 83 x 73	963-1,024
	5	SCC060H4B	CAV	61,500	59,500	1,650	12.8	15.5	15	30	NA	1,500	1,600	2,500	1.1	42 x 83 x 73	967-1,031
	10	SCC120H4B	CAV	123,000	119,000	3,700	12.5	12.8	15	30	45	3,000	3,800	4,800	1.0	52 x 91 x 87	1,678-1,750
	10	SCC120H4M	MSAV	123,000	119,000	3,700	12.3	15.2	15	30	45	2,000-3,000	3,800	4,800	1.0	52 x 91 x 87	1,678-1,750
	20	SCC240H4B	CAV	242,000	236,000	6,500	12.8	14.3	30	60	90	6,000	8,000	9,600	1.2	66 x 91 x 146	2,786-2,991
	20	SCC240H4M	MSAV	242,000	236,000	6,500	12.8	16.8	30	60	90	4,000-6,000	8,000	9,600	1.2	66 x 91 x 146	2,786-2,991
	24	SCC288H4B	CAV	296,000	288,000	7,700	11.6	12.8	30	60	90	7,200	8,000	11,520	1.2	66 x 91 x 146	2,856-2,956
	24	SCC288H4M	MSAV	296,000	288,000	7,700	11.6	14.2	30	60	90	4,800-7,200	8,000	11,520	1.2	66 x 91 x 146	2,856-2,956

Certified in accordance with USE certification program which is based on ARI standard 210/240 (5 tons and below):

95°F outdoor air temperature and 80°F DB/67°F WB entering evaporator coil air.

Certified (CAV units) or rated (MSAV units) in accordance with USE certification program which is based on ARI standard 340/360 (6 tons and above):

95°F outdoor air temperature and 80°F DB/67°F WB entering evaporator coil air.

All dimensions have been rounded up to the nearest inch.

Note: Due to Lennox' ongoing commitment to quality, all specifications, ratings and dimensions are subject to change.

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Commercial Packaged Rooftop Units
3- to 24-Ton Models

Up to 16.1 SEER,
Up to 14.3 EER and
Up to 16.8 IEER



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Our most innovative features are already built in.

Standard installed features:

- Circuit breakers
- Ground fault circuit interrupter (GFCI)
- Grille guard
- Thermal expansion valve (TXV)
- Compressor crankcase heater
- Freezestats
- High-pressure switch
- Low-pressure switch
- Filter driers
- MERV 7 filter

Prodigy® unit controller standard features:

- Over 200 customer-configuration parameters
- Over 100 diagnostic error codes
- Compressor time-off delay
- Compressors 1–4 runtime and cycle count
- Relative humidity input
- Thermostat bounce delay
- Return air temperature limit control
- Night setback mode
- Supply duct static pressure setpoint
- Smoke alarm mode
- CO₂ demand control ventilation ready
- “Strike-Three” critical alarm
 - Automatic reset
 - Low pressure
 - High pressure
 - Freezestat
 - Heat limit

Factory-installed options:

- 230/3/60, 460/3/60, 575/3/60 Volt
- Evaporator coil corrosion protection
- Condenser coil corrosion protection
- Stainless steel heat exchanger
- LPG/propane fuel supply
- Constant air volume supply fan
- Copper drain trap (20- and 24-ton only)
- Hail guard (20- and 24-ton only)
- MSAV® (multi-stage air volume) supply fan
- Manual outdoor air damper with hood
- Economizer with barometric relief, hood and global control
- Power exhaust fans with damper position control (10- and 20-ton only)
- Novar 2051 DDC
- CPC 810-3062 DDC
- Novar integration (requires Novar system gateway device)
- CPC integration (requires CPC system gateway device)
- Interoperability via BACnet or LonTalk® protocols
- Return smoke detector
- Supply smoke detector
- Dual/single enthalpy

Field-installed accessories:

- 14-inch bolt-together curb
- 24-inch bolt-together curb
- Novar 2051 DDC
- CPC 810-3062 DDC
- CO₂ sensor
- Thermostat
- Fresh-air tempering
- Coil guard
- Hail guard

THE STRATEGOS® ROOFTOP UNIT PRODUCT LINE PERFORMANCE SPECIFICATIONS

	Nominal Tonnage	Model	Supply Fan Type	COOLING DATA					HEATING INPUT			AIR SUPPLY RANGE				PHYSICAL DATA	
				Gross Cap. [Btuh]	ARI Rated Net Cap. [Btuh]	ARI Rated CFM	Full Load [EER]	Part Load [SEER or IEER]	Standard [Btuh]	Medium [Btuh]	High [Btuh]	CFM Min. Cool	CFM Min. Heat	CFM Max.	Static [in wg]	Dimensions H x W x L [inches]	Shipping Wt. [lbs.]
GAS/ELECTRIC UNITS	3	SGC036H4B	CAV	37,200	36,000	1,200	14.3	16.1	75	125	NA	900	926	2,500	1.1	42 x 83 x 73	1,018-1,063
	5	SGC060H4B	CAV	61,500	59,500	1,650	12.8	15.5	75	125	NA	1,500	800-1,235	2,500	1.1	42 x 83 x 73	1,042-1,087
	10	SGC120H4B	CAV	123,000	119,000	3,700	12.3	12.5	130	180	240	3,000	1,391-2,540	4,800	1.0	52 x 91 x 87	1,785-1,860
	10	SGC120H4M	MSAV	123,000	119,000	3,700	12.1	14.7	130	180	240	2,000-3,000	1,391-2,540	4,800	1.0	52 x 91 x 87	1,785-1,860
	20	SGC240H4B	CAV	242,000	236,000	6,500	12.6	14.2	260	360	480	6,000	2,782-5,079	9,600	1.2	66 x 91 x 146	3,000-3,275
	20	SGC240H4M	MSAV	242,000	236,000	6,500	12.6	16.6	260	360	480	4,000-6,000	2,782-5,079	9,600	1.2	66 x 91 x 146	3,000-3,275
	24	SGC288H4B	CAV	296,000	288,000	7,700	11.6	12.7	260	360	480	7,200	7,111	11,520	1.2	66 x 91 x 145	3,068-3,320
	24	SGC288H4M	MSAV	296,000	288,000	7,700	11.6	14.1	260	360	480	4,800-7,200	7,111	11,520	1.2	66 x 91 x 146	3,068-3,321
ELEC./ELEC. UNITS	KW Range																
	3	SCC036H4B	CAV	37,200	36,000	1,200	14.3	16.1	15	NA	NA	900	900	2,500	1.1	42 x 83 x 73	963-1,024
	5	SCC060H4B	CAV	61,500	59,500	1,650	12.8	15.5	15	30	NA	1,500	1,600	2,500	1.1	42 x 83 x 73	967-1,031
	10	SCC120H4B	CAV	123,000	119,000	3,700	12.5	12.8	15	30	45	3,000	3,800	4,800	1.0	52 x 91 x 87	1,678-1,750
	10	SCC120H4M	MSAV	123,000	119,000	3,700	12.3	15.2	15	30	45	2,000-3,000	3,800	4,800	1.0	52 x 91 x 87	1,678-1,750
	20	SCC240H4B	CAV	242,000	236,000	6,500	12.8	14.3	30	60	90	6,000	8,000	9,600	1.2	66 x 91 x 146	2,786-2,991
	20	SCC240H4M	MSAV	242,000	236,000	6,500	12.8	16.8	30	60	90	4,000-6,000	8,000	9,600	1.2	66 x 91 x 146	2,786-2,991
	24	SCC288H4B	CAV	296,000	288,000	7,700	11.6	12.8	30	60	90	7,200	8,000	11,520	1.2	66 x 91 x 146	2,856-2,956
	24	SCC288H4M	MSAV	296,000	288,000	7,700	11.6	14.2	30	60	90	4,800-7,200	8,000	11,520	1.2	66 x 91 x 146	2,856-2,956

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	5	SGC060H4B	CAV	61,500	59,500	1,650	12.8	15.5	75	125	NA	1,500	800-1,235	2,500	1.1	42 x 83 x 73	1,042-1,087
	10	SGC120H4B	CAV	123,000	119,000	3,700	12.3	12.5	130	180	240	3,000	1,391-2,540	4,800	1.0	52 x 91 x 87	1,785-1,860
	10	SGC120H4M	MSAV	123,000	119,000	3,700	12.1	14.7	130	180	240	2,000-3,000	1,391-2,540	4,800	1.0	52 x 91 x 87	1,785-1,860
	20	SGC240H4B	CAV	242,000	236,000	6,500	12.6	14.2	260	360	480	6,000	2,782-5,079	9,600	1.2	66 x 91 x 146	3,000-3,275
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Facility Name:	Walmart #2073
Location:	Brooklyn, Ohio Cooling Zone 2
Annual Cooling Hours:	935
kWh Rate:	\$0.08

Old HVAC System

Unit Tons	3	Cut Sheet 1
BTU's/hr <i>(Tons x 12,000 BTUs/hr)</i>	36,000	
EER	8.7	
Qty	7	
Annual kWh <i>(BTU's/SEER)/1000 x cooling hours x qty</i>	27,083	

Unit Tons	5	Cut Sheet 2
BTU's/hr <i>(Tons x 12,000 BTUs/hr)</i>	60,000	
EER	8.5	
Qty	9	
Annual kWh <i>(BTU's/SEER)/1000 x cooling hours x qty</i>	59,400	

Unit Tons	10	Cut Sheet 3
BTU's/hr <i>(Tons x 12,000 BTUs/hr)</i>	120,000	
EER	9	
Qty	24	
Annual kWh <i>(BTU's/SEER)/1000 x cooling hours x qty</i>	299,200	

New HVAC System

Unit Tons	3	Cut Sheet 4
BTU's/hr <i>(Tons x 12,000 BTUs/hr)</i>	36,000	
EER	14.3	
Qty	7	
Annual kWh <i>(BTU's/SEER)/1000 x cooling hours x qty</i>	16,477	

Unit Tons	5	Cut Sheet 5
BTU's/hr <i>(Tons x 12,000 BTUs/hr)</i>	60,000	
EER	12.8	
Qty	9	
Annual kWh <i>(BTU's/SEER)/1000 x cooling hours x qty</i>	39,445	

Unit Tons	10	Cut Sheet 6
BTU's/hr <i>(Tons x 12,000 BTUs/hr)</i>	120,000	
EER	12.1	
Qty	24	
Annual kWh <i>(BTU's/SEER)/1000 x cooling hours x qty</i>	222,545	

Old System kW:	412.49
Old System Annual kWh:	385,682.76
Old System Annual Cost to Operate:	\$30,854.62

New System kW:	297.83
New System Annual kWh:	278,467.69
New System Annual Cost to Operate:	\$22,277.42

kW Savings:	114.67
Annual kWh Savings:	107,215.07
Annual Cost Savings:	\$8,577.21



Ohio Edison • The Illuminating Company • Toledo Edison

Mercantile Customer Program - Custom Project Rebate Calculator

Project Name and Number:	Proj. 3 - High Eff. Refrigerated Cases
Site Name:	WM 2073 Cleveland
Completed by (Name):	MacDougall Pierce Construction
Date completed:	10/16/2012

Energy Conservation Measure	Annual Energy Savings kWh	Eligible Prescriptive Rebate Amount kWh * \$0.08
High Efficiency Refrigerated Cases	113,492	9079.34
Total Project Energy Savings kWh	113,492	
Total Custom Prescriptive Rebate Amount \$		\$ 9,079.34

Notes about this rebate calculation:

The annual energy use of refrigerated cases, with standard options installed, was used as the baseline for the energy calculations. Standard options in the refrigerated cases include T8 fluorescent lighting and shaded-pole motors on the evaporator fans. For this project, high efficiency options were chosen which include LED lighting and electrically commutated motors on the evaporator fans. Please see the attached calculations "WM 2073_P3_Refrigerated Cases Calculations.pdf".

Electrical Data

Case Length	Fans Per Case	Standard Fans		High Efficiency Fans		Anti-Condensate Heaters		Defrost Heaters			
		120 Volts		120 Volts		120 Volts		208 Volts		240 Volts	
		Amps	Watts	Amps	Watts	Amps	Watts	Amps	Watts	Amps	Watts
4'	2	1.00	60	0.47	28	---	---	1.92	400	2.22	532
6'	2	1.00	60	0.47	28	---	---	2.88	600	3.33	798
8'	3	1.50	90	0.70	42	---	---	3.85	800	4.44	1065
12'	4	2.00	120	0.93	56	---	---	5.77	1200	6.67	1600

Lighting Data

Case Length	Lights Per Row	Light Length	Fluorescent Lighting (Per Light Row)		Clearvoyant LED Lighting (Per Light Row)			
			120 Volts		Standard Power (Cornice or Shelf)		High Power (Cornice)	
			Amps	Watts	Amps	Watts	Amps	Watts
4'	1	4'	0.23	28	0.10	11.9	0.22	26.2
6'	2	3'	0.37	44	0.14	16.6	0.30	35.8
8'	2	4'	0.47	56	0.20	23.8	0.44	52.4
12'	3	4'	0.70	84	0.30	35.7	0.66	78.6

2 rows of lamps per case

Guidelines & Control Settings

Application	Front Sill Heights	2BTUH/ft		Superheat Set Point @ Bulb (°F)	Evaporator (°F)	Discharge Air (°F)	Discharge ³ Air Velocity (FPM)
		Conventional	Parallel				
Deli	2.5" Ext.	1600	1458	6 - 8	22	30	270
	5" Ext.	1556	1418	6 - 8	22	30	270
	7.5" Ext.	1523	1388	6 - 8	22	30	270
Dairy Cut Produce	Std. Dairy	1490	1358	6 - 8	26	34	270
	2.5" Ext.	1448	1319	6 - 8	26	34	270
	5" Ext.	1415	1289	6 - 8	26	34	270
	7.5" Ext.	1381	1258	6 - 8	26	34	270
Beverage Bulk Produce	Std. Dairy	1512	1378	6 - 8	29	36	270
	2.5" Ext.	1469	1338	6 - 8	29	36	270
	5" Ext.	1436	1308	6 - 8	29	36	270
	7.5" Ext.	1403	1278	6 - 8	29	36	270

Defrost Controls

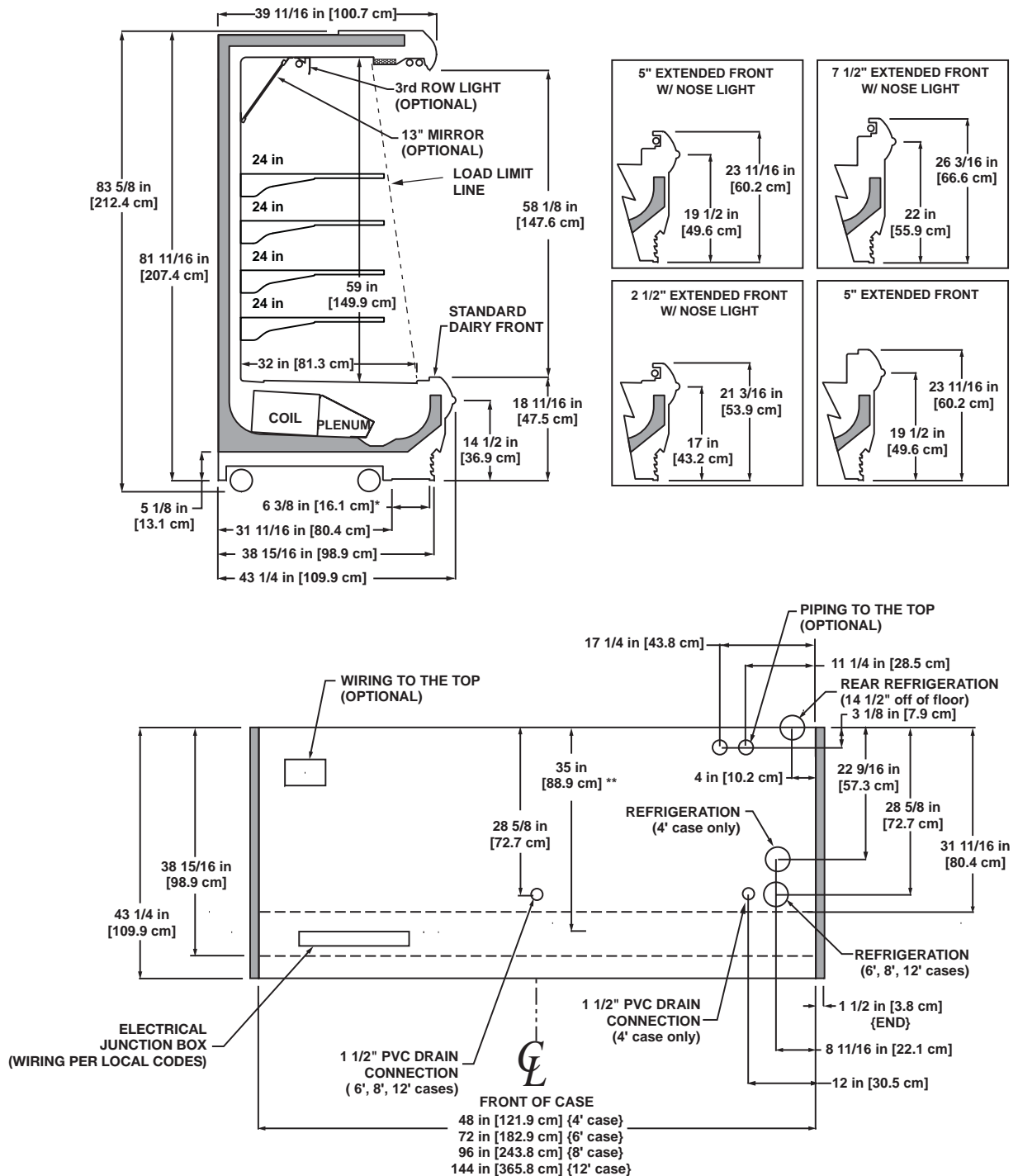
Defrosts Per Day	Run-Off Time (min)	Electric Defrost		Timed-Off Defrost		Hot Gas Defrost		Reverse Air Defrost	
		Fail-Safe (min)	Termination Temp (°F)	Fail-Safe (min)	Termination Temp (°F)	Fail-Safe (min)	Termination Temp (°F)	Fail-Safe (min)	Termination Temp (°F)
4	6 - 8	32	47	42	47	26	45	42	45

1 NOTE: " - - " indicates that feature is not an option on this case model.

2 BTUH/ft notes:

- Listed BTUH/ft indicate unlighted shelves. For T8 lighted shelves and 3rd row lighting, add 80 BTUH per 4' lighted shelf and 60 BTUH per 3' lighted shelf to determine Total Lighting BTUH Load, then divide the Total Lighting BTUH Load by the length of the case. For LED lighting, add 36 BTUH per 4' lighted shelf and 27 BTUH per 3' lighted shelf to determine Total Lighting BTUH Load, then divide the Total Lighting BTUH Load by the length of the case.
- Standard fans increase refrigeration load by 96 BTUH/fan.

3 Average discharge air velocity at peak of defrost.



NOTES:

* STUB-UP AREA

** RECOMMENDED STUB-UP CENTERLINE FOR ELECTRICAL AND HUB DRAINS

- FRONT SILL HEIGHT AND OVERALL CASE HEIGHT VARIES WITH BASEFRAME HEIGHT
- ENDS ADD APPROXIMATELY 1 INCH TO CASE HEIGHT
- WIRING-TO-THE-TOP ADDS APPROXIMATELY 4 INCHES TO CASE HEIGHT
- A 2" MINIMUM AIR GAP IS REQUIRED BETWEEN THE REAR OF THE CASE AND A WALL
- AVAILABLE SHELF SIZES: 10", 12", 14", 16", 18", 20", 22" & 24"
- DASHED LINES SIGNIFY AREA INSIDE BASE RAIL BEHIND KICK-PLATE



Electrical Data

Doors	Fans Per Case	Standard Fans		High Efficiency Fans		Defrost Heaters (1-Phase)				Defrost Heaters ¹ (3-Phase)			
		120 Volts		120 Volts		208 Volts		240 Volts		208 Volts		240 Volts	
		Amps	Watts	Amps	Watts	Amps	Watts	Amps	Watts	Amps ²	Watts	Amps ²	Watts
1-door	1	0.50	30	0.15	9	4.89	1020	5.67	1359	2.82	1020	3.27	1359
2-door	2	1.00	60	0.31	18	10.99	2286	12.66	3038	7.61	2286	8.76	3038
3-door	3	1.50	90	0.46	28	12.40	2580	14.27	3425	8.59	2580	9.88	3425
4-door	4	2.00	120	0.611	37	16.29	3388	18.89	4533	11.28	3388	13.08	4533
5-door	5	2.50	150	0.77	46	19.89	4138	22.93	5503	13.78	4138	15.88	5503
6-door	6	3.00	180	0.92	55	23.09	4803	26.65	6395	16.28	4803	18.46	6395

Lighting Data

Doors	Fluorescent Lighting		LED Lighting								
	Standard (60w)		Optimax Pro ³			GE IMMERSION			Crossfire/Polaris ³		
	120 Volts		120 Volts		BTUH Credit Per Door	120 Volts		BTUH Credit Per Door	120 Volts		BTUH Credit Per Door
	Amps	Watts	Amps	Watts		Amps	Watts		Amps	Watts	
1-door	1.00	120	0.17	20	206	0.13	16	214	0.13	15	216
2-door	1.50	180	0.33	39	145	0.27	32	152	0.25	30	154
3-door	2.00	240	0.48	58	144	0.40	48	152	0.38	45	154
4-door	2.50	300	0.64	77	135	0.53	64	143	0.50	60	146
5-door	3.00	360	0.80	96	131	0.67	80	138	0.63	75	141
6-door	3.50	420	0.96	115	127	0.80	96	135	0.75	90	138

Anti-Condensate Heater Data

Doors	Anthony						Gemtron					
	101		Eliminaator ⁵		Eliminaator 2 ⁵		Polar		Polar LE		Polar EF	
	120 Volts		120 Volts		120 Volts		120 Volts		120 Volts		120 Volts	
	Amps	Watts	Amps	Watts	Amps	Watts	Amps	Watts	Amps	Watts	Amps	Watts
1-door	---	---	---	---	---	---	---	---	1.55	186	---	---
2-door	4.10	492	1.79	214	1.24	149	2.39	287	1.67	201	1.19	143
3-door	5.89	707	2.63	315	1.81	217	3.58	430	2.50	301	1.78	214
4-door	7.77	932	3.46	415	2.37	284	4.77	573	3.33	401	2.37	285
5-door	9.61	1154	4.35	522	2.98	358	6.00	720	4.20	505	3.00	360
6-door	11.23	1347	5.20	624	3.56	427	7.14	857	4.98	599	3.54	425

ONRZH High Narrow Reach-In Glass Door Merchandiser

1, 2, 3, 4, 5 & 6-door (Frozen Food / Ice Cream)

Guidelines & Control Settings

Application	Door	⁶ BTUH/door		Evaporator (°F)	Superheat Set Point @ Bulb (°F)	Discharge Air (°F)	Discharge ⁷ Air Velocity (FPM)
		Conventional	Parallel				
Frozen	Standard	1286	1249	-11	3 - 5	-3	460
	Eliminaator/Polar LE (multi-door)	1127	1095	-11	3 - 5	-3	460
	Polar LE (single-door)	1527	1484	-8	3 - 5	2	300
Ice Cream	Standard	1347	1309	-17	3 - 5	-8	460
	Eliminaator/Polar LE (multi-door)	1166	1133	-17	3 - 5	-8	460
	Polar LE (single-door)	1601	1555	-17	3 - 5	-7	305

Defrost Controls

Defrosts Per Day	Run-Off Time (min)	Electric Defrost		Timed-Off Defrost		Hot Gas Defrost		Reverse Air Defrost	
		Fail-Safe (min)	Termination Temp (°F)	Fail-Safe (min)	Termination Temp (°F)	Fail-Safe (min)	Termination Temp (°F)	Fail-Safe (min)	Termination Temp (°F)
1	13 - 15	46	73 ⁸	---	---	24	73 ⁹	---	---

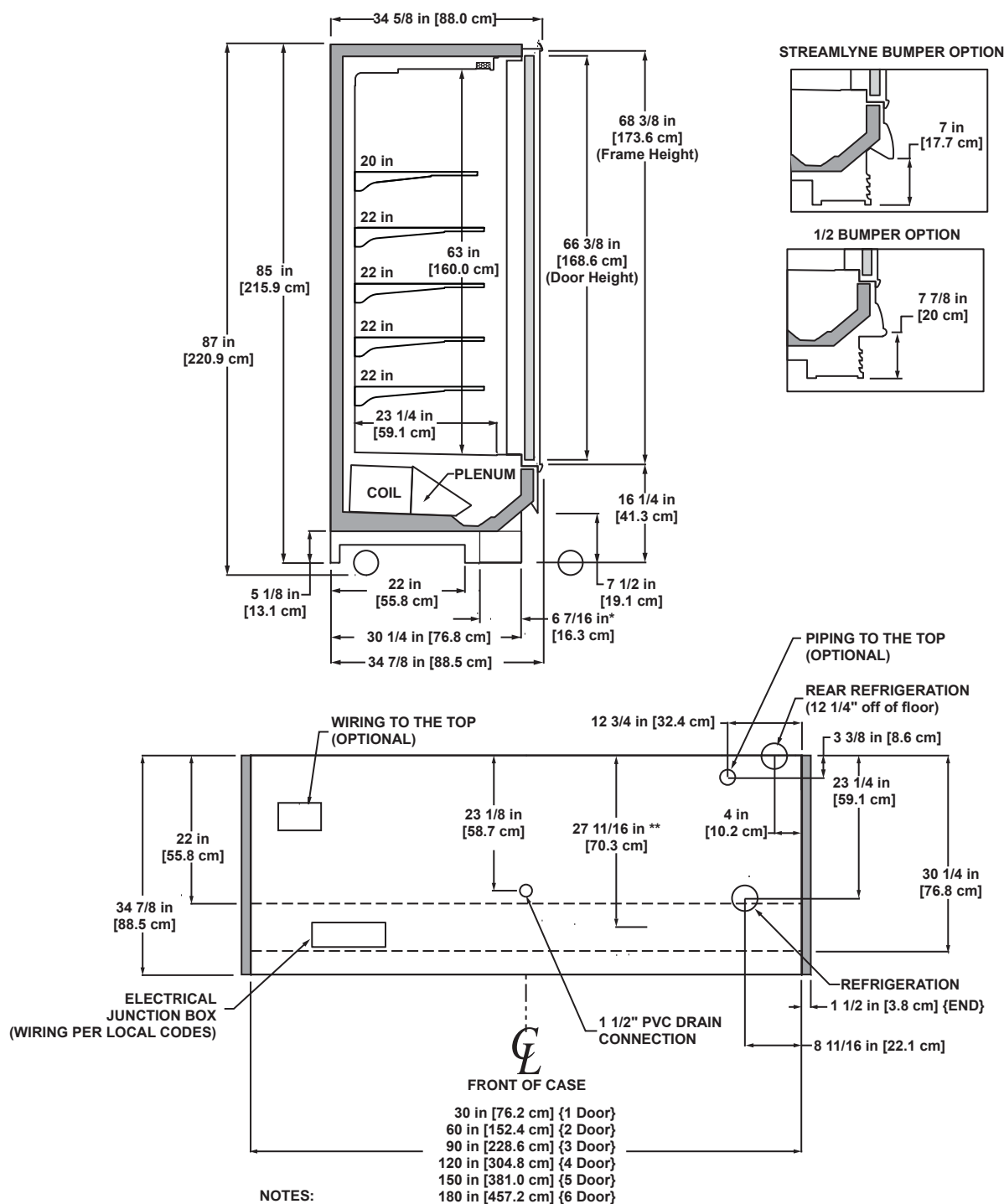
- 1 3-phase load is unbalanced.
- 2 Figure given is maximum line amperage per phase.
- 3 Low-power lights. High-power option available.
- 4 NOTE: " - - " indicates that feature is not an option on this case model.
- 5 Values provided are for doors with no heat on the glass.
- 6 Standard fans increase refrigeration load by 96 BTUH/fan.
- 7 Average discharge air velocity at peak of defrost.
- 8 The recommended location is in the center of the coil on the second pass. If using a discharge air temperature to terminate defrost, utilize a 55°F termination temp.
- 9 The recommended location is on the dump line. If using a discharge air temperature to terminate defrost, utilize a 55°F termination temp.

REACH-IN

Frozen Food / Ice Cream

ONRZH High Narrow Reach-In Glass Door Merchandiser

1, 2, 3, 4, 5 & 6-door (Frozen Food / Ice Cream)



Electrical Data

Doors	Fans Per Case	Standard Fans		High Efficiency Fans		Defrost Heaters (1-Phase)				Defrost Heaters ¹ (3-Phase)			
		120 Volts		120 Volts		208 Volts		240 Volts		208 Volts		240 Volts	
		Amps	Watts	Amps	Watts	Amps	Watts	Amps	Watts	Amps ²	Watts	Amps ²	Watts
1-door	1	0.50	30	0.15	9	4.89	1020	5.67	1359	2.82	1020	3.27	1359
2-door	2	1.00	60	0.31	18	10.99	2286	12.66	3038	7.61	2286	8.76	3038
3-door	3	1.50	90	0.46	28	12.40	2580	14.27	3425	8.59	2580	9.88	3425
4-door	4	2.00	120	0.611	37	16.29	3388	18.89	4533	11.28	3388	13.08	4533
5-door	5	2.50	150	0.77	46	19.89	4138	22.93	5503	13.78	4138	15.88	5503
6-door	6	3.00	180	0.92	55	23.09	4803	26.65	6395	16.28	4803	18.46	6395

Lighting Data

Doors	Fluorescent Lighting		LED Lighting								
	Standard (60w)		Optimax Pro ³			GE IMMERSION			Crossfire/Polaris ³		
	120 Volts		120 Volts		BTUH Credit Per Door	120 Volts		BTUH Credit Per Door	120 Volts		BTUH Credit Per Door
	Amps	Watts	Amps	Watts		Amps	Watts		Amps	Watts	
1-door	1.00	120	0.17	20	206	0.13	16	214	0.13	15	216
2-door	1.50	180	0.33	39	145	0.27	32	152	0.25	30	154
3-door	2.00	240	0.48	58	144	0.40	48	152	0.38	45	154
4-door	2.50	300	0.64	77	135	0.53	64	143	0.50	60	146
5-door	3.00	360	0.80	96	131	0.67	80	138	0.63	75	141
6-door	3.50	420	0.96	115	127	0.80	96	135	0.75	90	138

Anti-Condensate Heater Data

Doors	Anthony						Gemtron					
	101		Eliminaator ⁵		Eliminaator 2 ⁵		Polar		Polar LE		Polar EF	
	120 Volts		120 Volts		120 Volts		120 Volts		120 Volts		120 Volts	
	Amps	Watts	Amps	Watts	Amps	Watts	Amps	Watts	Amps	Watts	Amps	Watts
1-door	---	---	---	---	---	---	---	---	1.55	186	---	---
2-door	4.10	492	1.79	214	1.24	149	2.39	287	1.67	201	1.19	143
3-door	5.89	707	2.63	315	1.81	217	3.58	430	2.50	301	1.78	214
4-door	7.77	932	3.46	415	2.37	284	4.77	573	3.33	401	2.37	285
5-door	9.61	1154	4.35	522	2.98	358	6.00	720	4.20	505	3.00	360
6-door	11.23	1347	5.20	624	3.56	427	7.14	857	4.98	599	3.54	425

ONRZH High Narrow Reach-In Glass Door Merchandiser

1, 2, 3, 4, 5 & 6-door (Frozen Food / Ice Cream)

Guidelines & Control Settings

Application	Door	⁶ BTUH/door		Evaporator (°F)	Superheat Set Point @ Bulb (°F)	Discharge Air (°F)	Discharge ⁷ Air Velocity (FPM)
		Conventional	Parallel				
Frozen	Standard	1286	1249	-11	3 - 5	-3	460
	Eliminaator/Polar LE (multi-door)	1127	1095	-11	3 - 5	-3	460
	Polar LE (single-door)	1527	1484	-8	3 - 5	2	300
Ice Cream	Standard	1347	1309	-17	3 - 5	-8	460
	Eliminaator/Polar LE (multi-door)	1166	1133	-17	3 - 5	-8	460
	Polar LE (single-door)	1601	1555	-17	3 - 5	-7	305

Defrost Controls

Defrosts Per Day	Run-Off Time (min)	Electric Defrost		Timed-Off Defrost		Hot Gas Defrost		Reverse Air Defrost	
		Fail-Safe (min)	Termination Temp (°F)	Fail-Safe (min)	Termination Temp (°F)	Fail-Safe (min)	Termination Temp (°F)	Fail-Safe (min)	Termination Temp (°F)
1	13 - 15	46	73 ⁸	---	---	24	73 ⁹	---	---

1 3-phase load is unbalanced.

2 Figure given is maximum line amperage per phase.

3 Low-power lights. High-power option available.

4 NOTE: " - - " indicates that feature is not an option on this case model.

5 Values provided are for doors with no heat on the glass.

6 Standard fans increase refrigeration load by 96 BTUH/fan.

7 Average discharge air velocity at peak of defrost.

8 The recommended location is in the center of the coil on the second pass. If using a discharge air temperature to terminate defrost, utilize a 55°F termination temp.

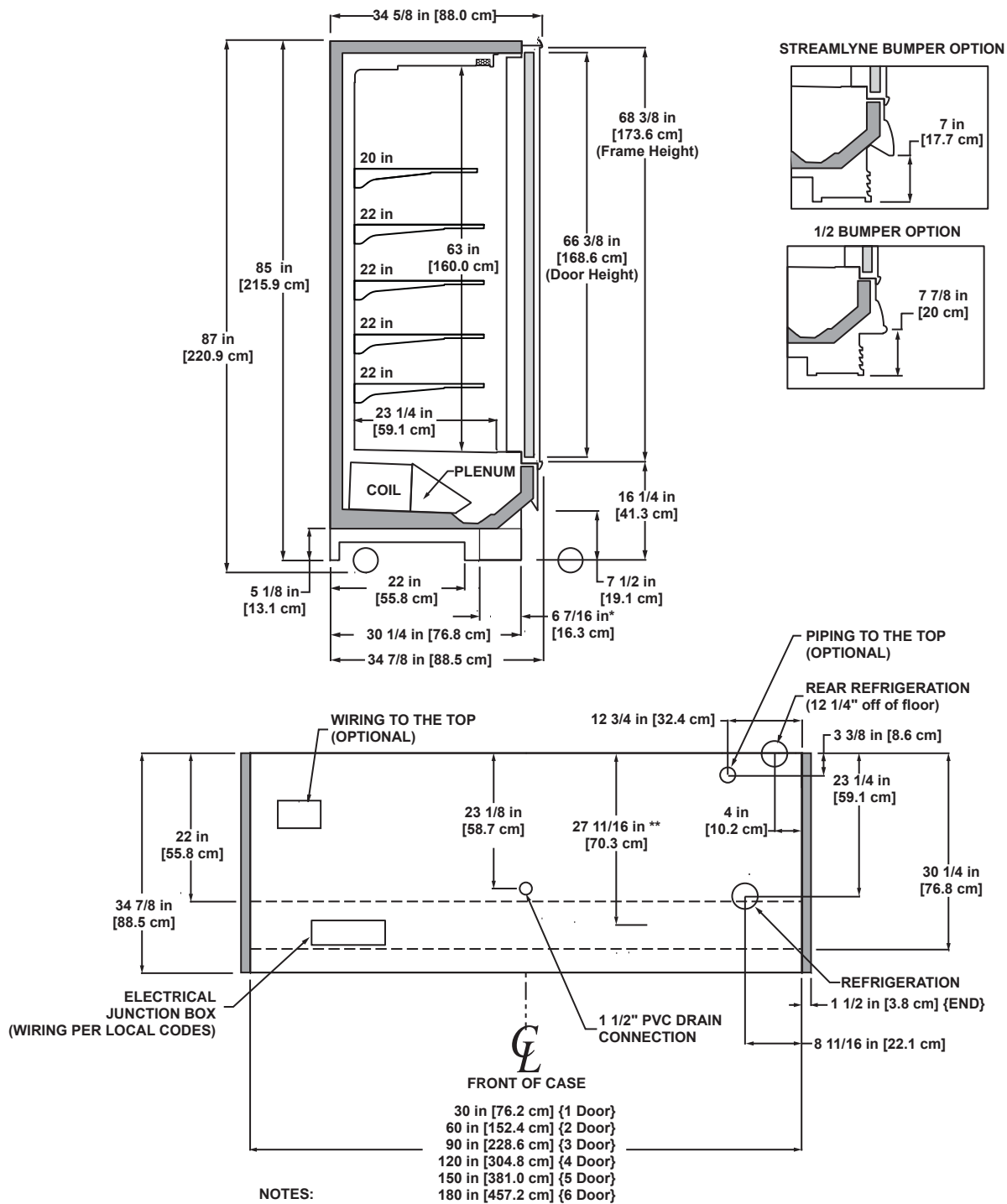
9 The recommended location is on the dump line. If using a discharge air temperature to terminate defrost, utilize a 55°F termination temp.

REACH-IN

Frozen Food / Ice Cream

ONRZH High Narrow Reach-In Glass Door Merchandiser

1, 2, 3, 4, 5 & 6-door (Frozen Food / Ice Cream)



Electrical Data

Doors	Fans Per Case	Standard Fans		High Efficiency Fans		Defrost Heaters (1-Phase)				Defrost Heaters ¹ (3-Phase)			
		120 Volts		120 Volts		208 Volts		240 Volts		208 Volts		240 Volts	
		Amps	Watts	Amps	Watts	Amps	Watts	Amps	Watts	Amps ²	Watts	Amps ²	Watts
1-door	1	0.50	30	0.15	9	4.89	1020	5.67	1359	2.82	1020	3.27	1359
2-door	2	1.00	60	0.31	18	10.99	2286	12.66	3038	7.61	2286	8.76	3038
3-door	3	1.50	90	0.46	28	12.40	2580	14.27	3425	8.59	2580	9.88	3425
4-door	4	2.00	120	0.611	37	16.29	3388	18.89	4533	11.28	3388	13.08	4533
5-door	5	2.50	150	0.77	46	19.89	4138	22.93	5503	13.78	4138	15.88	5503
6-door	6	3.00	180	0.92	55	23.09	4803	26.65	6395	16.28	4803	18.46	6395

Lighting Data

Doors	Fluorescent Lighting		LED Lighting								
	Standard (60w)		Optimax Pro ³			GE IMMERSION			Crossfire/Polaris ³		
	120 Volts		120 Volts		BTUH Credit Per Door	120 Volts		BTUH Credit Per Door	120 Volts		BTUH Credit Per Door
	Amps	Watts	Amps	Watts		Amps	Watts		Amps	Watts	
1-door	1.00	120	0.17	20	206	0.13	16	214	0.13	15	216
2-door	1.50	180	0.33	39	145	0.27	32	152	0.25	30	154
3-door	2.00	240	0.48	58	144	0.40	48	152	0.38	45	154
4-door	2.50	300	0.64	77	135	0.53	64	143	0.50	60	146
5-door	3.00	360	0.80	96	131	0.67	80	138	0.63	75	141
6-door	3.50	420	0.96	115	127	0.80	96	135	0.75	90	138

Anti-Condensate Heater Data

Doors	Anthony						Gemtron					
	101		Eliminaator ⁵		Eliminaator 2 ⁵		Polar		Polar LE		Polar EF	
	120 Volts		120 Volts		120 Volts		120 Volts		120 Volts		120 Volts	
	Amps	Watts	Amps	Watts	Amps	Watts	Amps	Watts	Amps	Watts	Amps	Watts
1-door	---	---	---	---	---	---	---	---	1.55	186	---	---
2-door	4.10	492	1.79	214	1.24	149	2.39	287	1.67	201	1.19	143
3-door	5.89	707	2.63	315	1.81	217	3.58	430	2.50	301	1.78	214
4-door	7.77	932	3.46	415	2.37	284	4.77	573	3.33	401	2.37	285
5-door	9.61	1154	4.35	522	2.98	358	6.00	720	4.20	505	3.00	360
6-door	11.23	1347	5.20	624	3.56	427	7.14	857	4.98	599	3.54	425

ONRZH High Narrow Reach-In Glass Door Merchandiser

1, 2, 3, 4, 5 & 6-door (Frozen Food / Ice Cream)

Guidelines & Control Settings

Application	Door	⁶ BTUH/door		Evaporator (°F)	Superheat Set Point @ Bulb (°F)	Discharge Air (°F)	Discharge ⁷ Air Velocity (FPM)
		Conventional	Parallel				
Frozen	Standard	1286	1249	-11	3 - 5	-3	460
	Eliminaator/Polar LE (multi-door)	1127	1095	-11	3 - 5	-3	460
	Polar LE (single-door)	1527	1484	-8	3 - 5	2	300
Ice Cream	Standard	1347	1309	-17	3 - 5	-8	460
	Eliminaator/Polar LE (multi-door)	1166	1133	-17	3 - 5	-8	460
	Polar LE (single-door)	1601	1555	-17	3 - 5	-7	305

Defrost Controls

Defrosts Per Day	Run-Off Time (min)	Electric Defrost		Timed-Off Defrost		Hot Gas Defrost		Reverse Air Defrost	
		Fail-Safe (min)	Termination Temp (°F)	Fail-Safe (min)	Termination Temp (°F)	Fail-Safe (min)	Termination Temp (°F)	Fail-Safe (min)	Termination Temp (°F)
1	13 - 15	46	73 ⁸	---	---	24	73 ⁹	---	---

1 3-phase load is unbalanced.

2 Figure given is maximum line amperage per phase.

3 Low-power lights. High-power option available.

4 NOTE: " - - " indicates that feature is not an option on this case model.

5 Values provided are for doors with no heat on the glass.

6 Standard fans increase refrigeration load by 96 BTUH/fan.

7 Average discharge air velocity at peak of defrost.

8 The recommended location is in the center of the coil on the second pass. If using a discharge air temperature to terminate defrost, utilize a 55°F termination temp.

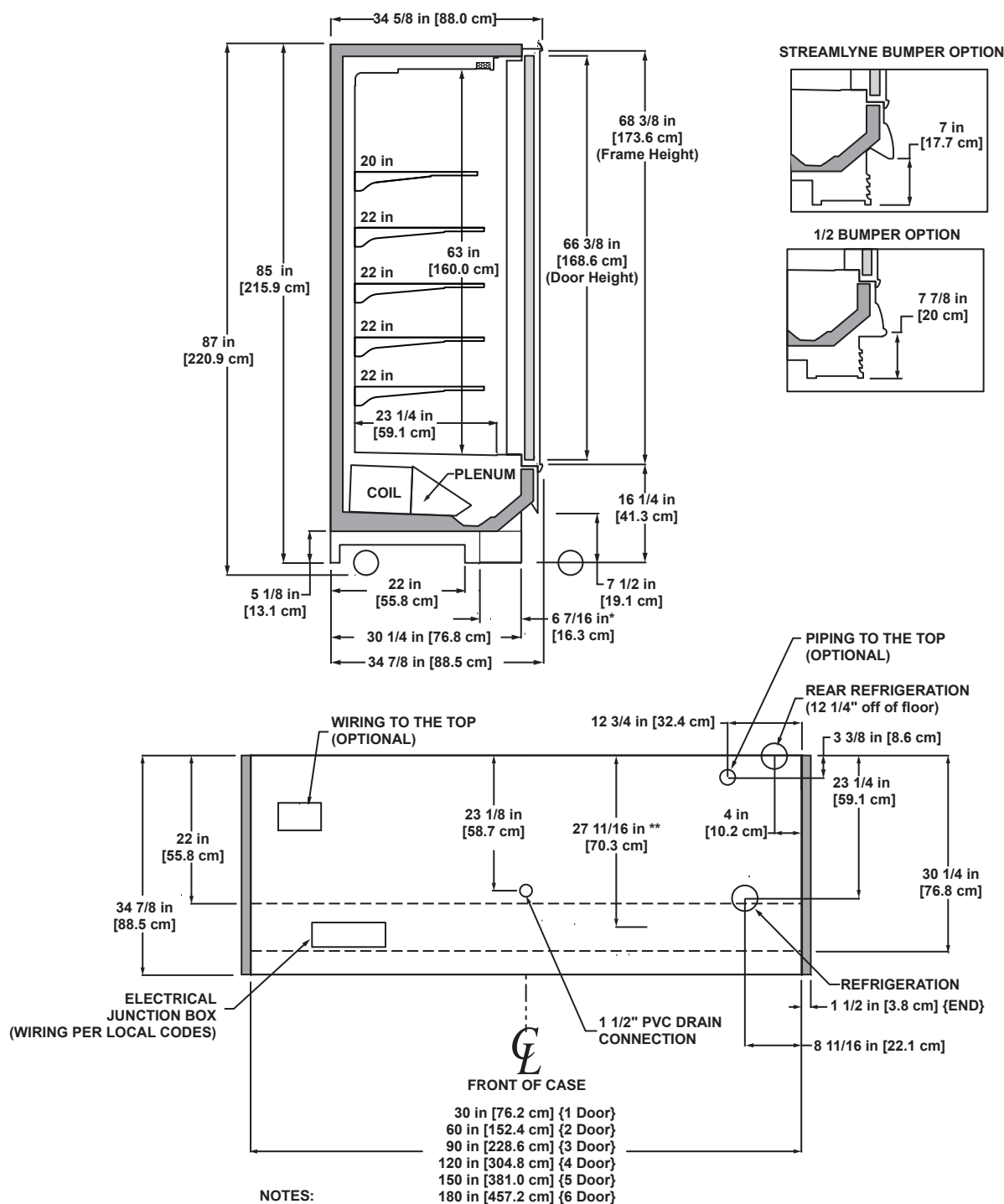
9 The recommended location is on the dump line. If using a discharge air temperature to terminate defrost, utilize a 55°F termination temp.

REACH-IN

Frozen Food / Ice Cream

ONRZH High Narrow Reach-In Glass Door Merchandiser

1, 2, 3, 4, 5 & 6-door (Frozen Food / Ice Cream)



Electrical Data

Doors	Fans Per Case	Standard Fans		High Efficiency Fans		Defrost Heaters (1-Phase)				Defrost Heaters ¹ (3-Phase)			
		120 Volts		120 Volts		208 Volts		240 Volts		208 Volts		240 Volts	
		Amps	Watts	Amps	Watts	Amps	Watts	Amps	Watts	Amps ²	Watts	Amps ²	Watts
1-door	1	0.50	30	0.15	9	4.89	1020	5.67	1359	2.82	1020	3.27	1359
2-door	2	1.00	60	0.31	18	10.99	2286	12.66	3038	7.61	2286	8.76	3038
3-door	3	1.50	90	0.46	28	12.40	2580	14.27	3425	8.59	2580	9.88	3425
4-door	4	2.00	120	0.611	37	16.29	3388	18.89	4533	11.28	3388	13.08	4533
5-door	5	2.50	150	0.77	46	19.89	4138	22.93	5503	13.78	4138	15.88	5503
6-door	6	3.00	180	0.92	55	23.09	4803	26.65	6395	16.28	4803	18.46	6395

Lighting Data

Doors	Fluorescent Lighting		LED Lighting								
	Standard (60w)		Optimax Pro ³			GE IMMERSION			Crossfire/Polaris ³		
	120 Volts		120 Volts		BTUH Credit Per Door	120 Volts		BTUH Credit Per Door	120 Volts		BTUH Credit Per Door
	Amps	Watts	Amps	Watts		Amps	Watts		Amps	Watts	
1-door	1.00	120	0.17	20	206	0.13	16	214	0.13	15	216
2-door	1.50	180	0.33	39	145	0.27	32	152	0.25	30	154
3-door	2.00	240	0.48	58	144	0.40	48	152	0.38	45	154
4-door	2.50	300	0.64	77	135	0.53	64	143	0.50	60	146
5-door	3.00	360	0.80	96	131	0.67	80	138	0.63	75	141
6-door	3.50	420	0.96	115	127	0.80	96	135	0.75	90	138

Anti-Condensate Heater Data

Doors	Anthony						Gemtron					
	101		Eliminaator ⁵		Eliminaator 2 ⁵		Polar		Polar LE		Polar EF	
	120 Volts		120 Volts		120 Volts		120 Volts		120 Volts		120 Volts	
	Amps	Watts	Amps	Watts	Amps	Watts	Amps	Watts	Amps	Watts	Amps	Watts
1-door	---	---	---	---	---	---	---	---	1.55	186	---	---
2-door	4.10	492	1.79	214	1.24	149	2.39	287	1.67	201	1.19	143
3-door	5.89	707	2.63	315	1.81	217	3.58	430	2.50	301	1.78	214
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6-door	11.23	1347	5.20	624	3.56	427	7.14	857	4.98	599	3.54	425

ONRZH High Narrow Reach-In Glass Door Merchandiser

1, 2, 3, 4, 5 & 6-door (Frozen Food / Ice Cream)

Guidelines & Control Settings

Application	Door	⁶ BTUH/door		Evaporator (°F)	Superheat Set Point @ Bulb (°F)	Discharge Air (°F)	Discharge ⁷ Air Velocity (FPM)
		Conventional	Parallel				
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	Eliminaator/Polar LE (multi-door)	1127	1095	-11	3 - 5	-3	460
	Polar LE (single-door)	1527	1484	-8	3 - 5	2	300
Ice Cream	Standard	1347	1309	-17	3 - 5	-8	460
	Eliminaator/Polar LE (multi-door)	1166	1133	-17	3 - 5	-8	460
	Polar LE (single-door)	1601	1555	-17	3 - 5	-7	305

Defrost Controls

Defrosts Per Day	Run-Off Time (min)	Electric Defrost		Timed-Off Defrost		Hot Gas Defrost		Reverse Air Defrost	
		Fail-Safe (min)	Termination Temp (°F)	Fail-Safe (min)	Termination Temp (°F)	Fail-Safe (min)	Termination Temp (°F)	Fail-Safe (min)	Termination Temp (°F)
1	13 - 15	46	73 ⁸	---	---	24	73 ⁹	---	---

1 3-phase load is unbalanced.

2 Figure given is maximum line amperage per phase.

3 Low-power lights. High-power option available.

4 NOTE: " - - " indicates that feature is not an option on this case model.

5 Values provided are for doors with no heat on the glass.

6 Standard fans increase refrigeration load by 96 BTUH/fan.

7 Average discharge air velocity at peak of defrost.

8 The recommended location is in the center of the coil on the second pass. If using a discharge air temperature to terminate defrost, utilize a 55°F termination temp.

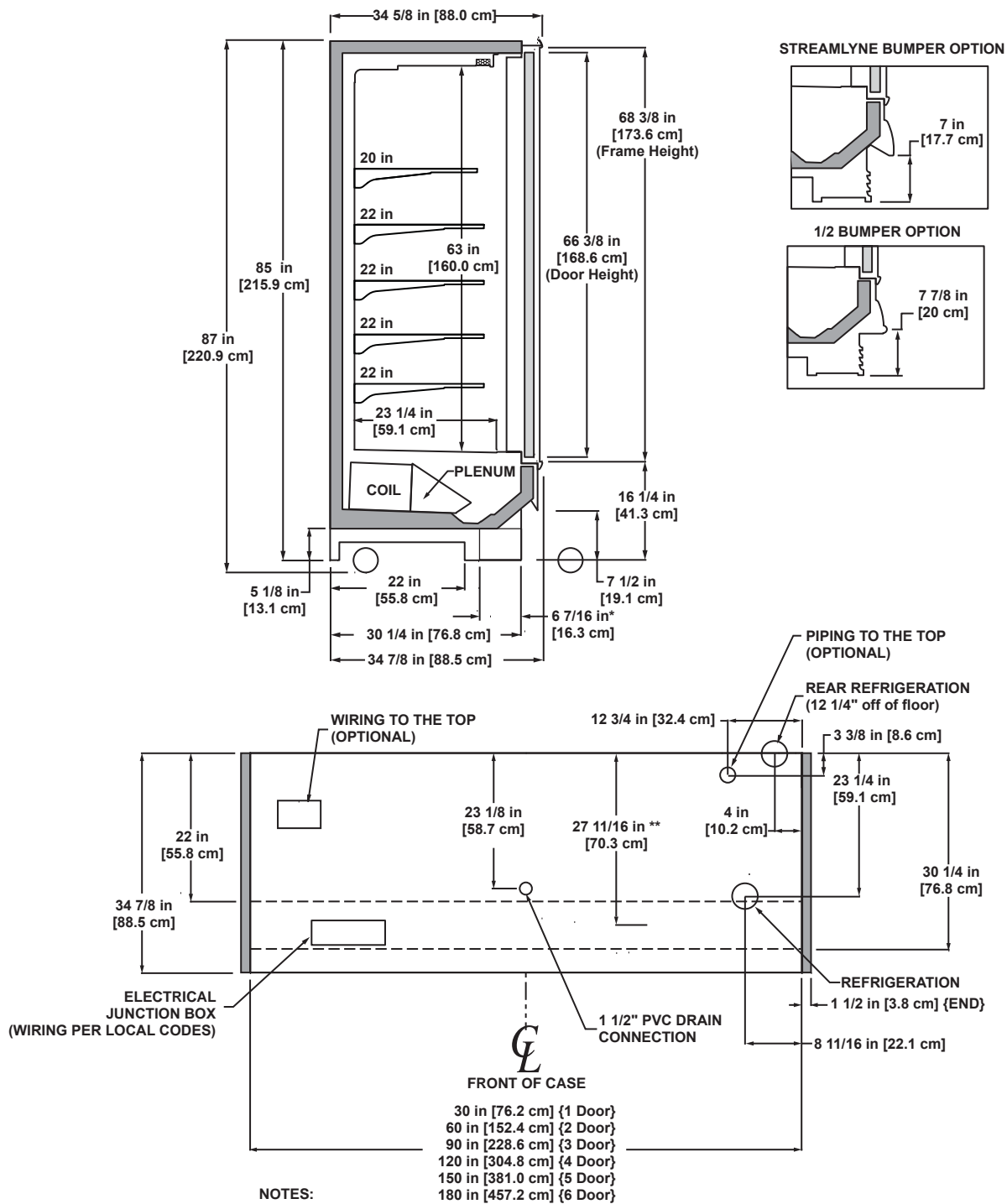
9 The recommended location is on the dump line. If using a discharge air temperature to terminate defrost, utilize a 55°F termination temp.

REACH-IN

Frozen Food / Ice Cream

ONRZH High Narrow Reach-In Glass Door Merchandiser

1, 2, 3, 4, 5 & 6-door (Frozen Food / Ice Cream)



* STUB-UP AREA

** RECOMMENDED STUB-UP CENTERLINE FOR ELECTRICAL AND HUB DRAINS

- ENDS ADD APPROXIMATELY 1 INCH TO CASE HEIGHT
- WIRING-TO-THE-TOP- ADDS APPROXIMATELY 4 INCHES TO CASE HEIGHT
- A 2" MINIMUM AIR GAP IS REQUIRED BETWEEN THE REAR OF THE CASE AND A WALL
- SUCTION LINE (2DR & 3DR) 5/8", SUCTION LINE (4DR, 5DR & 6DR) 7/8"
- LIQUID LINE (ALL LENGTHS) - 3/8", LIQUID LINE w/ HOT GAS DEFROST (ALL LENGTHS) - 1/2"
- AVAILABLE SHELF SIZES: WIRE SHELVES 16", 18", 20" & 22"; SOLID SHELVES 18", 20" & 22"
- TOP SHELF MUST BE 20" OR SHORTER
- RECOMMENDED CONFIGURATION IS 20" SHELF AND 4 22" SHELVES BELOW TOP SHELF)
- DASHED LINES SIGNIFY AREA INSIDE BASE RAIL BEHIND KICK-PLATE

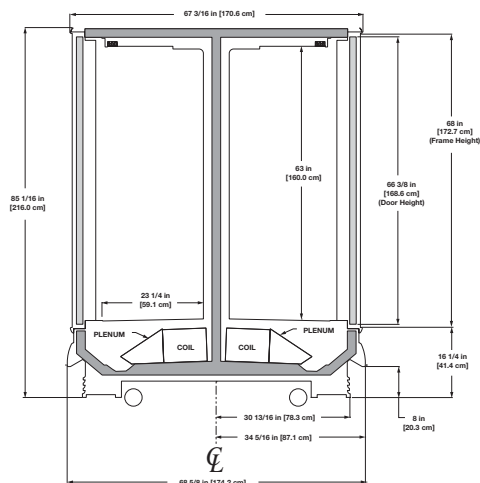




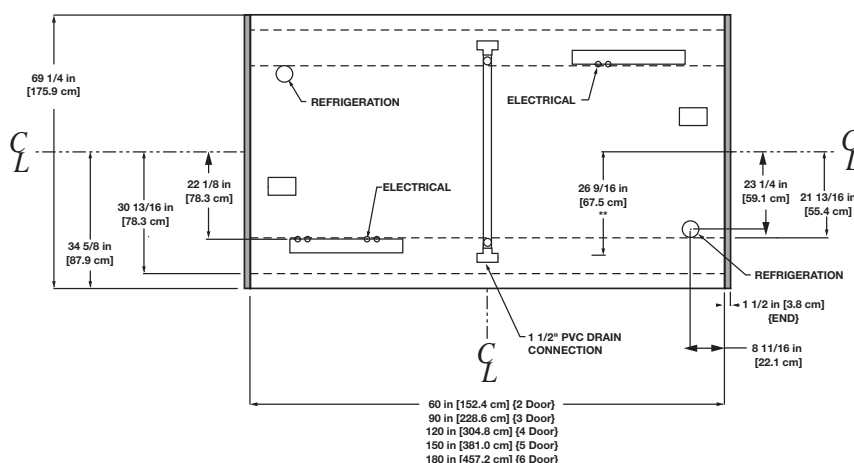
REACH-IN BACK-TO-BACK FREEZER OR ICE CREAM

Hill PHOENIX- ONRZH

R018



SECTION



PLAN

REFRIGERATION DATA

CASE LENGTH	CASE USAGE	CASE CAPACITY (BTUH)		EVAPORATOR (°F)	UNIT SIZING (°F)	DISCHARGE AIR		AVG. REF CHARGE (lbs)	DEFROST WATER (lbs per day)
		PARALLEL	CONVENTIONAL			TEMPERATURE (°F)	VELOCITY (FPM)		
		To find BTUH for 1/2 case, divide given figure by 2.							
4 Door	FROZEN FOOD	3041	3132	-8	-11	-3	400	2.8	7.2
6 Door	FROZEN FOOD	4694	4835	-8	-11	-3	400	4.8	10.8
8 Door	FROZEN FOOD	6402	6594	-8	-11	-3	400	6.7	14.4
10 Door	FROZEN FOOD	8085	8327	-8	-11	-3	400	8.6	18
12 Door	FROZEN FOOD	9743	10036	-8	-11	-3	400	10.6	21.6
4 Door	ICE CREAM	3329	3428	-17	-20	-8	400	2.8	7.2
6 Door	ICE CREAM	5226	5383	-17	-20	-8	400	4.8	10.8
8 Door	ICE CREAM	6978	7188	-17	-20	-8	400	6.7	14.4
10 Door	ICE CREAM	8805	9069	-17	-20	-8	400	8.6	18
12 Door	ICE CREAM	10607	10925	-17	-20	-8	400	10.6	21.6

ELECTRICAL DATA

Standard fans 35 watts.

Standard fluorescent lighting 58

CASE LENGTH	FANS/CASE	HI-EFFICIENCY FANS		LED LIGHTS (GEN-3)		ANTI-CONDENSATE HEATERS		DEFROST HEATERS			
		120 Volt		120 Volt		ELIM DOOR (120 Volt)		208 Volt (3-phase)		240 Volt (3-phase)	
		AMPS	WATTS	AMPS	WATTS	AMPS	WATTS	AMPS (phase) MAX	WATTS (total)	AMPS (phase) MAX	WATTS (total)
4 Door	4	0.61	36.8	0.94	112.8	3.56	427	15.22	4570	17.52	6076
6 Door	6	0.92	55.2	1.46	175.2	5.24	629	17.18	5160	19.76	6850
8 Door	8	1.22	73.6	1.96	235.2	6.90	828	22.56	6776	26.16	9066
10 Door	10	1.53	92.6	2.38	285.6	8.66	1039	27.56	8276	31.76	11006
12 Door	12	1.84	110.4	2.94	352.8	10.34	1240	32.56	9605	36.92	12790

DEFROST DATA

DEFROST TYPE		DEFROSTS PER DAY	DRIP TIME	PUMP OUT	DURATION TIME (MIN.)	TERMINATION TEMP (°F)
ELECTRIC	DX	1	13-15	N/A	46	55
	CO2	1	6-15	13	46	55

OPTIONS/NOTES:

- A 2-inch air gap is required between the case and the wall.
- Electric defrost is wired for 3-phase load, but is unbalanced. Drain Heater L3 is less than coil heaters L1 & L2. Figure given is maximum amps per phase. 1-door case has 3 identical heaters.
- One duplex receptacle provided in kickplate of END CAP cases (ONRZH-2 or 3); field wired left-hand end.
- Superheat setpoint at bulb to be 3-5°F.

Wal-Mart Store #2073 Cleveland, OH - H.E. Refrigerated Cases							Fan Hours of Op.						8760		Store Hours of Op.										8760									
Case Code	Invoice #	Invoice Amount	Cut Sheet #	Case Temp	Occ. Sensors	Efficiency Measure	Fan Quantity	Std. Fan W	Std. Fan kW	Std. Fan kWh	H.E. Fan W	H.E. Fan kW	H.E. Fan kWh	Incremental H.E. Fan Cost	Fan Savings kW	Fan Savings kWh	Lamp Qty.	Std. Lighting W	Std. Lighting kW	Std. Lighting kWh	LED Lighting W	LED Lighting kW	LED Lighting kWh	LED Lighting Interactive Savings kW	LED Lighting Interactive Savings kWh	LED Lighting Controls Savings kWh	Interactive Factor kW	Interactive Factor kWh	Coincidence Factor Demand	Lighting Controls Factor	Incremental LED Cost	Lighting Savings kW	Lighting Savings kWh	
OSDM Beer 48" (4x12")	0683893 - P1	\$23,124.20	Cut Sheet 1	Medium	No	LED/ECM Fans	16	30	0.48	4204.8	14.0	0.22	1962.24	\$80.95	0.26	2243	24	28.0	0.67	5886.7	11.9	0.29	2501.9	0.08	1776.3	0.0	0.29	0.29	0.94	1.00	\$105.50	0.46	5161.18	
ONRZH 4DR Seafood	0683893 - P1	\$7,634.92	Cut Sheet 2	Low	No	LED/ECM Fans	4	30	0.12	1051.2	9.3	0.04	325.87	\$80.95	0.08	725	5	60.0	0.30	2628.0	12.8	0.06	560.6	0.03	280.3	0.0	0.50	0.50	0.94	1.00	\$105.50	0.27	2347.68	
ONRZH 3DR Seafood	0683893 - P1	\$6,357.80	Cut Sheet 3	Low	No	LED/ECM Fans	3	30	0.09	788.4	9.3	0.03	244.40	\$80.95	0.06	544	4	60.0	0.24	2102.4	12.0	0.05	420.5	0.02	210.2	0.0	0.50	0.50	0.94	1.00	\$105.50	0.21	1892.16	
ONRZH 2DR Bakery	0683893 - P1	\$5,068.44	Cut Sheet 4	Low	No	LED/ECM Fans	2	30	0.06	525.6	9.0	0.02	157.68	\$80.95	0.04	368	3	60.0	0.18	1576.8	10.7	0.03	281.2	0.02	140.6	0.0	0.50	0.50	0.94	1.00	\$99.50	0.16	1436.20	
ONRZH 2DR Frozen Food	0683893 - P2	\$5,094.06	Cut Sheet 4	Low	No	LED/ECM Fans	2	30	0.06	525.6	9.0	0.02	157.68	\$80.95	0.04	368	3	60.0	0.18	1576.8	10.7	0.03	281.2	0.02	140.6	0.0	0.50	0.50	0.94	1.00	\$99.50	0.16	1436.20	
ONRZH 19DR Frozen Food (1x4DR, 3x5DR)	0683893 - P2	\$33,687.33	Cut Sheet 5	Low	No	LED/ECM Fans	19	30	0.57	4993.2	9.3	0.18	1547.89	\$80.95	0.39	3445	23	60.0	1.38	12088.8	12.8	0.29	2578.9	0.14	1289.5	0.0	0.50	0.50	0.94	1.00	\$105.50	1.22	10799.33	
ONRZH 2DR Frozen Food	0683893 - P2	\$5,094.06	Cut Sheet 4	Low	No	LED/ECM Fans	2	30	0.06	525.6	9.3	0.02	162.94	\$80.95	0.04	363	3	60.0	0.18	1576.8	12.8	0.04	336.4	0.02	168.2	0.0	0.50	0.50	0.94	1.00	\$105.50	0.16	1408.61	
ONRZH 2DR Frozen Food	0683893 - P2	\$5,094.06	Cut Sheet 4	Low	No	LED/ECM Fans	2	30	0.06	525.6	9.3	0.02	162.94	\$80.95	0.04	363	3	60.0	0.18	1576.8	12.8	0.04	336.4	0.02	168.2	0.0	0.50	0.50	0.94	1.00	\$105.50	0.16	1408.61	
ONRIZH 38 DR BTB Frzn Food (1x8DR, 3x10DR)	0683893 - P3	\$69,417.30	Cut Sheet 6	Low	No	LED/ECM Fans	38	35	1.33	11650.8	9.2	0.35	3062.50	\$80.95	0.98	8588	46	58.0	2.67	23371.7	23.8	1.09	9590.4	0.51	4795.2	0.0	0.50	0.50	0.94	1.00	\$185.00	2.09	18576.46	
ONRZH 2DR Frozen Food	0683893 - P3	\$5,094.06	Cut Sheet 4	Low	No	LED/ECM Fans	2	30	0.06	525.6	9.0	0.02	157.68	\$80.95	0.04	368	3	60.0	0.18	1576.8	10.7	0.03	281.2	0.02	140.6	0.0	0.50	0.50	0.94	1.00	\$99.50	0.16	1436.20	
ONRZH 2DR Frozen Food	0683893 - P3	\$5,094.06	Cut Sheet 4	Low	No	LED/ECM Fans	2	30	0.06	525.6	9.0	0.02	157.68	\$80.95	0.04	368	3	60.0	0.18	1576.8	10.7	0.03	281.2	0.02	140.6	0.0	0.50	0.50	0.94	1.00	\$99.50	0.16	1436.20	
ONRZH 19DR Frozen Food (1x4DR, 3x5DR)	0683893 - P3	\$33,595.66	Cut Sheet 5	Low	No	LED/ECM Fans	19	30	0.57	4993.2	9.3	0.18	1547.89	\$80.95	0.39	3445	23	60.0	1.38	12088.8	16.0	0.37	3223.7	0.17	1611.8	0.0	0.50	0.50	0.94	1.00	\$122.00	1.18	10476.96	
ONRZH 2DR Frozen Food	0683893 - P4	\$5,094.06	Cut Sheet 4	Low	No	LED/ECM Fans	2	30	0.06	525.6	9.3	0.02	162.94	\$80.95	0.04	363	3	60.0	0.18	1576.8	12.8	0.04	336.4	0.02	168.2	0.0	0.50	0.50	0.94	1.00	\$105.50	0.16	1408.61	
ONRZH 19DR Frozen Food (1x4DR, 3x5DR)	0683893 - P4	\$33,687.33	Cut Sheet 5	Low	No	LED/ECM Fans	19	30	0.57	4993.2	9.3	0.18	1547.89	\$80.95	0.39	3445	23	60.0	1.38	12088.8	16.0	0.37	3223.7	0.17	1611.8	0.0	0.50	0.50	0.94	1.00	\$122.00	1.18	10476.96	
ONRZH 19DR Frozen Food (1x4DR, 3x5DR)	0683893 - P4	\$34,034.85	Cut Sheet 5	Low	No	LED/ECM Fans	19	30	0.57	4993.2	9.3	0.18	1547.89	\$80.95	0.39	3445	23	60.0	1.38	12088.8	16.0	0.37	3223.7	0.17	1611.8	0.0	0.50	0.50	0.94	1.00	\$122.00	1.18	10476.96	
ONRZH 3DR Ice Cream	0683893 - P5	\$6,383.42	Cut Sheet 3	Low	No	LED/ECM Fans	3	30	0.09	788.4	9.3	0.03	244.40	\$80.95	0.06	544	4	60.0	0.24	2102.4	12.0	0.05	420.5	0.02	210.2	0.0	0.50	0.50	0.94	1.00	\$105.50	0.21	1892.16	
ONRZH 3DR Ice Cream	0683893 - P5	\$6,383.42	Cut Sheet 3	Low	No	LED/ECM Fans	3	30	0.09	788.4	9.3	0.03	244.40	\$80.95	0.06	544	4	60.0	0.24	2102.4	12.0	0.05	420.5	0.02	210.2	0.0	0.50	0.50	0.94	1.00	\$105.50	0.21	1892.16	

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 Wal-Mart Stores, Inc., Taxpayer ID No. 71-0862119 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: vnnofziger@firstenergycorp.com

If to the Customer:

Wal-Mart Stores, Inc.
Sam Walton Development Complex
2001 S.E. 10th Street
Bentonville, AR 72716-5530
Attn: Richard Mynatt
Telephone: 479-277-9086
Fax: 479-273-6851
Email: richard.mynatt@wal-mart.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.

The Cleveland Electric Illuminating Company_
(Company)

By: John C. Parnis

Title: V.P. Of Energy Efficiency

Date: 4-2-13

Wal-Mart Stores, Inc._
(Customer)

By: Debra J. Hines

Title: Director of Energy Strategies

Date: 3/20/2013

This foregoing document was electronically filed with the Public Utilities

Commission of Ohio Docketing Information System on

6/10/2013 5:00:43 PM

in

Case No(s). 13-0575-EL-EEC

Summary: Application to Commit Energy Efficiency/Peak Demand Reduction Programs of The Cleveland Electric Illuminating Company and Wal-Mart Stores, Inc. electronically filed by Ms. Jennifer M. Sybyl on behalf of The Cleveland Electric Illuminating Company and Wal-Mart Stores, Inc.