



Hybrid Power

Charger and Modules 320V

AC/DC charger & 320V Ultracapacitor storage

- Innovative in energy storage & Power Electronics
- Custom-made solutions
- Complete solution: storage & Power Electronics
- Design and system integration



Features

- Long life cycle and life time
- CAN-bus interface
- Current sensing
- Specifications can be customized
- Programmable AC/DC charge
- Approved for heavy-duty shock and vibration norms
- EMC and temperature certified
- Intelligent platform

Mechanical Data

Charger

Length x Width x Height

137 x 270 x 75 mm (w/o connector lengths)

Approx. 3,0 kg

Module (x2)

Length x Width x Height

646 x 155 x 81 mm (w/o connector lengths)

Approx. 9,5 kg

Applications

- UPS wind turbine pitching
- Wind turbine LVRT
- Warehouse / logistic AGV
- UPS
- Industrial
- Power supplies

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System Specifications

Symbol	Parameter	Description	Value	Unit
	Capacitance			
C_s	Rated capacitance		2,73	F
	Tolerance capacity		+20/-0	%
	Voltage			
U_{NOM}	Nominal voltage		320	VDC
U_{MAX}	Max. operation voltage		345,6	VDC
	Resistance			
ESR_{DC}	Internal resistance		400	mΩ
	Power (Cells in module)			
	Rated Power	@ V_r and ESR, DC_{max}	64	kW
	Energy (module)			
E_{max}	Energy	@ V_{max}	45,3	Wh
E_{ava}	Available	Between V_{max} and $\frac{1}{2} V_{max}$	34,2	Wh

AC/DC Charger Specifications

Symbol	Parameter	Description	Value	Unit
	General			
P_r	Rated power	@ U_{sr} 320VDC, I_{charge} 3A	960	W
f_r	Switching frequency		20	kHz
η_r	Efficiency		>90	%
	Primary side			
U_{pr}	Rated voltage		400	VAC ±10%
$U_{p,max}$	Max. operating voltage		440	VAC
	Secondary side			
U_{sr}	Rated voltage		320	VDC
$U_{s,max}$	Max. operating voltage		500	VDC
I_{charge}	Charge current		3	A
	Energy demand			
	Control voltage		24	VDC ±10%
	Control current		0,5	A

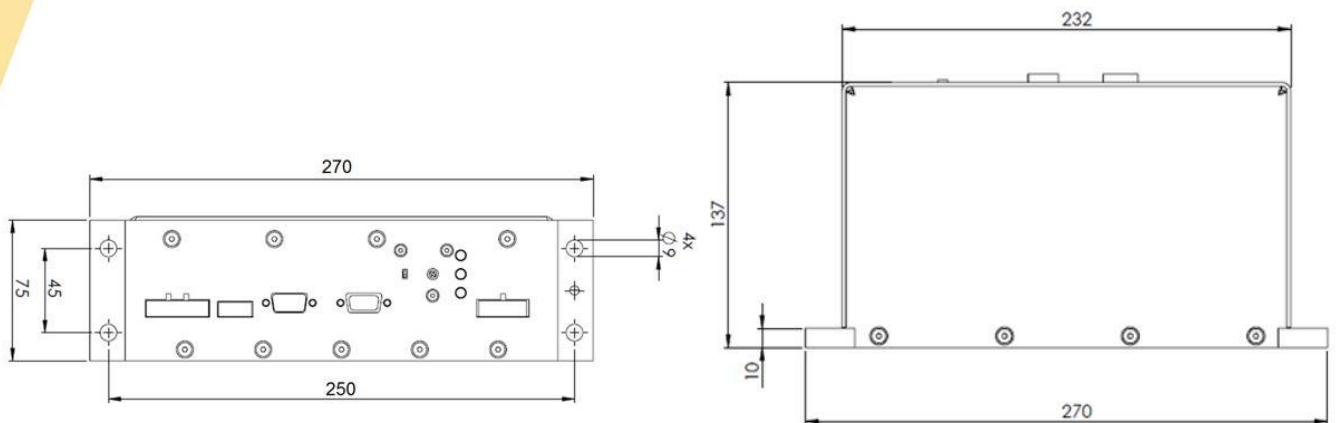


Capacitor Module Specifications

Symbol	Parameter	Description	Value	Unit
	Capacitance			
C_s	Rated capacitance		5,47	F
	Tolerance capacity		+20/-0	%
	Voltage			
U_{NOM}	Nominal charging voltage		160	VDC
U_{MAX}	Max. operating voltage		172,8	VDC
U_{ISO}	Isolation voltage		600	VDC
	Resistance			
ESR_{DC}	Internal resistance		200	m Ω
	Environment			
T_a	Operating temperature range		-40 till +65	$^{\circ}C$
$T_{STORAGE}$	Storage temperature range		-40 till +70	$^{\circ}C$
	Protection class		IP40	
	Power (cells only)			
P_d	Rated power density	@ V_r and $ESR_{DC_{max}}$	8,01	kW/kg
P_{max}		@ V_{max} and ESR_{AC}	9,35	kW/kg
	Power (cells in module housing)			
P_d	Rated power density	@ V_r and $ESR_{DC_{max}}$	3,26	kW/kg
P_{max}		@ V_{max} and ESR_{AC}	3,79	kW/kg
	Energy (module)			
E_{max}	Energy density	@ V_{max}	2,4	kW/kg
E_{ava}	Available energy	Between V_{max} and $\frac{1}{2} V_{max}$	17,8	Wh
	Current			
I_{AVG}	Rated continuous current		25	A
I_{LEAK}	Leakage current	After 72 hours at 25 $^{\circ}C$	0,3	mA

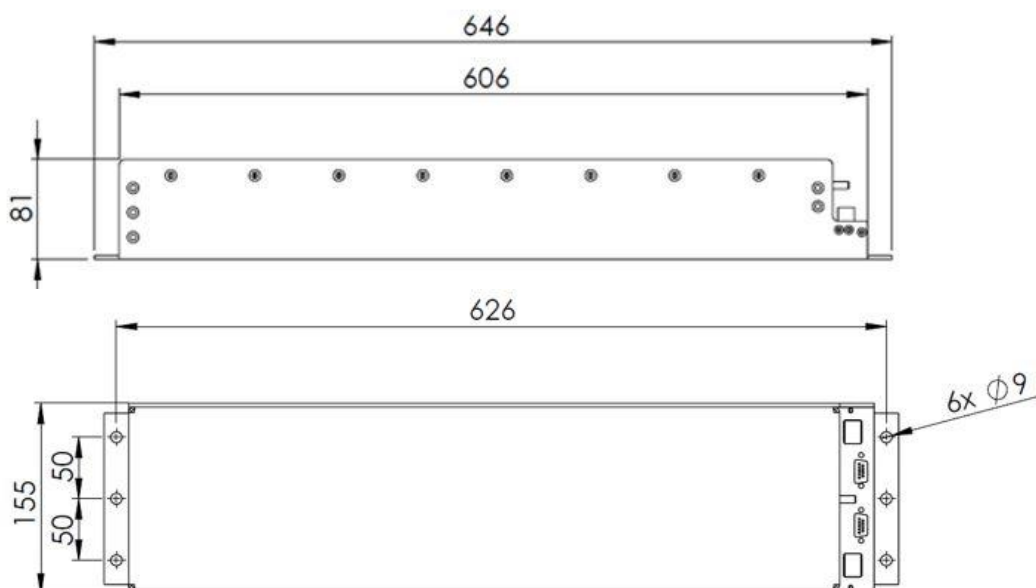
Mechanical data – AC/DC Charger

Length x Width x Height:	137 x 270 x 75 mm (w/o connector lengths)
Weight:	3,0 kg
Housing:	IP40 (connector IP20)
Mounting:	DIN rail mounting on l x h side



Mechanical data – Module (2x)

Length x Width x Height:	646 x 155 x 81 mm
Weight:	9,5 kg
Housing:	IP40 (connector IP20)
Mounting:	DIN rail mounting on l x w side





Certifying Tests

Description	Conditions
IEC60068	Shock and vibration
EN 61000	Electric Magnetic Compatibility (EMC)
	Temperature test -40°C till 60°C