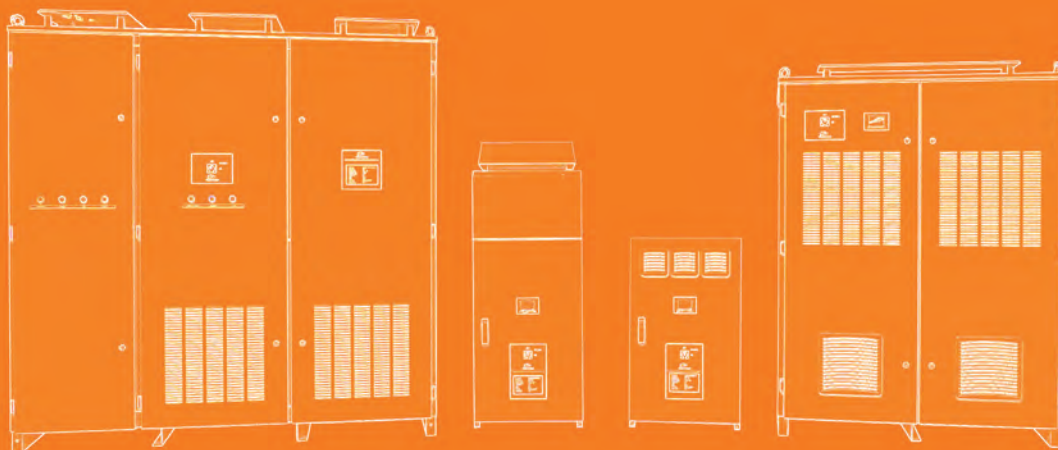


ACTIVE HARMONIC FILTERS



MERUS A-SERIES AND M-SERIES

A new generation of dynamic reactive power compensation and active harmonic filtering solutions.



POWER QUALITY SAVES MONEY AND ENERGY

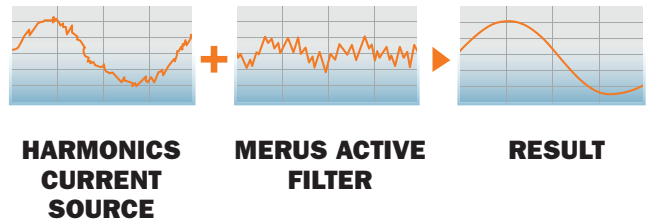
Power quality can affect the overall company performance, which is a fact easily overlooked by the management.

The Merus active harmonic filters provide a quick return on your investment. The device's quick and effective response to power system variations enables higher process reliability, longer equipment life, reduced energy losses and better productivity. It also makes it easy to comply with global power quality standards and demanding grid codes.

TACKLE YOUR POWER QUALITY CHALLENGES

Harmonic distortion, voltage variations, poor power factor and load unbalancing are among the key elements that not only test the reliability of modern electrical systems but also induce overall greater system losses.

Rise of non-linear and other challenging loads in modern electrical networks present unique power quality challenges. Sensitive operations, challenging loads and isolated or weaker grids demand stricter grid codes and power quality standards to safeguard industrial and commercial processes.



GOOD POWER QUALITY MEANS

- Energy efficiency
- Higher productivity in industrial plants
- Reduced maintenance costs
- Longer lifetime of electrical and process equipment
- Additional electric capacity in existing electrical network

SOPHISTICATED DYNAMIC COMPENSATION

Merus Power has developed a wide range of active harmonic filtering solutions to meet the needs of our customers in different market segments.

Merus active harmonic filters are designed for dynamic reactive power compensation and harmonic filtering. The state-of-the-art controller, modern touch-screen user interface and modular technical design combine into a fast, reliable and compact device that is easy to operate and complies with all standard communication protocols.

Merus active harmonic filters fast and dynamic response to voltage variations and harmonic distortions improves the reliability of your plant and extends its operational life. By improving power quality, Merus active filters increase process machinery uptime. That results in better productivity, reduced maintenance costs and therefore, higher profitability.

Energy losses and breakdown of key components of electrical systems such as capacitor banks, transformers, switch-gears, bus bars and cables can also be significantly reduced with Merus active harmonic filters.

PRODUCT HIGHLIGHTS

- Fast response time
- Compact size
- Modular cubicle and system design
- Modular controller concept
- Open and close loop
- Advanced user interface with 3.5" touch screen
- Sophisticated communications



MERUS ACTIVE HARMONIC FILTER KEY FUNCTIONS:

- Fast and effective mitigation of harmonics
- Voltage stabilization and flicker mitigation
- Balancing loads in three phase systems
- Improvement in power factor



ACTIVE FILTER RANGE THAT FITS TO YOUR APPLICATION

VERSATILE SOLUTION FOR COMMERCIAL BUILDINGS AND LIGHT INDUSTRIAL APPLICATIONS

Nominal current of individual unit: (50A 3W/4W, 100A 3W/4W, 150A 3W/4W, 200A 3W/4W)

Nominal voltage: 400V

Merus A-series active harmonic filter is the most suitable solution for commercial buildings and light industrial applications. A-series active harmonic filters have very fast response time and can effectively mitigate harmonics up to 50th. A50 and A100 can be wall mounted.

POWERFUL SOLUTION FOR LIGHT AND HEAVY INDUSTRIAL APPLICATION

Nominal current of individual unit: 420A

Nominal voltage: 690V

Nominal reactive power: 500kVAR

Merus M500 active harmonic filter can flexibly be used in both light and heavy industrial applications. Large pumps, compressors, kilns, paper machines and other heavy industrial loads fed by variable speed drives produce harmonics distortions. Such power quality challenges are easily addressable with Merus M500 active harmonic filters.

EXTRA-POWERFUL SOLUTION FOR DEMANDING INDUSTRIAL AND UTILITIES APPLICATION

Individual unit range: 820A

Nominal voltage : 960V

Nominal reactive power: 1350kVAR

Merus M1000, a very powerful active harmonic filter, has been designed for most demanding industrial applications. Active harmonic filtering and dynamic reactive power compensation functionality can flexibly be used for voltage stabilization and power factor improvement. Shredders, crushers, mine winders, conveyors and rolling mills are among the typical applications for Merus M1000 active filter.



**208V-
480V**



**480V-
750V**



**750V-
1000V**

OTHER VOLTAGES ON REQUEST

INNOVATIVE FEATURES FOR SUPERIOR PERFORMANCE

FAST AND EFFECTIVE

- Extremely fast response time ensures effective mitigation of harmonics and other power quality disturbances.
- Reduces voltage variations and flicker caused by fast fluctuating and heavy industrial loads.
- Balances loads in three phase systems.
- Global power quality standards such as IEEE-519 and G5/4 can be easily met with factory-tested Merus active harmonic filters.

SCALABLE

- To obtain higher power, several active filters can be installed in parallel.
- Conventional reactive power compensation can also be managed with Merus active harmonic filters user interface.

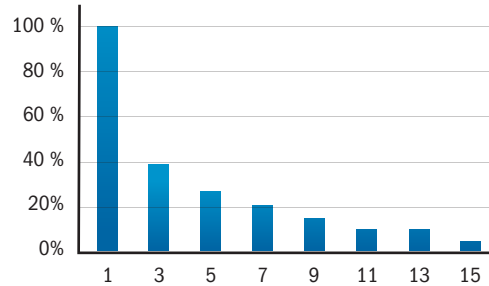
SMOOTH AND EASY OPERATION

- Advanced user interface with 3.5" touch screen makes it very easy and quick to configure the settings and commission the device.
- Systems of several devices, or even hybrid systems that include active filters and conventional reactive power compensation, can be managed with one HMI.
- Several language options are available.

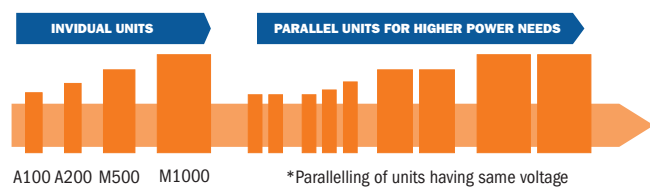
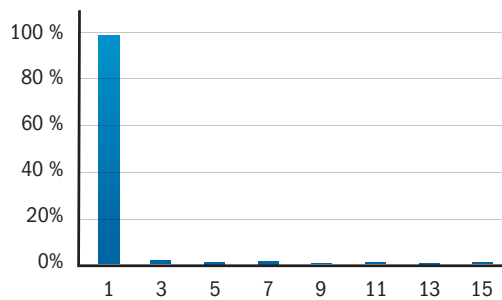
ADAPTABLE

- Unlike conventional technologies, changes in system configuration do not make the A-series active filter obsolete.
- Single device can flexibly fit to different operational requirements. Several operation modes enable tailoring of functionalities to address customer-specific power quality problems in most economic manner.

**HARMONIC SPECTRUM BEFORE
MERUS ACTIVE FILTER**



**HARMONIC SPECTRUM AFTER
MERUS ACTIVE FILTER**



USE WHEREVER A GOOD POWER QUALITY IS ESSENTIAL



Active filtering technology can be applied to industrial or commercial environments where good power quality is essential. It can be used to improve the power quality of variable speed drive-fed motors, compressors, pumps, conveyors, shredders, mixers, extruders, winders, grinders, crushers, DC Drives, welding equipment and UPS (Uninterrupted Power Supply) systems.

COMMERCIAL BUILDINGS

- Data centers & IT facilities
- Hospitals and laboratories
- Airports
- Shopping malls
- Financial institutions
- Hotels
- Residential buildings
- Ski resorts
- Amusement parks

INFRASTRUCTURE

- Water and wastewater treatment plants
- Heating, ventilation and air conditioning systems (HVAC)
- Wind farms
- Traction
- Metro stations
- Cranes
- Lifts
- Solar farms



INDUSTRY

- Steel industry
- Cement industry
- Food and beverages industry
- Oil and gas industry
- Chemical industry
- Pulp and paper industry
- Textile and clothing industry
- Pharmaceutical industry
- Microelectronic manufacturers
- Automotive industry
- Package sorting facilities
- Printing industry
- Marine vessels

TECHNICAL SPECIFICATIONS

MODEL	A50	A100	A150	A200	M500	M1000
Rating of individual units	50A	100A	150A	200A	420A	820A
Nominal voltage	Standard 400V ±10% (other voltages on request)				690V ±10%	960V ±10%
Harmonic performance	up to 50th harmonic - compliance with IEE 519 and G5/4, 95% reduction in THDi				up to 31st harmonic - compliance with IEE 519 and G5/4	up to 17th harmonic - compliance with IEE 519 and G5/4
Rated frequency	50 / 60 Hz				50Hz or 60Hz	
Operating modes	All harmonics/All harmonics but not fundamental/Selective harmonics				All harmonics/All harmonics but not fundamental/Selective harmonics	
Response time	<< 1 ms / 1 cycle (selective mode)				<< 1 ms / 1 cycle (selective mode)	
Switching frequency	10kHz				8kHz	4kHz
Controller	Real time digital control with FFT				Real time digital control with FFT	
Balancing capacity	100% * IN of active filter				100% * IN of active filter	
Neutral wire current	150A	300A	450A	Not available	Not available	Not available
3-Wire/4-Wire	3W & 4W	3W & 4W	3W & 4W	3W & 4W	3W	3W
Human-machine interface (HMI)	3,5" easy to use touch screen interface				3,5" easy to use touch screen interface	
HMI languages	8 languages including English-German-Spanish-Chinese-Russian. Others on request				8 languages including English-German-Spanish-Chinese-Russian. Others on request	
Monitoring	On-site and remote monitoring possibilities				On-site and remote monitoring possibilities	
Reporting	Reports data of power quality events up to previous one month				Reports data of power quality events up to previous one month	
Communication	Ethernet / RS485, ModBus				Ethernet / RS485, ModBus	
Cooling media	Air				Air	Liquid
Protection degree	IP 21, IP 34 as an option				IP 21, IP 34 as an option	
Ambient temperature	40°C, without derating				40°C, without derating	
Humidity	Maximum 95% RH; non-condensing				Maximum 95% RH; non-condensing	
Power losses	< 3 %				< 3 %	
Current transformers	3 pieces, secondary 5A or 1A, class 0,5 or better				3 pieces, secondary 5A or 1A, class 0,5 or better	
Dimension	600 x 600 x 1000	600 x 600 x 1000	600 x 600 x 1600	600 x 600 x 1600	1420 x 1100 x 2000	2120x1050x2220
Weight	110 kg	130 kg	280 kg	280 kg	1160 kg	2180 kg
Cable entry	Top or bottom	Top or bottom	Bottom	Bottom	Bottom	Bottom
Noise	60dB	66dB	68dB	68dB	70dB	80dB



WINNING BUSINESS WITH POWER QUALITY

Merus Power offers world-leading clean technology to improve power quality, energy efficiency and environmental performance. Our dynamic compensation solutions – active filters, STATCOMs and SVC's – solve your power quality problems in no time. You will enjoy a swift payback on your investment: our solutions save energy, increase productivity and capacity

and reduce energy costs. We provide our clients with world-class products, reliable Finnish technology, agile and flexible service, tailored solutions and true co-operation.

*Merus Power is a member of
Cleantech Finland.*

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