1. Overview

The ND series Hall one-line controller is a high-end high-power permanent magnet synchronous motor controller, which has the advantages of high quality, high efficiency and intelligence. It is suitable for vehicle applications of various Hall motors. It is suitable for high-speed motorcycles with hub motors and mid-mounted motors, and high-end electric tricycles. Adopt high-quality imported MOS core, all-metal shielding and aluminum die-drawing heat dissipation structure, perfect matching and fine optimization in hardware architecture and software implementation.

Accurate matching control function:

Using 32-bit intelligent microprocessor, matching high-precision motor angle encoder, and innovative vector control algorithm and intelligent control technology, the motor efficiency is maximized. The wide high-efficiency dynamic range enables the driving vehicles to obtain strict cruising range requirements under comprehensive road conditions. Expand and highlight the advantages of comfort performance and weak magnetic expansion speed.

Anti-slope function, maximum speed limit, electronic brake, energy feedback, current limit, host computer communication and other functions are all available to meet various needs.

Rich software parameter configuration:

- Monitor and configure the controller through the visual computer interface, update and upgrade online.
- The current at different speeds can be adjusted online.
- Can set the maximum speed of forward and backward, economic speed.
- The overall bus current and phase current can be set.
- Throttle pedal threshold can be set to adjust the response sensitivity of the pedal.

Perfect protection function:

Monitor working voltage, current, temperature, motor, gear, accelerator pedal, brake, etc.

Ensure the safety of vehicle driving control:

| Encoder fault protection	Accelerator pedal fault protection	Controller temperature protection	Motor temperature protection
Motor leakage protection	Anti-speeding protection	Overvoltage protection	Undervoltage protection
Overcurrent protection	Phase short circuit protection		

2. Index Parameter

| Model	Maximum bus	Maximum Phase line	Operating voltage	Size	Weight
72240	70A	240A	52V~90V	189mm*121mm*63.5mm	1.7kg
72300	110A	300A	52V~90V	189mm*121mm*63.5mm	1.7kg
72350	170A	350A	52V~90V	189mm*121mm*63.5mm	2.0kg
72450	210A	450A	52V~90V	189mm*121mm*63.5mm	2.0kg
72520	250A	520A	52V~90V	189mm*121mm*63.5mm	2.0kg
72660	330A	660A	52V~90V	189mm*121mm*63.5mm	2.0kg
72800	430A	800A	52V~90V	189mm*121mm*63.5mm	2.0kg
72880	430A	880A	52V~90V	222mm*142mm*71mm	3.2kg
721200	600A	1200A	52V~90V	238*155*88mm	4.0kg
721800	800A	1800A	52V~90V	238*155*88mm	4.0kg

Project	Index
Control Method	Double current loop true vector control
Speedometer display	Isolated pulse meter or CAN communication meter
Energy feedback	Yes
Protection level:	Completely sealed glue
Insulation class	DC1000V leakage current 0.05

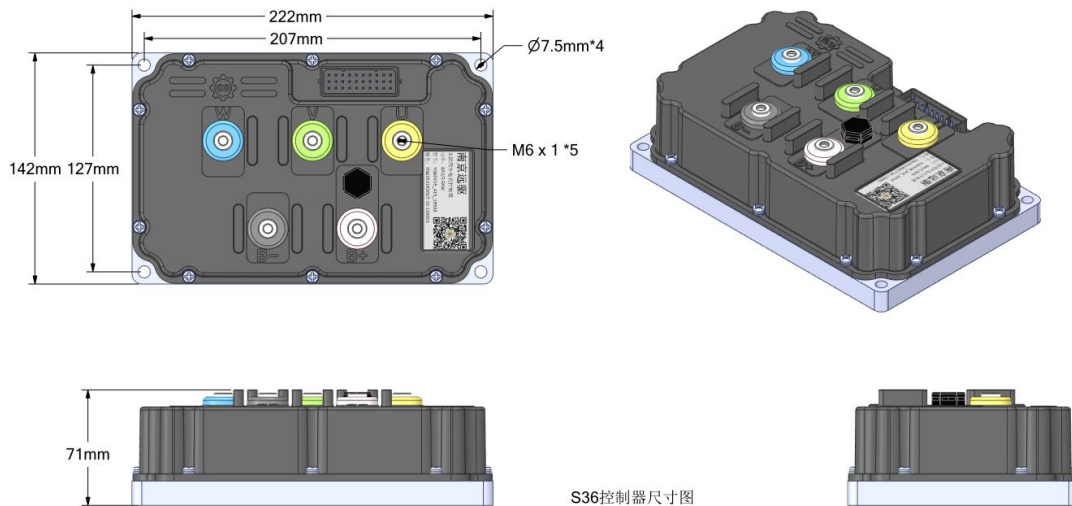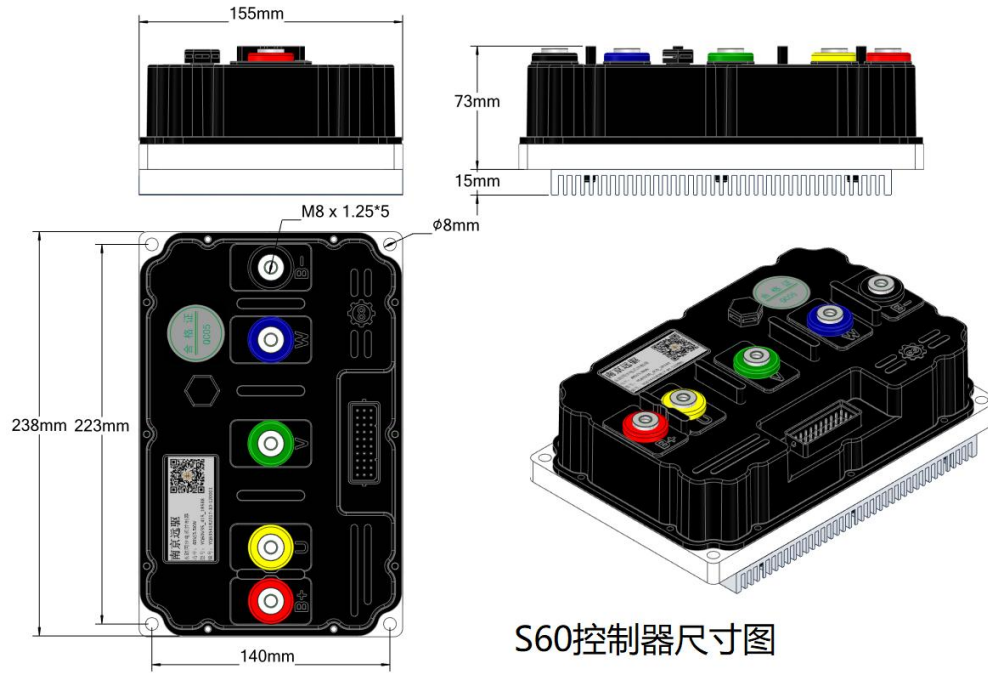| Working temperature	−30℃～+55℃
Storage temperature	−45℃～+85℃
Effectiveness	99%
Cooling method	Natural cooling
Vibration standard	GB/T2423
Cooling requirements	Good ventilation or increased air cooling

3.Wiring diagram

The Whole Car Circuit Diagram of Nanjing FarDriver Controller
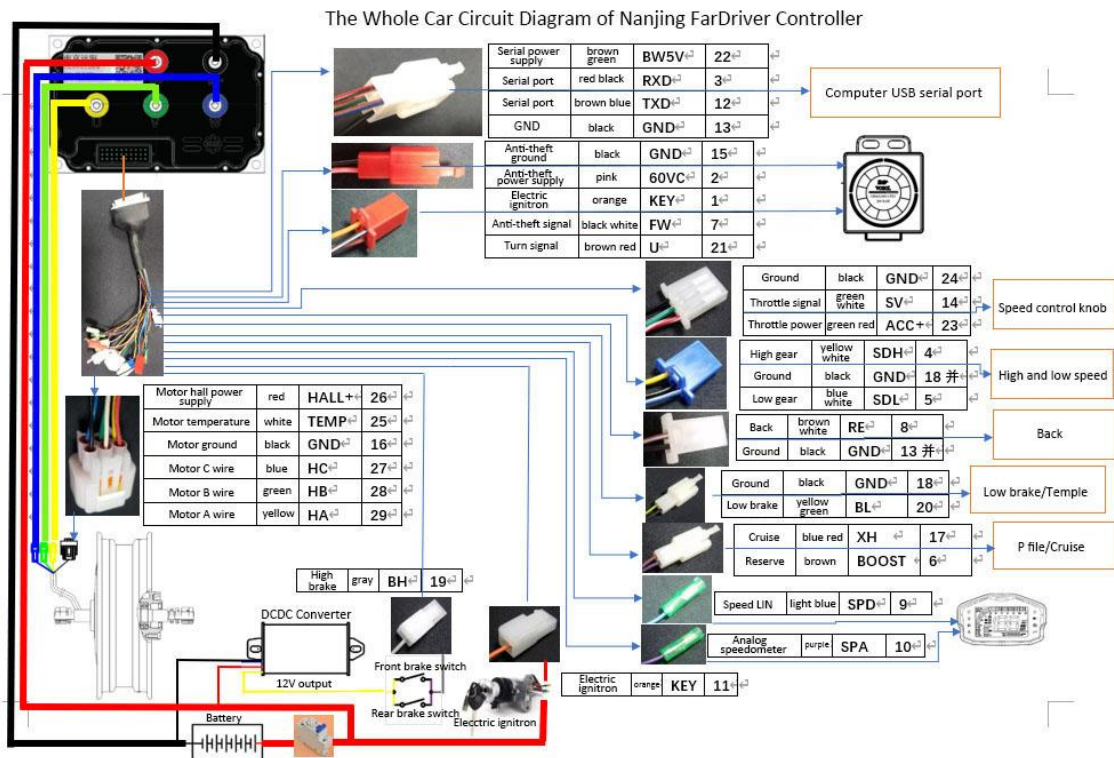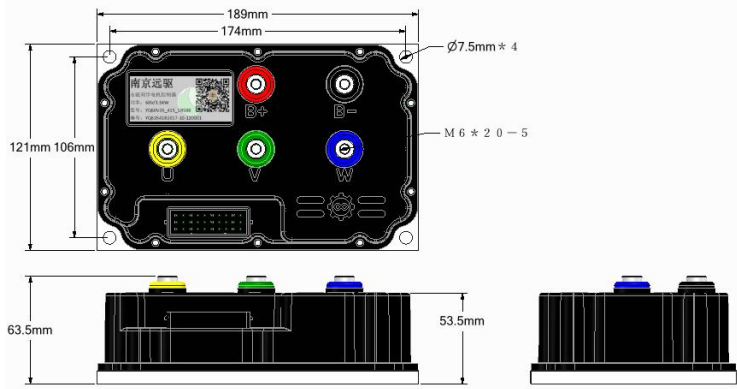
4. Dimensions

S24 Controller dimension drawing

S36控制器尺寸图

S60控制器尺寸图

5. Electrical Characteristics

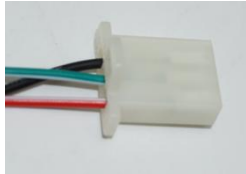| S/N	Content		
1	Motor HALL+	14V (No load) 8V/30Ma (Load)	
2	Accelerator pedal power supply 5V	5. 1V	Matching
3	Accelerator pedal signal	0. 5V~4. 3V 1. 1V~3. 9V	Host computer settings
4	BW5V	Bluetooth 5V, used to power the Bluetooth module	
5	High speed/low speed	Dangling invalid Effective grounding	
6	Backward gear	Dangling invalid Ground or battery is active	
7	Anti-theft signal	Dangling invalid Ground or battery is active	
8	Low brake	Suspended grounding parking Suspended parking ground driving	Host computer settings
9	High brake	Suspended driving to stop Suspended parking for high traffic High: 12V with or without battery isolation	Host computer settings
10	Small key switch output	That is, the electric door lock signal supplies power to the controller	
11	RX	Computer receiving signal, controller output, TTL level	
12	TX	Computer sends signal, controller input, TTL level	
13	GND	Signal	

6. Outlet interface description

6.1 Nanjing Yuandrive Technology plastic case controller Hall first line version of the line drawing is suitable for Hall's first-line controller. 30PIN connector recommended color definition.
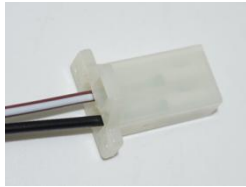
21	22	23	24	25	26	27	28	29	30
BL	HALLC	485B/TXD	TEMP	-	GND	SV	ACC+	BW5V	60VC
Yellow green	Blue	Brown blue	White		Black	Green white	Red white	Brown green	Pink
11	12	13	14	15	16	17	18	19	20
BH	HALLB	485A/RXD	FD	CANH	GND	P	ALARM	W	KEY
Grey	Green	Red black	Black white	Red yellow	Black	Blue red	Brown	Brown red	Orange
1	2	3	4	5	6	7	8	9	10
HALLA	FW2	FW	HALL+	CANL	GND	GND	RE	SPA	KEY
Yellow	Blue white	Yellow white	Red	Brown yellow	Black	Black	Brown white	Purple	Orange
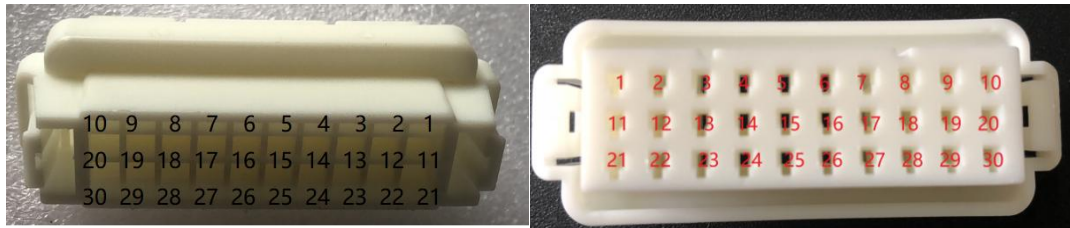
Connector		Description	Colour	Definition	Pin
Hall line length 290mm	DJ7061Y-2.3-21	Motor 5V	Red	HALL+	4
		Motor temperature	White	TEMP	24
		Motor ground	Black	GND	6
		Motor C wire	Blue	HALLC	22
		Motor B line	Green	HALLB	12
		Motor A line	Yellow	HALLA	1
Electric door lock length 290mm **DJ7011-6.3-21**		Electric door lock key	Orange	KEY	10
Cruise BOOST length 290mm	DJ7021B-2.8-11		Blue red		17
			Brown		18

Low brake length 290mm	DJ7021B-2.8-11	Ground	Black	GND	26 (and)
		Low brake	Yellow green	BL	21
Analog speedometer length 290mm	DJ221-3.5A	Hall speedometer signal	Purple	SPA	9
High brake length 290mm	DJ7011-6.3-21	High brake	Gray	BH	11
Throttle length 290mm	DJ7031A-2.8-21	Ground	Black	GND	26
		Accelerator signal	Green white	SV	27
		Accelerator power	Red white	ACC+	28
Anti-theft signal length 290mm	DJ7041A-2.8-21	Anti-theft	Black white	FW	14
		Phase line	Brown red	W	19
		Electric door lock	Orange	KEY	20
Anti-theft power supply length 290mm	DJ7021B-2.8-11	Battery +	Pink	60VC	30
		Battery -	Black	GND	7
High and low speed length 290mm	DJ7031B-2.8-21 Three-core female head cover 1 short-circuited three-core male head (default high speed)	High speed	Yellow white	FW	3
		Ground	Black	GND	7 (and)
		Low speed	Blue white	FW2	2

| Backward gear length 290mm |
DJ7021A-2.8-21 | Back | Brown white | RE | 8 |
| | | Ground | Black | GND | 16 (and) |

Velocity pulse length 290mm	 DJ221–3.5A	One-line (The default one-line does not match DKD speedometer)	Light blue	SPD	13 (and)
Upgrade port line length 190mm	 DJ7041B-2.8-11	Serial power supply	Brown green	BW5V	29
		Serial port	Red black	485A/RXD	13
		Serial port	Brown blue	485B/TXD	23
		GND	Black	GND	16

7. Buzzer alarm

The controller is equipped with a buzzer. When an alarm occurs, the buzzer will send out the corresponding alarm message.

7.1 Description of buzzer alarm sound times：

7.1.1 During normal boot, the buzzer will sound once, then no longer。

7.1.2 If there is a long beep, please check whether the brake and the throttle are effective at the same time.
Using this function, you can check whether the brake and the throttle are normal: step on the buzzer at the same time, let go of any one will not sound.

7.1.3 If there are 2 short sounds and 1 long sound, and the cycle is repeated, it means that the controller is in the self-learning state, and the self-learning should be completed according to the self-learning operation steps.

7.1.4 If there are 2 short sounds, pause for a short time, then 1 short sound, and then repeat, indicating that the controller program verification failed. In this case, the program must be upgraded again.

7.1.5 If there are 4 short sounds, 1 long sound, and 5 short sounds, and then repeat, it means that the upgraded program does not match the controller. Please check

whether the program matches the model on the controller label. If it does not match, find the matching program and restart upgrade.

7.1.6　If there are 1 to 15 sounds, judge the fault according to the number of sounds.

	Fault description	Number of sounds	
1	Motor Hall failure	1	The signal line between the controller and the motor is not connected properly.
2	Accelerator pedal failure	2	The accelerator did not return to zero, or the accelerator pedal was broken. Note that the fault will be displayed by default when the controller is restarted. When the self-test passes, the fault will disappear.
3	Current protection restart	3	Abnormal protection alarm
4	Phase current overcurrent	4	Abnormal protection alarm
5	Voltage failure	5	The voltage is too low or too high, which exceeds the allowable range of the controller.
6	Anti-theft alarm signal	6	Keep
7	Motor over temperature	7	The motor temperature is too low or too high beyond the use range
8	Controller over temperature	8	The controller temperature is too low or too high beyond the use range
9	Phase current overflow	9	Abnormal protection alarm
10	Phase current zero fault	10	Controller internal alarm
11	Phase short circuit fault	11	The phase wire is shorted, or the motor is faulty.
12	Line current zero fault	12	Controller internal alarm
13	MOSFET upper bridge failure	13	The upper bridge of the controller is damaged
14	MOSFET lower bridge failure	14	The lower bridge of the controller is damaged
15	Peak line current protection	15	Hardware overcurrent protection alarm

Note

· Throttle Error

There show throttle error in APP page, please check controller GND wire.