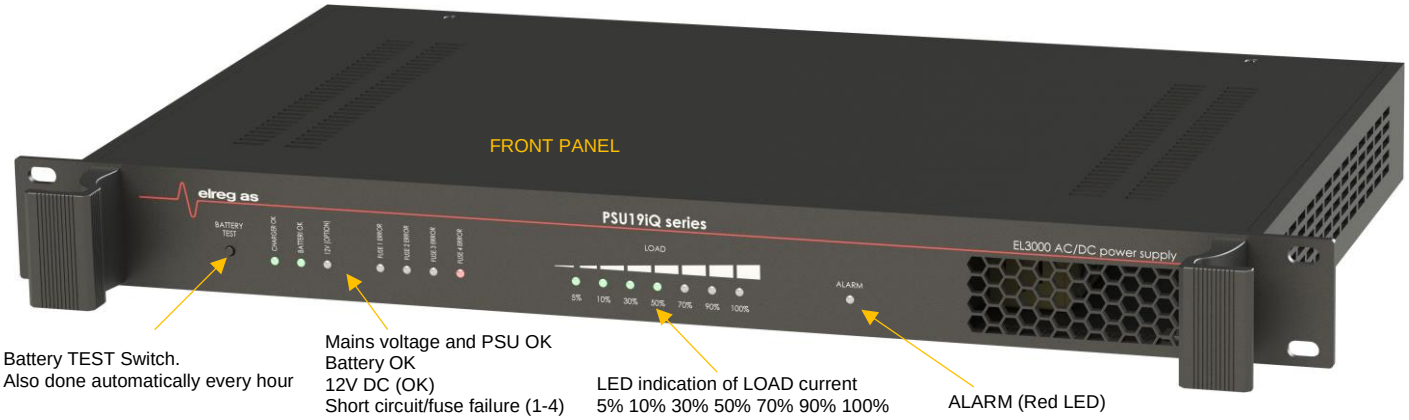
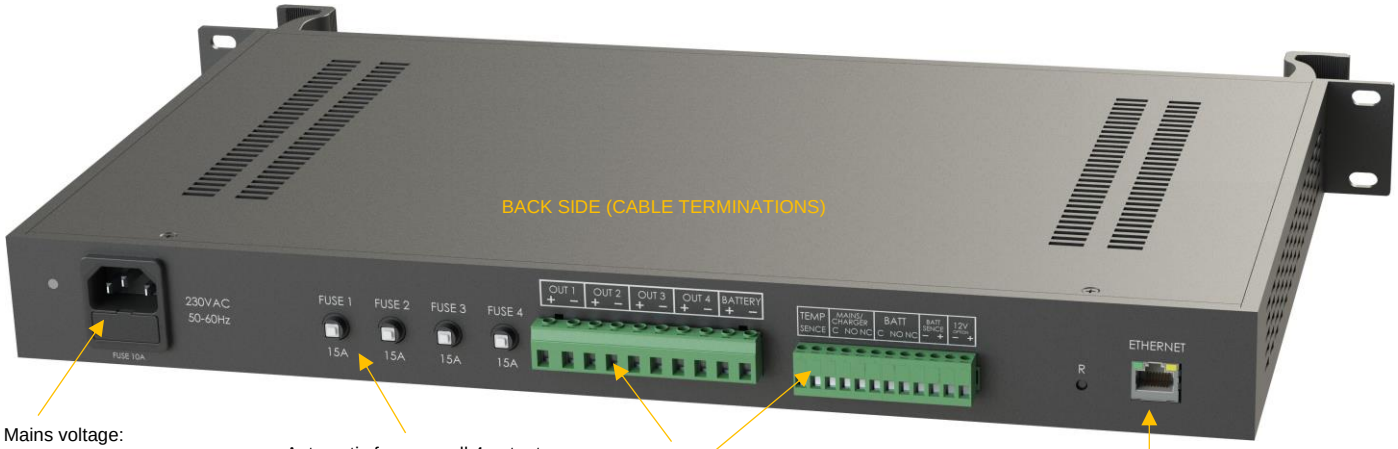
EL3000iQ-2420 DC UPS 24V 20A





IoT protocols: MQTT, CoAP and SNMP and more

Product code: 100.14.2420.000.0

Rectifier:

Power:	552W max (27.6V 20A) and 84W (12V 7A)
Cooling:	Fan, built-in
Outputs 24V:	Number of circuits 4 pcs. Automatic fuses 15A
Outputs 12V:	Number of circuits 1 pcs 8A (Mounted on PCB)
Status/error:	Potential-free relay contacts for battery failure
Status/error:	Potential-free relay contacts for charger failure
Flammability:	UL 94 V-0
Enclosure:	Recyclable aluminum
Dimensions:	482x220x45 mm (WxDxH).
Weight:	3.9 kg

LED indikatorer:

LEDs 15 pcs:	Power status, battery, overload, fuse failure, Alarm, and 7 LEDS showing load current.

Battery:

Capacity:	65 – 200Ah (Recommended capacity)
Wire connection:	Screw terminals max 4mm^2

Example of recommended accessories:

EL490 series:	Battery shelves
EL072 series:	Tamper switch
Battery cables:	Battery cables with fuse, 10mm2

EL3000iQ-2420 strømforsyning 24V 20A

Produkt beskrivelse

EL3000iQ-2420 is a reliable power supply based on switch-mode technology that has high efficiency and small dimensions. The power supply is designed to operate in parallel with a 24V battery to ensure uninterrupted power supply even when the mains voltage fails. In normal operation, the power supply keeps the battery charged while providing power to the load. When the mains voltage fails, the battery automatically takes over and continues to provide the necessary power to the load, without any form of voltage interruption. The battery capacity is determined based on the desired operating time. The battery is taken care of by the power supply's internal battery monitoring circuits and charging function to ensure a long battery life. The power supply has an output for remote reading of battery condition/charging/mains status in the form of potential-free relay contacts. LEDs indicate battery condition, mains/charger ok, load current, overload and fuse failure

EL3000iQ may also be monitored and configured via Ethernet. Built-in https web server with graphical user interface. The power supply can also be managed and monitored via SNMP (Simple Network Management Protocol) and can also be expanded with a number of other standard protocols. (on request)

Temperature compensated charging voltage

EL3000iQ has an input for connecting an external battery temperature sensor. This should always be used when the charging current can approach 20-30% of the battery capacity as the battery temperature will rise considerably when the charging current is high. When this is connected, the charger will regulate the charging voltage in relation to the battery temperature to ensure the longest possible life for the battery. With increasing temperature, the charging voltage decreases and vice versa. According to the battery manufacturer, the maintenance charging voltage for a 24V (2x12V) AGM lead battery is recommended to be 27.6VDC at a battery temperature of 25°C. Based on this temperature, the charging voltage is regulated by ÷36mV/°C.

$$Ubatt(T) = 27{,}6 + ((T - 25) * 36 * 10^{-3} \qquad [V]$$ hvor T er battery temperature i °C

Lithium batteries in most cases have built-in battery monitoring and protection circuits (BMS-Battery Management System) and therefore do not require an external temperature sensor or a temperature-compensated charging voltage.

Battery type settings

EL3000iQ has built-in charging characteristics adapted to 3 different battery types. The battery type is set by moving one or two jumpers. By default, this is set to AGM.

AGM refers to maintenance-free and gas-tight lead-acid batteries of the AGM (Absorbent Glass Mat) type.
With battery type set to LIT, it means lithium iron phosphate type, LiFePO4. (LFP).
With STD, it means lead-acid batteries with liquid acid, often with screw caps for refilling water.

EL3000iQ may also be used as a completely ordinary power supply without battery charging and battery monitoring functionality, the setting "NOBAT" then be selected.
The charging characteristic can be changed to adapt to other battery types via PM-Bus.

Battery monitoring and battery protection

The power supply automatically tests the battery condition every 60 minutes. If the battery voltage drops below 22V during the test, a battery fault is indicated by the LED marked BATTERY OK turned off. The LED marked BATTERY OK will light up again when the battery voltage has exceeded 23.8V. When the mains voltage is missing and the battery supplies power to the load, the LED marked BATTERY OK will flash. A manual battery test can be carried out with the push button marked BATTERY TEST.
In the event of a power failure, the battery will discharge. To prevent the battery from being damaged by being completely discharged, the load circuits are automatically disconnected when the battery voltage has dropped to 19V. The load circuits are automatically reconnected when the charging voltage rises above 23.8V.
Lithium batteries often have built-in battery protection and will switch off at approx. 20V (24V LifePo4 battery).

Recommended minimum battery size

The charging current should be limited to a maximum of 0.3 x the battery capacity (C) when using lead batteries. Too high charging current over a period of time damages the batteries. The charging current is distributed between the battery and the output circuits.

Example:

If the load on the output circuits is **8A**, the remaining current will be available to charge the batteries. In this case **12A**. The minimum recommended battery capacity for this charging current is then **12/0.3=40Ah**.

For lithium batteries of the type LiFePo4 used in a typical UPS system (few charge cycles) these can be charged with a much higher current, often up to 1C. For cyclic operation, the charge current should be reduced to <0.5C for the longest possible life.

Mains / Charger monitoring

When the charger is supplying power and is in good condition, the LED marked MAINS/CHARGER OK will light. When the power supply stops supplying power due to a power failure or charging error, the LED marked MAINS/CHARGER OK will turn off.

Alarm outputs

The power supply has separate outputs for remote reading of battery condition and charging/mains status.
The relay contacts are potential-free with contact rating (current) of 1 ampere DC, resistive load.

Charging and mains fault

Relay contacts marked MAINS/ CHARGER FAULT C and NO closed in case of mains/charging fault.

Relay contacts marked MAINS/ CHARGER FAULT C and NC opened in case of mains/charging fault

From the time a mains/charging fault occurs until the relay contacts are activated, there is a time delay of 30 seconds. The time delay can be changed via PM-Bus.

Battery failure

Relay contacts marked BATTERY FAULT C and NO are closed in the event of a battery fault.
Relay contacts marked BATTERY FAULT C and NC are opened in the event of a battery fault.

Overload and short circuit protection

The LED marked OVERLOAD starts to light up if the current draw exceeds the maximum output current of the power supply. The power supply regulates the maximum current draw to 22A and therefore lowers the output voltage in step with the load to maintain a constant output current. The power supply is not damaged by this current limitation.
The charger is equipped with 4 output circuits, each protected by a 15A fuse (slow). Since the batteries are connected in parallel with the load, the primary function of these fuses is to limit the current from the battery to the output circuits. In addition, the battery should be protected with a fuse mounted as close to the battery bank as possible.
Fuse LEDs are marked FUSE ERROR 1,2,3,4 and each indicate a separate circuit. The fuses are respectively marked in the same way.(1,2,3,4)
Outputs must be loaded with at least 100mA for these LEDs to light.

Over voltage protection:

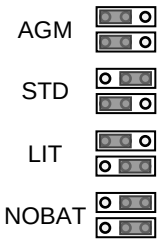
Mains voltage inputs are protected with a MOV (Metal Oxide Varistor) that protects against mains transients and overvoltages. Furthermore, "common mode" and "diff. mode inductors" are supplied together with X and Y capacitors to phase / ground to satisfy the requirements of the current EMC directive. These components will also help to prevent destructive transients from reaching sensitive components on the circuit board.
On the secondary side of the power supply, all inputs and outputs are equipped with transorb diodes that protect against static electricity and induced voltage pulses that can be supplied from outside via the connection cable.
The power supply also has an independent voltage monitor that ensures that the power supply is turned off if the output voltage exceeds 31.5-37.5V.

Connections EL3000iQ:

Fuses: 4 pcs
Type: Automatic fuses 15A
Push to reset

Mains input
90 – 265V_{AC}
47-63 Hz

Battery type setting:
Jumpers under cover.
Supplied as standard for AGM



Output circuits 4 pcs
Wire max 4mm^2

Output circuit
12VDC (7A)

Alarm outputs:
Mains/charger and
battery

Battery temperature sensor
Should be mounted on one of
the battery poles

Sense.
Connected to prevent voltage
drop if long battery cables
are used

Temperature sensor included.
Should be mounted on one of the
battery poles

The power supply can be used
with and without batteries.

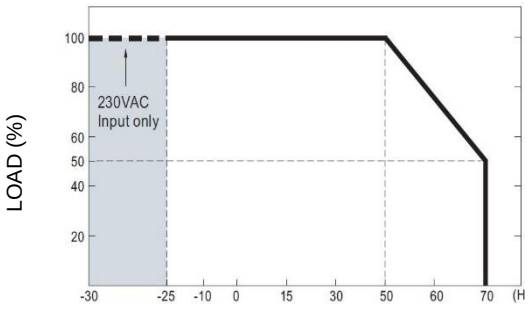
(See battery type settings)

Ethernet

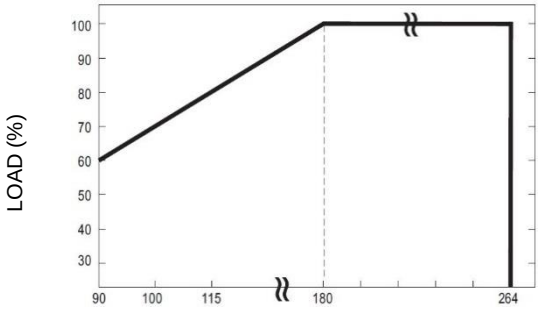
Built-in web server with graphical user interface that easily enables:

- Remote monitoring
- Data logging
- Configuration
- IoT protocols: MQTT, CoAP, and SNMP, among others.

Derating:



Ambient temperature °C

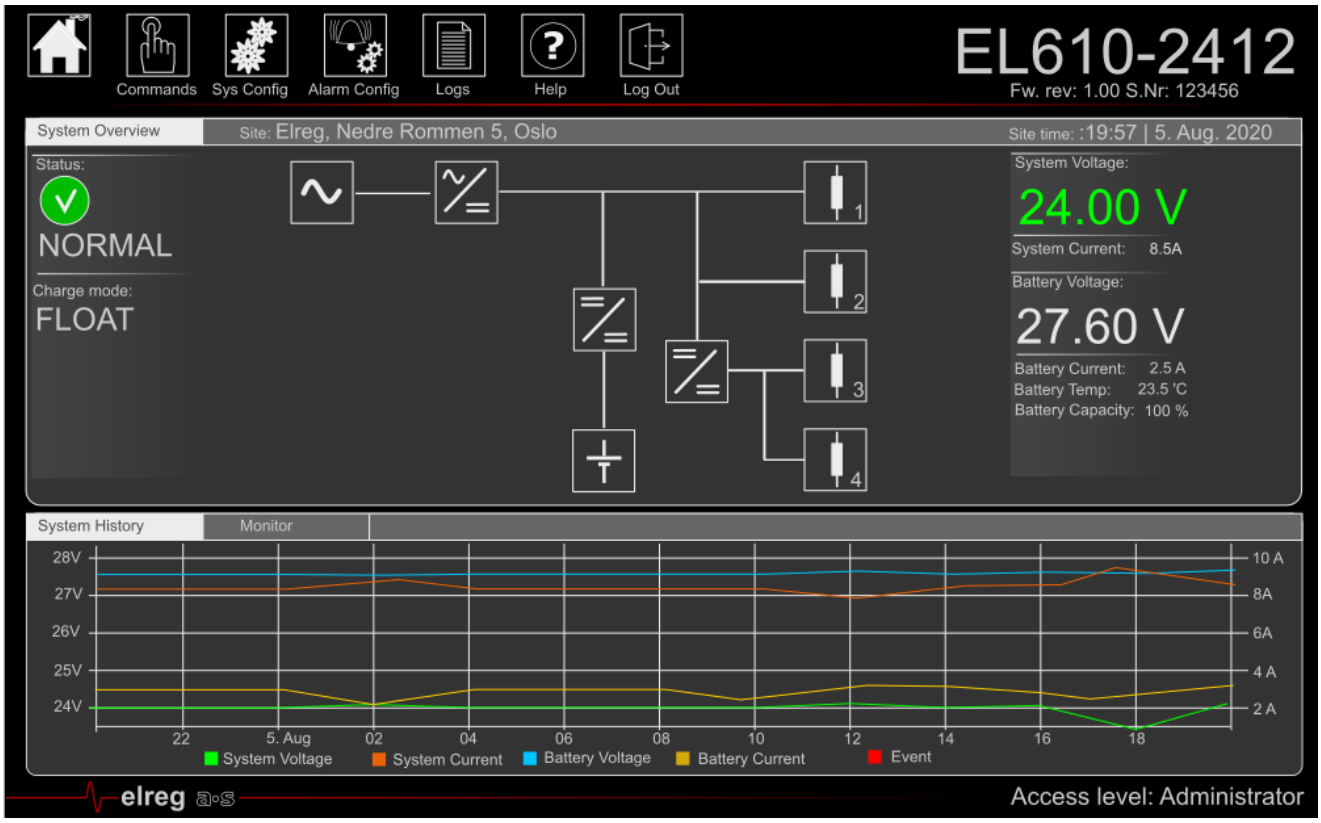


Operating voltage V_{AC}

Built-in communication unit (Ethernet)

Web user interface in the form of an http server listening on a local TCP port, allowing users to interact with the EL3000iQ from any device with a modern web browser. The web server allows higher-level monitoring systems, including an SNMP manager, to interact with the EL3000iQ SNMP agent to send a request to get the value of a variable or automatically receive an asynchronous notification sent by the agent to the SNMP manager to indicate a significant event, such as a fault or error. To further expand the possibilities, several other protocols running on top of TCP or UDP, such as MQTT, CoAP, ModBus TCP, AMQP, are available upon request.

Buil-in web-server, 128bit SSL encryption



Platform independent

The web interface works on common computer operating system platforms (such as Windows®, Mac®, UNIX, etc.) that support standard browsers that can run JavaScript. Supported browsers: Mozilla Firefox, Chrome, Safari, and IE.

No software installation on the host PC required: Communication with the web interface is simplified by standard HTTP.

Firmware can be upgraded over the network.

Concurrent sessions: Multiple login sessions (max. 4) are supported, which can be used for collaborative troubleshooting, training purposes, or other collaborative sessions with multiple users.

Security: Multiple group access levels are provided, which limit unauthorized attempts to change system settings.

Protected program:
The program runs from RAM, so there is no file system to be corrupted or damaged. The controller RAM is not accessible externally, providing excellent security against malicious attacks.

Built-in SNMP agent:
Standard SNMP traps are provided upon occurrence of alarm conditions; GET and SET operations are supported to retrieve data and perform remote operations over the network. The MIB files are provided with the controller software.

Technical data sheet EL3000iQ-2420	
Input	
Input voltage	90-264V_{AC}, 47-63 Hz
Input current	2.4A / 230V_{AC} (4.2A / 115V_{AC}) at full load
Power factor	> 97%, at max load and 230V_{AC} in
Overvoltage protection	Yes, MOV (Metall Oksid Varistor)
Connection 230V AC	Connector IEC C13 (With build-in fuse)
Outputs	
Nominal Output voltage 24V	27,6V_{DC} ±0,05V (adjustable)
Nominal Output current 24V	20A_{DC} ±0,5A_{DC}
Nominal Output voltage 12V	12,0V_{DC} ±0,05V
Nominal Output current 12V	7A_{DC} ±0,5A_{DC}
Nominal output power max	636W (total)
Regulation	Better than 0,5% at 0-100% load and/or 180-250VAC input voltage variation
Number of fused outputs	4 pcs, 15A (Automatic fuses)
Fuse type	Automatic fuses (push to reset)
Battery input	1 pcs (Proper fuse must be mounted as close as possible at the battery bank.)
Ripple and noise	<100mV p-p DC-30MHz, measured with scope probes directly at the outputs.
Connection	Screw terminals max 4mm^2
Protection	
Overtemperature	Automatic, the power supply will restart when temperature has decreased.
Overload	Yes, current limit at 22A +/- 0,5A, constant current mode of operation.
Overvoltage protection	31.5 ~ 37.5V, Power supply must be restarted to clear error.
Fan failure	Status output for mains failure/charging failure will be triggered
Status outputs / inputs	
Alarm output mains/charger/van	Potential-free relay contacts NO, NC, C, max 1A load
Alarm output battery	Potential-free relay contacts NO, NC, C, max 1A load
Wire connection	Screw terminals max 2.5mm^2
General	
Battery test	Automatic, based on periodic load testing. May also be done manually.
Recommended battery capacity	65 – 200Ah
Switching frequency	70kHz
Efficiency	>92%, at max load
Softstart:	YES
MTBF	160.1K hrs min. Telcordia SR-332 (Bellcore) ; 38.9K hrs min. MIL-HDBK-217F (25℃)
Physical	
Weight	3.9 kg
Physical size	482 x 220 x 45 mm (WxDxH)
Storage	÷40 ˚C to +85 ˚C
Operation	÷30 ˚C to +70 ˚C
Ingress protection	IP20
Cooling	Internal fans with fan control
Mounting	4 pcs. mounting holes (Screws included for 19" rack mounting)
EMC and Safety	
Safety	EN62368-1
EMC conducted	EN55032 (CISPR32), Conduction Class B, Radiation Class A og EN61000-3-2 (Harmonic distortion)
EMC immunity	EN61000-4-2,3,4,5,6,8,11

UL62368-1 BS EN/EN62368-1 TPTC004 IEC62368-1