ELR 10000 Series

30 kW to 1.08 MW

CE

Electronic DC Loads with Energy Recovery

INTEPRO SYSTEMS

THE POWER TEST EXPERTS

www.InteproATE.com

ELR 10000 Series

30 kW to 1.08 MW

ELR 10000

Product Overview

The ELR 10000 Series is a Regenerative DC Load designed to provide high performance in an efficient, compact chassis. Optimizing a combination of the latest digital and analog technologies, its modular architecture and robust standard features enables us to deliver a product that helps increase your profitability.

The ELR 10000 offers industry-leading power density 30kW of DC loading can be achieved via a single 4U chassis. The ELR 10000 also accepts 360-528 VAC Input - increasing its overall versatility.

When compared to conventional loads, the ELR 10000 Series saves money and improves the work environment in multiple ways. Instead of dissipating energy as heat that then must be removed from the environment with air conditioning, the ELR synchronizes and regenerates the energy back to the mains. A byproduct or recovering up to 95% percent of the load energy, the ELR requires very little cooling, significantly reducing the fan acoustic noise. Normal conversations can be had in rooms with ELR loads.

Four modes of operation (CV, CC, CP, CR) with standard waveforms and an arbitrary function generator highlight the standard features of this robust design. Complex waveforms can be programmed using a table-base regulation circuit to simulate non-linear resistance.

Applications

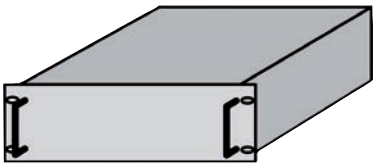
With an energy recovery of >90%, the ELR 10000 is an ideal load for all power conversion applications not requiring fast load steps. The ELR 10000 offers features that make testing more effortless and streamlined. The built-in Battery Test function is ideal for charge-discharge testing. Energy recovery 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 testing faster/more rapid, economical and simpler without having to sacrifice performance.

www.InteproATE.com

INTEPRO SYSTEMS

Construction

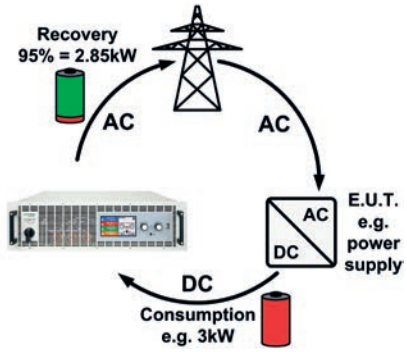


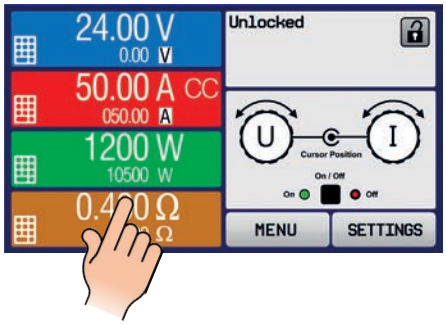
Enclosure

All models are built in 19” wide rack enclosures with 4U height and 24” depth, which makes them ideal for use in 19” cabinets of various sizes.

Energy Recovery

The most important feature of the ELR 10000 series is its ability to recover nearly 95% of the DC load energy to the AC grid connection. Recovering the loaded energy reduces not only the energy for the test but the cooling of the environment required when the energy is dissipated as heat by conventional air or water-cooled loads.

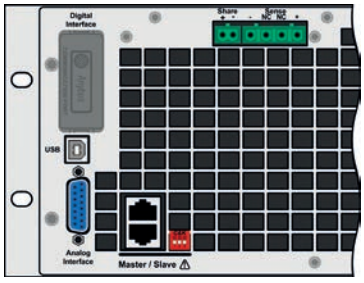




Operation (HMI)

Direct control of the unit is done via a Gorilla-Glass display, two rotary knobs and a pushbutton. The full-collor 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



Rear connectors of the standard models
Image 1

The ELR 10000 comes standard with three interface ports (1x analog, 1x USB, 1x Ethernet) on the rear of the device. A variety of optional interfaces can be added using the digital interface slot (dedicated). These cards are field pluggable and easily retrofitted.

A front side USB port is intended for portable drives to load save functions and user profiles.

For system implementation, Intepro offers its PowerStar software for simple fill-in-the-blank control of the loads, NI LabView IDE drivers. All drivers and Virtual Instrument Panels work with all the interfaces.

www.InteproATE.com

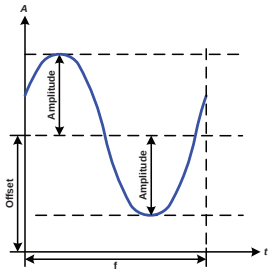
INTEPRO SYSTEMS

Integrated Function Generator

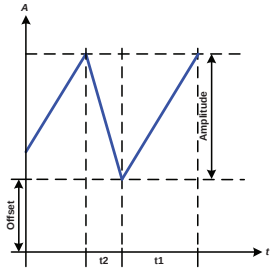
An integrated function generator is able to create various non-linear load conditions based on 4096 data points and and apply these to the set values of voltage, current, resistance and power.

Available functions:

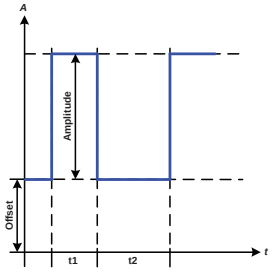
Function	Short Description
Sine	Sine wave generation with adjustable amplitude, offset and frequency
Triangle	Triangular wave signal generation with adjustable amplitude, offset, gain and decay times
Rectangular	Rectangular wave signal generation with adjustable amplitude, offset and duty cycle
Trapezoid	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



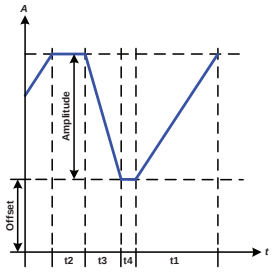
Sine



Triangle

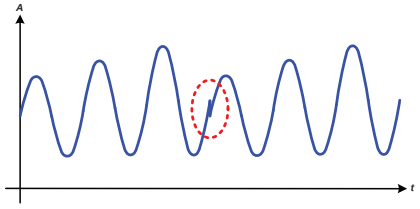


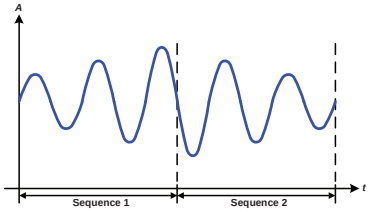
Rectangle

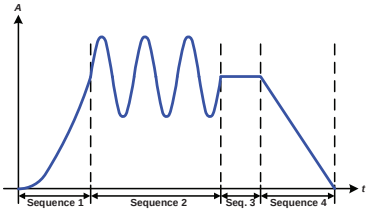


Trapezoid

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.







www.InteproATE.com

INTEPRO SYSTEMS

Options

Digital, Pluggable and Retrofitable Interface Options	
IF-AB-RS232	RS232
IF-AB-PBUS	Profibus DPV1
IF-AB-CANO	CANopen
IF-AB-DNET	DeviceNet
IF-AB-MBUS1P	Modbus-TCP 1 Port
IF-AB-MBUS2P	Modbus-TCP 2 Port
IF-AB-ETH1P	Ethernet/IP 1 Port
IF-AB-ETH2P	Ethernet/IP 2 Port
IF-AB-PNET1P	Profinet-IO 1 Port
IF-AB-PNET2P	Profinet-IO 2 Port
Option 3	3-Way interface Analog/USB/GPIB

Featured Benefits

- *Energy recovery of the supplied DC energy into the local or public grid*
- *Galvanically isolated DC input*
- *AC connection: 342-528 V, 3-phase*
- *Input power ratings up to 30 kW per chassis*
- *Expandable to 1080kW*
- *Input voltages up to 2000 V*
- *Input currents up to 1000 A per chassis*
- *FPGA/DSP based digital control*
- *Multilingual TFT touch panel*
- *User profiles, true function generator*
- *Ethernet, Analog, 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*

Techincal Data	*ELR 10000 4U Series*	
AC:Supply		
Voltage / Phases	342-528 V, 3 ph	
Frequency	45-66 Hz	
DC: Voltage		
Accuracy	≤0.1% of rated value	
DC: Current		
Accuracy	≤0.2% of rated value	
Load regulation 1-100% ΔU_{DC}	≤0.15% of rated value	
Slew rate 10-90%	≤ 300 µs	
DC: Power		
Accuracy	≤0.2% of rated value	
DC: Resistance		
Accuracy	≤1% of max. resistance ± 0.3% of maximum current	
Display / Control Panel	Graphics display with touch panel	
Protection	OT, OVP, OCP, OPP, PF	
Degree of pollution	2	
Protection class	1	
Digital Interfaces		
Built In	1xUSB and 1x Ethernet for communication, galvanically isolated 1x USB type A for data recording etc.	
Slot	1x for retrofittable plug-in modules (standard models only)	
Analog Interface	Built-in, galvanically isolated	
Signal range	0-5 V or 0-10 V (switchable)	
Inputs	U,I,P,R remote control on-off, DC input on-off, resistance mode on-off	
Outputs	U, I, overvoltage, alarms, reference voltage	
Accuracy U / I / P / R	0-10 V: ≤0.2%	0-5 V: ≤0.4%
Parallel operation	Yes, via master-slave bus and Share bus, up to 36 units	
Standards	EN 61010-1:2011-07 EN 61000-6-3:2011-09, EN 61000-6-2:2016-05 Radiation Class B EN 50160:2011-02 Grid Class 2	
Cooling	Temperature-controlled fans (optional:water)	
Ambient temperature	0-50 °C	
Storage temperature	-20-70 °C	
Terminals on rear		
DC input	Screw terminal	
Share Bus & Sense	Share bus: 2x BNS, Sense:Phoenix, 4 pole	
Analog interface	Sub-D connector 15 pole	
Digital interface	Module socket 50 pole, USB, Ethernet, master-slave	
Dimensions (W x H x D)	19” x 4U x 670mm (26.4”)	

Model	Power	Voltage	Current	Resistance	Efficiency	Weight
ELR 10060-1000 4U	0-30 kW	0-60 V	0-1000 A	0.006 - 10 Ω	~93%	~ 44 kg
ELR 10080-1000 4U	0-30 kW	0-80 V	0-1000 A	0.006 - 10 Ω	~93%	~ 44 kg
ELR 10200-420 4U	0-30 kW	0-200 V	0-420 A	0.033 - 50 Ω	~93%	~ 44 kg
ELR 10360-240 4U	0-30 kW	0-360 V	0-240 A	0.1 - 180 Ω	~94%	~ 44 kg
ELR 10500-180 4U	0-30 kW	0-500 V	0-180 A	0.16 - 340 Ω	~95%	~ 44 kg
ELR 10750-120 4U	0-30 kW	0-750 V	0-120 A	0.4 - 740 Ω	~95%	~ 44 kg
ELR 11000-80 4U	0-30 kW	0-1000 V	0-80 A	0.8 - 1300 Ω	~96%	~ 44 kg
ELR 11500-60 4U	0-30 kW	0-1500 V	0-60 A	2.5 - 3000 Ω	~96%	~ 44 kg
ELR 12000-40 4U	0-30 kW	0-2000 V	0-40 A	2.5 - 3000 Ω	~96%	~ 44 kg

Software

In addition to the ability to thrive in many software environments, the ELR 10000 works best with Intepro's PowerStar Test Suite. PowerStar is a truly hardware-independent architecture that allows the user to easily swap out equipment in test benches to address obsolescence or changes to standards/requirements – without having to re-write the test programs. PowerStar features "Program without Coding" ™ that utilizes a simple drag and drop utility that enables users to create complicated, custom test scripts or select from a vast library of built in routines. All these features drive efficiency as less time setting up your test means more time for actual testing.

Contact Us

sales@inteproate.com

Americas
Intepro Systems America, LP
14662-E Franklin Ave
Tustin, CA 92780
Tel: 1 714 953 2686
sales@inteproate.com
www.inteproate.com

service@inteproate.com

Europe & Africa
Intepro UK Ltd.
9 Lakeside Business Park
Swan Lane, Sandhurst Berkshire
GU47 9DN / UK
Tel: 44 012 5287 5600

www.inteproate.com

Asia & Oceania
Intepro Power Electronics
(Shenzhen) Co., Ltd
No. 828, Block 7,
Fourth Industrial Area
Nanyou, Nashan District
Shenzhen, China 518052
Tel: 0086 755 86500020