THROTTLE WITH LCD
Ref：KH-ID1
Instructions
V01

Version	Date	Description	Author
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Overview of device：

Display

Button for manipulation

Thumb throttle for speed control
Could be replaced by a half or full throttle

1. **Specification**

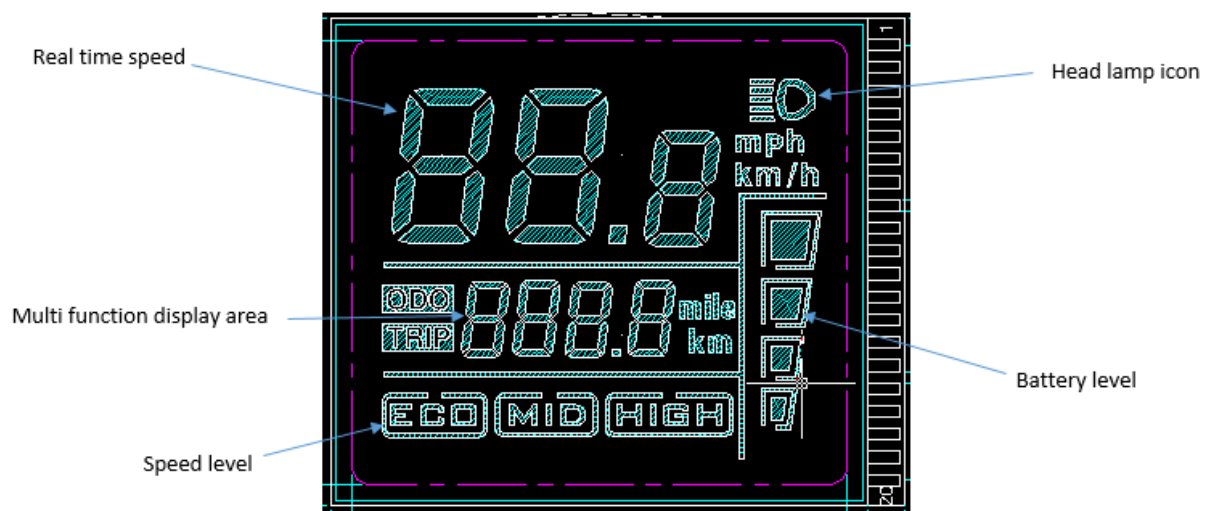| No.	Item	Value
1.	Rated operating voltage	36V,48V
2.	Rated current	25mA
3.	Working temperature	−30℃~70℃
4.	Speed accuracy	<3%
5.	Battery voltage accuracy	±0.3V

2. **Pinout definition**

If throttle signal managed by this device itself and sent by COM, then 5 wire is enough
Otherwise throttle signal will be managed by controller, in this case 7 wire is needed

Pin out	Description	Remark
1	Vcc	
2	GND	
3	Ignition signal	
4	COM（Rx）	
5	COM（Tx）	

3. **Presentation of screen**

3.1. Overview of screen:

3.1.1. **Specification of screen**

Size of LCD：28x26mm

FSTN type

3.1.2. **Presentation of contents on the screen**

Item	Picture	Remark
Real time speed		Indicates real time speed info, in km/h or mph
Battery level		Indicates battery level 4 segments in total，last segment will flash if battery level is under low voltage value
Real time Battery voltage		In multi-purpose area, which indicates the battery voltage in real time, without unit
ODO distance		In multi-purpose area, which indicates accumulated distance, in km or mile, this value will be memorized when power off the device
TRIP distance		In multi-purpose area, which indicates single trip distance, in km or mile, the value be reset to 0 when power off the device
PWM value to control speed		In case that the throttle signal managed by the device itself, here indicates the speed ratio sent to controller, Ex: 500 means 50% of max speed,1000 means full speed
Speed level		In total 3 levels ECO, MID，HIGH
Error code		Indicates error code, please check error code table for details

4.   **Manipulation**

By default, which means after power on, this device displays the real time speed, ODO, battery level and speed level.

This device has 3 buttons for manipulation:

"M":   Hold this button for more than 3 seconds will power on/off the device

Shortly press(<1 second) will switch different content in multi-function area(ODO->TRIP->battery voltage->speed ratio->Error code(if exist)）

"+":   Shortly press this button will increase speed level

Hold this button for more than 3 seconds will turn on/off the head lamp（depending on whether controller integrates this function or not）

"-"：   Shortly press this button will decrease speed level

Hold **"+"** and **"-"** buttons for more than 3 seconds will enter parameter setting mode

5. **Parameter setting mode**

Hold **"+"** and **"-"** buttons for more than 3 seconds will enter/quit parameter setting mode
Customer could select the parameters that he exactly needs, and also define the parameter value by default
Shortly press "M" button will save current value and switch to next parameter
Shortly press "+" will increase parameter value
Shortly press "-" will decrease parameter value

Parameter list：
P01 Backlight brightness level, from 0 to 9 ,by default:5
Real time speed area, 'P01', multi-function area: from 0 to 9

P02 Unit selection, by default:0
0: km   km/h
1: mile   mph

P03 Rated voltage selection, by default:36V
'36, 48' could not be modified by user

P04 Auto shut down time in minutes, by default: 10 minutes
'0-255'
If no operation on device during a certain time, the device will turn off automatically
If this parameter is set to 0, means will never enter this mode
P05 =5 should not be modified
P06 =10 should not be modified
P07 =15 should not be modified

P08 Wheel size in inch: from 1.0 to 50.0
'1.0 to 50.0'

P09 Number of magnets for speed detection, from 0 to 255
'

P10 Speed limit value   0-255 ,

'0 to 255', 0 means no limit

P11 Zero speed start enable/disable

0: zero speed start

1: non zero speed start

P12 Driving mode: '0,1,2'

0:only assist mode enabled

1:only electric mode enabled

2:both modes are enabled

P13 Assist sensitivity setting

"0 to 255"

Set the number of pulses (from magnet disc) detected to start the vehicle

P14 Assist starting power setting

"0 to 5"

0-weakest, 5-most powerful

P15 Number of magnets in the assist disc

"5,8,12"

5- five magnets/turn,

8- eight magnets/turn,

12-twelve magnets/turn

P16 Current limit setting for the controller

from "0 " to "255"，unit is in "A"

P17 Low voltage protection for controller

It sets the lowest voltage that controller can work normally, unit is in "V"

P18 Enable throttle function to have 3 different speed levels

0:disabled,in this case only 1 speed level, throttle PWM is always from 0 to 1000

1:enabled, in this case, there are 3 speed levels, for each level, the max speed is set by P35,P36,P37 parameters

P20 Cruise mode function

0: Cruise mode disabled

1: Cruise mode enabled and realized by holding "-" button

2: Cruise mode enabled and realized by holding the throttle for several seconds

P26 ODO reset

By holding "+" or "-" button, will reset ODO

P31 Hide throttle "PWM" value on screen

PWM is a value to control the speed of motor, it is a value from 0 to 1000,

Ex: 300 means 30% of full speed

Sometimes user can confuse this value, in this case can hide it

0- Hide PWM value

1- Show PWM value

P32 head light function enable/disable

0- Head light control enabled

1- Head light control disabled

P33 =1,this value should not be modified

P34 =1, this value should not be modified

P35 Set the max PWM value of speed level 1

From 0 to 1000, ex: 300 means 30% of max speed, normally this value is =300,which means under this level, if the user fully turns the throttle, speed can only reach 30% of full speed

P36 Set the max PWM value of speed level 2

From 0 to 1000, ex: 500 means 50% of max speed, normally this value is =500,which means under this level, if the user fully turns the throttle, speed can only reach 50% of full speed

P37 Set the max PWM value of speed level 3

From 0 to 1000, ex: 1000 means 100% of max speed, normally this value is =1000,which means under this level, if the user fully turns the throttle, speed can reach full speed

Remarks: P35,P36,P37 values could be used to adjust max speed for each level

6. Error code list

Error Code	Description
E001	Display does not receive data from controller
E002	Controller does not receive data from display
E003	Controller Error
E004	Motor Hall Error
E005	Motor Phase Error
E006	Throttle Error
E007	E-brake Error
E008	Assist sensor Error
E009	Controller low voltage protection