

# Harmonics & Power Quality

## HARMONICGUARD® **PASSIVE**

Poor power quality can be a result of variable frequency drives or other types of non-linear loads using a power conversion process that causes current and voltage distortion. This resulting distortion is known as harmonics.

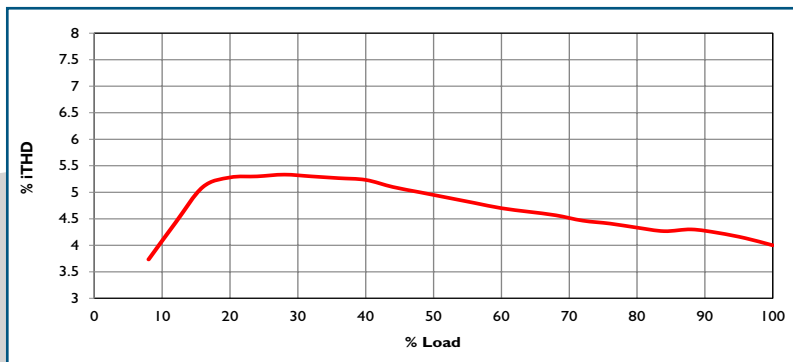
Issues caused by harmonics may include:

- Transformer and distribution equipment overheating
- Random breaker tripping
- Sensitive equipment failure
- Poor power factor

### HarmonicGuard Passive Filter

- Limits current harmonic distortion to less than 5% over a wide load range
- Industry leading performance under high background voltage distortion
- True 100kA SCCR
- Fuse Monitor available
- IEEE 519-2014 compliant
- Branch circuit protection via fuses
- Generator compatible
- Increases drive uptime
- Eliminates nuisance tripping
- For Type 3R enclosures: 150 HP and above units include hardware for floor mounting. 125 HP and below include standard hardware for wall mounting or optional floor stand available.

### iTHD% vs. % Load



### HGP Filters vs. Other Harmonic Solutions

The HarmonicGuard Passive (HGP) filter is built using the highest quality components and is able to operate under the harshest conditions. The UL 508A open panels, Type 1, Type 3R, and Type 12 enclosures include 100kA SCCR, safety fusing and easy internal access.

Compared to 18-pulse drives, the HGP:

- Is a more efficient and reliable solution at reduced loads
- Has a better THID at reduced loads
- Saves money by reducing operation costs and energy loss
- Corrects power factor in both the VFD and filter
- Has a smaller footprint

### Oil & Gas Industry Application

The HGP filter is uniquely suited for power quality needs in oil and gas fields. Excessive background voltage distortion, often found in remote oil and gas applications, reduces the effectiveness of standard passive filters. In these applications, the HGP filter performs well with distortion as high as 5%.

### Typical Applications

- Oil & Gas
- Steel Industry
- Water/Wastewater
- HVAC Systems
- Machining
- Airports
- Commercial Buildings
- Hospitals
- Irrigation Fields, Farms
- Extruders
- Pulp & Paper



**Reliable**  **Advanced Power Quality**

Courtesy of Steven Engineering, Inc. - (800) 258-9200 - sales@steveneng.com - www.stevenengineering.com



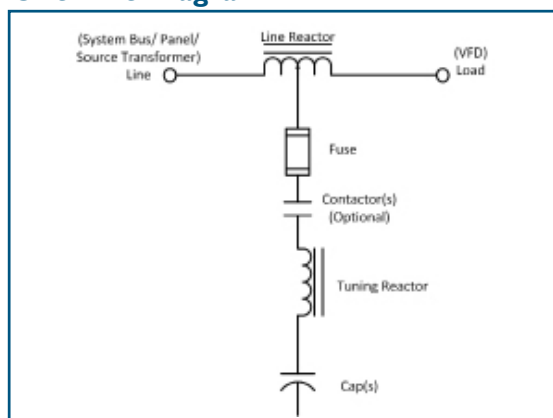
## Technical Specifications

Voltage / Frequency Rating	208, 240, 480 & 600 VAC- 60 Hz	400 VAC- 50 Hz
Phase	3Ø	
Motor drive input power rating range	208, 240 VAC: 5 - 100 Hp 480, 600 VAC: 5 - 1250 Hp	400 VAC: 4 - 1000 KW
SCCR (Short Circuit Current Rating)	100 kA	
Immunity from Voltage Distortion	Less than 5% iTHD at full load with vTHD as high as 5%*	
THID	Less than 5% at full load	
Efficiency	Greater than 99%	
Overload Capability	200% of current rating for 3 minutes	
<b>Environmental Conditions</b>		
Operating Temperature	Open: 50°C (122°F), Enclosed: 40°C (104°F)	
Storage Temperature	60°C (140°F)	
Elevation	Up to 1,000 m without derating. Consult factory for higher elevations.	
Humidity	95% non-condensing	
Protection Category	Open Chassis, UL Type 1, UL Type 3R and Type 12 enclosure	
Cooling Method	Natural or Forced Air Convection	
<b>Reference Technical Standards</b>		
Agency Approvals	cULus	

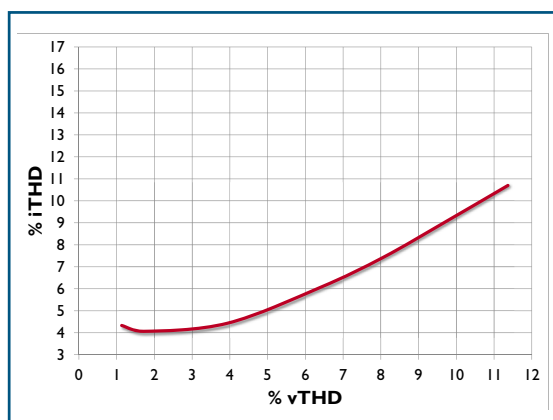
## Part Numbering System

**Series:** \_\_\_\_\_  
**Rating (HP - 60Hz) ( kW - 50 Hz ):** \_\_\_\_\_  
**Voltage Rating:** \_\_\_\_\_  
     A - 480 V                      B - 240 V  
     C - 600 V                      D - 208 V  
     L - 400 V  
**Frequency:** \_\_\_\_\_  
     W - 60 Hz (HP Rated)  
     X - 50 Hz  
**Enclosure:** \_\_\_\_\_  
     0 - Open                      3 - Type 3R  
     1 - Type 1  
     2 - Type 12  
**Option:** \_\_\_\_\_  
     S - Standard  
     C - Contactor  
     F - Contactor and Fuse Monitor  
     G - Standard & Fuse Monitor  
**Option:** \_\_\_\_\_  
     0 - Standard  
**Option:** \_\_\_\_\_  
     0 - Standard  
     F - Floor Stand (for 150 HP and below Type 3R & 200 HP and below Type 1)  
**Option:** \_\_\_\_\_  
     0 - Typical Voltage Distortion  
     1 - High Voltage Distortion  
**Option:** \_\_\_\_\_  
     0 - Standard  
     H - Heater (only available on Type 3R Enclosures)  
     P - Oilfield Version  
     V - Vibration Pads

## One-Line Diagram



## Current Distortion (iTHD) vs. Background Voltage Distortion (vTHD)



*\*When configured for High Background Voltage Distortion. See IOM for guidelines for distortion above 5%.*

