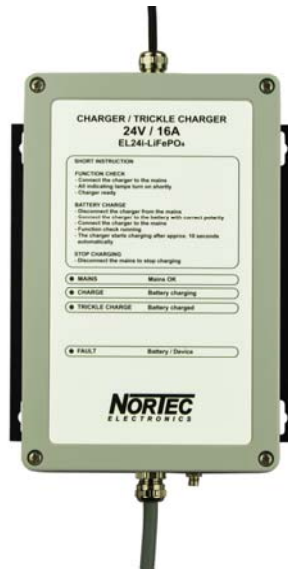


Operation manual

Battery charger and trickle charger 24V for wall mounting

EL24i-16

DC 24V 16A / DC 24V 2A // AC230V 50/60Hz
Version: 11.2019



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Nortec Electronics GmbH & Co. KG

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1 Technical data

Typ:	EL24i-16.1310
Manufacturer:	Nortec Electronics GmbH & Co. KG An der Strusbek 32 B D-22926 Ahrensburg Tel.: +49 / 4102 / 42002 Fax: +49 / 4102 / 42840 Email: info@nortec.de Web: www.nortec.de
Mains voltage:	230V \pm 10% / 50-60Hz
Output voltage charge:	28.8VDC \pm 1% (constant voltage at 20°C)
Output current main charge:	16A \pm 5% (constant current)
Trickle charging:	26.4VDC, max. 2A \pm 5%
Output current trickle charging:	2A \pm 5% (constant current)
Battery types:	Ansmann AG LiFePo ₄ battery pack (article Z0600660)
Battery capacity:	5.0Ah
Indicator lights:	4LEDs for „MAINS“, „CHARGE“, „TRICKLE CHARGE“ and „FAULT“
Protection:	IP65
Signal output:	3 outputs switched via relays (maximum load 1A)
Electrical safety:	according to EC Low Voltage Directive

Operating temperature:	-25 to + 40°C, (at higher operating temperature the output power is reduced)
Storage temperature:	-40 to +85°C
Humidity:	<(95-5)% at TU = 55°C
Dimensions (LxBxH):	320 x 210 x 145mm
Weight:	7.4kg
Declaration of conformity:	CE conformity
Mains connection:	Connection cable 5m long with earthing contact plug with double protection contact system (SCHUKO)
Charge cable:	5m with open end Pin 1 + (brown); Pin 2 - (blue)
Reporting line: (sensing port)	Removable 5m with open end Pin 1 = brown; Pin 2 = white; Pin 3 = blue; Pin 4 = black
Warranty period:	24 months

2 General information

We congratulate you on the acquisition of the EL24i-16

This robust housing combines two functions:

- **Battery charger**
- **Battery tricklecharger**

State-of-the-art microprocessor technology ensures that your battery is optimally charged with the UIUa characteristic, which guarantees maximum battery life. The UIUa characteristic is recommended by leading battery manufacturers. The experience of many years of observations of battery charging and charging in large fleets (partly with stored vehicles) is consistently implemented in this device in modern charging technology. An intact deeply discharged battery is brought back to the best possible state of charge and held there. It does not have to be opened or separated from the vehicle. Defective batteries are detected automatically.

Light emitting diodes keep you informed about the status of the battery and the device at all times.



3 Safetyinstructions

Please read the operating instructions carefully before first use and keep them in a safe place.

3.1 Intendeduse

The charger is designed to charge 24V the Ansmann AG LiFePo4 battery pack (article Z0600660). The charger can be connected directly to the battery with clamps or via suitable plug connectors.

The EL24i is approved for private and commercial use.

Each device is tested for all functions before delivery and delivered in a safe and secure condition. When used as intended, the device is safe to operate.

3.2 Safetyinstructions

The battery charger EL24i-16 should only be operated in perfect condition while observing the operating instructions. The safety and operating instructions must be observed.

In the case of operator errors or misuse, there are risks for:

- body and life of the operator,
- the equipment and other property of the operator,
- the function of the device.

All persons involved in the installation, commissioning, operation, maintenance and upkeep of the device must:

- be appropriately qualified,
- pay close attention to these operating instructions and
- follow the applicable rules for occupational safety.

Unauthorized intervention or manipulation of the device is not permitted. Furthermore, the local safety regulations must be observed.

Nortec Electronics is not responsible for any damage caused by improper connection. Never connect 230V to the battery connection cables.

Charging non-rechargeable or mechanically damaged batteries may cause the battery to explode.

Avoid any contact with battery acid. If you come into contact with battery acid, wash the affected area thoroughly. If eyes come into contact with battery acid, rinse them with running water or an eyewash device and consult a doctor.

Charging a battery can cause the release of gases. These gases are flammable and explosive! Do not get close to batteries with sparks, open flames or cigarettes. Always ensure adequate ventilation of the batteries during charging.

The safety instructions of the battery manufacturer Ansmann AG must be strictly adhered to. The battery charger may only be opened and repaired by the manufacturer, by authorized repairers or by individual agreement with Nortec Electronics.

	<p>Maintenance and safety regulations of the battery manufacturers!</p> <ul style="list-style-type: none"> - All maintenance work on batteries must only be carried out by suitably qualified personnel.
	<p>Wear eye protection and protective clothing when working on batteries!</p> <ul style="list-style-type: none"> - Observe the applicable accident prevention regulations.
	<p>Avoid contact of acids with eyes or skin!</p> <ul style="list-style-type: none"> - In case of emergency, rinse immediately with plenty of water. - Then consult a doctor immediately.

	<p>Dangerous electrical voltage!</p> <ul style="list-style-type: none"> - Do not lay any metal tools or objects on the battery. - Do not wear metal ornaments such as rings, watches, belts or jewelry. - Disconnect mains voltage before opening the device. - Do not manipulate the device.
	<p>Explosion and fire hazard!</p> <ul style="list-style-type: none"> - When charging batteries, a highly explosive oxyhydrogen gas mixture can arise. - - Avoid sparking and short circuits: use only insulated tools, do not lay metallic objects on the battery or drop them.
	<p>No Smoking!</p>
	<p>Follow instructions for battery usage!</p> <ul style="list-style-type: none"> - Attach these visibly near the battery. - Pay attention to the dangers arising from batteries.
	<p>Batteries must not be disposed of with household waste!</p> <ul style="list-style-type: none"> - You are legally obliged to return old batteries, so that a proper disposal can be guaranteed.

3.3 Disposal

Do not throw the packaging and the product in the household waste! The product and packaging are made of reusable materials (plastics, metals, paper). Dispose of an unusable product in an environmentally friendly manner in accordance with local regulations.

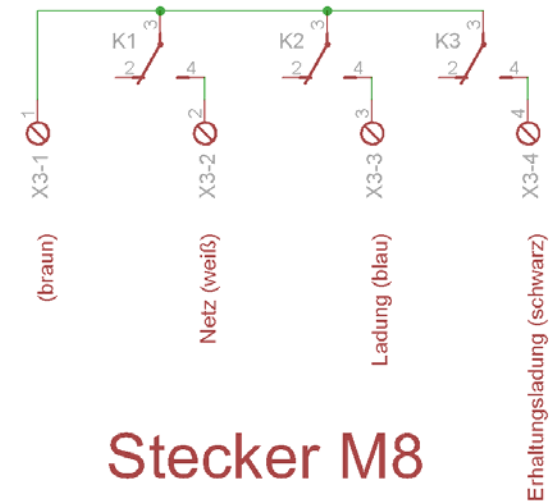
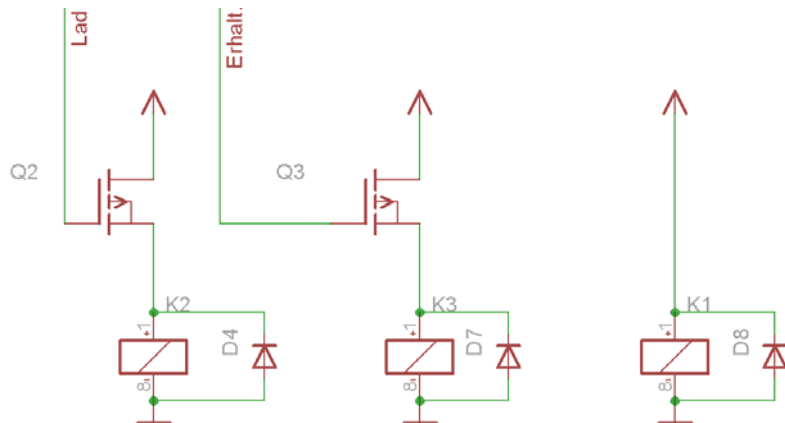
4 Connection and commissioning

Before connecting the device, check that the specified mains voltage on the type plate of the device is the same as that available to you. These are 230V/50Hz.

Due to the circuit design of the EL24i-16, no special sequence is required for operation and connection. We recommend the following procedure. It provides you with the most efficient information.

1. Plug the device into a power outlet. A brief flash on and off of the LED indicators confirms that the device has successfully completed its self-test and is ready to be charged. The green LED lights up.
2. Connect the device to the battery with the correct polarity.
 blue or No. 2 = battery minus
 brown or No. 1 = battery plus

The sensing port M8 is for external monitoring and is assigned as follows:



Stecker M8

Hinweis: Die Relaiskontakte übertragen auch den Zustand "LED blinkt"

Pin 1 = brown Pin 2 = white Pin 3 = blue Pin 4 = black

6 Function battery LOAD

6.1 Preliminarynote

Proper battery charging is the first requirement for a long battery life. The device present here treats Ansmann AG LiFePO₄ battery pack (article Z0600660) in an optimal way.

Please remember that only a full battery can be stored.

After reaching the end-of-charge voltage, this is left by the device on the battery until the charging current drops to a predetermined value (here 2A) - the battery is optimally fully charged.

Attention!

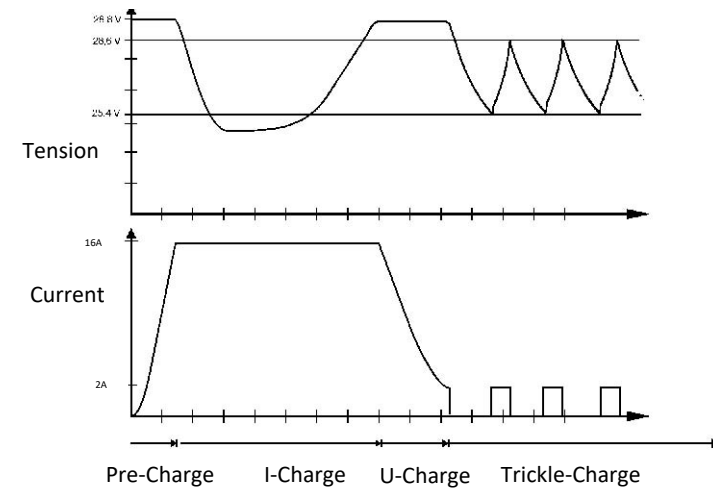
Unlike to the charger for lead acid batteries, another program is installed here. A deeply discharged lithium battery does not supply any output voltage. Therefore, a voltage is always applied to the lithium program charger to allow a fully discharged lithium battery to start charging again. The current is limited to 2 A to protect the contacts of the vehicle. As soon as power flows into the battery, the charging process starts with 16 A and the LED charging lights up.

6.2 Chargeable batteries and charging characteristics

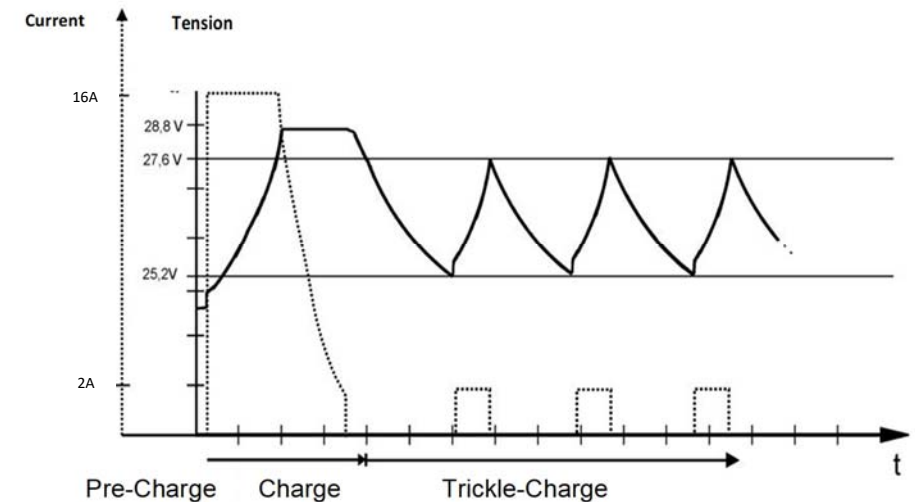
The EL24i-16 battery charging and maintenance charger is designed for charging and subsequent trickle charging of Ansmann AG LiFePO₄ battery pack (article Z0600660) with a rated voltage of 24V and a rated capacity of 5.0Ah designed.

The battery charger and trickle charger EL24i-16 is equipped with an IUa charging program (for deep-discharged batteries UIUa-charge) with the following charging areas:

- Charge divided into main charge and
- Trickle charge



Current and voltage curve when charging a deeply discharged 24V battery



Typical charging voltage curve

Notes

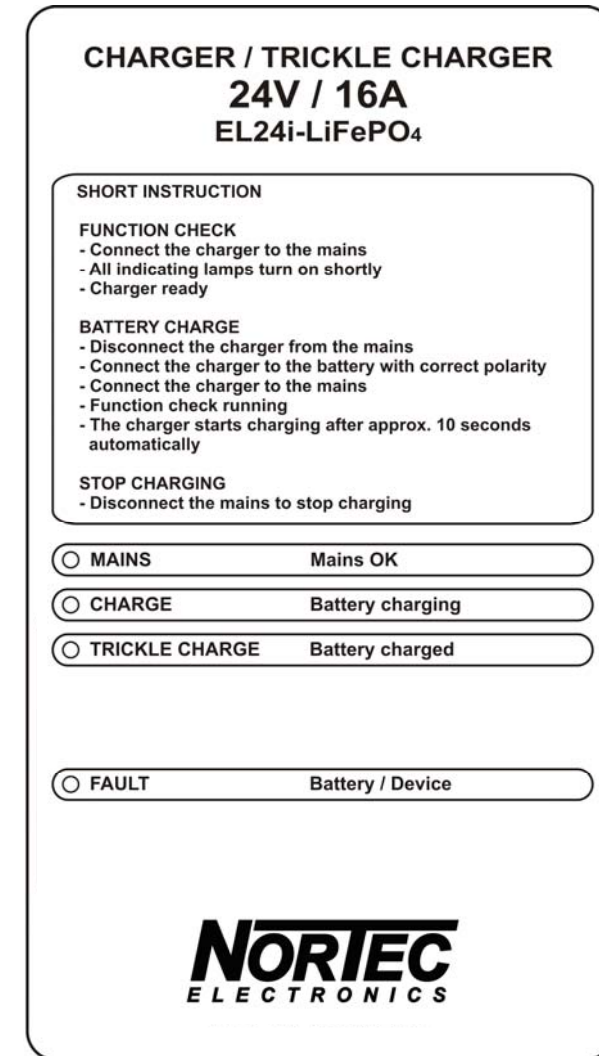
The charging functions cannot be selected separately but provide a closed functional sequence. This is started when the device is switched on.

The entire charging process starts automatically:

- after switching on the supply voltage with connected battery,
- after mains failure and return of the supply voltage,
- If the lower turn-on voltage of 25.4V during the trickle charge e.g. is exceeded by connecting consumers for more than 10 seconds.

Charging cables and batteries must be checked for contamination and perfect mechanical and electrical condition before connection.

7 Optical indicators



- **MAINS:**
 - Mains available, green LED "Power OK" lights
- Internal function test: all indicator lights light up for approx. 1 second
- **CHARGE:**
 - "Main charge": yellow LED lights up permanently
- **TRICKLE CHARGE:**
 - "Monitoring phase" and "Charging phase": green LED lights up permanently
- **FAULT:**
 - "Device error": red LED flashes - device defective and for repair
 - "Battery error": red LED lights permanently - no or defective battery connected