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NETWAVE SERIES (1-PHASE)

PROGRAMMABLE MULTIFUNCTIONAL AC/DC POWER SOURCES

FOR TESTS ACCORDING TO ...

› AIRBUS
› BOEING
› DO 160 Section 16
› EN 61000-3-11
› EN 61000-3-12
› EN 61000-3-2
› EN 61000-3-3
› EN 61000-4-11
› EN 61000-4-13
› EN 61000-4-14
› EN 61000-4-17
› EN 61000-4-28
› EN 61000-4-29
› IEC 61000-3-11
› IEC 61000-3-12 Ed.2:2011
› IEC 61000-3-2
› IEC 61000-3-3
› IEC 61000-4-11
› IEC 61000-4-13
› IEC 61000-4-14
› IEC 61000-4-17
› ...

NETWAVE - SIMULATION OF THE MOST REQUIRED POWER SUPPLY PHENOMENON

The NetWave series (1-phase) are single phase AC/DC power sources, specifically designed to meet the requirements as per the standards IEC/EN 61000-4-13, -4-14 and -4-28. Used as a DC power source it covers the requirements as per the standards IEC/EN 61000-4-17 (Ripple on DC) and IEC/EN 61000-4-29 for voltage dips and interruptions on DC supplies. With its low distortion and high stability, even if supplying dynamic loads, the NetWave series guarantees full compliant measurements for harmonics and flicker testing as per IEC/EN 61000-3-2,-3-3, -3-11 and -3-12 as well as JIS C 61000-3-2. The NetWave series is well suited for testing inverters (e.g. solar power, wind power) and e-vehicles.
Additionally, the NetWave series (1-phase) offers the necessary capabilities for avionics testing as per DO-160, Airbus ABD0100 and Boeing as well as per MIL-STD-704.

HIGHLIGHTS

› **Wide Power Bandwidth; DC - 5 kHz**
› **Output Power up to 7,500 VAAC and 9,000 WDC**
› **Output Voltage max. 360 VAC and +/- 500 VDC**
› **High Inrush Current Capability up to 200 A**
› **Extended trigger and control capabilities (NetWave 7.3)**

APPLICATION AREAS

INDUSTRY
AVIONICS
MEDICAL
MILITARY
RESIDENTIAL
RENEWABLE ENERGY

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TECHNICAL DETAILS

BENEFITS

NETWAVE - THE POWERFUL MULTITALENT FOR AC AND DC SUPPLY SIMULATION

The programmable AC and DC power source with its wide frequency bandwidth offers powerful waveform generation capabilities for various test applications in the EMC area and for avionics testing. Based on a Dual-Processor technology, with an integrated high-performance PC, a digital signal processor (DSP) and equipped with a hard disk the NetWave is capable to generate and record waveforms in realtime.

Its output power with low distortion and high stability, even if supplying dynamic loads, guarantees full compliant measurements for harmonics and flicker testing as per IEC/EN 61000-3-2, JIS C 61000-3-2 and IEC/EN 61000-3-3 as well as per IEC/EN 61000-3-11 and IEC/EN 61000-3-12. The NetWave is well suited for testing inverters of solar and wind power generators and e-vehicles. Additionally, the NetWave offers full capabilities for avionics testing as per DO-160, Airbus ABD0100 and Boeing as well as per MIL-STD-704.

According to standard requirements a pure sinusoidal voltage is needed for harmonics and flicker measurements. The output voltage of the NetWave is therefore guaranteed to have a very low distortion (THD) of less than 0.1% regardless of the load.

No matter whether waveforms are programmed of segments or of single points (normally resulting in MBs of data) the NetWave will do. Recording of waveforms with up to 1GByte is easily possible. The measuring channels are designed to handle up to +/- 500 Vpeak and +/-150 Apeak with 16bit resolution. Interfaces like GPIB, Ethernet and USB (to connect a memory stick) are common features with the NetWave.

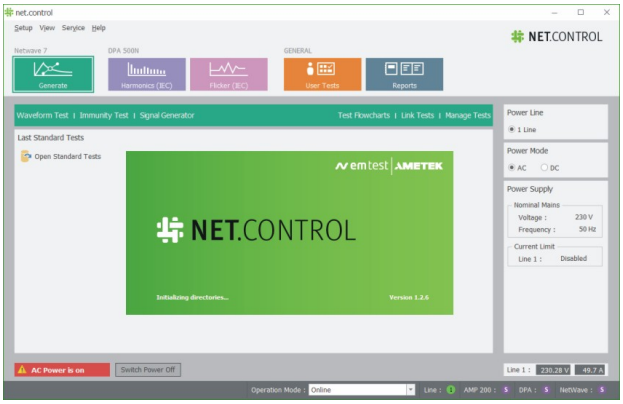
SOFTWARE

NET.CONTROL - EDITING, DOCUMENTING AND MANAGING YOUR WAVEFORMS AND STANDARD TESTS

net.control is the tool to easily and conveniently control the NetWave. By means of net.control the user can program any kind of waveform either composed from segments or points and download into the NetWave. Enhanced graphic tools are at hand to adjust the waveform according to individual requirements.

net.control provides a library of an extensive compilation of predefined segments as well as a large number of standard test routines as per EMC and avionics standards. net.control is also handling any waveform recorded by other method (e.g. captured by an oscilloscope) or imported as Excel or CSV files. All waveforms can be downloaded into the NetWave.

net.control offers an enhanced reporting tool to generate test/measuring reports and can be used under Windows 7, Windows 8 (64 Bit) and Windows 10.



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TECHNICAL DETAILS

MODEL OVERVIEW

NETWAVE 3.1 (1-PHASE)

Multifunctional AC/DC source, 3 kVA, as per EN/IEC 61000-4-x standards

NETWAVE 7 (1-PHASE)

Multifunctional AC/DC source, 7.5 kVA, as per EN/IEC 61000-4-x standards

NETWAVE 7.3 (1-PHASE)

Multifunctional AC/DC source, 7.5 kVA, as per EN/IEC 61000-4-x standards with built-in isolation transformer required to perform tests as per aircraft and military standards

NETWAVE-SERIES (3-PHASE)

EM TEST ALSO OFFERS 3-PHASE NETWAVE MODELS FOR ALL APPLICATIONS AND NEEDS

The NetWave-series (3-phase) are three-phase AC power sources with a power capability of up to 108 kVA (150 kW DC), specifically designed to meet the requirements as per IEC/EN 61000-4-13, IEC/EN 61000-4-14, IEC/EN 61000-4-17, IEC/EN 61000-4-27, IEC/EN 61000-4-28.

It is also serving as a DC power source to cover the requirements as per IEC/EN 61000-4-29 for voltage dips and interruptions on DC supplies.

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MODEL OVERVIEW

1-PHASE NETWAVE-MODELS	
NetWave 3.1	Multifunctional AC/DC source, 3,000 VA AC / 4,250 W DC
NetWave 7	Multifunctional AC/DC source, 7,500 VA AC / 9,000 W DC
NetWave 7.3	Multifunctional AC/DC source, 7,500 VA AC / 9,000 W DC, with built-in isolation transformer required to perform tests as per aircraft (DO-160, Airbus and Boeing) and military (MIL-STD-704) standards

TECHNICAL DETAILS

NETWAVE 3.1	
Output voltage	0 V - 310 VAC (RMS) 0 V - +/-440 VDC
Output current	10 A (RMS) continuous 20 A (RMS) short-term (max. 3 s) 70 A repetitive peak

NETWAVE 7	
Output voltage	0 V - 300 VAC (RMS) 0 V - +/-425 VDC
Output current *	26 A (RMS) continuous 47 A (RMS) short-term (max. 3 s) 200 A repetitive peak *(@max. 300 VAC, 360 VDC)

NETWAVE 7.3	
Output voltage	0 V - 360 VAC (RMS) 0 V - +/-500 VDC
Output current *	26 A (RMS) continuous 47 A (RMS) short-term (max. 3 s) 200 A repetitive peak *(@max. 300 VAC, 360 VDC)

EXTENDED CAPABILITIES FOR NETWAVE 7.3	
SourceAC mode	PLL synchronization with other voltage sources
Trigger channel	Extended trigger functions
Segment "Step"	Ramping of voltage and/or frequency in constant time windows
Extern mode	Control of the NetWave by an external control signal
Simple mode	Optimized control for integration of the Netwave into existing automation environments (for example Matlab)

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TECHNICAL DETAILS

GENERAL SPECIFICATIONS

SPECIFICATIONS	
Output frequency	DC - 5,000 Hz
Frequency accuracy	100 ppm
DC offset with AC signal	‹20 mV with linear load
Phase accuracy	Resolution 1°
Output noise	‹ 320 mV rms
Slew rate	8 V/us

REGULATION	
Voltage sense	Internal or external, 4 wires
Distortion (THD)	Less than 0.5 %, @50/60 Hz
Output voltage stability	Better than 0.1 %
Output voltage accuracy	Better than 0.5 %
Max. compensable drop on wire	5 % of V nominal.
Current limiter f‹75 Hz	2 A to Imax for (NetWave 3) 5 A to Imax for (NetWave 7.x) Stop / Current limiter
Protection	Over current, over voltage, over temperature, low voltage

OUTPUTS	
DUT connection	4 mm safety lab connectors DUT adapter with connector (depends on country of use)

DISPLAY AND CONTROLS	
Display	2-Line LCD, 40 characters
LED indicators	Power On Active output channel Trigger Functional status hard disk
Operation	6 function keys, Test On key: ON/OFF key for the power source

GENERAL SPECIFICATIONS

TRIGGER AND DUT MONITORING	
Trigger	2 inputs, 2 outputs
DUT monitors	2 inputs, configurable

WAVEFORM GENERATOR	
Segment types DC	DC, Ramp, Square, Triangle, Sawtooth, Step, Sine, Sine sweep, Sine ramp, Damped sinewave, Sine ripple, Profile, Square sweep, Noise, Sine Dwell, Sinc, Harmonic, Exponent ...
Segment types AC	Sine, Modulation, Sine sweep, Sweep on Sine, Sine up/down, Overswing, Sine offset, Sine Dip, Sine switching, Harmonic, Interharmonic, Interharmonic step, Harmonic distortion ...
Segment duration	Unlimited

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TECHNICAL DETAILS

GENERAL DATA

INTERFACES	
	GPIB, Ethernet USB (for memory stick) RS 232 (input from DPA analyser) Frame bus (internal system bus)

AMBIENT CONDITIONS	
Temperature	5°C - 35°C
Rel. humidity	10 % - 90 %, non condensing
Atmospheric pressure	86 kPa (860 mbar) to 106 kPa (1.060 mbar)

MAINS	
Supply voltage	3 x 400 V (3P, N, PE); 3 x 480 V (3P, N, PE); 3 x 208 V (3P, N, PE) with option MT-Netwave (NetWave 7) or NetWave 7.x
Input current	32 A (Phase 16 A, Neutral 27 A)
Line frequency	45 Hz - 65 Hz
Connector	CEE type 32 A

DIMENSIONS	
NetWave 3 / NetWave 7	19", 9 HU, 417 mm x 449 mm x 500 mm, 45 kg
NetWave 7.3	Minirack, 25 HU, 600 mm x 800 mm x 1250 mm, 120 kg

OPTIONS

OPTIONAL ACCESSORIES (FOR NETWAVE 7 ONLY)	
MT-NetWave	Three-phase matching transformer, input voltage 3x200 V, output voltage 3x400 V, in separate cubicle
IT-NetWave	Three-phase isolation transformer, input voltage 3x200 or 3x400 V, output voltage 3x400 V, with 25HU rack (with space to also house a DPA 500N). This option is required to use the NetWave 7 for aircraft and MIL standard testing.

OPTIONAL SOFTWARE FOR MODELS NETWAVE	
Lic-1 NetIndustry	Software license for industrial standards IEC 61000-4-13, -4-14, -4-17, -4-27, -4-28
Lic-1 NetHarmonics	Software license for harmonics analysis as per IEC 61000-3-2, -3-12 and ECE-R10
Lic-1 NetFlicker	Software license for flicker analysis as per IEC 61000-3-3 and -3-11
Lic-1 NetAircraft DO	Software license for DO-160 standard (only for models NetWave 7.3)
Lic-1 NetMilitary	Software license for MIL-STD-704 standard (only for models NetWave 7.3), requires filter Box F-Box 1 for LDC / HDC 103
Lic-1 NetAircraft Airbus	Software license for AIRBUS standards (only for models NetWave 7.3)
Lic-1 NetAircraft Boeing	Software license for BOEING standards (only for models NetWave 7.3)
Lic-1 NetAutomotive	Software license for Automotive applications

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TECHNICAL DETAILS

OPTIONS (ALL MODELS)

OPT-1 NWB (MEASURING BOARD)	
Voltage	25 V, 50 V, 100 V, 250 V and 500 V, unipolar or bipolar
Current	7 A, 15 A, 30 A, 70 A and 150 A, unipolar or bipolar
Resolution	16 Bit
Accuracy	Voltage: better than 0.2 % Current: better than 0.5 %
Frequency range	DC - 50 kHz
Sample rate	5 Hz - 100 kHz, selectable
Memory	Min. 40 GB on hard disk, File size max. 1 GB
PC requirements	Minimum Intel i5 with 8 GB RAM or similar

OPT-1 NETAMPHIGH	
Opt-1 NetAmpHigh	Option for AMP 200Nx for extended frequencies up to 500 kHz

ACCESSORIES

FILTER BOX F-BOX 1	
Application	Lowpass filter for smoothing the dc voltage for very low ripple application ‹ 500 mV
Standard	MIL-HDBK-704-7 HDC 103 MIL-HDBK-704-8 LDC 103 other applications with low ripple signals
Application MIL-HDBK	Test condition A (10 Hz) Test condition B (25 Hz)
Voltage	AC: 230 V DC: 500 V
Current	32 A
Frequency	max. 60 Hz
Dimension (LxWxH)	190 x 72 x 110 mm, plug +24 mm
Weight	0.83 kg

ACCESSORIES

FILTER BOX L-BOX 1-32A	
Application	50 µH decoupling coils with integrated 10 µF capacitor for MIL-STD-704 LDC
Max EUT Voltage	500 VDC / 360 VAC
Max EUT current	32 A

FILTER BOX L-BOX 1-100A	
Application	50 µH decoupling coils with integrated 10 µF capacitor for MIL-STD-704 LDC
Max EUT Voltage	500 VDC/360 VAC
Max EUT current	100 A

OTHER SOLUTIONS

OTHER MODELS	
NetWave Series (3-phase)	Three-phase Multifunction AC/DC power sources, up to 108,000 VAAC and 150,000 WDC

OTHER EQUIPMENT	
DPA 500N1	1-phase Harmonics and Flicker analyzer with built-in Flicker impedance

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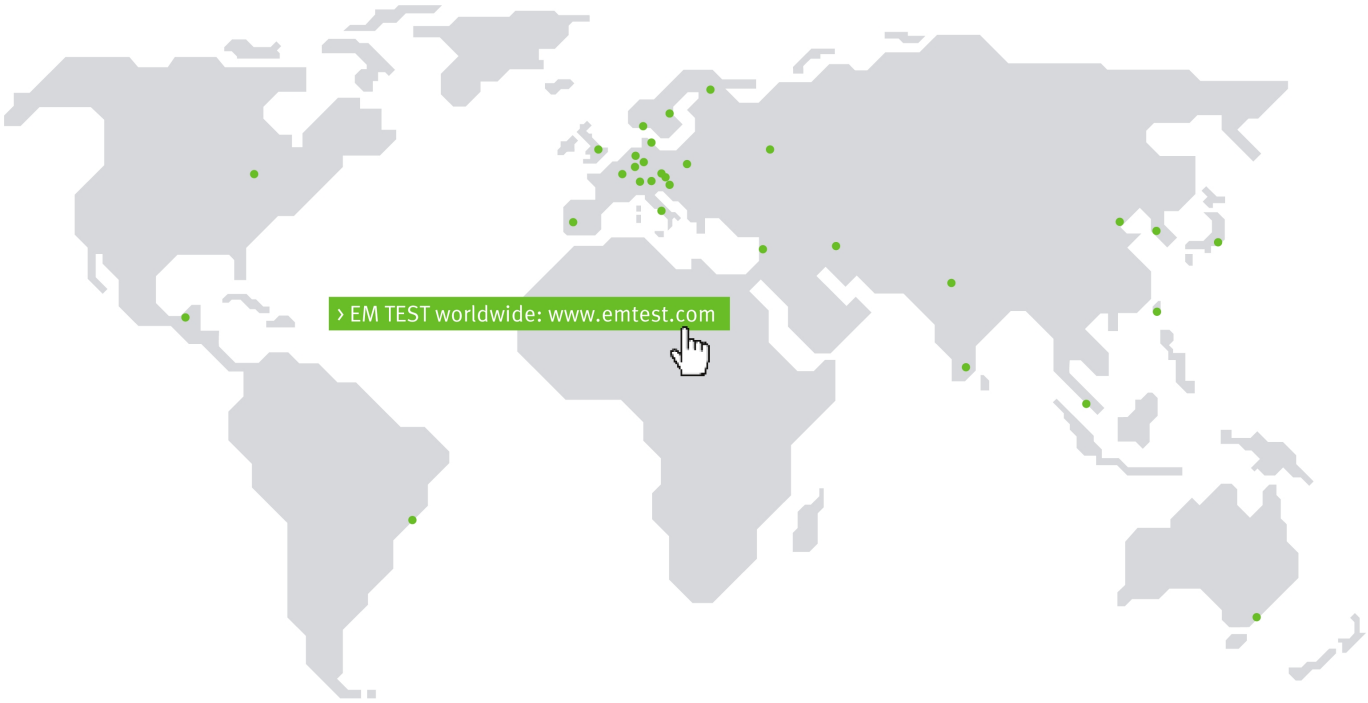
COMPETENCE WHEREVER YOU ARE



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Information about scope of delivery, visual design and technical data correspond with the state of development at time of release. Subject to change without further notice.