

# User Manual

*product model:* H60A

*File number:* SPEC EM039-C1/C1S

*Version number:* V1.1

**compiler:**

**Verifier:**

**ratifier:**

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# catalogue

- Foreword .....
- 1.Product introduction .....
- 2.Product standard.....
  - 2.1Technical indicators.....
  - 2.2major function.....
  - 2.3interface defini .....
- 3.Machine size.....
- 4. FCC Statement.....

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## Foreword

In the process of compiling this specification, we try our best to avoid errors, and we hope to bring you a clear and accurate manual structure.

In the process of reading and using this specification, if you find relevant errors or incomplete statements, or if you think it is necessary to improve, please inform us so as to bring you a more accurate and detailed specification. We are very grateful for your suggestions on this specification.

If you have improvement suggestions, please contact:



TEL: 027-81650773

# 1.Product introduction

This product is aimed at the vehicle controller developed by Yadea high-end two-wheeled electric vehicle C1/C1S. In which C1 is configured as RS485 communication and C1S is configured as CAN communication.

## 2.product standard

### 2.1 product standard

**Limit parameter:**

VCC	100V	Exceeding this voltage range may damage this product.
CANport Voltage	-4V~16V	Voltage relative to GND of CAN
485 port Voltage	-4V~12V	Voltage relative to GND
Antenna port ESD	±2KV	
CANport ESD	±2KV	
VCC port ESD	±500V	The machine model of non-contact end of human body
PMWKUP ESD	±500V	The machine model of non-contact end of human body
limit temperature	-30~85℃	

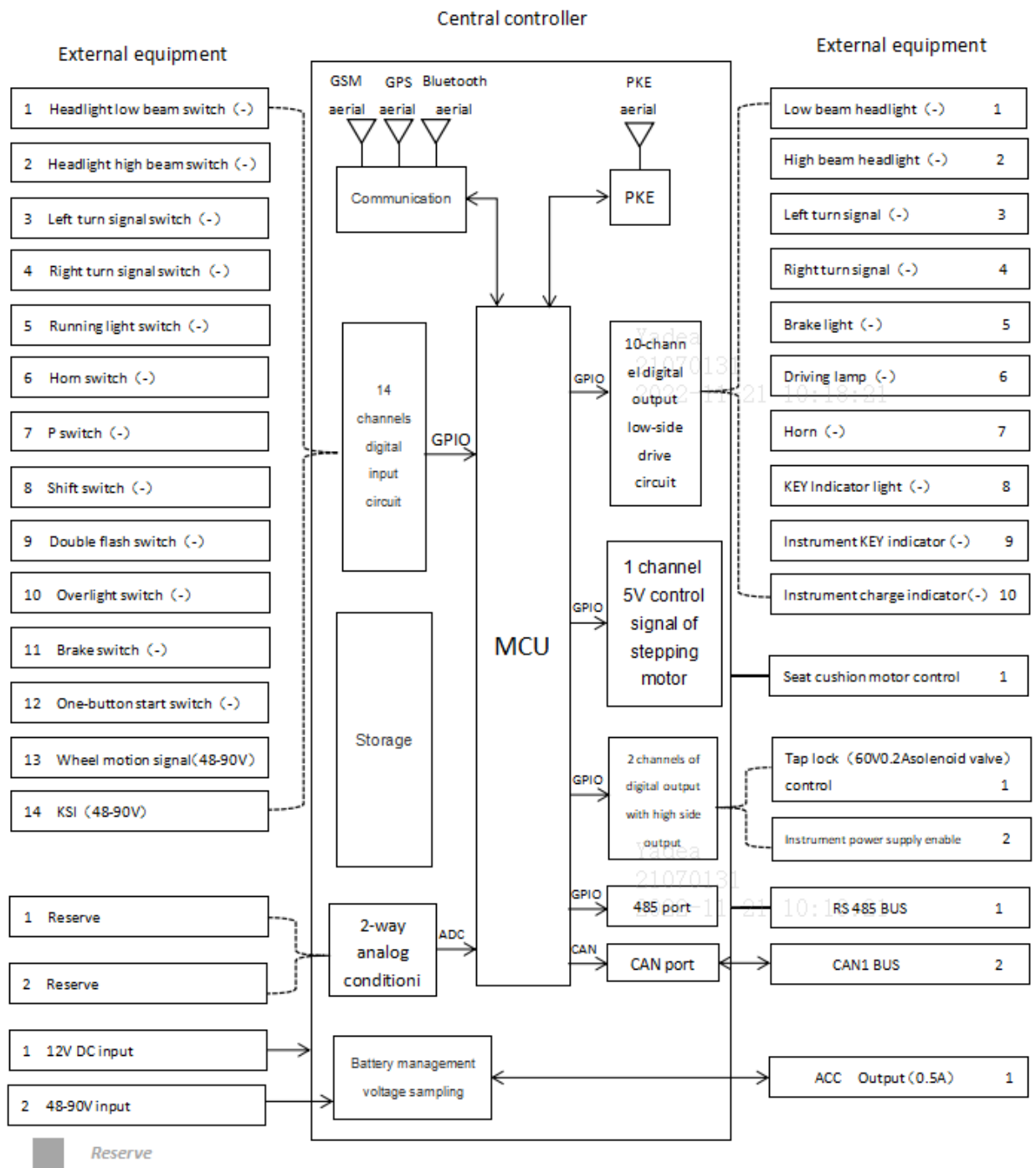
**working parameter:**

functional description		norm	remark
Work characteristic	VCC	48~84V	Typical 60V
	rated current	Less than 200mA	@60V
	Work temperature	-25~65℃	
	Protection Class	IP65	
	Quiescent Current	Less than 10mA	
in-out charac	Switch and drive interface protection	No damage due to short circuit to ground or open	

		circuit.	
	Headlight driving capacity	2A work continuously	Parameters are adjusted according to actual needs.
	Horn driving ability	3A work continuously	Parameters are adjusted according to actual needs.
	Other lamp driving capability	0.5A work continuously	Parameters are adjusted according to actual needs.
	Vibration alarm	2~10GAdjustable sensitivity	
comm unicati on	CAN	Baud Rate 250k	Do not support 60V short circuit protection.
	RS485	115200	Do not support 60V short circuit protection.
Wireless norm	GPS sensitivity	-160dBm	
	GPRS sensitivity	-120dBm	
	PKE receiving sensitivity	-110dBm	
	Keyless start distance	Less than 1.5 meters	More than 4 meters is "key away"(Because only one low frequency antenna is used)
	Wireless module model	YiYuan MC20	Refer to the manual for relevant indicators.
Power Amplifier		72 dB	
Master controller model		NXP S32K144HFT0VLLT <sup>®</sup>	Car-grade chip
Vibration		Vibrating frequency: 50~500HZ, Acceleration: 5g	

## 2.2 major function

The controller provides 14 digital inputs, 2 analog inputs, 10 digital inputs, 1 stepping motor control signal, 1 RS485 and 1 CAN bus. The block diagram is as follows:



This function is divided into 2 blocks:

— Basic control part

Include key detection, vibration detection, handle detection, gear control, brake control, overtaking control, battery detection, brake lights,

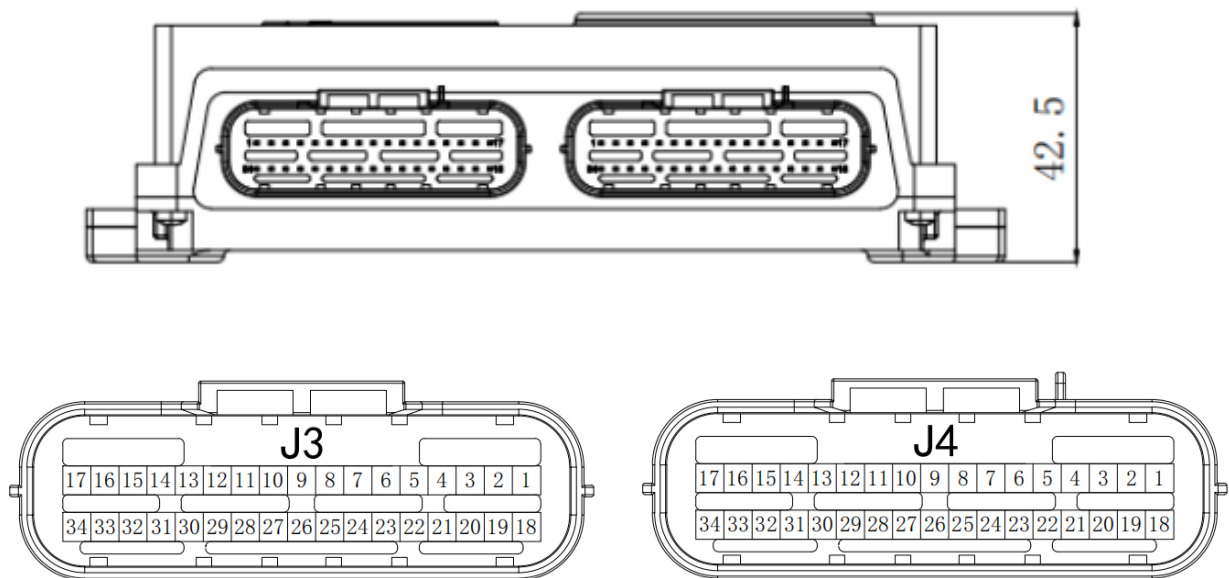
turn signals, cushion lock switch, horn control, faucet lock control, GPS positioning, TBOX and other functions.

## 二 Extended control part(BCM)

Include: Low beam/high beam/running light/one-button start light,PKE system,Seat cushion lock control.

## 2.3 Interface definition

1) Interface diagram(Seen from the board end insertion opening)



Board end type : ZGCMX23A34NF1(Black)

End harness : ZGCMX23A34SF1 (Black)

Front waterproof ring : ZGCMX23A34FR1 (Black)

Rear waterproof plug : ZGCMX23A34RR1 (Black)

Terminal model : ZGCM23S05K351

Board end type : ZGCMX23A34NF2(Gary)

End harness : ZGCMX23A34SF2(Gary)

Front waterproof ring : ZGCMX23A34FR1(Black)

Rear waterproof plug : ZGCMX23A34RR1(Black)

Terminal model : ZGCM23S05K351

Note: The listed connector models are those of China-made Guangzhou Zhengya Company, and the definition of pin number is different from that of JAE Company. Please define the wiring strictly according to the pin number of this document.

2) Define detailed description of interface

Type	Pin number	Interface definition	Electrical performance	Logic
Power input	J3_33	Power-on key	MAX 84V	Short-circuiting it with the external battery is defined as key opening.
	J3_16,J3_21,J3_22,J3_23,J3_24,J3_25,J3_26,J3_27,J3_34,J4_23	Battery negative electrode (GND)		The negative pole of the external power supply is also the signal reference ground of the product. All the power circuits of lamps pass through these reference grounds, so the wires of these grounds should not be too thin.
	J3_17	Battery positive electrode	MAX 84V	The positive input of the power supply is prohibited.
	J3_28	DCDC power 12V positive		Positive input of external 12V power supply.
power output	J3_15	ACC power output	The maximum driving capacity is 0.2A	Output the power switch signal.
	J3_32	12V power output (one-button start power supply)	The maximum driving capacity is 0.1A	12V DC power output, which can supply power to one-key start button.
	J4_22	Instrument power supply enable	The maximum driving capacity is 0.1A	Output 12V
	J3_1	Tap lock motor +	The maximum driving capacity is 60V/0.3A	Electromagnetic valve and relay control
	J3_21	Tap lock motor -		
Digital quantity input	J4_8	Reserved switch signal	As a cruise physical switch.	active-low
	J4_9	Push-down switch signal		active-low
	J4_10	High, medium and low		active-low

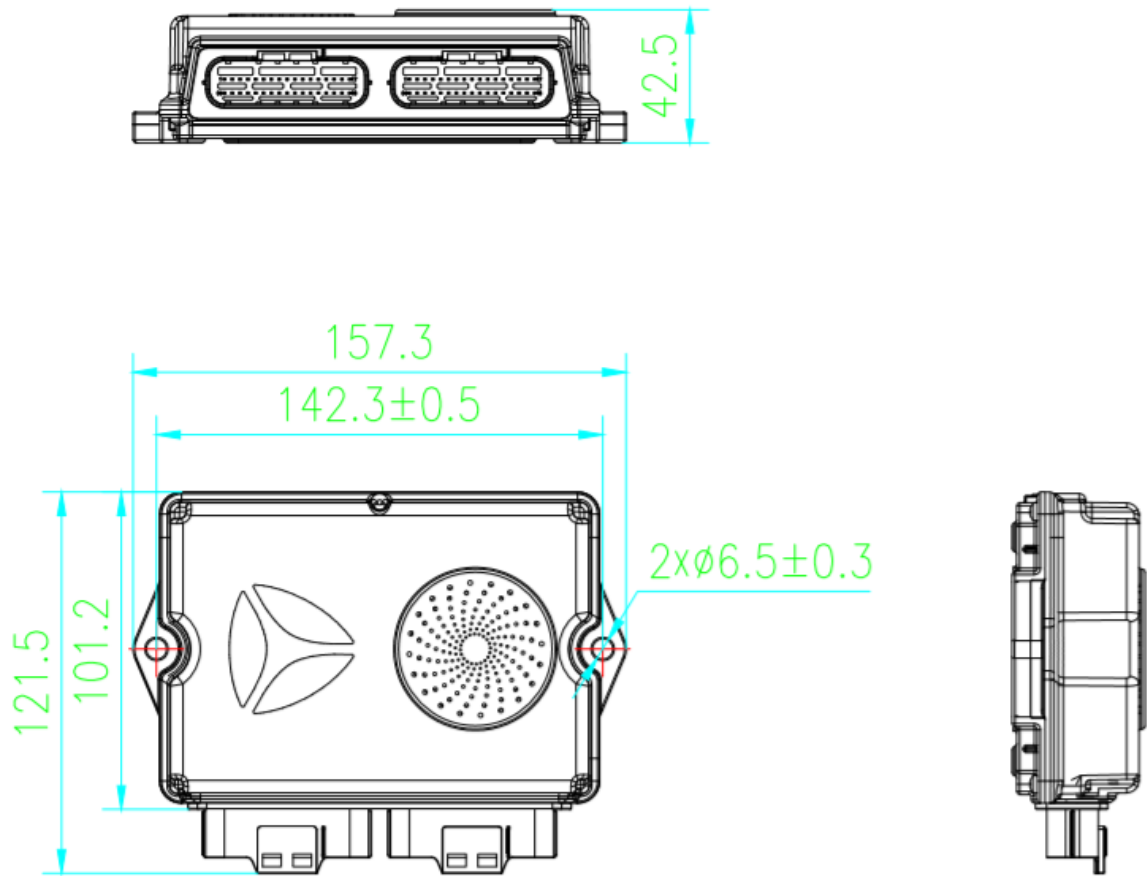


		switch signal		
J4_11		P-position switch signal		active-low
J4_12		Horn switch signal		active-low
J4_13		Reserve	Reserved driving light switch signal	active-low
J4_14		Right turn signal switch signal		active-low
J4_15		Left turn signal switch signal		active-low
J4_16		High beam switch signal		active-low ( Works with AUTO switch and headlight switch combination logic. )
J4_17		AUTO switch and headlight switch signal multiplexing(European version only has AUTO function.)	European version of low beam is always on, without headlight switch function.	active-low ( Works with the combination logic of AUTO switch and high beam switch. )
J4_26		Seat cushion switch signal		active-low
J4_27		Overtaking switch signal		active-low
J4_28		PUSH button	Tap lock switch signal	active-low
J4_29		SEL switch	Originally reserved.	active-low
J4_30		Reserved switch signal	Originally a headlight switch, it is reserved now.	active-low
J4_31		Reserved (originally: AUTO switch signal)		active-low ( Works with the combination logic of AUTO switch and high beam

				switch. )
	J4_32	Double flash switch signal		active-low
	J4_33	Charging wake-up indicator pin	Originally a one-button start lock switch.	12V input is active-high.
	J4_34	Brake signal		active-low
Digital low-side output	J3_2	Charging indicator light	(Start the outer ring light as the original key.)	Maximum ID current 0.03A
	J3_20	Iron horn+(External 12V power supply)		Maximum ID current 3A
	J3_7	Iron horn -		Maximum ID current 3A
	J3_3	Starting key light		Maximum ID current 0.03A
	J3_4	Meter charging indicator		Maximum ID current 0.03A
	J3_5	Instrument KEY indicator		Maximum ID current 0.03A
	J3_6	License plate lamp		Maximum ID current 1.2A
	J3_8	brake light		Maximum ID current 0.5A
	J3_9	Right turn signal		Maximum ID current 0.5A
	J3_10	Left turn signal		Maximum ID current 0.5A
	J3_11	full beam headlight		Maximum ID current 3A
	J3_12	dipped headlight	When the high beam is turned on, the low beam is turned on automatically.	Maximum ID current 2A

motor drive	J3_29	Stepping motor control signal		
Analog input	J4_6	Wheel motion signal		Convert to switching signal
	J4_5	Reserve	Reserve	
	J4_4,	Reserve	Reserve	
CAN Port	J4_1	CAN low	C1S	Termination resistance 120 Ω
	J4_18	CAN high	C1S	
System	J4_3,J4_20,J4_2 1,J3_18,J3_19,J3 _13,J3_14,J3_30, J3_31,J4_2,J4_1 9	System reservation		
RS485 Port	J4_24	RS485A	C1	
	J4_25	RS485B	C1	

### 3.machine size



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## Warranty agreement

1. The warranty period of this product is twelve months (subject to the information of fuselage bar code). If the product is used correctly according to the instruction manual during the warranty period, our company will be responsible for free maintenance if the product fails or is damaged.
2. During the warranty period, if the damage is caused by the following reasons, a certain maintenance fee will be charged:
  - A. Machine damage caused by incorrect operation according to the user manual provided by our company;
  - B. Unauthorized repair, unauthorized disassembly, machine modification, etc. lead to machine damage due to deliberate destruction;
  - C. Machine damage caused by abnormal power supply system, abnormal load, use environment not meeting product protection level, improper transportation and falling;
  - D. Machine damage caused by sudden natural disasters such as fire, flood, earthquake and war;
3. When the product breaks down or is damaged, please fill in the contents of the Product Warranty Card correctly and in detail.
4. The collection of maintenance fees shall be subject to the Maintenance Quotation Sheet formulated by our company.
5. This warranty card will not be reissued under normal circumstances. Please keep this card and show it during the warranty.
6. Please contact our company in time if you have any problems during the service.

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7. The right to interpret this agreement belongs to Wuhan Hekang Electronic Technology Co., Ltd.

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## 4. FCC Statement

Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

FCC RF Radiation Exposure Statement:

This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with a minimum distance of 20cm between the radiator and any part of your body