

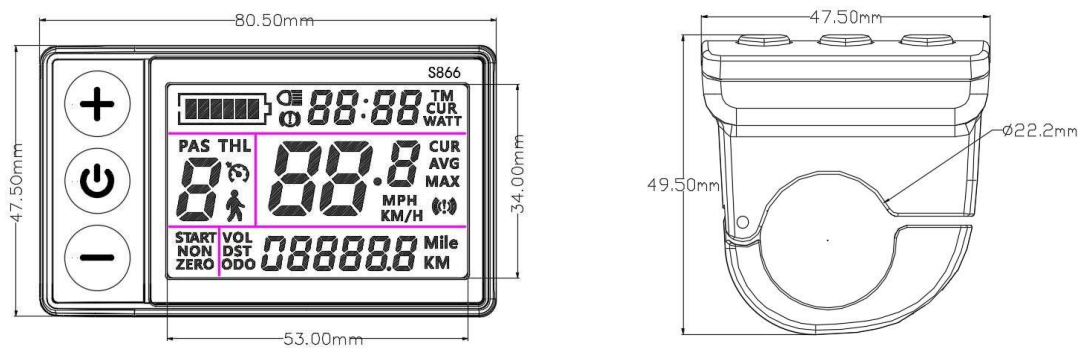
LCD-S866 Unofficial User Manual

2019 (June 6) – Fan-made Version



Measurements and materials

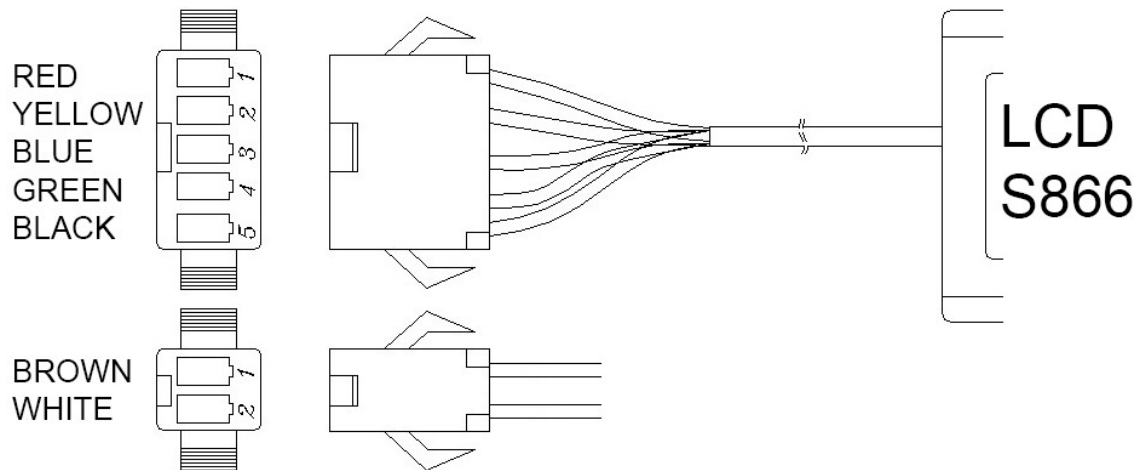
The outer shell of the product is ABS, the transparent LCD window is high-hardness acrylic with a hardness value equivalent to tempered glass.



Operating voltage and connectors

1. Operating voltage: DC24V, 36V, 48V, 60V. Other voltages can be customized.

2. Connectors



Connector wire	Colour	Function
1	Red(VCC)	Power input (+)
2	Blue(K)	Controller power on/off control line
3	Black(GND)	Ground (-)
4	Green(RX)	Receive data from controller
5	Yellow(TX)	Transmit data to controller
small connector 1	Brown	Lights power output (+) Voltage equal to battery voltage
small connector 2	White	Lights ground (-)

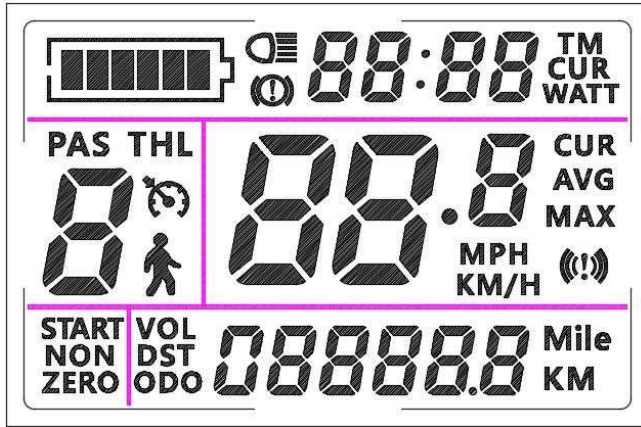
Features:

1. The LCD displays: Trip time, Current speed, Trip distance, Wattage, Average speed, Total distance travelled, Current, Maximum speed reached, Battery voltage, Battery monitor, PAS level, Error codes and Status indicators.

2. The followings settings are available: Backlight brightness, Metric and imperial units, Voltage level, Sleep time, Number of power assist levels, Wheel diameter, Number of motor magnets, Speed limit, Zero start, Drive mode, Boost sensitivity, Boost start strength, Number of PAS magnets, Controller current limit, Controller undervoltage, ODO reset, Walk assist, Cruise control, Speed ratio, 0 gear and Communication protocol

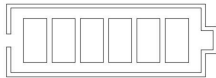
3. Communication protocol: UART

All display functions are shown for 1 second (display test) when turning on the display.



1. Display content

1.1 Battery indicator



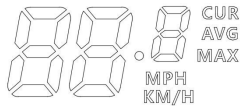
When the battery is full, all 6 segments of the battery indicator are visible (black).

1.2 Multi-function display area



ODO: total distance travelled, DST: trip distance, VOL: battery voltage, TM: trip duration, CUR: operating current, WATT: instantaneous power, error code (see error code table). Depending on P02 parameter value setting, speed is displayed in km or mile.

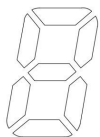
1.3 Speed display area



AVG: average speed, MAX: maximum speed, CUR: current speed (mph or km/h).

The speed signal is taken from the Hall sensors and/or speed sensor in the hub motor and sent to the display via the controller. The display will calculate the speed by wheel diameter and Hall signal/speed sensor data. If a geared hub motor does not have a built-in speed sensor (no white Hall sensor wire), the display will only show speed when the motor is engaged. In that case an external Hall speed sensor can be installed to constantly show the speed, even when coasting. Depending on P02 parameter value setting, speed is displayed in km/h or mph.

1.4 Power assistance / speed limit level area



Depending on P05 parameter value setting, 3 to 5 levels are available.

1.5 Status display area



Communication failure



Walk assist



Cruise control



Electric brake active



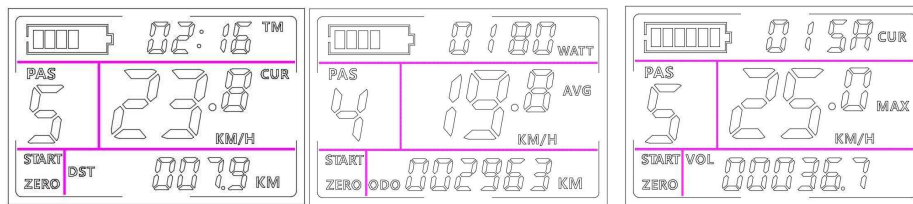
Light

2. Buttons, display modes and functions

2.1 Powering on/off the display, available modes

To turn the display on or off, press and hold the power button

After the display is turned on you will see display mode 1. Short press the power button



Mode 1

Mode 2

Mode 3

2.2 Display mode description

Mode 1: Trip time, Current speed, Trip distance

Mode 2: Wattage, Average speed, Total distance travelled

Mode 3: Current, Maximum speed reached, Battery voltage

The battery monitor and PAS level are visible in all modes.

2.3 PAS and maximum speed level

Short press the plus button

to increase the power assistance/speed limit level, short press the minus button

to decrease the power assistance/speed limit level. Selecting PAS level 0 allows you to temporarily disable PAS/throttle. **Note: PAS level 0 is available only when parameter value P19 is set to "0".**

2.4 Lights

Long press the plus button

to turn on the lights, the light icon

will be shown on the display and the lights will turn on. Long press the plus button

2.5 Walk assist


Walk assist powers the bicycle up to a steady 6 km/h allowing you to walk alongside the bicycle without needing to push. Long press the minus button

to activate walk assist, the walk assist icon

will be shown on the display. Long press the minus button

again to deactivate. **Note: This function will only work when parameter value P17 is set to "0".**

2.6 Automatic cruise control

Cruise control will automatically be engaged when a steady throttle speed is maintained for six seconds. When the cruise control is engaged, the cruise icon  will be shown on the display and the throttle does not need to be held in position anymore for the bicycle to maintain the current speed. **Note: This function will only work when parameter value P17 is set to “1”.**




2.7 Zero start






Zero start allows the motor to start accelerating from a complete standstill when using the throttle. **Note: The value of parameter P09 needs to be set to “0” to enable zero start.**

When zero start is disabled the bicycle needs to be moving at a minimum speed of ?? km/h before the throttle can activate the motor. **Note: The value of parameter P09 needs to be set to “1” to disable zero start.**





3. Settings






3.1 Changing parameters

Long press the plus and minus buttons   simultaneously to enter parameter setting mode. Short press the power button  to cycle through the parameters (P01-P20) (see the parameter list for details).



Short press the plus button  to increase the parameter value, short press the minus button  to decrease the value. After modifying the parameter value, short press the power button  to save the parameter value and go to the next parameter. After parameters are modified, long press the plus and minus buttons   simultaneously to manually save the parameters and exit parameter setting mode. Alternatively you can wait 8 seconds to automatically save the parameters and exit parameter setting mode.

3.2 Setting a password

Long press the plus and minus buttons   simultaneously to enter parameter setting mode. Now long press and hold the power and plus buttons   simultaneously to enter password setting mode.

Use the plus and minus buttons   to modify a digit. Short press the power button  to go to the next password digit. After the password is modified, long press the power and plus buttons   simultaneously to save the password and exit password setting mode.

(Note: From now on you will need to enter the password when powering on the display).

Long press the plus and minus buttons   simultaneously again to manually save parameters, exit parameter setting mode and go back to the normal user interface. Alternatively you can wait 8 seconds to automatically save parameters and exit parameter setting mode.

(!) Forgot password

If you forget your password, use the override password: “3745” and press and hold the ?? button for 10 seconds to enter the normal user interface. You can now set a new password by going through the steps described above.

4. Parameter list

P01: Backlight brightness level: 1-3 (3 = max. brightness)

P02: Metric / imperial units: 0 = km, 1 = mile

P03: Voltage level: 24V, 36V, 48V, 60V, 64V (Default = 36V)

P04: Sleep time in minutes: 0-60 (0 = disabled) **Note: This function might not work**

P05: Number of power assist levels: 0 = 3 level mode, 1 = 5 level mode

P06: Wheel diameter in inches; accuracy: 0.1; This parameter is needed to display the speed accurately.

P07: Number of speed signal magnets inside the motor \times motor reduction gear ratio: 1-100; This parameter is needed to align the actual bicycle speed with the max speed setting.

For a regular hub motor, enter the number of speed signal magnets inside the motor;

For a geared hub motor, multiply the number of speed signal magnets by the gear ratio; number of magnets \times gear ratio = input value;

Example: number of motor magnets = 20, (reduction) gear ratio = 4.3

Input value = $20 \times 4.3 = 86$

P08: Speed limit: 0-100 km/h, 100 means unlimited speed. The value indicates the maximum speed of the bicycle.

Example: a value of 25 means that the maximum speed of the bicycle does not exceed 25km/h; the speed is maintained at the set value. Error: ± 1 km/h; (both power assist and throttle speed limit) **Note: This value is based on metric units (km/h) even when the display is set to imperial units (mph).**

Note: The P09-P15 menu is only valid when the display has an active data connection with the controller.

P09: Zero start: 0 = enabled, 1 = disabled

P10: Drive mode:

0 = PAS (1:1) enabled (throttle is disabled)

1 = Throttle enabled (PAS is disabled)

2 = PAS and throttle both enabled


P11: PAS sensitivity: 1-24

P12: PAS start strength: 0-5 **Note: This function might not work**

P13: Number of pas magnets: 5, 8, 12

P14: Controller current limit: 1-20A (Default = 12A)

P15: Low Voltage Cutoff; accuracy: 0.1

P16: ODO reset. Press and hold the plus button  for 5 seconds to reset

P17: 0 = Walk assist enabled, 1 = Cruise control enabled

P18: Displayed speed adjustment: 50%~150%

P19: PAS level 0: 0 = PAS level 0 enabled, 1 = PAS level 0 disabled

P20: Communication protocol: 1 = Protocol 2, 2 = Protocol 5S, 3 = Alternate protocol
Do not change, leave set to the default value or your S866 display will not be able to communicate with the controller!

5. Error Codes

An error code will be shown on the display if there is an error in the electrical function of the bicycle. Error codes are automatically cleared when the problem has been corrected and the bicycle has reached a minimum motor(assisted) speed of 6 km/h. See the table below for error code descriptions.

Error code	Description	Remarks
E01	Reserved	
E02	Brake	
E03	Power assist sensor	Not implemented
E04	Walk assist	
E05	Cruise control	
E06	Battery undervoltage	
E07	Motor	Check Hall sensor function and connector/wiring
E08	Throttle	
E09	Controller	
E10	Receive data	Check connector/wiring
E11	Send data	Check connector/wiring
E12	BMS communication	
E13	Headlight	