

Input voltage	Output voltage	Output current	Output power	Efficiency	Size
75-145V	24V	20A	480W	88%	125x105x52mm

The GEMSD1102420 is an isolated DC-DC converter that uses a synchronous rectification technology, and features high efficiency and power density. It has the dimensions of 125x105x52 mm and provides the rated output voltage of 24V and the maximum output current of 20A.



Features

- Design meeting RoHS / CE
- High efficiency:88%(@90V/110Vin)
- 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
- Under voltage, Short circuit, Overload protection

Model naming method

GEMSD1102420

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
110: 110V Input Voltage
24 : 24V Output Voltage
20 : 20A Max Current

Electrical Specifications

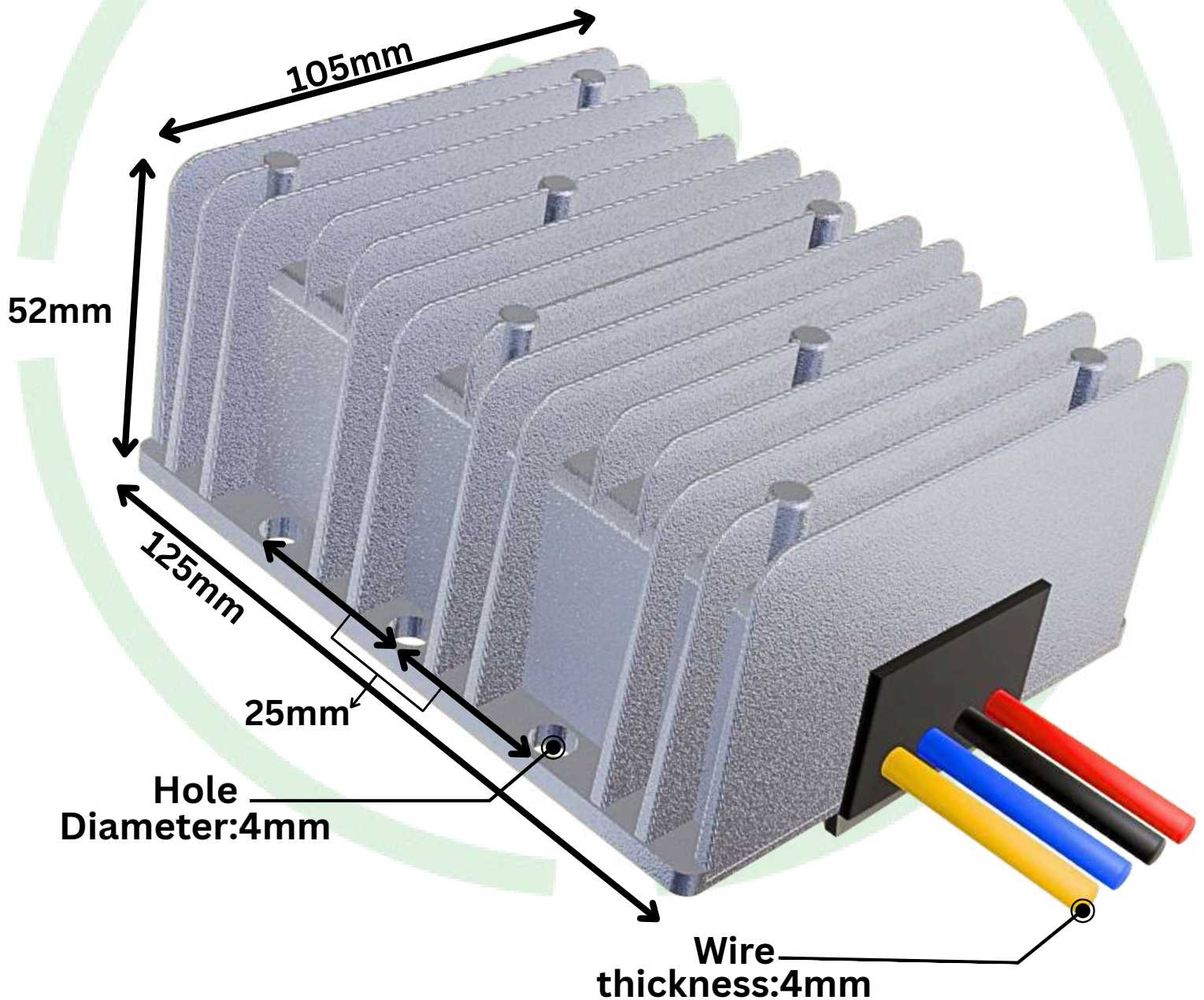
Conditions: TA=25°C(77°F), Airflow= 1 m/s (200LFM), Vin =90V/110V Vout =24V, unless otherwise specified

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	75	90/110	145	V	-
Max. input voltage	-	-	150	V	Continuous
Undervoltage shutdown	72.8	73.9	74.6	V	Automatic recovery
Undervoltage recovery	74.6	74.8	75	V	Automatic recovery
Max. input current	-	-	7.2	A	Vin =75V Iout =20A
No load current	-	10	15	mA	Vin = 75V

Positive electrode cable	16	-	-	AWG	If the wire length is greater than 50cm, it is recommended to use a thicker wire diameter.
Negative electrode cable	16	-	-	AWG	
Enable PIN cable	-	-	-	AWG	None
Fuse	-	-	-	A	



Output characteristics

Efficiency	-	88	-	%	Vin =90V/110V; Iout =20A
Output voltage	23.5	24	24.3	V	Vin =90V/110V; Iout =20A
Regulator accuracy	-	±2	-	%	
Voltage regulation	-	±3	-	%	
Load Regulation	-	±2	-	%	
Overvoltage protection	-	-	-	V	
Output current	-	-	20	A	
Overcurrent protection	22.5	23	24	A	
External capacitance	-	NA	-	μF	Don't need
Output ripple and noise	-	220	300	mVp-p	Vin =75-145V; Iout=20A, Oscilloscope bandwidth: 20 MHz
Output voltage rise time	-	7	12	mS	
Boot delay time	-	15	20	mS	
Out voltage overshoot	-	1	5	%	Vin =90V/110V, 50%-75% Load step
Over temperature protection	-	-	-	°C	Shell temperature, @ 100°C Restore working
Short circuit protection	-	YES	-		
Positive electrode cable	18	-	-	AWG	If the wire length is greater than 50cm, it is recommended to use a thicker wire diameter.
Negative electrode cable	18	-	-	AWG	

Feature Description

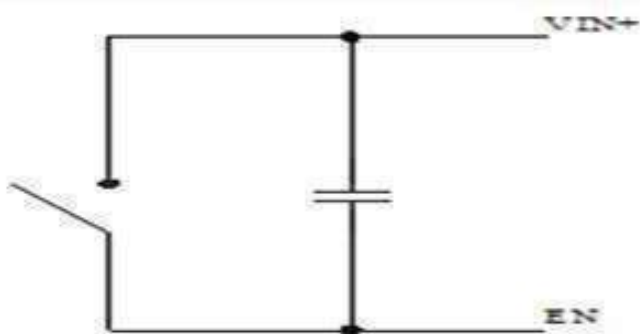
Remote On/Off (EN) (Optional)

Logic Enable	Low level (0-75Vdc)	High level (75-145Vdc)	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



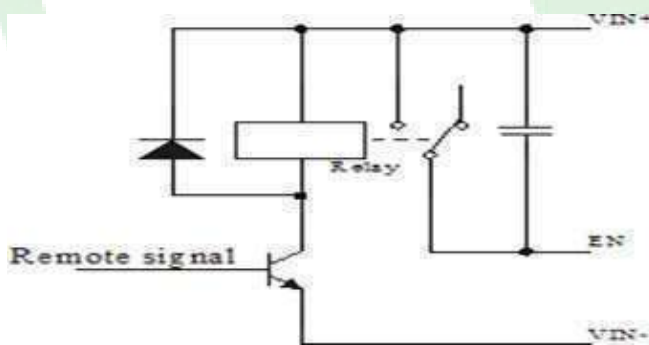
Simple control

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.

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.



Transistor control

Safety and EMC features

Anti-electric Strength	Input to Output		V	Leakage current $\leq 3.5\text{mA}$, 1min, no breakdown, no arcing
	Input to Shell	≥ 500	V	
	Output to Shell	≥ 500	V	
Insulation resistance	Input to Output	≥ 10	$\text{M}\Omega$	Test voltage = 500V
	Input to Shell			
	Output to Shell			

Other characteristics

Weight	≤ 1100	g	
Package	White box		
MTBF	$\geq 200,000$	H	$V_{in} = 90\text{V}/110\text{V}; I_{out} = 20\text{A}$
Switching frequency	135 ± 10	KHz	

Characteristic Curves

Conditions: $T_A = 25^\circ\text{C}$ (77°F), $V_{in} = 90/110\text{V}$, $V_{out} = 24\text{V}$, unless otherwise specified

Figure 1, Efficiency

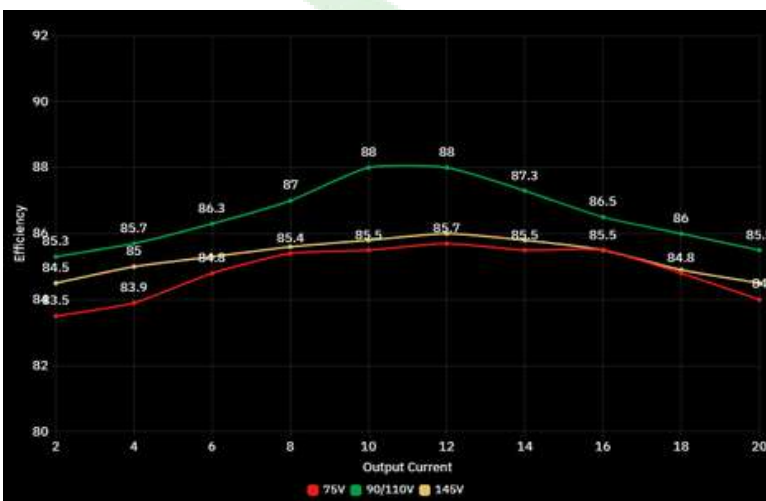


Figure 2, Input V-I, $I_{out} = 20\text{A}$

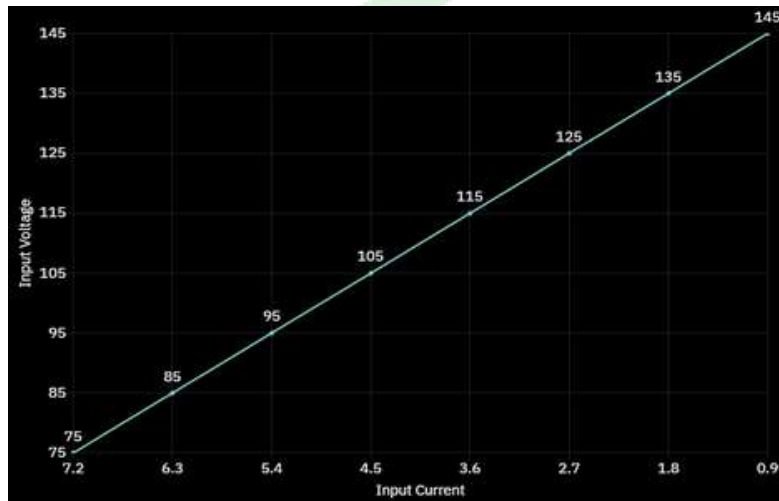
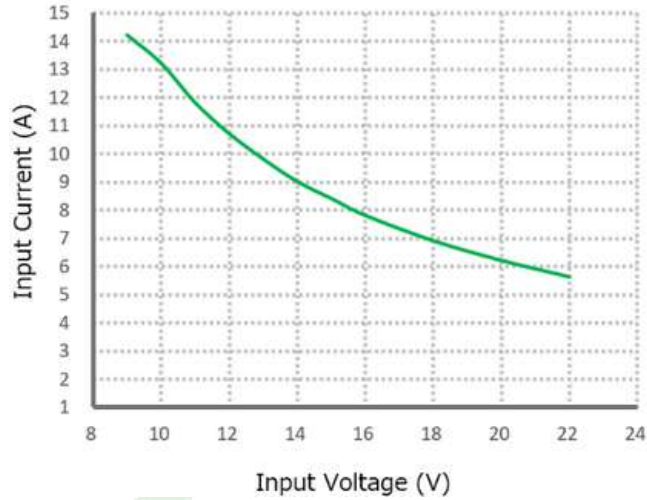


Figure 3, Input V-I, Iout=3A



Typical Waveforms

Conditions: TA = 25°C (77°F), Vin = 24V, unless otherwise specified.

Figure 4, 25% - 50% load dynamic



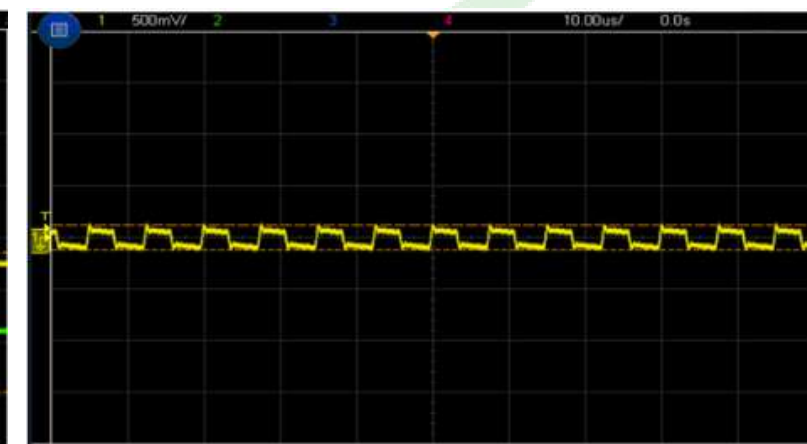
Figure 5, 50% - 75% load dynamic



Figure 6, Output voltage established (Iout = 5A)



Figure 7, Output ripple & noise (Iout = 5A)



Thermal Consideration

Sufficient airflow should be provided to help ensure reliable operating of the GEMSD1101220. Therefore, thermal components are mounted on the top surface of the GEMSD1101220 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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