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No.196-19, Chunghua Rd., Yungkang Dist., Tainan City 71069, Taiwan

Technical Specification

Model：

ATD1K-7212-A

ATD1K-10812-A

ATD1K-14412-A

ATD1K-32012-A

Name： 1KW DC/DC Converter Natural Cooling System

Version： V1.0

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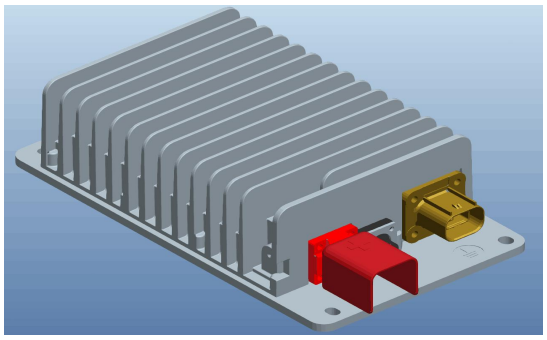
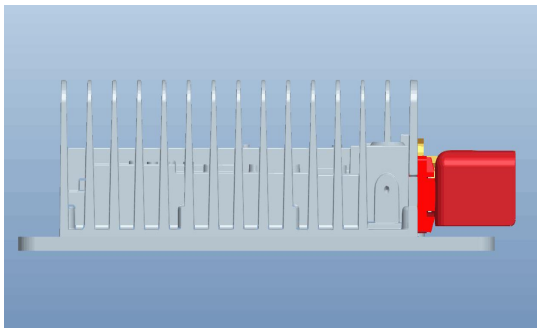
1. Features

1.1 Convert the high voltage direct current of battery into 12V low voltage direct current
1.2 Charging management to the 12V backup battery
1.3 High Voltage Inter Lock (HVIL) is optional
1.4 With CAN2.0 communication, working status, error etc can be monitored
1.5 With OBD diagnosis
1.6 Protections with input polarity reverse, under-voltage input, over-voltage input, over-voltage output, over-current output, short-circuit, over-temperature, etc

2. Appearance


3. Environmental Specification

▲Working environmental temperature

Area	Lowest Temperature	Highest Temperature

Global	-40℃	60℃

▲Storage environmental temperature

Area	Lowest Temperature	Highest Temperature
Global	-55℃	100℃

▲Humidity：relative humidity 5%~95%， no condensation

▲Altitude：≤2000m

▲Working noisy：max when working ≤65dB，meet China standard QTC 895-2011

4. Technical Specification

4.1 Regulations requirements and reference standards

No.	Standard Code	Standard Name	Remark
1	GB/T 24347-2009	Electric vehicle DC/DC converter	/
2	GB/T 18488.1-2015	Electric motors and their controllers for electric vehicles - part 1: technical conditions	/
3	GB/T 18384.2-2015	Safety requirements for electric vehicles - part 2: functional safety and fault protection	/
4	GB/T 18384.3-2015	Safety requirements for electric vehicles - part 3: protection against shock to personnel	/
5	GB/T 18387-2008	Limits and measurement methods for electromagnetic field emission intensity of electric vehicles	/
6	GB 9254-2008	Limits and methods for measurement of radio harassment for information technology equipment	/
7	GB/T 18655-2010	Limits and measurement methods for radio disturbance characteristics of vehicles, ships and internal combustion engines used to protect vehicle-mounted receivers	/
8	GB 29743-2013	Motor vehicle engine coolant	/
9	GB 4208	Enclosure protection level (IP code)	/
10	GB/T 28046-2	Environmental conditions and tests for electrical and electronic equipment for road vehicles - part 2: electrical loads	/
11	GB/T 28046-3	Road vehicles - environmental conditions and tests for electrical and electronic equipment - part 3: mechanical loads	/
12	GB/T 28046-4	Environmental conditions and tests for electrical and electronic equipment for road vehicles - part 4: climatic loads	/
13	GB/T 2423.34-2012	Environmental test - part 2: test method test Z/AD: combined	/

		temperature/humidity cycle test	
14	GB/T 2423.1-2008	Environmental testing of electrical and electronic products - part 1: test methods - test B: low temperature	/
15	GB/T 2423.2-2008	Environmental tests for electrical and electronic products - part 2: test methods - test B: high temperature	/
16	GB/T 2423.3-2008	Electrical and electronic products - environmental tests - part 2: test methods - Cab: constant heat and humidity test	/
17	GB/T 2423.17-2008	Environmental tests for electrical and electronic products - part 2: test methods : salt spray	/
18	GB/T 30512-2014	Prohibited substances requirements for automobiles	/
19	QC/T 413	Basic technical conditions of automotive electrical equipment	/

4.2 Safety Regulations Specification

	Condition	Requirement
Grounding resistance test	@25A/AC	≤100mΩ
Input insulation test	@1000V/DC	≥20MΩ
Input withstand test	@2000V/DC 1min	Lead current≤10ma

4.3 Electrical Performance

4.3.1 Input

Input	Nominal Voltage	DC72V	DC108V	DC144V	DC320V	/	/
	Input voltage range	44~97V	74~162V	103~227V	206~454V	/	/

4.3.2 Output

Output	Nominal output voltage	14V
	Output voltage range	9~15V
	Nominal output current	72A
	Peak current	88±2A
	Nominal power	1000W
	Peak power	1200W lasting 6 minutes
	Efficiency	≥94%

	Dynamic response time	＜50ms
	Voltage regulation	≤1%
	Load regulation	≤1%
	Voltage control accuracy	≤1%
	Current control accuracy	≤2%
	Quiescent current	≤1mA @14V
	Ripple voltage coefficient	≤2% @nominal working state

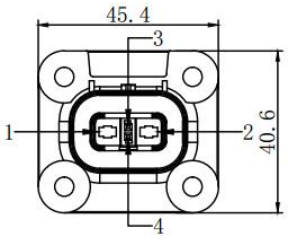
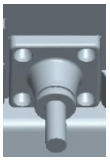
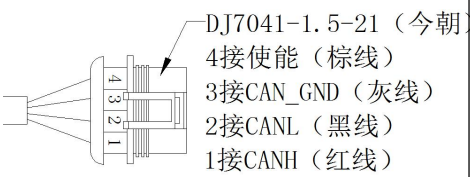
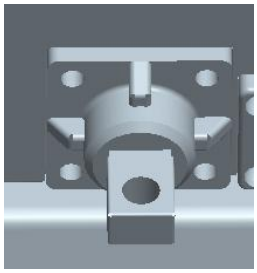
4.3.3 Other

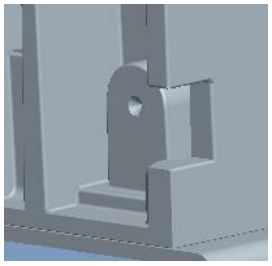
Humidity test	Meet GB/T 24347-2009 6.1.2
Low temperature test	Meet GB/T 24347-2009 6.1.1.1
High temperature test	Meet GB/T 24347-2009 6.1.1.2
EMI	Meet GB/T 17619-1998 article 4
EMD	Meet GB 18655-2002 article 12 and 14
Protection level	IP67
Vibration resistance	10~25Hz swing 1.2mm，25－500Hz 30m/S^2，8 hours each direction
MTBF	150000H

4.3.4 Protection Functions

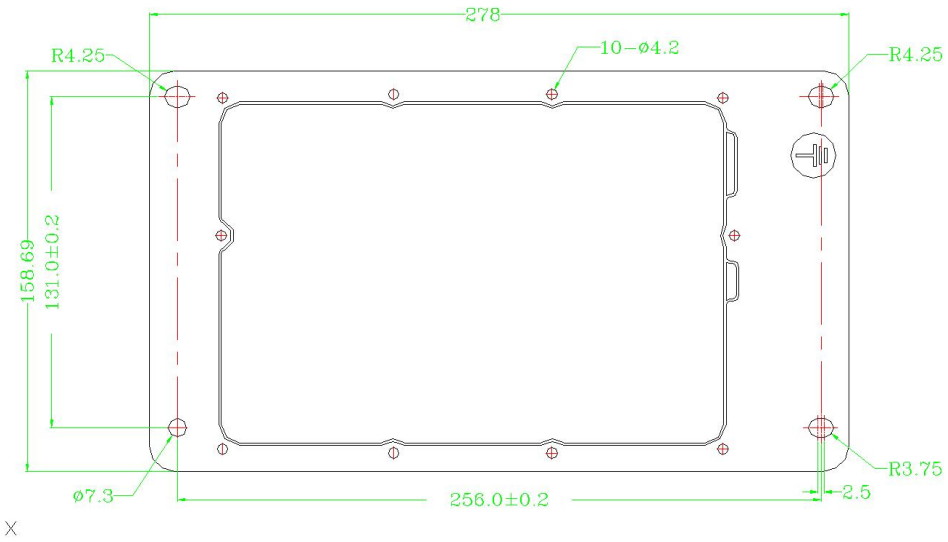
Protection Functions	Input over-voltage protection	72V	108V	144V	320V	/
		＞97V	＞162V	＞227V	＞454V	/
	Input low-voltage protection	72V	115V	144V	320V	/
		＜44V	＜74V	＜103V	＜206V	/
	Output over-voltage protection	Output voltage over-voltage protection threshold is 16±0.5V，working recovery after voltage back to≤14±0.2V				
	Output low-voltage protection	Output voltage low-voltage protection threshold is 7±1V，working recovery when voltage rise to≥9±0.2V				
	Output over-current protection	Reduces the output voltage when the output current exceeds the maximum output current				
	Over-temperature protection	Power start to decrease when internal temperature rise to 100℃, shut off when rise to 110℃, auto-recovery when power decreased				
	Short circuit protection	Yes, auto-recovery				

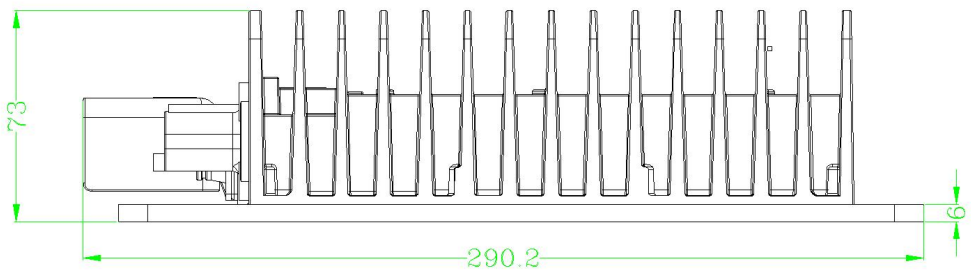
5 Connector Interface

No.	Port	Pins Definition	Socket P/N	Plug P/N	Brand	Drawing
1	Input	1-DC+、 2-DC-、 3、4-HVIL	2103124-4	2103177-4	TAIKE	
3	Signal	1-CANL、 2-CANH、 3-CANGND、 4-ENABLE、	/	/	/	 
4	DC Output +	M8 thread hole	/	/		

5	DC Output -	M8 thread hole	/	/	

6. Size





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