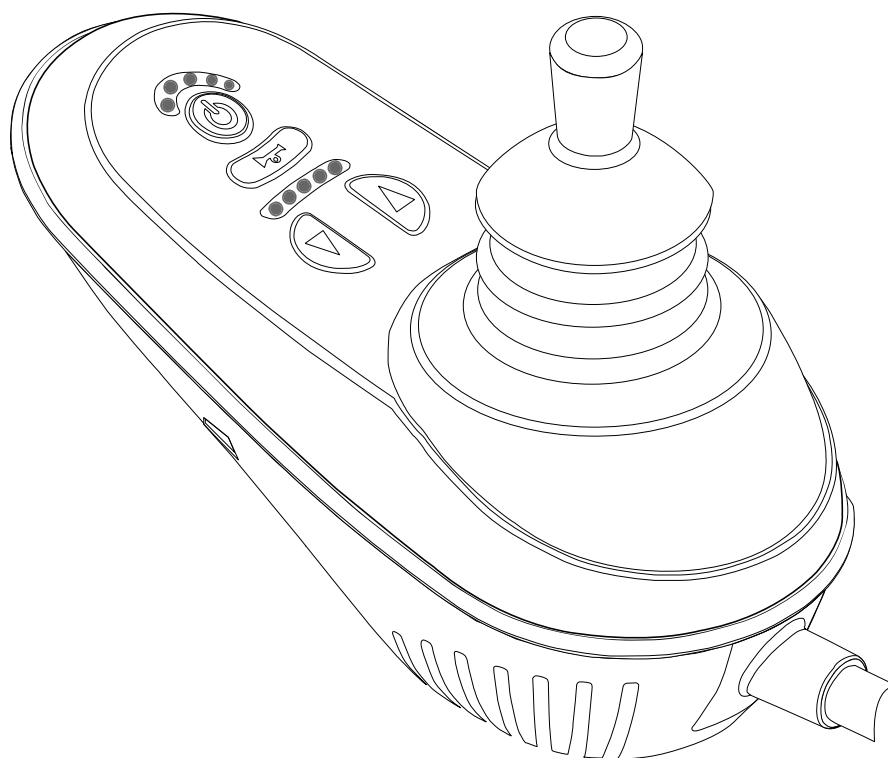




## Hopsmart HT- 003 Electric wheelchair controller



## Content

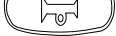
1. Basic Function descriptions	-----	3
2. Controller design descriptions	-----	3
3. Buttons and Joystick functions	-----	6
4. Controller LED indicators	-----	6
4.1. Battery level LED indicators	-----	7
4.2. Speed and operation mode indicators	-----	8
5. HT- 003 Reference parameters	-----	10

## 1. Basic Function descriptions

Hopsmart HT-003 was a smart electronic power wheelchair controller that developed by chain inspiration Ltd, it has most smoothly control, powerful driver and best control sensitivity, it also with App both for iOS and Android operation system can let user remote control the wheelchair with their mobile phone or tablet, and user also can make different settings and alert etc with the App:

- Most smoothly straight line forward, reverse moving control with no deviation from orbit, and when release the joystick, stop the wheelchair immediately
- Advanced drive control algorithm, special in S and Z type trace, and also no swinging sense
- Smoothly moving speed control via simply adjust the Joystick freely.
- Can easy climb up an ascent with maximum 15 degree of an incline (included 180W to 300W power of the motor).
- During an upward slope, both start and stop, the wheelchair never down reverse
- During an downward slope, both start and stop, the wheelchair never down forward
- Smoothly acceleration, deceleration and brake, no swinging and the brake available distance shorter than 1.2 meter.
- Most easy joystick controlling, over 5 million service life and suitable neutral window (%)

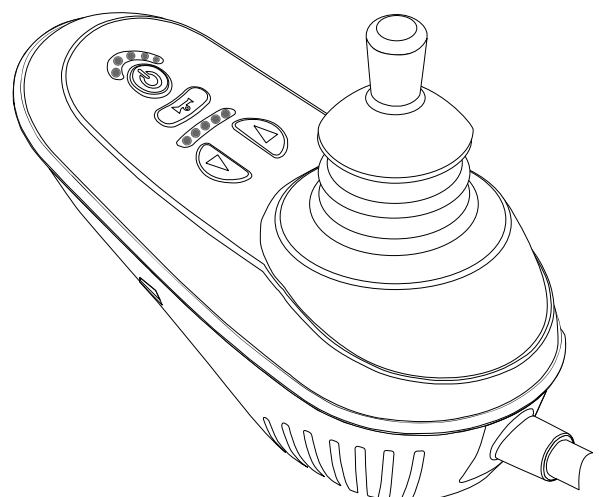


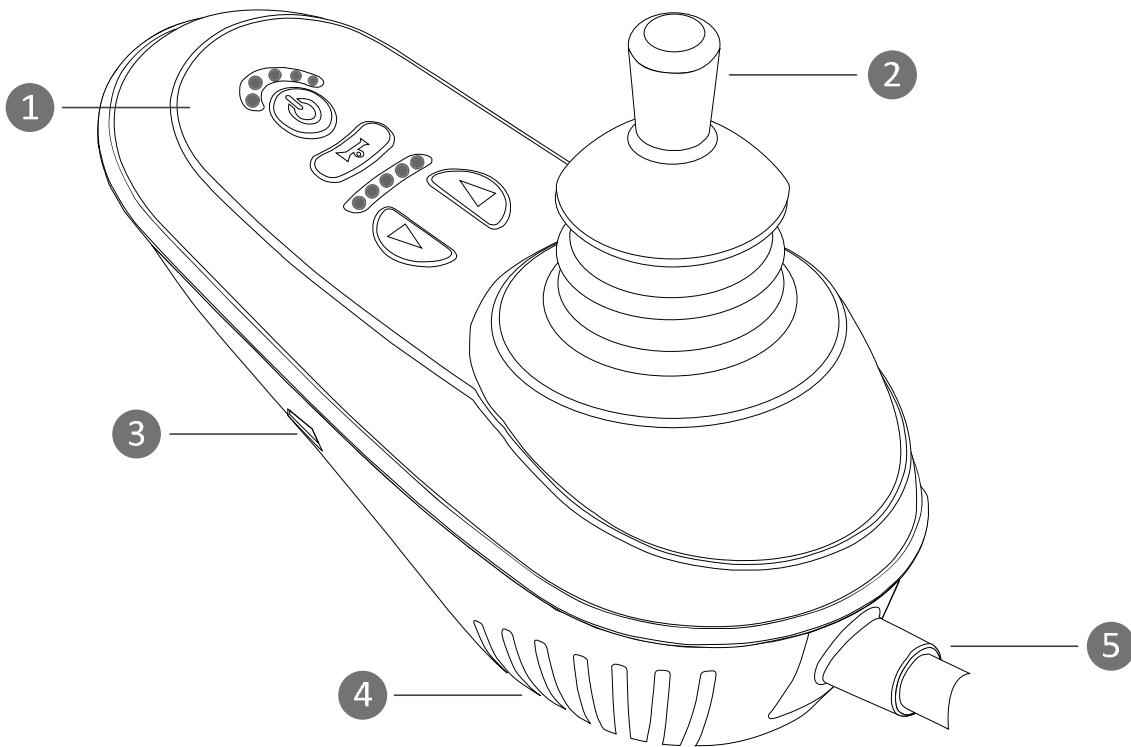
- With the  horn button of the controller can alert the passengers, the maximum volume can reach 85db.
- HT-003 has built in the self-testing program, every time when turn on the power, wheelchair will make this process to confirm the wheelchair in safety usage status, the self testing included every connector with a good connection, brake in normally, joystick in central position, battery capacity in usage status or not, if there is any testing fail, the wheelchair can be controlled and be locked, the abnormal 5 LEDs will blink to display what fault happened.
- Wheelchair in use, can adjust and display speed
- Wheelchair in use, will monitor and display the battery status

- A alert will activity when low battery, the corresponding LED will blink for indicate and if battery capacity lower than lowest voltage of the voltage setting, the controller will lock the wheelchair. During charging status, controller will disable using the wheelchair.
- Since HT-003 has built in the App function both for iOS and Android, user can set the user setting items via cell phone or tablet.
- Also HT-003 has built in the special App function for Manufactory, engineers can set all parameters via their cell phone or tablet.
- App also can let user set wheelchair back to initialize parameters.
- By App, user can use their cell phone or tablet as a remote controller to remote control the wheelchair, the available distance around 15 to 20 meters. This will help user train themselves to handle simply action in their life.
- Controller also has a power bank function, simply plug the cell phone or tablet USE cable into USB port, then HT-003 will charging user's devices.

## 2. Controller design descriptions

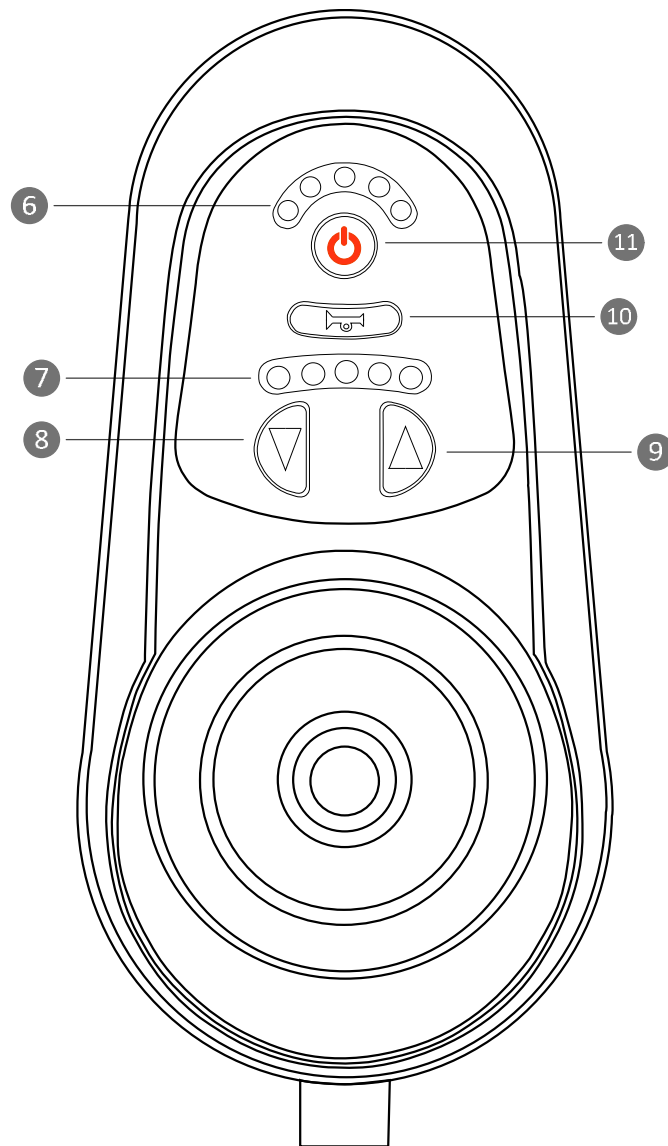
According to the wheelchair basic functions and ergonomics requirements, HT-003 has been designed as an electric wheelchair controller with beautiful appearance, user friendly interface and comfortable using sense as below:





Electric Wheelchair Control Panel

1. Electric Wheelchair Controller Panel
2. Electric Wheelchair Joystick
3. Electric Wheelchair Controller power bank USB port
4. Electric Wheelchair Controller heat sink
5. Electric Wheelchair Controller connecting cable



Control panel and LEDs





- 6. Battery and alert indicators
- 7. Speed and operation mode indicators
- 8. Decrease button
- 9. Increase button
- 10. Horn button
- 11. ON/OFF button

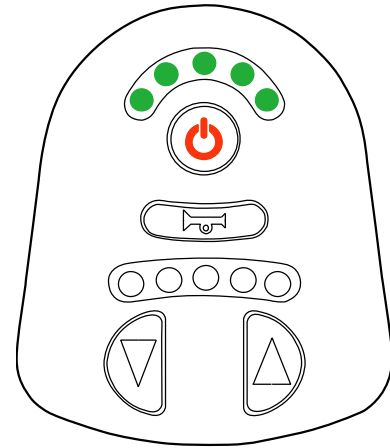
### 3. Buttons and Joystick functions:

HT- 003 totally has 4 control buttons and a 360 degree joystick:

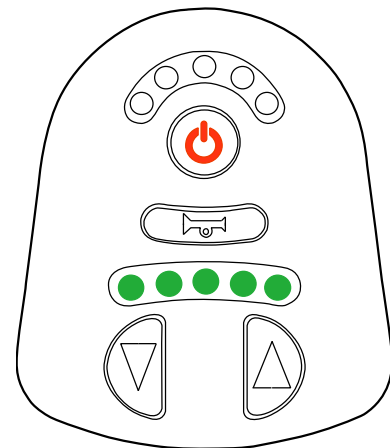
### 4. Controller LED indicators:

HT- 003 smart electric wheelchair controller has built in 2 sets LEDs and every set with 5 green LEDs as below:

HT- 003 Control Buttons Function		
<b>ON/OFF</b> 	One touch	Power on and off the controller
	Level hold	
<b>Horn</b> 	One touch	Enable/disable the horn sound playing
	Level hold	
<b>Increase</b> 	One touch	Increase speed until maximum speed
<b>Decrease</b> 	One touch	Decrease speed until minimum speed
<b>Joystick forward</b>	One touch	Drive wheelchair moving forward stepping
	Level hold	Drive wheelchair moving forward continually
<b>Joystick backward</b>	One touch	Drive wheelchair moving reverse stepping
	Level hold	Drive wheelchair moving reverse continually
<b>Joystick left</b>	One touch	Drive wheelchair turning to left stepping
	Level hold	Drive wheelchair turning to left continually
<b>Joystick right</b>	One touch	Drive wheelchair turning to right stepping
	Level hold	Drive wheelchair turning to right continually



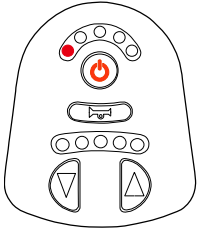
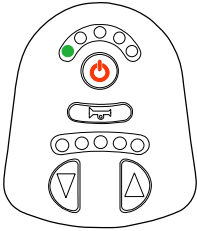
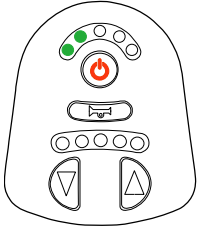
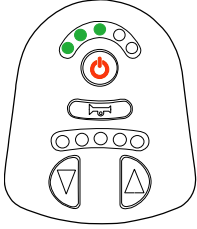
Battery level indicators

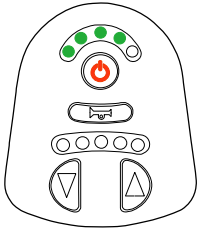
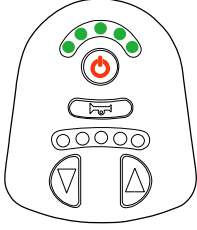
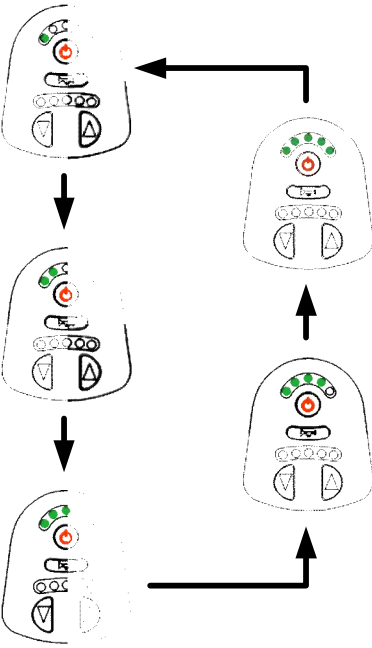


Speed & Operation Mode indicators

### 4.1. Battery level LED indicators

In HT-003 control panel, there are 5 green LEDs and one red LED to indicate the wheelchair battery status:

Battery Status indicate LEDs		
Battery status	LED display pattern	Descriptions
In the use status		Very low battery status, the battery capacity lower than setting lowest value, the red LED blink (2 times /sec), needs charging immediately
		Battery at the 20% of the maximum capacity, needs charging
		Battery at the 40% of the maximum capacity, needs charging
		Battery at the 60% of the maximum capacity, needs charging

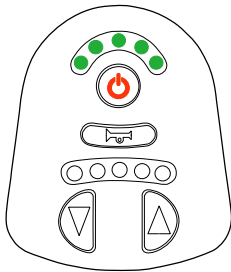
		Battery at the 80% of the maximum capacity
		Battery full, the voltage above than 25.3V
In the charging status		In battery charging status, the wheelchair controller can't be used

**Note:** Whatever wheelchair controller in on or off status, the battery status LEDs will always scrolling display the charging status when power cable has been plugged

## Wheelchair self-testing abnormal

There are 5 LEDs to indicate the abnormal information when wheelchair self testing fail, the LEDs will blink with different pattern in every 2 seconds. When wheelchair abnormal, please turn off the wheelchair or reference descriptions below to check the problem points

Abnormal description in details



Blinking one time:  
Bad connection between controller and battery

Blinking 2 times:  
Connecting error between controller and left hand motor

Blinking 3 times:  
The left hand motor has a short circuit to battery connection. Please call help from your service supplier

Blinking 4 times:  
Bad connection between controller and right hand motor

Blinking 5 times:  
The right hand motor has a short circuit to battery connection. Please call help from your service supplier

Blinking 6 times:  
The joystick abnormal. Please check the joystick is in the center position before switching on the controller

Blinking 7 times:  
The controller fault is indicated. Make

sure that all connections are secure

Blinking 8 times:  
The parking brakes with a bad connection. Check the parking brake and motor connections. Please make sure the controller connections are secure.

Blinking 9 times:  
An over highest voltage has been applied to the controller. This is usually caused by a bad battery connection. Check the battery connections.

Blinking 10 times:  
There are bad button connection, Please call help from your service supplier

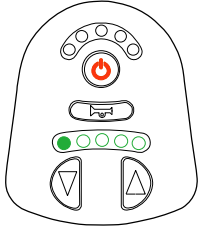
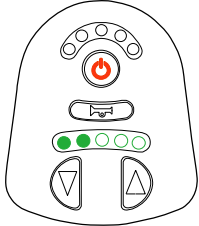
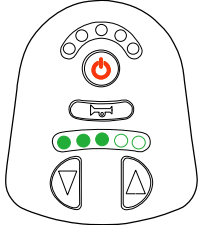
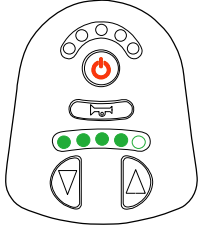
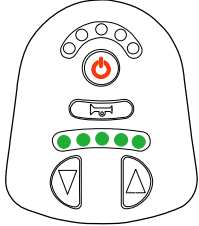
**Note:** Since there are different batteries will be used in electric wheelchair, for match these different batteries, HT-003 can let the manufactory set up different battery type voltage range, maximum and minimum battery voltage with free download factory mode App.

When wheelchair self testing has more than one situations, the abnormal LEDs will blink with high priority first. If there are 2 errors when self testing at same time, for example, the connecting error between controller and left hand motor and the parking brakes with a bad connection, the abnormal LEDs will blink 2 times every 2 seconds and after this problem has been solved, the abnormal LEDs will blink 8 times to indicate another error until all problems has been solved.



## 4.2. Speed and operation mode indicators

HT-003 also built in another 5 green LEDs to indicate the wheelchair moving speed and operation mode, it will show different wheelchair speed and operation mode:

Wheelchair speed and mode LED indicators		
Operation mode	LED display	Descriptions
Push the joystick to forward or Reverse, LEDs will displays acceleration or deceleration status of the wheelchair		Current speed is 20% of the maximum forward, reverse and turning speed
		Current speed is 40% of the maximum forward, reverse and turning speed
		Current speed is 60% of the maximum forward, reverse and turning speed
		Current speed is 80% of the maximum forward, reverse and turning speed
		Current speed is the maximum forward, reverse and turning speed

Maximum Speed is 6 km/h

Minimum speed is 1.6km/h

For example: if maximum speed set as 6 km/h in App, when speed adjusted as lowest speed (one LED on), the maximum speed will be 3.8 km/h. Base on different maximum speed setting in App, different gear position real speed as below:

In App settings, set maximum speed is 1	
Joystick speed settings	Speed(km/h)
1	1.60
2	1.70
3	1.80
4	1.90
5	2.00

In App settings, set maximum speed is 2	
Joystick speed settings	Speed(km/h)
1	2.15
2	2.33
3	2.50
4	2.73
5	3.00

In App settings, set maximum speed is 3	
Joystick speed settings	Speed(km/h)
1	2.70
2	2.95
3	3.20
4	3.55
5	4.00

In App settings, set maximum speed is 4	
Joystick speed settings	Speed(km/h)
1	3.25
2	3.58
3	3.90
4	4.38
5	5.00

**Note:** Even wheelchair in using status, user still can adjust the wheelchair speed, the adjustable range between maximum and minimum speed:

In App settings, set maximum speed is 5	
Joystick speed settings	Speed(km/h)
1	3.80
2	4.20
3	4.60
4	5.20
5	6.00

## 5. HT- 003 Reference Parameters

- Supply voltage: 24Vdc
- Operating Voltage: 16Vdc - 35Vdc
- Overvoltage Trip: 35Vdc
- Reverse Battery Voltage 40Vdc
- Max Drive Current: 40A
- Brake Voltage: 24Vdc
- Brake Current: maximum 1.25A
- Charging Current: maximum 12Arms.
- Moisture Resistance: IPx4
- Operating Temperature: -25°C - +50°C
- Storage Temperature: -40°C - +65°C

## 6. FCC Compliance

1. 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.

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

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.