ANNREN TECHNOLOGIES CO., LTD.

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Combo 2.5KW DCDC Converter 6.6KW OBC Bidirectional
Model No. ATCDB66662252

Features

1 Nominal Output Power:
OBC: 6.6KW ; DC/DC: 2.5KW
2 Input Voltage Range:
OBC: 90~264VAC ; DC/DC: 200~480VDC
3 Output Voltage Range:
OBC: 200~500VDC Rated: 350V
DC/DC: 9 -16V, Nominal: 14V
4 Dimensions: 322*269*69.5mm
5 Weight: ≤6.5KG
6 Cooling System: Liquid, flow ≥8L/min
7 Ingress Protection Rating: IP67
8 V2L/ V2V : Supported
9 UDS Diagnostics: Supported (Basic SID)
10 Enclosure: Aluminum alloy
11 Software: Digital software design
12 Inverter Function: Supported by Bi-direction OBC
11 Online Upgrade & Fault Diagnosis: Supported

Specification

Description	Technical Specification	Remark
OBC		
Rated Output Power(KW)	6.6	When input is 110Vac, output will reduce power automatically. When input is 220Vac, output operates at full power.
Rated Input Voltage(VAC)	220	
Input Voltage Range(VAC)	90~264	
Input Current(A) Max	22	
Output ripple & noise(%V0	±5	
Power Factor	@>0.98 at 50%~100% load @>0.94 at 15%~50% load	
Rated Output Voltage(VDC)	350	
Output Voltage Range(VDC)	200~500	
Max Output Current(A)	20	
Output ripple and noise(%Vo)	±5	
Startup rise time(S)	4	The output voltage rises from 10% to 90% when OBC receives BMS charging request.

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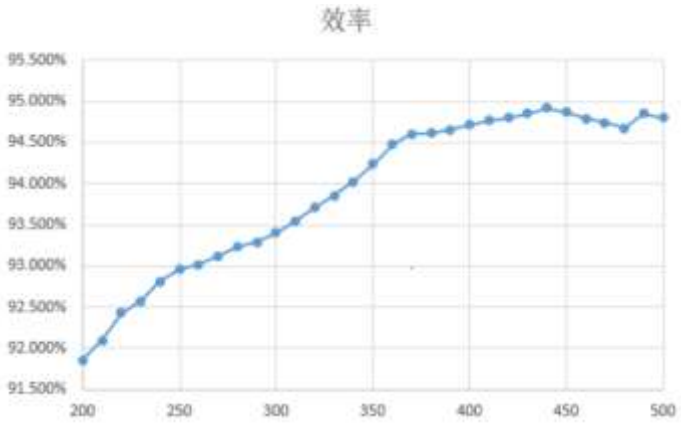
Output drop time(mS)	300	When OBC receives BMS shutdown command, the output current decreases to 0A.
Overall Efficiency%	≥ 93	Output voltage < 300V, efficiency ≥ 93%, Output voltage ＞300V efficiency ≥ 94.5%
Voltage Accuracy(Max) %	±1	
Current Accuracy%	±5	Max ± 0.5A
Input Over-voltage Protection(VAC)	269~279	Typical: 274, Turn off output
Static loss current(mA)	1	Sleep without inserting coupler, consume KL30 constant current
Input over-voltage recovery(VAC)	259~269	Hysteresis range ≥ 5Vac
Input under-voltage protection(VAC)	75~85	Turn off output
Input under-voltage recovery(VAC)	85~95	Hysteresis range ≥ 5Vac
Input over-current protection(A)	20	
Output over-voltage protection(VDC)	490	
Output under-voltage protection(VDC)	190	
Output over-current protection(A)	22	
Output short circuit protection	Yes	
Output reverse connection protection	Yes	
Communication failure warning	Yes	
Over-temperature protection	85~90℃	Detect the internal temperature of OBC. When the temp. of detected point is higher than 85 ℃, starts reducing output power. However, when the temp. still keep rising to 90 ℃, OBC will shuts down.

OBC output efficiency and



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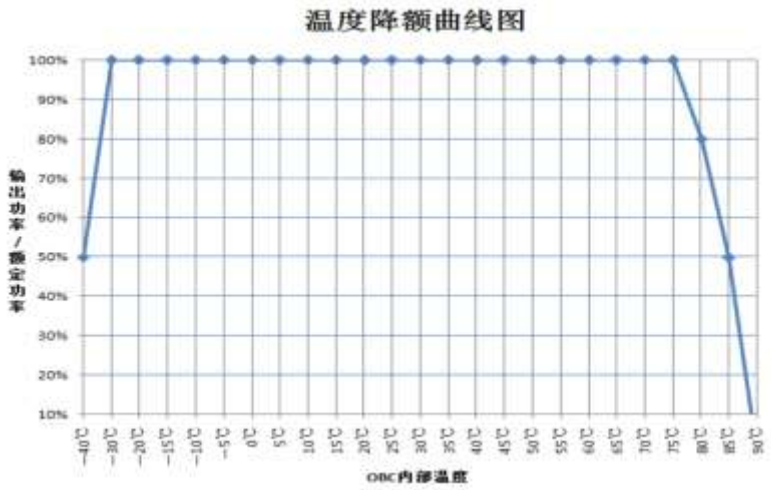
temperature de-rating curve



OBC Temperature de-rating curve

OBC-Inverter Mode		
Rated input voltage(VDC)	350	
Input Voltage Range(VDC)	330~480	
Output Voltage	220VAC(±5%)/50±1HZ	
Rated Output Power(KW)	6(Max)	5kw for car internal use 6kw for car external use
Efficiency(%)	≥92	
Output current range (discharge inside vehicle)(A)(Max)	10	Range: 0-10
Output current range (discharge outside the vehicle)(A)	20	Determine by PP resistance
Output overvoltage protection(V)	400	
Output overvoltage recovery(V)	380	
Output overcurrent protection(A)	20	
Overload period (s)	10	
DC/DC		
Input Voltage Range(VDC)	200~480	
Efficiency(%)	≥92	Input current >2A
Output Voltage Range(V)	9 ~16	
Rated Output Voltage(V)	14	Our Standard Nominal voltage: 14V
Rated Output Current(A)	178	
Peak Output Current(A)	214	
Rated Power (KW)	2.5	
Peak Power(KW)	3	≦ 6min
Input overvoltage protection point(VDC)	490	
Input overvoltage recovery point(VDC)	480	
Input under voltage protection point(VDC)	190	
Input under voltage recovery point(VDC)	200	
Output overvoltage protection point(VDC)	16	

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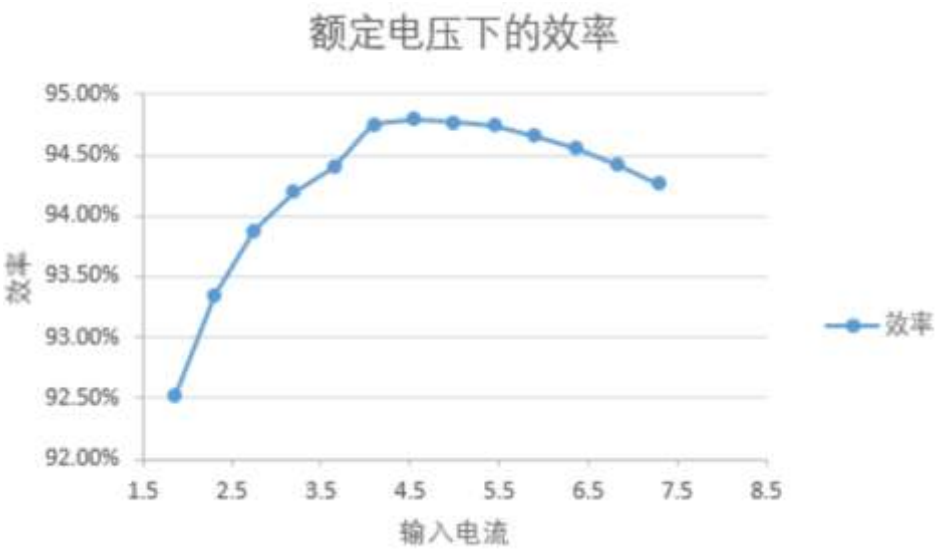
Output under voltage protection point(VDC)	9	
Over temperature protection ℃	100	When internal temp. of DCDC is higher than 100℃ , reduces output
	105	When the temp. continues rise and reach 105 ℃ , shut down output
Output overcurrent protection(A)	>220	
Communication failure warning	Yes	

DC-DC Output efficiency curve



Pic4 DC efficiency curve

Others		
Operating Temperature(℃)	-40~65	Coolant inlet temperature
Relative humidity(%RH)	5～95	No condensation, no frost
Vibration level	Complied with QC/T895-2011	
Noise level (Db)	≦65	Complied with QC/T895-2011
Salt fog grade	Complied with QC/T2423.17-2011	
Altitude (m) Max	≦3000	GB/T16935.1-2008
Temperature and humidity resistance	Complied with GB/T 2423.22	
Drop	Harness as QC/T417.1-2001 requirement Enclosure follow GB/T2423.8-1995	Normal appearance, structure and performance
Wakeup Method	CAN, PP/CP	
CAN Communication	CAN-BUS	
Baud rate(Kbps)	250, 500	AS PER REQUIREMENT
CAN bus communication format	Comply with CAN2.0B specification	
Terminating resistor	No built in terminating resistor	
Storage Temperature(℃)	-40-95	

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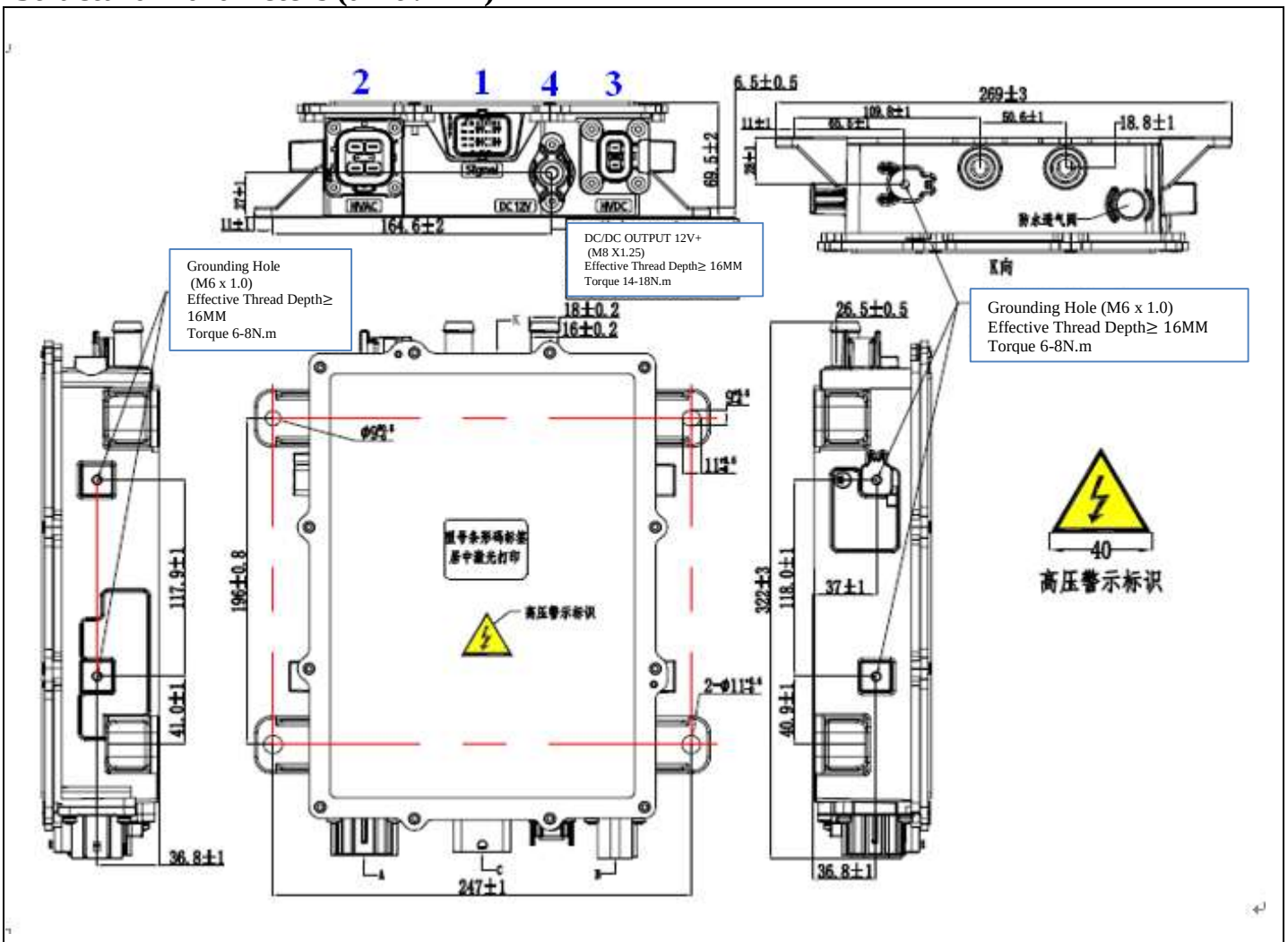
Structural Parameters (unit : mm)



WIRING DIAGRAM

- **Item 1**: Signal control connects to the VCU or BMS.
- **Item 2**: AC input connects to the AC charging inlet.
- **Item 3**: DC output connects to the PDU or battery pack or other devices.
- **Item 4**: DC/DC output 12V (+) connects to the 12V (+) auxiliary battery. 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 Model

Item	Function	Brand	Socket Model	Plug Model	Rated Currency(A)	Cable size
1	LV Signal control	Molex	0643340100	643191211	5A	A-F: 0.5mm² G,H: 0.75mm²
2	AC Input	Amphenol	HVC4PG63MV106-S02	HVC4PG63FS106	32A	6mm²
3	DC Output (HV)	TE	2367138-1	4-2103177-1 (4-2310537-1)	20A	4mm²
4	HV OUTPUT + (12V+)	Gvtong	GH06-F210-1NNB-T01	Install bolts (M8 X1.25) Effective Thread Depth≥ 16MM Torque 14-18N.m	208A	50 mm²

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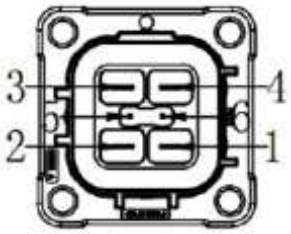
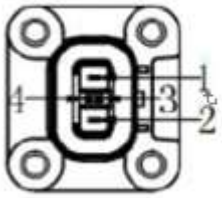
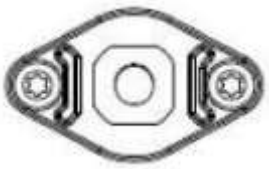
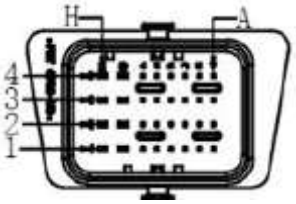
Interface Definition

AC Input(2)		DC output(3)		DC/DC output 12V+ (4)	
					
1	L (Connect to AC socket inside vehicle)/10A Output of inverter mode	1	Output +	+	Output + CONNECTS TO 12V AUXILIARY BATTERY bracket
2	N (Connect to AC socket inside vehicle)/10A Output of inverter mode	2	Output -		
3	N (Connect to EV Charging Inlet)/32A	3	HVIL+		
4	L(Connect to EV charging Inlet)/32A	4	HVIL-		
5	HVIL+				
6	HVIL-				

Signal Control(1)



1A	OBC_Wakeup_inv (Inverter wake-up)	2F	Indicator Blue	3A	CP	4A	CANH
1B	Indicator Red	2G	N_TEMP+	3B	PP	4B	CANL
1E	E-lock feedback			3E	E-Lock Driver-	4C	HVIL+
1G	L TEMP-			3F	Indicator Green	4D	HVIL-
1H	KL30(VCC)_12V			3G	N TEMP-	4E	E-LOCK Driver+
				3D	KL15(EN-OBC/DC)	4F	L TEMP+
						4G	KL31 (GND)
						4H	Indicator Ground

Remark
1.NC: no connected
2. Indicator is the driving signal output by OBC, it provides driving signals for external indicator lights, PIN 1B is the red light of the indicator, 2F is the blue light, 3F is the green light, and 4H is the indicator ground. (指示燈是由 OBC（車載充電器）輸出的驅動訊號，用來為外部的指示燈提供驅動信號。PIN 腳位分配如下：1B 是指示燈的紅燈, 2F 是藍燈, 3F 是綠, 4H 是指示燈的接地端。

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代號	定義	說明
K15	點火開關接通後的電源	僅在點火開關轉至 ON 位置時供電。主要供應控制單元、儀表板等電氣裝置運作。
K30	電池正極電源	常電 +12V (或+24V) ，無論點火開關狀態如何，隨時有電。
K31	電池負極 (地 / GND)	車輛所有電氣系統的接地參考點，與車體金屬部分相連接。

Code	Definition	Description
K15	Power after ignition switch is ON	This line provides power only when the ignition switch is in the ON position. It powers key vehicle electrical and electronic systems.
K30	Battery positive terminal power	Constant +12V (or +24V in some systems), always live regardless of the ignition switch position.
K31	Battery negative terminal (Ground / GND)	The reference ground for all vehicle electrical systems, typically connected to the vehicle chassis.