ARTEMES

arte[s] me[nsioni]s - The Art of Measuring
Power & Energy
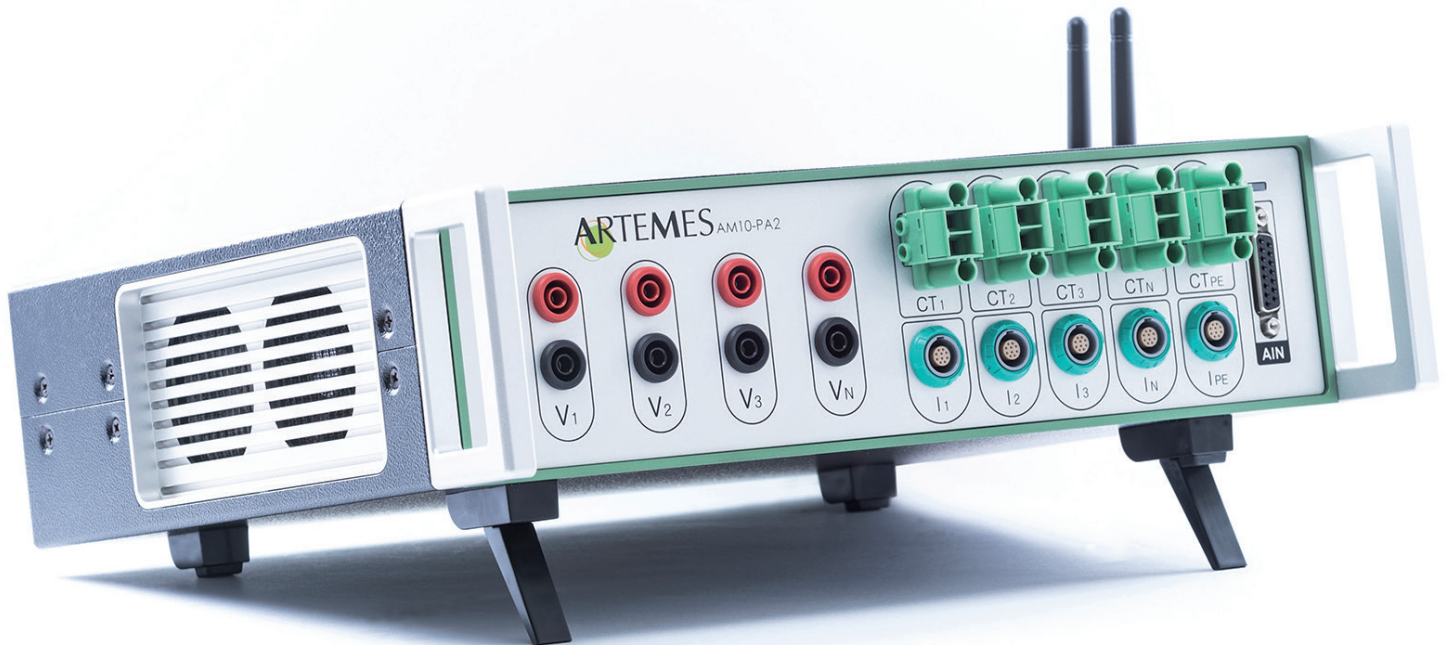
24 BIT RESOLUTION

Power Analyser
AM-10-PA2

2 M SAMPLES PER SECOND

Power Analyser
AM-10-PA2

- PQ + PMU + PFR + PM + DFR

- 24 bit resolution

- 2M samples/sec. fault recorder and data streaming

- measurements and analyses via web browser

- **A**RTE**M**ES CLOUD interface

- online FFT 2-9 kHz (200 Hz-package) and 8-150 kHz (2 kHz-package)

- 4 voltages and 5 currents

- oscilloscope even on a smart phone

- GPS-synch.

The **A**RTE**M**ES Power Analyser AM-10-PA2 is a strong 24-bit instrument and combines the tasks of energy consumption and power quality analysis with the state of the art possibilities of modern telecommunication technology. Beside the operation via web interface with e.g. smartphone or PC also all post processing opportunities are available via the worldwide web - as a browser application directly on the instrument, on a dedicated server or by using the **A**RTE**M**ES CLOUD service.

Beside classical energy and power analysis according to EN 50160 the instrument offers the new frequency bands up to 9 kHz or 50 kHz and with the option AM-10PA2-Opt 2 MS even up to 150 kHz. Flicker emission and evaluations according to IEC 61400 also belong to the enhanced functionality of the analyser.

Also in terms of measurement connections the AM-10-PA2 offers various possibilities. Beside the single-phase connection and the two-phase connection, three-phase star and delta connection are available as well. In addition, the transformer saving connections Aron and V have already been included. With the standard model AM-10-PA2 even low voltage grids including neutral line and earth conductor can be measured.

energy and power quality
EN 50160, IEC 61000-2, IEC 61000-3, IEC 61400
IEC 61000-4-30 class A
LAN, WLAN and GSM
web technology for operation and post processing via browser
phasor measurement unit

Measurement Functions

Overview - Online

showing a recorder with actual data,
as vectorscope and as numeric values

recording mode or simulation mode
RMS, AVG, Min, Max (10 period values,
adjustable)

RMS, AVG (period values, adjustable
overlapping and duration)
U, I, P, Q, S, D, PF, unbalance, cos phi

flicker, flicker emission
IEC 61000-4-15: 2012 class F1

frequency

symmetrical components
IEC 61000-4-30: 2008 class A
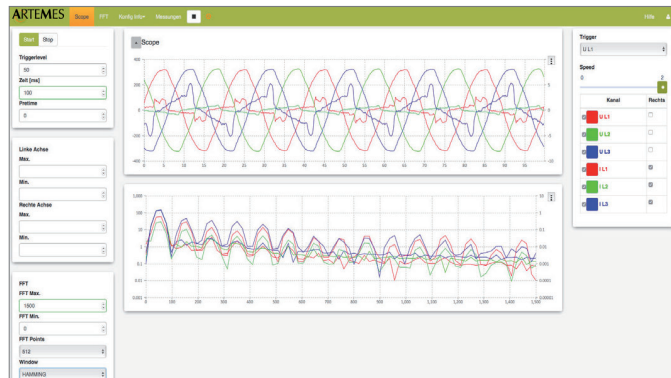and IEC 61400-21: 2008

Oscilloscope - Real-Time

real time-scope in the web browser

voltage and current

scaling left or right, adjustable

FFT with filters:
HANN, HAMMING, RECTANGULAR, BLACK-
MAN, BARTLETT, BARTLETTHANN, COSINE,
GAUSS; LANCZOS, TRIANGULAR

FFT - Real-Time

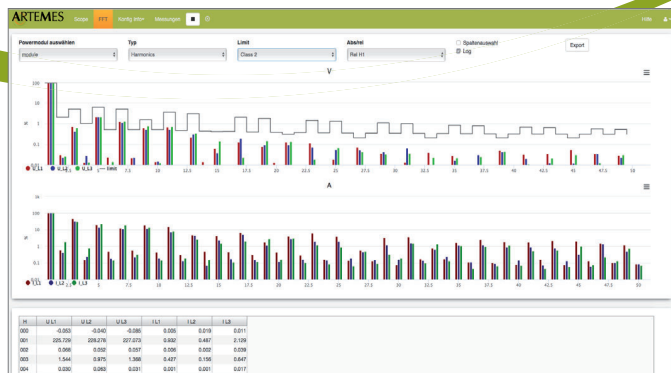voltage, current, power, phase angle

phase and line voltage

bar diagram and numeric values

IEC 61000-4-7: 2009 Class 1

interharmonics
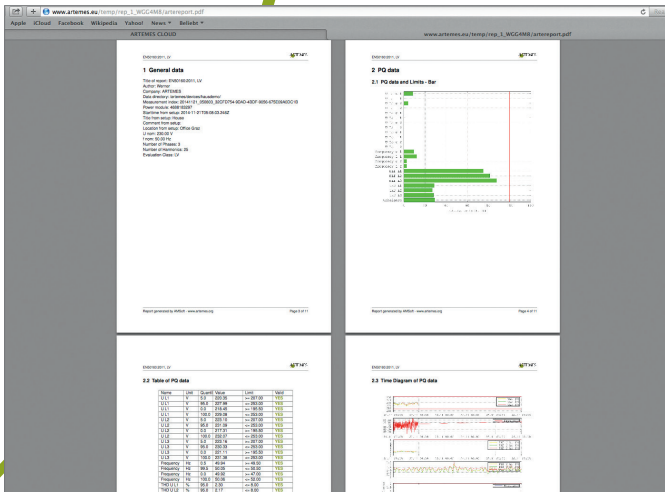
frequency bands 2-9 kHz in 200 Hz-groups

frequency bands 8-50 kHz in 2 kHz-groups or
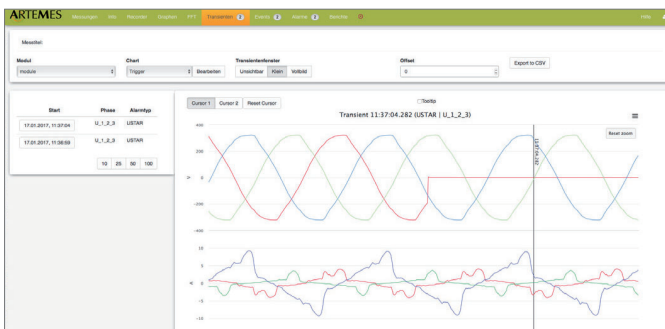frequency bands 8-150 kHz (AM-10-PA2-H)

Dynamic Reports

diagrams of individual channels

predefined templates

zoom-in and zoom-out possibilities

Static Reports

report generator to define complete reports, predefined reports according to:

EN 50160: 2011, energy (ISO 50001)

IEC 61000-2-4: 2002

IEC 61400-12-1: 2007
(option AM-10-PA2-Opt Wind)

IEC 61400-21: 2008
(option AM-10-PA2-Opt Wind)

individual diagrams

event statistics

Transient Fault Recording and Data Streaming

fast transient recorder (TFR)

disturbance recorder (DFR)

event recorder EN 50160: 2011
IEC 61000-4-30: 2008

zoom-in and zoom-out possibilities

statistical evaluation: DisDip/Unipede, CBEMA, events according to EN 50160: 2011

2 MSamples/sec. (AM-10-PA2-H)

data streaming with full sampling rate continuously possible

Technical Data

		AM-10-PA2	AM-10-PA2-H
voltage inputs		4	4
	range	+/-1.600V	+/-1.600V
	accuracy (on value, 5-100% of range)	0,1%	0,1%
current inputs		5	5
	clamp 5A (order code: AM-CL-5)	AC	AC
	range	5A	5A
	accuracy	0,5%	0,5%
	Rogowski coil (order code: AM-CL-Rog10K)	AC	AC
	range	10 / 100 / 1k / 10 kA	10 / 100 / 1k / 10 kA
	accuracy	1%	1%
	DC Clamp (order code: AM-CL-300DC)	AC + DC	AC + DC
	range	150A / 300A peak	150A / 300A peak
	accuracy	0,5%	0,5%
	direct current input (included)	AC + DC	AC + DC
	range	5A	5A
	accuracy	0,5%	0,5%
	other clamps (https://store.artemes.org/zubehoer/stromsensoren/)	on request	on request
measurement parameters	resolution	24 bit	24 bit
	sampling rate	up to 144 kSamples/sec. per channel	up to 2 MSamples/sec per channel
	bandwidth	70kHz	900kHz
additional inputs	low voltage +/- 10V	4 channels / each 144 kSamples/Sec	4channels / each 2 MSamples/sec
measurement values	phase voltages, neutral voltage	✓	✓
	line voltages	✓	✓
	phase currents, neutral current, earth current	✓	✓
evaluation online	web interface	✓	✓
	recorder - diagram and actual values	✓	✓
	scope	✓	✓
	FFT	✓	✓
data processing	flexible report generator on web	✓	✓
	EN 50160	✓	✓
	IEC 61000-2-4 class 1,2,3	✓	✓
	IEC 61400-12-1	option: AM-10-PA2-Opt Wind	option: AM-10-PA2-Opt Wind
	IEC 61400-21	option: AM-10-PA2-Opt Wind	option: AM-10-PA2-Opt Wind
	ISO 50001 energy report	✓	✓
data storage	internal SSD (not rotating)	2 x 256 GB	2 x 256 GB
	ARTEMES server	licence included (max 3 measurement clients)	licence included (max 3 measurement clients)
	ARTEMES CLOUD	option: AM-10-CLOUD	option: AM-10-CLOUD
communication ports	USB 2.0 / 3.0	2 / 1	2 / 1
	RS485	1	1
	LAN	1	1
	WLAN	✓	✓
	GSM	option: AM-10-PA2-Opt GSM	option: AM-10-PA2-Opt GSM
	CAN	✓	✓
	GPS	option: AM-10-PA2-Opt PMU	option: AM-10-PA2-Opt PMU
EMC	IEC 61326-1 industry	✓	✓
	IEC 61000-4-4 surge, IEC 61000-4-5 burst	4 kV	4 kV
	isolation (AC, 1 min)	6 kV	6 kV
safety	IEC 61010-1	✓	✓
dimensions	width x height x length	390 / 105 / 310 mm	390 / 105 / 310 mm
power supply	AC - V/f	85-264 VAC / 47-63 Hz	85-264 VAC / 47-63 Hz
	DC option instead of AC (AM-10-PA2-Opt DC)	6-36 V DC	6-36 V DC
	internal battery	3 hours	3 hours
power consumption	VA	30 VA	70 VA
weight	kg	5,7 kg	5,7 kg
temperature range	operation	-20°C to +60°C	-20°C to +60°C
	storing	-20°C to +80°C	-20°C to +80°C
order options			
AM-10-PA2-Opt Wind		software option	software option
	wind report according IEC 61400-12-1 and IEC 61400-21, for		
AM-10-PA2-Opt PMU	PMU - phasor measurement add-on including software according IEEE C37.118 and GPS input, for AM-10-PA2	software option	software option
AM-10-PA2-Opt GSM	GSM modem, internal, for AM-10-PA2	hardware option	hardware option
AM-10-PA2-Opt DC	DC power supply instead of AC, without battery	option only available with new instrument	option only available with new instrument
AM-Cloud-1	rent cloud space per month on ARTEMES server	online option	online option

Accessories

ARTEMES CLOUD
AM-CLOUD
ARTE**M**ES CLOUD for safe data storage and worldwide access via the web

external antenna for GSM / WLAN module
AM-10-antenna
external antenna with magnetic bottom

Rogowsky coil 10.000 A
AM-CL-Rog10k
flexible coil for measuring on bus bars and cables ranging from A to 10 kA

clamp 5 A
AM-CL-5
precise clamp for small currents with Mumetal, from mA to 5 A

DC clamp 300 A
AM-CL-300DC
current clamp for measuring direct and alternating current, very precise

carrying case
AM-HC-L (551/422/268)
carrying case as protection against water, dust and vibration, offers space for measurement instrument and accessories, has rollers and an extendible handle

leadfuse for leads 4 mm, 3 black
AM-Leadfuse

screw adapter, 5 black + 5 blue
AM-screwadapter
screw adapter for leads 4 mm

alligator clamp, 5 black
AM-alligator clamp

magnetic adapter, 5 black
AM-magnetic adapter

set of voltage leads 4 mm
AM-10-leads
5 leads black, 2 m
5 leads blue, 2 m

For further accessories and additional information please visit store.artemes.org.

Measurements for Power Applications

System Integration and Monitoring Solution

energy management systems
for commerce and industry

convenient generation
of reports

load profile measurings and
multi-channel power analyses

data compression and data base solutions
for easy and individual use

ARTEMES

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power quality analyses according
to definded standards

cloud solutions for continuous and
distributed measurement tasks

qualification of power plants
with renewables

automated test sequences
for repeated testings

software and hardware solutions
for individual test bench systems

ARTEMES GmbH | sales@artemes.org | www.artemes.org

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