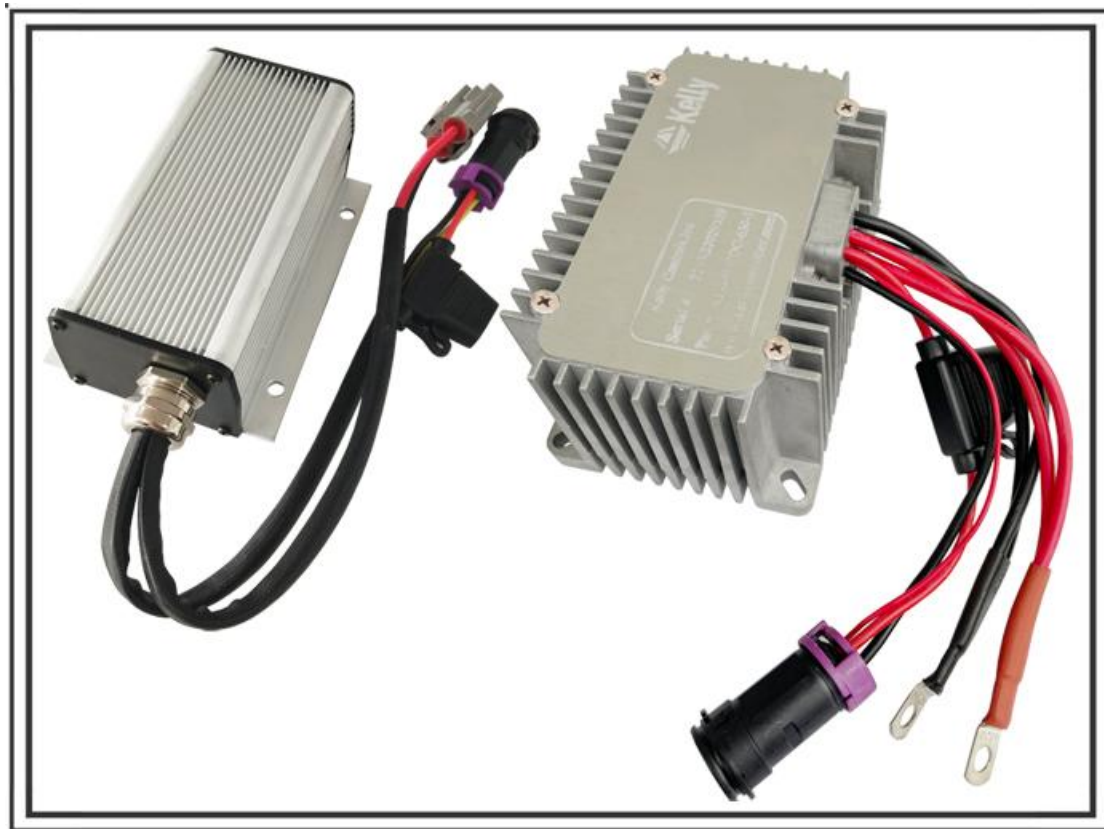


Kelly DC/DC Converter User's Manual

Model:

KL-48DCDC-400-5	KL-48DCDC-500-5	KL-72DCDC-650-5
KL-72DCDC-400-5	KL-72DCDC-500-5	KL-96DCDC-650-5
KL-96DCDC-400-5	KL-96DCDC-500-5	KL-144DCDC-650-5
KL-144DCDC-400-5	KL-144DCDC-500-5	



Rev.1.2
Nov. 2022

1. Introduction

This manual introduces the Kelly isolated DC-DC Converter's features, specifications and installation. Read the manual carefully and thoroughly before using the converter. If you have any questions, please contact the support center of Kelly Controls, Inc.

Kelly DC-DC Converter covers wide range of DC input voltages of 40V to 200V, and outputs DC 13.5V. It is quite efficient and reliable with a compact size.

2. Features

- No arc
- Can be controlled by key switch directly, no need of external relay
- By default, key switch is non-isolated, its input connect to B+. Customer can order isolated key switch which is powered by a separate 12V. (For 500W 650W DC/DC)
- Over temperature protection, shut down at 90°C
- Over current protection
- Low voltage protection: stop working at low battery voltage
- High efficiency with compact size and light case
- Low standby current: $\leq 5\text{mA}$
- Isolate between input and output
- The matching connectors and crimp pins will come with each DC/DC converter
- IP66 protection

3. Specifications

- Nominal input voltage: DC 48V, 60V, 72V, 84V, 96V, 108V, 120V, 144V
- Output voltage: DC 13.5V under 70°C or DC 12.2V above 70°C
- Operating voltage range: 36V-60V, 45V-90V, 63V-130V, 90V-180V
- Output current: 30A, 40A, 50A
- Output power: 400W, 500W, 650W
- Operating Temperature Range: -20°C to 90°C (case temperature)

Kelly Controls, Inc

- Full - load efficiency: $\geq 90\%$
- Ripple coefficient: $\leq 1\%$

Model	Input Voltage	Output voltage (at nominal input voltage)	Output voltage (at min input voltage)	Operating Voltage	Output Current	Output Power
KL-48DCDC-400-5	48V	13.5V	11.5V	36V-60V	30A	400W
KL-72DCDC-400-5	60V, 72V	13.5V	11.5V	45V-90V	30A	400W
KL-96DCDC-400-5	84V, 96V, 108V	13.5V	11.5V	63V-130V	30A	400W
KL-144DCDC-400-5	120V, 144V, 156V	13.5V	11.5V	90V-180V	30A	400W
KL-48DCDC-500-5	48V	13.5V	11.5V	36V-60V	40A	500W
KL-72DCDC-500-5	60V, 72V	13.5V	11.5V	45V-90V	40A	500W
KL-96DCDC-500-5	84V, 96V, 108V	13.5V	11.5V	63V-130V	40A	500W
KL-144DCDC-500-5	120V, 144V, 156V	13.5V	11.5V	90V-180V	40A	500W
KL-72DCDC-650-5	60V, 72V	13.5V	11.5V	45V-90V	50A	650W
KL-96DCDC-650-5	84V, 96V, 108V	13.5V	11.5V	63V-130V	50A	650W
KL-144DCDC-650-5	120V, 144V, 156V	13.5V	11.5V	90V-180V	50A	650W

4. Installation

KL-xxDCDC-400-5 Dimensions: 130mm (L)*94mm (W)*53mm (H)

The case outline and mounting holes' dimensions are shown below.

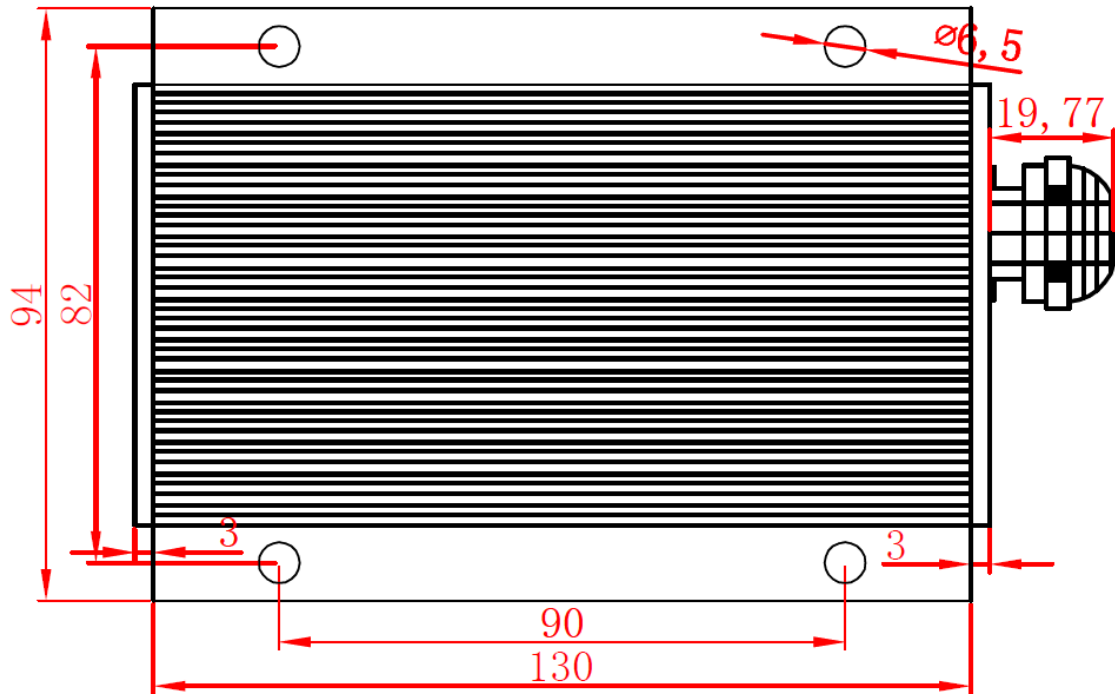


Figure 1 :(Top view) Models: KL-xxDCDC-400-5

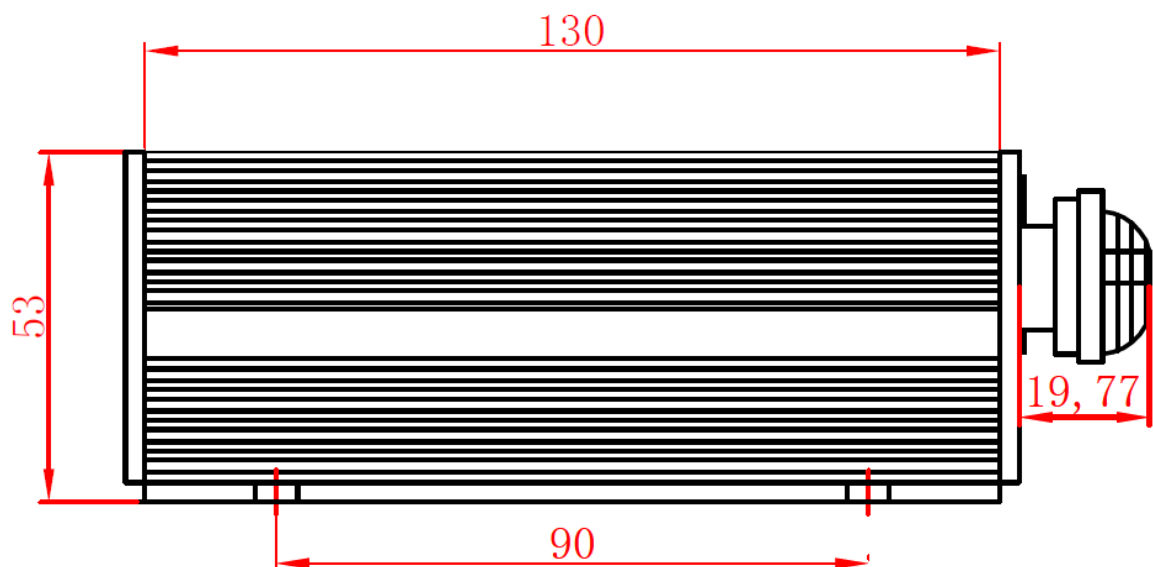


Figure2: (Side view) Models: KL-xxDCDC-400-5

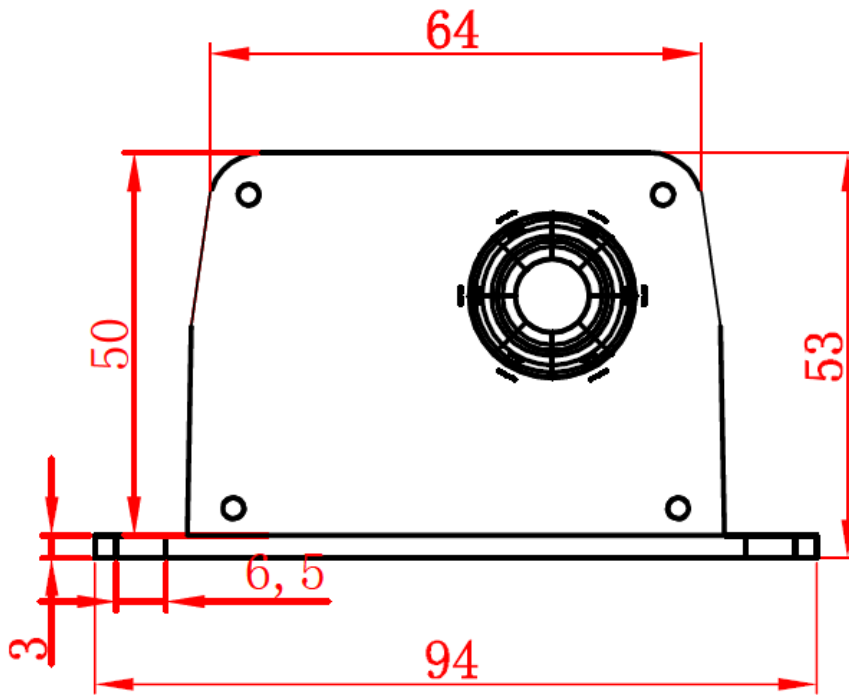
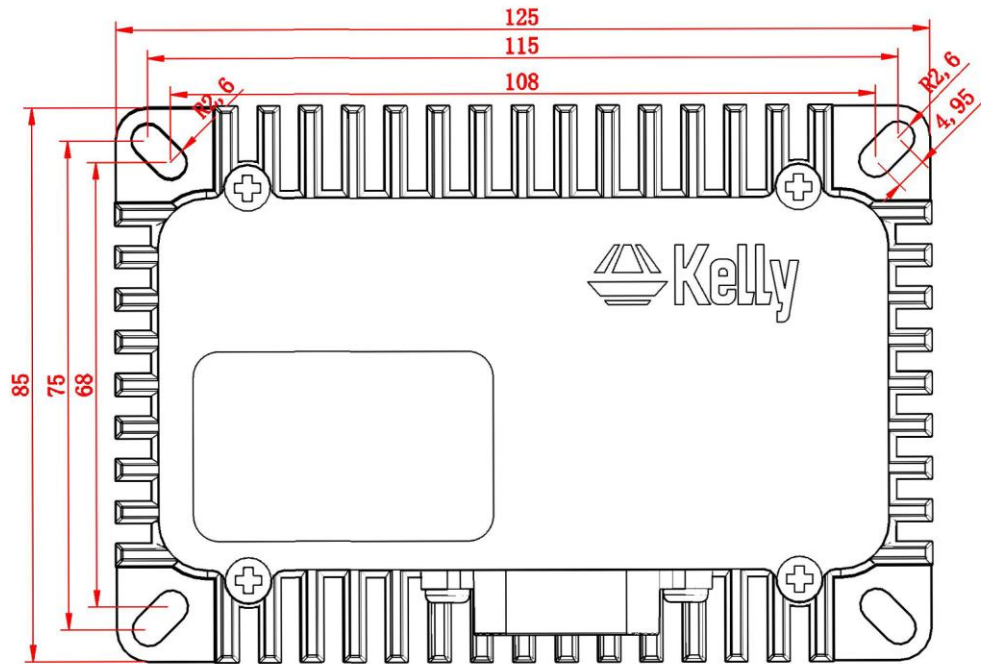
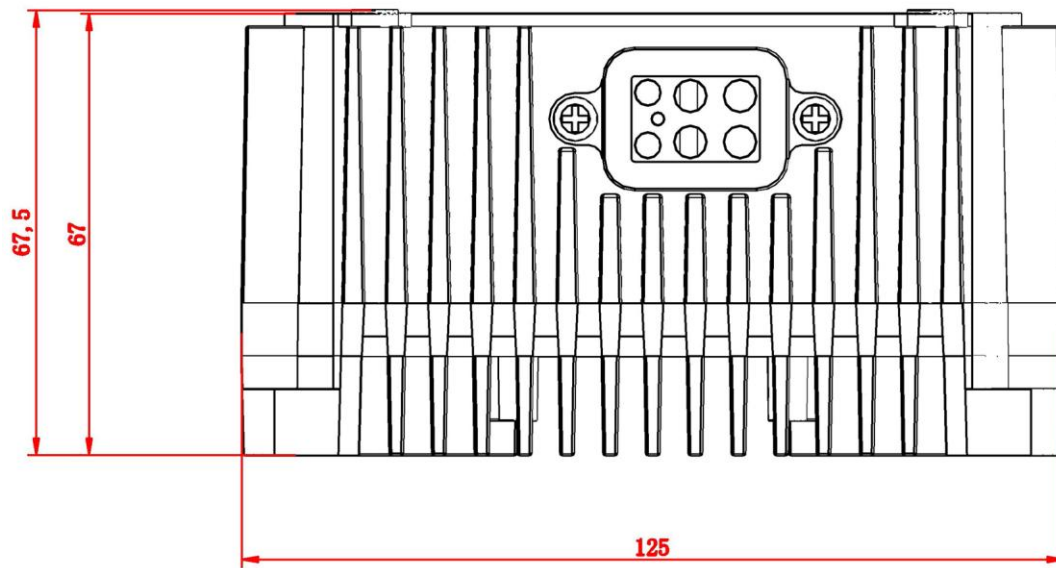


Figure 3 :(Front view) Models: KL-xxDCDC-400-5

KL-xxDCDC-500-5 Dimensions: 125mm (L)*85mm (W)*67.5mm (H)
The case outline and mounting holes' dimensions are shown below.



Top View

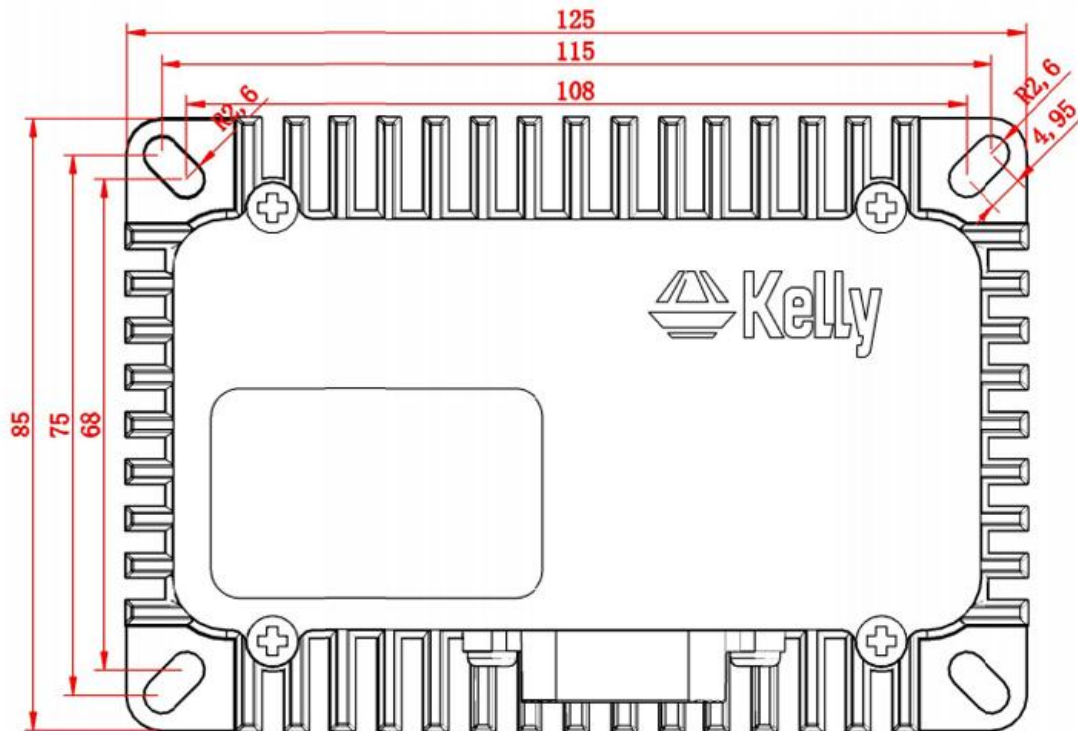


Side View

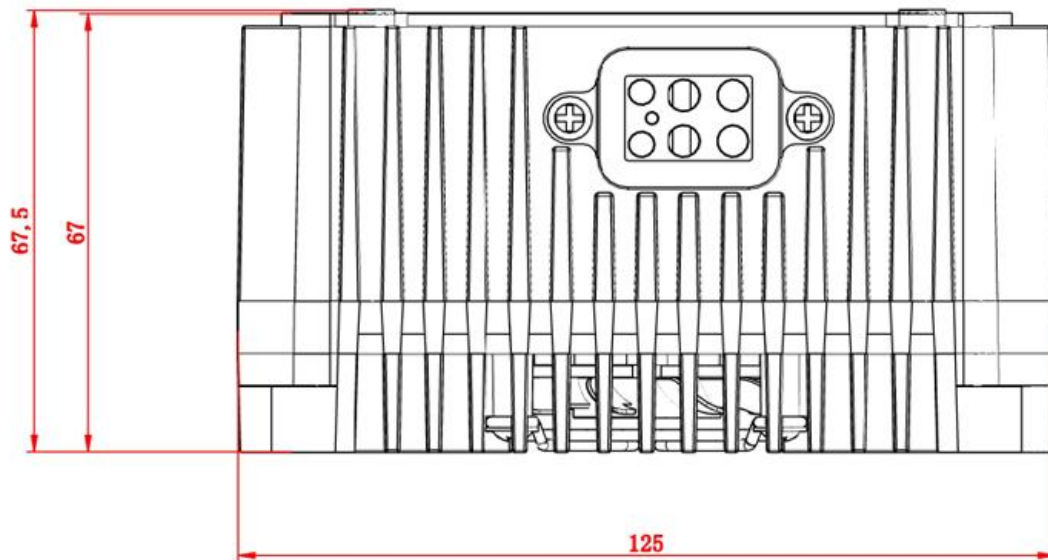
Figure 4 : Models: KL-xxDCDC-500-5

KL-xxDCDC-650-5 Dimensions: 125mm (L)*85mm (W)*67.5mm (H)

The case outline and mounting holes' dimensions are shown below.



Top view



Side view

Figure 5 : Models: KL-xxDCDC-650-5
(With cooling fan at the bottom)

5. Characteristics Curves

5.1 Test conditions: Input voltage: 48V, Load resistance: 0.4Ω. The converter is equipped with an aluminum heat sink. Output voltage, output current and efficiency are shown in figure 5, 6, and 7.

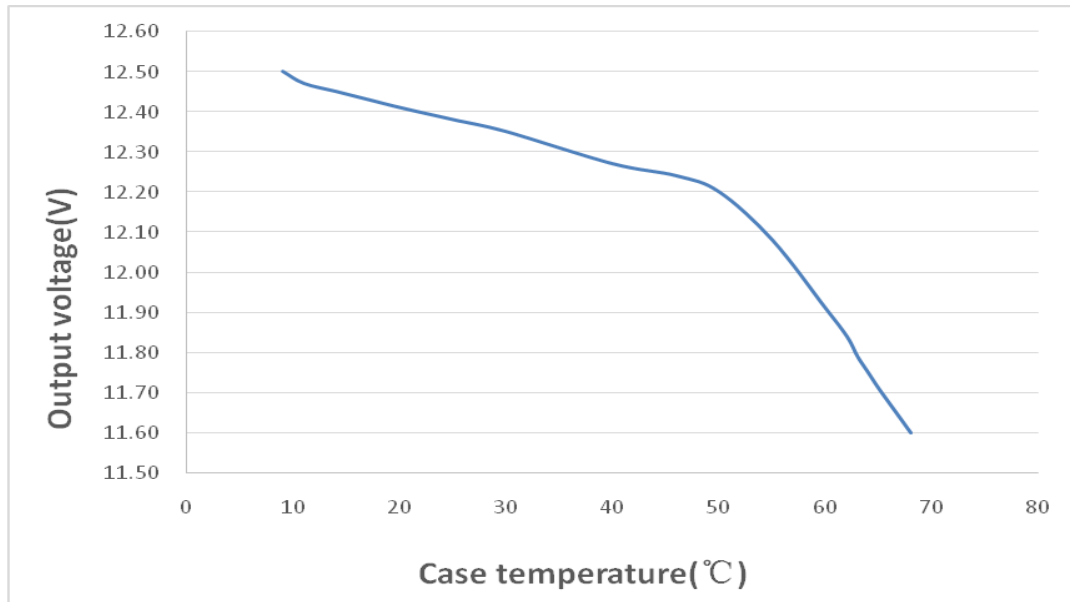


Figure 6

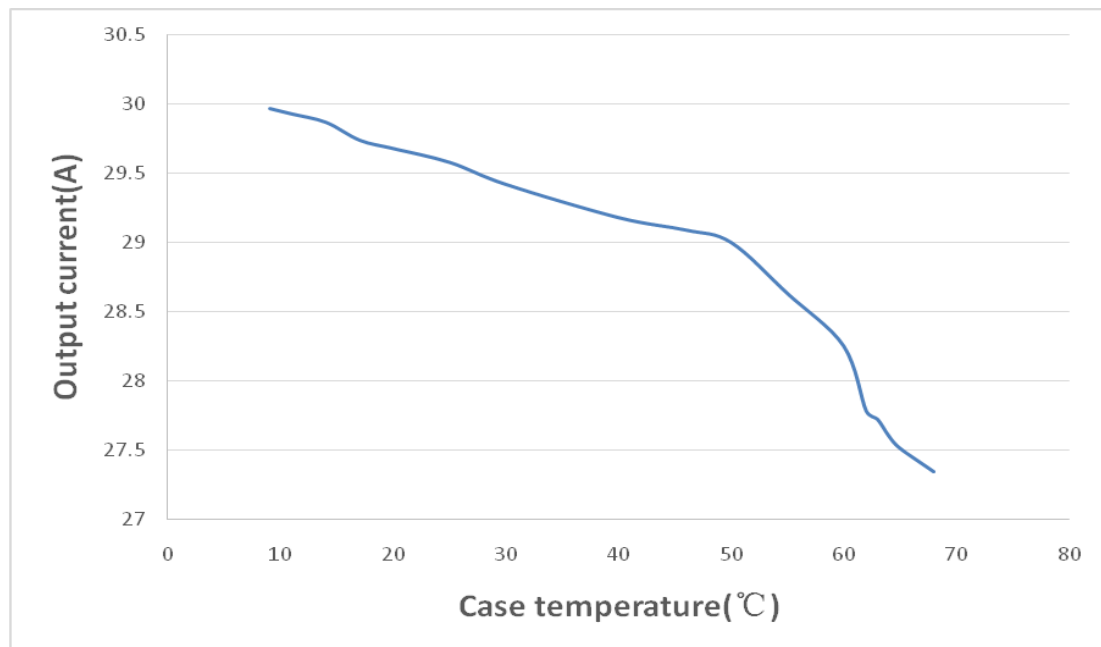


Figure 7

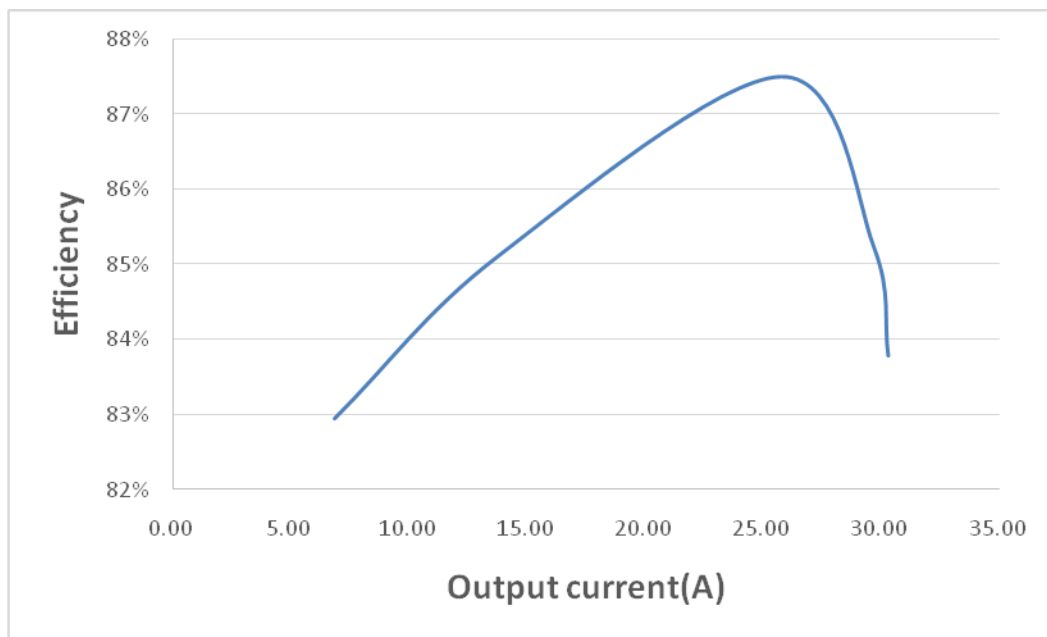


Figure 8

5.2 Test conditions: Input voltage: 60V, Load resistance: 0.4Ω. The converter is equipped with an aluminum heat sink. Output voltage and output current are shown in figure 8 and 9.

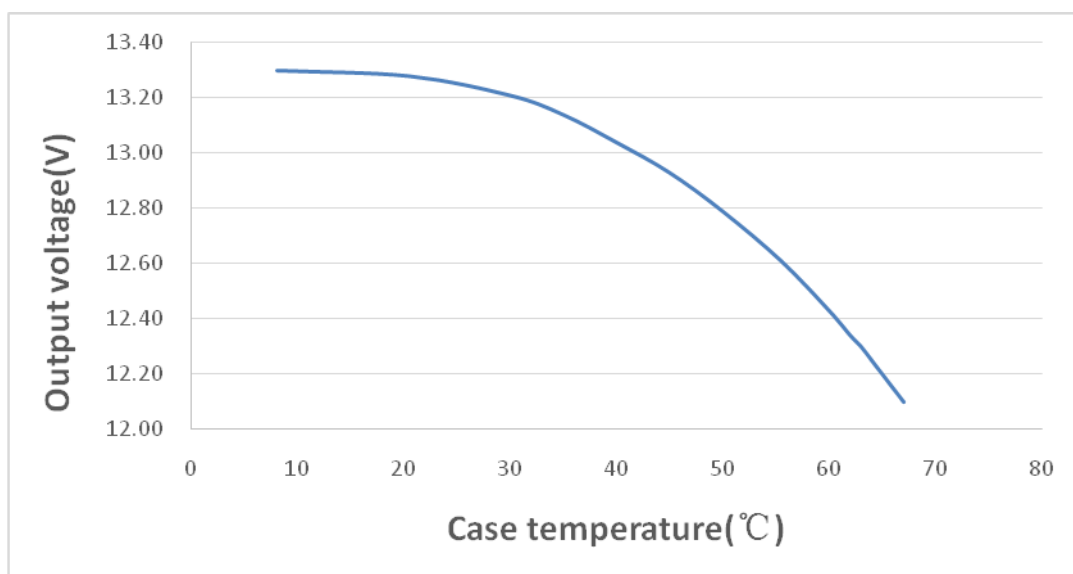


Figure 9

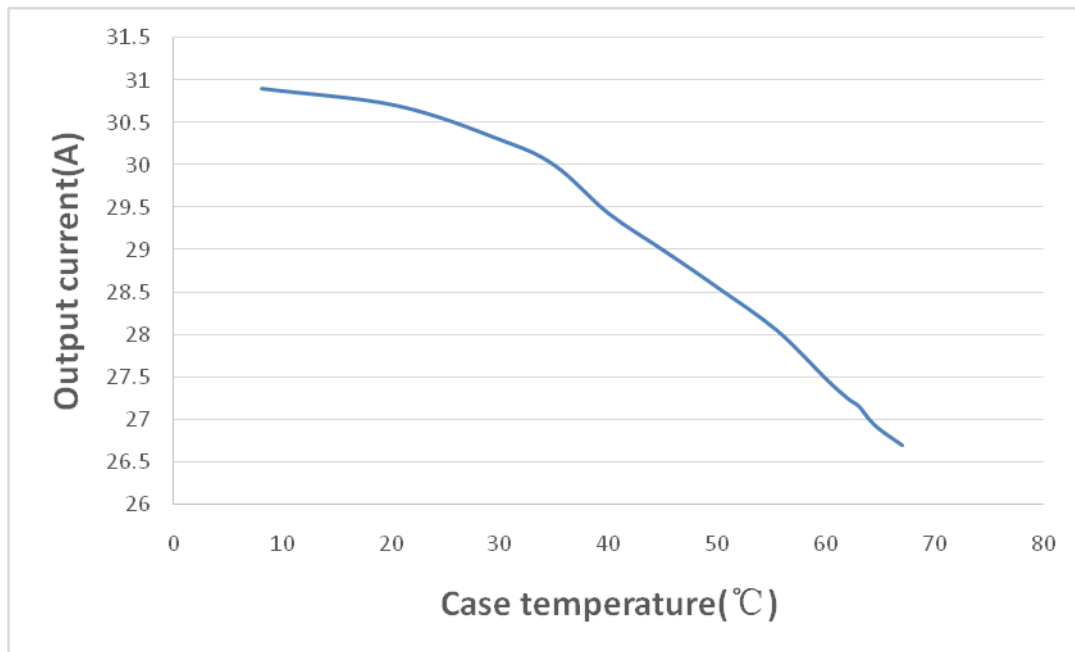


Figure 10

6. Connections

Input:

Red: Input Positive with 15A fuse(2.0mm²)

Yellow: Key Switch(2.0mm²)

Black: Input Negative(2.0mm²)

Output:

Red: Output Positive(4.0mm²)

Black: Output Negative(4.0mm²)

7. Contact Us:

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