INTEPRO SYSTEMS

Technical Note

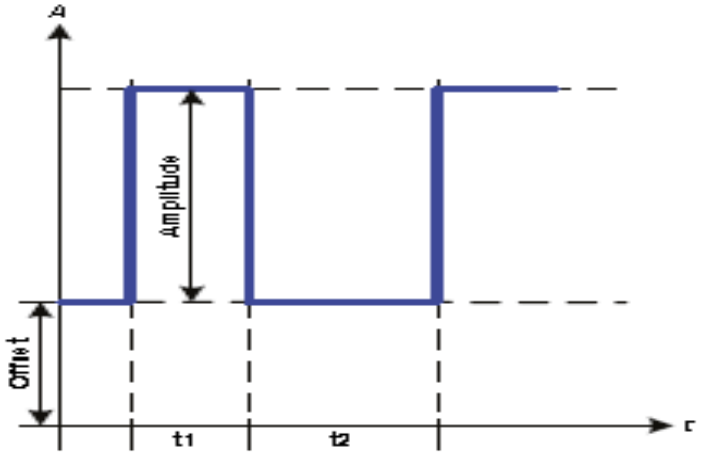
Pulse Load Testing with Electronic Loads

Many of today's power devices experience sudden changes in load conditions. In order to prove your device reacts in an acceptable manner, pulse loading has become the tool to use from research and development to production testing. Our electronic loads can simulate a wide variety of load conditions to match your testing needs.

Features found in many of our electronic loads include 4 Modes of Operation; Current, Resistance, Power, Voltage. Also included are adjustable Frequency, Slew Rate and Duty Cycle Control.

Typical Pulse Settings.

Value	Range	Description
I(A), U(A)	0...(Nominal value - (Off)) of U, I	A = Amplitude of the signal to be generated
I(Off), U(Off)	0...(Nominal value - (A)) of U, I	Off = Offset, based on the foot of the rectangular wave
t1	0.1 ms...36000 s	Time (pulse width) of the upper level (amplitude)
t2	0.1 ms...36000 s	Time (pause width) of the lower level (offset)



Application Example:

In Figure 1 this is the typical results you can expect when pulse testing a power supply. The square wave is the pulsed current controlled by the electronic load. The flat line with the small disturbances is the output voltage of the unit being tested. A typical characteristic of a voltage regulated power supply is the output voltage will dip when current is increased and the voltage will overshoot when current is decreased.

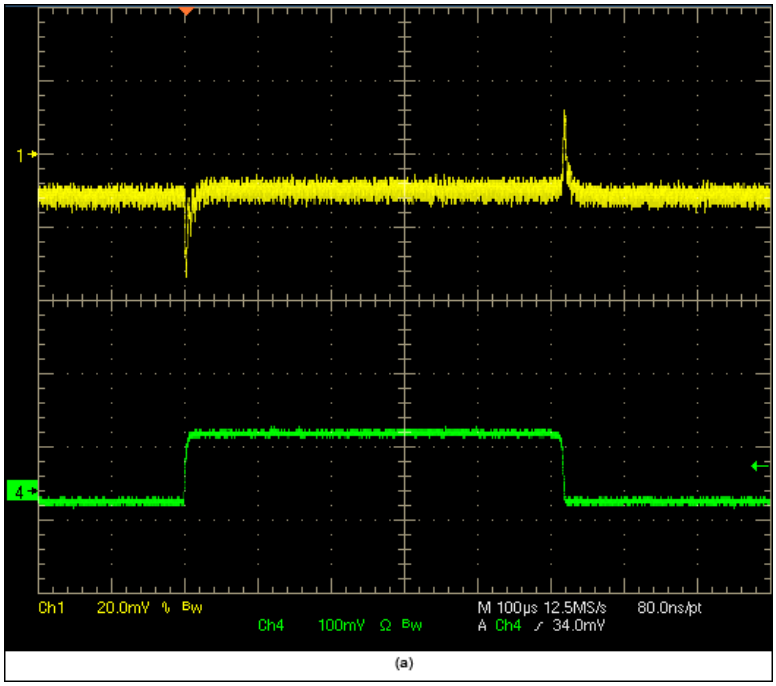
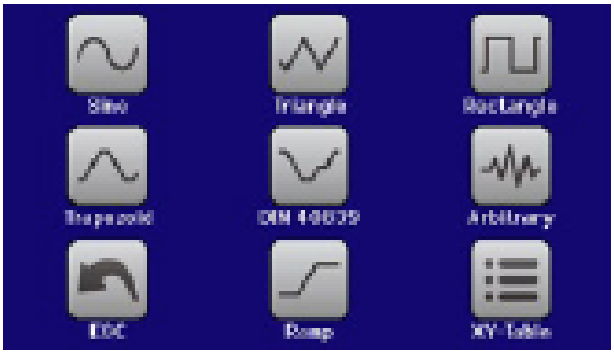


Figure 1

Pulse Loading a Constant Current Source

Pulse testing a constant current source is very similar to the above mentioned power supply testing with a few differences. We put the electronic load in constant voltage mode and pulse the voltage set points of the load between the two different voltage levels. Use an oscilloscope to see how the current reacts to the voltage being changed.

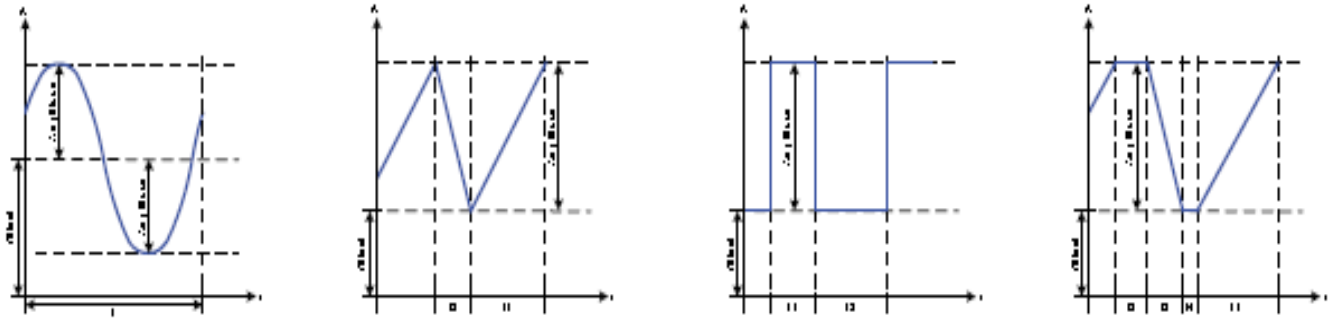
ELR and EL9000B Menus



Advanced Waveform Loading

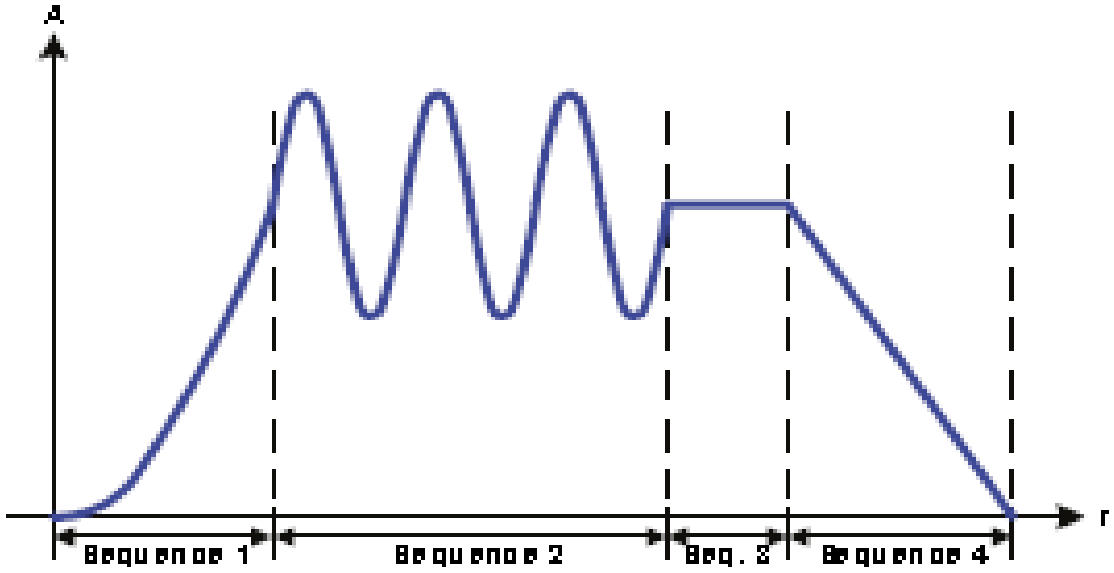
For more advanced test many of our electronic loads have an Integrated Function Generator. This feature allows for Sine, Triangle, Rectangle, Trapezoid waveforms. Also includes an arbitrary generator with up to 100 freely configurable steps. Full rise and ramp control. DIN 40839/EN ISO 7637 simulated engine start curves. Non linear load conditions with 4096 data points. Linking for complex progression and Analog input control.

Function	Short Description
Sine	Sine wave generation with adjustable amplitude, offset and frequency
Triangle	Triangular wave signal generation with adjustable amplitude, offset, gain and decay times
Rectangular	Rectangular wave signal generation with adjustable amplitude, offset and duty cycle
Trapezoid	Trapezoidal wave signal generation with adjustable amplitude, offset, rise time, pulse time, fall time, idle time
DIN 40839	Simulated automobile engine start curve according to DIN 40839 / EN ISO 7637, split into 5 curve sequences, each with a start voltage, final voltage and time
Arbitrary	Generation of a process with up to 100 freely configurable steps, each with a start and end value (AC/DC), start and end frequency, phase angle and total duration
Ramp	Generation of a linear rise or fall ramp with start and end values and time before and after the ramp
UHU	Table (.csv) with values for U or I, uploaded from a USB flash drive



Arbitrary Function

Value	Range	Seq.	Description
Is(AC)	0...50% Nominal value I	1-100	Start amplitude of the sine wave part of the curve
Ie(AC)	0...50% Nominal value I	1-100	End amplitude of the sine wave part of the curve
fs(1/T)	0 Hz...10000 Hz	1-100	Start frequency of the sine wave part of the curve (AC)
fe(1/T)	0 Hz...10000 Hz	1-100	End frequency of the sine wave part of the curve (AC)
Angle	0°...359°	1-100	Start angle of the sine wave part of the curve (AC)
Is(DC)	Is(AC)...(Nominal value - Is(AC)) of I	1-100	Start value of the DC part of the curve
Ie(DC)	Ie(AC)...(Nominal value - Ie(AC)) of I	1-100	End value of the DC part of the curve
Seq.time	0.1 ms...36000 s	1-100	Time for the selected sequence



Feel free to contact us with you power test questions

Customers rely on Intepro for cost effective solutions for testing mission critical power devices for AC and DC applications. Intepro's 35 plus years of power testing expertise simplifies the testing process of complex power testing to insure your product meets or exceeds performance and reliably needed for demanding power requirements.

Pulse Load Testing with Electronic Loads

Intepro Electronic Loads

Our Electronic Loads offer advanced features without the added cost from bench testing to ATE testing. Want to save even more money checkout our multi-channel and scalable single channel lines of regenerative loads.

Regenerative ***Multi-Channel*** ***Up to 1500Vdc*** ***Reliable***

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