KLONEC

TECHNICAL DATASHEET

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HF-Series Harmonic Filter

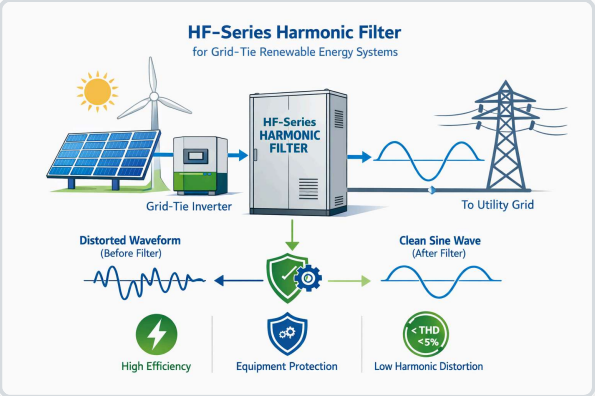
Grid-Tie Renewable Energy Systems

Model: HF-10K-415-50

Product Overview

The HF-Series Harmonic Filter is specifically designed for grid-tie renewable energy applications, including solar PV and wind power systems. This advanced passive filtering solution effectively mitigates harmonic distortion generated by grid-connected inverters, ensuring compliance with international power quality standards.

By reducing total harmonic distortion (THD) to less than 5%, the HF-Series protects sensitive equipment, prevents grid interference, and maximizes the efficiency of renewable energy injection into utility networks.



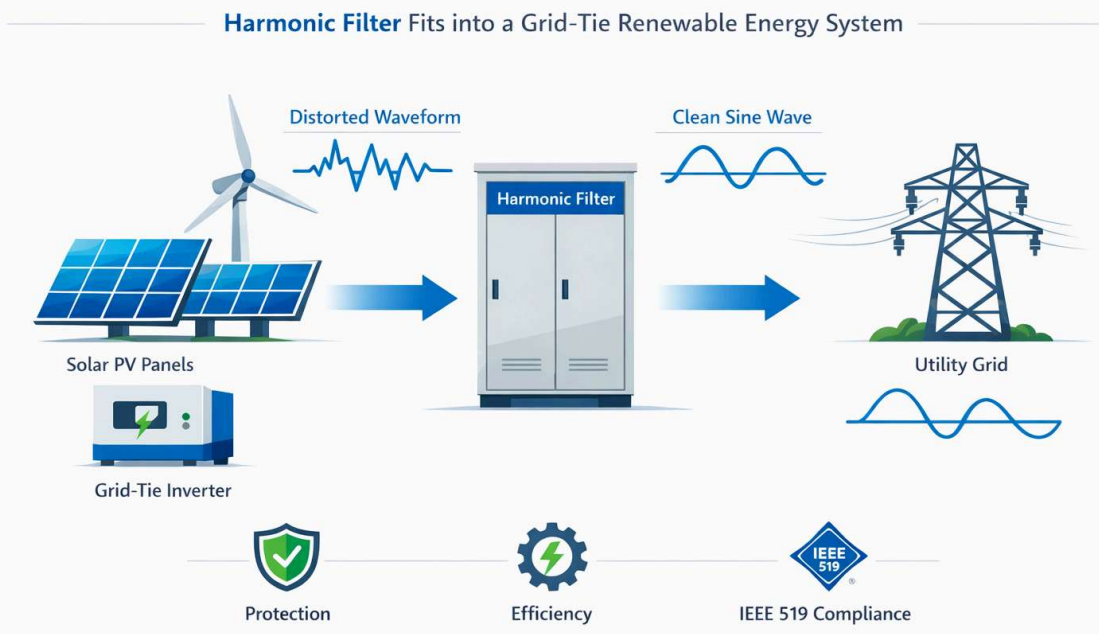
HF-Series Product Overview

Electrical Specifications

Parameter	Specification
Inverter Type	Grid-connected (on-grid)
Rated Power	10 kW
Output Voltage	415 V AC (3-phase)
Grid Frequency	50 Hz
Rated Current	≈ 14 A
Maximum Current	18–20 A
Target Current THD	< 5%
Maximum Temperature Rise	50 °C

System Application

The harmonic filter is installed between the grid-tie inverter and the utility grid connection point. It attenuates high-frequency harmonics and ensures clean power injection.



Solar PV / Wind → Grid Tie Inverter → Harmonic Filter → Utility Grid

System Integration: The harmonic filter attenuates current harmonics generated by the inverter's switching frequency, protecting the grid and ensuring IEEE 519 compliance.

Key Benefits

Harmonic Reduction
Reduces current THD to <5%

Equipment Protection
Protects transformers and switchgear

Improved Power Quality
Maintains grid voltage stability

Higher Efficiency
Minimizes reactive power losses

IEEE 519 Compliance
Meets international standards

Reliable Grid Integration
Ensures stable utility connection

Environmental Specifications

Parameter	Specification
Operating Temperature	-10°C to +50°C
Storage Temperature	-25°C to +70°C
Humidity	5% to 95% RH (non-condensing)
Altitude	Up to 2000 m
Protection Rating	IP20 (indoor enclosure)
Cooling Method	Natural convection

Harmonic Performance

Harmonic Attenuation

The HF-Series filter is tuned to attenuate the most significant harmonic orders typically generated by PWM inverters. The filter provides comprehensive harmonic suppression across the frequency spectrum, ensuring clean power delivery to the utility grid.

Key Performance Features:

- Effective attenuation of high-frequency harmonics
- Optimized for grid-tie inverter applications
- Maintains power quality under varying load conditions
- Reduces electromagnetic interference (EMI)

Benefits of harmonic filtering in grid-tie systems

Compliance & Standards

IEEE 519-2014

Recommended Practice for Harmonic Control in Electric Power Systems

IEC 61000-3-2

Limits for Harmonic Current Emissions

IEC 61000-3-12

Limits for Harmonic Currents Produced by Equipment Connected to Public Low-Voltage Systems

IEC 61000-4-7

General Guide on Harmonics and Interharmonics Measurements

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Product Series: HF-Series Harmonic Filters Designed for Renewable Grid Integration
Compliance: IEEE 519 / IEC 61000