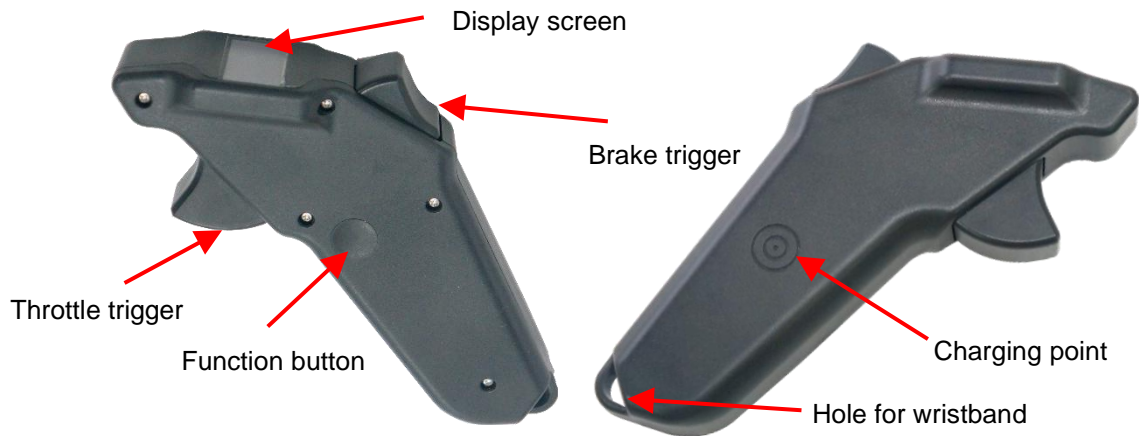


# VOLT1 Waterproof Remote Control User Manual

## Remote (transmitter) appearance:



## Wireless charger

To ensure the waterproof effect, the remote(transmitter) only supports wireless chargers which meet Qi standard. The charger in the kit is shown in the figure below. Charging time is no more than one hour.



## Switch on/off:

**【 Switch on 】** When remote is off, long press the function button 1s, screen displays Maytech logo and firmware version to switch on the remote.

**【Switch off】** When remote is on, long press the function button 1.5s, screen displays POWER OFF to switch off the remote.

## Function button operating instructions:

Function Button	Operation	Current display	Next display after the operation	
	Long press	OFF		Long press 3S to switch on the remote
		Main interface		Long press 3S to switch off the remote
		Main menu or Sub-menu		Enter the sub-menu/ Data Setting Interface
		Pairing interface		Quit Pairing process
		Calibration interface	Quit Calibration process	
		Wheel diameter/Gear ratio data setting interface	Select One hundred / Ten / One / Decimal place	
Short press one time	Main interface		Switch data display on main interface	
	Main menu and sub-menu		Switch options in the menu	
	Data input interface		Data plus one	

## Throttle and brake triggers operating instructions:

Operation	The other trigger position	Current display	Throttle output
Press throttle trigger	Brake trigger at original position	Main interface	Output corresponding throttle signal
Press brake trigger	Throttle trigger at original position	Main interface	No throttle signal output
	Throttle trigger at 10%-100% throttle position	Main interface of ESURF mode	After 3 seconds, it enters the cruise speed control mode, and the throttle keeps its original output after release. The cruise control will be cancelled when the brake trigger is pressed again to the end or the throttle trigger exceeds the cruise throttle value.

## Speed source:

Speed signal is detected by motor phase wire or hall sensor wire or VESC. Please select **【Speed Source】** in remote manual Item6 and make sure hardware is connected correct and well. The original acquisition speed signal is the electrical speed of the motor (ERPM). Then remote will convert it to RPM or Speed and display.

Mode	Speed	Conversion formula
Esk8	Skateboard speed (KM/H)	$ERPM/Motor\ Poles/Gear\ Ratio*60*3.14*Wheel\ Dia/1000000$
	Skateboard speed (MPH)	$ERPM/Motor\ Poles/Gear\ Ratio*60*3.14*Wheel\ Dia/1000000*0.6214$
Esurf	Esurfboard propeller RPM (RPM)	$ERPM/Motor\ Poles/Gear\ Ratio$

## Distance:

Not used

## Main battery voltage display:

When **【Speed Source】** is set to **【VESC】**, it will obtain VESC voltage information by UART port; Otherwise, voltage information is obtained by BAT port on receiver PCB.

Please make sure receiver GND and your main battery GND are connected(common ground).

If receiver is not connected to main battery or VESC UART port, remote will not display anything about main battery.

If receiver gets voltage information, remote will show voltage in bars according to preset **【 Batt. Type】** and **【Batt. Ser Num】**.

Under the voltage bar on remote screen, it's marked **【xx Batt.】**. "xx" means current **【Batt. Ser Num】** value, please check if it's same as your battery specification.

If **【 Batt. Type】** or **【Batt. Ser Num】** is set different from your battery's actual value, voltage display will be incorrect. Please make sure correct settings of both.

If voltage bars only have 2 or less left, the bars and **【xx Batt.】** words on screen will flash to remind you charge your battery.

## Voltage, Current, Temperature display:

When **【Speed Source】** is set to **【VESC】**, Remote and receiver will obtain voltage/current/temperature information by VESC UART port. The function automatically takes effect after correct connection and settings with VESC. You can press the Function Button to turn over the main interface data to view these data.

## VESC throttle control type

When use VESC and UART for throttle output, VESC will automatically identify your remote throttle settings. It has two modes:

**【Current Mode】** take motor current as control target. When release the trigger, it will free slide and has no danger. For normally electric skateboards and surfboards, recommend this mode.

**【Duty Cycle】** take motor RPM as control target and motor RPM will increase as throttle increase and decrease with throttle decrease. When release the trigger and it will instantly brake down to zero and throw people off because of inertia. This mode is only suitable for differential control similar to tank operation.

## 16. Display:

### 16.1 Throttle percentage (Main interface after remote switch-on):



**【 Signal strength 】** Signal strength between remote and receiver. Recommend that the direct distance between them is no more than 10 meters in air and no more than 1 meter in water.

**【Remote BATT voltage】** The voltage percentage of the remote built-in lithium battery. **【BATT. Num】** Main Batt. Series Number.

**【Main battery voltage】** The voltage is measured by receiver or obtained by VESC. The receiver reports the main battery voltage to the remote, which displays the power ratio of the main battery according to the preset number of battery. If your main battery electricity is used up, the bars and **【xx Batt.】** words on screen will flash to remind you charge your battery.

Attention:

When speed source is not set to VESC, If receiver is not connected to main battery, remote will not display anything about main battery;

When speed source is set to VESC, it will obtain VESC voltage information automatically.

**【Control mode】** ESurf-Electric surfboard mode.

**【Throttle signal percentage】** Value of the current output PWM signal percentage. In ESK8 mode, display range is  $\pm 100\%$ ; in ESurf mode, display range is 0-100%.

When VESC Thr is set to None, receiver's PWM\_T output PWM signal as throttle signal.

When VESC Thr is set to Current/Duty Cycle, receiver's TXD/RXD output signal to VESC RX/TX as throttle signal .

**Esurf mode Motor RPM display:**

In Esurf mode, after selecting suitable Speed Source, when screen displays main interface, short press Function Button, it will change to Motor RPM interface. For different Speed Source, text in the lower right corner is different.



Motor RPM is obtained by VESC.

**Voltage and Current display:**

For both Esurf and Esk8 modes, the interface must be displayed after selecting **【VESC】** in **【Speed Source】**. Data is obtained from the VESC via the UART port. The voltage shows the current value and the minimum value after running. The current shows the current value and the maximum value after running.



### VESC temperature and motor temperature display

For both ESurf and Esk8 modes, the interface must be displayed after selecting **【VESC】** in **【Speed Source】**. Data is obtained from the VESC via the UART port. It shows the current value and the minimum value after running.

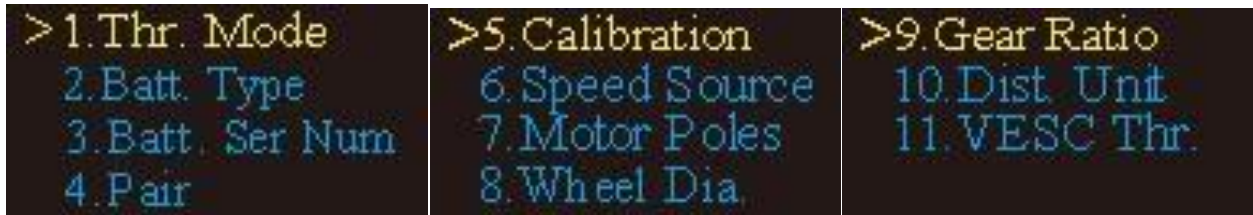


## 17. Entry and Exit Main Menu

**【Entry Main Menu】** Hold brake trigger to the end and press Function button.

**【Exit Main Menu】** When the parameters are edited, press the brake to the end, exit from the sub-menu to the main menu, and then press again to exit from the main menu to the main interface. Special case: when set "Calibration", trigger will be occupied, please long press function button to exit from Calibration sub-menu to main menu.

## Main Menu Description



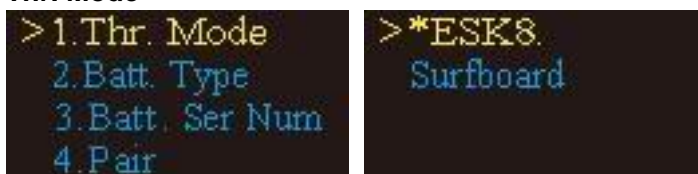
Main Menu has 11 options, with specific parameters in the sub-menu under each option:

**Below last column shows the settings to use volt efoil.**

1	<b>Thr. Mode</b>	Control mode	<b>【Select options in Main Menu】</b> Short press function button, jump to the next option; Long press function button, select current option and enter sub-menu.	surfboard
2	<b>Batt. Type</b>	Main battery type		3.7V
3	<b>Batt. Ser Num</b>	Main battery Series Number		14
4	<b>Pair</b>	Pair remote and receiver		
5	<b>Calibration</b>	Remote throttle calibration		
6	<b>Speed Source</b>	Speed source		VESC
7	<b>Motor Poles</b>	Motor pole pairs		6
8	<b>Wheel Dia.</b>	Wheel diameter		Not used
9	<b>Gear Ratio</b>	=Wheel pulley/motor pulley		1
10	<b>Dist. Unit</b>	Distance and Speed unit		Not used
11	<b>VESC Thr.</b>	VESC throttle control type		current

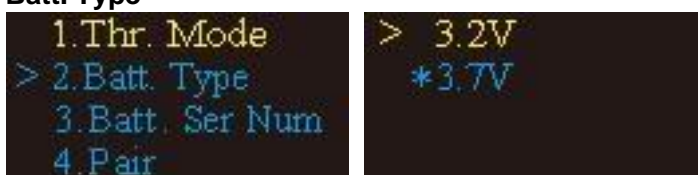
## Sub-Menu Description

### Thr. Mode



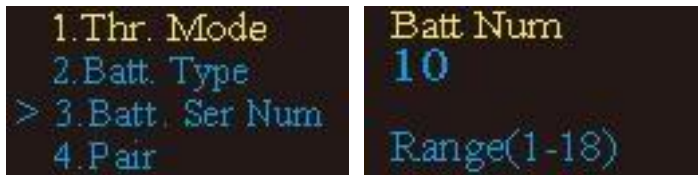
Short press function button to select control mode. Mode with \* is current mode, Mode with > is selected mode. Long press function button to move \* to the mode you wanted. After setting, press brake trigger back to main menu. Required: Surfboard.

### Batt. Type



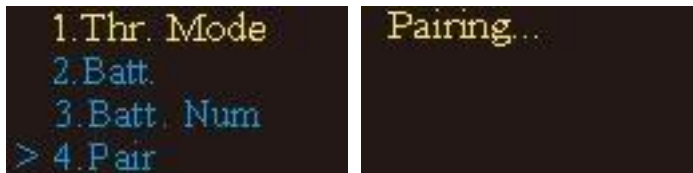
Short press function button to select control mode. Mode with \* is current mode, Mode with > is selected mode.  
Long press function button to move \* to the mode you wanted. After setting, press brake trigger back to main menu.  
Required: 3.7 V

### Batt. Ser Num



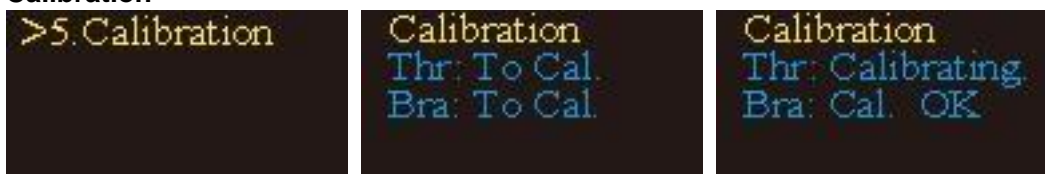
Select 【>3.Bat.Num】 and long press function button for 1 second to enter Sub-menu.  
Press function button to add Battery number. Max number is 18.  
Press brake trigger to save number and return to main menu.  
Required: 14

### Pair



1. If remote and receiver are paired successfully before, then no need to pair them again.
2. If remote and receiver does not get paired before, please pair them according to below steps: 1) Turn off receiver.  
2) Select 【>4.Pair】 and long press function button for 1 second to enter pair status. When screen shows 【Paring...】 , turn on receiver and it will auto-pair with remote control in 0.5 second. Red led lights steady. Pairing competed. Remote screen will automatically return to main menu.  
If auto-pairing time is over 1 second and screen still shows 【Pairing...】 , pairing fails and it needs to turn off and turn on receiver again to pair them. If you don't want to continue the pairing process, long press function button to exit to main menu.

### Calibration

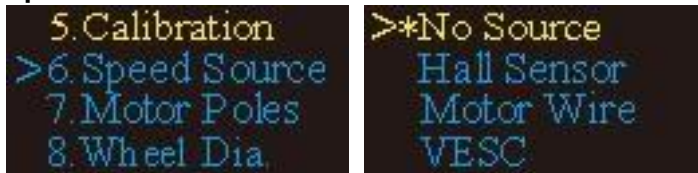


Due to environmental changes during use, remote calibration may be out of proportion to the output of PWM signal. Then it needs to do calibration.

Select 【 >5.Calibration 】 and long press function button for 1 second to enter Sub-menu. **Once enter calibration, it must need to be finished.** If don't continue calibration and exit, remote and receiver will stop working together.  
Press throttle trigger to top and loose it. Then press brake trigger to top and loose. When press trigger, the screen will prompt 【Calibrating】 and 【 Cal. OK】 .  
After both two are 【 Cal. OK】 , long press function button to return to main menu and save the results.



### Speed Source



This is an important parameter. If you want to show RPM or Speed&Distance in Esurf or Esk8 mode, please select suitable speed source in here.

Select **【>6.Speed Source】** and long press function button for 1 second to enter Sub-menu.

**【No Source】** No speed source, remote screen will not display any information of RPM/Distance/Voltage/Current/Temperature.

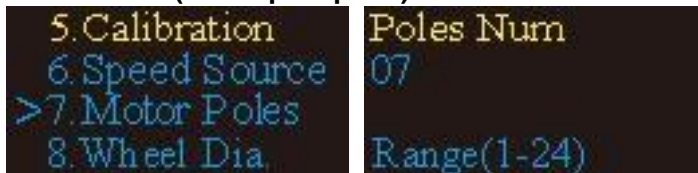
**【Hall Sensor】** The motor ERPM is detected by the state change of the Hall sensor.

**【Motor Wire】** The motor ERPM is detected by the motor phase wire back electromotive force.

**【VESC】** Read all kinds of valid data from VESC through UART port.

Required: VESC

### Motor Poles (Motor pole pairs)

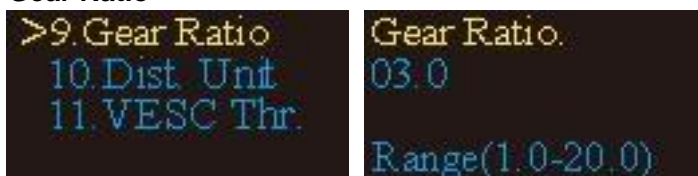


Be sure to note that the “Poles” here are actually Pole Pairs! This data is used to calculate motor speed(or RPM) based on motor ERPM, please refer to “Item 10”.

Press function button to add pole pairs number. Max number is 24.

Press brake trigger to save number and return to main menu.

### Gear Ratio

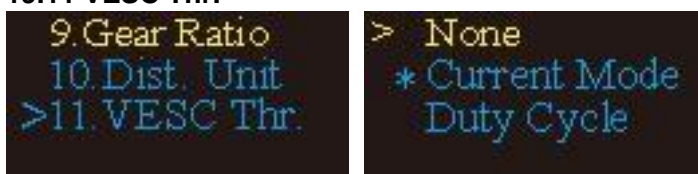


Gear Ratio=Motor RPM÷Propeller or Wheel RPM. It's to calculate speed and distance. Please refer to “Item 10”.

Long Press function button to select digit; Short press function button to add number. Press brake trigger to save number and return to main menu.


Required: 1.0

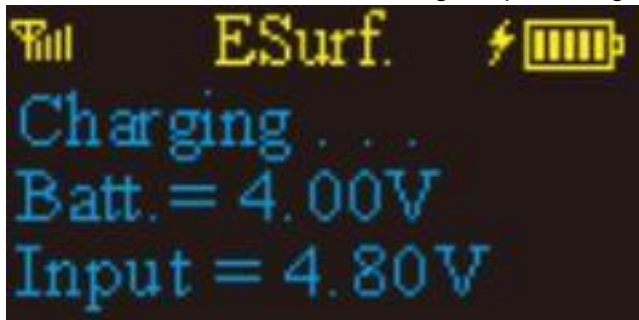
### 19.11 VESC Thr.



Required: Current mode

## Charging

- When remote battery icon  has 2 or less bars, it needs to charge the remote. Please keep remote dry when charging.
- Connect wireless charger to power, put remote Charging Point right on the wireless charger; it will automatically charge after 2 seconds.
- Remote screen will show charger input voltage "Input" and current battery voltage "Batt.".



- When remote battery gets to 4.2V, it will stop charging automatically. The screen displays voltage data all the time and will not shut down automatically. Please don't put remote on charger for longtime after full-charged!
- Charging without supervision is prohibited!
- When the remote control is not used, please charge it once a month, otherwise the battery life will be shortened or even scrapped