

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.

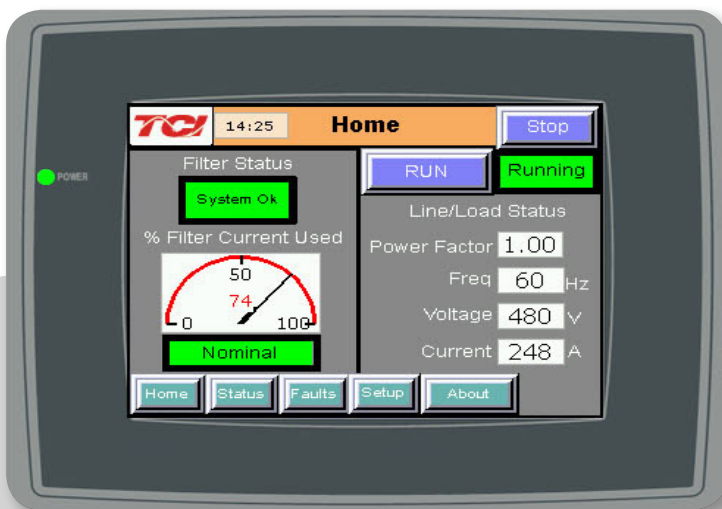
Issues caused by harmonics may include:

- 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, compared to Active Front Ends
- 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
 - Remote mountable HMI unit for open chassis and 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 six 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

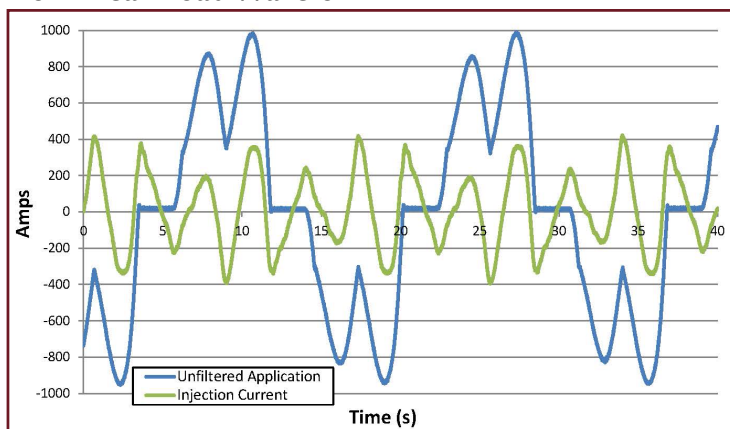


Technical Specifications

Compensation Capacity (Parallel for Higher Capacity)	480V: 50A, 100A, 150A, 200A, 250A, 300A, 400A, 500A; 3-phase, 60 Hz 600V: 39A, 78A, 110A, 150A, 185A, 220A, 370A; 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 six active filters can be connected in parallel*
Display	High quality 6" 65k color touchscreen with LED backlight
Communications	Modbus RTU over RS485, Modbus TCP/IP, EtherNet/IP [®] , DeviceNet, BACnet, HGA-HMI
Environmental Conditions	
Operating Temperature	Open Chassis: 0°C (32°F) to 40°C (104°F) Derating above 40°C
	UL Type 1: 0°C (32°F) to 40°C (104°F) Derating above 40°C
	UL Type 12: 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), up to 3,000 m (9,900 ft) with derating
Storage Temperature	Open Chassis, UL Type 1 & UL Type 12: -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 1, UL Type 12, UL Type 3R
Over Current Protection	Molded Case Circuit Breaker
HMI Languages	English, French, Spanish
Surge Protection	ANSI C62.42

*Consult factory for larger systems.

Non-linear Load Waveform



Resulting Line Current Waveform

