



Case No.: 13-1311-EL-EEC

Mercantile Customer: TriHealth – Bethesda Oak Hospital

Electric Utility: Duke Energy

**Program Title or
Description: VFDs**

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

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

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

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

Section 1: Mercantile Customer Information

Name: **TriHealth Hospitals**

Principal address: **619 Oak Street Cincinnati Ohio 45206**

Address of facility for which this energy efficiency program applies:

619 Oak Street Cincinnati Ohio 45206

Name and telephone number for responses to questions:

Grady Reid Jr, 513-287-1038

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. (Refer to Attachment 1 - Appendix 1)**

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: **Duke Energy**

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)).

The following new equipment was installed May 2012.

1 VFD on 5 HP Supply and Return Fan Motor

2 VFDs on 7.5 HP Supply and Return Fan Motors

1 VFD on 10 HP Supply and Return Fan Motor

2 VFDs on 30 HP Supply and Return Fan Motors

1 VFD on 40 HP Supply and Return Fan Motor

- ☐ Installation of new equipment to replace equipment that needed to be replaced The customer installed new equipment on the following date(s):
- ☐ Installation of new equipment for new construction or facility expansion. The customer installed new equipment on the following date(s): _____.
- ☐ Behavioral or operational improvement.

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

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

Annual savings: **173,566 kWh (Refer to Attachment 1 - Appendix 2)**

- 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.

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

Annual savings: _____kWh

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

- 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?

May 2012

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

28.6 KW (See Attachment 1 - Appendix 2)

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 **\$6500.00 (See Attachment 1 - Appendix 3).**

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 **14.50 (See Attachment 1 - Appendix 4)**

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 **\$63,570 (See Attachment 1 - Appendix 5).**

The utility's program costs were **\$1,820 (See Attachment 1 - Appendix 6).**

The utility's incentive costs/rebate costs were **\$6500 (See Attachment 1 - Appendix 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.

Refer to Offer Letter following this application

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.



DUKE ENERGY
Mercantile Self Direct Program
139 East Fourth Street
Cincinnati, OH 45202
513 629 5572 fax

May 13, 2013

Mr. Rick Volk
TriHealth Bethesda Oak
619 Oak Street
Cincinnati, Ohio 45206

Subject: Your VFD Application for a Duke Energy Mercantile Self-Direct Rebate

Dear Mr. Herlein:

Thank you for your Duke Energy Mercantile Self Direct rebate application. As noted in the Energy Conservation Measure (ECM) chart on page two, a total rebate of \$6500.00 has been proposed for your VFD projects completed in the 2012 calendar year. **All Self Direct Rebates are contingent upon approval by the Public Utilities Commission of Ohio (PUCO).**

At your earliest convenience, please indicate if you accept this rebate by

- providing your signature on page two
- completing the PUCO-required affidavit on page three.

Please return the documents to my attention via fax at 513-629-5572 or e-mail to SelfDirect@Duke-Energy.com. Upon receipt, Duke Energy will submit the necessary documentation to PUCO. Following PUCO's approval, Duke Energy will remit payment.

At Duke Energy, we value your business and look forward to working with you on this and future energy efficiency projects. We hope you will consider our Smart Saver® incentives, when applicable. Please contact me if you have any questions.

Sincerely,

A handwritten signature in black ink, appearing to read 'Grady Reid, Jr.'.

Grady Reid, Jr
Product Manager
Mercantile Self Direct Rebates

cc: Mike Heath, Duke Energy
Rob Jung, Ecova
Dan Buchanan, Pathian

Please indicate your response to this rebate offer within 30 days of receipt.

☒ Rebate is accepted.

☐ Rebate is declined.

By accepting this rebate, TriHealth Hospitals affirms its intention to commit and integrate the energy efficiency projects listed on the following pages into Duke Energy's peak demand reduction, demand response and/or energy efficiency programs.

Additionally, TriHealth Hospitals also agrees to serve as joint applicant in any future filings necessary to secure approval of this arrangement as required by PUCO and to comply with any information and reporting requirements imposed by rule or as part of that approval.

Finally, TriHealth Hospitals affirms that all application information submitted to Duke Energy pursuant to this rebate offer is true and accurate. Information in question would include, but not be limited to, project scope, equipment specifications, equipment operational details, project costs, project completion dates, and the quantity of energy conservation measures installed.

If rebate is accepted, will you use the monies to fund future energy efficiency and/or demand reduction projects?

☒ YES

☐ NO

If rebate is declined, please indicate reason (optional):

Richard Velek

Richard Velek

5/16/13

Customer Signature

Printed Name

Date

Proposed Rebate Amounts

Measure ID	Energy Conservation Measure (ECM)	Proposed Rebate Amount
ECM-1	VFD HVAC Supply Fan 5 HP (Qty 1)	\$250.00
ECM-2	VFD HVAC Supply Fan 7.5 HP (Qty 2)	\$750.00
ECM-3	VFD HVAC Supply Fan 10 HP (Qty 1)	\$500.00
ECM-4	VFD HVAC Supply Fan 30 HP (Qty 2)	\$3000.00
ECM-5	VFD HVAC Supply Fan 40 HP (Qty 1)	\$2000.00
Total		\$6500.00

Ohio | Public Utilities Commission

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

Case No.: ____ - ____ -EL-EEC

State of OHIO :

Richard V. Velle, Affiant, being duly sworn according to law, deposes and says that:

1. I am the duly authorized representative of:

Bethesda Oak

[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.
3. I am aware of fines and penalties which may be imposed under Ohio Revised Code Sections 2921.11, 2921.31, 4903.02, 4903.03, and 4903.99 for submitting false information.

Paul Volk Supervisor ENGINEER + MAINTENANCE
Signature of Affiant & Title

Sworn and subscribed before me this 22ND day of May,
2013 Month/Year

[Signature]
Signature of official administering oath

ANTHONY W WALDBILLIG
Print Name and Title Dispatcher

ANTHONY W. WALDBILLIG
Notary Public, State of Ohio

My commission expires on ____
My Commission Expires 11-20-2013

Attachment 1 –TriHealth Bethesda Oak Hospital

Appendix 1 – Electric History

04900675 01		
Electric Meters 108044766 & 108044761 - Rate DP		
BETHESDA HOSPITAL		
619 OAK		
CINCINNATI, OH 45206		
combined consumption		
Date	Days	Actual KWH
11/28/2012	33	959,568
10/26/2012	29	1,034,724
9/27/2012	30	1,245,689
8/28/2012	29	1,268,030
7/30/2012	32	1,581,650
6/28/2012	29	1,243,097
5/30/2012	30	1,217,933
4/30/2012	32	1,052,923
3/29/2012	29	1,003,433
2/29/2012	29	849,842
1/31/2012	32	919,824
12/30/2011	30	884,801
Total		13,261,514

Appendix 2 – Annual kWh losses and annual KW losses

Measure	Measure Amount	Unit of Measure	Annual kWh Gross with losses (per unit)	TOTAL Annual kWh Gross with losses	Saved Summer coincident kW with losses Per Unit	Total KW Gross with losses
VFD HVAC Fans ONLY (1.5-50 HP)	130	HP	1335.12	173565.6	0.22	28.6

Existing Equipment Assumptions	New Equipment Assumptions	kWh Savings per unit	kW Savings Per Unit	Total kWh Savings	Total kW Savings
Base efficiency is assumed to be Variable Air Volume with inlet vane. A market average of building types and HVAC air distribution schemes are assumed.	New efficiency is assumed to be Variable Air Volume with VFD. A market average of building types and HVAC air distribution schemes are assumed.	1243	0.22	161,559	29

Note: After consideration of line losses, total energy savings are **173,566 kWh and 29 summer coincident kW**. These values may also reflect minor DSMore software rounding error

Appendix 3 – Cash Rebate

Measure	Amount
VFD HVAC Fans ONLY (1.5-50 HP)	\$6,500

Appendix 4 – Utility Cost Test

Measure	UCT
VFD HVAC Fans ONLY (1.5-50 HP)	14.50

Appendix 5 – Avoided Supply Costs

Measure	T&D	Production	Capacity	Quantity	Total Avoided Costs
VFD HVAC Fans ONLY (1.5-50 HP)	\$32.00	\$358.00	\$99.00	130	\$63,570

Appendix 6 – Utility Program Costs

Measure	Qty	Admin Costs	Total Costs
VFD HVAC Fans ONLY (1.5-50 HP)	130	\$14.00	\$1,820

Ohio Mercantile Self Direct Program

Application Guide & Cover Sheet

Questions? Call 1-866-380-9580 or visit www.duke-energy.com.

Email this form along with completed Mercantile Self Direct Prescriptive or Custom applications, proof of payment, energy savings calculations and spec sheets to SelfDirect@Duke-Energy.com. You may also fax to 1-513-629-5572.

Mercantile customers, defined as using at least 700,000 kWh annually are eligible for the Mercantile Self Direct program. Please indicate mercantile qualification:

- ☒ a single Duke Energy Ohio account
☐ multiple accounts in Ohio (energy usage with other utilities may be counted toward the total)

Please list Duke Energy account numbers below (attach listing of multiple accounts and/or billing history for other utilities as required):

Account Number	Annual Usage	Account Number	Annual Usage
0490067501	13,704,046		

Self Direct rebates are available for completed Custom projects that have not previously received a Duke Energy Smart Saver® Custom Incentive. Self Direct incentives are applicable to Prescriptive measures that were installed more than 90 days prior to submission to Duke Energy and have not previously received a Duke Energy Prescriptive rebate.

Self Direct Program requirements dictate that certain projects that may be Prescriptive in nature under the Smart Saver program must be evaluated using the Custom process. Use the table on page two as a guide to determine which Self Direct program fits your project(s). Apply for Self Direct projects using the appropriate application forms in conjunction with this cover sheet. Where Mercantile Self Direct Prescriptive applications are listed, please refer to the measure list on that application. If your measure is not listed, you may be eligible for a Self Direct Custom rebate. Self Direct Custom applications, like Smart Saver Custom applications, should include detailed analysis of pre-project and post-project energy usage and project costs. Please indicate which type of rebate applications are included in the table provided on page two.

Please check each box to indicate completion of the following program requirements:

☒ All sections of appropriate application(s) are completed	☒ Proof of payment.*	☒ Manufacturer's Spec sheets	☒ Energy model/calculations and detailed inputs for Custom applications
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* If a single payment record is intended to demonstrate the costs of both Prescriptive & Custom projects, please include an additional document with an estimated breakout of costs for each Prescriptive and Custom energy conservation measure.

**** Behavioral energy efficiency and demand reduction projects must be both measurable and verifiable. Provide justification with your application.

Application Type	Replaced equipment at end of lifetime or because equipment failed**	Replaced fully operational equipment to improve efficiency***	New Construction
Lighting	MSD Custom Part 1 ☐ Custom Lighting Worksheet ☐	MSD Prescriptive Lighting ☐	MSD Prescriptive Lighting ☐
		MSD Custom Part 1 ☐ Custom Lighting Worksheet ☐	MSD Custom Part 1 ☐ Custom Lighting Worksheet ☐
Heating & Cooling	MSD Custom Part 1 ☐ MSD Custom General Worksheet ☐	MSD Custom Part 1 ☐ MSD Custom General Worksheet ☐	MSD Prescriptive Heating & Cooling ☐
			MSD Custom Part 1 ☐ MSD Custom General Worksheet ☐
Window Films, Programmable Thermostats, & Guest Room Energy Management Systems	MSD Custom Part 1 ☐ MSD Custom General and/or EMS Worksheet(s) ☐	MSD Prescriptive Heating & Cooling ☐	MSD Custom Part 1 ☐ MSD Custom General and/or EMS Worksheet(s) ☐
Chillers & Thermal Storage	MSD Custom Part 1 ☐ MSD Custom General Worksheet ☐	MSD Custom Part 1 ☐ MSD Custom General Worksheet ☐	MSD Prescriptive Chillers & Thermal Storage ☐
			MSD Custom Part 1 ☐ MSD Custom General Worksheet ☐
Chiller Tune-ups	MSD Prescriptive Chiller Tune-ups ☐	MSD Prescriptive Chiller Tune-ups ☐	MSD Prescriptive Chiller Tune-ups ☐
Motors & Pumps	MSD Custom Part 1 ☐ MSD Custom General Worksheet ☐	MSD Custom Part 1 ☐ MSD Custom General Worksheet ☐	MSD Prescriptive Motors, Pumps & Drives ☐
			MSD Custom Part 1 ☐ MSD Custom General Worksheet ☐
VFDs	Not Applicable	MSD Prescriptive Motors, Pumps & Drives ☒	MSD Custom Part 1 ☐ MSD Custom VFD Worksheet ☒
		MSD Custom Part 1 ☐ MSD Custom VFD Worksheet ☐	
Food Service	MSD Custom Part 1 ☐ MSD Custom General Worksheet ☐	MSD Custom Part 1 ☐ MSD Custom General Worksheet ☐	MSD Prescriptive Food Service ☐
			MSD Custom Part 1 ☐ MSD Custom General Worksheet ☐
Air Compressors	MSD Custom Part 1 ☐ MSD Custom Compressed Air Worksheet ☐	MSD Custom Part 1 ☐ MSD Custom Compressed Air Worksheet ☐	MSD Prescriptive Process ☐
			MSD Custom Part 1 ☐ MSD Custom Compressed Air Worksheet ☐
Process	MSD Custom Part 1 ☐ MSD Custom General Worksheet ☐	MSD Prescriptive Process ☐	MSD Custom Part 1 ☐ MSD Custom General Worksheet ☐
		MSD Custom Part 1 ☐ MSD Custom General Worksheet ☐	
Energy Management Systems	MSD Custom Part 1 ☐ MSD Custom EMS Worksheet ☐	MSD Custom Part 1 ☐ MSD Custom EMS Worksheet ☐	MSD Custom Part 1 ☐ MSD Custom EMS Worksheet ☐
Behavioral*** & No/Low Cost		MSD Custom Part 1 ☐ MSD Custom General Worksheet ☐	

** Under the Self Direct program, failed equipment and equipment at the end of its useful life are evaluated differently than early replacement of fully functioning equipment. **All equipment replacements due to failure or old age will be evaluated via the Custom program.**

*** Please ensure that you include the age of the replaced equipment for measures classified as "Early Replacement" in your application as well as the estimated date that you would have otherwise replaced the existing equipment if you had not chosen a more energy efficient option.

MERCANTILE SELF DIRECT Ohio Premium Motor/Pump/VFD Incentive Application

Questions? Call 1-866-380-9580 or visit www.duke-energy.com.

Email the complete, signed application with all required documents to SelfDirect@duke-energy.com or fax to 513-629-5572.

Is this application: ☐ **NEW** (original) or ☐ **REVISED** (changes made to original application)

Building Type – Required (check one)

☐ Data Centers	☐ Full Service Restaurant	☒ Office
☐ Education/K-12	☒ Healthcare	☐ Public Assembly
☐ Education Other	☐ Industrial	☐ Public Order/Safety
☐ Elder Care/Nursing Home	☐ Lodging	☐ Religious Worship/Church
☐ Food Sales/Grocery	☐ Retail (Small Box)	☐ Service
☐ Fast Food Restaurant	☐ Retail (Big Box)	☐ Warehouse
☐ Other:		

How did you hear about the program? (check one)

☒ Duke Energy Representative	☐ Web Site	☐ Radio
☐ Contractor / Vendor	☐ Other	

Please check each box to indicate completion of the following program requirements:

☒ All sections of application	☒ Invoice with make, model number, quantity and equipment manufacturer	☒ Tax ID number for payee	☒ Customer/vendor agree to Terms and Conditions
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Customer Information

Customer/Business	TriHealth - Bethesda Oak Facility		Contact	Rick Volk	
Phone	513-569-6321		Account Number	0490067501	
Street Address (Where incentive should be mailed)	619 Oak Street				
City	Cincinnati	State	OH	Zip Code	45206
Installation Street Address	619 Oak Street				
City	Cincinnati	State	OH	Zip Code	45206
E-mail Address	rick_volk@trihealth.com				

**Failure to provide the account number associated with the location where the installation took place will result in rejection of the application.*

Vendor Information

Vendor	Pathian		Contact	Dan Buchanan	
Phone	513-737-7430		Fax	513-737-1549	
Street Address	11260 Chester Road, Suite 545				
City	Cincinnati	State	OH	Zip Code	45246
E-mail Address	srohrs@pathian.com				

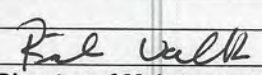
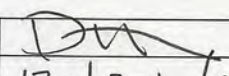
If Duke Energy has questions about this application, who should we contact? ☐ Customer ☒ Vendor

Payment Information

Who should receive incentive payment?	☒ Customer ☐ Vendor (Customer must sign below)	
I hereby authorize payment of incentive directly to the vendor:	Customer Signature (written signature)	
	Date	
Provide Tax ID Number for Payee	Customer Tax ID #	31-127019
	Vendor Tax ID #	

Terms and Conditions

I have read and hereby agree to the Terms & Conditions and Program Requirements.

Customer Signature		Vendor Signature	
Date	12/21/12	Date	12/21/12
Title	Director of Maintenance	Title	Owner

Incentives are subject to change and may be discontinued at the sole discretion of Duke Energy. Equipment must be installed and operable to be eligible for incentives. As Federal Energy Policy Law changes, equipment efficiency requirements are subject to change.

Motor incentives will be removed from the Prescriptive Program effective March 31, 2011. To qualify for the current incentives, motors must be purchased by March 31, 2011 and installed by June 30, 2011. Applications must be received by September 30, 2011.

Certain motors will still be eligible for incentives using the custom program. Please refer to the Duke Energy Mercantile Self Direct website for further detail.

The Equipment below is (check one): ☐ New Equipment / New Construction

Early replacement of existing equipment or replacement of failed equipment must apply for Self Direct Custom program.

Motor											
Motor	Make/Model or Catalog #	Quantity	Type	RPM	Incentive	HP	Installed Nominal Efficiency*	Annual Operating Hrs (Minimum of 2000)	Equipment Cost	Date Installed and Operable (mm/yy)	Total Incentive
1-5 HP			☐ OPEN ☐ TEFC	☐ 1200 ☐ 1800 ☐ 3600	\$5/HP	HP	%	Hrs			
7.5-20 HP			☐ OPEN ☐ TEFC	☐ 1200 ☐ 1800 ☐ 3600	\$4/HP	HP	%	Hrs			
25-100 HP			☐ OPEN ☐ TEFC	☐ 1200 ☐ 1800 ☐ 3600	\$2.50/HP	HP	%	Hrs			
125 - 250 HP			☐ OPEN ☐ TEFC	☐ 1200 ☐ 1800 ☐ 3600	\$2/HP	HP	%	Hrs			

* See page four for required efficiency levels for motors.

*Incentive capped at 50% of project cost (equipment and external labor).

- Qualifying motors must be three-phase open drip (ODP) or totally enclosed fan cooled (TEFC) units with nominal speeds of 1200, 1800, or 3600 RPM.
- Efficiencies are to be full-load nominal efficiencies tested in accordance with IEE Standards 112, Method B. Please refer to attached table to determine qualifying efficiencies.
- Installed equipment must be new. Used, rebuilt or rewound equipment is **not** eligible.
- Motor shall be squirrel cage design and conform to NEMA Premium design A, B or C torque characteristics.
- Motor/pump load must be served by Duke Energy and installed in customer's facility.
- Replaced motors shall be disposed of or recycled (not to be resold or rewound).
- Motor(s) and pump(s) must operate a minimum of 2000 hours annually to be eligible.

The Equipment below is (check one):

☐ New Equipment / New Construction

Early replacement of existing equipment or replacement of failed equipment must apply for Self Direct Custom program.

High Efficiency Pumps

Pump	Make/Model or Catalog #	Quantity	Incentive	Installed Nominal Efficiency* (pump curve)	Annual Operating Hrs (Minimum of 2000)	Equipment Cost	Date Installed and Operable (mm/yy)	Total Incentive
1.5 HP			\$61.00/PUMP	%	Hrs			
2 HP			\$87.50.00/PUMP	%	Hrs			
3 HP			\$87.50/PUMP	%	Hrs			
5 HP			\$85.00./PUMP	%	Hrs			
7.5 HP			\$124.50/PUMP	%	Hrs			
10 HP			\$82.50.00/PUMP	%	Hrs			
15 HP			\$145.00/PUMP	%	Hrs			
20 HP			\$200.00/PUMP	%	Hrs			

* See on page four for required efficiency levels for pumps. Pump curves are required.

*Incentive capped at 50% of project cost (equipment and external labor).

- Installed equipment must be new. Used, rebuilt or rewound equipment is **not** eligible.
- Motor/pump load must be served by Duke Energy and installed in customer's facility.
- Pump efficiency is based on the design point on the pump curve. Documentation of the pump curve is required to receive an incentive.
- The pump efficiency at the design point on the pump curve must meet nominal efficiencies as stated in table on page 4.
- Duplicative to the first bullet point.

The Equipment below is (check one): ☐ Retrofit
 Replacement of failed equipment or new construction is not eligible for incentives.

**Variable Frequency Drives (VFDs) – For Process Fluid Pumping Only
 (Retrofit* Application only)**

Process pumping does not include HVAC or swimming pool fluid pumping systems.

List Process Pumping Application

VFD**	Make/Model or Catalog #	Quantity	Incentive***	Annual Operating Hrs (Minimum of 2000)	Project Cost	Date Installed and Operable (mm/yy)	Total Incentive
5 HP			\$20.00/HP	Hrs			
7.5 HP			\$20.00/HP	Hrs			
10 HP			\$20.00/HP	Hrs			
15 HP			\$20.00/HP	Hrs			
20 HP			\$20.00/HP	Hrs			
25 HP			\$20.00/HP	Hrs			
30 HP			\$20.00/HP	Hrs			
40 HP			\$20.00/HP	Hrs			
50 HP			\$20.00/HP	Hrs			

*Retrofit only – incentives are only available for new VFDs installed on existing fluid process pump systems.

** VFDs over 50 HP and VFDs on new equipment are not eligible for prescriptive incentives, but may qualify through the custom program. Please refer to the custom webpage for guidance.

***Incentives are capped at 50% of project cost (equipment and external labor).

- Installed equipment must be new. Used, rebuilt or rewound equipment is **not** eligible.
- Variable Frequency Drive Fans & Pumps qualifying equipment must have 2000 annual run hours or more.
- A 3% impedance reactor on the AC input to the VSD is recommended to prevent damage to the VSD due to overvoltage from power factor correction and should be properly sized by your supplier. A 5% reactor may be recommended if there is additional harmonic distortion on the AC input lines due to other plant-specific causes.
- VFDs on new equipment do not qualify under this program; but may qualify through the custom program. Please refer to the Custom website for guidance. Incentives will be paid for the installation of **NEW** VFDs on existing fan/pump systems and process equipment only.
- Replacement of existing VFDs does not qualify for incentives.
- VFDs installed on redundant pumps do not qualify.
- VFDs installed in newly constructed facilities do not qualify for incentives.
- VFD speed must be automatically controlled by differential pressure, flow, temperature, or other variable signal.
- Existing throttling devices including inlet vanes, bypass dampers, and throttling valves must be removed or permanently disabled.
- Duplicative to the first bullet point.

The Equipment below is (check one): ☐ Retrofit
 Replacement of failed equipment or new construction is not eligible for incentives.

Variable Frequency Drives (VFDs) – Applied to HVAC Fans Only (Retrofit* Application only)							
VFD HVAC Applications (please check one):							
☐ Supply Fan		☐ Cooling Tower Fan		☐ Return Fan			
☐ Exhaust Fan							
VFD**	Make/Model or Catalog #	Quantity	Incentive***	Annual Operating Hrs (Minimum of 2000)	Project Cost	Date Installed and Operable (mm/yy)	Total Incentive
1.5 HP			\$50.00/HP	Hrs			
2 HP			\$50.00/HP	Hrs			
3 HP			\$50.00/HP	Hrs			
5 HP	Square D E-Flex 8839EFDFA4VYB07A08E09	1	\$50.00/HP	2680Hrs	\$7,000.00	05/2012	\$250.00
7.5 HP	Square D E-Flex 8839EFDGA4VYB07A08E09	2	\$50.00/HP	3120Hrs	\$3,790.00	05/2012	\$750.00
10 HP	Square D E-Flex 8839EFDHA4VYB07A08E09	1	\$50.00/HP	3120Hrs	\$2,500.00	05/2012	\$500.00
15 HP			\$50.00/HP	Hrs			
20 HP			\$50.00/HP	Hrs			
25 HP			\$50.00/HP	Hrs			
30 HP	Square D E-Flex 8839EFDMA4VYB07A08E09	2	\$50.00/HP	3120Hrs	\$13,000.00	05/2012	\$3,000.00
40 HP	Square D E-Flex 8839EFDNA4VYB07A08E09	1	\$50.00/HP	3120Hrs	\$20,210.00	05/2012	\$2,000.00
50 HP			\$50.00/HP	Hrs			
* Retrofit only – incentives are only available for new VFDs installed on existing HVAC fan systems. **VFDs over 50 HP and VFD's on new equipment are not eligible for prescriptive incentives, but may qualify through the custom program. ***Incentives are capped at 50% of project cost (equipment and external labor).							

- Installed equipment must be new. Used, rebuilt or rewound equipment is **not** eligible.
- Variable Frequency Drive Fans & Pumps qualifying equipment must have 2000 annual run hours or more.
- A 3% impedance reactor on the AC input to the VSD is recommended to prevent damage to the VSD due to overvoltage from power factor correction and should be properly sized by your supplier. A 5% reactor may be recommended if there is additional harmonic distortion on the AC input lines due to other plant-specific causes.
- VFDs on new equipment do not qualify under this program; but may qualify through the custom program. Please refer to the Custom website for guidance. Incentives will be paid for the installation of **NEW** VFDs on existing fan/pump systems and process equipment only.
- Replacement of existing VFDs does not qualify for incentives.
- VFDs installed on redundant pumps do not qualify.
- VFDs installed in newly constructed facilities do not qualify for incentives.
- VFD speed must be automatically controlled by differential pressure, flow, temperature, or other variable signal.
- Existing throttling devices including inlet vanes, bypass dampers, and throttling valves must be removed or permanently disabled.
- Duplicative to the first bullet point.

The Equipment below is (check one): ☐ Retrofit
 Replacement of failed equipment or new construction is not eligible for incentives.

**Variable Frequency Drives (VFDs) – Applied to HVAC Pumps Only
 (Retrofit* Application only)**

VFD HVAC Applications (please check one):

☐ Chilled Water Pump

☐ Condenser Pump

☐ Hot Water Pump

VFD**	Make/Model or Catalog #	Quantity	Incentive***	Annual Operating Hrs (Minimum of 2000)	Project Cost	Date Installed and Operable (mm/yy)	Total Incentive
1.5 HP			\$50.00/HP	Hrs			
2 HP			\$50.00/HP	Hrs			
3 HP			\$50.00/HP	Hrs			
5 HP			\$50.00/HP	Hrs			
7.5 HP			\$50.00/HP	Hrs			
10 HP			\$50.00/HP	Hrs			
15 HP			\$50.00/HP	Hrs			
20 HP			\$50.00/HP	Hrs			
25 HP			\$50.00/HP	Hrs			
30 HP			\$50.00/HP	Hrs			
40 HP			\$50.00/HP	Hrs			
50 HP			\$50.00/HP	Hrs			

* Retrofit only – incentives are only available for new VFDs installed on existing HVAC pumps systems.

**VFDs over 50 HP and VFDs on new equipment are not eligible for prescriptive incentives, but may qualify through the custom program. Please refer to the custom webpage for guidance.

***Incentives are capped at 50% of project cost (equipment and external labor).

- Installed equipment must be new. Used, rebuilt or rewound equipment is **not** eligible.
- Variable Frequency Drive Fans & Pumps qualifying equipment must have 2000 annual run hours or more.
- A 3% impedance reactor on the AC input to the VSD is recommended to prevent damage to the VSD due to overvoltage from power factor correction and should be properly sized by your supplier. A 5% reactor may be recommended if there is additional harmonic distortion on the AC input lines due to other plant-specific causes.
- VFDs on new equipment do not qualify under this program; but may qualify through the custom program. Please refer to the Custom website for guidance. Incentives will be paid for the installation of **NEW** VFDs on existing fan/pump systems and process equipment only.
- Replacement of existing VFDs does not qualify for incentives.
- VFDs installed on redundant pumps do not qualify.
- VFDs installed in newly constructed facilities do not qualify for incentives.
- VFD speed must be automatically controlled by differential pressure, flow, temperature, or other variable signal.
- Existing throttling devices including inlet vanes, bypass dampers, and throttling valves must be removed or permanently disabled.
- Duplicative to the first bullet point.

Efficiencies for Premium Motor/Pump Measures

Nominal Efficiencies for "NEMA Premium" Induction Motors Rated 600 volts or less (random wound)

HP	1200 RPM	Open Drip Proof		Totally Enclosed Fan-Cooled		
		1800 RPM	3600 RPM	1200 RPM	1800 RPM	3600 RPM
1	82.5	85.5	77.0	82.5	85.5	77.0
1.5	86.5	86.5	84.0	87.5	86.5	84.0
2	87.5	86.5	85.5	88.5	86.5	85.5
3	88.5	89.5	85.5	89.5	89.5	86.5
5	89.5	89.5	86.5	89.5	89.5	88.5
7.5	90.2	91.0	88.5	91.0	91.7	89.5
10	91.7	91.7	89.5	91.0	91.7	90.2
15	91.7	93.0	90.2	91.7	92.4	91.0
20	92.4	93.0	91.0	91.7	93.0	91.0
25	93.0	93.6	91.7	93.0	93.6	91.7
30	93.6	94.1	91.7	93.0	93.6	91.7
40	94.1	94.1	92.4	94.1	94.1	92.4
50	94.1	94.5	93.0	94.1	94.5	93.0
60	94.5	95.0	93.6	94.5	95.0	93.6
75	94.5	95.0	93.6	94.5	95.4	93.6
100	95.0	95.4	93.6	95.0	95.4	94.1
125	95.0	95.4	94.1	95.0	95.4	95.0
150	95.4	95.8	94.1	95.8	95.8	95.0
200	95.4	95.8	95.0	95.8	96.2	95.4
250	95.4	95.8	95.0	95.8	96.2	95.8

Nominal Efficiencies for Pumps

HP	Efficiency
1.5	efficiency of 65% or more for system
2	efficiency of 65% or more for system
3	efficiency of 67% or more for system
5	efficiency of 70% or more for system
7.5	efficiency of 73% or more for system
10	efficiency of 75% or more for system
15	efficiency of 77% or more for system
20	efficiency of 77% or more for system

Program Requirements

Incentive Eligibility

- Incentives are only available to customers on a Duke Energy Ohio non-residential rate.
- Duke Energy Customers who purchase electric generation from an alternative supplier are eligible to participate.
- Incentive will not be paid until eligible equipment has been installed, is available to operate, and verification has been completed by Duke Energy staff as noted in the Term & Conditions stated below.
- Duke Energy reserves the right to revise incentive levels and/or qualifying efficiency levels at any time.
- Customer may assign the incentive to the vendor who installed/supplied the equipment. The customer's signature is required in the Payment Information section on page 1 of this form to assign the incentive to the vendor. Customer agrees that such an action constitutes an irrevocable assignment of the incentive. This assigned incentive must reduce the purchase price paid for the equipment by an equivalent amount.
- Leased equipment is eligible for incentives providing the equipment meets the program requirements and the customer provides the required documentation noted on the Incentive Application Process page of this application.
- Any equipment which, either separately or as part of a project, has or will receive an incentive from any other Duke Energy program is ineligible.
- In no case will Duke Energy pay an incentive above the actual cost of the new equipment.
- Incentive recipient assumes all responsibilities for any tax consequences resulting from Duke Energy incentive payment.
- To qualify for Duke Energy incentives, applicants who provide their social security number as their federal tax identification number for tax purposes must sign and return the "Customer consent to release personal information" form ("Consent Form") along with the application. Incentive applications are processed by a 3rd party vendor. The 3rd party vendor is responsible for mailing the 1099 form at the end of the calendar year for tax filing. Duke Energy and the 3rd party vendor have signed a confidentiality agreement to protect your personal information. If your social security number is your federal tax ID number and you elect not to sign the Consent Form, please do not send Duke Energy the application, as you will not be qualified to participate in the incentive program.

Terms and Conditions

I certify that this premise is served by Duke Energy (or an affiliate of Duke Energy), that the information provided herein is accurate and complete, and that I have purchased and installed the high efficiency equipment (indicated herein) for the business facility listed herein and not for resale. Attached is an itemized invoice for the indicated installed equipment. I understand that the proposed incentive payment from Duke Energy is subject to change based on verification and Duke Energy approval. I agree to Duke Energy verification of both the sales transaction and equipment installation which may include a site inspection from a Duke Energy representative or Duke Energy agent. I understand that I am not allowed to receive more than one incentive from Duke Energy on any piece of equipment. I also understand that my participation in the program may be taxable and that my company is solely responsible for paying all such taxes. I hereby agree to indemnify, hold harmless and release Duke Energy and its affiliates from any actions or claims in regards to the installation, operation and disposal of equipment (and related materials) covered herein including liability from an incidental or consequential damages. Duke Energy does not endorse any particular manufacturer, product or system design within these programs; does not expressly or implicitly warrant the performance of installed equipment (Contact your contractor for details regarding equipment warranties and is not liable for any damage caused by the installation of the equipment nor for any damage caused by the malfunction of the installed equipment.

Incentive Application Instructions

IMPORTANT NOTICE

Delays in processing incentive payments will occur if required documentation is not included with completed application(s).

1. Contact Duke Energy toll free at 866-380-9580 to confirm customer eligibility. Applications are available for download at www.duke-energy.com.
2. Review program and equipment requirements on the incentive application. (Page8)
3. Purchase and install eligible energy-efficient equipment.
4. **The following items must be included to verify projects. If they are not included, it will delay payment of incentive.**
 - A. Itemized invoice for all equipment installed to include:
 - a. Equipment cost
 - b. Quantity per equipment type installed
 - c. Model # for each equipment type
 - d. Manufacturer's data sheet for each equipment model #.
 - B. **Make sure the account number provided on the cover page (customer information section) is associated with the location where the equipment was installed. If the account # does not match the address where the equipment was installed, the application will be rejected as ineligible.**
 - C. Provide required tax ID# for payee.
 - D. Customer must sign and date the application after reviewing the Terms and Conditions. If customer wishes to **assign payment of the incentive directly to the vendor**, the customer should circle the appropriate payee in the Payment Information section of the application and sign their name to authorize payment.
5. Duke Energy may require site verification of projects that have been self-installed, prior to payment of incentive.
6. Email the complete, signed application with all required documents to SelfDirect@duke-energy.com or fax to 513-629-5572.
7. A percentage of equipment installations will be site verified for quality assurance purposes. Once selected, a Duke Energy representative will contact the customer to arrange for the inspection. All incentive payments related to the project will be withheld until site verification is complete. There is no charge to the customer for these inspections.

Mercantile Self Direct Incentive Program Requirements for Vendor Participation

Program Overview

- Duke Energy offers it's eligible non-residential customers the opportunity to increase profitability through energy cost savings and contribute to a cleaner environment by participating in our Mercantile Self Direct Incentive Program.
- Under the Duke Energy Mercantile Self Direct Incentive Program, Vendor is defined as any third party who:
 - Promotes the sale and installation of the high efficiency equipment for the customer. The Vendor will ensure that the eligible equipment is installed and operating before submitting the application or assisting the customer in completing the application.
 - Is responsible for the product sale only and is not required to ensure installation of the eligible equipment.
- All license requirements, if any, are solely the Vendor's responsibility. Participating Vendors include equipment contractors, equipment Vendors, equipment manufacturers and distributors, energy service companies, etc. The typical Vendor role is to contact/solicit eligible customers building new or retrofitting existing facilities and encourage the installation of the energy-efficient equipment offered in Duke Energy's program.
- Incentives are paid directly to customers unless the customer assigns the incentive to the Vendor. The assigned incentive must reduce the purchase price paid for the equipment by an equivalent amount. Incentives are taxable to the entity who receives the rebate check. Rebates greater than \$600 will be reported to the IRS unless documentation of tax exempt status is provided.
- Vendors may not represent to customers that Duke Energy endorses their specific products or services. Duke Energy does not endorse specific products, services, or companies – only energy-efficient technologies.
- Vendors may advise customers of their option to have Duke Energy make their rebate check(s) payable to the Vendor if the customer's rebate amount is being deducted from the total sale price in advance. The customer must complete and sign the Payment Release Authorization section of the Mercantile Self Direct Incentive Program Application.
- Vendors may use the words "Duke Energy's Mercantile Self Direct Incentive Program" in promotional materials or advertisements. Vendors may use the name Duke Energy in a text format to describe the Mercantile Self Direct Incentive Program, but are not permitted to use Duke Energy's logos.
- For Vendors who properly install the qualifying equipment, the equipment shall be installed and operating prior to an application being submitted. A percentage of each Vendor's installations will be subject to inspection by Duke Energy for verifying that the equipment is installed and operating. Vendors demonstrating high failure rates (based on a statistically significant sample) will have 100% of subsequent jobs inspected or may have their participation in the Mercantile Self Direct Incentive Program revoked by Duke Energy in it's sole discretion.
- Vendors shall provide customers with applicable equipment warranty information for all measures installed. Vendors shall provide the required documentation for customers to apply for the rebate (invoices with model numbers and quantities, specification sheets for installed equipment, etc.) and assist customers in filling out the application.
- Vendors shall comply with all applicable local, state, and federal laws and codes when performing installation and related functions.
- Duke Energy reserves the right to revoke a Vendor's participation in Mercantile Self Direct Incentive Program if, in Duke Energy's sole judgment, the Vendor fails to comply with the program's guidelines and requirements.
- Mercantile Self Direct Incentive Program offerings may be modified or terminated without prior notice. Check Duke Energy's Web site for current program status.

Vendors can sign up to be on Duke Energy's Web site as a participating Vendor and be added to Duke Energy's e-mail distribution by emailing the Vendor Participation Agreement (VPA) to SelfDirect@duke-energy.com or faxing to **513-629-5572**.

Guidelines for Vendor Activities

- Vendors shall sign and return the attached VPA to Duke Energy prior to soliciting customer participation or when submitting an application. Rebate payments will not be released to a Vendor unless a signed VPA is on file.
- Vendors shall not misrepresent the nature of their role in the program. In particular, Vendors shall not state or imply to customers, or any persons, that the Vendor is employed by or working on Duke Energy's behalf.

For more information, call **1-866.380.9580** or visit www.duke-energy.com.

Mercantile Self Direct Rebate Program

Technology	Responsible for sales and not installs*	Responsible for sales and Installation*	Technology	Responsible for sales and not installs*	Responsible for sales and Installation*
Lighting	☐	☐	Thermal Storage	☐	☐
Heating Ventilation & Cooling	☐	☐	Pumps/Motors/VFDs	☒	☐
Food Service	☐	☐	Chillers	☐	☐
Water Heating	☐	☐	Refrigeration	☐	☐
Process Equipment (air compressors, injection molding, etc.)	☐	☐	Window Film	☐	☐

* Check all that apply

Vendors who wish to be listed as a Mercantile Self Direct Incentive Program participating Vendor shall complete this form. A signed copy of this form must be on file at Duke Energy in order for the Vendor to receive incentive payments. Fax form to **513-629-5572** or email to SelfDirect@duke-energy.com.

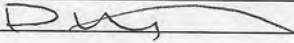
I have read and understand the Mercantile Self Direct Incentive Program Requirements for Vendor Participation, and I agree to comply with all requirements set forth therein. By signing this agreement, I agree to provide my customers with information and documentation that is true and accurate to the best of my knowledge. I hereby represent and warrant that the Tax ID and Vendor Tax Status provided below are true and accurate. I agree that any confidential information concerning my customer, including but not limited to Duke Energy service account information, will be used for the sole purpose of facilitating the customer's participation in the Mercantile Self Direct Incentive Program. Further, I understand that I am responsible for making sure everyone working for me understands the requirements prior to soliciting customer participation.

Vendor Federal Tax ID Number	
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To qualify for Duke Energy incentives, applicants who provide their social security number as their federal tax identification number for tax purposes must sign and return the "Customer consent to release personal information" form ("Consent Form") along with the application. Incentive applications are processed by a third-party vendor. The third-party vendor is responsible for mailing the 1099 form at the end of the calendar year for tax filing. Duke Energy and the third-party vendor have signed confidentiality agreement to protect your personal information. If your social security number is your federal tax ID number and you elect not to sign the Consent Form, please do not send Duke Energy the application. As you will not be qualified to participate in the incentive program.

Vendor Tax Status	☐ Corporation	☐ Individual/Sole Proprietor	☐ Partnership	☐ Other
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Contact me via	☒ Phone	☒ E-Mail	☐ Mail
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Company Name	Pathian
Mailing Address	11260 Chester Road, Suite 545
City, State, Zip	Cincinnati, OH, 45246
Phone/Fax	513-737-7430
Primary E-mail Address	srohrs@pathian.com
Secondary E-mail Address	
Vendor Signature	
Title	Owner 
Print Name	Dan Buchanan
Date	12/21/12

For more information, call 1-866-380-9580 or visit www.duke-energy.com.



INVOICE

Date: 2/24/2012
INVOICE # 1-213

TO

Rick Volk
Bethesda Oaks Hospital
619 Oak St
Cincinnati, OH 45206

Salesperson	Job	Payment Terms	Due Date
	2012 AC-10 & 36 VFD's: PO # 13583-0-119		2/24/2012

Description	Qty.	Unit Price	Line Total	
2012 AC-10 & 36 VFD's: PO # 13583-0-119	1	\$18,900.00	\$18,900.00	
			Subtotal	\$18,900.00
			Sales Tax	\$0.00
			Total	\$18,900.00
			Payments	\$0.00
			Balance	\$18,900.00

Thank you for your business!
Make all checks payable to Pathian Incorporated

2929 Audubon
Fairfield Township, OH 45011

Phone: (513) 746-8951
Fax: (513) 737-1549
dbuchanan@pathian.com



INVOICE

Date: 2/24/2012
INVOICE # 1-212

TO

Rick Volk
Bethesda Oaks Hospital
619 Oak St
Cincinnati, OH 45206

Salesperson	Job	Payment Terms	Due Date
	Replace pneumatic Controls: PO # 13580-0-119		2/24/2012

Description	Qty.	Unit Price	Line Total	
Replace pneumatic controls, ad VFD drives on AC-24: PO # 13580-0-119	1	\$27,100.00	\$27,100.00	
			Subtotal	\$27,100.00
			Sales Tax	\$0.00
			Total	\$27,100.00
			Payments	\$0.00
			Balance	\$27,100.00

Thank you for your business!
Make all checks payable to Pathian Incorporated

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Fairfield Township, OH 45011

Phone: (513) 746-8951
Fax: (513) 737-1549
dbuchanan@pathian.com



INVOICE

Date: 2/24/2012
INVOICE # 1-211

TO Rick Volk
Bethesda Oaks Hospital
619 Oak St
Cincinnati, OH 45206

Salesperson	Job	Payment Terms	Due Date
	Furnish and Install SAF VFD: PO #135582-0-119		2/24/2012

Description	Qty.	Unit Price	Line Total	
Furnish and Install SAF & RAF VFD's AC-40: PO #135582-0-119	1	\$35,500.00	\$35,500.00	
			Subtotal	\$35,500.00
			Sales Tax	\$0.00
			Total	\$35,500.00
			Payments	\$0.00
			Balance	\$35,500.00

Thank you for your business!
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Fairfield Township, OH 45011

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Fax: (513) 737-1549
dbuchanan@pathian.com

E-Flex™

Enclosed Drive Controllers

Adjustable speed solutions for
HVAC and pump applications



Industrial-grade reliability designed for HVAC

Square D® E-Flex™ AC drives provide the optimum combination of efficiency and economy for HVAC, pump and fan applications in both commercial and industrial environments. They are the ideal choice in adjustable speed drive solutions for applications such as:

- Air Handling Units
- Supply and Return Fans
- Exhaust Fans
- Chilled Water Pumps
- Hot Water Pumps
- Cooling Tower Fans and Pumps



Seismic Qualification for New Generation of Building Codes: from the first drive manufacturer to meet seismic criteria

Square D E-Flex enclosed drive controllers are designed to meet International Building Code and ASCE 7 standards for seismic qualification in accordance with ICC ES AC156 testing protocol. Many states and jurisdictions are beginning enforcement of the seismic guidelines for installed equipment contained in the International Building Code.

E-Flex enclosed drive controllers were subjected to actual shaker table tests for seismic ratings, not just theoretical calculations for seismic ratings or obsolete requirements of the Uniform Building Code. The E-Flex enclosed drive controller provides structural integrity when installed to published guidelines and can be specified for use in applications that require $I_p = 1.5$, which means operational status can be restored after a seismic event.

Enclosure Styles

Square D E-Flex enclosed drive controllers can meet both indoor and outdoor application requirements with Type 1, Type 12/12K and Type 3R enclosures.

- Type 1 enclosures are designed specifically for indoor, non-dusty environments.
- Type 12/12K enclosures are designed for protection from dust and dripping liquid.
- Type 3R enclosures permit installation on rooftops or other outdoor locations to free up space in mechanical equipment rooms. Plus, Type 3R enclosures allow operations in temperature ranges from +14°F to +122°F (-10°C to +50°C).

Energy Efficiency

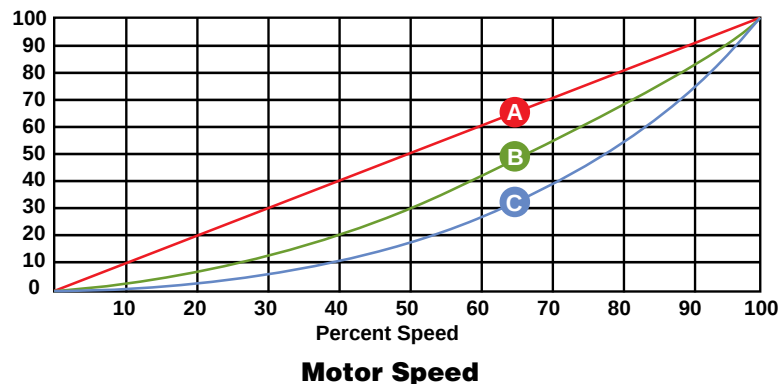
Square D E-Flex enclosed drive controllers can increase system energy efficiency by providing a means to reduce the motor speed of HVAC equipment based on the needs of the building environment (lower motor speed = lower energy costs).

Energy savings can be realized because of the Affinity laws of physics:

- Flow = f (motor speed)*
- Pressure = f (motor speed)²
- Horsepower = f (motor speed)³

A motor running at 50% of full speed capacity has a motor torque of 25% of full speed. In addition, electricity required to operate the motor at 50% of full speed is 12.5% of the amount of electricity required if the motor was running at 100% full speed capacity. Thus, reducing motor speed can significantly reduce the electrical energy consumption.

Percent
Flow, HP, Pressure



An Example Energy Saving Calculation**

A fan with a 20 horsepower motor supplies air 10 hours a day for 260 days a year and the energy cost is \$0.10 cents per kilowatt-hour.

Cost of running full speed:

$$20 \text{ hp} \times 0.746 \text{ kW/hp} \times 2600 \text{ hours} \times \$0.10/\text{kWhr} = \$3879.20$$

Assuming the fan does not need to run at full speed all of the time, let's use an example of:

- Running full speed (100%) for 25% of the time
- 80% speed for 50% of the time
- 60% speed for the remaining 25% of the time

Cost of running with an AC drive controlling the motor:

$$20 \text{ hp} \times (1)^3 \times 0.746 \text{ kW/hp} \times 650 \text{ hours} \times \$0.10/\text{kWhr} = \$969.80$$

$$20 \text{ hp} \times (0.8)^3 \times 0.746 \text{ kW/hp} \times 1300 \text{ hours} \times \$0.10/\text{kWhr} = \$993.08$$

$$20 \text{ hp} \times (0.6)^3 \times 0.746 \text{ kW/hp} \times 650 \text{ hours} \times \$0.10/\text{kWhr} = \$209.48$$

$$\text{Total} = \$2172.36$$

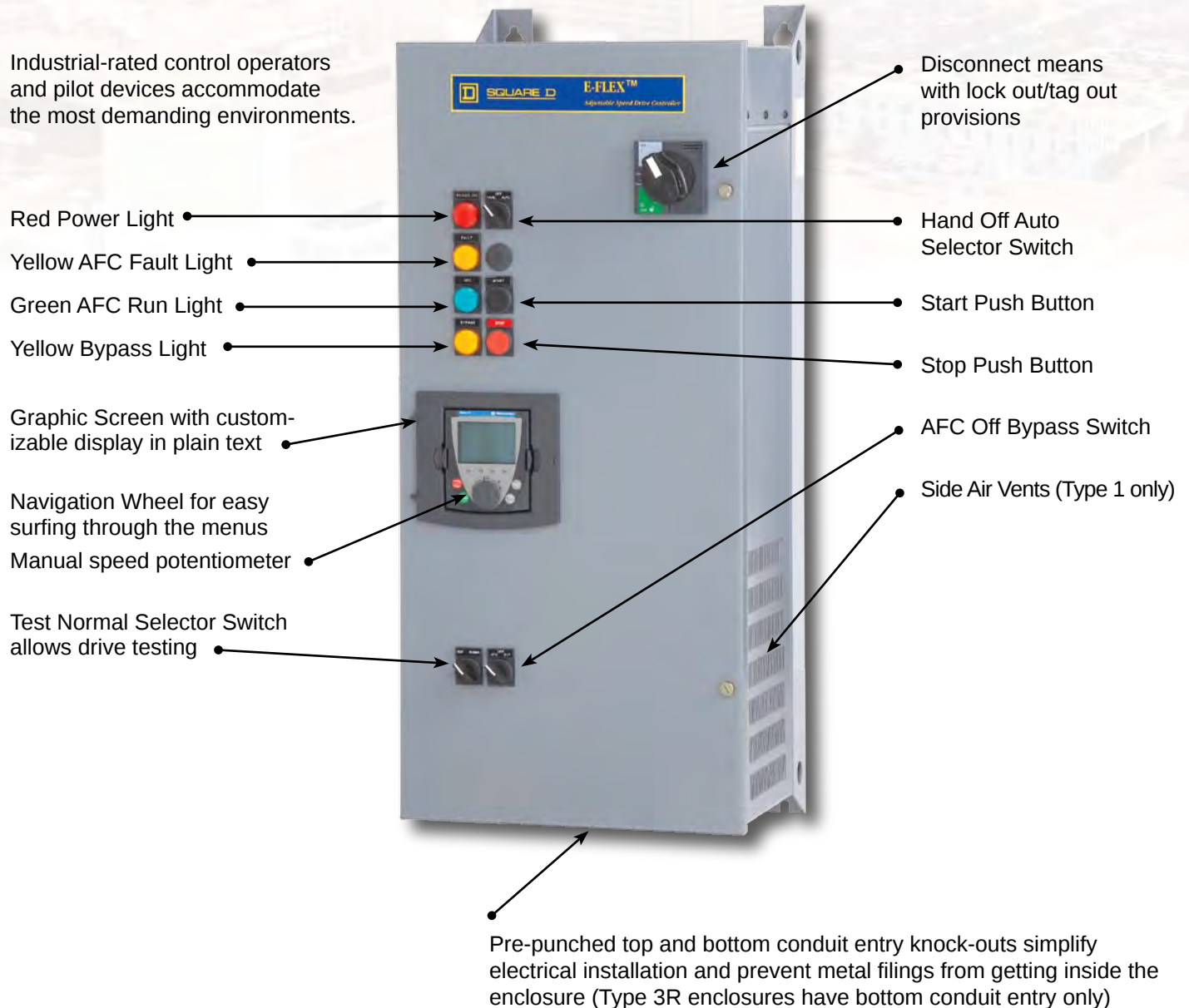
$$\text{Annual savings: } \$3879.20 - \$2172.36 = \$1706.84$$

- In many instances, the payback period for using an adjustable frequency drive in place of other flow control methods is less than 18 months.

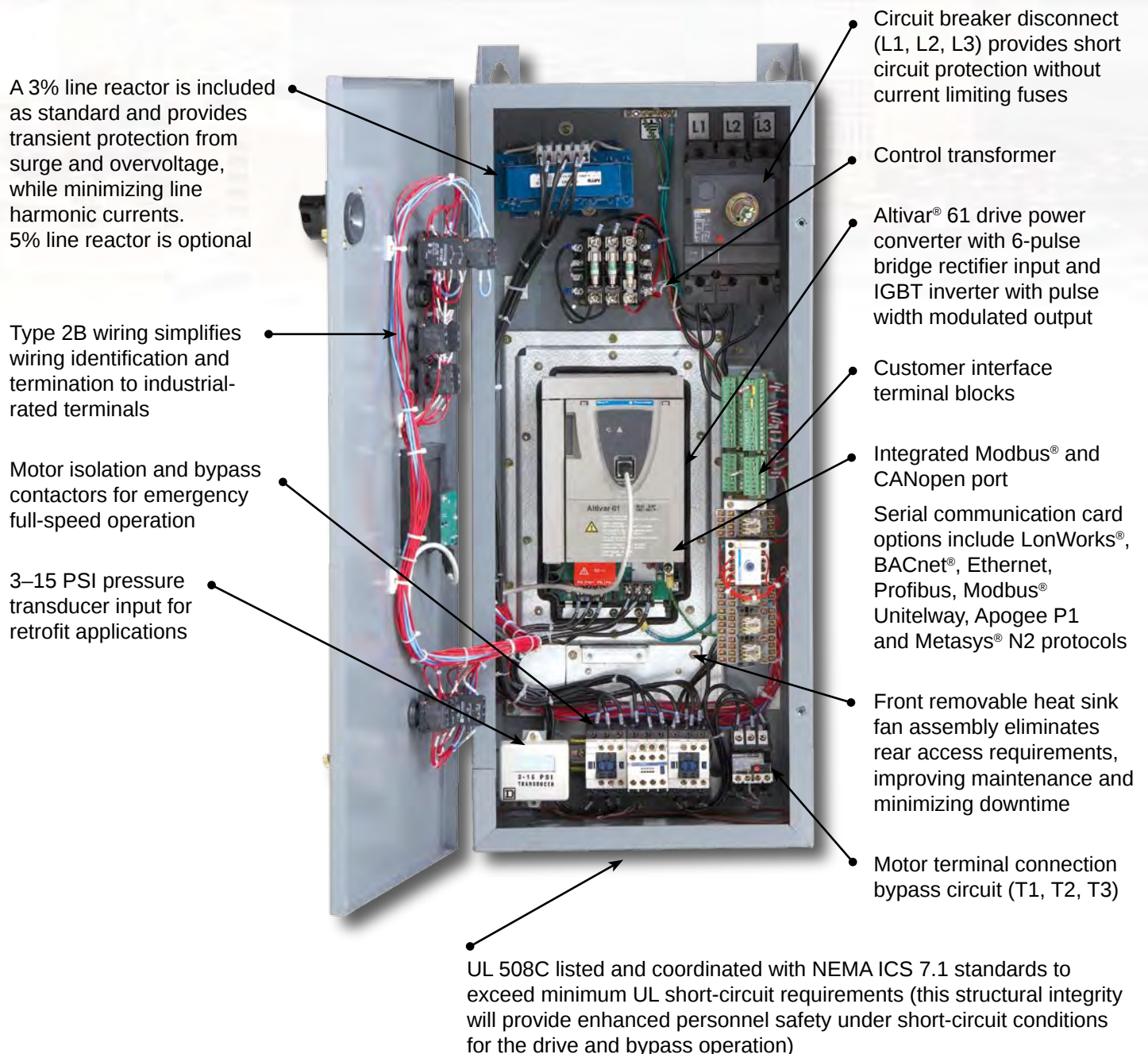
* Flow as a function of motor speed.

**Actual results may vary for closed loop pumping and variable air volume systems.

The Square D® E-Flex™ family of enclosed drive controllers is well suited for commercial building, hospital, and school HVAC applications requiring a disconnect and bypass. These controllers offer a compact metal enclosure designed to reduce Radio Frequency Interference (RFI). In addition, HVAC specific control interface is pre-programmed for HVAC variable torque operation to permit ease of set-up and installation. HVAC controls provide end damper control, smoke purge relays and fire/freezestats for full-speed fire safety override and lock-out terminations.



Fully-rated, AC3 duty-rated motor isolation and bypass contactors with mechanical and electrical interlocks prevent accidental voltage back feed. The adjustable carrier frequency is optimized at 8 kHz to reduce motor noise levels and is programmable from 0.5 kHz to 16 kHz. The advanced ASIC technology platform increases reliability and uptime and lowers the component count. The motor soft start inherent in the drive reduces mechanical stress and routine maintenance.



Electrical Specifications

Input Voltage	208 V $\pm$ 10%, 230 V $\pm$ 10%, 460 V $\pm$ 10%
Displacement Power Factor	98% through speed range
Input Frequency	60 Hz $\pm$ 5%
Output Voltage	Three-phase output Maximum voltage equal to input voltage
Galvanic Isolation	Galvanic isolation between power and control (inputs, outputs and power supplies)
Frequency Range of Power Converter	0.1 to 500 Hz (factory setting of 60 Hz)
Torque/Overtorque	110% of nominal motor torque for 60 s
Current (Transient)	110% of controller rated current for 60 s
Switching Frequency	Selectable from 0.5 to 16 kHz ^[1] Factory setting: 8 kHz for 208 V, 230 V and 1-100 hp @460 V
Speed Reference	AI1: 0 to +10 V, Impedance = 30 k Ω Can be used for speed potentiometer, 1–10 k Ω AI2: Factory setting: 4 to 20 mA, Impedance = 242 Ω
Factory Resolution in Analog Reference	0.1 for 100 Hz (11 bits)
Speed Regulation	V/f control: equal to the motor's rated slip SLFV (sensorless flux vector): 10% of motor's rated slip from 20% to 100% of nominal motor torque.
Efficiency	97% at full load typical
Reference Sample Time	2 ms $\pm$ 0.5 ms
Acceleration and Deceleration Ramps	0.1 to 999.9 seconds (definition in 0.1 s increments)
Drive Controller Protection	Thermal protection of power converter Phase loss of AC mains circuit breaker rated at 100 kAIC
Motor Protection	Class 10 electronic overload protection Class 20 electromechanical overload protection with bypass ^[2]
Graphic Display Terminal	Self diagnostics with fault messages in three languages also refer to the Programming Manual, supplied on CD-ROM W817574030111 with power converter.
Codes and Standards	UL Listed per UL 508C under category NMMS. Conforms to applicable NEMA ICS, NFPA, and IEC standards. Manufactured under ISO 9001 standards.

[1] On 1-100 hp VT controllers, above 8 kHz, select the next largest drive controller.

[2] Class 10 electromechanical for 1 hp at 460 V.

Environmental Specifications

Temperature	Storage for all enclosures: -13°F to +149°F (-25°C to +65°C) Operation: +14°F to + 104°F (-10°C to +40°C).
Humidity	95% with no condensation or dripping water, conforming to IEC 60068-2-3.
Altitude	3,300 ft. (1,000 m) maximum without derating; derating of current by 1% for each additional 330 ft. (100 m)
Enclosure	Type 1, Type 12/12K, and Type 3R
Polution Degree	Type 1: Polution degree 2 per NEMA ICS-1 Annex A and IEC 60664-1 Type 12/12K: Pollution degree 3 per NEMA ICS-1 and IEC17.560664-1
Operational Test Vibration	Conforming to IEC 60721-3-3-3M3 amplitude 1.5 peak to peak from 3 Hz to 13 Hz 1g from 13 Hz to 200 Hz
Transit Test to Shock	Conforming to National Safe Transit Association and International Safe Transit Association test for packages
Operational Shock	15 g, 11 ms
Seismic Qualification	2003 IBC, NFPA 5000, and ASCE 7 ICC ES AC156 acceptance criteria test protocol with importance factor of 1.5

Schneider Electric is a global supplier of electrical distribution, automation and control equipment products under the brand names of Square D®, Telemecanique® and Merlin Gerin®. For over 100 years, Schneider Electric has been an innovator in manufacturing products that are tailored to the demanding specifications of our customers. Backed by a global organization of 80,000 employees in 130 countries, Schneider Electric is a global electrical industry leader. With one of the strongest distribution networks in the U.S. and around the world, you can count on Schneider Electric to keep your business running smoothly and efficiently.

Schneider Electric has been providing adjustable frequency drive solutions for HVAC and pumping applications for over 30 years. Schneider Electric has made a significant investment in research and development to design a new generation of products to serve the HVAC and pumping marketplace.

Dimensions and Weights

Type 1 or Type 12K Enclosures

HP		Height		Width		Depth		Weight	
208/230 V	460 V	mm	in.	mm	in.	mm	in.	kg.	lbs.
1–5	1–7.5	889	35	374.9	14.76	353.91	13.93	37.7	83
7.5–10	10–25	1041.4	41	521.21	20.52	353.91	13.93	57.2	126
15–25	30–50	1244.6	49	524.51	20.65	427.49	16.83	80.5	177
30–50	60–100	1600.2	63	651.51	25.65	427.49	16.83	95.9	211

Type 3R Enclosures

HP		Height		Width		Depth		Weight	
208/230 V	460 V	mm	in.	mm	in.	mm	in.	kg.	lbs.
1–5	1–7.5	889	35	620.52	24.43	347.73	13.69	52.3	115
7.5–10	10–25	1041.4	41	766.83	30.19	347.73	13.69	74.1	163
15–25	30–50	1326.39	52.22	770.13	30.32	415.04	16.34	96.8	213
30–50	60–100	1681.99	66.22	897.13	35.32	415.04	16.34	112.3	247

For additional information on Square D® E-Flex™ adjustable frequency AC drives, visit our website at www.us.squared.com.

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Schneider Electric - North American Operating Division

1415 S. Roselle Road
Palatine, IL 60067
Tel: 847-397-2600
Fax: 847-925-7500