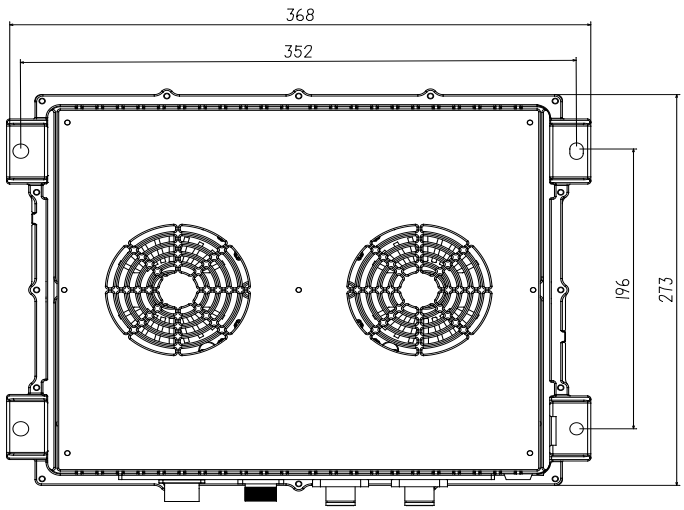
ANNREN TECHNOLOGIES CO., LTD.

https://www.annren.com
e-Mail：sales@annren.com
TEL：+886-6-313-0155 FAX：+886-6-313-0225
No.196-19, Zhonghua Rd., Yongkang Dist., Tainan City 71069, Taiwan

80-750V 3.6KW DC-DC Converter FAN cooled
Model No. ATRD3K6 SERIES

MODEL NO.
ATRD3K6-144S14F
ATRD3K6-360S14F
ATRD3K6-540S14F
ATRD3K6-360S27F
ATRD3K6-540S27F
ATRD3K6-360S48F



Features

1. Output Power: 3.6K
2. Input Voltage Range(VDC): 80-750
3. Output Voltage Range(VDC): 0-64VDC
4. Rated Output Voltage(VDC): 14/27/48
5. Output Current Range(A): 0-256A
6. Dimensions(mm): 368 x 273 x 112
7. Weight(KG): ≤ 13.5Kg±0.5Kg
8. Cooling System: Fan
9. IP Rating: IP67
10. CAN compatibility: CAN2.0
11. Enclosure: Aluminum alloy
12. Pre-charge & isolated: Supported
13. Software: Digital software design
14. Online Upgrade & Fault Diagnosis: Supported

Main specification

MODEL NO.	Input voltage range	Rated output power	Rated output voltage	Output voltage/ current range
ATRD3K6-144S14F	400~750VDC	3.6KW	14VDC	0-16VDC/0-256A
ATRD3K6-360S14F	200~500VDC	3.6KW	14VDC	0-16VDC/0-256A
ATRD3K6-540S14F	80~200VDC	3.6KW	14VDC	0-16VDC/0-256A
ATRD3K6-360S27F	80~200VDC	3.6KW	27VDC	0-32VDC/0-132A
ATRD3K6-540S27F	200~500VDC	3.6KW	27VDC	0-32VDC/0-132A
ATRD3K6-360S48F	200~500VDC	3.6KW	48VDC	0-64VDC/0-74A

https://www.annren.com
e-Mail：sales@annren.com
TEL：+886-6-313-0155 FAX：+886-6-313-0225
No.196-19, Zhonghua Rd., Yongkang Dist., Tainan City 71069, Taiwan

1. Electrical Characteristics

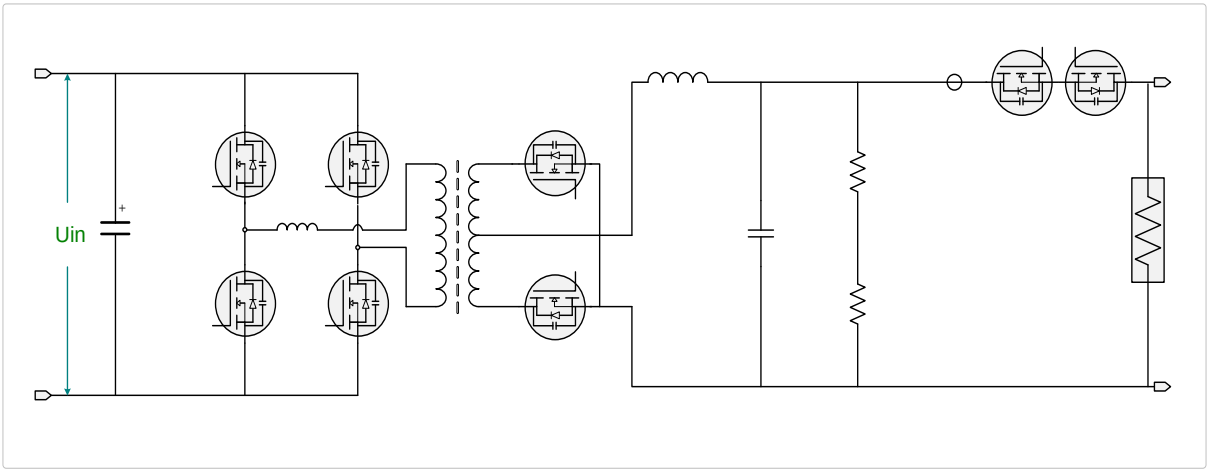
1.1. Electrical Characteristics

On-board power supply type	Self-cooled automotive DC-DC converter					
Enter the properties						
Rated input voltage	540V	360V	144V	144V	360V	360V
Input voltage range	400-700V	200-500V	80-200V	80-200V	200-500V	200-500V
Enter the pre-charge path	Built					
the pre-charge resistor	120R	120R	30R	30R	120R	120R
Start the inrush current	≤7.5 A	≤11A	≤24A	≤24A	≤11A	≤11A
Bus capacitors	12uF	22uF	42UF	42UF	22uF	22uF
Output characteristics						
Rated output power	3.6KW					
Rated output voltage	14V			27V		48V
Output voltage range	0～16V			0～32V		0～64V
Output current range	0～128A			0～66A		0-37A
Voltage regulation accuracy	±0.2V（引线根部测试 lead root test）			±0.4V（引线根部测试lead root test）		
Output response time	≤200mS					
Typical efficiency	≥92%			≥93%		
Operating noise	≤60dB					
Protection characteristics						
Over- and under-voltage protection	The input over- and under-voltage shutdown can be self-recovering, and the output over-voltage and under voltage shutdown can be self-recovering。					
Output reverse polarity and short-circuit protection	The output is powered off when it is short-circuited or reversed, and it can be self-recovering					
Over-temperature protection	When the heat sink temperature is higher than 75℃, the output power is reduced, when the temperature is higher than 95℃, the circuit is disconnected, and the charger resumes output when the charging temperature returns to below 85℃					
Environmental conditions						
Operating ambient temperature	-40℃～+85℃					
Storage temperature	-40～95℃					
Humidity	5%~95% no condensation, no condensation					
IP rating	IP67					
Cooling function	Self-cooling					
Communication features	CAN bus control					
Charging function	Receiving the charging command can charge normally; The no-command charger is in standby					
Safety & Reliability						
Safety & Reliability	Primary edge — secondary edge 2000VAC			Primary Side—Chassis 1500VAC		
Insulation resistance	Primary-secondary ≥50MΩ					
Vibration resistance	After the X, Y, Z three directions sweep vibration test, the parts are not damaged, and the fasteners are not loose					

https://www.annren.com
e-Mail：sales@annren.com
TEL：+886-6-313-0155 FAX：+886-6-313-0225
No.196-19, Zhonghua Rd., Yongkang Dist., Tainan City 71069, Taiwan

Impact resistance	See the requirements of 6.5 in GB/T15139-1994
Resistance to industrial solvents	Metal parts have a good anti-corrosion layer
Anti-salt spray Performance	See GB/T 2423.17
Durability	In accordance with the relevant provisions of not less than GB/T 24347-2009
EMC features	
Electromagnetic immunity	Meet the provisions of Chapter 4 of GB/T17619-1998
Electromagnetic harassment	See the limits set forth in Chapters 12 and 14 of GB18655-2002

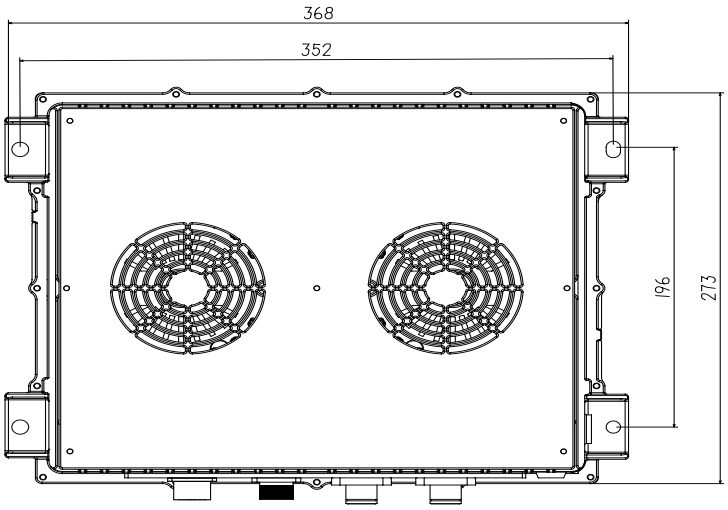
2.2 Electrical topology diagrams



2. Dimensions and weight

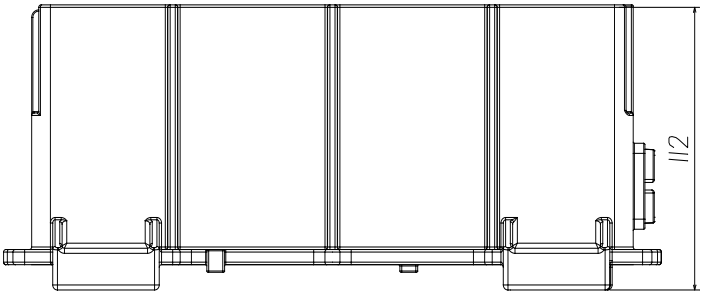
3.1 Product Dimensions

Top view

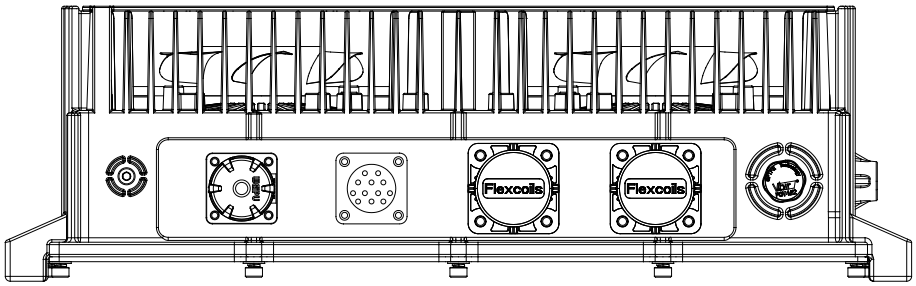


https://www.annren.com
e-Mail：sales@annren.com
TEL：+886-6-313-0155 FAX：+886-6-313-0225
No.196-19, Zhonghua Rd., Yongkang Dist., Tainan City 71069, Taiwan

Side view



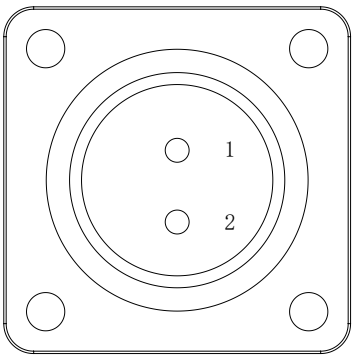
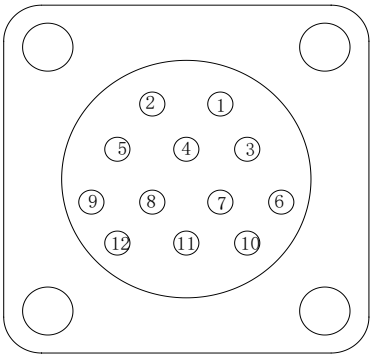
Front view



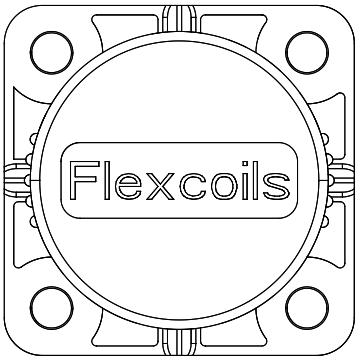
3.2 Product Weight: 13.5Kg±0.5Kg

3. Definition of connectors and connecting terminals

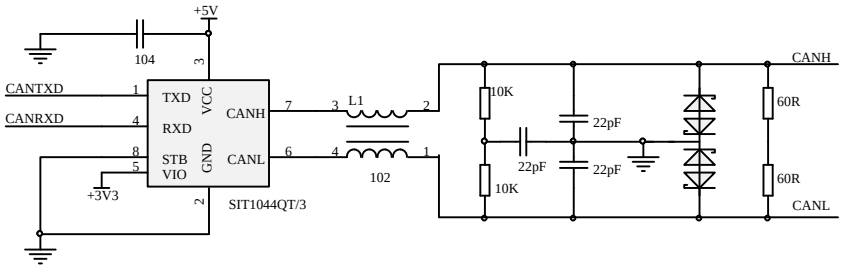
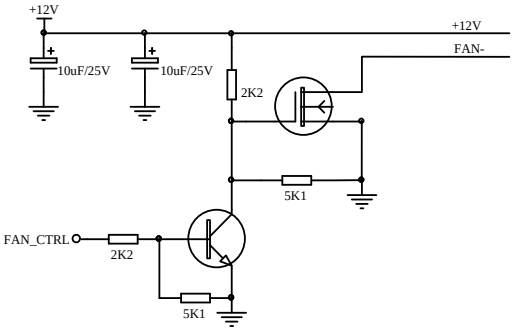
4.1 Connector Model and Definition

Type	Connector definition		Connector drawings
In put WF20K2Z	Foot position	Definition	
	1	Input+	
	2	Input-	
	Connector manufacturer		Guangdong Weipu Electric Appliance Co., Ltd
	To the plug-in model		WF20J2TE
Signal WF20K12Z	Foot position	Definition	
	1	CANH	
	2	CANL	
	3	12V+	
	4	GND	
	5-12	/	
	Connector manufacturer		Guangdong Weipu Electric Appliance Co., Ltd
	To the plug-in model		WF20J12TE
Out put YQ-BS400A-M8M8	Foot position	Definition	
	A	Out put+	

https://www.annren.com
e-Mail：sales@annren.com
TEL：+886-6-313-0155 FAX：+886-6-313-0225
No.196-19, Zhonghua Rd., Yongkang Dist., Tainan City 71069, Taiwan

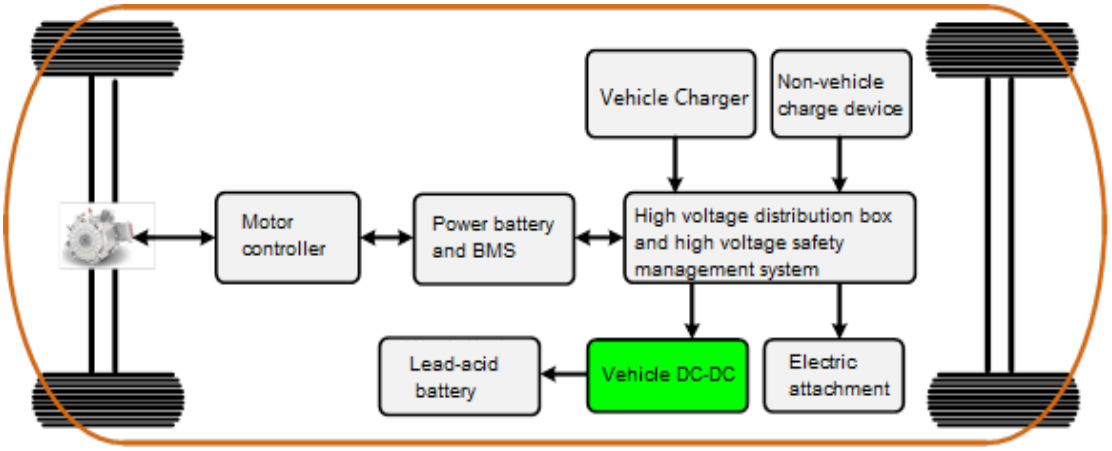
		
	Connector manufacturer	Yun qi
	Connector manufacturer	M8

4.2 Signal Interface Schematic

Signal Description	
CAN communication	
Fan drive	

4. User Guide

5.1 Block diagram of electrical connections



https://www.annren.com
e-Mail：sales@annren.com
TEL：+886-6-313-0155 FAX：+886-6-313-0225
No.196-19, Zhonghua Rd., Yongkang Dist., Tainan City 71069, Taiwan

5.2 Product Installation

Part number	TBD	
Product type	DCDC	
Mounting screws	Mounting hole aperture	Φ10
	Number	4
	Screw model recommended	M10*20 Hexagon socket screws

Install and secure this product
Align the mounting holes, lock the fastening screws, and secure the power supply.
Tightening force distance requirements
When installing, according to the size of the screw, the connection method, etc., use the appropriate torque for installation, refer to the following table for details:

Specifications and models		Tightening torque (torque range: ±10%)/(unit: Kgf.cm)						
Categories	Sub-categories	Plastics - Plastics	Steel-plastic Copper - Copper	General connections		High-density connectivity		
				Steel - Steel	Copper-cast aluminum Steel-aluminium profiles Steel-copper	Steel - Steel	Steel - cast aluminum Steel-copper	Steel-aluminium profiles
Allen socket screws	M2		0.8	1.5	1.5	2.5	2.5	1.5
	M2.5		1.6	3	3	5.5	4.5	3
	M3	1.5	3	5.5	5	10	8	6
	M4		6	12	10	16	14	12
	M5		10	20	13	30	28	20
	M6		15	30	28	50	48	30
	M8					80	80	-

5.3 CCAN communication protocol

Projects	Technical indicators	Remarks
Crystal oscillator tolerance	± 0.15%	within the operating temperature range
Communication rate	It can be configured through the background software, and it will not be lost after power failure	The tolerance is ±0.375 Kbit/s
Sampling points	The sampling point should be set close to but no later than 7/8 of the bit time	
Transceiver	The maximum transceiver "ring delay" (from send to receive) is 300 ns	CAN transceivers should comply with the ISO 11898-2 standard
Termination resistor	The DC-DC CAN communication circuit has no 120 ohm termination resistor by default	
Default CAN communication protocol		

https://www.annren.com
e-Mail：sales@annren.com
TEL：+886-6-313-0155 FAX：+886-6-313-0225
No.196-19, Zhonghua Rd., Yongkang Dist., Tainan City 71069, Taiwan

5.4 Background Debugging Software Description

Product type	DCDC	
Background software coding	2001 Setup V2.0.exe	
Background software communication mode	CAN communication	Baud rate 125K/250K/500K adjustable
Installation and usage assistance		
Support CAN box Brand 1	1. Beijing Aitai USBCAN-2I 2. Beijing Aitai USBCAN-I	
Support CAN box Brand 2	TBD	

5.5 Troubleshooting and Confirmation

Fault phenomenon	Common causes of failures	Troubleshooting
The power supply has no output	High Voltage Input Exception (None or Reverse)	Check if the high-voltage input is normal
	12V voltage input port is abnormal (none, over/undervoltage, reverse connection)	Check whether the 12V voltage input port is normal
	The output is disconnected	Check whether the output connection is normal
No packets are sent from DC-DC	The signal connector is not properly connected	Reseat the signal connector
	The CAN cable is reversed	Adjust the CAN line sequence
	The communication protocol does not match	Compare whether the protocols match
	Baud rates don't match	Compare whether the protocols match
The distribution box high voltage input fuse is damaged The product reports a fault signal	Input short circuit	Check if the high-voltage input is normal
	Input over/under voltage, output over/under voltage, over temperature, output short-circuit/overcurrent	Check the input voltage, output for overcurrent/short circuit, turn off the power, let stand for 10 minutes, if it still fails, contact the manufacturer.
Over temperature failure	Fan-cooled machines: The fan is stalled or the air duct is blocked	Check the fan and air duct
	Liquid-cooled machines: No coolant or too high coolant temperature	Check that the coolant is normal