

ACTIVE POWER QUALITY FILTER

PQactiF

Higher flexibility and modularity
for improved power quality



—
s.a. ABB n.v.

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ABB is a pioneering technology leader in power grids, electrification products, industrial automation and robotics and motion, serving customers in utilities, industry and transport & infrastructure globally. Continuing a history of innovation spanning more than 130 years, ABB today is writing the future of industrial digitalization with two clear value propositions: bringing electricity from any power plant to any plug and automating industries from natural resources to finished products. As title partner in ABB Formula E, the fully electric international FIA motorsport class, ABB is pushing the boundaries of e-mobility to contribute to a sustainable future. ABB operates in more than 100 countries with about 147,000 employees.

ABB offers a wide range of products from 208 V up to 1200 kV that help enhance the reliability, efficiency and quality of power in transmission and distribution grids, power plants and industries while minimizing environmental impact. The wide product range is complemented by a comprehensive service offering.

Power quality is a major concern for transmission and distribution utilities, industries, and transport and infrastructure sectors. Poor power quality affects grid reliability, productivity, leads to higher operating costs and penalties for non-compliance with grid codes. ABB is a technology leader with a wide range of products, systems and services that improve power quality including capacitors and filters, power electronics-based compensators and software solutions, across the power value chain for low, medium and high-voltage applications, helping shape a stronger, smarter and greener grid.



20 years of Active filter PQF



Active filter PQF from ABB has been present in the market for more than 20 years, protecting critical industrial, residential and commercial applications, solving tough power quality problems for all types of applications and customers globally. It makes installations compliant with prevailing power quality regulations by mitigating harmonic pollution, load unbalance and reactive power compensation.

The new power quality filter PQactiF encompasses all these benefits with additional features such as



Flexibility



Modularity



Improved efficiency

for applications which are suffering from poor power quality.



Suitable for each type of segment

like mining, metal, paper, commercial and infrastructure, aluminum, steel and other metal industries



Experience

in vessel, port, ski resort and skyscrapers



Local service teams

available to perform commissioning and site support



Commissioning & troubleshooting

experience worldwide



We offer solution

not only for commercial segment, but for infrastructure and industrial segments also



Continuous training

to service teams around the world



Factory service team

with global experience more than 20 years

PQactiF

Features and benefits

Harmonic filtering:

Individual harmonic selection capability and unique filtering efficiency due to three-level inverter and proven control system

PQactiF has an improved capability of filtering up to 25 harmonics simultaneously, between the orders H2 to H50.

Reactive power compensation:

Stepless reactive power compensation for both inductive and capacitive loads, target settable

PQactiF can perform precise stepless reactive power compensation of both inductive and capacitive loads. The target power factor is programmable from 0.6 (inductive) to 0.6 (capacitive) which makes PQactiF a superior alternative to a conventional capacitor bank. This also allows compensation of loads fed by generators without the risk of overcompensation.

Load balancing:

Balancing the load currents to address neutral-to-earth voltages and negative impact of voltage unbalance

Load balancing feature is available in both 3-wire and 4-wire systems between phases and between phase and neutral. This feature helps to improve voltage unbalance on the phases which increases the safety of the installation and allows sensitive loads to operate.

Enhanced communication features:

Wi-Fi enabled modules allow users to monitor and set parameters via smartphone or computer

Parameter settings and simple diagnostics can be performed by a web server on a mobile device. The optional user-friendly HMI interface offers direct access to filter control, programming and monitoring with its 7-inch touchscreen.

PQactiF - Higher flexibility. More reliability.

Adaptable

Compact
Small footprint

Modular
Mix & match
20A – 2400A

Configurable
Module, wall-mounted
or standalone cabinet

Efficient

3-level inverter
Energy efficient
and compact

**Open and closed
loop control**
Choice of speed
and accuracy

Resonance protection
Added operational
stability

Easy to operate

User-friendly HMI
7-inch interactive
touchscreen GUI

Wi-Fi enabled
Control through
PC or smartphone

Reliable
Suited to both
new and retrofit
applications

PQactiF

Portfolio offering

01 PQactiF - M
Module

02 PQactiF - WM
Wall-mounted

03 PQactiF - C
Standalone cabinet

PQactiF is offered in 4 different module ratings of 20 A, 40 A, 100 A and 150 A. Depending on the application, PQactiF is available in either as a module, a wall-mounted solution or a standalone cabinet.

PQactiF - M - Module

- Modular design: Suitable for OEMs, LV switch-gear and drive manufacturers
- Very compact: Can be integrated into a small cubicle, either vertically or horizontally
- Low losses: Reduced losses and built-in forced air cooling

PQactiF - WM - Wall-mounted

- Distributed filtering: For building applications where space restrictions exist
- Easy to install thanks to wall-mounting kit
- Silent solution: <65dBA, perfect solution for installing on office floors

PQactiF - C - Standalone cabinet

- Complete solution: Factory made fully functional tested panel
- Flexibility: Rating can be extended in modular way from 20 A to 600 A in single cabinet

Sizing tools

Our online tool PQF Size enables our customers to size and select the active filter at maximum economic benefit. The tool also generates an automatic sizing report that allows customer to review the level of improvement before and after the application.

To register and use, please access the following link:

power-quality-filter.configurator.abb.com



01



02



03

PQactiF

Technical specifications

Specifications	PQactiF - M	PQactiF - WM	PQactiF - C
	Module	Wall-mounted	Standalone cabinet
Electrical characteristics			
Connection method	3-wire/ 4-wire		
Network voltage (+/- 10%)	208 - 480 V (3-wire) 208 - 415 V (4-wire)		
Network frequency (+/- 5%)	50/ 60 Hz		
Line current rating per base unit (A)	20 A, 40 A, 100 A, 150 A	Full cubicle: 20 A .. 600 A	
Neutral current rating per base unit (A)	3 times the line current rating		
Inverter technology	Three level inverter		
Switching frequency of semiconductors	18 kHz		
Modularity	Up to 16 modules can be combined. Different module rating allowed Any unit can become a master (defined as lowest ID that is operational). In case of failure, other unit takes the lead as master		
Redundancy	In case of failure, other unit takes the lead as master		
Equipment losses	<2.2% of the equipment power typically		
Filter characteristics⁽¹⁾			
Harmonic range	2 nd to 50 th order, 25 harmonic order selectable		
Harmonic attenuation factor (I _H (source)/ I _H (load))	Better than 97% at nominal load		
CT configuration	Closed or open loop		
Reaction time	110 µs		
Response time	2 networks cycles typically (10-90% filtering) <1 network cycle typically for fundamental compensation		
Reactive power characteristics⁽¹⁾			
Target power factor	Programmable from 0.6 (inductive) to 0.6 (capacitive)		
Load balancing characteristics⁽¹⁾			
Unbalanced kvar and kW compensation	Up to 100% of nominal rating		
Programming/ communication			
Wi-Fi communication	Webserver on smartphone or computer for simple diagnostics and parameters setup		
USB	With dedicated optional software (servicing/programming)		
HMI	7-inch color TFT screen (800 x 480 pixels) 198 x 141 x 40 mm IP65 front side/ IP20 backside CAN 2B (internal) – RJ12 for communicating with units Ethernet (Modbus TCP) – RJ45 USB 2.0		
Digital I/O on HMI	2 insulated digital inputs - 24 V (AC or DC) 6 digital NO outputs – 250 Vac/ 5 A (one common polarity), dry contacts		

Specifications	PQactiF - M	PQactiF - WM	PQactiF - C
	Module	Wall-mounted	Standalone cabinet
Physical aspects			
Mounting	Module unit, suitable to integrate into a cabinet	Wall-mounted	Standalone cabinet
Approximate dimensions (W x D x H)	20 A and 40 A: 435 x 459 x 130 mm 100 A and 150 A: 504 x 558 x 300 mm	20 A and 40 A: 438 x 154 x 517 mm 100 A and 150 A: 508 x 317 x 599 mm	Full size cabinet: 600 x 800 x 2100 mm
Color	Surface treated metal frames Front side painted RAL 7035	Optional HMI holder painted RAL 7035	RAL 7035
Installation aspects			
Altitude	Indoor installation in clean environment up to 1000 m altitude		
Ambient temperature	-10°C to 40°C during operation (up to 50°C with auto-derating) -27°C to 70°C during storage		
Humidity	Max. 95% non-condensing during operation Max. 85% non-condensing during storage		
Fixation	Special kit allows module to be integrated into cabinet	Wall-mounted	Floor fixation/ lifting lugs provided
Cable entry	Rear for power cables Front for control cables	Top for power cables Bottom for control cables	Bottom for both power and control cables
CT requirements	3 CT's are required (class 1.0 or better, 15 VA)		
IP protection	IP20 from front access	IP30	IP21
Compliance with standards			
General construction and safety aspects for PQactiF - M	EN 62477-1 (2012) "Safety requirements for power electronic converter systems and equipment"		
General construction and safety aspects for PQactiF - WM and PQactiF - C	EN 61439-1 (2011) "Low-voltage switchgear and control gear assemblies – Part 1: General rules"		
EMC immunity (CE version only)	EN/ IEC 61000-6-2, Industrial level		
EMC emissions (CE version only)	EN/ IEC 61000-6-4, Class A		
Certification	CE		

1. Functions other than filtering, i.e. reactive power compensation and load balancing are performed based on the availability of spare capacity (amperes) of device after harmonics mitigation. Or, a priority function (kvar compention/ harmonics filtering) can be selected from device settings.

ABB's commitment

Quality assurance

At ABB, we are committed to providing the best products and services. Our products comply with or exceed the latest international standards. In addition to type tests in independent laboratories, our certified design and manufacturing processes guarantee the highest quality. We are certified according to the latest relevant ISO quality standards.

Sustainability

For ABB, sustainability is about balancing economic success, environmental stewardship and social progress to benefit all our stakeholders. Sustainability considerations cover how we design

and manufacture products, what we offer customers, how we engage suppliers, how we assess risks and opportunities, and how we behave in communities where we operate and towards one another, while striving to ensure the health, security and safety of our employees, contractors and others affected by our activities. We are certified according to the latest relevant ISO quality standards.

