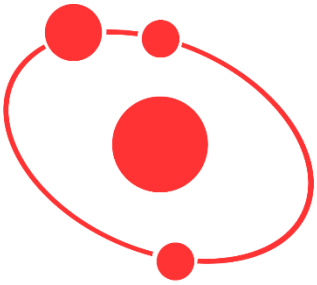


ATOM
DRIVE SYSTEM

Atom Drive System User Guide

Version 1.0

CONTENTS

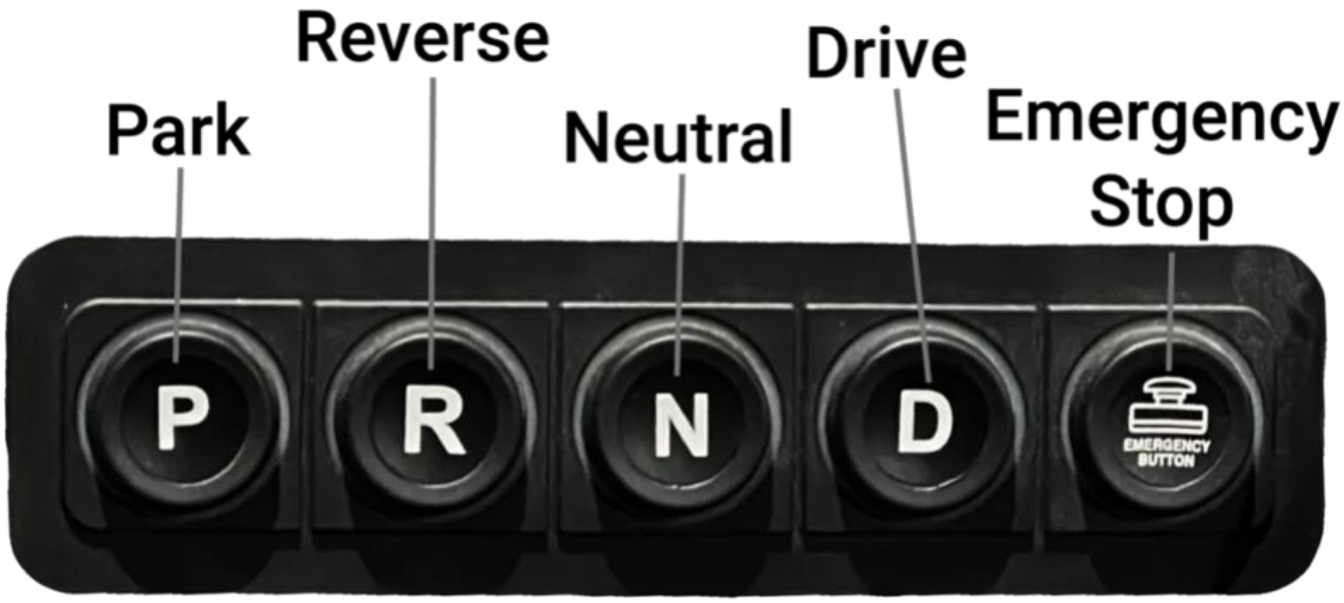
Driving

The Atom Drive system is meant to look and act like an OEM car, it was designed to be predictable and intuitive to use. The driving experience includes the conveniences and safety features you expect in a modern electric vehicle.

Turning on the vehicle:

The car will turn on with an ignition switch signal and will turn off within 10-15 seconds of the ignition being switched off.

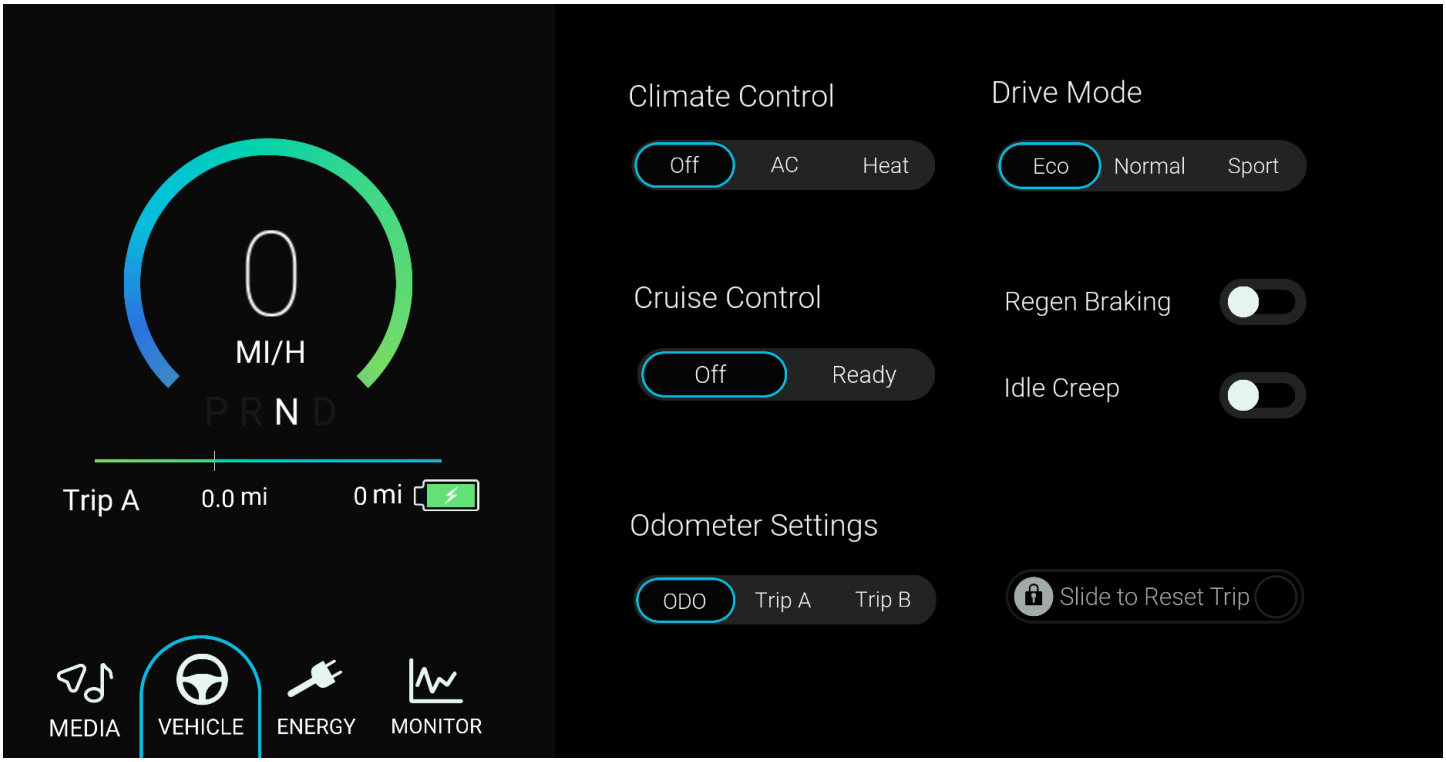
Driving the vehicle:



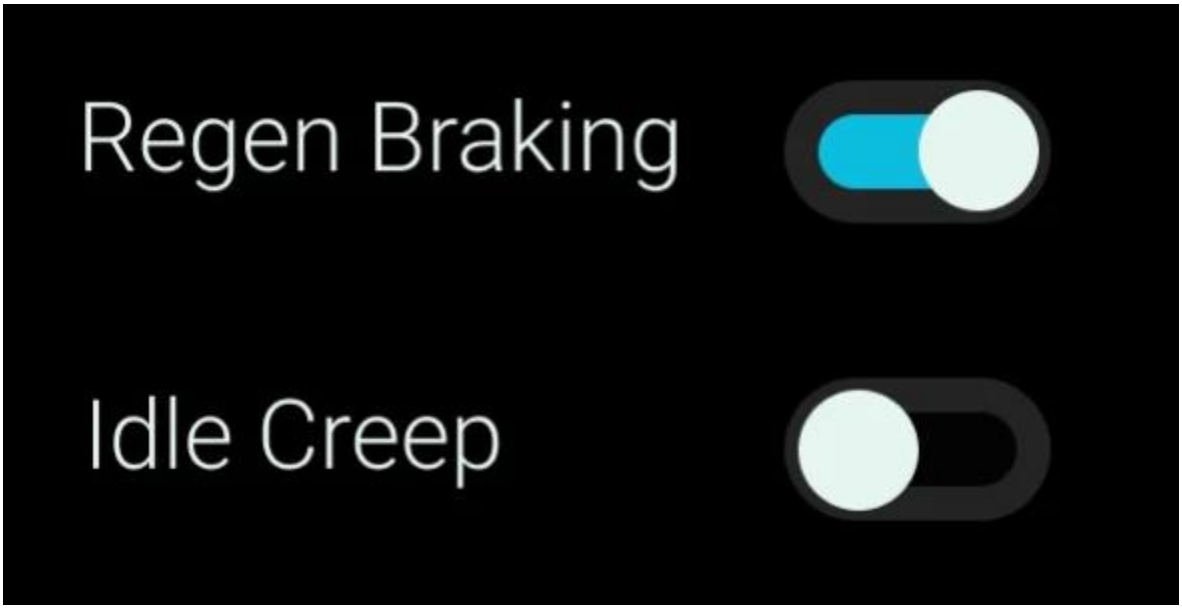
To indicate that the vehicle is ready to drive, look for the car ready icon on the GUI screen. If there is no car ready icon, ensure the car is not plugged in.

To shift the car into Drive or Reverse, press the brake, and hold while you select your gear. Once selected, the brake can be released, and the accelerator pedal pressed. The vehicle must come to a complete stop before changing gears, however, it can go into neutral at any time. The emergency stop button immediately turns off the car and should only be used if strictly necessary.

Driving Modes and Settings:



On the Vehicle page of the GUI, there are 3 distinct driving modes to choose from. Sport, Normal, Eco. Sport mode will provide increased responsiveness for a livelier driving experience. Normal is the middle ground between Sport and Eco. Eco mode provides the least responsiveness to aid in efficient driving. Driving modes will also adjust your power steering effort (if equipped).



Regen braking allows the electric motor system to work in reverse, allowing the batteries to regain energy while slowing down. Regen braking will cause the brake lights to turn on while decelerating. Note that regen braking is not available above 95% battery charge.

Idle creep allows the vehicle to slowly move forward or backward when the brake is lifted depending on what gear is selected. This behavior is most similar to an automatic-equipped combustion vehicle that does this due to its torque converter.

Parking:

Depending on the electric motor equipped on your Atom Drive System, parking functionality may differ. Some electric motors or transmission systems have a parking pawl that will automatically engage when the vehicle is placed in park. Others, may not be equipped with this system and a manual parking brake must be used. Optionally, an electronic parking brake may be installed to provide this automatic park functionality.

Tesla Small Front Drive Unit – Manual parking brake or aftermarket electronic parking required.

Cascadia Motion IDM-190 – Parking pawl equipped as standard.

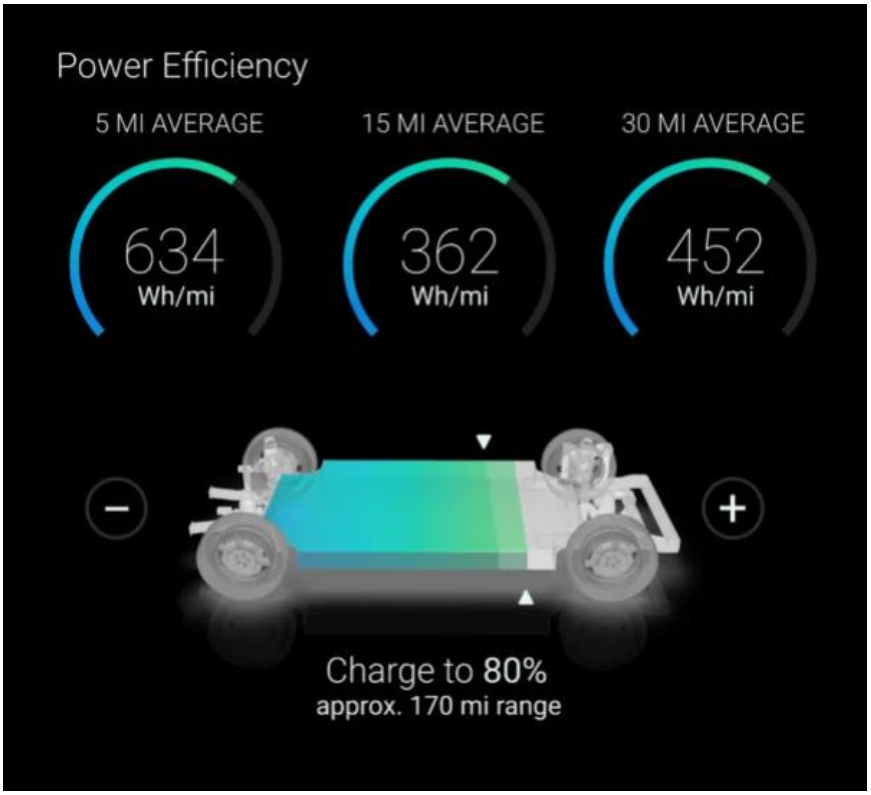
Cascadia Motion IM-255 – Parking pawl equipped with SR309 gearboxes, optional on Torque Trends gearboxes, and otherwise installation dependent.

Charging

Charging Instructions:

1. To charge the vehicle, first make sure the car is in Park and the ignition is switched to the off position.
2. Plug in the charge connector and ensure that the clip on the connector latches. There should be a sound of a lock engaging and charging will begin shortly.
3. The vehicle should turn on and display the estimated charging time on the screen. Noises similar to those while the car is powered on (water pumps and fans) are normal. In the energy menu, tap the plus or minus to set the desired final charge percentage. This is what charging will stop and hold at.
4. To stop charging the vehicle, press the button on the cable and listen for the lock to release. Once heard, the connector can be disconnected safely.

- It is recommended to charge to 100% on the first charge.
- For maximum battery longevity, charge to 80%.



DC Fast Charging Instructions:

DC fast charging, if equipped, allows the vehicle to charge at a much faster speed than would be possible on a standard level 1 or level 2 charger. The Atom Drive System currently supports the Combined Charging Standard, better known as CCS, for this DC fast charging functionality.

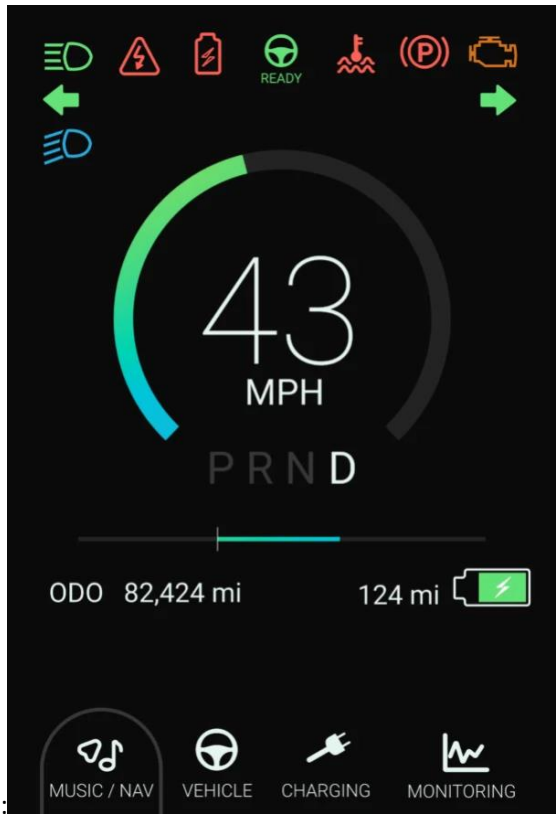
1. Ensure the car is in Park and the ignition switch is in the off position.
2. Plug in the vehicle to the EVSE (Electric vehicle Service Equipment) charging cord.
3. Authenticate the charging sessions through the EVSE.
    a. This may require an app or other form of authentication.
4. To end the session, either press the release button on the charging cord or press the cancel button on the EVSE.
    a. The release button may require a firm press to register. The cord should unlock shortly after the release button is pressed.

Charging FAQ:

- **What type of charging does Atom Drive use?**
    - Types of charging :
    - Level 1 : 110 volt AC charging up to 2.4 kW
    - Level 2 : 220 volt AC charging up to 19 kW
    - Level 3 : DC charging up to 350 kW
    - The Atom Drive system uses a J1772 connector with an optional CCS DC fast charging connector. The standard kit will support level 2 charging at 6.6kW. With the optional CCS fast charging, it will support level 3 charging at 50 kW for 42kWh systems or 100kW for 84kWh systems.

Graphical User Interface (GUI)

Static Panel:



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The Static Left Panel is comprised of several parts:

Icon Bar -Car Information -Panel Controls

The Static Panel will only change when the car is charging or while the car is in cruise control. The Right Panel controls are located at the bottom of the Static Panel. The gray outline indicates the current page choice.

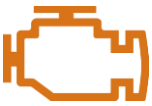
Icons:

Car Ready

READY

Parking Brake On

Malfunction Indicator Light (MIL)

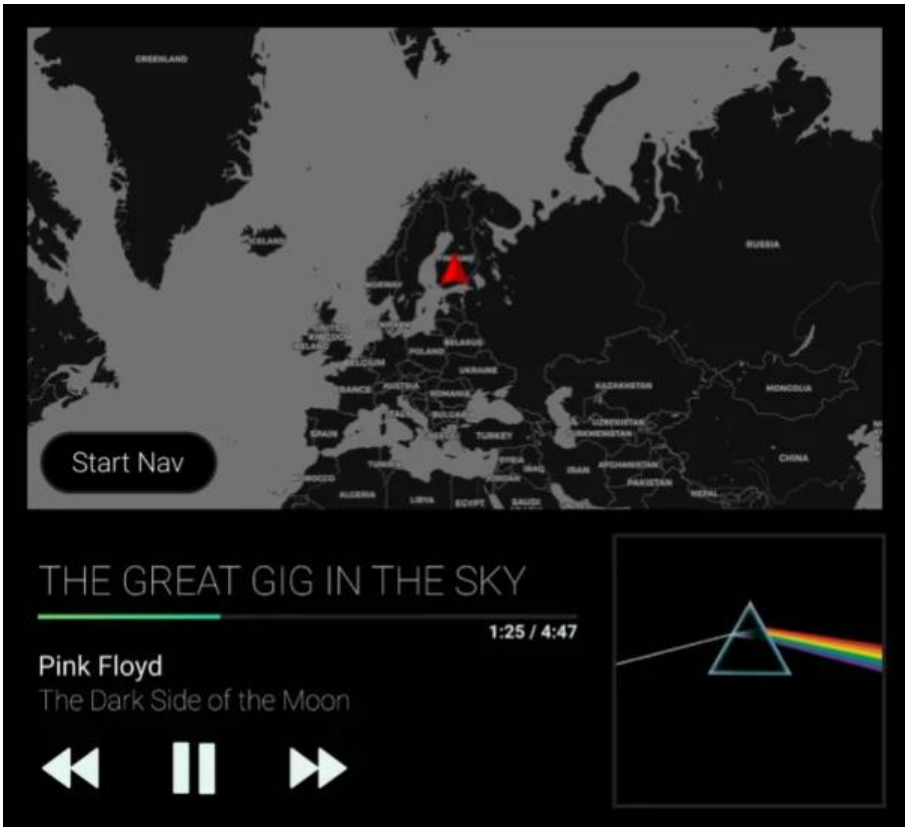


Overheat warning

HV System Warning

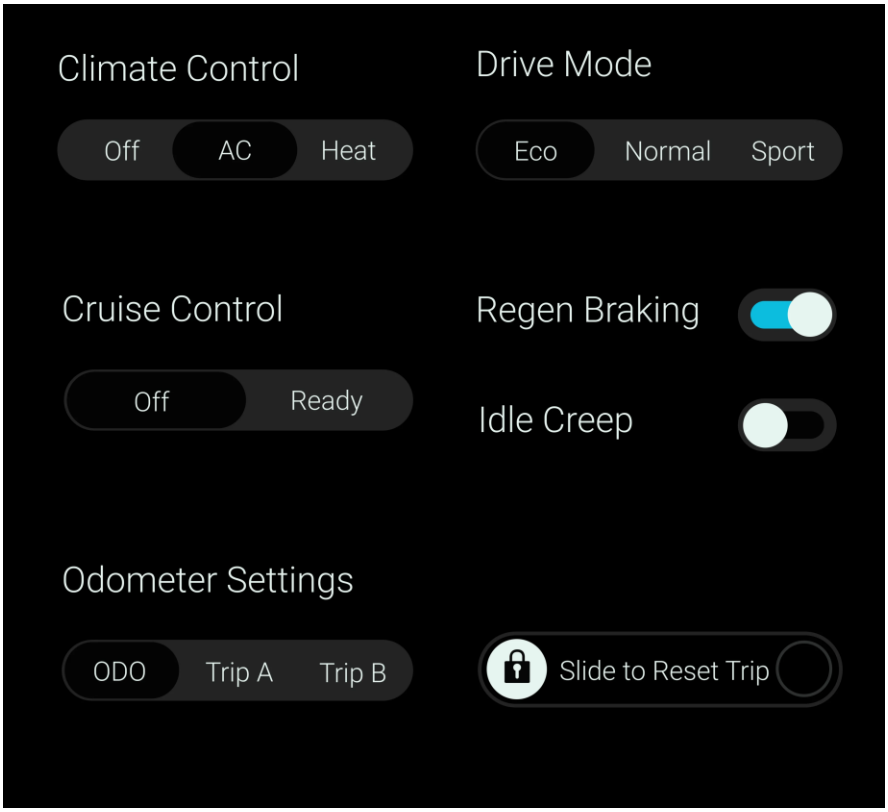
Battery Range Warning

Music/Navigation Page:



The top section is the navigation panel. To use the built in navigation system, tap 'Start Nav' and type in the destination. Once found, the navigation panel will load the directions and give turn by turn guidance.

Vehicle Page:



Cruise Control toggles between 'Off' and 'Ready'. When 'Ready' is selected, the user will then be given a separate button to change Cruise Control from standby to active. Please note that this means that selecting 'Ready' does not make Cruise Control active.

Idle Creep controls whether or not the car will idle forwards when neither the brake nor the gas pedal are pressed. Non-electric cars have idle creep.

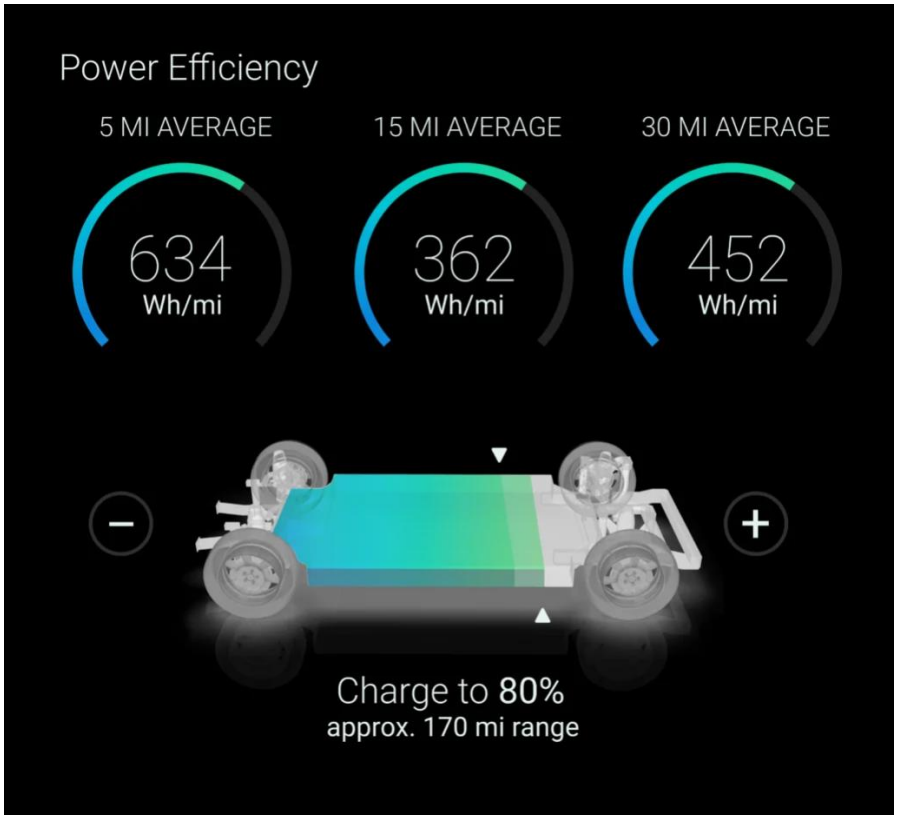
Drive Mode controls the dynamic feel of the vehicle. 'Eco' will extend the car's range at the expense of a lower performance while 'Sport' will increase performance at the cost of a shorter range.

Regen Braking is an on/off toggle controlling whether the car will attempt to regenerate electricity when braking. Note that this will control the rate that the car brakes, so some caution upon initial use is advised.

The Odometer, Trip A, and Trip B are always counting distance traveled. Swapping between them changes which is displayed in the Static Panel. To reset the trip counter, select the trip you would like to reset. Then, slide the locked icon to the circle target on the unlock slider to complete the action. Once the check mark appears, the trip should read as 0 miles on the static panel.

Climate control can be set to 'Off', 'AC', or 'heat' via a multi-choice toggle.

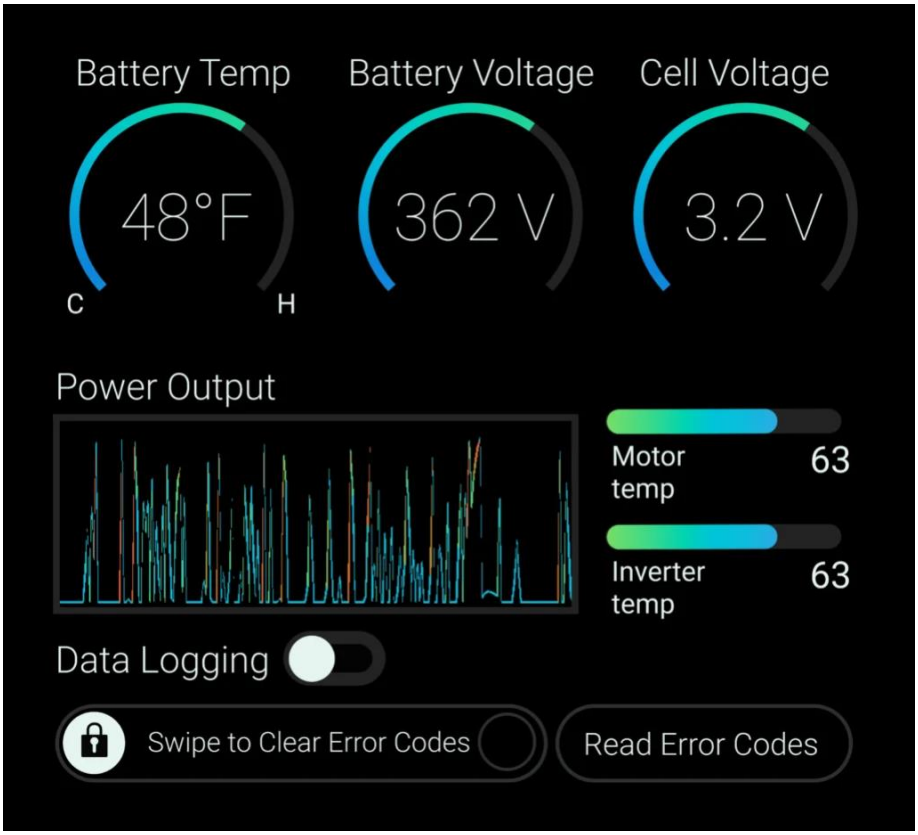
Energy Page:



The three efficiency gauges show the vehicle's power consumption rate over 5, 15, and 30 miles.

The car image shows two separate values of the car battery. The solid, filled in section represented by the indicator above the battery shows the current capacity. The second, translucent section represented by the bottom indicator represents the maximum amount the car battery will be charged to. This is done in increments of 5% and can be controlled by the + and – buttons. The text below gives the specific percentage and an estimated range at that percentage.

Monitoring Page:



The Battery Temp, Battery Voltage, and Cell Voltage gauges allow the user to more carefully monitor these values.

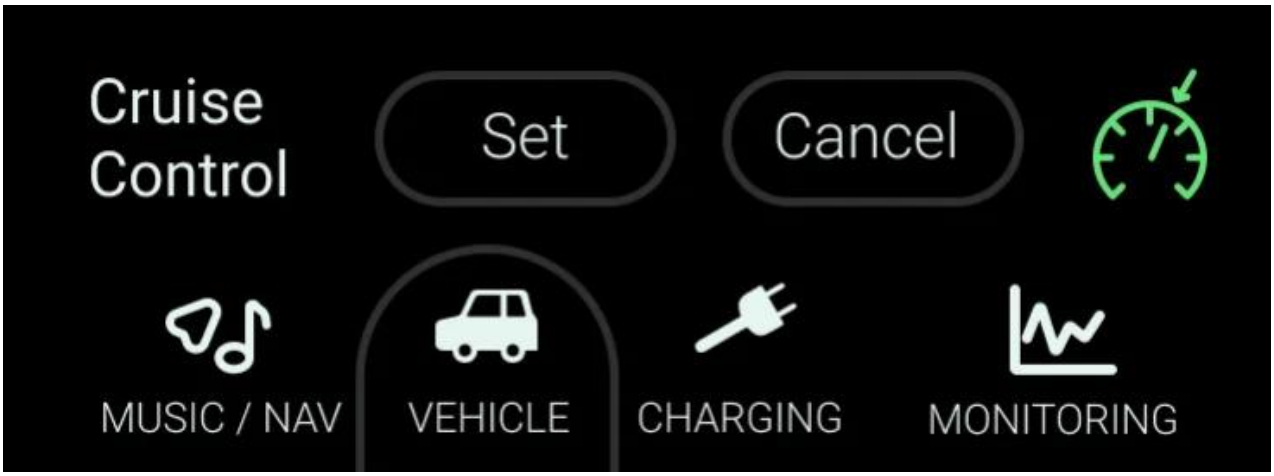
The **Power Output graph** displays the motor torque history over the past 60 seconds in real time.

The **Temperature Bars** display the motor and inverter temperatures.

Data Logging can be toggled on or off via the toggle button. This data logger functionality saves the file on the device and can be accessed via USB or be reviewed on the GUI.

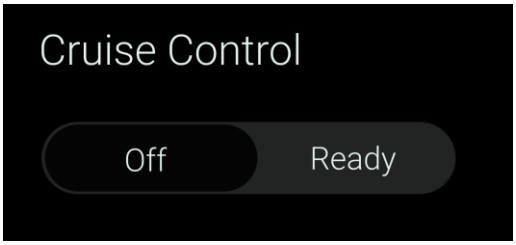
Clearing and reading OBD2 codes is coming to the Atom Drive System at the end of 2023. These buttons are reserved for this purpose.

Cruise Control



Cruise Control is standard on every Atom Drive System, but there are a couple ways in which it can be controlled. The first is through the Ampere EV GUI. The optional method is via the Analog Controls Kit that equips the vehicle with a physical stalk for enabling and using cruise control features.

GUI Control:



The first step in using cruise control via the GUI is to navigate to the Vehicle page and set Cruise Control to “Ready”. This will enable the display of the “Set” and “Cancel” button on the left hand Static Panel. To set your set speed, press the “Set” button while you are driving at that vehicle speed. Cruise control can be cancelled either through the “Cancel” button or by pressing the brake pedal.

Analog Control:

The analog cruise controls function just like those in your standard automobile. To enable cruise control, press the on/off button until the cruise indicator is “On”. You can then press the “Set/Coast” button to set your target vehicle speed.

The analog kit adds the functionalities of Coast, Resume, and Accelerate to the cruise control system. Coast allows you to set the target vehicle speed lower while cruise control is engaged. Resume allows you to return to your previous target speed after cruise control has been disengaged. Accelerate allows you to increase your target speed while cruise control is active.

Air Conditioning

The Ampere EV air conditioning kit is meant to preserve factory AC controls in your vehicle. This means that the electric AC compressor, controlled by the vehicle control unit, operates independently from the factory blower fan. For this reason, the AC will have to be turned on via the GUI (graphical user interface) and the factory blower fan turned on through its own control system. Because the AC compressor can be turned on without the blower fan, the compressor will be off by default each time the car turns on.

Via the optional Analog Controls Kit, AC can also be controlled through a physical toggle switch that functions just like a vehicle's "AC" button.

Cabin Heat

Cabin heat works very similar to the Atom Drive AC system. To enable Cabin Heat, select "Heat" on the HVAC controls of the GUI. Once on, the cabin heat system will heat and flow water through the vehicle's heater core. The blower controls should be operated separately.

Via the optional Analog Controls Kit, Heat can also be controlled through a physical toggle switch.

Revision History

Version	Description of Version/Changes	Updated by	Date
1.0	First pass at assembling all relevant information.	Lawson Sumner	10/2/2023