

# Demand more

Eaton's enclosed drives portfolio



*Powering Business Worldwide*

# Enclosed drives

## product offering



Our extensive enclosed drives product offering covers most HVAC and industrial applications. These standard products are pre-engineered to provide a complete drawing package at time of quote and a short lead time.



Eaton has a complete line of harmonics mitigation drives that are industry proven to protect your equipment, comply to IEEE® 519 standards and save you from costly utility fines.

## HVAC



**DH1**  
PowerXL® DH1 drive

## Industrial



**EGS**  
Enclosed DG1 drive

**ACE**  
Hazardous location  
DG1 drive

**SVX**  
Enclosed SVX drive

## Harmonics mitigation



**HCX**  
12-Pulse SVX

**EGF**  
Passive filtered DG1

**CFX**  
Passive filtered SVX

**CPX**  
18-pulse SVX

**RGX**  
Active front end

## Standard options

### Enclosure options

- NEMA® Type 1, 1 filtered, 12, 3R, 7
- Wall-mount
- Floor-mount
- Space heater

### Pilot device options

- Indicating lights
- Pushbuttons
- HOA switches
- Speed potentiometers
- E-stops
- External keypad

### Control options

- CPT
- Terminal blocks
- Control relays
- Timers

### Metering options

- Elapsed time meter
- Volt meter
- Amp meter
- Frequency meter
- Power meter

### Input power options

- Circuit breaker disconnect
- Fused disconnect
- Fuses
- Surge protection
- Input reactor

### Bypass options

- Three-contactor bypass
- RVSS bypass

### Output power options

- Output contactor
- Output reactor
- dV/dt filter
- Sine wave filter

**Product range**  
Voltage: 208–575  
Horsepower: 1–1000

## Technology comparison

Technology	Inductive reactors	12-Pulse converters	Passive filters	18-Pulse converters	Active front end drives
<b>How it works</b>	Mitigates higher-order harmonics by providing high input impedance that limits high-frequency currents.	Two parallel 6-pulse converters fed by parallel isolation transformer paths, phase shifted 30° which mitigates 5th and 7th order harmonics. Input impedance mitigates higher-order harmonics as well.	Provides high input impedance for higher-order harmonics and a shunt-tuned reactor and capacitor to mitigate 5th and 7th harmonics.	Three parallel 6-pulse converters fed by a single-phase shifting autotransformer, phase shifted 20° to cancel all harmonics below the 17th. Input impedance mitigates higher-order harmonics as well.	IGBT-based front end pulls relatively linear power from the line and uses an L-C-L filter to mitigate the IGBT switching noise.
<b>Typical THD</b>	33–38%	12–18%	6–8%	3–6%	3–5%
<b>Advantages</b>	<ul style="list-style-type: none"> <li>• Low-cost, simple application</li> </ul>	<ul style="list-style-type: none"> <li>• Simple to apply</li> <li>• Extremely robust</li> </ul>	<ul style="list-style-type: none"> <li>• Simple retrofit</li> <li>• Low cost for performance</li> <li>• Insensitive to voltage imbalance</li> </ul>	<ul style="list-style-type: none"> <li>• Simple to apply</li> <li>• Extremely robust</li> </ul>	<ul style="list-style-type: none"> <li>• Slightly higher efficiency</li> <li>• Immune to voltage imbalance</li> <li>• Regeneration capability</li> </ul>
<b>Disadvantages</b>	<ul style="list-style-type: none"> <li>• Low effectiveness</li> <li>• Voltage drop concerns</li> </ul>	<ul style="list-style-type: none"> <li>• Not as effective as other methods</li> <li>• Relative high cost compared to passive filters</li> </ul>	<ul style="list-style-type: none"> <li>• Challenges with generator design</li> <li>• Power factor issues</li> <li>• Less robust than 18-pulse</li> </ul>	<ul style="list-style-type: none"> <li>• High cost on small hp</li> </ul>	<ul style="list-style-type: none"> <li>• High cost, not as robust as 18-pulse</li> </ul>

# Variable Frequency Drives Flex Center

Eaton's Variable Frequency Drive Flex Center provides customers with value-engineered enclosed drive solutions—how they want it, when they want it.

The Flex Center helps you solve your toughest applications. Whether it is extreme environmental conditions, complex electrical schematics or lightning-fast lead times, we deliver a customized solution to meet your needs.

							
Deadfront door	Stainless steel enclosures	NEMA 4/4X enclosures	Non-metallic enclosures	120 V receptacles	USB and RJ45 bulkhead	Enclosure lights	Customer supplied schematics
							
Sun shields	A/C units	Custom paint colors	NEMA 3R device panel door	Enclosed micro drives	Two-contactor bypass with isolation switch	Dual main breakers for bypass configuration	Custom-labeled drives
							
NEMA 3R device panel door with viewing window	Generator quick connect	HMI	Insect screens	Redundant drive	Line isolation switch	OEM drive assembly	Custom enclosure modifications
						 <p>Is your equipment down? Did you need to be up and running yesterday? <b>We can help!</b> Our Rapid Response program delivers enclosed DH1 drives in 1–3 days.</p>	
Motor protection relays	O&M manual holders	Signal towers and sirens	GSM and wireless	Rapid Response 3-day quick-ship program for EGS drives	PowerXL DH1 1-day quick-ship program for enclosed DH1 drives		

For more information about the Flex Center, please contact **1-920-319-3539** or **VDFFlexCenter@Eaton.com**

# Support contacts and resources



## Variable Frequency Drives Flex Center

### Email

VFDFlexCenter@Eaton.com

### Phone

1-920-319-3539



## EatonCare Technical Resource Center (TRC)— low-voltage variable frequency drives support

### 24/7 Phone support

1-877-386-2273 option 2, option 6

- Option 1: Pre-sale application support, new or aftermarket part number identification
- Option 2: Network and communication questions
- Option 3: Startup or programming questions
- Option 4: Troubleshooting assistance

### Email

- Technical support: TRCDrivesTechSupport@Eaton.com
- Pre-sale support: PresaleVFD@Eaton.com
- Aftermarket: VFDAftermarketEG@Eaton.com



## Startup and service

Startup and service support can be provided by Eaton's Electrical Engineering Services & Systems (EESS) or an Eaton certified independent service provider (ISP).

### [www.eaton.com/vfdaftermarket](http://www.eaton.com/vfdaftermarket)

- To contact EESS: Use the *Locate an Eaton Engineering Office* tool on the right-hand side of the screen
- To contact an ISP: Select the ISP nearest you using the list of independent service providers found on the *Documentation* tab, under *Service and Startup*



## Online resources

Resource	Website
Drives product information	<a href="http://www.eaton.com/drives">www.eaton.com/drives</a>
Enclosed drives product information	<a href="http://www.eaton.com/encloseddrives">www.eaton.com/encloseddrives</a>
Software downloads	<a href="http://www.eaton.com/drives">www.eaton.com/drives</a>
Harmonics and energy savings calculators	<a href="http://www.eaton.com/drives">www.eaton.com/drives</a>
Online drives training	<a href="http://www.eaton.com/vfdaftermarket">www.eaton.com/vfdaftermarket</a>
Classroom drives training	<a href="http://www.eaton.com/vfdaftermarket">www.eaton.com/vfdaftermarket</a>

### Eaton

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