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SCHAEFER

Power Conversion Systems

Innovation made in Germany

Power Quality Solutions

Active Harmonic Filters

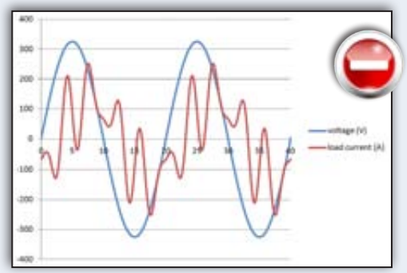
Power Quality - Active Harmonic Filters

Power Balance Series

Features

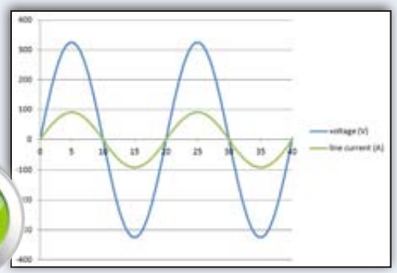
The PB-SERIES is an active harmonic filter system for tower buildings as well as automation, windturbine and various industrial applications eliminating harmonic oscillations and consequently costs for reactive energy. The filter monitors the current signal and compensates for the unwanted elements of the measured current. Thus, the filter ensures a harmonic suppression independently of the number of loads. Furthermore the filter corrects the power factor, improving the systems' efficiency while reducing harmonic distortion.

- Analysis and optimisation of the power quality
- Modular systems 60 A to 560 A extendable
- Harmonic compensation for 3-wire & 4-wire technology
- Up to 50th harmonic each individually selectable
- Ultrafast reactive power & flicker compensation
- Load balancing between phases & unload neutral wire
- Ethernet and Ethercat system for interconnection
- Subsystems Display control unit, Active sensor unit, ModBus ...



Without POWER BALANCE: Harmonic disturbances caused by e.g. non-linear loads.

With POWER BALANCE: Reactive power & harmonic oscillations are actively compensated.



POWER BALANCE solutions are easily installed, commissioned and individually combined for customers power requirements.

PBAF 400_60 / 120 (N) - W | wallmount system

Specifications

60 Amps or (2 x 60Amps) wall mount system	consisting of 1 module, 1 sensor unit & optionally 1 display (Total weight: ~76kg)				
Connectivity	3-wire: 3 phase 4-wire: 3 phase + neutral load				
Phase compensation current	60A				
Neutral lead compensation current	180A				
Input voltage	3-wire: 200 V - 480 V ± 10% 4-wire: 200 V - 400 V ± 10%				
Frequency	50/60 Hz ± 3 Hz				
Response time max.	< 300 µs correction time				
Switching frequency	24 kHz				
Control frequency	48 kHz				
Power factor correction	Fully inductive and reactive current compensation from 0 to 100%				
Maximum power losses (W)	~900				
Overload current	150A @cf2.5	300A @cf2.5	450A @cf2.5	600A @cf2.5	750A @cf2.5
Current transformer	Source or Load side selectable, Primary current range 100 A – 10000 A, secondary current 1 A				
Dimensions single unit	505 x 290 x 770 mm (W x D x H)				
Air flow rate	470 cfm				
Interface	Ethercat 100 Mbit/s, USB, Active sensor bus, Display bus				
Ambient temperature	-10°C to + 40°C full performance, up to +55°C derating 2% / K				
Humidity	95% non condensing				

PBAF 400_120 (N) - WL | wallmount system

Specifications

120 Amps wall mount system	consisting of 1 module, 1 sensor unit & optionally 1 display
Connectivity	3-wire: 3 phase
Phase compensation current	120A
Neutral lead compensation current	~240A
Input voltage	3-wire: 200 V - 480 V ± 10%
Frequency	50/60 Hz ± 3 Hz
Response time max.	< 300 µs correction time
Switching frequency	16 kHz
Control frequency	32 kHz
Power factor correction	Fully inductive and reactive current compensation from 0 to 100%
Maximum power losses (W)	~2000
Dimensions single unit	510 x 380 x 1100 mm (W x D x H)
Air flow rate	470 up to ~1000cfm
Interface	to be defined
Ambient temperature	-10°C to + 40°C full performance, up to +55°C derating 2% / K
Humidity	95% non condensing

Power Quality - Active Harmonic Filters

PBAF 690 - 560 | modular system

Specifications

Cabinet system	System with max 4 plug-in filter modules
Modular System with 2 cooling loops	***Primary cooling loop:*** liquid cooled IGBT + filter components ***Secondary cooling loop:*** liquid or air cooled heat exchanger, flow control, pressure monitoring
Total compensation current	560 A Phase
Protection class	IP65 dust protected (e.g. against welding metal powder)
Pollution level	PD 4
Operating temperature range	-10° C to +45° C full performance, +45° C to +55° C derating 2% / K
Relative Humidity class 3k4	up to 95% non condensing, PCBs are coated
Storage conditions class 1K4 and 1K3	-25° C to + 55° C
Dimensions (W x H x D) mm	800 x 2000 x 600
Altitude	2000 m without derating, 4000 m max with derating
Electromagnetic Compatibility	EN 61000-6-2, EN 61000-6-4, EN 61800-3 (C2)
Safety	EN 50178, IEC 62477-1, EN 61800-3 class C2

Weight single unit: ~140 kg
Weight cabinet without modules: ~200 kg

PBAF 40060 - PBAF 400300 | modular system

Stand-up cabinet or wall mounting solution for space saving installation

Modular Concept: Up to five independant power modules per cabinet

Plug- & Play 19“ eurocassettes

Extension possibility for additional power module

Sensor box

Separate fuses for each power module

cable entry from bottom

Proven technology: Contains power units with autonomous regulation and self-monitoring

Built-in control computer with front touch panel, graphic display and uniform operating software

Control board with connections: Flexible integration into industrial networks thanks various interfaces

Standard: air cooling with speed controlled fans Optional: liquid cooling with connection to external cooling system via heat exchanger unit

Separate fans for the cooling of the peripheral components, protection up to IP 54 possible

Weight single unit: ~60 kg
Weight cabinet without modules: ~235 kg

Specifications

Connectivity	3-wire: 3 phase 4-wire: 3 phase + neutral load				
Phase compensation current	60A	120A	180A	240A	300A
Neutral lead compensation current	180A	360A	540A	720A	900A
Input voltage	3-wire: 400-480V nom. ± 10% 4-wire: 400V ± 10%				
Frequency	50/60 Hz ± 3 Hz				
Response time	21µs				
Harmonic compensation	Individual compensation up to 50th order, simultaneously selectable				
Overload current	150A @cf2.5	300A @cf2.5	450A @cf2.5	600A @cf2.5	750A @cf2.5

Switching frequency	24 kHz				
Power factor correction	Fully inductive & reactive current compensation from 0 to 100%				
Current transformer	3-phase current measurement, xx/1 A (parameterized)				
Maximum power losses (W)	< 2,2 % of compensation power maximum < 2 % in typical operation < 50 W in standby				
Dimensions single unit	482 x 678 x 222 mm (W x D x H)				
Air flow rate / module	470 cfm	940 cfm	1410 cfm	1880 cfm	2350 cfm
Interface	Ethercat, Ethernet, TCP/IP, ModBus, USB, Active sensor bus, Display bus				