

ZGR FAA / AHF ACTIVE HARMONIC FILTER

ZGR FAA / AHF is a system that helps to eliminate harmonic distortion in the power grid

The ZGR FAA / AHF helps to eliminate harmonic contamination in the grid, reducing power quality problems and enhancing a more efficient and safe use of energy.

The presence of harmonics increases the RMS current in electricity grids. The transmission of currents harmonics through system impedance creates harmonics which produce voltage distortions and in this way deteriorate the quality of the grid voltage. This leads to increased operation and energy costs, production/process stops, overheating and malfunctioning of electrical equipment.

The ZGR FAA / AHF is designed according to the latest state of the art in power electronics technology. The technology is installed in parallel with non-linear electrical loads. The active filter analyses the phase current together with the associated harmonics, generating a compensation current, which neutralizes the harmonic currents creating a practically sinusoidal waveform.



Applications









Characteristics

- High security and reliability
- Harmonic compensation up to the order of 50° (individually selectable)
- Flicker Compensation
- Ultra-fast reactive power compensation (inductive and capacitive)
- Phase and neutral cable balance
- Compact design
- Scalable modular system (25 A 600 A)
- Resonance detection
- Digital control with intelligent FFT algorithm
- Ethernet and Ethercat connection system
- High performance and reliability

- Insensitive to grid conditions
- Protections:
- Overload protection
- Internal short circuit protection
- Over temperature protection
- Over and under voltage protection
- Inverter bridge
- Resonance protection
- Fan failure alarm

Connectivity and monitorization

Communication via Modbus RTU 485 and Modbus TCP-IP. It allows the user to access all the data shown on the screen: status, measurements, configuration, alarms, control, network, equipment, etc.

7" LCD screen for displaying and debugging rack mounted modules. User-friendly operation interface, with 800*400 colour graphic display. Allows the user to check the operating status of the Filter and the status of the grid in real time.



Nominal voltage					
Nominal voltage	TECHNICAL SPECIFICATIONS				
Frequency Compensation current (module) 25A, 35A, 50A, 60A, 100A, 150A Compensation capacity in neutral terminal 3 times the compensation current (in case of 4 wire system) Compensation range of harmonic currents 2nd - 50th harmonic order, or specified order of harmonics 0 - 110% Power factor (PF) Switching frequency/control 20kHz / 20kHz Reaction time 250 µs Global response time 25ms Harmonic compensation Yes Reactive power compensation Yes MONITORING Screen TFT 7" colour Communication protocols Modbus RTU, TCP/IP (Ethernet) PROTECTIONS Failure alarm Yes, 500 alarm logs max. Protections Overvoltage, under voltage, short-circuit, inverter bridge, over compensation MECHANICAL AND ENVIRONMENTAL CHARACTERISTICS Working altitude 1500 m (without derating) Protection degree Working altitude 1500 m (without power loss) 256 (Without condensation) Forced STANDARDS Certifications CE, IEEE 61000 CE, ETL (UL508), IEEE 61000	Model	ZGR FAA / AHF			
Compensation current (module) 25A, 35A, 50A, 60A, 100A, 150A Compensation capacity in neutral terminal Compensation range of harmonic currents Harmonic reduction rate 2nd - 50th harmonic order, or specified order of harmonics 0 - 110% Harmonic reduction rate >95% Power factor (PF) Adjustable from -1 to 1 Switching frequency/control 8eaction time <50 µs Global response time <5 ms Harmonic compensation Yes MONITORING Screen TFT 7" colour Communication ports Communication protocols Modbus RTU, TCP/IP (Ethernet) PROTECTIONS Failure alarm Yes, 500 alarm logs max. Protections Working temperature range -10°C - +40°C (without derating) Protection degree Working altitude 1500 m (without power loss) Noise level Relative humidity 5 to 95 % (without condensation) Forced STANDARDS Certifications CE, IEEE 61000 CE, ETL (UL508), IEEE 61000	Nominal voltage	380 V (228 to 456 V)	480 V (384 to 552 V)	690 V (480 to 790 V)	
Compensation current (module) Compensation capacity in neutral terminal Compensation capacity in neutral terminal 2nd - 50th harmonic order, or specified order of harmonics 0 - 110% Harmonic reduction rate > 95% Power factor (PF) Adjustable from -1 to 1 Switching frequency/control 20kHz / 20kHz Reaction time < 50 µs Global response time Harmonic compensation Yes Reactive power compensation Yes White power compensation Yes White power compensation Yes White power compensation TFT 7" colour Communication ports Communication ports RS485, network port (RJ45) Communication protocols Modbus RTU, TCP/IP (Ethernet) PROTECTIONS Failure alarm Yes, 500 alarm logs max. Overvoltage, under voltage, short-circuit, inverter bridge, over compensation MECHANICAL AND ENVIRONMENTAL CHARACTERISTICS Working temperature range Protection degree Working altitude 1500 m (without derating) Protection degree Working altitude 1500 m (without power loss) Cost B (depending on the model) model) Relative humidity 5 to 95 % (without condensation) Forced STANDARDS Certifications CE, IEEE 61000 CE, ETL (UL508), IEEE 61000	Frequency	43-62 Hz			
Compensation range of harmonic currents Admonic reduction rate > 95% Power factor (PF) Adjustable from -1 to 1 Switching frequency/control Reaction time < 50 µs Global response time Admonic compensation Yes Reactive power compensation Yes MONITORING Screen TFT 7" colour Communication ports Reads Nedbus RTU, TCP/IP (Ethernet) PROTECTIONS Failure alarm Yes, 500 alarm logs max. Protections MECHANICAL AND ENVIRONMENTAL CHARACTERISTICS Working temperature range 1P20 Working altitude 1500 m (without power loss) Noise level Relative humidity 5 to 95 % (without condensation) CE, IEEE 61000 CE, ETL (UL508), IEEE 61000 CE, ETL (UL508), IEEE 61000 CE, ETL (UL508), IEEE 61000	Compensation current (module)		75 A, 90 A	75A, 90A	
Harmonic reduction rate Power factor (PF) Adjustable from -1 to 1 Switching frequency/control 20 kHz / 20 kHz Reaction time Styles Reaction time Styles Reaction time Reactive power compensation Reactive power compensation Ves MONITORING Screen TFT 7" colour Communication ports RS485, network port (RJ45) Communication protocols R6485, network port (RJ45) Communication protocols PROTECTIONS Failure alarm Protections MeCHANICAL AND ENVIRONMENTAL CHARACTERISTICS Working temperature range Protection degree UP20 Working altitude 1500 m (without power loss) Noise level R6486 (depending on the model) model) Relative humidity Stops Forced STANDARDS Certifications CE, IEEE 61000 CE, ETL (UL508), IEEE 61000	Compensation capacity in neutral terminal	3 times the compensation current (in case of 4 wire system)			
Power factor (PF) Switching frequency/control Reaction time Communication ports Communication protections Communication protection degree Power compensation Power communication ports Power communication ports Power communication ports Power communication protocols Power communication protocols Power communication protocols Power compensation Power compensatio	Compensation range of harmonic currents	2nd - 50th harmonic order, or specified order of harmonics 0 - 110%			
Switching frequency/control Reaction time Global response time 45 ms Harmonic compensation Yes Reactive power compensation Yes MONITORING Screen TFT 7" colour Communication ports RS485, network port (RJ45) Communication protocols Modbus RTU, TCP/IP (Ethernet) PROTECTIONS Failure alarm Yes, 500 alarm logs max. Overvoltage, under voltage, short-circuit, inverter bridge, over compensation MECHANICAL AND ENVIRONMENTAL CHARACTERISTICS Working temperature range 10°C ~ +40°C (without derating) Protection degree IP20 Working altitude 1500 m (without power loss) Noise level Relative humidity 5 to 95 % (without condensation) Forced STANDARDS Certifications CE, IEEE 61000 CE, ETL (UL508), IEEE 61000	Harmonic reduction rate	>95%			
Reaction time <50 µs Global response time <5 ms Harmonic compensation Yes Reactive power compensation Yes Unbalance compensation Yes MONITORING Screen TFT 7" colour Communication ports RS485, network port (RJ45) Communication protocols Modbus RTU, TCP/IP (Ethernet) PROTECTIONS Failure alarm Yes, 500 alarm logs max. Overvoltage, under voltage, short-circuit, inverter bridge, over compensation MECHANICAL AND ENVIRONMENTAL CHARACTERISTICS Working temperature range -10°C ~ +40°C (without derating) Protection degree IP20 Working altitude 1500 m (without power loss) Noise level <56 dB (depending on the model) Relative humidity 5 to 95 % (without condensation) Forced STANDARDS Certifications CE, IEEE 61000 CE, ETL (UL508), IEEE 61000	Power factor (PF)	Adjustable from -1 to 1			
Global response time Harmonic compensation Yes Reactive power compensation Yes Unbalance compensation Yes MONITORING Screen TFT 7" colour Communication ports RS485, network port (RJ45) Communication protocols Modbus RTU, TCP/IP (Ethernet) PROTECTIONS Failure alarm Yes, 500 alarm logs max. Overvoltage, under voltage, short-circuit, inverter bridge, over compensation MECHANICAL AND ENVIRONMENTAL CHARACTERISTICS Working temperature range -10°C ~ +40°C (without derating) Protection degree Working altitude 1500 m (without power loss) Noise level Relative humidity 5 to 95 % (without condensation) Forced STANDARDS Certifications CE, IEEE 61000 CE, ETL (UL508), IEEE 61000	Switching frequency/control	20 kHz / 20 kHz			
Harmonic compensation Reactive power compensation Yes MONITORING Screen TFT 7" colour Communication ports RS485, network port (RJ45) Communication protocols Modbus RTU, TCP/IP (Ethernet) PROTECTIONS Failure alarm Yes, 500 alarm logs max. Protections Overvoltage, under voltage, short-circuit, inverter bridge, over compensation MECHANICAL AND ENVIRONMENTAL CHARACTERISTICS Working temperature range -10°C ~ +40°C (without derating) IP20 Working altitude 1500 m (without power loss) < 56 dB (depending on the model) Relative humidity 5 to 95 % (without condensation) Forced STANDARDS Cer, IEEE 61000 CE, ETL (UL508), IEEE 61000	Reaction time	<50 μs			
Reactive power compensation Unbalance compensation Yes MONITORING Screen TFT 7" colour Communication ports RS485, network port (RJ45) Modbus RTU, TCP/IP (Ethernet) PROTECTIONS Failure alarm Yes, 500 alarm logs max. Protections Overvoltage, under voltage, short-circuit, inverter bridge, over compensation MECHANICAL AND ENVIRONMENTAL CHARACTERISTICS Working temperature range -10°C ~ +40°C (without derating) Protection degree UP20 Working altitude 1500 m (without power loss) < 56dB (depending on the model) Relative humidity 5 to 95 % (without condensation) Forced STANDARDS Certifications CE, IEEE 61000 CE, ETL (UL508), IEEE 61000	Global response time	<5ms			
Unbalance compensation MONITORING Screen TFT 7" colour Communication ports RS485, network port (RJ45) Communication protocols Modbus RTU, TCP/IP (Ethernet) PROTECTIONS Failure alarm Yes, 500 alarm logs max. Overvoltage, under voltage, short-circuit, inverter bridge, over compensation MECHANICAL AND ENVIRONMENTAL CHARACTERISTICS Working temperature range -10°C ~ +40°C (without derating) Protection degree UP20 Working altitude 1500 m (without power loss) Noise level Relative humidity 5 to 95 % (without condensation) Forced STANDARDS Certifications CE, IEEE 61000 CE, ETL (UL508), IEEE 61000	Harmonic compensation	Yes			
MONITORING Screen TFT 7" colour Communication ports RS485, network port (RJ45) Communication protocols Modbus RTU, TCP/IP (Ethernet) PROTECTIONS Failure alarm Yes, 500 alarm logs max. Protections Overvoltage, under voltage, short-circuit, inverter bridge, over compensation MECHANICAL AND ENVIRONMENTAL CHARACTERISTICS Working temperature range -10°C ~ +40°C (without derating) Protection degree IP20 Working altitude 1500 m (without power loss) V56 dB (depending on the model) model) Relative humidity 5 to 95 % (without condensation) Cooling Forced STANDARDS CE, IEEE 61000 CE, ETL (UL508), IEEE 61000	Reactive power compensation	Yes			
Screen Communication ports RS485, network port (RJ45) Communication protocols Modbus RTU, TCP/IP (Ethernet) PROTECTIONS Failure alarm Yes, 500 alarm logs max. Protections Overvoltage, under voltage, short-circuit, inverter bridge, over compensation MECHANICAL AND ENVIRONMENTAL CHARACTERISTICS Working temperature range -10°C ~ +40°C (without derating) Protection degree UP20 Working altitude 1500 m (without power loss) < 56 dB (depending on the model) model) Relative humidity 5 to 95 % (without condensation) Forced STANDARDS Certifications CE, IEEE 61000 CE, ETL (UL508), IEEE 61000	Unbalance compensation	Yes			
Communication ports Communication protocols Modbus RTU, TCP/IP (Ethernet) PROTECTIONS Failure alarm Yes, 500 alarm logs max. Protections Overvoltage, under voltage, short-circuit, inverter bridge, over compensation MECHANICAL AND ENVIRONMENTAL CHARACTERISTICS Working temperature range -10°C ~ +40°C (without derating) Protection degree Working altitude 1500 m (without power loss) < 56 dB (depending on the model) Relative humidity 5 to 95 % (without condensation) Forced STANDARDS Cer, IEEE 61000 CE, ETL (UL508), IEEE 61000	MONITORING				
Communication protocols PROTECTIONS Failure alarm Yes, 500 alarm logs max. Protections Overvoltage, under voltage, short-circuit, inverter bridge, over compensation MECHANICAL AND ENVIRONMENTAL CHARACTERISTICS Working temperature range -10°C ~ +40°C (without derating) Protection degree IP20 Working altitude 1500 m (without power loss) Noise level Relative humidity 5 to 95 % (without condensation) Cooling Forced STANDARDS CE, IEEE 61000 CE, ETL (UL508), IEEE 61000	Screen	TFT 7" colour			
PROTECTIONS Failure alarm Yes, 500 alarm logs max. Protections Overvoltage, under voltage, short-circuit, inverter bridge, over compensation MECHANICAL AND ENVIRONMENTAL CHARACTERISTICS Working temperature range Protection degree IP20 Working altitude I500 m (without power loss) Voise level Relative humidity Sto 95 % (without condensation) Cooling Forced STANDARDS CE, IEEE 61000 CE, ETL (UL508), IEEE 61000	Communication ports	RS485, network port (RJ45)			
Failure alarm Protections Overvoltage, under voltage, short-circuit, inverter bridge, over compensation MECHANICAL AND ENVIRONMENTAL CHARACTERISTICS Working temperature range Protection degree IP20 Working altitude I500 m (without power loss) Voise level Relative humidity Sto 95 % (without condensation) Cooling Forced STANDARDS CE, IEEE 61000 CE, ETL (UL508), IEEE 61000	Communication protocols	Modbus RTU, TCP/IP (Ethernet)			
Protections Overvoltage, under voltage, short-circuit, inverter bridge, over compensation MECHANICAL AND ENVIRONMENTAL CHARACTERISTICS Working temperature range -10°C ~ +40°C (without derating) Protection degree IP20 Working altitude 1500 m (without power loss) < 56 dB (depending on the model) Relative humidity 5 to 95 % (without condensation) Cooling STANDARDS CE, IEEE 61000 CE, ETL (UL508), IEEE 61000	PROTECTIONS				
MECHANICAL AND ENVIRONMENTAL CHARACTERISTICS Working temperature range	Failure alarm	Yes, 500 alarm logs max.			
Working temperature range -10°C ~ +40°C (without derating) Protection degree IP20 Working altitude 1500 m (without power loss) Noise level <56 dB (depending on the model) Relative humidity 5 to 95 % (without condensation) Cooling Forced STANDARDS CE, IEEE 61000 CE, ETL (UL508), IEEE 61000	Protections	Overvoltage, under voltage, short-circuit, inverter bridge, over compensation			
Protection degree IP20 Working altitude 1500 m (without power loss) Noise level <56 dB (depending on the model) Relative humidity 5 to 95 % (without condensation) Cooling Forced STANDARDS Certifications CE, IEEE 61000 CE, ETL (UL508), IEEE 61000	MECHANICAL AND ENVIRONMENTAL CHARACTERISTICS				
Working altitude 1500 m (without power loss) < 56 dB (depending on the model) Relative humidity 5 to 95 % (without condensation) Cooling Forced STANDARDS CE, IEEE 61000 CE, ETL (UL508), IEEE 61000	Working temperature range	-10°C ~ +40°C (without derating)			
Noise level < 56 dB (depending on the model) Relative humidity 5 to 95 % (without condensation) Cooling Forced STANDARDS CE, IEEE 61000 CE, ETL (UL508), IEEE 61000	Protection degree	IP20			
Model) Relative humidity 5 to 95 % (without condensation) Cooling Forced STANDARDS Certifications CE, IEEE 61000 CE, ETL (UL508), IEEE 61000	Working altitude	1500 m (without power loss)			
Cooling Forced STANDARDS Certifications CE, IEEE 61000 CE, ETL (UL508), IEEE 61000	Noise level	` '	<65 dB (depending on the mo	odel)	
STANDARDS Certifications CE, IEEE 61000 CE, ETL (UL508), IEEE 61000	Relative humidity	5 to 95 % (without condensation)			
Certifications CE, IEEE 61000 CE, ETL (UL508), IEEE 61000	Cooling	Forced			
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	Certifications	CE, IEEE 61000	CE, ETL (UL508), IEEE 61000		
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These specifications may change without notice



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