

Input voltage	Output voltage	Output current	Output power	Efficiency	Size
18-36V	12V	100A	1200W	97.5%	140x120x42.5mm

The GEMSD2412100 is a non-isolated DC-DC converter that uses a synchronous rectification technology, and features high efficiency and power density. It has the dimensions of 140x120x42.5mm and provides the rated output voltage of 12V and the maximum output current of 100A.



### **Features**

- Design meeting RoHS / CE
- High efficiency:97.3%(@24Vin)
- Import capacitors, high reliability
- Output transient absorption protection
- Support -40 °C environment
- 100% full load burn-in test
- 3 month warranty
- Remote ON/OFF control (optional)
- Waterproof level IP68
- Undervoltage, short circuit, overload protection

### Model naming method

GEMSD2412100

### **Applications**

- Industrial
- Alternative Energy
- Golf Cart
- Forklift
- Electromotor
- Telecommunications Boat & Yatch
- Medical
- Led Marketplace & So On

GE : G-energy

M : Metal Body

SD : Step Down

24 : 24V Input Voltage

12 : 12V Output Voltage

100: 100A Max Current

## Electrical Specifications

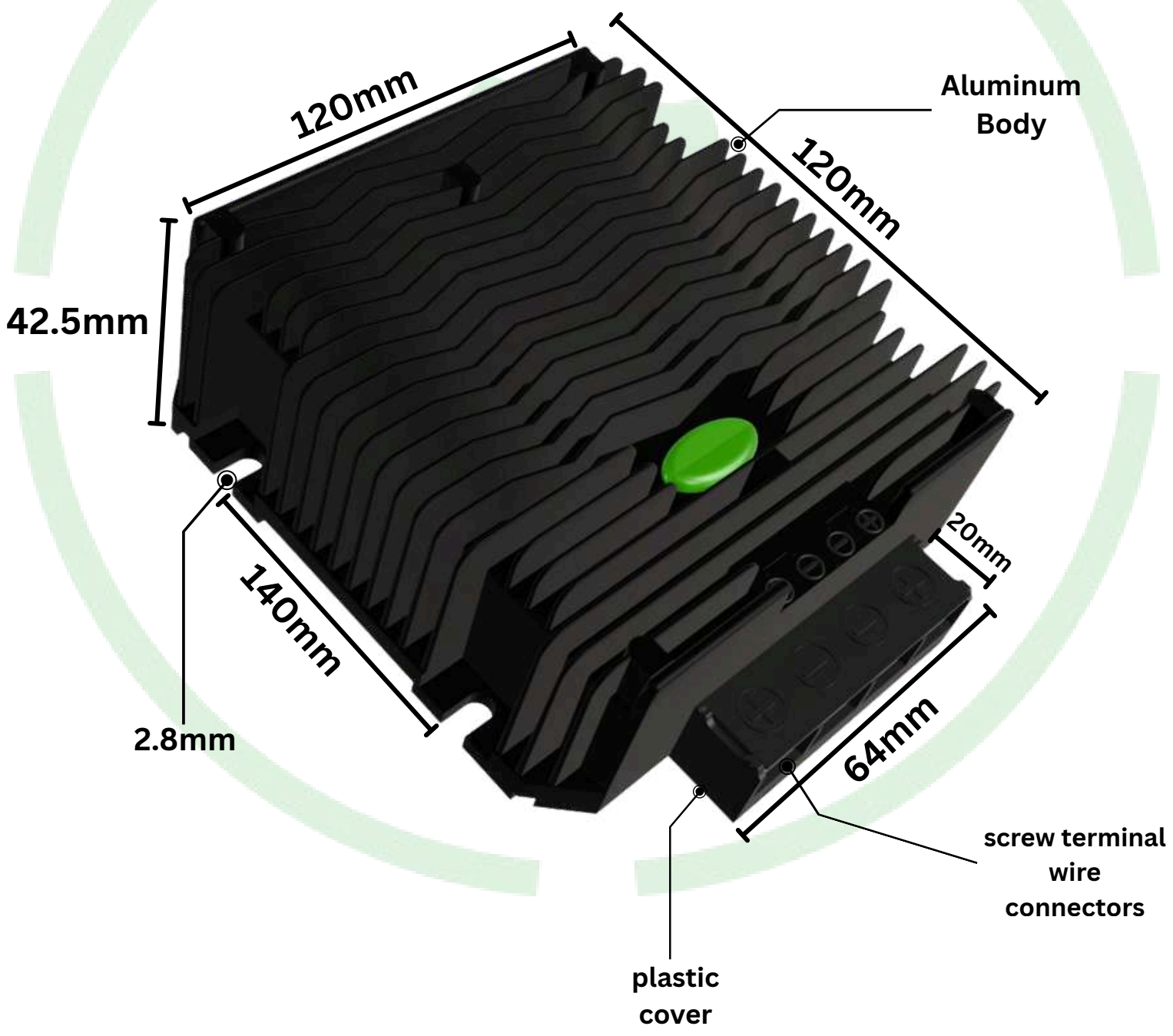
Conditions: TA=25°C(77°F), Airflow= 1 m/s (200LFM), Vin =24V Vout =12V, unless otherwise specified

Parameter	Min.	Typ	Max.	Units	Remarks
Absolute maximum ratings					
Operating ambient temperature	-40	-	+50	°C	
Shell ambient temperature	-40	-	80	°C	
Storage temperature	-55	-	100	°C	
Operating humidity	5	-	95	%	Non-condensing
Atmospheric pressure	62	-	106	Kpa	
Altitude	-	-	4000	m	
Cooling way	-	-	-		Natural cooling

## Input characteristics

Input voltage	18	24	36	V	-
Max. input voltage	-	-	36	V	Continuous
Undervoltage shutdown	16.7	17	17.5	V	Automatic recovery
Undervoltage recovery	17.3	17.5	17.8	V	Automatic recovery
Max. input current	-	-	74.6	A	Vin =17.2V; Iout =100A
No load current	-	42	120	mA	Vin = 72V

Positive electrode cable	6	-	-	AWG	If the wire length is greater than 50cm, it is recommended to use a thicker wire diameter.
Negative electrode cable	6	-	-	AWG	
Enable PIN cable	-	-	-	AWG	None
Fuse	-	100	-	A	



## Output characteristics

Efficiency	-	97.3	-	%	Vin =24V; Iout =100A
Output voltage	11.9	12.0	12.3	V	Vin =24V; Iout =100A
Regulator accuracy	-	±2	-	%	
Voltage regulation	-	±2	-	%	
Load Regulation	-	±2	-	%	
Overvoltage protection	-	NA	-	V	
Output current	-	-	100	A	
Overcurrent protection	-	130	135	A	
External capacitance	-	NA	-	μF	Don't need
Output ripple and noise	-	48	200	mVp-p	Vin =18-36V; Iout=100A, Oscilloscope bandwidth: 20 MHz
Output voltage rise time	-	16.1	50	mS	
Boot delay time	-	37.6	50	mS	
Out voltage overshoot	-	1	2	%	Vin =24V, 50%-75% Load step
Over temperature protection	-	-	100	°C	Shell temperature, @ 100°C Restore working
Short circuit protection	-	Yes	-		Long-term (4 hours) short circuit is not damaged, Hiccup mode
Positive electrode cable	6	-	-	AWG	If the wire length is greater than 50cm, it is recommended to use a thicker wire diameter.
Negative electrode cable	6	-	-	AWG	

## Feature Description

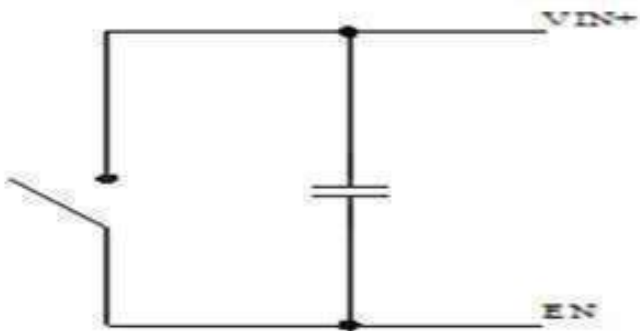
### Remote On/Off (EN) (Optional)

Logic Enable	Low level (0-18Vdc)	High level (18-36Vdc)	Left open
Positive logic	Off	On	Off

### Input Undervoltage Protection

The converter will shut down after the input voltage drops below the under-voltage protection threshold for shutdown. The converter will start to work again after the input voltage reaches the input under voltage protection threshold for startup. For the Hysteresis, see

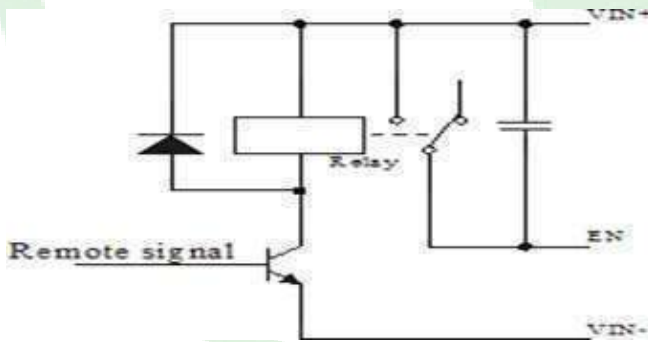
### Various circuits for driving the EN



Simple control

### Output Overcurrent Protection

The converter equipped with current limiting circuitry can provide protection from an output overload or short circuit condition . If the output current exceeds the output overcurrent protection set point, the converter enters hiccup mode. When the fault condition is removed, the converter will automatically restart.



Transistor control

### Wiring Instructions

The input and output of this product is terminals. The user should ensure that the input and output wires and terminals are connected reliably, and pay attention to the wire diameter to meet the requirements of the power supply current. If the cable to be used is long, it needs Considering the voltage drop of the wire, if the voltage drop is too large, the voltage output at the load end may not meet the load demand. In this case, consider using a thicker wire diameter or reducing the length of the wire. Generally, if long wiring is required. Long line should be used on the side where the current is relatively small. For example, this product is a step-down product, so long lines should be used on the input side.

**Safety and EMC features**

Anti-electric Strength	Input to Output		V	Leakage current $\leq 3.5\text{mA}$ , $I_{\text{min}}$ , no breakdown, no arcing
	Input to Shell	$\geq 500$	V	
	Output to Shell	$\geq 500$	V	
Insulation resistance	Input to Output	$\geq 10$	$\text{M}\Omega$	Test voltage = 500V
	Input to Shell			
	Output to Shell			

**Other characteristics**

Weight	$\leq 1200$	g	
Package	White box		
MTBF	$\geq 200,000$	H	$V_{\text{in}} = 24\text{V}; I_{\text{out}} = 100\text{A}$
Switching frequency	$100 \pm 10$	KHz	

**Characteristic Curves**

Conditions:  $T_A = 25^\circ\text{C}$  ( $77^\circ\text{F}$ ),  $V_{\text{in}} = 24\text{V}$ ,  $V_{\text{out}} = 12\text{V}$ , unless otherwise specified

Figure 1, Efficiency

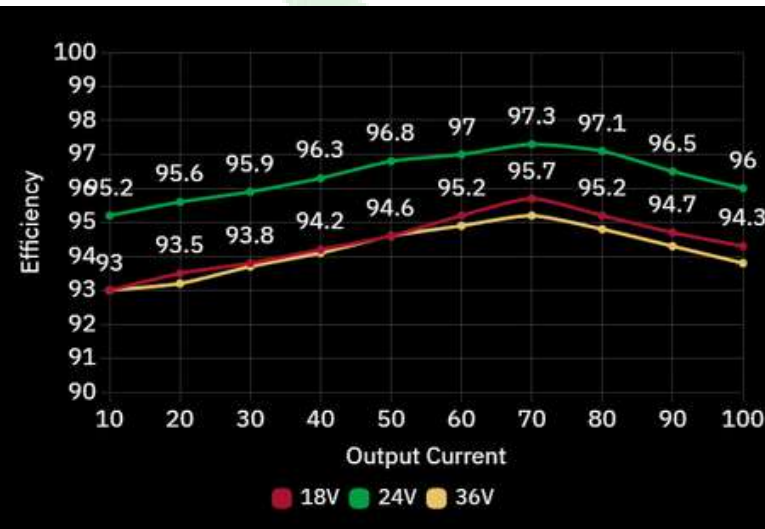
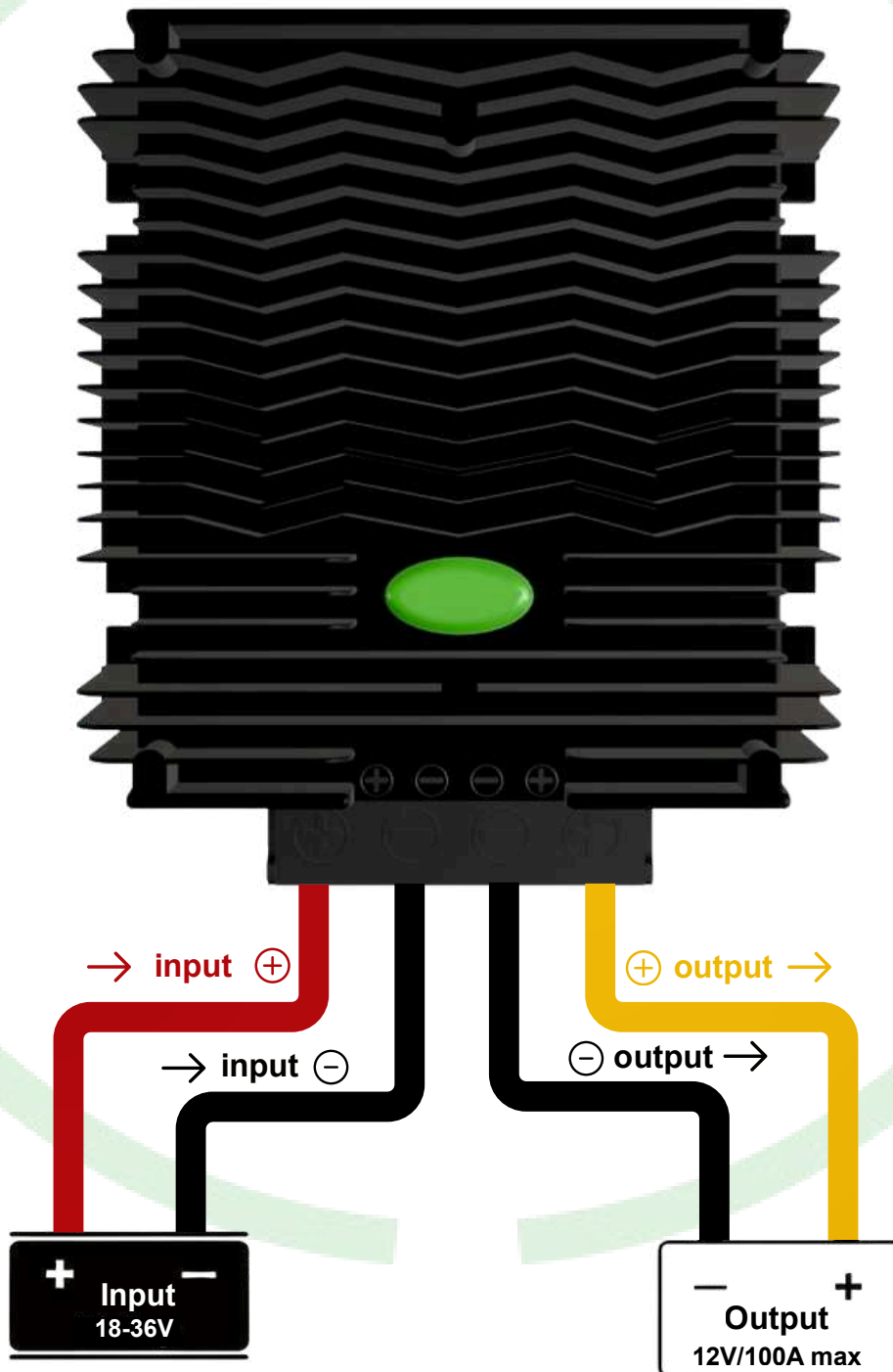


Figure 2, Input V-I,  $I_{\text{out}} = 100\text{A}$



**Thermal Consideration**

Sufficient airflow should be provided to help ensure reliable operating of the GEMSD2412100. Therefore, thermal components are mounted on the top surface of the GEMSD2412100 to dissipate heat to the surrounding environment by conduction, convection, and radiation. Proper airflow can be verified by measuring the temperature at the middle of the base plate.

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