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Lime 4.1

Lime 4.1 Scooter User Manual

Version：V1.2

Date：2022-10-19

Revision history

Version	Date	Author	Description
1.0	2022-10-16	Robin Zhang	Initial

Content

1 Production Introduction

Lime 4.1 series scooter central control (CCU), support 4G&WiFi data transmission, Bluetooth interconnection, SMS service and other functions. The CCU with accelerometer and gyroscope sensor, support high power audio output, and GPS positioning function. The CCU has a UART port and a CANBUS port.

Lime 4.1 series scooters support data transmission in 4G/3G mode. CCU built-in background server interface, can realize real-time transmission of scooter location information, running information. The background can do data analysis according to the collected CCU data to improve operational efficiency.

2 Key Function

2.1 4G/3G Data Transmission Function

Support Bands：
FDD LTE: B1/B2/B3/B4/B5/B7/B8/B12/B13/B18/B19/B20/B25/B26/B28
TDD: B38/B39/B40/B41
WCDMA: B1/B2/B4/B5/B6/B8/B19

2.2 GPS Function

Large Patch antenna; GPS performance is excellent and stable

2.3 Accelerometer, Gyroscope, Hall and other sensors

Based on sensor data, user behavior pattern analysis can be done.

3 CCU Instruction

3.1 Basic Parameter

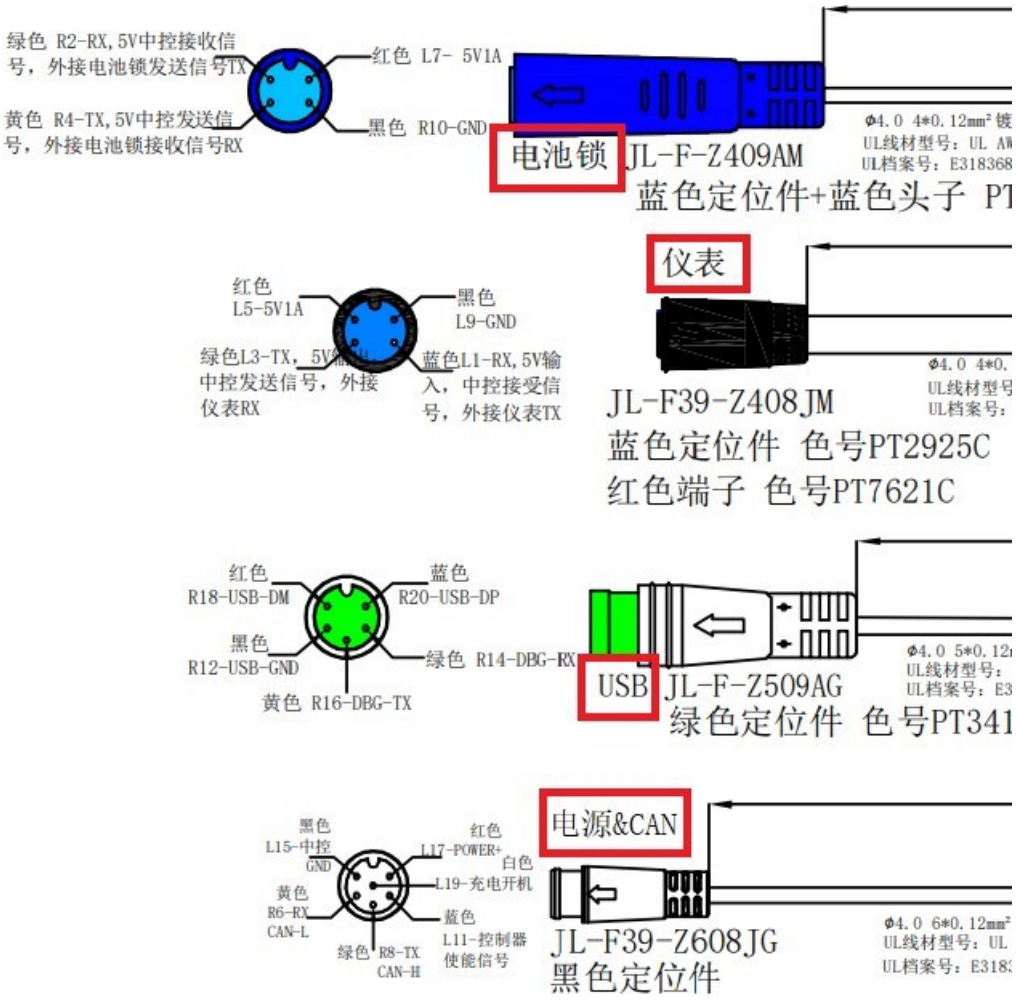
Size：148.7x51.07x26mm
Weight：About 200g (laboratory sampling value)

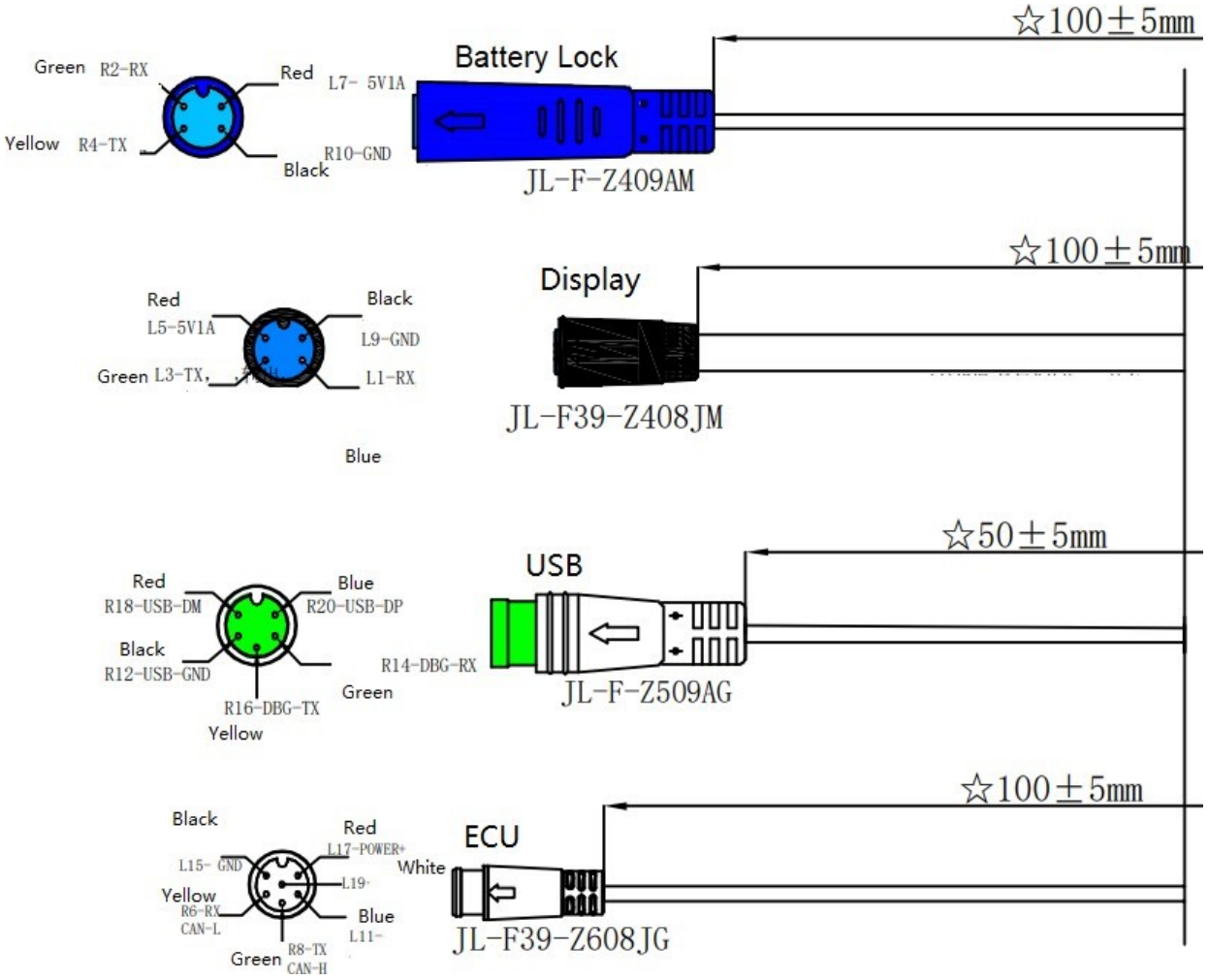
3.2 Power

Rated Input：36VDC 200mA
Operating Voltage Range：25VDC-60VDC
Battery Lock Output：5VDC 500mA (Instantaneous MAX:5VDC 1A)
Meter Output：5VDC 200mA (instantaneous MAX:5VDC 500mA)
Backup Battery：3.3VDC~4.2VDC,1250mAh
Battery Lock Output：5VDC, 500mA

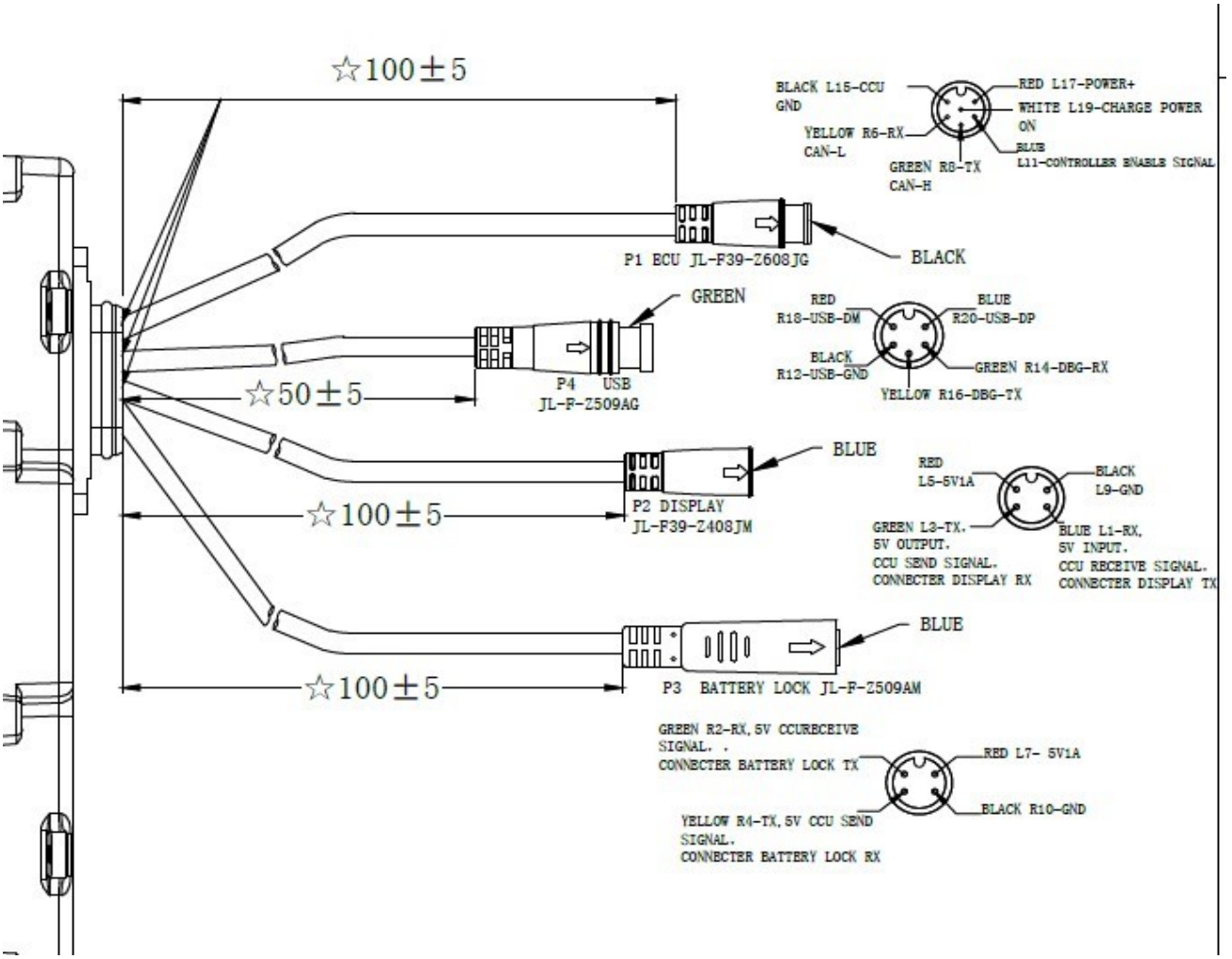
3.3 Control Interface

3.3.1 Control Wire Definition Diagram





3.3.2 Control Interface Image



3.3.3 Control Interface Description

Interface	Definition	Voltage	Remark	Color	Model
ECU 6PIN Interface	CANL	5VDC	Connect to ECU CANL	Yellow	JL-F39-Z608JG
	CANH	5VDC	Connect to ECU CANH	Green	
	POWER	25VDC-60VDC	Power Input	Red	
	CHG_IN	5VDC	Startup requirements: High level by default. Low level 3S	White	
	ECU_EN	3.3VDC	High level electric control start, low level electric control shutdown	Blue	
	GND	0VDC		Black	
Display Interface	RX	Default 5VDCD	CCU RX connect to Meter TX	Blue	JL-F39-Z408JM
	TX	Default 5VDC	CCU RX connect to Meter TX	Green	
	POWER	5VC	500mA	Red	

			Power output 500mA		
	GND	0VDC		Blck	
Lock port	RX	Default 5VDC, Compatible with 3.3 VDC	CCU RX connect to Battery Lock TX	Yellow	JL-F-Z49AM
	TX	Default5VDC Compatible with 3.3 VDC	CCU TX connect to Battery Lock RX	Green	
	POWER	5VDC	Power output 1A	Red	
	GND	0VDC		Black	
Debug port	DP	5VDC	USB data DP	Blue	JL-F-Z509AG
	DM	5VDC	USB data DM	Red	
	TX	1.8VDC	CCU TX connect to USB RX	Yellow	
	RX	1.8VDC	CCU RX connect to USB TX	Green	
	GND	0VDC		Black	

3.4 CCU Startup Method

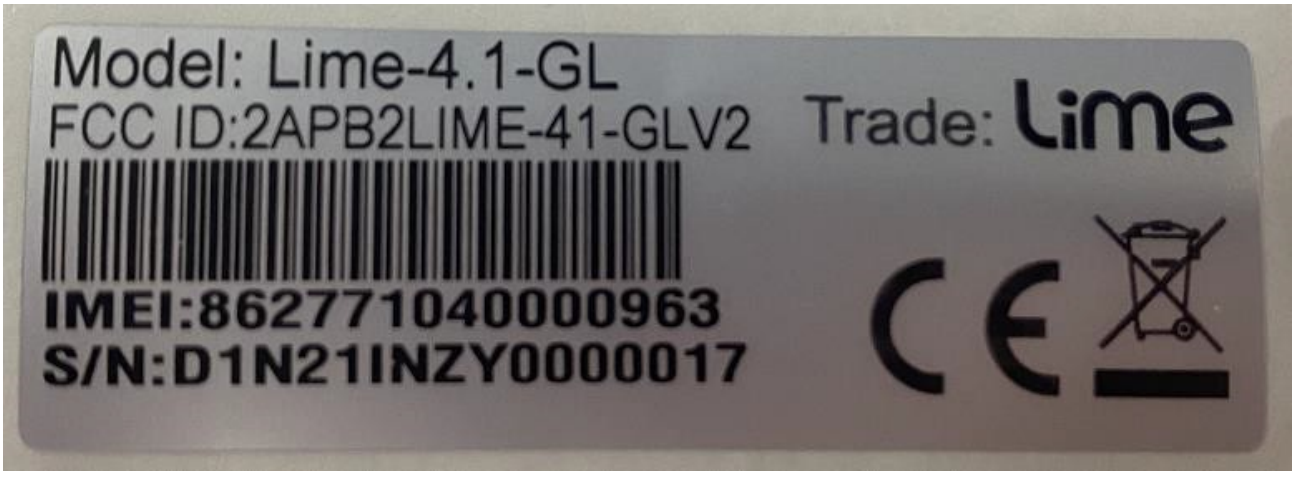
1） Use a magnet to close to the position of the CCU'S electromagnetic induction sensor (red box) for 3 seconds to power on； The electromagnetic induction area of central control CCU is as follows:

2） Connect the white cable CHG_IN of the 6PIN interface of the controller to GND for 2 seconds and release it, then start the machine.

3.5 Ambient Temperature Characteristics

Operating Temperature：-20℃~65℃
Storage Temperature：-40℃~85℃

3.6 CCU Label Picture



4 Internal rechargeable battery warning

Danger: Do not attempt to replace the internal rechargeable lithium ion battery. Replacing the original battery with an incompatible type may result in an increased risk of personal injury or property damage due to explosion, excessive heat, or other risks. Do not attempt to disassemble or modify the battery pack. Attempting to do so can cause a harmful explosion or battery fluid leakage.
When disposing of the battery, comply with all relevant local ordinances or regulations. Do not dispose the battery pack in municipal waste. Dispose used batteries according to the instructions.
The battery pack contains a small amount of harmful substances.
To avoid injury:

- Keep the battery pack away from open flames or other heat sources.
- Do not expose the battery pack to water, rain, or other corrosive liquids.
- Do not leave the battery in an environment with extremely high temperature.
- Avoid short-circuiting the battery pack.
- Keep the battery pack out of reach of small children and pets.
- Do not leave the battery in an environment with extremely low air pressure. It may result in an explosion or the leakage of flammable liquid or gas from the battery.

5 Certification Information

5.1 FCC regulations

15.21NOTE: The manufacturer is not responsible for any radio or TV interference caused by unauthorized modifications to this equipment. Such modifications could void the user's authority to operate the equipment.

15.105 NOTE: 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
- This device and its antenna(s) must not be co-located or operating in conjunction with any other antenna or transmitter.

This equipment complies with FCC radiation exposure limits set forth for an uncontrolled

environment. This equipment should be installed and operated with minimum distance of 20 cm between the radiator and your body. This transmitter must not be co-located or operating in conjunction with any other antenna or transmitter

15.19 NOTE: 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.

5.2 European Union compliance statement

5.2.1 Compliance with the RE Directive

Hereby, [Neutron Holdings, Inc.] declares that the radio equipment type [Lime-4.1-GL] is in compliance with Directive 2014/53/EU. The full text of the EU declaration of conformity is available at the following internet address: https://www.li.me/

5.2.2 RF exposure statement

RF exposure information: The Maximum Permissible Exposure (MPE) level has been calculated based on a distance of 20 cm between the device and the human body. To maintain compliance with RF exposure requirement, use product that maintain a 20cm distance between the device and human body.

5.2.3 Frequency Bands and Power

WCDMA B2/B4/B5 24dbm
LTE B2/B4/B5/B7/B12/B13/B25/B26/B38/B41 23dbm
Bluetooth 5dbm WIFI 2.4G 19.5dbm

The Lime 4.1 CCU operating bands of the antennas are as follows:

table 1-1 Operating Band

Operating Band	Description	Mode	Tx (MHz)	Rx (MHz)
Band 1	2100MHz	LTE FDD/WCDMA	1920 - 1980	2110 - 2170
Band 2	1900MHz	LTE FDD/WCDMA	1850 - 1910	1930 - 1990
Band 3	1800MHz	LTE FDD	1710 - 1785	1805 - 1880
Band 4	1700MHz	LTE FDD/WCDMA	1710 - 1755	2110 - 2155

Operating Band	Description	Mode	Tx (MHz)	Rx (MHz)
Band 5	850MHz	LTE FDD/WCDMA	824 - 849	869 - 894
Band 6	850Mhz	WCDMA	830 – 839.9	875 – 884.9
Band 7	2600Mhz	LTE FDD	2500 - 2570	2620 - 2690
Band 8	900MHz	LTE FDD/WCDMA	880 - 915	925 - 960
Band 12	700MHz	LTE FDD	699 - 716	729 - 746
Band 13	700MHz	LTE FDD	777 - 787	746 - 756
Band 18	850MHz	LTE FDD	815 – 830	860 – 875
Band 19	850MHz	LTE FDD/WCDMA	830 - 845	875 - 890
Band 20	800MHz	LTE FDD	832 - 862	791 - 821
Band 25	1900MHz	LTE FDD	1850 - 1915	1930 - 1995
Band 26	850MHz	LTE FDD	814 – 849	859– 894
Band 28	750MHz	LTE FDD	703 - 748	758 - 803
Band 38	2600MHz	LTE FDD	2570 - 2620	2570 - 2620
Band 39	1900MHz	LTE FDD	1880 - 1920	1880 - 1920
Band 40	2300MHz	LTE FDD	2300 - 2400	2300 - 2400
Band 41	2500MHz	LTE FDD	2496 – 2690	2496 – 2690