

INTRODUCTION

CYC MOTOR (BAC)

Monitor & customize your e-bike riding experience for all CYCMOTOR mid-drive systems. Use it as a secondary dashboard, a settings set-up, or both. Customize your ride to suit your style!

The CYC Motor (BAC) mobile application is your ideal solution to set up & customize your e-bike experience.

This platform is your go-to station for your CYCMOTOR kit for all ASI controllers

FEATURES

Bluetooth connectivity

Complete with torque sensor configuration

Compatible with ASI BAC855 & BAC2000 controllers

Real-time dashboard for all your motor & riding information

Fully customizable parameters for pedal assist, throttle, & gear preferences

DOWNLOAD



For iOS



For Android

GETTING STARTED

DASHBOARD

Bluetooth icon to connect to your device

Instantly change mode

Real-time speedometer

Change between your Dashboard & Settings page

The dashboard displays the following information:

- Bluetooth icon** (top left)
- Battery**: 100 %
- Battery Voltage**: 55.7 V
- Mode**: RACE (with flag icon)
- Speed**: 0 km/h
- Motor Input Power**: 0 W
- Controller Temp**: 21 °C
- Motor RPM**: 0 RPM
- Average Pedal RPM**: 0 RPM
- Average Human Power**: 0 W
- Battery input Power**: 0 W
- Battery Input Current**: 0 A
- Assist Lv.**: 9
- Motor Phase Current**: 0.13 A
- Motor Temp**: 0 °C
- Throttle In**: 0.96 V
- Average Pedal Torque**: 0 Nm

Navigation icons at the bottom: **Dashboard** (selected) and **Settings**.

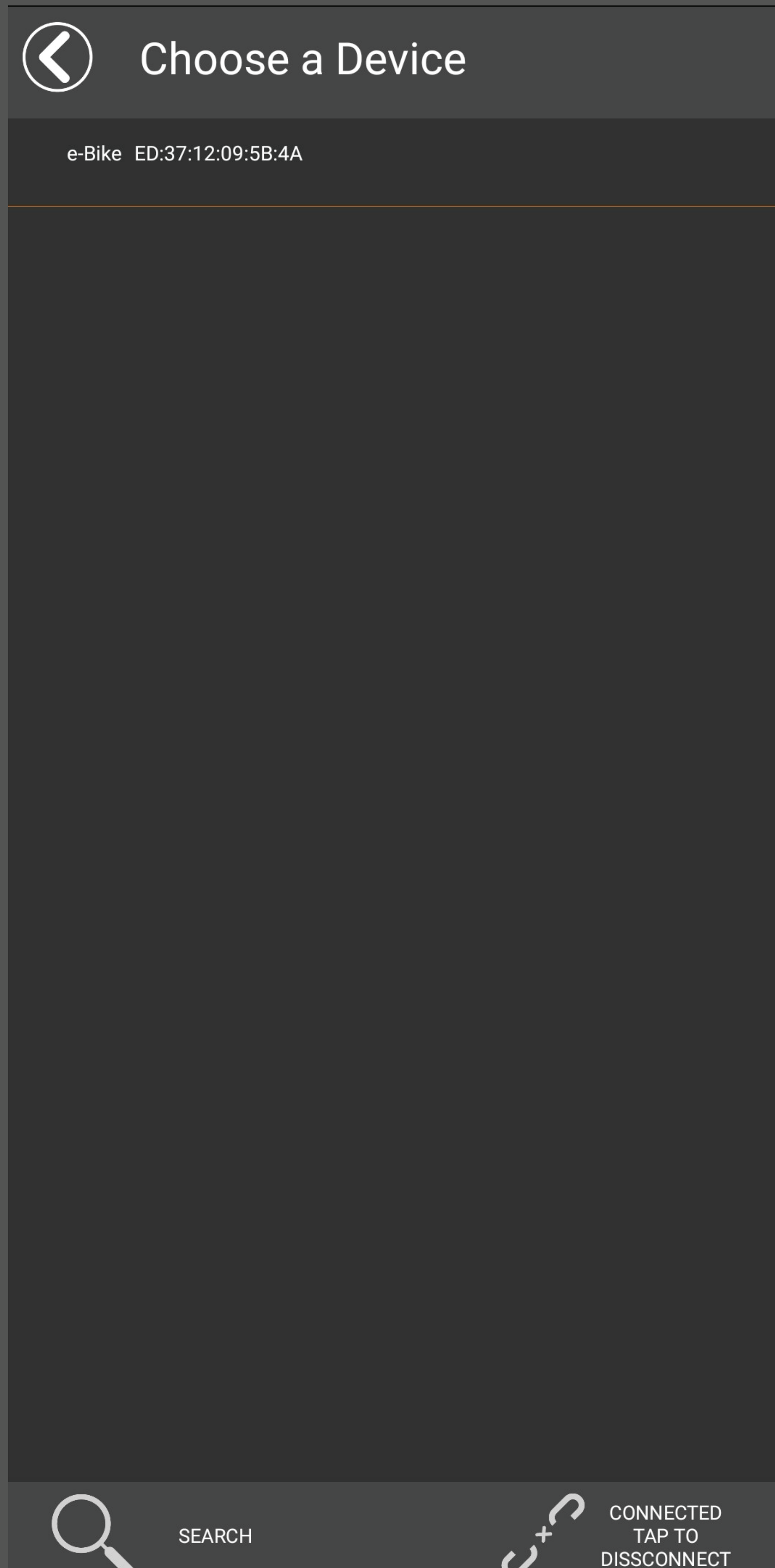
Information icon to provide you with important app usage tips

Warning icon to check error codes & clear faults

All parameters show real-time information

GETTING STARTED

CONNECTING A DEVICE



STEP 1

Open the app & select the Bluetooth icon in the top left corner of your dashboard. This icon will be grey when not connected to a device & red when connected. Make sure that your phone's Bluetooth is enabled.

IMPORTANT: Location permission for the app must be enabled.

STEP 2








Select the SEARCH button in the bottom left corner to search for your controller. Available e-bikes will then be listed.

STEP 3

Select your e-bike and then select CONNECT at the bottom right corner. Once connected, the CONNECT icon will change stating that you are connected & can select again to disconnect.

GETTING STARTED

QUICK FUNCTIONS

   	
Battery	Battery input Power
100 %	0 W
Battery Voltage	Battery Input Current
55.7 V	0 A
Mode	Assist Lv.
 RACE	9
Speed	
0 km/h	
Motor Input Power	Motor Phase Current
0 W	0.13 A
Controller Temp	Motor Temp
21 °C	0 °C
Motor RPM	Throttle In
0 RPM	0.96 V
Average Pedal RPM	Average Pedal Torque
0 RPM	0 Nm
Average Human Power	
0 W	
 Dashboard	 Settings

SWITCHING MODES

For the CYCMotor Ltd's supplied APT displays, you are able to access 2 modes: Race Mode & Street Mode where Race Mode is intended for full power output & Street Mode intended to accommodate your legal regional output requirements for e-bikes. You can change these settings to suit your country's legal road requirements in the "Modes & Levels" settings section.

To change your mode, select the icon displayed in the "Mode" tab on the main dashboard. You will be able to change the mode in real-time.

Note that the mode will be reset after each reboot. The app will reset to the mode that is displayed on your APT display (either an R for Race, or an S for Street). You can press the power button twice on your display to set the mode after reboot.

CLEARING ERRORS

In some circumstances, you might be presented with an error. When an error occurs, your display will show an error code. In order to clear the error, you can select the warning icon on your app dashboard. The error code/s will then be listed.

Refer to the "Error Codes" section in this document & fix the fault accordingly. To then clear the error signal after you've fixed the fault, select the warning icon, select the error code, & press "Clear" at the bottom of your display.

The error signal will stay on until the fault is fixed & the error is cleared.

Note that only common errors will be displayed on your APT display. In the unlikely event that your motor is not working, & there is no error code on your display, check for internal errors by selecting the warning icon.

MAIN SETTINGS PAGE



Information icon

Save to flash icon

The settings page allows you to navigate through different parameter categories. There are 6 different categories. Each category provides a set of parameters of which some are adjustable & some are readings from your e-bike system.

Each category contains an "Information" tab in the top, righthand corner explaining parameters & providing guidelines. Kindly take note of these descriptions as well as any warnings mentioned in these tabs & in this guide.

IMPORTANT

Save all new changes in parameters to flash or risk losing progress. Any changes made that were not saved, will be lost after a reboot. To save to flash, tap the 'Save' icon in the upper righthand corner, next to the information icon. "Successfully saved to flash!" message will appear upon completion.

GENERAL

GENERAL		
General Settings		
Display Unit	Metric (km)	>
Temperature Unit	°C	>
Software Revision Level	6.016	
Load from local files		>
Load from cache		>
Save settings to cache		>
Calibration Data		
Instantaneous Over Current Trip Threshold	109	Amps
Average Over Current Trip Threshold	104	Amps
Averaged Over Current Trip Sample Length	100	Samples
Maximum Measurable Current	139	Amps
Phase A Current Gain	96.875	A/Volt
Phase C Current Gain	-84.453	A/Volt

GENERAL SETTINGS

Display Unit

Set your units to display in Metric (km) or Imperial (miles).

Temperature Unit

Set your units to display in degrees Celsius (°C) or Fahrenheit (°F)

Software Revision Level

This is the settings version currently installed.

Load from local files

If you have received a settings file from CYC Motor Ltd, an authorized CYC Motor dealer, or someone else, you can load it here. All settings files are in XML format.

Note that the app will need permission to access your phone's storage.

Load from cache

If you have pre-saved settings to your cache, you can load them here. These settings will be named by a time stamp with the latest one showing at the bottom of the list

Save settings to cache

Save your current settings here and access them later by loading from your cache history.

CALIBRATION DATA

Keep record of these values when first connected via screenshot or writing them down somewhere safe. These parameters are used for troubleshooting. With this data, CYC Motor Ltd will be able to restore your original controller settings.

MODES & LEVELS

MODES & LEVELS		
Race Mode - Throttle		
Rated Motor Power	3000	Watts
Vehicle Maximum Speed	100	km/h
Race Mode - PAS		
Rated Motor Power	3000	Watts
Vehicle Maximum Speed	100	km/h
Street Mode - Throttle		
Rated Motor Power	3000	Watts
Vehicle Maximum Speed	25	km/h
Street Mode - PAS		
Rated Motor Power	750	Watts
Vehicle Maximum Speed	25	km/h
Assist Level Configuration		
Assist Gain 1	0.3	PU
Assist Gain 2	0.601	PU
Assist Gain 3	1	PU
Speed Limit Assist		
Assist Speed 1	0.3	PU
Assist Speed 2	0.601	PU

RACE & STREET MODE

You can set the throttle & PAS power output independently for both modes.

RACE MODE THROTTLE & PAS

Race Mode is your “boost” or “full power” mode and has parameters set for reaching closer to the system’s full capabilities. You can adjust these to your own preference within the capabilities of your chosen controller. The default setting in Race Mode is 3000W & 100km/hr.

STREET MODE THROTTLE & PAS

Street Mode is intended to be set to your region’s legal limits. You can adjust these to your own preference or to your region’s legal limits. The default setting in Street Mode is 750W & 25Km/hr.

Learn how to set up your region’s legal limits in the “Legal Limits” section of this document.

MODES & LEVELS

MODES & LEVELS	
Street Mode - Throttle	
Rated Motor Power	750 Watts
Vehicle Maximum Speed	25 km/h
Street Mode - PAS	
Rated Motor Power	750 Watts
Vehicle Maximum Speed	25 km/h
Assist Level Configuration	
Assist Gain 1	0.3 PU
Assist Gain 2	0.601 PU
Assist Gain 3	1 PU
Speed Limit Assist	
Assist Speed 1	0.3 PU
Assist Speed 2	0.601 PU
Assist Speed 3	1 PU
Others	
Speed Regulator Mode	Torque >
Throttle Bypass Assist Level	off >
Motor RPM Speed Limiting	on >

ASSIST LEVEL CONFIGURATION & SPEED LIMIT ASSIST

These 2 categories set the factor with which motor power is timed to give an output.

In assist level 1, the assist level is by default 0.3, meaning that only 30% of the available power will be achieved. The 3 assist levels underneath each heading, map the assist levels evenly throughout your number of gears. You can set the maximum number of assist levels to 3, 5, or 9 respectively via the display (kindly see your display user manual).

Assist Level Configuration affects both your throttle & PAS & is relevant to the amount of assist you will get in each gear.

Speed Limit Assist affects only your vehicle speed limit set & pertains to your top speed in each assist level as set for Race & Street Mode respectively.

OTHERS

Speed Regulator Mode

There are 3 different modes that can be set to affect your speed regulation:

Speed - This mode maps your throttle to respond with a specific motor speed. This means that if you apply 50% throttle & your motor can reach 10K RPM, the controller will do what is necessary to get the motor RPM up to 5K RPM. This mode can only be set before shipment or when update via programming cable is available.

CYCMOTOR LTD does not recommend using this mode.

MODES & LEVELS

MODES & LEVELS	
Street Mode - Throttle	
Rated Motor Power	750 Watts
Vehicle Maximum Speed	25 km/h
Street Mode - PAS	
Rated Motor Power	750 Watts
Vehicle Maximum Speed	25 km/h
Assist Level Configuration	
Assist Gain 1	0.3 PU
Assist Gain 2	0.601 PU
Assist Gain 3	1 PU
Speed Limit Assist	
Assist Speed 1	0.3 PU
Assist Speed 2	0.601 PU
Assist Speed 3	1 PU
Others	
Speed Regulator Mode	Torque >
Throttle Bypass Assist Level	off >
Motor RPM Speed Limiting	on >

OTHERS (cont.)

Speed Regulator Mode

Torque with Speed Limiting - In this mode, the throttle controls motor current supplied to the motor, but speed limits set in Modes & Levels are considered as well. For example, if you apply 50% throttle, the controller will supply 50% of the rated motor current until it senses that 50% of vehicle speed is reached. After this, the controller will start limiting the motor power to maintain a certain speed. Keep in mind that ASI speed limiting is through Motor RPM & not actual vehicle speed. Actual vehicle speed limiting can be done through the display.

Torque - In this mode, the throttle controls only the motor current. Meaning that if 50% throttle is applied, 50% of rated motor current will be supplied to the motor regardless of motor RPM and threshold needed to clear the overvoltage error.

CYCMOTOR LTD recommends Torque with Speed Limiting

Throttle Bypass Assist Level

Here, you can set your throttle to give you 100% power range according to your Race/ Street mode power settings regardless of your assist level settings. Enabling this will give you 100% throttle power range from 0 to the highest assist level, but the pedal assist will still refer to the assist level settings. Disabling this will give you throttle power range according to your assist level power settings.

Motor RPM Speed Limiting

This parameter enables or disables the speed sensor which allows you to be able to limit your speed based on the motor RPM & not the speed sensor. Under high power, this will give you a smoother riding experience.

THROTTLE

THROTTLE		
Throttle Settings		
Throttle Voltage Reading	0.96	Volts
Throttle Full Voltage	5	Volts
Throttle Off Voltage	0.87	Volts
Throttle Fault Range	0.2	Volts
Throttle Deadband Threshold	0.2	Volts
Throttle Ramp Times		
Positive Motoring Torque Ramp	250	ms
Negative Motoring Torque Ramp	100	ms

THROTTLE SETTINGS

Throttle Voltage Reading

This non-adjustable value is the voltage reading from your throttle. This value will be just below 1 out of the box, provided that you are using a throttle supplied by CYC Motor. It may be different for throttles supplied elsewhere.

Throttle Full Voltage

This is the output of the throttle when opened fully and is pre-set when purchased. You do not need to change this at all with CYC supplied throttles.

Throttle Off Voltage

The Throttle Off Voltage value should be the same as the Throttle Voltage Reading when the throttle is closed and sets the output of the throttle when it is not active.

Throttle Fault Range

This is the amount the throttle can move up & down without activating. In other words, when you are driving around on a bumpy road and the throttle moves slightly, it will not drastically affect your speed. Within the 0.2V range, the output will remain constant. Only when moving the throttle more than 0.2V, will the response of the motor change.

Throttle Deadband Threshold

The Throttle Deadband Threshold pertains to opening the throttle when it's completely closed. This is the amount the throttle can be moved from the zero position without generating a response from the motor. If this value is set lower, your throttle will engage quicker & vice versa.

THROTTLE

THROTTLE		
Throttle Settings		
Throttle Voltage Reading	0.96	Volts
Throttle Full Voltage	5	Volts
Throttle Off Voltage	0.87	Volts
Throttle Fault Range	0.2	Volts
Throttle Deadband Threshold	0.2	Volts
Throttle Ramp Times		
Positive Motoring Torque Ramp	250	ms
Negative Motoring Torque Ramp	100	ms

THROTTLE RAMP TIMES

The Throttle Ramp Times affect the response times when opening and closing the throttle.

Positive Motoring Torque Ramp

This is the time it takes for the motor to achieve the required input. For example, if you open the throttle fully, it will take 250ms (by default) before the motor gives you full power. It will gradually ramp up to full power within the set time. We recommend not to set this below 150ms.

Negative Motoring Torque Ramp

This is the time it takes for the motor to stop responding after the throttle is closed. This value is usually set low to stop any motor response after the throttle is closed as soon as possible. We do not recommend setting this value higher.

COMMON QUESTIONS

Q1: Which parameters can adjust the sensitivity of the throttle?

A1: The Throttle Fault Range, Deadband Threshold, Positive and Negative Motoring Torque Ramp are the parameters that set the sensitivity and responsiveness of your throttle.

Q2: How can I turn my throttle off?

A2: The second parameter under Pedal Assist settings, is called "Control Command Source". Here, you can select whether you want to activate your throttle.

SETTING UP OTHER THROTTLES

If you have obtained a throttle from a different supplier or accidentally changed values to trigger error 22H, then your Throttle Full & Off Voltage values need to be checked & entered manually.

1. The Throttle Full Voltage can be obtained by making sure the bike is in Assist Level 0, so the motor will not be activated when the throttle is pressed down. Then, when fully opening the throttle, the Throttle Full Voltage can be read from the Throttle In value on the app dashboard. Enter that value into the Throttle Full Voltage parameter.

2. The Throttle Off Voltage can be obtained by entering the value that is read from the Throttle In value, but this time when the throttle is in a closed position i.e., not activated at all. Your Throttle Off Voltage and your Throttle Voltage Reading will then be the same when the throttle is completely closed.

PEDAL ASSIST

PEDAL ASSIST		
Hardware Input Information		
Torque Sensor Voltage	0.057	Volts
Control Command Source	Throttle or pedal sensor	
Pedal Sensor Configuration		
Pedal Sensor Type	Signal hall torque (LDS)	
Pedal Speed Sensor Pulses Per Revolution	18	PPR
Pedal Sense Delay	1	counts
Pedalec Maximum Timeout	100	ms
Pedalec Minimum Timeout	50	ms
Pedal Speed Map End	64	RPM
Pedal Speed Map End	0.3	PPR
Assist Cut Out Distance	1.5	m
Torque Sensor Configuration		
Torque Sensor Gain	69	Nm/Volts
Pedalec Power Gain	2	G
Axle Torque Sensor Offset Voltage	0.058	Volts
Torque Sensor Offset	1.55	Volts
Pedalec Initial Torque	10	Nm
Pedalec Deadband Torque	1	Nm
PAS Ramp Times		

HARDWARE INPUT INFORMATION

These 2 parameters tell you if your torque sensor is working, and how you would like your overall assist to work.

Torque Sensor Voltage

The Torque Sensor Voltage can be used to confirm that the torque sensor is connected and that it works properly. How do you know? If the torque sensor is plugged in, the voltage reading should be 1.5V. Then, you can put some force onto the pedals and if the voltage changes, your torque sensor is working correctly.

Control Command Source

This selection allows you to decide if you only want to use PAS, only throttle, or both. This is generally a preference from rider to rider:

Throttle and pedal sensor (Throttle, cadence, & torque sensor is activated & can be used simultaneously)

Throttle or pedal sensor (Throttle, cadence, & torque sensor is activated but cannot be used simultaneously)

Torque sensor (Torque sensor is activated; cadence sensor & throttle is deactivated)

Throttle (Throttle is activated; cadence & torque sensor is deactivated)

Pedal sensor (Cadence & torque sensor is activated; throttle is deactivated)

PEDAL ASSIST

PEDAL ASSIST		
Hardware Input Information		
Torque Sensor Voltage	0.057	Volts
Control Command Source	Throttle or pedal sensor	>
Pedal Sensor Configuration		
Pedal Sensor Type	Signal hall torque (LDS)	>
Pedal Speed Sensor Pulses Per Revolution	18	PPR
Pedal Sense Delay	1	counts
Pedalec Maximum Timeout	100	ms
Pedalec Minimum Timeout	50	ms
Pedal Speed Map End	64	RPM
Pedal Speed Map End	0.3	PPR
Assist Cut Out Distance	1.5	m
Torque Sensor Configuration		
Torque Sensor Gain	69	Nm/Volts
Pedalec Power Gain	2	G
Axle Torque Sensor Offset Voltage	0.058	Volts
Torque Sensor Offset	1.55	Volts
Pedalec Initial Torque	10	Nm
Pedalec Deadband Torque	1	Nm
PAS Ramp Times		

PEDAL SENSOR CONFIGURATION

This is the pedal (or cadence) sensor settings.

Pedal Sensor Type

There are 4 types of pedal sensors giving you the option to use only the pedal sensor, only the torque sensor, or both:

Single Hall Reverse (Only for Gen 1 X1 PRO motors. If you have a Gen 1, you should only use this sensor type as the Gen 1 motors do not have torque sensing)

Single Hall Torque (LDS) (Both the pedal (or cadence) sensor & torque sensor is activated)

Axle torque (Torque sensor is activated ; pedal (or cadence) sensor is deactivated)

Single Hall (Pedal (or cadence) sensor is activated ; torque sensor is deactivated)

Pedal Speed Sensor Pulses Per Revolution

This is a torque sensor specific parameter. For the latest torque sensor, there are 36 magnet pulses for one revolution of the pedals. For older versions, there are 18. You can contact CYCMOTOR LTD directly if you are unsure what version you have.

Pedal Sense Delay

This is the number of magnet pulses that must be detected before the PAS is activated. Most prefer having it engaged as soon as possible so we have set the value to 1. If the PAS engages too fast for your preference, you can set it higher. Adding more magnets will give you a larger range to set your activation.

Pedalec Maximum Timeout & Pedalec Minimum Timeout

The Pedalec Maximum Timeout & Pedalec Minimum Timeout are two parameters that work together & affect your PAS response for deactivating. What this means is that between 50ms to 100ms (by default), the controller will start probing for change in pedal speed. If there is no change in pedal speed within this timeframe, the PAS will be deactivated. This time period can be set longer or shorter by changing maximum & minimum values.

PEDAL ASSIST

PEDAL ASSIST		
Hardware Input Information		
Torque Sensor Voltage	0.057	Volts
Control Command Source	Throttle or pedal sensor	>
Pedal Sensor Configuration		
Pedal Sensor Type	Signal hall torque (LDS)	>
Pedal Speed Sensor Pulses Per Revolution	18	PPR
Pedal Sense Delay	1	counts
Pedalec Maximum Timeout	100	ms
Pedalec Minimum Timeout	50	ms
Pedal Speed Map End	64	RPM
Pedal Speed Map End	0.3	PPR
Assist Cut Out Distance	1.5	m
Torque Sensor Configuration		
Torque Sensor Gain	69	Nm/Volts
Pedalec Power Gain	2	G
Axle Torque Sensor Offset Voltage	0.058	Volts
Torque Sensor Offset	1.55	Volts
Pedalec Initial Torque	10	Nm
Pedalec Deadband Torque	1	Nm
PAS Ramp Times		

PEDAL SENSOR CONFIGURATION (cont.)

Pedal Speed Map End

This is the cadence value that will give you full gain when pedaling, i.e. the speed at which the torque sensor will feel most powerful. There is an ideal pedal speed for each rider at which the motor feels the most powerful when riding, & you can set this value according to your ride style.

Pedal Speed Map Offset

The Pedal Speed Map Offset is related to the pedal speed required to activate the PAS. The lower the value, the slower you can pedal & still engage pedal assist, & vice versa. The value must remain between 0.3-0.5. Tip: when riding more technical terrains, try setting this lower than you would for riding on an open road.

Assist Cut Out Distance

Set to 1.5m (by default), this is the distance before the PAS cuts out. 1.5m is approx. one-wheel revolution & is required for smooth operation. This can only be made shorter if you have more magnets on your wheel. If you only have 1 magnet, then the controller will only be able to pick up signal after 1 wheel revolution. If you install 2 magnets, then you can set this lower to 0.75m & the controller will be able to pick it up accordingly.

TORQUE SENSOR CONFIGURATION

This is the torque sensor settings.

Torque Sensor Gain

This is a value related to your specific torque sensor. For the latest torque sensor, this value is calculated to be 69 Nm/Volt. Do not change this value as it is used for informational purposes only. If you have accidentally changed this value, please restore settings to default or load latest saved settings from your cache.

PEDAL ASSIST

PEDAL ASSIST		
Hardware Input Information		
Torque Sensor Voltage	0.057	Volts
Control Command Source	Throttle or pedal sensor	>
Pedal Sensor Configuration		
Pedal Sensor Type	Signal hall torque (LDS)	>
Pedal Speed Sensor Pulses Per Revolution	18	PPR
Pedal Sense Delay	1	counts
Pedalec Maximum Timeout	100	ms
Pedalec Minimum Timeout	50	ms
Pedal Speed Map End	64	RPM
Pedal Speed Map End	0.3	PPR
Assist Cut Out Distance	1.5	m
Torque Sensor Configuration		
Torque Sensor Gain	69	Nm/Volts
Pedalec Power Gain	2	G
Axle Torque Sensor Offset Voltage	0.058	Volts
Torque Sensor Offset	1.55	Volts
Pedalec Initial Torque	10	Nm
Pedalec Deadband Torque	1	Nm
PAS Ramp Times		

TORQUE SENSOR CONFIGURATION (cont.)

Pedalec Power Gain

You can adjust the sensitivity of the torque sensor by changing this value. If you want the torque sensor to be more powerful, increase this value.

Decrease it if you want it less powerful. Pedal Power Gain is the factor of input to output. Meaning that if you pedal at certain strength, it will be multiplied by this factor before giving an input to the motor.

Axle Torque Sensor Offset Voltage & Torque Sensor Offset

The Axle Torque Sensor Offset Voltage & Torque Sensor Offset is set to determine at what voltage input, the system should remain inactive as every torque sensor has a reading once it's connected. Just because the torque sensor is connected, doesn't mean you want it to activate without any human input. The Torque Sensor Offset should not be set lower than the Axle Torque Sensor Offset Voltage. Torque Sensor Offset voltage can be set by reading the value from Axle Torque Sensor Offset Voltage. This value should be 1.55v. If it is close to 0V, then no torque sensor is connected.

All the torque sensors provided by CYC are set with a base voltage of 1.55V so there is no need to change the Torque Sensor Offset.

Pedalec Initial Torque

The Pedalec Initial Torque is the amount of torque supplied from the motor to account for the lack of pressure from the opposite leg. For example, when you are starting on a hill, it is difficult to maintain pressure on both legs and keep a constant cadence. This helps to get things going in these situations. Increase this value for more initial torque when the PAS is engaged.

Pedalec Deadband Torque

This is the amount of torque required before activating the PAS. The higher this value is, the harder you must pedal to activate the pedal assist.

PEDAL ASSIST

PEDAL ASSIST		
Hardware Input Information		
Pedal Sensor Configuration		
Pedal Sensor Type	Signal hall torque (LDS)	>
Pedal Speed Sensor Pulses Per Revolution	18	PPR
Pedal Sense Delay	1	counts
Pedalec Maximum Timeout	100	ms
Pedalec Minimum Timeout	50	ms
Pedal Speed Map End	64	RPM
Pedal Speed Map End	0.3	PPR
Assist Cut Out Distance	1.5	m
Torque Sensor Configuration		
Torque Sensor Gain	69	Nm/Volts
Pedalec Power Gain	2	G
Axle Torque Sensor Offset Voltage	0.058	Volts
Torque Sensor Offset	1.55	Volts
Pedalec Initial Torque	10	Nm
Pedalec Deadband Torque	1	Nm
PAS Ramp Times		
Pedalec Positive Motoring Torque Ramp	50	ms
Pedalec Negative Motoring Torque Ramp	50	ms

PAS RAMP TIMES

The final 2 parameters for your PAS settings, are the ramp times. These work similar to the ramp times in the Throttle settings & affects the system's response time.

Pedalec Positive Motoring Torque Ramp

This is the amount of time it takes to reach the desired input. If 100% pedal power is given to the controller, the motor will take 50ms (by default) to reach 100% power.

Pedalec Negative Motoring Torque Ramp

This is the amount of time it takes for the motor to have no response after you stop pedaling. If the motor was running at 100% power, & there is no more pedal input, it will take 50ms (by default) for the motor stop responding.

COMMON QUESTIONS

Q1: Which parameters should I look at to give me more/ less power when pedaling?

A1: To adjust the power of your pedal assist, make sure you are in Single Hall Torque (LDS) or Torque mode in you Pedal Sensor Type as your power output is toque based. Then, go to Pedalec Power Gain under Toque Sensor Configuration. If you want the torque sensor to be more powerful, increase this value. Decrease it, if you want it less powerful.

Q2: Which parameters affect my pedal sensitivity?

A2: The 2 parameters under PAS Ramp Times will affect how quickly the PAS will respond.

Q3: How can I set my PAS to start up faster/ slower?

A3: To change how fast your PAS activates, you can look at your Pedal Sense Delay and Pedal Speed Map Offset under Pedal Assist Configuration, as well as your Pedalec Deadband Torque under Torque Sensor Configuration

Q4: How can I get more power when I activate the pedal assist?

A4: To adjust the power of your pedal assist when starting, make sure you are in Single Hall Torque (LDS) or Torque mode in you Pedal Sensor Type as your power output is toque based. Then, go to Pedalec Initial Torque under Toque Sensor Configuration.

PERIPHERALS SETUP

PERIPHERALS SETUP		
Brake Configuration		
Brake 1 Voltage	4.699	Volts
Analogue Brake Off Voltage	1	Volts
Analogue Brake Full Voltage	4	Volts
Display		
Display Protocol	KM5S	>
Wheel Diameter	700	mm
Disable Display	off	>
Wheel Speed Sensor Pulses Per Revolution	1	PPR
Motor Settings		
Rated Motor Current	90	Amps
Motor Position Sensor Type	Hall Start and Sensorless Run	>
Instant Resume	on	>

BRAKE CONFUGURATION

Brake 1 Voltage

This is the voltage read from the brake sensor.

Analogue Brake Off Voltage

This is the voltage read from the brake sensor when the magnet is close to or touching the sensor.

Analogue Brake Full Voltage

This is the voltage read from the brake sensor when the magnet is taken away from the sensor. This is when the brakes are fully engaged.

Contact the CYC technical support team to set up brake sensors not supplied by CYC Motor Ltd.

DISPLAY

Display Protocol

Display Protocol is set to KM5s by default. For displays not supplied by CYC Motor Ltd, contact the CYC technical support team for assistance.

Wheel Diameter

The wheel diameter can be measured or calculated. We advise that this number must be calibrated so that vehicle speed within the app matches display speed. This will give more accurate speed limiting under different modes. Remember to set the correct wheel size within the display as well. Kindly refer to your user manual.

Disable Display

Here, you can enable or disable the display. Note that when the display is disabled, you will have full access to the kit's power range irrespective of assist levels where throttle & PAS is always active.

PERIPHERALS SETUP

← PERIPHERALS SETUP ⓘ

Brake Configuration

Brake 1 Voltage	4.699	Volts
Analogue Brake Off Voltage	1	Volts
Analogue Brake Full Voltage	4	Volts

Display

Display Protocol	KM5S	>
Wheel Diameter	700	mm
Disable Display	off	>
Wheel Speed Sensor Pulses Per Revolution	1	PPR

Motor Settings

Rated Motor Current	90	Amps
Motor Position Sensor Type	Hall Start and Sensorless Run	>
Instant Resume	on	>

DISPLAY (cont.)

Wheel Speed Sensor Pulses Per Revolution

This is the number of magnets in the wheel that is communicating with the speed sensor. For more accurate vehicle speed limiting and measurement, we advise to add more magnets to the wheel.

MOTOR SETTINGS

Rated Motor Current

This is the amount of phase current the motor draws from the controller & should be kept according to the following values:

For BAC855 - between 75A to 90A

For BAC2000 - below 150A

Motor Position Sensor Type

Here you can choose to set it to Sensorless which will deactivate the Hall sensor.

Instant Resume

Here, you can enable or disable instant resume when the motor cuts out. CYC Motor Ltd advises to keep this parameter enabled. If disabled, the risk of Error 21H is increased especially when riding on rough terrain.

BATTERY

← BATTERY ⓘ

General Configuration

Rated System Voltage	52	Volts
Slow Over Voltage Threshold	119.995	%
Slow Under Voltage Threshold	75	%
Fast Over Voltage Threshold	124.951	%
Fast Under Voltage Threshold	59.985	%
DC Voltage Trip Clear Hysteresis	4.98	%

GENERAL CONFIGURATION

Rated System Voltage

This is equal to the nominal voltage of the battery pack you are using. This is where the voltage for the controller is set. Your kit is pre-set to the voltage you specified when making your purchase but you can change this at any time.

When changing to a different battery voltage, you need to adjust this parameter accordingly & save to flash in order to prevent an error from occurring due to change in voltage reading.

Slow Over Voltage Threshold

This is the value at which the controller will fault when connecting too high voltage to the system. These values are considered over a long period of time.

Slow Under Voltage Threshold

This is the value at which the controller will fault when connecting too low voltage to the system. These values are considered over a long period of time.

Fast Over & Fast Under Voltage Threshold

These are the instantaneous voltage change at which the controller will fault. Meaning that if the voltage spikes above 124% (by default) of the nominal voltage, or drops below 60% (by default) of the nominal voltage, the controller will fault to protect itself.

DC Voltage Trip Clear Hysteresis

This is the number of volts below the overvoltage threshold needed to clear the overvoltage error.

TROUBLESHOOT

ERROR CODES

ERRORS SHOWN ON DISPLAY

Error 22H (Throttle voltage out of range)

This can be caused by 3 main reasons:

1. The throttle cable has been accidentally unplugged

Ensure that the throttle is connected properly

2. The default throttle off & throttle full voltages have been changed.

Confirm that throttle off voltage & throttle full voltage thresholds have been set correctly. Refer to Throttle settings > "Setting up other throttles" for instructions to set the throttle voltages correctly if they have been changed.

3. Throttle is broken

You can check if the throttle is broken by switching on your ebike, ensure that you are in Assist level 0, then checking that the Throttle In voltage on the app dashboard changes normally when opening the throttle.

If you are still experiencing error 22H, it could be caused by a partially bricked controller. Refer to "Other faults" on the next page to check how to confirm if your controller is bricked. If it is bricked, please contact CYC Support for further assistance.

Error 24H (Hall sensor error)

This error is caused by faulty hall sensors or by connecting the wrong motor wires. Firstly, check that you have connected the motor wires correctly: blue to blue, yellow to yellow, red (or orange) to green. If this is correct, then connect to the CYC Motor (BAC) app & to go Settings > Peripheral Setup > Motor Position Sensor Type > change this to "Sensorless" & save to flash to run your motor safely. When running in sensorless mode, there is a slight lag in the system's start-up response.

To fix the hall sensor, kindly contact CYC Support for further assistance.

Error 30H (Communication error)

If error 30H is displayed briefly upon startup, that is normal. If the error stays on, refer to "Other faults" on the next page to check if your controller is bricked. Next, contact CYC Support for further assistance stating whether your controller is bricked or not.

CYC Support line for all errors & faults: technical_support@cycmotor.com

FAULTS & WARNINGS



Warning

Faults: Controller over voltage (flash code 1,1)

CLEAR

OTHER FAULTS

Bricked Controller

To know if your controller is bricked, switch on your ebike, connect via the app, & check if values are displayed. If all values show 0 when connected, it means that your controller is bricked or partially bricked. Ensure that you have waited for the values to load as it may take up to 5 seconds. This is fixable but you will need to contact CYC Support.

Motor not running with no errors on the display

There are a few main reasons that your motor may not run but there are no error codes displayed. If this is the case, check for internal errors by selecting the Warning icon in the top right corner of the app dashboard.

Faults: Controller over/ under voltage

If you have set the incorrect battery voltage reading in your Battery settings, a fault warning will appear. Go to Setting > Battery > changed your Rated System Voltage to match your battery voltage & save to flash. This faulty will now appear as a "Last Fault" until cleared by selecting the "clear" button at the bottom of the internal warnings tab.

Other causes:

Brake sensors not set up correctly or faulty.

When the brake sensors are plugged in but the magnet is not close enough to the sensor, or if the sensor is broken, the motor will not run. Confirm that Brake 1 Voltage changes when moving the magnet closer to & from the brake sensor. You can find your Brake 1 Voltage under Settings > Peripherals Setup > Brake Configuration.

CYC Support line for all errors & faults: technical_support@cycmotor.com

QUICK START

BEFORE YOUR RIDE

After unboxing & installing your X1 Pro or X1 Stealth, there are a few things you need to set up.

STEP 1

Ensure that all wires are properly connected & that your system can switch on by long pressing the display's power button. Check that the display shows your battery voltage & level. Should your display briefly show Error 30H upon start-up, this is normal as the system takes a moment to connect. Should your battery voltage & level not display refer to step 3.

STEP 2

Ensure that your pedal assist & throttle are working correctly. To test this, connect to the app & change to Assist Level 0 on your display. You can test the PAS by looking at the app's dashboard & turning the crank set. If your Average Pedal RPM reading changes, then your PAS is working. To test the throttle, open your throttle & check that your Throttle In voltage changes. Ensure that you test the PAS & throttle in Assist Level 0 as to not make the bike thrust forward.

STEP 3

Set up the correct information on your display. You will need to enter your wheel diameter, battery voltage (if incorrect), & your preferred number of assist levels. Kindly see your display's user manual for instructions.

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