



Ripple NX High Power Ripple Generator

The Ripple NX is a high-power ripple generator that is used to perform ripple immunity tests. It offers the power to test high power high voltage components i.e. electric drives, high voltage batteries, DC-DC converters, on-board charger and other high voltage components. It can also be used to generate ripple on high power aircraft components.

The Ripple NX is a fully integrated test system that includes all necessary components:

- Low frequency amplifier 10 Hz - 300 kHz, 160 Vp, 63 Ap or 126 Ap
- Coupling network consisting of coupling transformers and a switch matrix
- Measurement and control unit
- Capacitor bank 10mF (low ESR) with pre- and discharge circuits
- Connection boxes with connection cables

MAIN FEATURES

- Fully integrated ripple generator
- 300 Hz to 300 kHz ripple signal
- Up to 1000V / 1000A DC
- Integrated, frequency-selective measurement unit
- Local touch panel control or remote control (CAN, Ethernet, IEEE, OptoLink)
- Configurable coupling network
- Multiple operating modes
- Overvoltage and overcurrent protection

STANDARDS

- ISO 21498-2
- ISO TS 7637-4
- LV 123
- MBN 11123
- VW 80300
- GS 95023
- and similar

The **fully integrated system** guarantees for minimum setup time, error-proof cabling, and reduced operator interaction. The components are designed that they optimally work as a system, ensuring the maximum voltage, current and system power.

The Ripple NX incorporates a **transformer coupling network** that can be reconfigured. This allows to select the optimal operating mode based on the frequency range and required current or voltage. The configuration can be set manually or automatically by the system.

The **integrated measurement and control unit** monitors the operating statuses of the amplifier, coupling network and capacitor bank. The measurement channels allow to measure ripple current and voltage. They are frequency-selective (narrow band) which allows precise regulation of the ripple signal even on noisy DC lines (i.e. switching noise generated by the EUT).

The Ripple NX has **two outputs** available which allows to apply the ripple signal on two EUT output connectors. This makes it possible to test through the front and rear axle connectors of a high voltage battery. For each output individual current and voltage limits can be programmed, which makes sure that the EUT is not destroyed – especially critical at resonance points. The included connection box allows to connect EUTs in difficult situations, i.e., when placed in test or climate chambers.

Several **operating modes** are available:

- Impedance Measurement Mode where the impedance of the EUT is measured using a small signal.
- Calibration Mode is used as a “learning test” which allows to optimally set the amplifier output and coupling network configuration. This enables fast switching during ripple testing.
- Single Mode where an individual point can be tested by setting the frequency and amplitude
- List Mode where a list of test points (frequency, amplitude) is programmed and executed by the ripple generator

The ripple NX includes a display with touch-panel for local control and comes with CAN/Ethernet/IEEE/OptoLink interface for remote control (remote command set). This allows to integrate the Ripple NX into existing test benches for automation. Also included is a control software that has a large library of pre-programmed tests and report generator.




Technical Specifications

	Ripple NX 600-1000-5	Ripple NX 1000-1000-10
	consisting of	consisting of
	RippleSource NX5	RippleSource NX10
Amplifier (AC ripple)		
Frequency	DC; 10 Hz – 300kHz	
Voltage < 60 kHz	113 Vrms / 160 Vp / 320 Vpp derated to 110 Vpp @ 300kHz	
Current	45 Arms / 63 Ap	90 Arms / 126 Ap
Power	5 kVA	10 kVA
	RippleCoupler NX600-1000	RippleCoupler NX1000-1000
Coupling Network		
Outputs	2	2
EUT voltage	1000 VDC max.	
EUT current	600 ADC	1000 ADC
Frequency	300 Hz - 300kHz, derated < 300Hz	
Ratio	2:1 and 4:1, switchable	
Capacitor Bank		
Capacitance	10 mF, low ESR	
Voltage	1000 VDC	
Functions	Automatic pre-charge and discharge circuit ; passive discharge circuit	
Control and Measurement Unit		
Signal Generator	1 channel (internal), 0 – 300kHz	
Measurement	4 channels: 2 x voltage, max. 1000V, AC/DC coupling 2 x current, max. 1000A 0 - 300 kHz, frequency selective (narrow band)	
Safety features	Emergency circuit, interlock circuit, external relay control, warning lamp (optional), high voltage indicator, active and passive discharge circuit (C-Bank), door interlock	
Control functions	Control of amplifier, coupling network configuration and capacitor bank charging/discharging	
Operating modes	Impedance measurement, calibration, single point and table mode	
EUT Monitoring	Voltage and current measurement and programmable limits, individually settable per output channel	
User Interface	Touch panel for local control, web interface	
Communication Interfaces	CAN, Ethernet, GPIB/IEEE and OptoLink Remote command set, IVI-C and LabView driver	
Software	Included control software for remote control of ripple generator, including library with pre-programmed standards and tests, enhanced analysis and report generator	
Analog Input/Output	Analog input (0-10V), analog output (0-10V) for external source control, trigger out	

General Specifications

	Ripple NX 600-1000-5	Ripple NX 1000-1000-10
Mains supply	3 x 400 V / 50 - 60 Hz or 3 x 208 V / 50 - 60 Hz	
Dimensions	Two 19" racks, 34HU	Two 19" racks, 34HU
Weight	approx. 2 x 500 kg	approx. 2 x 600 kg