



GRUPPO ENERGIA ACTIVE HARMONIC FILTER, 3 IN 1

GEAHF

INNOVATIVE, MULTI-LEVEL POWER QUALITY EQUIPMENT

MODERN POWER NETWORK INFLUENCED BY MULTIPLE DISTORTIONS, SO IT'S QUALITY IS FARAWAY OF IDEAL.

Low power quality → Low performance of any electrical equipment → High electricity consumption → High electricity bill.



HAVE YOU ALREADY NOTED

- Unbalanced 3 phase network?
- Decrease in UPS performance?
- Decrease in motor performance?
- Increase in transformer temperature?
- High energy bill due to low power factor?
- Derating of diesel generators or transformers?
- High total current harmonic distortion THDI%?
- Tripping of circuit breakers and residuals current devices?

SOLUTION - 3 FUNCTIONS IN 1 WITH UNIQUE PRIORITY SELECTION FEATURE

For maximum flexibility and optimal capacity utilization.

HARMONIC FILTERING UP 50TH ORDER

POWER FACTOR CORRECTION

PHASE BALANCING

MADE IN ITALY



WWW.GRUPPOENERGIA.COM

GEAHF ACTIVE HARMONIC FILTER, 3 IN 1

MODERN NETWORKS PROBLEMS, HARMONICS

In recent years, electronic devices such as computers, speed drivers for production control systems, air-conditioning, lifts with the soft stop, pumps with soft start, etc., are increasingly used.

Their correct functioning brings various benefits on an industrial and private level but on the other hand it causes serious problems in terms of energy supplies and efficiency.

This is because the power electronic devices equipped with rectifiers, modulators etc., distort the wave shape of the current for the correct operation, creating the harmonics, which represents the deviation between the ideal sinusoidal waveform the network voltage or the load current should have, and what really it is.

Reduction of harmonic currents can report quantifiable benefits in terms of overall installation cost, energy bill reduction, and protection against process interruptions and equipment faults.

Types of loads that generate harmonics:

- Solar and wind inverters
- Air-conditioning systems
- Pumping systems
- Variable speed drivers, converters...
- Cooling chambers
- PLCs
- Electronic light ballasts (LED)
- Personal computers (PC's)

GEAHF SOLUTION ALL IN ONE

Harmonic Filtering

The **GEAHF** has been specially designed to eliminate harmonics from the network in an ultra-fast way, response time <20ms.

The harmonics to be eliminated can be selected up to 50th order from the 3,5" color touchscreen display.

Thanks to the specially developed algorithm, **GEAHF** can detect a potential resonance on a harmonic and deactivate its compensation in order not to compromise the system.

The efficiency of the device reaches up to 97% even on the networks most compromised from the harmonic point of view.

Power Factor Correction

GEAHF save your installation from additional charges in the electricity bill by compensate for both capacitive and inductive loads. Furthermore accurate power factor correction reduces the current flow through the installation's conductors, avoiding any overheating and the triggering of protections.

In addition, benefits will also be seen on the performance of the transformer and its available power. The target $\cos \Phi$ from 0,7 inductive to 0,7 capacitive can be set to reach any installation demand.

Phase Balancing

A three-phase power system is called balanced or symmetrical, if the three phase voltages and currents have the same amplitude and are phase shifted by 120° from one another. If any of these conditions is lacking, the system is called unbalanced or asymmetrical.

There are no passive solutions which can perform negative sequence compensation for load balancing. On the other hand, this can easily be achieved using the **GEAHF**.

The end result is a better use of existing electrical infrastructure, a significant reduction of energy bills and better voltage profile.

BENEFITS OF GEAHF

Priority and Working Mode Configurable By The User

Choose the working mode that best suits your needs and activate or deactivate harmonic filtering, PF correction ore phase balancing directly from the menu. Thanks to the priority function, the device will automatically give priority to the chosen working mode in case of filter current saturation due to overload.

Anti-Resonance Algorithm

Algorithm has been specially developed to not allow the device to operate in resonance frequencies (specific harmonics) while all other functions remain 100% active.

Anti-resonance algorithm is fundamental as resonating currents can damage the active filter and other devices connected to the installation.

EMI Incorporated Filter

All **GEAHF** are equipped with integrated EMI filters to reduce high frequency electronic noise that may cause interference with other devices and cause malfunctions on the network

Current Transformer Reversal

Through the menu, without changing the wiring of the current transformers, it is possible to reverse the direction of the same, reducing commissioning times.

Ultra-Fast

GEAHF are equipped with most advanced IGBT and semiconductors multi-level technology which allows response time lower than 20 ms (faster than contactors or thyristors) even in networks with high consumption variability. The device will be at your side in the most critical conditions and with any type of load.

User Friendly HMI With Network Analyzer

HMI created to be user friendly also acts as a network analyzer through which it is possible to control power and harmonic distortion before and after the filter as well, PF, waveforms, phasor diagram etc.

Expandable

GEAHF are designed to be modular allowing the parallel connection of up to 100 units, even of different power, comfortably controlled by the master unit thanks to the integrated "Master / Slave" system.

Save resources by avoiding the installation of current transformers for each slave device.

Smart Security System

The internal temperature is constantly automatically monitored to protect the device in all working conditions.

Auto-check system allows the device to control itself and signal the alarm on the display if there are any problems.

If during the operation **GEAHF** will find an error, safe mode will automatically be activated to avoid damaging the device.

The intensity of the forced ventilation is controlled by the internal sensors in order to guarantee adequate cooling and extend the life of the fans. All alarms can be controlled directly from the **GEAHF** display.

Quick and Easy Commissioning

Just connect, set-up and start to perform harmonic filtering, power factor correction and phase balancing.

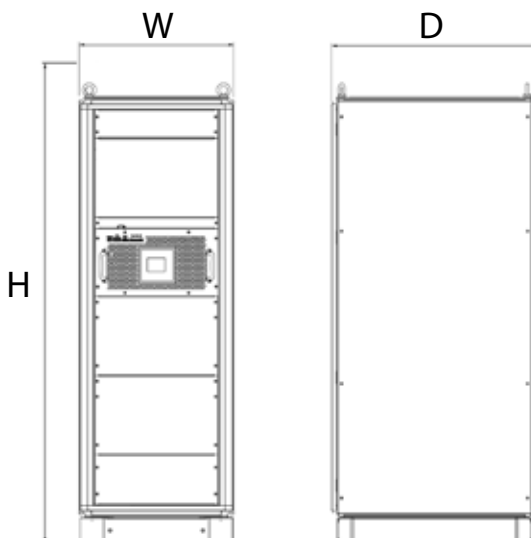
All configurations can be carried out through touch screen display directly on site.



TYPE C

Cabinet type for system 230...690 V, 50/60 Hz.

Range
70/400 A

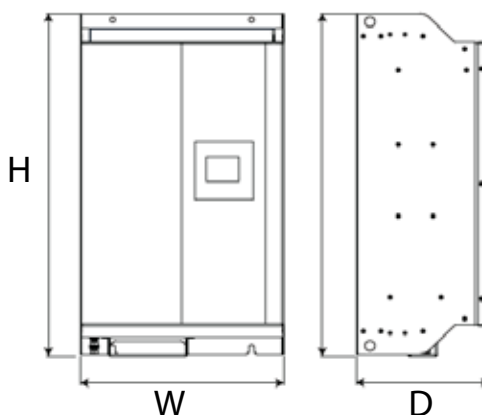


TYPE W

Wall mounted type for system 230...480 V, 50/60 Hz.



Range
30/100 A



ACTIVE HARMONIC FILTER, 3 IN 1 GEAHF

Wall mounted type for system 50/60 Hz

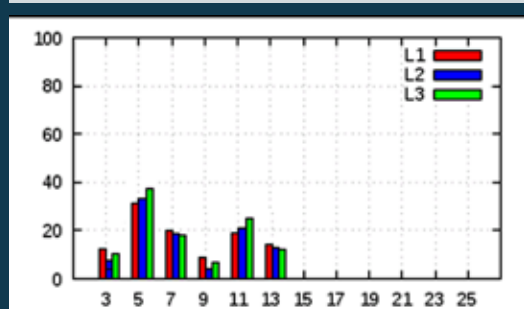
ORDER CODE	System Type	Phase Current A	Min. Operating Voltage	Max. Operating Voltage	Peak Current A	Max Neutral Current A	Dimension mm WxDxH	Weight Kg	Protection Degree	Type
GEAHF3P3W30W480	3P3W	30	230	480	60	-	430 x 178 x 530	21	IP20	W
GEAHF3P3W60W480	3P3W	60	230	480	120	-	430 x 348 x 530	39	IP20	W
GEAHF3P3W100W480	3P3W	100	230	480	200	-	439 x 288 x 745	56	IP20	W
GEAHF3P4W30W400	3P4W	30	230	400	60	90	430 x 178 x 530	21	IP20	W
GEAHF3P4W60W400	3P4W	60	230	400	120	180	430 x 348 x 530	39	IP20	W
GEAHF3P4W100W400	3P4W	100	230	400	200	300	439 x 288 x 745	56	IP20	W

Cabinet type for system 50/60 Hz

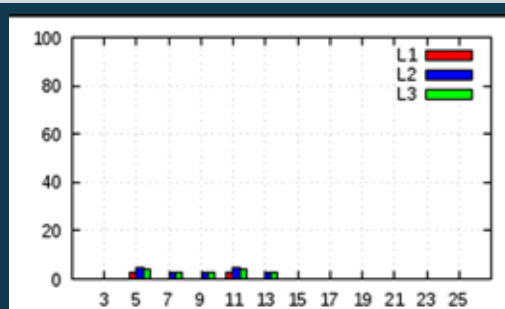
ORDER CODE	System Type	Phase Current A	Min. Operating Voltage	Max. Operating Voltage	Peak Current A	Max Neutral Current A	Dimension mm WxDxH	Weight Kg	Protection Degree*	Type
GEAHF3P3W100C480	3P3W	100	230	480	200	-	608 x 812 x 1890	190	IP20	C
GEAHF3P3W200C480	3P3W	200	230	480	400	-	608 x 812 x 1890	245	IP20	C
GEAHF3P3W300C480	3P3W	300	230	480	600	-	608 x 812 x 1890	300	IP20	C
GEAHF3P3W400C480	3P3W	400	230	480	800	-	608 x 812 x 1890	355	IP20	C
GEAHF3P3W70C690	3P3W	70	690	690	140	-	608 x 812 x 1890	192	IP20	C
GEAHF3P3W140C690	3P3W	140	690	690	280	-	608 x 812 x 1890	249	IP20	C
GEAHF3P3W210C690	3P3W	210	690	690	420	-	608 x 812 x 1890	306	IP20	C
GEAHF3P3W280C690	3P3W	280	690	690	560	-	608 x 812 x 1890	363	IP20	C
GEAHF3P4W100C400	3P4W	100	230	400	200	300	608 x 812 x 1890	190	IP20	C
GEAHF3P4W200C400	3P4W	200	230	400	400	600	608 x 812 x 1890	245	IP20	C
GEAHF3P4W300C400	3P4W	300	230	400	600	900	608 x 812 x 1890	300	IP20	C
GEAHF3P4W400C400	3P4W	400	230	400	800	1200	608 x 812 x 1890	355	IP20	C
GEAHF3P4W70C550	3P4W	70	550	550	140	210	608 x 812 x 1890	192	IP20	C
GEAHF3P4W140C550	3P4W	140	550	550	280	420	608 x 812 x 1890	249	IP20	C
GEAHF3P4W210C550	3P4W	210	550	550	420	630	608 x 812 x 1890	306	IP20	C
GEAHF3P4W280C550	3P4W	280	550	550	560	840	608 x 812 x 1890	363	IP20	C

* Protection Degree IP54 on request

TOTAL CURRENT HARMONIC DISTORTION THDI



CURRENT HARMONICS WITHOUT GEAHF



CURRENT HARMONICS WITH GEAHF



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