

ELR 5000 Series

320 W to 3200 W



Energy Recovering
Multi Channel
DC Load

INTEPRO
SYSTEMS

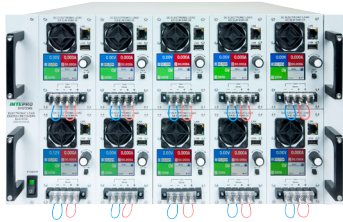
THE POWER TEST EXPERTS

ELR 5000 Series

320 W to 3200 W



Product Overview



ELR5000



The ELR 5000 Series is a DC Regenerative multi-channel Load designed to provide high performance in an efficient, compact chassis. Utilizing an optimized mix of the latest digital and analog technologies, a modular architecture and robust standard features enables us to deliver a product that helps increase profitability.

The ELR 5000 offers a rack for 19" systems, up to ten DC load units with 320 W nominal power each can be installed. The modular units operate separately from each other, but require the rack as it contains the energy recovering DC-AC inverter. The load modules come in two voltage variants, 80 V and 200 V

The ELR Series saves you money in 2 different ways when compared to a conventional DC Load. Instead of dissipating energy as heat into your environment, the ELR synchronizes with and regenerates the energy back to your local mains. As a byproduct of this key feature, minimal internal cooling is required and fan (acoustic) noise is thereby reduced. This helps the creative process and improves the ability to communicate inside the lab or other closed environments.

Four regulation modes (CV, CC, CP, CR), Touchscreen/Gorilla Glass/Front Panel Display, standard waveforms and an arbitrary function generator highlight the standard features offered in this aforementioned robust design based on FPGA circuit control. A table based regulation circuit is used for simulation of non-linear resistance.

Applications

The ELR 5000 offers features that make testing both easy and efficient. The built-in Battery Test function is ideal for charge-discharge testing. Energy recovery comes in handy for burn-in or EOL/Production Testing.

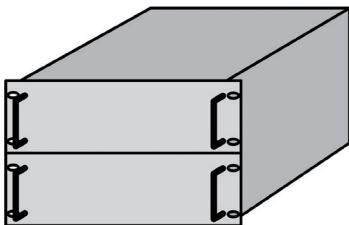
Our products and systems are designed by engineers, for engineers. We take pride in making your tests quicker, cheaper and easier without having to sacrifice performance.

Featured Benefits

- Multi-channel DC load
- Energy recovery of the supplied DC energy into the local grid
- 19" 6U rack for up to 10 separate load modules
- Input power ratings: up to 0...320 W per module
- Input voltages: 0...80 V or 0...200 V
- Input currents: 0...10 A or 0...25 A
- Multilingual TFT touch panel
- User profiles, true function generator
- Analog interface and USB interface built-in
- Master-slave bus for parallel connection
- Extra USB port on the front for USB stick
- Optional, digital, plug & play interfaces or alternatively installed IEEE/GPIB port
- SCPI command language supported
- Optional automatic isolation unit

Power Ratings, Voltages & Currents

There are two load models available. One for max. 80 V DC input voltage and one for max. 200 V. Both models have a max. power of 320 W, while the 80 V model can take up to 25 A and the 200 V can take up to 10 A. By installing up to 10 units of these load modules into a single rack it is possible to extend the power to 3200 W max.



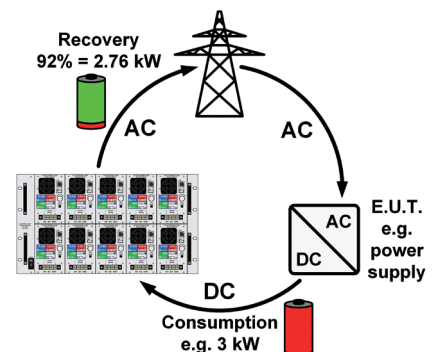
Enclosure

Construction

The rack, which is used to hold the load modules, is designed with 19" width and 6U height, while having an installation depth of 480 mm. This makes it ideal for use in 19" cabinets of various sizes.

Energy Recovery

The most important feature of the ELR HP series is that the AC input, i.e. grid connection, is also used as the output for the recovery of supplied DC energy with approximately 95% efficiency. Recovering the loaded energy reduces energy costs and avoids expensive cooling systems that are commonly required for conventional air-cooled and water-cooled loads that dissipate energy in the form of heat.



Supply

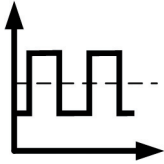


The rack can be operated on a normal 230 V AC ($\pm 10\%$), 16 A wall socket or a similar supply. The recovery feature requires to always have sufficient devices on the grid to consume the backfed energy.

The grid connection can be equipped with a supervision unit “ENS2” (see User Manual for more details) which is optionally available, retrofittable and modular.

With this option installed, the grid connection will always be three-phase (L1, L2, L3, N, PE).

Sequence Generator



A special feature is the digital sequence generator. It enables users to control the load unit by semi-automatic sequence blocks (max. 100). Those blocks consist of programmable set values for voltage, current and power, plus a time value. The generator can apply a rectangular wave signal to any or all set values at once.

Options

Ethernet patch rack (separate 1U rack which collects up to 10 Ethernet ports of the load modules in an ELR rack, such as an Ethernet switch to a single network connection on the rear of the multi-channel electronic load system).

Ethernet Patch Rack: Separate 1U Chassis 24-Port Gigabit Switch (allows for a single network connection)

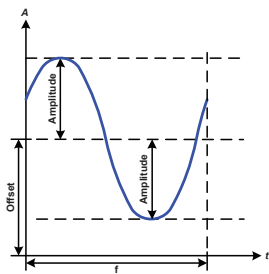
Multi-Control: Professional user/control software for up to 20 devices (license fee applies)

Integrated Function Generator

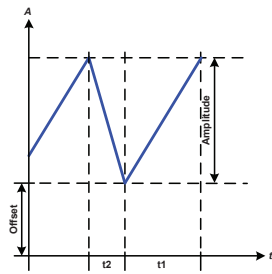
An integrated function generator is able to create various non-linear load conditions based on 4096 data points and apply these to the set value of voltage or current.

Available functions:

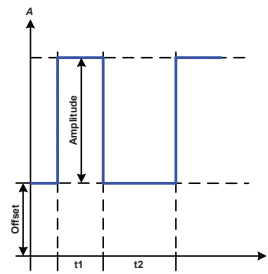
Function	Short Description
Sine	Sine wave generation with adjustable amplitude, offset and frequency
Triangle	Triangular wave signal generation with adjustable amplitude, offset, gain and decay times
Rectangular	Rectangular wave signal generation with adjustable amplitude, offset and duty cycle
Trapezoid	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
UI-IU	Table (.csv) with values for U or I, uploaded from a USB flash drive



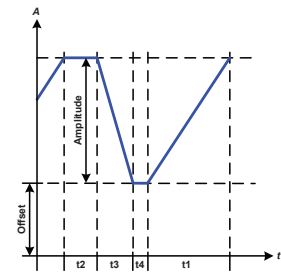
Sine



Triangle

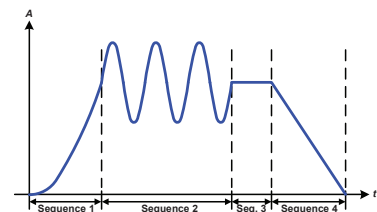
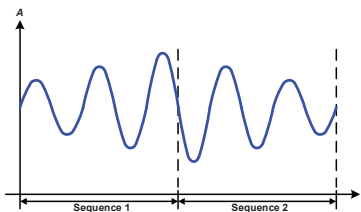
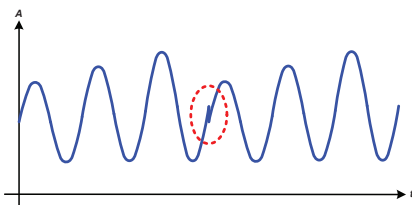


Rectangle



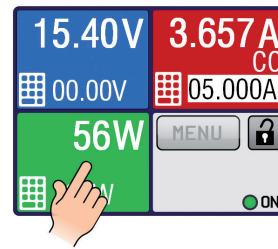
Trapezoid

By linking together a number of differently configured sequences, complex progressions can be created. Smart configuration of the arbitrary generator can be used to match triangular, sine, rectangular or trapezoidal wave functions and thus, e.g. a sequence of rectangular waves with differing amplitudes or duty cycles could be produced.



Operation (HMI)

Local operation is achieved via a Gorilla-Glass display, two rotary knobs and a pushbutton. The full-color display shows all relevant set and actual values at a glance. You can setup your test or configure advanced waveforms from the front panel.

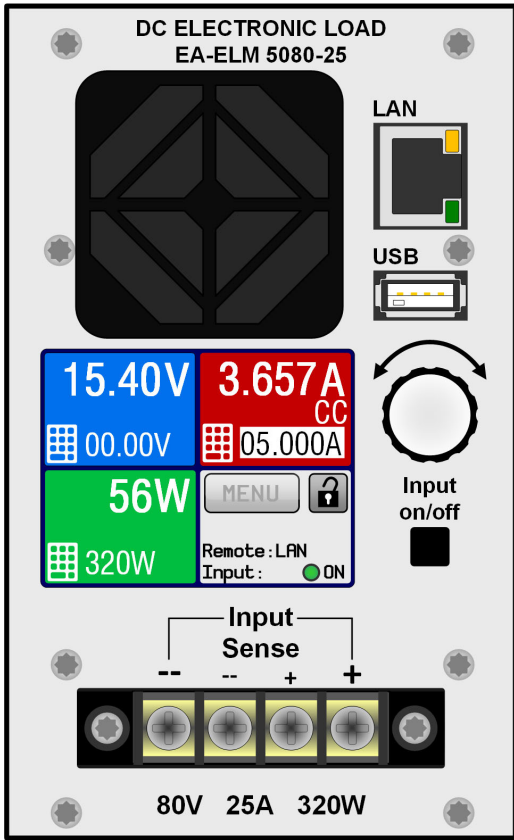


Remote Control & Connectivity

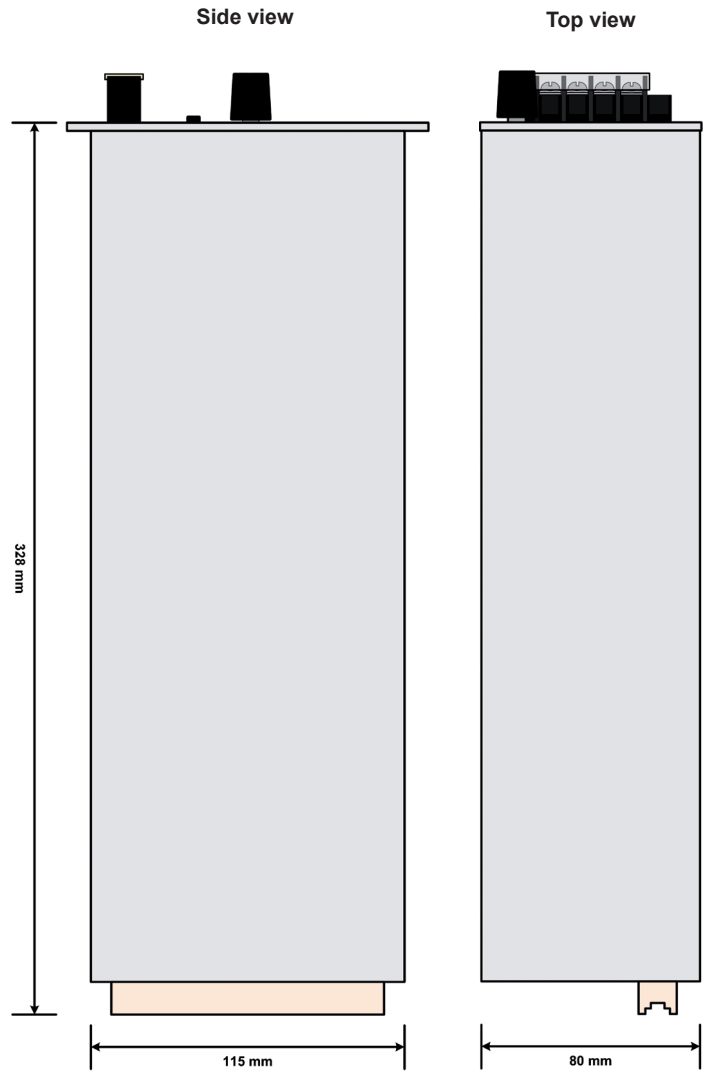
For remote control, there is by default an Ethernet/LAN port available on the front of the modules. Via this configurable connection users can completely control all functions of the modules either via SCPI language or ModBus protocol.

A USB port, also located on the front side, is intended for USB flash drives in order to load and save sequences and to install firmware updates for the HMI, i.e. control panel.

For the implementation into the LabView IDE we offer ready-to-use components (VIs) to be used with the Ethernet interface. Other IDEs and interfaces may be supported upon request.



Front view of the load module with control panel



Technical Data	ELR 5000 Series
AC connection	
- Voltage	230 V AC, $\pm 10\%$, 45..65 Hz
- Power factor correction (PFC)	>0.99
- Efficiency	$\geq 92\%$
Cooling	
- Kind	Temperature controlled fans
- Operation temperature	0...50 °C
- Storage temperature	-20...70 °C
Terminals	
- DC input	Screw terminal
- Sense	Screw terminal
- Other	Ethernet, USB
Mechanics	
- Load modules per rack	up to 10
- Weight of rack	12.25 kg
- Weight of fully equipped rack	35.8 kg
- Dimensions of rack (WxHxD)	19" x 6HE / 6U x 500 mm
- Protection class	1
- Degree of pollution	2
Ordering number	33130336

Technical Data	ELM 5080-25	ELM 5200-10
DC input: Voltage		
- Range	0...80 V	0...200 V
- Accuracy	<0.1%	<0.1%
- Load regulation 0-100% Δ UDC	<0.05%	<0.05%
- Response time 10-90% load step	<1 ms	<1 ms
DC input: Current		
- Range	0...25 A	0...10 A
- Accuracy	<0.1%	<0.1%
- Load regulation 0-100% Δ IDC	<0.05%	<0.05%
DC input: Power		
- Range	0...320 W	0...320 W
- Accuracy	<1%	<1%
- Load regulation 0-100% Δ U/IDC	<0.2%	<0.2%
Display and panel	Graphics display with touch panel	
Digital interfaces		
- Built-in (front side)	1x USB Typ A USB-Sticks / 1x USB type A for USB flash drives 1x Ethernet (SCPI, ModBus, HTTP, TCP, ICMP)	
Cooling		
- Kind	Temperature controlled fans	
- Operation temperature	0...50 °C	
- Storage temperature	-20...70 °C	
Terminals		
- DC input	Screw terminal	
- Sense	Screw terminal	
- Other	Ethernet, USB	
Mechanics		
- Weight	2.35 kg	
- Dimensions (WxHxD)	81 x 132, 5 x 310 mm	
Ordering number	33220430	33220431

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