



110KW 540V Motor Control Unit Model No.: ATM110K540-V6H4D110

1 Basic technical parameters of the product

Item	Requirement	Remark
DC supply voltage range	DC 350V—750V	Support high Voltage platform
Protection level of control box	IP67	
Cooling mode	liquid cooling	Ethylene glycol mixed solution or other coolant
Nozzle outer diameter	20	mm
Controller communication mode	CAN 2.0	Support: 250kbps/500kbps
precharge	There is no pre-charging inside the electronic control, and an external pre- charging circuit is required.	
Water channel parameter	Flow8-15L/min, capacity: 0.23L	0.3 Mpa≤水壓 hydraulic pressure < 0.5Mpa
System low voltage control power supply	Range : DC 9-36V	
Low power consumption	≤10W	Rated operating condition
consumption of the heat dissipation	2.5KW-4KW	Rated operating condition
Control box dimensions	See CAD drawing for details	
Controller Weight	÷ 9.5	kg

1.1 Specific technical specifications

Name	Specification and Parameter	Remark
Rated Power(kW)	110KW	
Applicable motor	Permanent magnet synchronous motor	
Peak Power(kW)	180KW	
Rated output current	210A	
Maximum output current	350A	10S
Efficiency	≥98%	Rated operating condition
Active discharge time	≤3S	DC60V or less
Passive discharge time	≤3min	DC60V or less



Speed control range	1 : 1000 $\leq 500\text{rpm} : \pm 2\% ; \geq 500\text{rpm} : \pm 1\%$	Vector control performance with speed sensor
Speed control accuracy	$\leq 400\text{ms}$	
Speed response time	$\pm 5\text{N.m@100N.m}$ 以内, $\pm 5\%$ @ 100N.m以上	
Torque control accuracy		
Torque response time	$\leq 100\text{ms}$	

Output frequency range	0—800HZ	
Other functions	Feedback, speed control, torque control, speed/torque control switching, speed limit, torque limit, self-learning, fault reset, PC software function.	
protection function	Over-temperature, overload, phase-to-phase short circuit, short circuit to ground, over current, over voltage, under voltage, phase loss, stall, sudden load change during operation, etc.	

1.2 Outline drawing example (refer to attached diagram)

2 Product usage conditions

2.1 Operating environment and storage environment

- Working Temperature : $-40^{\circ}\text{C} \sim +55^{\circ}\text{C}$
- Relative Humidity : $5\% \sim 95\%$, without condensation .
- Altitude : maximum 4000米 meters
- Allow storage temperature : $-40^{\circ}\text{C} \sim +85^{\circ}\text{C}$
- Allow storage of relative humidity : $5\% \sim 95\%$, without condensation

3 Product performance description

3.1 Product low-voltage interface

Control wire harness Interface definition plug model : AMP 776164-1 AMP 770520-1 or client	Pin number	Vehicle side definition	Controller side definition	Remark
	1	PWR-	VIN-	Power input -
	5	Normal power input +	X1	Normal power input + (requires pin 27 to wake up)
	7	Cos-	COS-N-IN	Resolver cosine negative input
	8	Sin+	SIN-P-IN	Resolver sine positive input
	9	Ref+	EXC-P-OUT	Resolver excitation positive output



Plug model : C-GE01- P00 8-35NNB- Y0 1 pin : C-S06- 0017 P-NA-N)	10	TEMP-GND	TEMP-GND	Motor temperature sampling common ground
	11	NTC+	NTC	Motor temperature resistance NTC
	12	Debugging CANH2	Debugging CANH2 high	Debugging CAN2 is preset with terminal resistor for debugging and maintenance.
	18	Cos+	COS-P-IN	Resolver cosine positive input
	19	Sin-	SIN-N-IN	Resolver sine negative input
	20	Ref-	EXC-N-OUT	Resolver excitation negative output
	21	PTC+	PTC	Motor temperature resistance PTC
	22	Complete vehicle CANA_L	Vehicle CANL1	Vehicle communication CAN is low, with no terminal resistor by default.
	23	Debugging CANL2	DEBUG CANL2 LOW	Debugging CAN2 is preset with terminal resistor for debugging and maintenance.
	27	Wake-up signal (ACC file)	X5	Low voltage power supply wake-up signal, active high level
	34	CAN terminal resistor selection	CAN1H_TERM	The vehicle CAN is preset without a terminal resistor. If a 120Ω terminal resistor is required, short-circuit pins 34 and 35 externally.
	35	CANA_H Complete vehicle CANA_H	CANH1 Vehicle CANH1	Vehicle communication CAN high, preset without terminal resistor



Remark :

- 1、Low-voltage signal lines need to use twisted pair shield lines ;
- 2、Controller requires ground shield ;
- 3、The debugging CAN needs to be led to the cab maintenance port for debugging and maintenance. ;
- 4、Highly effective ($9 \leq U \leq 36V$)

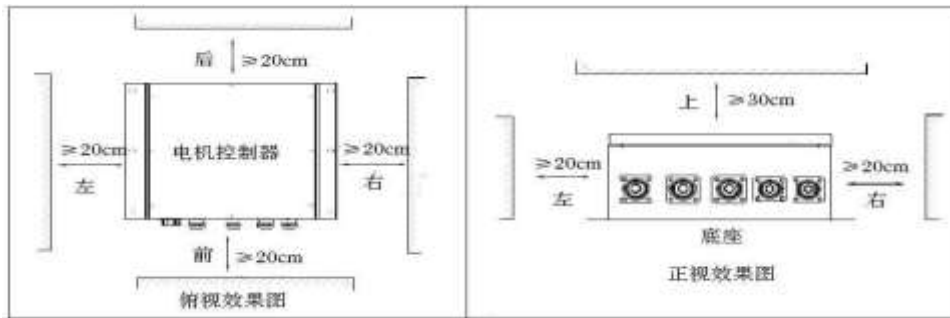
3.2 High Voltage Interface Definition

Name	Socket Model	Client docking terminal model	Pin definition	Function	Remark
(+)	Copper bar (M8) connection	Terminal width $\leq 16mm$	+	Power battery positive pole (+)	Gland head specifications: Masking range: 8.5~15mm, locking range: 11~16mm, recommended 35 square meters of mask cable;
(-)	Copper bar (M8) connection		-	Power battery negative pole (-)	
U	Copper bar (M8) connection	Terminal width $\leq 16mm$	U	Drive motor U phase	Gland head specifications: Mask range: 8.5~15mm, locking range: 11~16mm, it is recommended to use 35 square meter mask cable;
V	Copper bar (M8) connection		V	Drive motor V phase	
W	Copper bar (M8) connection		W	Drive motor W phase	

3.3 Relays, fuses, plug-ins, fans, etc. are wearing parts. Please pay attention to the working conditions and excessive use is strictly prohibited.

4 Installation requirements

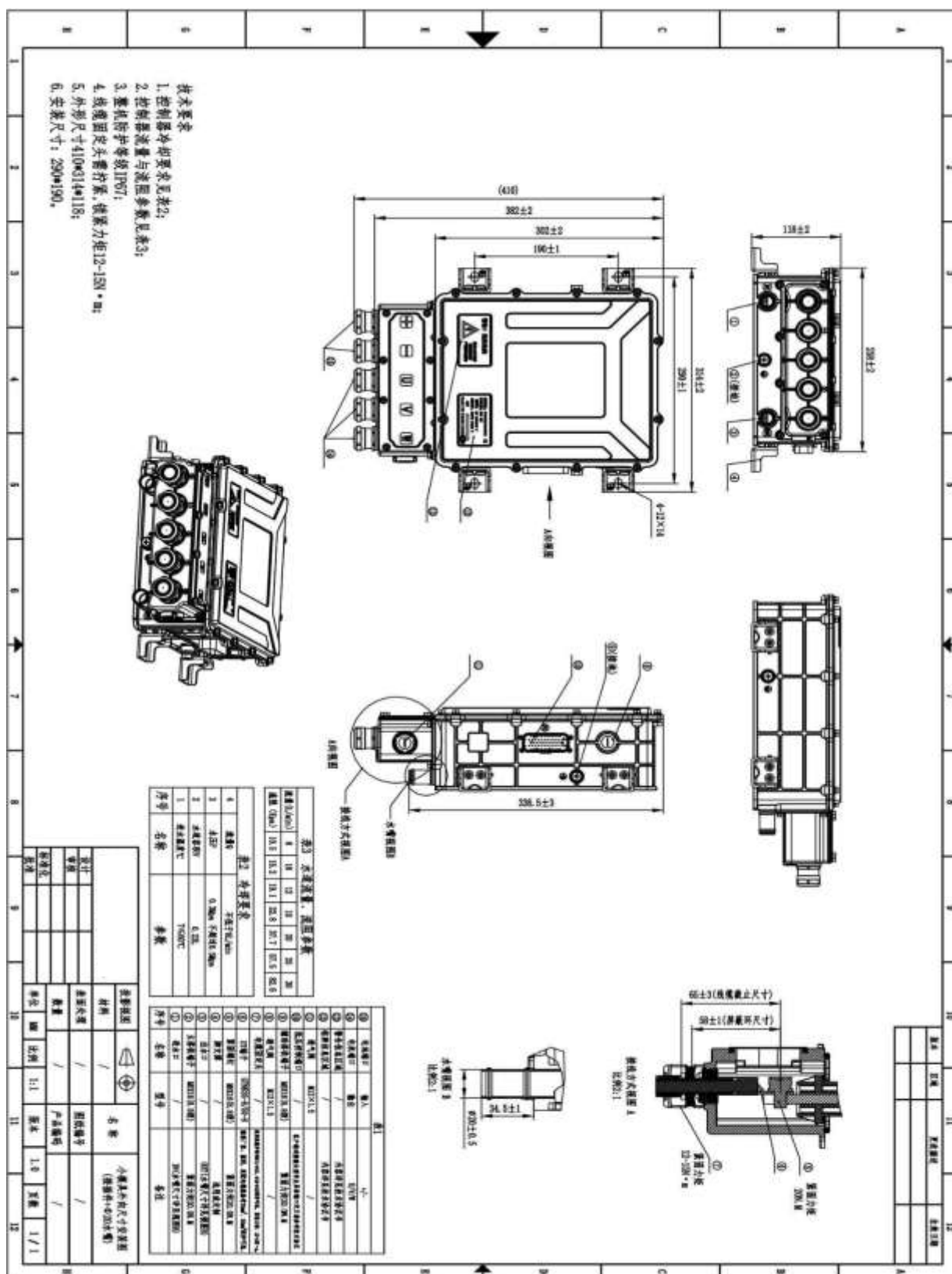
- The controller needs to be installed horizontally on the flame retardant bracket
Keep at least 20cm of space in front of the controller, rear, left and right of the controller(the connector does not contain space when there is an electrical harness connection), and the space above 30cm should be reserved above; the operation space of the fastening bolts during maintenance must be guaranteed.



- The direction of the electric harness should be natural and tidy, and the strong and weak electricity must be separated. Do not arrange the signal line and the power line side by side, and the connecting harness is easy to identify and disassemble.
- When fixing, please use bolts and elastic washers to fix it to the flame- retardant bracket.

5 Product standard :

- QC/T413-2002 《Basic technical conditions for automotive electrical equipment》
- GB/T 18488.1-2015 : Motors and controllers for electric vehicles Part 1: Technical conditions
- GB/T 18488.2-2015 : Electric motors and their controllers for electric vehicles Part 2: Experimental methods
- GBT 18384.1-2015 : Safety requirements for electric vehicles Part 1: On-board energy storage devices
- GBT 18384.2-2015 Safety requirements for electric vehicles Part 2: Functional safety and fault protection
- GBT 18384.3-2015 Safety requirements for electric vehicles Part 3: Personnel protection against electric shock
- GB 4208-2008 Enclosure protection level (IP code)
- SAE J1939/11 Commercial Vehicle Control System Area Network (CAN Bus) Communication Protocol》
- GB/T 18655-2015 Vehicles, boats and internal combustion engines Radio disturbance characteristics Limits and methods of measurement for the protection of onboard receivers



Attachment: Appearance and installation dimensions drawing