ELR 5000 Series

320 W to 3200 W

Energy Recovering Multi Channel DC Load

INTEPRO SYSTEMS

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320 W to 3200 W

ELR5000

Product Overview

The new series ELR 5000 was designed to configure a multi-channel electronic DC load. In 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 modules are also extendable. Parallel connection on the DC inputs of the module is possible.

The load modules come in two voltage variants, 80 V and 200 V, and incorporate the common regulation modes constant voltage (CV), constant current (CC) and constant power (CP).

The energy recovery function inverts the supplied DC energy into a synchronous sine current and feeds it back into the local grid. This reduces the usual heat dissipation to a minimum and saves energy costs at the same time. The color TFT touch panel offers an intuitive kind of manual operation.

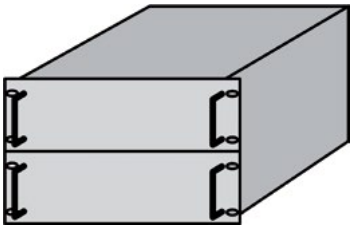
Equipped with an Ethernet port by default, the load units can be easily integrated into a network of LAN devices. External control is possible via an included Windows software or via custom applications created in LabView or other IDEs. The commonly known communication protocols SCPI and ModBus are supported.

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*
- *µController based digital control*
- *Multilingual TFT touch panel*
- *Sequence generator*
- *Ethernet/LAN interface built-in*
- *Optional:*
  - *Ethernet patch field rack*
  - *SCPI command language and ModBus supported*

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.

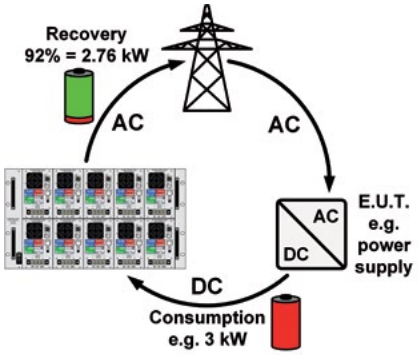


Enclosure

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 these electronic loads is that the AC input, i.e. grid connection, is also used as output for the recovery of the supplied DC energy, which will be converted with an efficiency of approximately 93%. This way of energy recovery helps to lower energy costs and avoids expensive cooling systems, such as required for conventional electronic loads which convert the DC input energy into heat.

Operation of these backfeeding loads in terms of power generation is not intended. There is an additional supervision unit (automatic isolation unit, ENS) available for optional installation and to achieve additional safety of persons and equipment, especially when running the so-called isolated operation.

Regardless of whether the user has installed that supervision unit or not, the devices feature a simple and non-redundant switch-off function for the case of an interruption in the grid connection cable. They supervise AC voltage and frequency and will automatically switch off the inverter block in case upper or lower limits are exceeded.

Supply

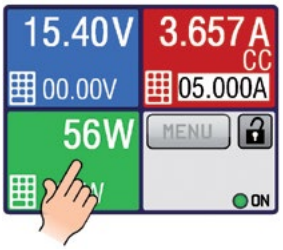
The rack can be operated on a normal 230 V AC (±10%), 16 A wall socket or a similar supply. The recovery feature requires to always have sufficient devices on the grid to consume the backfed energy.

The grid connection can be equipped with a supervision unit “ENS2” (see page <?>) which is optionally available, retrofittable and modular.

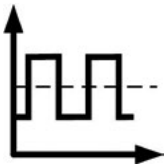
With this option installed, the grid connection will always be three-phase (L1, L2, L3, N, PE).

Operation (HMI)

Manual operation is done with a resistive touch panel, two rotary knobs and a pushbutton. The color display shows all relevant set values and actual values at a glance. The whole setup is also done with the human-machine interface, as well the configuration of the sequence generator.



Sequence Generator



A special feature is the digital sequence generator. It enables 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.

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.

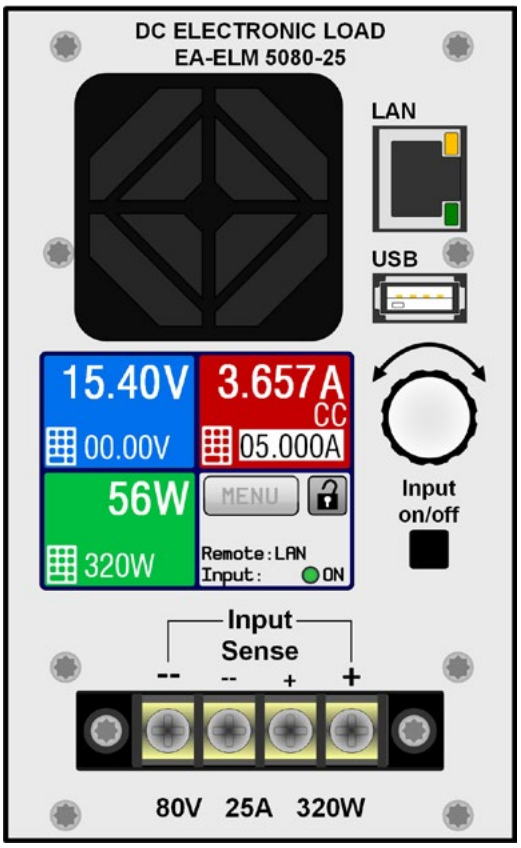
For the implementation into the LabView IDE we offer ready-to-use components (VIs) to be used with the Ethernet interface. Other IDEs and interfaces are supported by documentation about the communication protocol.

Options

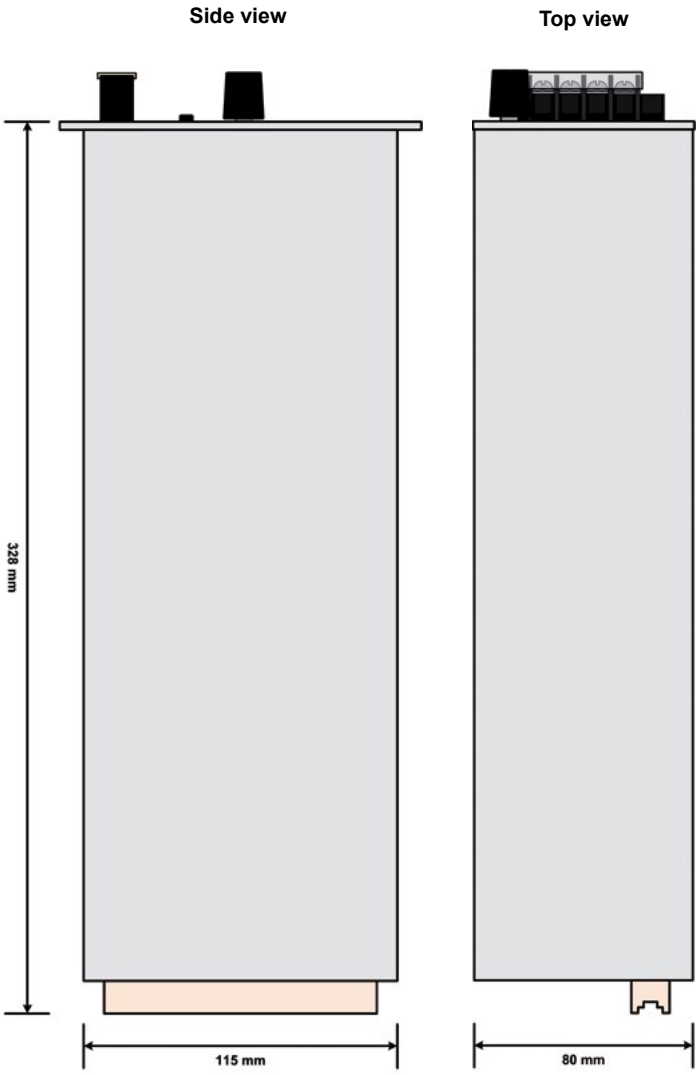
Ethernet patch rack (separate 1U rack which collects up to 10 Ethernet ports of the load modules in an ELR rack, such as an Ethernet switch to a single network connection on the rear of the multi-channel electronic load system).

Technical Data	ELR 5000 Series
AC connection	
- Voltage	Nominal 230 VAC (EU models) or 208 VAC (US models), +/- 10%, 45-65Hz
- Power factor correction (PFC)	>0.99
- Efficiency	≥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% ΔUDC	<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% ΔIDC	<0.05%	<0.05%
DC input: Power		
- Range	0...320 W	0...320 W
- Accuracy	<1%	<1%
- Load regulation 0-100% ΔU/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



Front view of the load module with control panel



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