

Let's talk!

Lithium-Ion Storage Cabinet VUCAB52

Energy Storage for Telecom and Industry Applications

General description

The VUCAB52 provides an electrical energy storage with special performance characteristics and security features. Based on highly efficient lithium cells and a well-considered concept of error prevention and error handling, this storage cabinet is designed as a component of a large-capacity storage as well as a basis for a single solution, for example in the home storage sector. The solution consists of lithium batteries, a DCDC converter and a controller. Due to this design, the energy storage can be used in applications requiring a DC voltage between 300 V and 750 V. The controller can be equipped with external standard interfaces according to demand. It can monitor and adjust up to 10 storage cabinets via the internal CAN bus. The output currents of the DCDC converters in the connected cabinets can be set individually, thus enabling a centrally controlled charging and discharging.

The cabinet provides a forcibly actuated ventilation system, which interlinks the floor panels (equipped with a flame protection filter) under each battery with an exhaust system. Thus, no danger to users or to the environment can arise from this lithium-ion storage, even in the case of an accident.



Picture may differ from actual device

General

Electrical safety	EN 60950, UL 94
Ventilation	forced ventilation, electronically controlled/monitored fans

Electrical data

Bus voltage (output voltage)	300 V _{DC} – 750 V _{DC} , optionally up to 950 V _{DC}
Charging current resp. discharge current	I _{NOM} = 50 A I _{MAX} = 100 A
Battery voltage	565 V _{DC} (5 LIM50 modules with 113 V _{DC} each)
Energy content	29.5 kWh (5 LIM50 modules with 5.9 kWh each)
Efficiency	max. 98 % in the charge/discharge cycle

Parallel connection of several cabinets via an active string controller in the cabinet, controlled by LICON

Environmental conditions

Insulation group	accord. to EN 60950, pollution degree 2
Operation temperature	-5°C to +45°C, non-condensing
Relative humidity	20 % – 95 %
Max. operation altitude	2000 meters
Protection class	IP 20

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Lithium-Ion Battery LIM50-110-K1

Lithium Cerion Battery Module with electronic safety shutdown
for use in the Storage Cabinet VUCAB52

- High-capacity Lithium Cerion cells
- High intrinsic safety through ceramic separator
- Intelligent battery management system (BMS) with active cell balancing
- Electronic protection against excess current in interaction with DCDC-30k



Picture may differ from actual device

Electrical data

Cell number	31
Nominal stack voltage	113 V
Charging current	max. 100 A
Discharge current	max. 100 A
Nominal power	max. 11.3 kW
Energy content	5900 Wh
Capacity	52 Ah
Control	via CAN bus
Module balancing	active, via balancing connectors

Mechanical data

Dimensions (W x H x D)	23", 5 U, 450 mm
Weight	approx. 70 kg
Protection class	IP20

Battery management

Active cell balancing	NBS technology (Neighbour Balancing System)
Measurement of the cell voltage	via BMS
Measurement of the cell temperature	via BMS

Connection technology

Positive terminal	H4 plug, Amphenol H4CMM8D
Negative terminal	H4 socket, Amphenol H4CFM8D
Module balancing	Phoenix PC5/2-STCL1-7,62
CAN bus	RJ45

Order code: LIM50-110-K1

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LICON-K1 Controller

Controller Module for the Storage Cabinet VUCAB52

General description

The controller module is designed to control and monitor the storage cabinet VUCAB52 via the CAN bus. The LAN interfaces enable the connection of a local PC or network. A clear and easy-to-operate web interface facilitates the controlling, programming and linkage of all controller parameters.

Further features:

- External alarm inputs
- Freely programmable alarm relays
- Anybus module for the integration of additional field buses such as:
 - CANopen
 - Modbus RTU
 - Modbus TCP
 - Profibus
 - RS-232
 - RS-485/422
- Web interface integrated

Electrical data (auxiliary voltage)

AC input voltage	230 V ($\pm 10\%$), 50 Hz
DC input voltage	24 V ($\pm 10\%$)
DC output voltage	24 V / 1 A

Signalling

Inputs	3 alarm inputs (alarm loop, freely programmable)
Outputs	3 alarm relays (potential-free, freely programmable)
Temperature measurement	2 x PT1000
CAN bus	CAN_BATT, CAN_EXT (800 kbit/s)



Picture may differ from actual device

Signalling (continuation)

Additional bus interfaces	via Anybus module
Optical	LED green: OK LED red: common alarm
LAN	web interface
LAN specification	IEEE 802.3™ compatible Ethernet controller, 10/100Base-T Port
Supported network protocols	IPv4, HTTP, DHCP, NTP, ICMP

Connection technology

AC input	Wago Winsta Midi, 3-pole
DC input / output (auxiliary voltage)	Phoenix MC1,5/2-GF-3,81
Signal	Phoenix FK-MC0,5/10-ST-2,5 (2 x 10-pole)
CAN battery	RJ45
CAN EXT	RJ45
LAN	2 x RJ45

Mechanical data

Dimensions (WxHxD)	23", 1 U, 170 mm
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Order code: LICON-K1

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DCDC Converter DCDC30k-400-600-K1

DCDC Converter for the string control of battery modules in energy storage cabinets

- 4-quadrant operation with interruption-free switchover in automatic mode
- Highly dynamic and precise current measurement with magneto-resistive sensor technology
- 3-phase interleaved current mode operation guarantees a symmetrical load sharing
- PID control algorithm on a DSP controller, supported by FPGA
- 120 kHz PWM frequency of the silicon carbide MOSFET output stages (thus smaller components = low space requirement)
- Inrush current limitation on both sides and soft start function
- Short-circuit resistance, temperature monitoring, overvoltage protection
- Active rectification with monitoring of the storage choke currents in order to achieve optimal efficiency
- Control via CAN bus, including firmware update function
- Protection of the output stages due to integrated desat shutdown
- Integrated master BMS module for the control of the DCDC30k and for the control of up to six LIM50-110 modules



Picture may differ from actual device

General

Electrical safety	EN 60950, VDE 0805 overload- and short-circuit proof
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Input (battery)

Nominal voltage	$U_N = 565 (280 - 781) V_{DC}$
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Output (external DC grid)

Nominal voltage	600 V _{DC} (300 – 750 V _{DC} programmable)
Voltage stability	+/-1 %
Efficiency	97 %
Max. output power	30.000 W
Max. output current	50 A static, 100 A for 5 minutes
Current limit	constant current, without shutdown, but limited by temperature

EMC

according to EN 61000-6-2 and EN 61000-6-4

Signalling

Auxiliary voltage input	24 V _{DC} (black start)
Signal input	for higher-level cut-off device
Bus interfaces	2 x CAN bus (800 kbit/s) 6 x bus connections for battery modules
Optical	LED green: OK LED red: alarm

Connection technology

Battery: +	H4 plug, Amphenol H4CMM8D
Battery: -	H4 socket, Amphenol H4CFM8D
Output	Phoenix PCV35 HC/5-GF-15,00
Mating plug:	Phoenix PC35 HC/5-STF-15,00
Grounding	M8 grounding bolt
Auxiliary voltage	Phoenix MC1,5/2-GF-3,81
Signal input	Phoenix MC1,5/3-GF-3,81
CAN bus	2 x RJ45
Bus 1 – Bus 6	6 x RJ45

Mechanical data

Dimensions (W x H x D)	23", 5 U, 450 mm
Weight	approx. 35 kg
Protection class	IP 20
Ventilation	2 controlled fans

Order code: DCDC30k-400-600-K1