

Made in Germany



Power Quality Monitoring
Power Management
Cost Center Management

Power Quality Solutions:
Power Factor Correction
Harmonic Filter
Dynamic PFC
Active Harmonic Filter

Janitza
electronics

Janitza electronics GmbH...

... a German company founded in 1986. More than 20 years active in systems for efficient electricity usage - electrical energy measurement and cost saving. Janitza is globally well recognized as a supplier of power monitoring and power management devices, energy control systems, reactive power factor controllers and power quality solution systems. Tremendous experience gained over decades and countless of power quality-, power management – and load management - solutions supplied during this period all around the world to top class clients are speaking for themselves. Janitza stands for highest quality standards, high innovation rate and products with latest features produced with the most modern production

technology. Janitza's customers highly appreciate the flexibility towards user wishes as well as the convenient and user friendly usage of Janitza systems and products.

Janitza electronics GmbH is an innovation leader and spending more than 6% of its annual revenues for R&D and new innovative products. This is supported by an R&D team of highly qualified scientists and engineers with high degree of knowledge and long-standing affiliation to Janitza. As an enterprise with the factory situated in the centre of Germany close to Frankfurt airport Janitza offers you excellent logistic connection which ensures short delivery times and first class logistic service around the globe.



Rudolf Müller
Director Sales & Marketing Export



- a family driven company
- acting globally
- with the benefit of high flexibility and speed
- the product know how of a market leader
- market and application information from a global player
- state of the art management skills

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Provide triple savings by Power Quality Monitoring - Power Management - Power Quality Solutions

To achieve a competitive advantage in an enterprise, cost factors and outputs that affect the bottom line have to be controlled carefully. One important cost factor is the electricity bill for production, processes, facilities, buildings or infrastructure objects. However, the electricity bill is only one part – the visible one - of sometimes much higher cost, considering “polluted” and unreliable power. Besides direct electricity cost the effective usage of production equipment and reliable energy supply plays a major role in cost effectiveness.

Reduce Electricity Costs

You can remarkably decrease direct consumption-related electricity costs, i.e. reduce spending for your electricity bill. For property managers it means an enhancement of accuracy of energy settlements and customer electricity billing (“cost center management”). Utility bills are the peak, easy to see every month. By simply installing Janitza power quality monitoring systems, typically 2-4% savings can be realized – and that’s just the “tip of the iceberg” in terms of possible “earnings”.

- Review and reconcile utility bills to identify mistakes
- Identify energy inefficiencies and waste of energy
- Improve control mechanism by automatic meter reading and sub-metering
- Precise measuring and sub-billing of electricity cost
- Optimize energy purchase by precise demand forecasts
- Implement power factor correction, harmonic filtering and fact based electricity reduction concepts
- Reduce peak demand through load management

Optimize Equipment Utilization

Major portion of savings, using a Janitza system, can be achieved by going beyond utility bill — i.e. below the surface. Eliminating or delaying capital costs for new investments in distribution equipment (LV switchgear, transformer, cables, ..) additional 2-5% savings are possible by better utilizing the existing electrical infrastructure.

- Prolong equipment life by identifying stress factors (e.g. high harmonics, unbalanced systems or transients)
- By balancing loads on substations, transformers, distribution boards, and other distribution equipment overloads on individual branches can be avoided
- Optimize use of existing distribution equipment capacity to delay or eliminate capital expenses
- Compare the performance of facilities or processes and identify low performer
- Active load management can disconnect uncritical loads to cut-off peak loads

Improve System Reliability and Ensure Stable Processes

Power problems, poor power quality as well as unreliable power (brown-outs, black-outs) risk productivity of your enterprise.

Substantial savings are behind this point. Up to 10% have been reported from satisfied customers. Janitza UMG systems provide the technology to deliver the appropriate depth and reliability of information in order you can identify root causes, develop counter measures and act accordingly.

- Time stamp and event sequence recording support failure tracking
- Identify and isolate root causes fast by using real time data as well as historical and event data
- Set thresholds and get early warning and remote alarm of exceeded system parameters
- Control system parameters and reliable equipment operation and identify weak points
- Identify power quality problems, e.g. transients, voltage interruptions, harmonics, ...
- Determine remedial measures based on accurate data
- Perform proactive equipment maintenance and monitoring



Janitza's 3P-Strategy & Scope of Products and Services for every business and application

Janitza's products, systems and services are the industry's most comprehensive offer – from power quality monitoring over load management down to power quality solutions. This unique offer out of one hand ensures you highest energy efficiency, energy reliability and helps to achieve your cost saving targets.



Janitza's products and solutions are ideal for businesses and applications of all sizes and types, including following areas:

Industrial

Manufacturing and processing

Buildings

Commercial (shopping malls ...), offices, universities, government, banks ...

Infrastructure & Transport

Airports, train stations, water and waste, IT and data centers, hospitals, telecom ...

Power Utilities

Electricity Distribution

P – Power Quality Monitoring

The first step improving your process or system is to measure, monitor and identify the important electricity parameters in your application. Janitza is offering you a complete family of power quality monitoring devices and meters – UMG series - which enables you to look closely into your electricity systems, set thresholds and give alarms if exceeded, or monitor power quality in line with common standards (e.g. EN50160). Janitza's PSW software package, circuit monitors, power meters and power quality analysers offer energy and power monitoring with real time diagnostics from the supply transformer up to the entire enterprise level. Embedded

WEB server and features for communication ensure that the information reaches the person in charge, in time, at the right place, for taking immediate decisions based on real time facts and data.

P – Power Management

Proactive managing your electrical power considering topics such as peak load management as well as cost center management. With the two product groups UMG 507 and ProData your application can be actively managed in terms of power peaks, energy consumption and billing.

The ProData series for example allows you a transparent and easy billing system within an enterprise, cost center by cost center monitored and billed separately. This enhances transparency and allows specific and dedicated allocation by cost center, most important for correct cost determination of your products and services or sub-billing of electricity cost.

P – Power Quality Solutions

Power Quality as well as supply reliability is of major importance and matters a lot in nowadays business environment. Highly sensitive equipments and processes are heavily depending on a specified power quality in clearly defined and narrow tolerance bands. On the other side the number of "polluting" equipments increases day by day. And on top power utilities reduce safety margins and redundancies in their equipment due to profit orientation not only since energy markets liberalizations started in a number of countries.

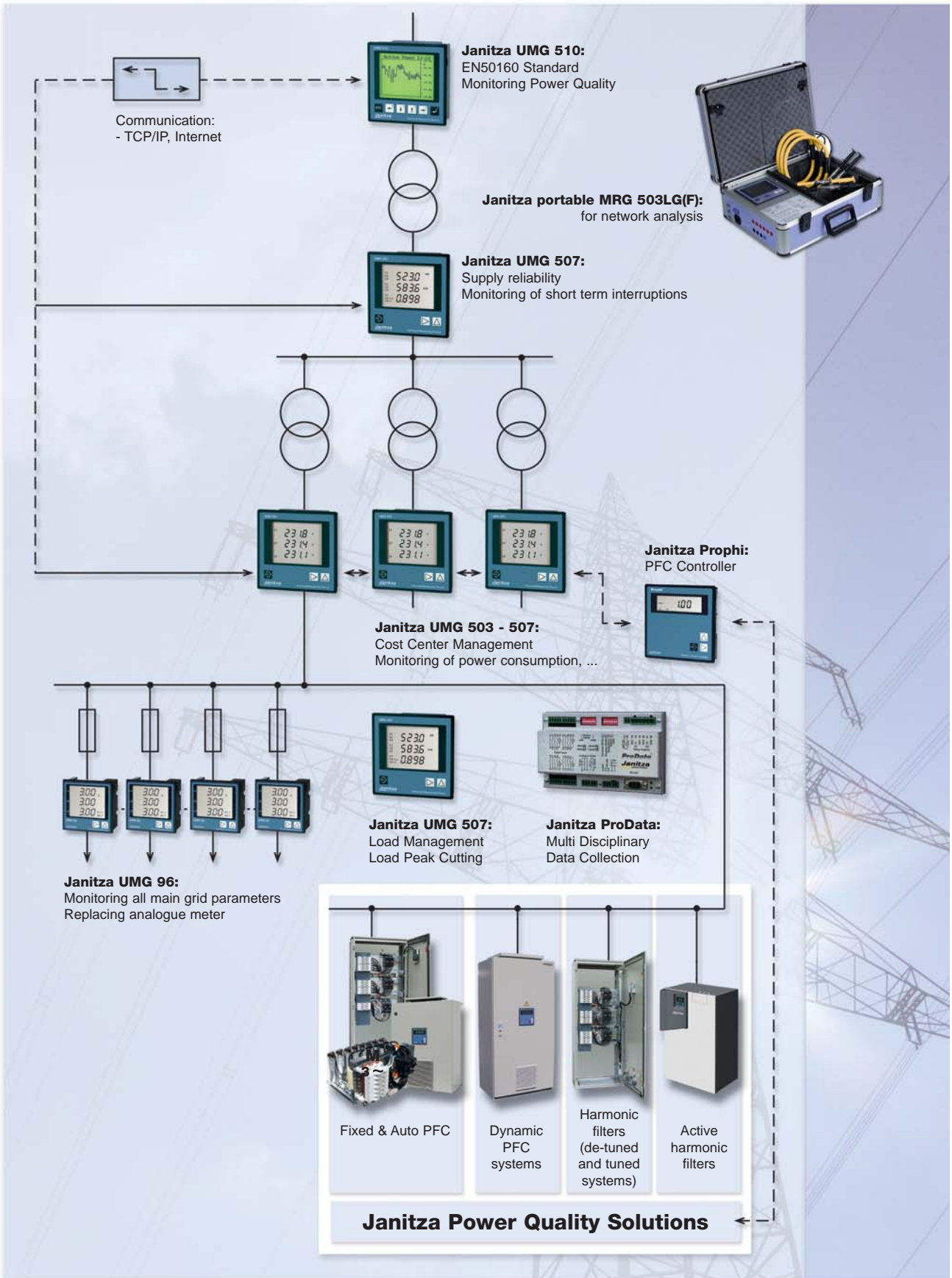
Janitza is offering a comprehensive package of power quality solutions, dealing with:

- Reactive Power Improvement
- Harmonic distortions
- Transients
- Fast changing loads
- Voltage drop
- High electricity bills

All Janitza Power Quality solutions are fully integrated into the 3P-strategy, utilizing data from the Power Monitoring Devices, considering actions from Power Management, communicating based on globally most common bus standards and protocols. Embedded WEB server and PSW software package allows visualization and control of the improvements.

Power Quality is not directly visible – investment into Power Quality does not contribute directly to your production facilities or main purpose of your enterprise - but it matters a lot for your EBIT targets and the bottom line!

Various products of Janitza in the application in various grid levels and connection points



MATRIX PRODUCTS, OVERVIEW WITH FEATURES



Type	UMG 96L	UMG 96	UMG 96S							UMG 503							
			L	LG	LS	S	OV	V									
Ordering Code	52.14.001 (52.14.005)	52.09.001 (52.09.002)	52.13.001	52.13.005	52.13.009	52.13.017	52.13.013	52.13.021	52.13.025	52.13.029	52.07.017	52.07.027	52.07.028	52.07.008	52.07.006	52.07.001	
Measuring range L-N, AC	50 - 255V, (16 - 80V)*1	50 - 275V, (60 - 276V)*1	50 - 300V (25 - 150V)*1							50 - 500V							
Measuring range L-L, AC	86 - 442V, (28 - 139V)*1	86 - 476V, (85 - 135V)*1	87 - 520V							80 - 870V							
Supply voltage L-N, AC	196 - 255V, (45 - 80V)*1	96 - 275V, (49 - 76V)*1	85-300V(5213025; 140 -300V) -							-							
Auxilliary voltage	-	-	only 52.13.029; 18 - 70V DC, 18 - 33V AC							85 - 265V AC; 80 - 370V DC*1							
Three / Four Wire	-/●	-/●	-/●							●/●							
Quadrants	4 *4	4 *4	4							4							
Random measurement	●	●	●							●							
Number of samplings / second	1	1	1							2							
Averaging time / ms	20	20	120							20							
Permanent measurement	-	-	-							-							
Harmonics order V/A	-	-	1,3 ... 15							1 - 20							
THD V in %	-	-	●							●							
THD I in %	-	-	●							●							
Unbalance	-	-	-							-							
Positive/Negative/Zero sequence	-	-	-							-							
Actual flicker intensity	-	-	-							-							
Short/long term flicker	-	-	-							-							
Transients	-	-	-							-							
Trigger events	-	-	-							-							
Accuracy V, A	+-1% vMb	+-1% vMb	+-0,5% vMb							+-0,2% vMb							
Real energy class	2	2	1							1							
Operating hours counter	●	●	●							-							
Weekly switch clock	-	-	-							-							
Auxilliary input	-	-	-							-	-	-	-	-	1*3	1	
Digital inputs	-	-	-	-	-	-	(2)	(2)	(2)	-	-	-	-	-	-	-	
Digital outputs	-	●	2	2	2	2	2	(2)	(2)	(2)	-	-	-	-	-	-	
Relay outputs	-	-	-							-	-	-	-	-	2*3	2	
Analogue inputs	-	-	-							-	-	-	-	-	-	-	
Analogue outputs	-	-	-	-	-	(2)	(2)	-	-	-	-	-	-	-	1*3	1	
Thermistor input	-	-	-							-							
Intergrated logic	-	Comparator	Comparator							Comparator							
Min/max value storage	●	●	●							●							
Memory capacity	-	-	-	-	160k	512k	512k	-	-	-	80k	128k	512k	128k	128k	512k	512k
Number of stored values	-	-	-	-	160k	160k	-	-	-	-	80k	320k	80k	80k	320k	320k	
Timer	-	-	-	-	●	●	-	-	-	-	●						
Bimetal function A / kW	●	●	●							●							
Malfunction recorder	-	-	-							-							
Power Management	-	-	-							-							
Software	-	-	PSWbasic/ Option: Professional							PSWbasic / Option: Professional							
Interfaces																	
RS 232 (Modbus RTU)	-	-	-	-	●	●	-	-	-	-	●	●	-	-	●	●	
Modem	-	-	-	-	●	●	-	-	-	-	●	●	-	-	●	●	
RS 485 (Modbus RTU)	-	-	-	-	●	●	-	-	-	-	-	-	●	●	●	●	
Modbus-Gateway	-	-	-							-							
Profibus DP	-	-	-	-	-	-	-	●	●	-	-	-	-	●*3	●*3	●*3	
LON	-	-	-							-							
Ethernet	-	-	-							-							
Webserver / Email	-	-	-							-							
Protocols																	
Modbus RTU	-	-	●							●							
Profibus DP V0	-	-	-	-	-	-	-	-	●	●	-	-	-	●*3	●*3	●*3	
LonTalk	-	-	-							-							
Modbus TCP/IP	-	-	-							-							

MATRIX PRODUCTS, OVERVIEW WITH FEATURES



Type	UMG 505				UMG 507						UMG 510
	MOD	MOD	LON	LON	L	EL	AD	P	E	EP	
Ordering Code	52.10.004	52.10.007	52.10.001	52.10.013	52.15.004	52.15.021	52.15.003	52.15.002	52.15.001	52.15.005	52.12.001
Measuring range L-N, AC	50 - 500V				50 - 500V						5 - 500V
Measuring range L-L, AC	80 - 870V				80 - 870V						8 - 870V
Supply voltage L-N, AC	-				-						-
Auxilliary voltage	85 - 265V AC; 80 - 370V DC*1				85 - 265V AC; 80 - 370V DC*1						95 -265V AC / 100 - 370V DC
Three / Four Wire	●/●				●/●						●/●
Quadrants	4				4						4
Random measurement	●				-						-
Number of samplings / second	2				-						-
Averaging time / ms	20				200						200
Permanent measurement	-				●						●
Harmonics order V/A	1 - 20				1,3 - 15						1 - 50
THD V in %	●				●						●
THD I in %	●				●						●
Unbalance	-				●						●
Positive/Negative/Zero sequence	-				●						●
Actual flicker intensity	-				-						●
Short/long term flicker	-				-						●
Transients	-				-						70µs
Trigger events	-				●						●
Accuracy V, A	+-0,2% vMb				0,2% rng						+- (0,2% rdg+0,02% rng)
Real energy class	1				1						1
Operating hours counter	-				●						-
Weekly switch clock	●				●						-
Auxilliary input	-				-						-
Digital inputs	4				6	-	6	6	6	6	8
Digital outputs	5				6	-	6	6	6	6	5
Relay outputs	-				-	-	-	-	-	-	-
Analogue inputs	-				-	-	1	1	1	1	-
Analogue outputs	4				-	-	2	2	2	2	-
Thermistor input	-				-	-	1	1	1	1	-
Intergrated logic	Comparator				●						Comparator
Min/max value storage	●				●						●
Memory capacity	512k				256k	16MB	256k	256k	16MB	16MB	128MB
Number of stored values	320.000				18k	1.000k	18k	18k	1.000k	1.000k	5.000k
Timer	●				●						●
Bimetal function A / kW	●				●						-
Malfunction recorder	-				●						●
Power Management	-				●						-
Software	PSWbasic/ Option:Professional				PSWbasic/ Option: Professional						PAS510
Interfaces											
RS 232 (Modbus RTU)	●	-	●	-	●	●	●	●	●	●	-
Modem	●	-	●	-	●	-	●	●	●	●	-
RS 485 (Modbus RTU)	-	●	-	●	●	-	●	●	●	●	●
Modbus-Gateway	-	-	-	-	-	-	-	-	●	●	●
Profibus DP	-	-	-	-	-	-	-	●	-	●	●
LON	-	-	●	●	-	-	-	-	-	-	-
Ethernet	-	-	-	-	-	●	-	-	●	●	●
Websrver / Email	-/-	-/-	-/-	-/-	-/-	●/●	-/-	-/-	●/●	●/●	●/-
Protocols											
Modbus RTU	●	●	●	●	●	●	●	●	●	●	●
Profibus DP V0	-	-	-	-	-	-	-	-	-	●	●
LonTalk	-	-	●	●	-	-	-	-	-	-	-
Modbus TCP/IP	-	-	-	-	-	●	-	●	●	●	●

- : not included

● : included

*1 Other voltage optionally
 (2) Combinations of inputs & outputs: a) 2 digital inputs, b) 2 digital outputs, c) 2 analogue outputs, d) 1 digital & analogue output, e) 1 digital output & one digital input.
 *3 Option *4 not for energy

Power Monitoring-, Power Management-Analysis Software PSW Professional

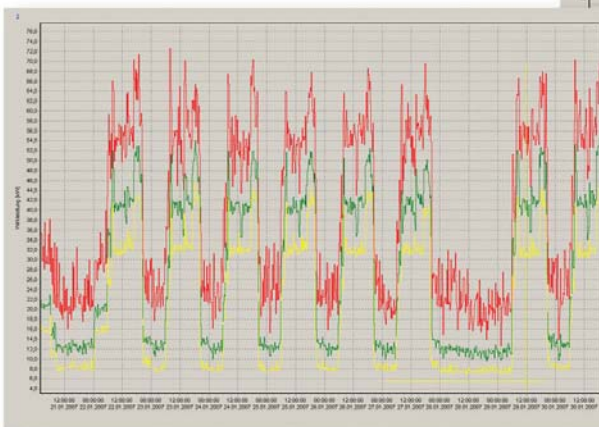
PSW Professional energy management software is a comprehensive package of software tools easy to use and with one INTERFACE for all Janitza instruments. This software includes a family of applications, e.g. for visualizing all data retrieved from UMG series instruments. In integrated solutions all Janitza instruments, i.e.

UMG96, UMG503, UMG505, Prophi Power Factor Controller, UMG507 load management and ProData data collection for cost centre management can be displayed. Measurement data can be online retrieved and automatically filed. For the system analysis the software offers alphanumeric as well as graphical tools.

PSW Professional Features

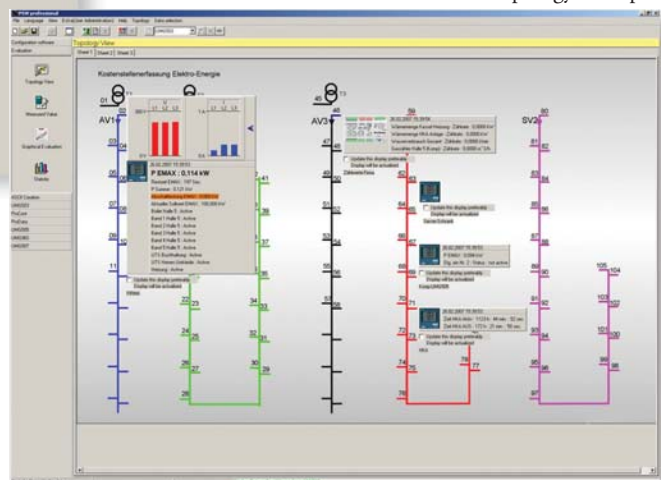
- Supported device types : UMG503, 505, 507, 96S, ProData, Prophi RS
- Supported PC operation systems : Windows 2000, XP
- Database support (MySQL, ACCESS)
- Integrated DDE Server
- Upgradeable to maximum 255 devices in one project
- Graphical analysis of ringbuffer-data
- Topological view (with background image and visualization of values from online-readout)
- Line plot function for values from online-readout
- Time scheduled ringbuffer-readout configurable
- Supports analogue modems
- Information : Software PSWbasic for configuration of devices already included in delivery

Example of a trigger event, one phase voltage and current.



Evaluation of sum real power with maximum, average and minimum value.

Topology example



MRG 503LGF - Portable power analyser and needs for analysing power quality

The portable power analyser MRG 503LGF is suitable for measurement and storage of all main electrical parameters in low voltage mains including full harmonic analysis.

Up to 320.000 measured values can be saved and read out via the interface RS232. The measurement instrument is designed for one and three phase systems and a measurement voltage of phase to neutral 50-500 VAC, phase to phase 80-870VAC (auxiliary voltage 85-265 VAC).

This power analyser is suitable for flexible current transformers with a voltage output of 3,0 VAC or current clamps.

The dimensions of the aluminium case are W480xD395xH195mm.

The measuring wires, voltage grips as well as the configuration and reading out software PSWbasic belong to the contents of delivery.

The flexible CTs are optional and do not belong to the contents of delivery.



Janitza's PFC and PQ Solutions (active filter, dynamic PFC, harmonic filters, ...)

Power Factor Correction Systems

Inductive loads, typically induction motors cause a phase shift between voltage and current due to the magnetizing current required to maintain the magnetic field. This phase shift results in an unwanted reactive power and an additional current load on distribution equipment, which has to be avoided due to government and power utilities regulations in most countries globally.

Standard solution to tackle this matter is Power Factor Correction by means of shunt capacitors. Janitza's automatic PFC systems with highly advanced Propfi power factor controller ensure an intelligent and precise control of the phase shift and ensure to keep electricity bill to a minimum. A fast return on investment, typically 1-2 years, and long life expectancy provide long term savings.

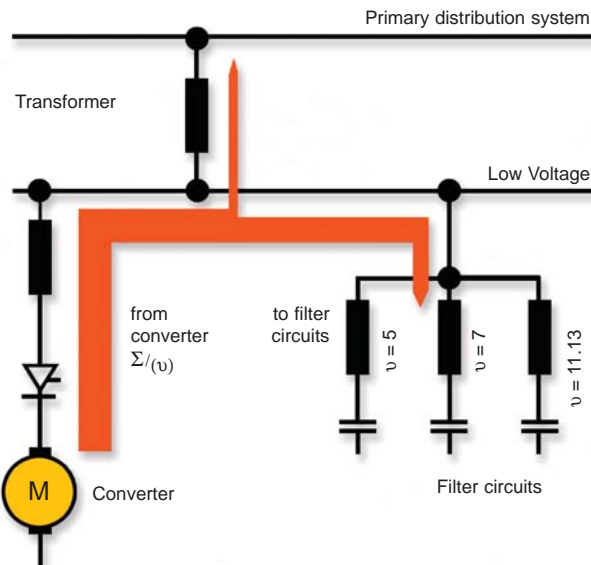


Harmonic Filters, Passive - De-tuned

Nowadays an increasing amount of non-linear loads causes grid pollution, similar to well known air and water pollution. Harmonics are harmful for electrical systems and connected loads such as polluted water is dangerous for the human body. Not only electronic and measurement equipments are malfunctioning, but as well electrical loads such as motors show overload and faster deterioration and in worst case early breakdowns.

Harmonic pollution is one of the key root causes for invisible power quality problems with tremendous cost for maintenance and investment for replacing defective equipment.

Janitza's harmonic filters are an one time investment avoiding such effects and paying back extremely fast considering a reliable power supply and high power quality standards.



Tuned Harmonic Filters

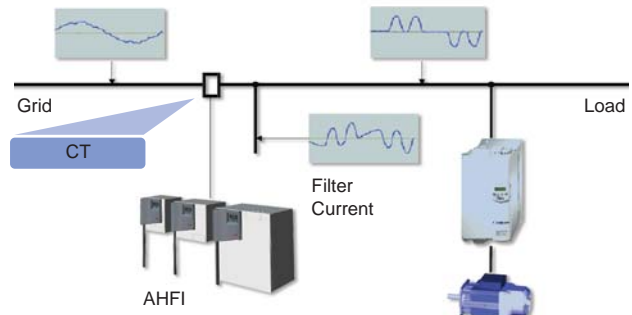
In case of weak grids and high harmonic pollution (e.g. DC-drive for ski lift) or in cases in which power utilities ask for very specific targets of THD-V levels it may be necessary to have a higher reduction of harmonics by more than what de-tuned systems can achieve. In such cases tuned harmonic filters can be a solution.

Tuned filters are closely tuned to the main harmonic frequencies (e.g. 5th, 7th and 11th) and provide very low impedance passes to these frequencies, and consequently absorb currents of these frequencies – cleaning grids from harmful pollution.

Active Harmonic Filters – AHFI

Active harmonic filters are used for cleaning polluted networks. Such highly sophisticated systems are especially used in applications in which:

- Clearly defined pollution level has to be ensured
- High neutral distortion has to be corrected
- Additional reactive power is not allowed to be installed (e.g. banks, IT centre ...)
- Extremely high distortion (e.g. conventional passive filters do not sufficiently reduce harmonic pollution)



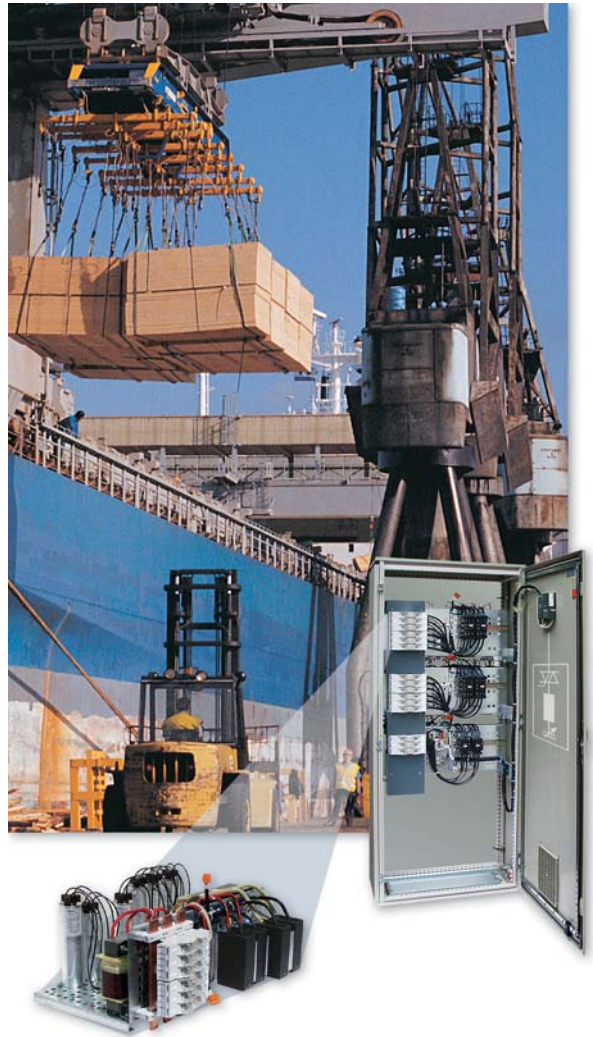
Dynamic PFC

Dynamic PFC systems are used in applications with high and frequent load changes. In such cases conventional PFC systems are not fast enough to follow the load change, i.e. the systems tends to be either under- or overcompensated. And even more important is the fact that electromechanical contactors are not built for such high number of switching cycles. A fast wear of contactors leads to damages and safety risk of PFC capacitors. Dynamic PFC systems overcome these challenges by means of replacing mechanical contactors with semiconductor switches. Semiconductor switches are smoothly switching capacitors without grid disturbances and high stress levels for capacitors.

Dynamic PFC systems are typically used in following applications:

- Automotive industry (welding, presses, ...)
- Lifts and cranes
- Large motor start-up compensation
- Crude oil drilling
- Wind turbines
- Welding

Please ask for our application note "Dynamic Power Factor Correction" for more details.



Visit our Web at www.janitza.com



Product details for all above mentioned solutions can be found at www.janitza.com, or simply send an Email to info@janitza.com and ask for the specific product catalogues.



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- | | |
|--|--|
| <input type="checkbox"/> Product range overview with pricelist | <input type="checkbox"/> Power Quality Solutions |
| <input type="checkbox"/> Power Quality Monitoring | |
| <input type="checkbox"/> Power Management | <input type="checkbox"/> Please call me back |
| <input type="checkbox"/> Cost Center Management | <input type="checkbox"/> Please contact me for further information |

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