



## Mild Hybrid Module

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



## Features

- 7 kW DC/DC converter,  $U_n$  30V
- Current 150A
- Step up and step down mode
- Binary and analog I/O
- RS 232 / CAN bus interface
- 24 VDC Supply
- Forced air-cooling (option)
- Plug and play or set-point over CAN
- Compatible with "smart-alternators" and conventional alternators
- Triple usage: Mild-hybrid, stop/start and cold start

## Applications

- Heavy transport vehicle (bus & truck)
  - Fast energy storage hybrid driveline combination diesel-electric, fuel cell and batteries
  - Regenerative braking
  - Smart alternator operation
  - Board net stabilization
  - Peak shaving

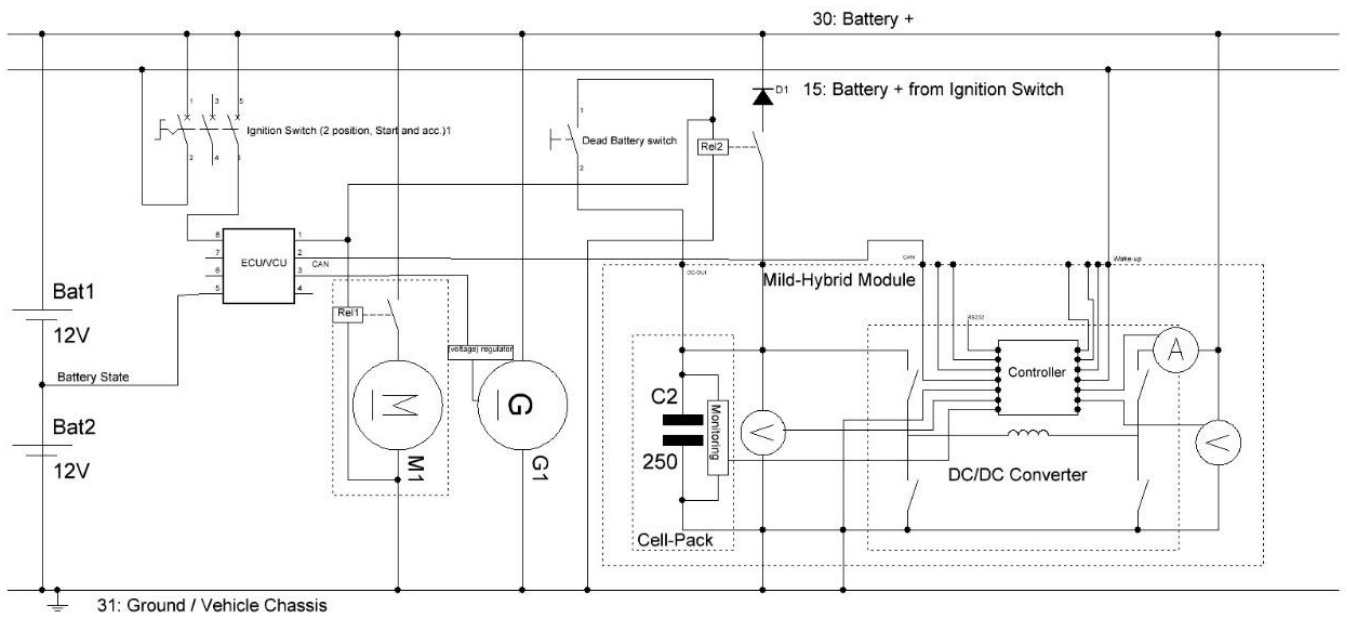
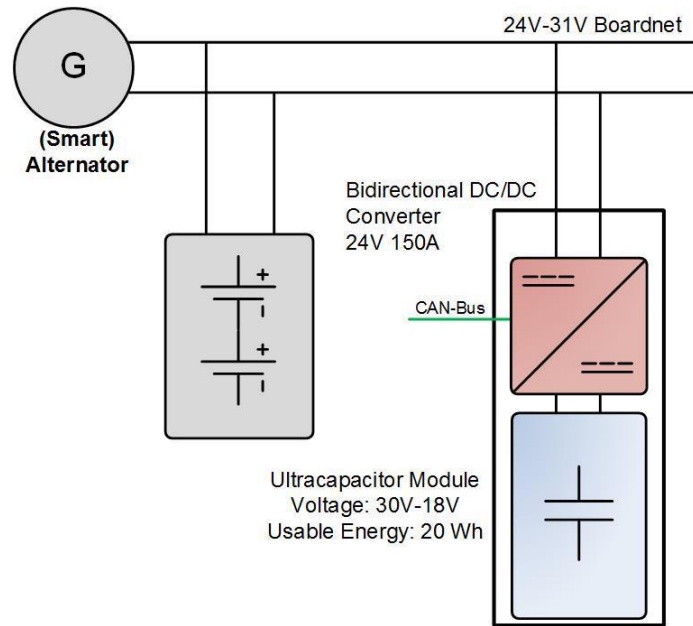
## Mechanical Data

Length x Width x Height  
1000 x 320 x 210 mm  
Approx. 25 kg

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## Overview





## Technical specifications

Symbol	Parameter	Description	Value	Unit
	<b>General</b>			
$P_r$	Rated power	@ $U_{out}$ 30V	2.7	kW
$f_r$	Switching frequency		24	kHz
$\eta_r$	Efficiency	@ $P_r$	>95	%
	<b>Ultracapacitor store</b>			
	<b>Capacitance</b>			
$C_s$	Rated capacity		250	F
	Tolerance capacity		+/- 20	%
	<b>Voltage</b>			
$U_{in}$	DC voltage range		9-30	VDC
$U_{in,max}$	Max. operating voltage		32.4	VDC
	<b>Resistance</b>			
$ESR_{DC}$	Rated resistance		2	$\Omega$
	<b>Module specifications</b>			
	<b>Output</b>			
$U_{out}$	Rated voltage		18-30	VDC
$U_{out,max}$	Max. operating voltage		35	VDC
$I_{nom}$	Max. current		150	A
$I_{RMS}$	RMS current		100	A
	<b>Supply power</b>			
	Control voltage	Rated value	24	VDC
	Control current	Between	20 till 35	VDC
	<b>Environment</b>			
$T_o$	Operating temperature		-40 till 65	$^{\circ}C$
$T_s$	Storage temperature		-40 till 70	$^{\circ}C$
	Protection class		IP-54	
	<b>Mechanical data</b>			
	Weight	Approx.	25	kg
	Width		320	mm
	Height		210	mm
	Length		1000	mm



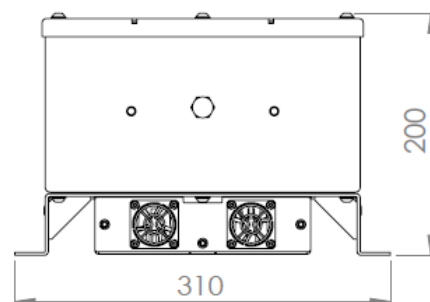
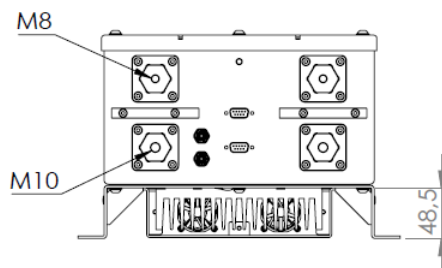
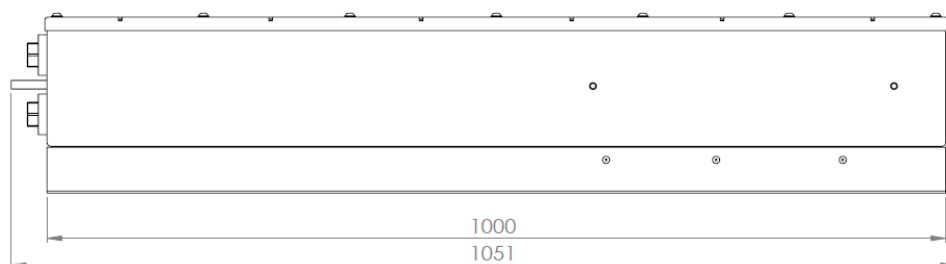
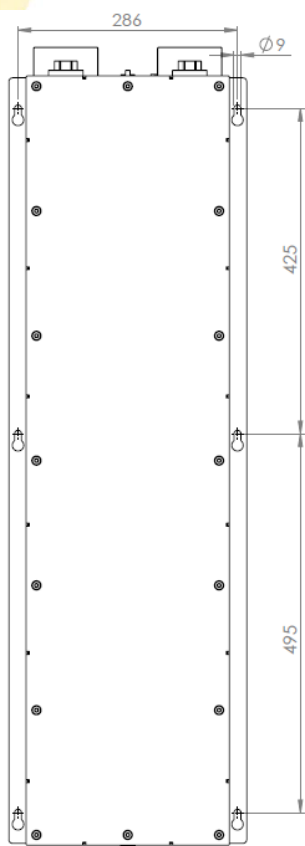
Symbol	Parameter	Description	Value	Unit
	Communication			
	Data	CAN / RS232 electrical isolated SAEJ1939		

## Mechanical Data

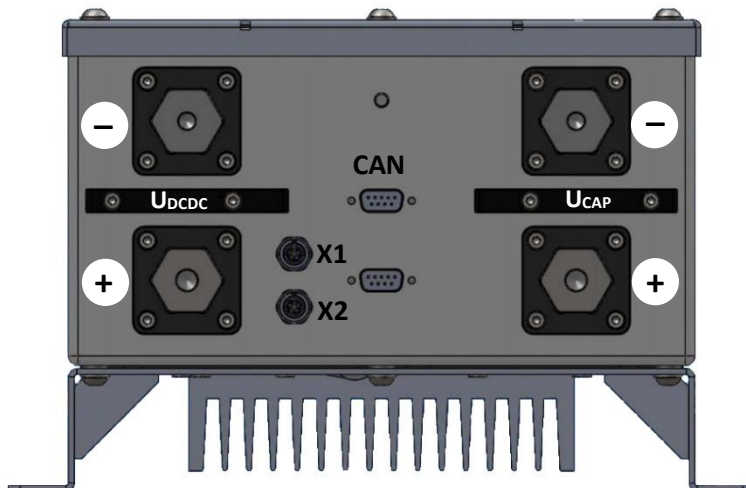
Length x Width x Height: 1000 x 320 x 210 mm

Weight: Approx. 25 kg

Enclosure: IP-54



## Connections



CAN: two parallel standard SUB-D connectors for CAN-IN / CAN-OUT

### Connector: X1

Pin	Signal	Cross section	Description
1	+24V	0,14 mm <sup>2</sup>	Power supply DC/DC converter, current consumption <1A
2	GND	0,14 mm <sup>2</sup>	Power supply DC/DC converter, current consumption <1A
3	Reserve	0,14 mm <sup>2</sup>	
4	Reserve	0,14 mm <sup>2</sup>	
5	Reserve	0,14 mm <sup>2</sup>	
6	Reserve	0,14 mm <sup>2</sup>	
7	Reserve	0,14 mm <sup>2</sup>	

### Connector: X2

Pin	Signal	Cross section	Description
1	U <sub>CAP</sub> *	0,25 mm <sup>2</sup>	DC-out, I <sub>max</sub> = 4A, observe correct polarity
2	GND	0,25 mm <sup>2</sup>	DC-out, I <sub>max</sub> = 4A, observe correct polarity

**\*Caution! Not internal fused! Shorted contacts will destroy the connector!**

### Power Screw Terminals

Pin	Signal	Connector	Description
	- U <sub>DCDC</sub>	M8	
	+ U <sub>DCDC</sub> **	M10	
	- U <sub>CAP</sub>	M8	Short-circuited for safety
	+ U <sub>CAP</sub> **	M10	Short-circuited for safety

**\*\*Caution! Not internal fused!**