

Harmonics & Power Quality

HARMONICGUARD[®] **ACTIVE**

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.

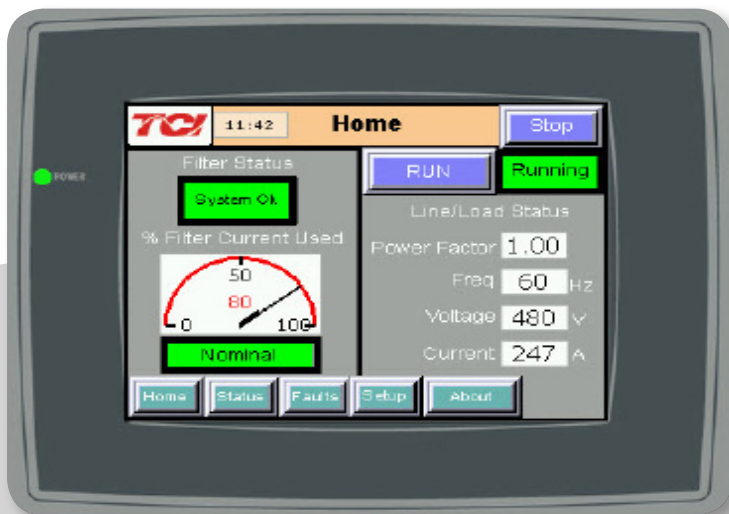
Issues caused by harmonics may include:

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

HarmonicGuard Active Filter

The HarmonicGuard Active (HGA) filter monitors the load current and reacts to changes almost instantaneously. A counter current is injected by the unit to cancel out harmonics and synchronize the current and voltage waveforms. True power factor will be returned to near unity if power factor correction is enabled on the filter. The HGA meets even the most stringent IEEE 519-2014 requirements with its advanced technology.

A large, built-in, 65k color touchscreen HMI display with LED backlight is included, along with the communication options of Modbus RTU over RS485, Modbus TCP/IP, EtherNet/IP, DeviceNet and HGA-HMI.



Large, 65K Color HMI

HGA Filters vs. Other Harmonic Solutions

In comparison to 18-pulse drives, the HarmonicGuard Active filter is superior in many aspects and features including:

- The HGA is a bus-applied solution eliminating the need for harmonic correction at each drive which results in significant savings
- Can be installed in an MCC section
- Offers up to a 65% reduced footprint when coupled with a standard 6-pulse drive
- The HGA is a shunt-applied device: a failure will not shut down your processes
- Can be less expensive than multi-pulse and AFE (active front-end) variable frequency drives
- Optional add-ons: (contact factory for more details)
 - Ready to assemble wall mount or floor stand
 - Portable HMI unit (HGA-HMI) for 3R units

Advantages of the HarmonicGuard Active Filter

- The HGA's patented master-master operation provides unparalleled accuracy not found in other active filters
- Up to 20 HGA filters can be connected in parallel to increase correction capability
- Automatic harmonic cancellation
- Remaining capacity, after harmonic target is achieved, can be applied towards power factor correction

Bus-Applied Configuration for MCC or Switchboard

The HGA can be directly connected to the power bus in standard MCC and Switchboard configurations.

Typical Applications

- Wastewater Treatment Plants
- Mining
- Material Handling
- Oil & Gas
- HVAC Systems
- Chemical Processing
- Data Centers
- Renewable Energy
- Pulp & Paper



Reliable / Advanced Power Quality

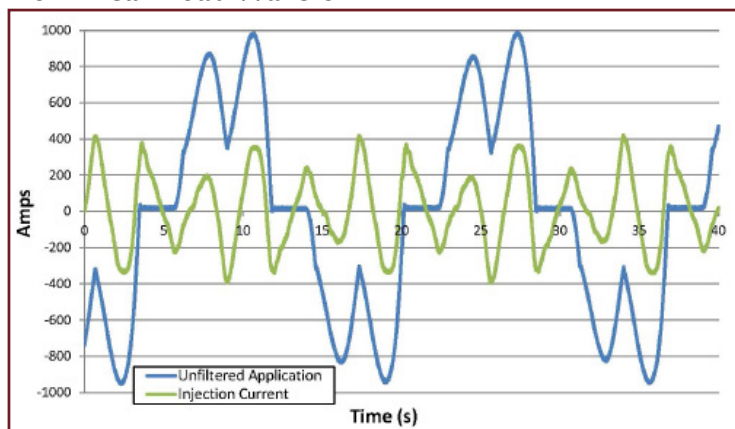


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Technical Specifications

| | |
|---|--|
| Compensation Capacity (Parallel for High Capacity) | 480 V: 50 amp, 100 amp, 150 amp, 200 amp, 300 amp; 3-phase, 60 Hz 600 V: 39 amp, 78 amp, 150 amp, 220 amp; 3-phase; 60 Hz |
| Technical Characteristics | |
| Power Factor Correction | Up to 0.98 lagging |
| Response Time | Less than 8 ms to step load changes |
| Harmonic Cancellation Spectrum | To the 50th harmonic - auto-selecting |
| RMS Current Attenuation | Less than 10:1 |
| Parallel Configuration | Up to 20 active filters can be connected in parallel to increase correction capability |
| Display | High quality 6" 65k color touchscreen with LED backlight |
| Communications | Modbus RTU over RS485, Modbus TCP/IP, EtherNet/IP®, DeviceNet, HGA-HMI |
| Environmental Conditions | |
| Operating Temperature | Open Chassis: 0°C (32°F) to 40°C (104°F) Derating above 40°C |
| | UL Type I: 0°C (32°F) to 40°C (104°F) Derating above 40°C |
| | UL Type I2: 0°C (32°F) to 40°C (104°F) Derating above 40°C |
| | UL Type 3R: -20°C (-4°F) to 40°C (104°F) Derating above 40°C |
| Relative Humidity | 95%, non-condensing |
| Operating Altitude | 1,000 m (3,300 ft) |
| Storage Temperature | Open Chassis, UL Type I & UL Type I2: -20°C (-4°F) to 60°C (140°F) |
| | UL Type 3R: -40°C (-40°F) to 60°C (140°F) |
| Reference Technical Standards | |
| Agency Approvals | UL & cUL Listed |
| Protection (Enclosure) | Open Chassis, UL Type I, UL Type I2, UL Type 3R |
| Over Current Protection | Molded Case Circuit Breaker |
| HMI Languages | English, French, Spanish |
| Surge Protection | ANSI C62.42 |
| Warranty | One year of useful service, or 18 months from shipment |

Non-linear Load Waveform



Resulting Line Current Waveform

