



Input DC 200~450V Output 13.8V 1.2KW DC/DC Converter Fan Cooled
Model No. ATRD1K2-390S138F



The connectors are for reference only. Please refer to the connectors table for details
Dimensions(mm): 277 x 165 x 94

Features

- 1 Output Power(KW): 1.2K
- 2 Input Voltage Range(VDC): 200~450
Rated Input Voltage(VDC): 390
- 3 Output Voltage Range(VDC): 0~16
- 4 Rated Output Voltage(VDC): 13.8
- 5 Output Current Range(A): 0-86
- 6 Output Current Max(A): 86
- 7 Weight(KG): ≤ 2.85
- 8 Cooling System: Fan
- 9 IP Rating: IP67
- 10 Communication: CAN2.0 B SAE J1939
- 11 Enclosure: Aluminum alloy
- 12 Pre-charge & isolated: Supported
- 13 Software: Digital software design
- 14 Online Upgrade & Fault Diagnosis: Supported

Specification

Description		Remark
Input Voltage Range (VDC)	200 ~ 450	Adjusted as per requirement
Rated Input Voltage (VDC)	390	Adjusted as per requirement
Output Voltage Range(VDC)	9 ~ 16	
Rated Output Voltage(VDC)	13.8	Adjusted as per requirement
Output current(A) Max.	86	
Efficiency	$\geq 92\%$	Rated input voltage, load $> 25\%$
Output Voltage Ripple	$\leq 500\text{mV}_{\text{PK-PK}}$	
Output Voltage Accuracy(V)	$\pm 1\%$	
Communication Method	CAN-BUS SAE J1939	Baud rate: 500Kbps
Quiescent Current	$\leq 2\text{mA}$	Battery current will be consumed in sleep/standby mode
Pre charge & active charging	Built in	

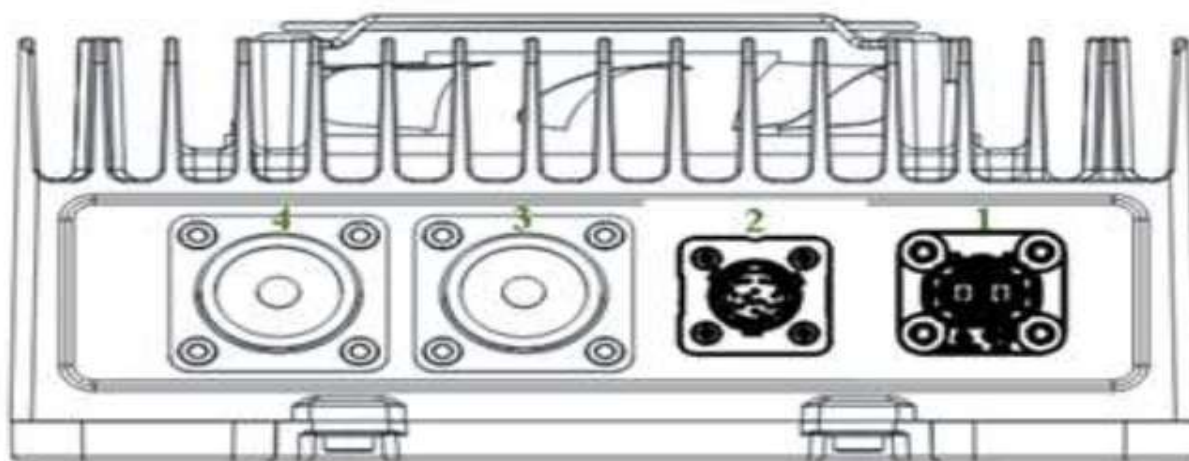
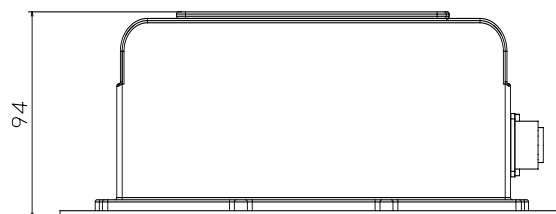
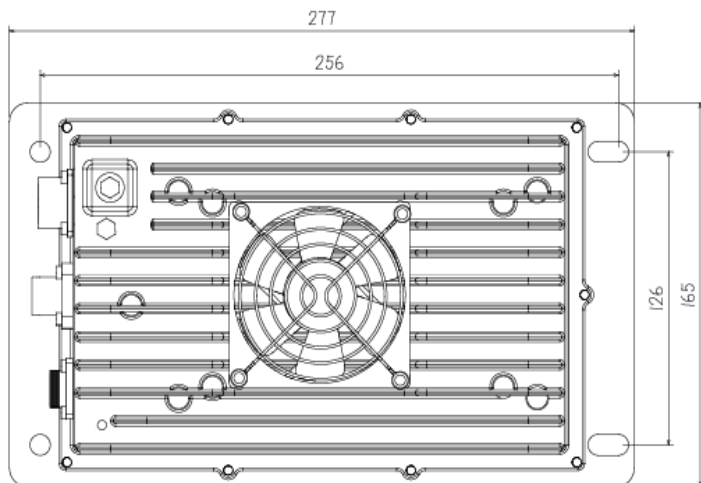
Operating Environment

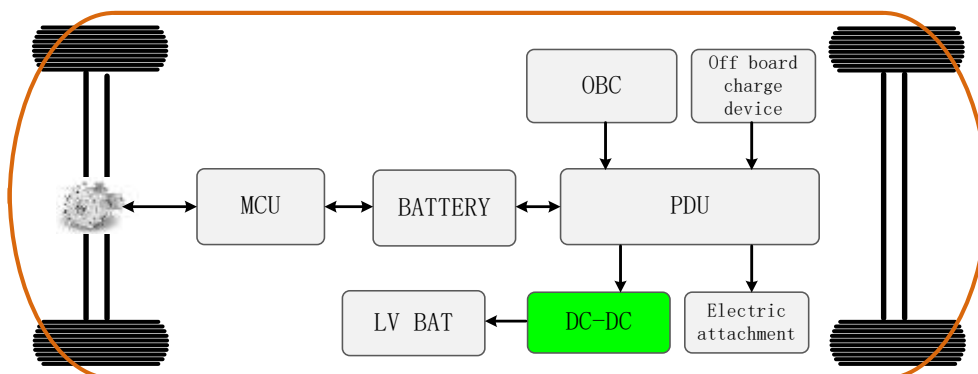
The operating environment conditions of this assembly are as follows:

Items	Descriptions		Remark
1.	Operating Temperature($^{\circ}\text{C}$)	40-85	The power will be derated when the temperature exceeds 65°C
2.	Storage Temperature($^{\circ}\text{C}$)	40-105	



3.	relative humidity(%RH)	5~95	No condensation, no frost
4.	Protection level	IP67	Housing : IP67, connector: IP 6K/9K
5.	Cooling method	Natural	
6.	Vibration level	ISO 16750-3,2012 (E) GB/T 28046.3-2011 - 4.1	After X,Y,Z three directions of sweep frequency vibration testing, no damage for parts , no loose for fastening piece
7.	Noise level(dB)	65	Meet QC /T895-2011
8.	Salt spray level	GB/T 2423.17	
9.	Altitude(M)Max	3000(normal), 5400(Specific regions)	GB/T16935.1-2008
10.	Fall	Wiring harness according to QC/T417.1-2001 Housing according to GB/T 2423.8-1995	Appearance, structure and performance are normal
11.	Protection Characteristics	Input OVP/UVF, output OVP/UVF, input anti-reverse connection, output short circuit protection, OCP, OTP	
12.	Electromagnetic immunity	GB/T17619-1998 chap4	
13.	Electromagnetic disturbance	GB18655-2002chap 12 chap14	





WIRING DIAGRAM

- **Item 1:** Signal control connects to the VCU or BMS.
- **Item 2:** DC input connects to the PDU or battery pack or other devices.
- **Item 3:** DC output (+) connects to the 12V (+) auxiliary battery (LV BAT). 12V(-) auxiliary battery connects to the enclosure for ground protection.

Note: The enclosure must be securely mounted onto the vehicle bracket and keep flat position.

Connector Table

Connector Model

Position	Function	Brand	Socket Model	Plug Model
1	Signal control	Huuzheng	FPT20N21208PN	FPT60N21208SN
2	HV DC input	RECODEL	RED-T2PAH-2.5-A	RED-Z2PAH-2.5-A
3	Output +		Leishen	
4	Output -		Leishen	

Interface Definition

Signal Control(1)		HV DC Input(2)		Output Positive(3/4)	
A	CANL 0.75MM2	1	Input + 2.5MM2	3	Output + 86A 16MM2 OR 25mm2
B	CANH 0.75MM2	2	Input -2.5MM2	4	Output -
C	12V+ Enable 0.75MM2	A	HVIL +		
D	12V-OUT 0.75MM2	B	HVIL -		
E	HVIL + 0.75MM2				
F	HVIL - 0.75MM2				



Cable Current Rating Table for reference only.

The actual current-carrying capacity shall be based on the cable manufacturer's specifications

CURRENT (A)	CABLE SIZE (MM2)	CURRENT (A)	CABLE SIZE (MM2)	CURRENT (A)	CABLE SIZE (MM2)
7	0.75	60	10	250	70
22	2.5	80	16	300	95
25	3	125	25	350	120
30	4	150	35		
40	6	200	50		