HARMONIC FILTER
DRIVE-APPLIED
HARMONICGUARD®

HG7

TCI®

Limits harmonic distortion and improves power factor
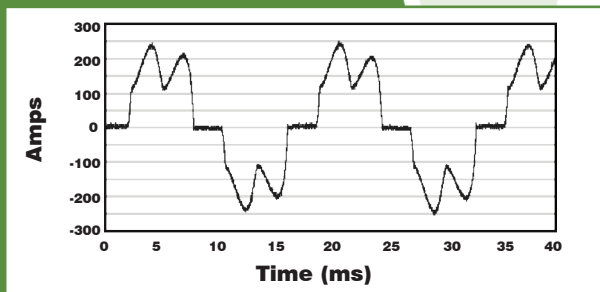
• Meets IEEE-519 2014
• Protects drives and other sensitive equipment
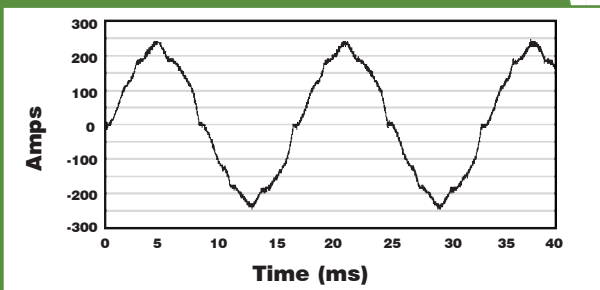• Improves energy efficiency

c **UL** US LISTED

Made in U.S.A.

Line Reactors • Harmonic Filters • EMC Filters • dv/dt Filters • Sinewave Filters

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Harmonic Current Distortion Without HG7

Harmonic Current Distortion with HG7 applied

Typical Problems, Superior Solutions with HG Filters

Power quality has degraded over time due to the increased use of non-linear loads. The IEEE-519 standard for harmonic distortion was developed to address this problem. An increasing number of utilities are now mandating that this standard be followed.

Harmonics and Power Quality

Variable frequency drives are beneficial for a wide range of applications, however VFDs contain a power conversion process that creates current and voltage distortion which can cause system-wide problems.

If non-linear loads represent a significant portion of the entire installed load, this distortion begins to cause problems throughout the electrical system:

- Transformer and distribution equipment overheating
- Random breaker tripping
- Sensitive equipment may fail completely
- Poor power factor
- Reduced system efficiency

The HG7 Passive Harmonic Filter

The HG7 not only limits current distortion to less than 7% (5-6% typical), it also:

- Eliminates nuisance tripping
- Increases drive uptime dramatically
- Improves power factor
- Improves system efficiency & reliability
- Extends equipment life

Meeting IEEE-519 Recommendations on Harmonics

The HG7 passive filter provides a cost effective solution allowing the user to meet IEEE-519 requirements. Using our harmonic analysis software, TCI can help customers meet IEEE-519. Typical applications include:

- Wastewater treatment plants
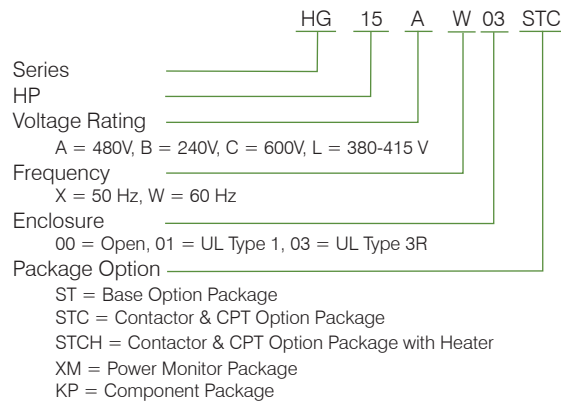- Commercial buildings
- Hospitals
- Airports

HG7 Filters v. Other Harmonic Solutions

The HG7 passive filter is built using the highest quality components. HG7 filters include capacitors designed to withstand harsh harmonic currents. The UL508A configuration includes **built-in safety features** like fusing and easy access inside the enclosure. Processes will not shut down if the filter goes off-line.

When compared to multi-pulse solutions, HG7 filters:

- Save money
- Save space
- Reduce energy losses
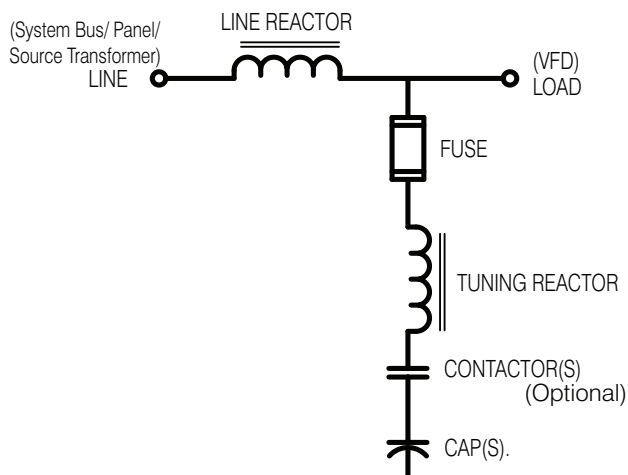
Part Numbering System

HG 15 A W 03 STC

Series
HG
Voltage Rating
   A = 480V, B = 240V, C = 600V, L = 380-415 V
Frequency
   X = 50 Hz, W = 60 Hz
Enclosure
   00 = Open, 01 = UL Type 1, 03 = UL Type 3R
Package Option
   ST = Base Option Package
   STC = Contactor & CPT Option Package
   STCH = Contactor & CPT Option Package with Heater
   XM = Power Monitor Package
   KP = Component Package

Package Options

Configure the HG7 to meet your performance and monitoring needs:

ST - High Quality Harmonic Filter

STC - High Quality Harmonic Filter with contactor and control power transformer which allows users to remove the capacitors from circuit, eliminating the possibility of leading power factor

XM - Similar to STC version with the addition of a power monitor display to view filter performance

One-Line Diagram

(System Bus/ Panel/ Source Transformer)
LINE

LINE REACTOR

(VFD) LOAD

FUSE

TUNING REACTOR

CONTACTOR(S) (Optional)

CAP(S).

Product Specifications

- 3-Phase

- Ratings:
  480V/60Hz: 7.5 - 900 HP
  600V/60Hz: 15 - 900 HP
  240V/60Hz: 7.5 - 100 HP
  400V/50Hz: 4 - 710 kW

- Harmonic Reduction: < 7% (Typically better TDD) at full load

- Efficiency (typical):
  Below 100 HP $\geq$ 98%
  100 - 250 HP $\geq$ 98.8%
  Above 250 HP > 99%

- Capacitors: Components designed for harmonic-rich environments

- Protection: All units have internal fusing protection for the capacitors and trap reactor

- Operating Temperature:
  Open: 50° C (122° F)
  Enclosed: 40° C (104° F)

- Maximum Altitude: 1,000 m (Derating necessary above 1,000 m)

- Fundamental Frequency: 60 Hz (50Hz for 400V)

- Agency Approvals: cUL, UL

- Enclosures: Open, UL Type 1, UL Type 3R

- HG7 HarmonicGuard Filters are warranted for three years from the date of original shipment

Performance Guarantee
When properly applied and sized for the application, HG7 will typically provide 5 - 6% current distortion. TCI further guarantees that the HG7 will lower ITDD (as calculated using IEEE-519 guidelines) to no more than 8% at the filter input terminals. If a properly selected, installed, and loaded HG7 filter fails to meet the guaranteed performance levels, TCI will provide the necessary components or replacement filter at no additional charge. TCI does not take responsibility for additional installation or removal costs, to include, but not limited to, replacement of third party equipment. Please see TCI web site for minimum system requirements.

HG7 Typical Applications

- Oil and Gas Pumps
- Irrigation Fields, Farms
- Water, Wastewater
- HVAC
- Steel Industry
- Pulp/Paper
- Machining
- Extruders

Additional Power Quality Solutions:

HarmonicGuard® Active (HGA) Filter
- Helps meet IEEE-519
- Reduces current harmonic distortion to less than 5% at full load
- Actively monitors system current, improves power factor to near unity
- Built-in touchscreen display & Modbus RTU

KDR Line Reactor
- Prevents nuisance tripping
- Protects the source by lowering current distortion created by the drive

MotorGuard™ Sinewave Output Filter
- Protects the motor by converting the PWM waveform into a near sinusoidal wave
- Prevents voltage overshoots that cause early degradation of insulation systems in motors, transformers, and cables
- Extends motor life by reducing operating temperature

V1k Motor Protection Output Filter
- Protects the motor and cable from voltage spikes due to high dv/dt and excessive cable capacitance
- Helps stop motor insulation breakdown
- Protects cable runs (up to 3,000 feet) and reduces motor heating, noise and vibration

KRF EMI/RFI Filter
- Filter EMI/RFI noise caused by power switching devices
- Meet FCC regulation 15, subpart J
- Prevents interference with automated lighting circuits, security cameras, and other critical electronics

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Please contact us about
specific products and services.

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