

EA-EL 9000 B 15U/24U 10.8 kW - 43.2 kW



Programmable high power electronic DC loads



EA-EL 9000 B 15U



EA-EL 9000 B 24U



- Wide AC supply voltage range: 90...264 V, with active PFC
- Various power ratings
- Voltages: 80 V, 200 V, 360 V, 500 V, 750 V
- Currents: up to 3060 A
- Preconfigured, prewired, ready to be installed
- Based on electronic loads of series EA-EL 9000 B 3U with:
 - True function generator
 - USB and analog interface built in
 - Slot for optional interface modules Profinet, Profibus, CAN, CANopen, Ethernet, EtherCAT, ModBus TCP
 - SCPI command set and ModBus RTU support
 - LabView VIs and remote control software (Windows)
 - Color TFT touch panel

General

The new series EA-EL 9000 B 15U and EA-EL 9000 B 24U extend the electronic load series EA-EL 9000 B 3U with high power models in mobile 19" cabinets. There is a choice of 20 different configurations with various power ratings. A cabinet system is considered as a single electronic load device with extended power, with manual handling and remote control being usual, while offering the same features like the standard models of EA-EL 9000 B 3U series.

There are two cabinet sizes with 15U or 24U, which are equipped with 3 to 6 load units, depending on the model. Some models even offer to further extend the available power by adding another load unit through retrofitting.

The cabinets have lockable rear and front doors, as well as four casters which can be fixed. The system will be shipped completely configured and will be ready to use right after installation on location.

Power ratings, voltages, currents

The available voltage range portfolio goes from models with 0...80 V DC up to models with 0...750 V DC. Input currents up to 0...3060 A with only one cabinet are available. The series offers various power classes with 10.8 kW up to 27 kW steady power and 10.8 kW up to 43.2 kW peak power.

Power derating

The devices of the EA-EL 9000 B 15U/24U series are equipped with thermal derating in order to avoid overheating when operating in the maximum power range. The lower the ambient temperature and the better the cooling, the higher the power that the load can take. The rated input power before the derating starts is defined at 21°C ambient temperature.

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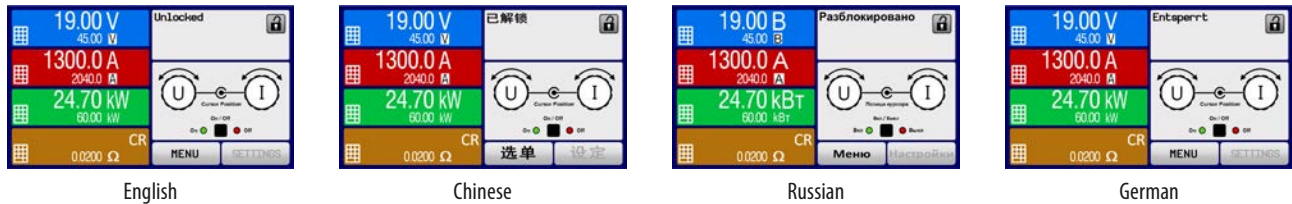
Display and control panel

Set values and actual values of output voltage, output current and output power are clearly represented on the graphic display. The color TFT screen is touch sensitive and can be intuitively used to control all functions of the device with just a finger tip.

Set values of voltage, current, power or resistance can be adjusted using the rotary knobs or entered directly via a numeric pad.

To prevent unintentional operations, all operation controls can be locked.

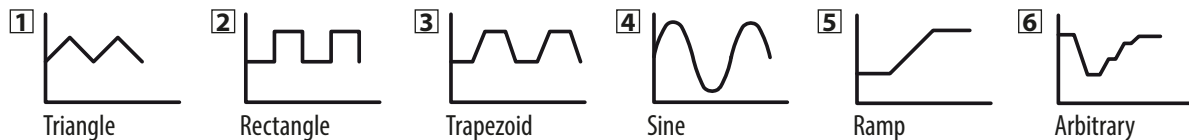
Multi-language screen



Function generator

All models of this series include a true function generator which can generate typical functions, as displayed in the figure below, and apply them to either the input voltage or the input current. The generator can be completely configured and controlled by using the touch panel on the front of the device, or by remote control via one of the digital interfaces.

The predefined functions offer all necessary parameters to the user, such as Y offset, time / frequency or amplitude, for full configuration ability.

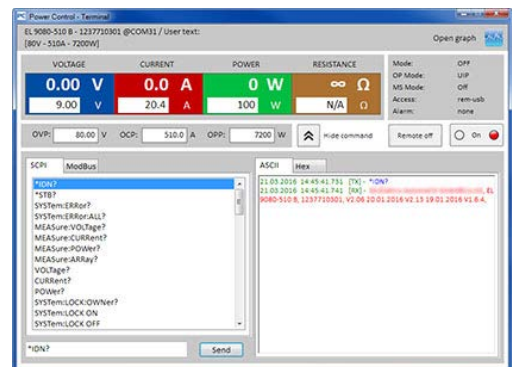


Remote control & connectivity

Monitoring, control and configuration of these load devices can either be done using the built-in USB interface or via one of various optional digital interfaces (see page 116). There is furthermore a standard analog interface for control and monitoring. All interfaces are galvanically isolated from the DC input.

For the implementation into the LabView IDE we offer ready-to-use components (VIs) to be used with the interface types USB, RS23 and Ethernet. Other IDEs and interfaces are supported by documentation about the communication protocol.

Windows users can profit from the free software "EA Power Control". It offers a feature called "Sequencing", where the device is controlled through a table in CSV format to achieve automatic test runs. This table represents simple to complex test procedure and can be created and edited in MS Excel or other CSV editors and then imported into the software tool. This software also allows for the control of up to 20 units at once with an optional feature called "Multi Control" (licensed, not free of charge). See page 118 for more information.



Options

- Digital interface modules for RS232, CAN, CANopen, ModBus TCP, Profibus, Profinet/IO, EtherCAT or Ethernet. The interface slot is located on the rear panel (standard models only), making it easy for the user to plug in a new interface or to replace an existing one. The interface will be automatically detected by the device and requires no or only little configuration. See page 116.
- Water cooling (upon request, also see page 121)
- Emergency stop system with stop switch, door contacts and screw terminals for external breaker contacts



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- A
- B
- C
- D
- E
- F



Rear view 24U 90 kW



DC bus terminal

Model	P _{PEAK}	P _{MAX} @ 21°C	P _{MAX} @ 35°C	Voltage	Current	Resistance	Weight	Height	Ordering number ⁽¹⁾
EA-EL 9080-1530 B 15U	21.6 kW	0...13.5 kW	0...10.8 kW	0...80 V	0...1530 A	0.005...1.6666 Ω	≈ 120 kg (264 lb)	15U	33240600
EA-EL 9200-630 B 15U	18 kW	0...13.5 kW	0...10.8 kW	0...200 V	0...630 A	0.0266...85 Ω	≈ 120 kg (264 lb)	15U	33240601
EA-EL 9360-360 B 15U	16.2 kW	0...13.5 kW	0...10.8 kW	0...360 V	0...360 A	0.09...30 Ω	≈ 120 kg (264 lb)	15U	33240602
EA-EL 9500-270 B 15U	10.8 kW	0...10.8 kW	0...10.8 kW	0...500 V	0...270 A	0.1667...55.666 Ω	≈ 120 kg (264 lb)	15U	33240603
EA-EL 9750-180 B 15U	10.8 kW	0...10.8 kW	0...10.8 kW	0...750 V	0...180 A	0.4...120 Ω	≈ 120 kg (264 lb)	15U	33240604
EA-EL 9080-2040 B 24U	28.8 kW	0...18 kW	0...14.4 kW	0...80 V	0...2040 A	0.0038...1.25 Ω	≈ 170 kg (375 lb)	24U	33240605
EA-EL 9200-840 B 24U	24 kW	0...18 kW	0...14.4 kW	0...200 V	0...840 A	0.02...7 Ω	≈ 170 kg (375 lb)	24U	33240606
EA-EL 9360-480 B 24U	21.6 kW	0...18 kW	0...14.4 kW	0...360 V	0...480 A	0.0675...22.5 Ω	≈ 170 kg (375 lb)	24U	33240607
EA-EL 9500-360 B 24U	14.4 kW	0...14.4 kW	0...14.4 kW	0...500 V	0...360 A	0.125...41.75 Ω	≈ 170 kg (375 lb)	24U	33240608
EA-EL 9750-240 B 24U	14.4 kW	0...14.4 kW	0...14.4 kW	0...750 V	0...240 A	0.3...90 Ω	≈ 170 kg (375 lb)	24U	33240609
EA-EL 9080-2550 B 24U	36 kW	0...22.5 kW	0...18 kW	0...80 V	0...2550 A	0.003...1 Ω	≈ 187 kg (412 lb)	24U	33240610
EA-EL 9200-1050 B 24U	30 kW	0...22.5 kW	0...18 kW	0...200 V	0...1050 A	0.016...5.6 Ω	≈ 187 kg (412 lb)	24U	33240611
EA-EL 9360-600 B 24U	27 kW	0...22.5 kW	0...18 kW	0...360 V	0...600 A	0.054...18 Ω	≈ 187 kg (412 lb)	24U	33240612
EA-EL 9500-450 B 24U	18 kW	0...18 kW	0...18 kW	0...500 V	0...450 A	0.1...33.4 Ω	≈ 187 kg (412 lb)	24U	33240613
EA-EL 9750-300 B 24U	18 kW	0...18 kW	0...18 kW	0...750 V	0...300 A	0.24...72 Ω	≈ 187 kg (412 lb)	24U	33240614
EA-EL 9080-3060 B 24U	43.2 kW	0...27 kW	0...21.6 kW	0...80 V	0...3060 A	0.0025...0.833 Ω	≈ 204 kg (450 lb)	24U	33240615
EA-EL 9200-1260 B 24U	36 kW	0...27 kW	0...21.6 kW	0...200 V	0...1260 A	0.0133...4.6666 Ω	≈ 204 kg (450 lb)	24U	33240616
EA-EL 9360-720 B 24U	32.4 kW	0...27 kW	0...21.6 kW	0...360 V	0...720 A	0.045...15 Ω	≈ 204 kg (450 lb)	24U	33240617
EA-EL 9500-540 B 24U	21.6 kW	0...21.6 kW	0...21.6 kW	0...500 V	0...540 A	0.0833...27.833 Ω	≈ 204 kg (450 lb)	24U	33240618
EA-EL 9750-360 B 24U	21.6 kW	0...21.6 kW	0...21.6 kW	0...750 V	0...360 A	0.2...60 Ω	≈ 204 kg (450 lb)	24U	33240619

(1) Ordering number of the standard version, models with options will be different

EA-EL 9000 B 15U/24U 10.8 kW - 43.2 kW

Technical Data	Series EA-EL 9000 B 15U & EA-EL 9000 B 24U	
AC: Supply		
- Voltage	90...264 V, 1ph+N	
- Frequency	45...66 Hz	
- Power consumption	Max. 390 W - max. 780 W (depending on model)	
DC: Voltage		
- Accuracy	<0.1% of rated value	
DC: Current		
- Accuracy	<0.2% of rated value	
- Load regulation 1-100% ΔU_{DC}	<0.1% of rated value	
- Slew rate 10-90%	<50 μ s	
DC: Power		
- Accuracy	<0.5% of rated value	
DC: Resistance		
- Accuracy	$\leq 1\%$ of max. resistance + 0.3% of rated current	
Protection	OT, OVP, OPP, PF, OCP ⁽¹⁾	
Degree of pollution	2	
Protection class	1	
Display / control panel	Graphics display with touch panel	
Digital interfaces		
- Built-in	1x USB type B for communication	
- Slot	1x for retrofittable plug-in modules	
Analog interface	Built in, 15 pole D-Sub (female), 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%
Series operation	Not allowed	
Parallel operation	Not supported	
Cooling	Temperature-controlled fans (optional: water)	
Ambient temperature	0...50 °C	
Storage temperature	-20...70 °C	
Relative humidity	<80%, non-condensing	
Operation altitude	<2000 m (1.242 mi)	
Terminals on rear		
- DC input	Screw terminal	
- Analog interface	Sub-D connector 15 pole	
- Digital interfaces	Module socket, USB	
Dimensions (W x H x D)	19" x 15U x 688 mm (27.1")	19" x 24U x 688 mm (27.1")

⁽¹⁾ See page 126

