

PowerCore 30

battery management system



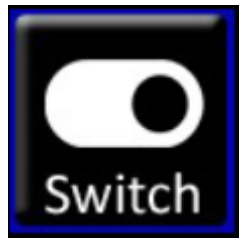
The **PowerCore30** is a feature packed total battery management and automation system developed specifically for 4wd vehicles, RV's and campers. With powerful, compact all in one features, the system will deliver a full continuous 30 Amps of charging power from solar panels, vehicle DC to DC input and AC power. It will manage dual battery systems, disconnect loads when batteries are low, and maintain house batteries during storage. View and control the **PowerCore30** from it's remote touch screen control panel, or download the **PowerCore30** app and connect your smart phone.

FEATURES

- ALL IN ONE compact 30 amp charger
- AC CHARGE - Charge from AC power source 30 amps
- DC_DC CHARGE - Charge from DC - DC vehicle power source 30 amps
- MPPT SOLAR CHARGE - Charge from Solar panel source via MPPT 30 amps
- IGN input for DC - DC SMART Alternator charging
- Automation loads output disconnect on low voltage state
- Dual battery system manager
- Touch screen operation, with full charger control from remote panel
- WIFI connection for app control
- Tank Monitor option to monitor up to 5 x tanks using the FinScan PRS1000 RV tank sensor or 4 x tanks with the RV probe style sensor
- LITHIUM and AGM charge profiles
- RV Automation - switching of up to 8 outputs with resettable fusing , including dimming of lights (Outputs 4 to 8 bank switched)

SWITCHING OPERATION

All switching of lights and 12vDC power circuits (with the exception of the dimming lights) are operated and accessed via the switching icon from the home page



Turning any light or power circuit on and off, is performed via the blue rectangle buttons :



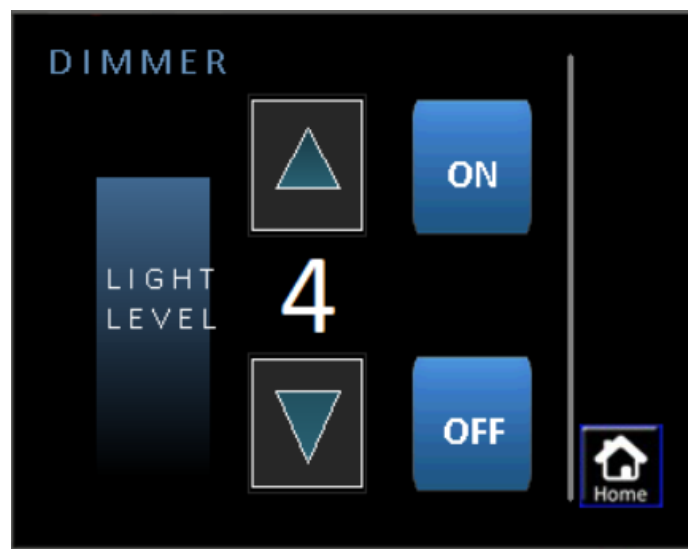
12V POWER BUTTON - Blue indicates the circuit is turned OFF



12 POWER BUTTON - Orange indicates the circuit is turned ON

DIMMING OPERATION

The PowerCORE has a dimming feature and is usually connected to an interior light to allow the operator to set the light level in the living space. Dimming can be accessed using the dimming icon from the home page.



There are 5 levels of light intensity (dimming) available. Level 0 turns off the light, and Level 5 will turn on the light at full brightness.

ON BUTTON - pressing the ON button will set the light level to 5

OFF BUTTON - pressing the OFF button will set the light level to 0

UP ARROW - pressing UP arrow will increase the light intensity by 1

Down Arrow - pressing down arrow will decrease the light intensity by 1

STORAGE MODE

Storage mode is a feature that can be used when a camper or RV is put into storage. To turn storage mode on, press the Storage mode button on the home screen. To Turn storage mode off, press the button again so that it stops flashing.



When storage mode button is pressed on, the Storage mode button will :

1. Begin to flash
2. Automatically turn off all outputs on PowerCORE and any expansion power modules on the system. All power will be turned off.
3. After 5 minutes the system will enter sleep mode where PowerCORE will turn off power to any connected modules to preserve power during storage if there is no input source connected. This will include loss of power to the touch screen. It is important that long term storage will require a power source connected to PowerCORE. PowerCORE power consumption in storage mode is minimal, however, over a long period of time in storage, the battery will eventually be discharged to a damaging state.

IMPORTANT : when the PowerCORE has entered storage mode, any input source connected such as 240v or Sunshine on the solar panels will wake the system, and turn the screen on. With an input source left connected, the screen will remain powered, but remain in storage mode.

LITHIUM BATTERY JUMP START FEATURE

A characteristic of some Lithium batteries, is that they will have their own internal battery management system. When a Lithium battery is excessively discharged, the internal battery management system will disconnect the battery terminals to preserve the battery and protect it from damage.

The PowerCORE has a unique automatic jump start feature built in that will automatically bring back lithium batteries into operation, without external "Jump Starting" required. To engage the LBJ feature, simply connect any power source to PowerCORE and the disconnected Lithium battery will start up and begin taking charge from PowerCORE.

CHARGING OPERATION

The PowerCORE30 battery management system will manage all aspects of keeping your batteries in the best charged state possible. It will automatically select between charge sources available to continue charging. Charging information and battery state are relayed to the touchscreen for viewing.

CHARGE SOURCES

There are three charging sources connected to the PowerCORE. The PowerCORE will provide up to 30 Amps of charge from the selected source.

On the PowerCORE battery page, the selected charge source will be indicated by a flashing white icon. Only one selected source will be selected at any given

moment in time , regardless of availability of multiple sources to the PowerCORE.
All other source icons will be grayed out.



SOLAR source - represents charging from solar panels



VEHICLE source - represents charging from the vehicle alternator



MAINS 240V source - represents charging from the Mains 240v

CHARGE PRIORITY

The PowerCORE is internally programmed to prioritize selection of multiple available charge sources in the following order of priority to enable the fastest charge time possible :



MAINS 240V



VEHICLE



SOLAR

GREEN MODE

In addition to the default charge priority, a "Green Mode" feature is available on the battery page . Green mode will change the charging priority to select Solar as the first priority. This will change the behavior of PowerCORE to always attempt to provide charging from solar power first , if available.



GREEN MODE OFF



GREEN MODE ON

CHARGE MODES

The PowerCORE will charge in 3 modes indicated below :



NO SOURCE - No source icon will appear when there is no charge source available for charging



BULK MODE - bulk mode icon will appear when the charger is charging a relatively discharged battery, and High current is being drawn from the charger.



ABSORPTION - absorption mode icon will appear as the battery becomes more charged and reduces the amount of current that it draws from the charger.



FLOAT - float mode icon will appear when the battery reaches its charged state. Float mode also reduces the output of the charger to a lower voltage of 13.5 volts to maintain the batteries charge, without overcharging the battery for long periods of time.

QUIET MODE

Quiet mode will reduce the speed of the PowerCORE cooling fan. This will reduce noise during operation for situations where PowerCORE is installed in an interior cavity. In extreme cases where ambient air temperature is high, and PowerCORE is operating at full capacity to charge a heavily discharged battery, PowerCORE may over ride Quiet mode temporarily.



QUIET MODE OFF



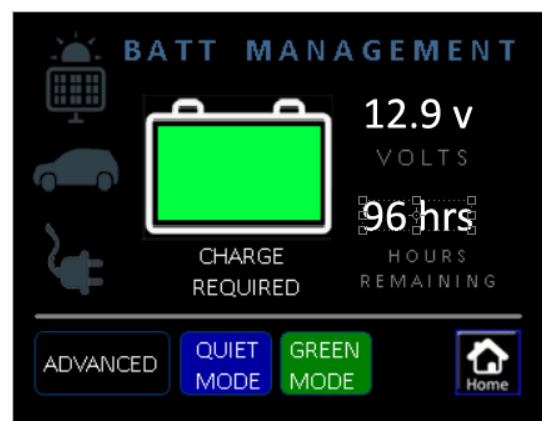
QUIET MODE ON

BATTERY MODE

Battery mode is set when the batteries are installed. The battery mode icon will show either "LITHIUM" or "AGM"

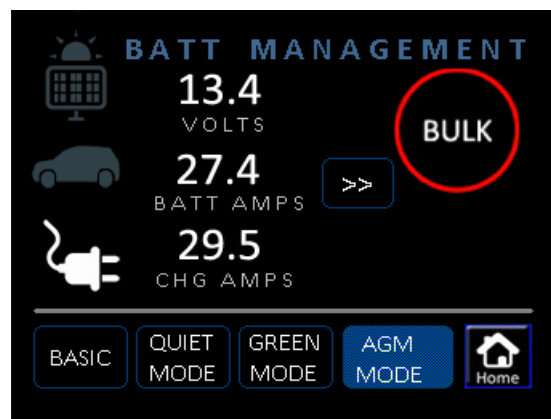
CHARGING DATA

There are two pages available to view for battery data, BASIC and ADVANCED screens.



The BASIC screen will show information that is required to determine the battery state, at a glance. Information presented :

1. Charge source
2. State of Charge
3. Voltage
4. Hours of use remaining



The ADVANCED screen will show more detailed battery data of a more technical nature. Information presented :

1. Charge source
2. State of Charge
3. Voltage
4. Battery Amps - reported by Current Shunt module as NET amps
5. Charger Amps - charging amps output from PowerCORE charger
6. Amp Hours Used
7. Hours of use remaining

ERROR MESSAGES

Error warnings displayed on the battery page will relate to the charging ability of PowerCORE.

LOW VOLTAGE WARNING



LOW VOLTAGE WARNING - The low voltage warning icon will appear when the battery voltage drops below a set threshold. By default the battery low voltage warning will appear when the battery voltage drops below 11.5v . When a charge source is applied and battery charging resumes, the low voltage warning icon will reset when battery voltage exceeds 12.0v.

NOTE : Power outputs will also attempt to turn off when in low voltage state to help preserve the life of the battery.



BATTERY TEMPERATURE - The battery temp warning icon will appear if the battery temperature sensor mounted on the positive terminal of the battery terminal, detects a temperature of greater than 60 degree's Celsius. PowerCORE will stop charging the battery if the battery temperature icon appears. Charging will resume when the battery cools.

NOTE : it is strongly recommended that your batteries be tested if you regularly have the battery temperature icon appear.



OVER TEMPERATURE -

The over temperature icon will appear if PowerCORE has reached a temperature that is too high to continue operating. PowerCORE will stop charging while it cools itself back to an acceptable temperature before resuming charging. The over temperature icon will disappear and charging will resume automatically. The over temperature icon does not represent a faulty state of the charger. Over temperature may occur for many reasons :

1. PowerCORE is installed in a tight sealed cavity with restricted airflow.
2. PowerCORE location has a very warm ambient air temperature.
3. A large battery bank capacity that is heavily discharged and requires an extended period of charging at full charger capacity.



OVER CURRENT -

The over current error message will appear when the Charger battery amps exceeds 35 amps. Over current warnings will usually be caused by an incorrect grounding system.



OVER VOLTAGE -

The over voltage error message will appear when PowerCORE detects that the battery voltage has exceeded 17.8 volts.

PowerCORE cannot supply a voltage greater than 14.4 volts.

TANK MONITORING

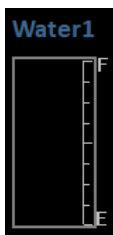
The PowerCORE screen also monitors up to 5 x tanks, Depending on configuration, 2 to 5 tanks may appear.

The tank monitoring page can be accessed by pressing the TANK button from the home screen

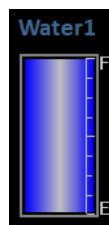


When accessing the tank screen, PowerCORE will apply power to the tank sensors and take a reading to show in the tank gauges. This process can take up to 4 seconds and is designed to preserve valuable battery power when the tanks are not being viewed. Each tank is a bar graph indicating the tank level.

TANK EMPTY



TANK FULL



INVERTER CONTROL (optional)

Some installations will include the FinScan inverter control option. This option allows control and monitoring of third party inverters via the PowerCORE touchscreen . The FinScan inverter option is connected to the inverter via an interface port. The Inverter control button, when enabled is found on the home page of the FinScan screen.

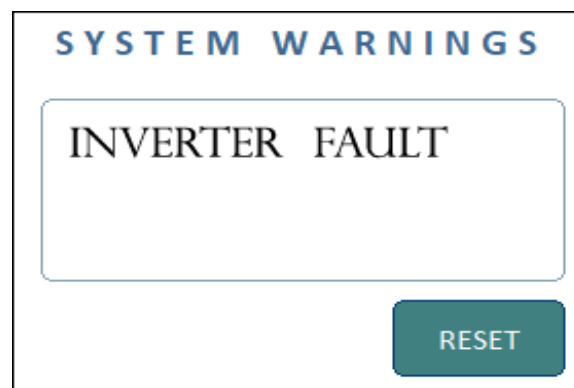


INVERTER OFF



INVERTER ON

In the event an Inverter fault occurs, the FinScan screen will display an Inverter Fault message that will appear if the inverter is reporting that it is in a fault state.



IMPORTANT NOTE : The PowerCORE BMS is NOT the inverter. It only switches the separate inverter on and off, and reports to the screen the Inverter status. If there is an inverter fault, check your inverter manual for operation detail and troubleshooting.

SYSTEM OVERRIDE

In the event of a system failure, there are mechanisms on the PowerCORE system to allow you to bypass the controls and apply emergency power to allow you to continue operating connected DC loads.

POWERCORE OVERRIDE

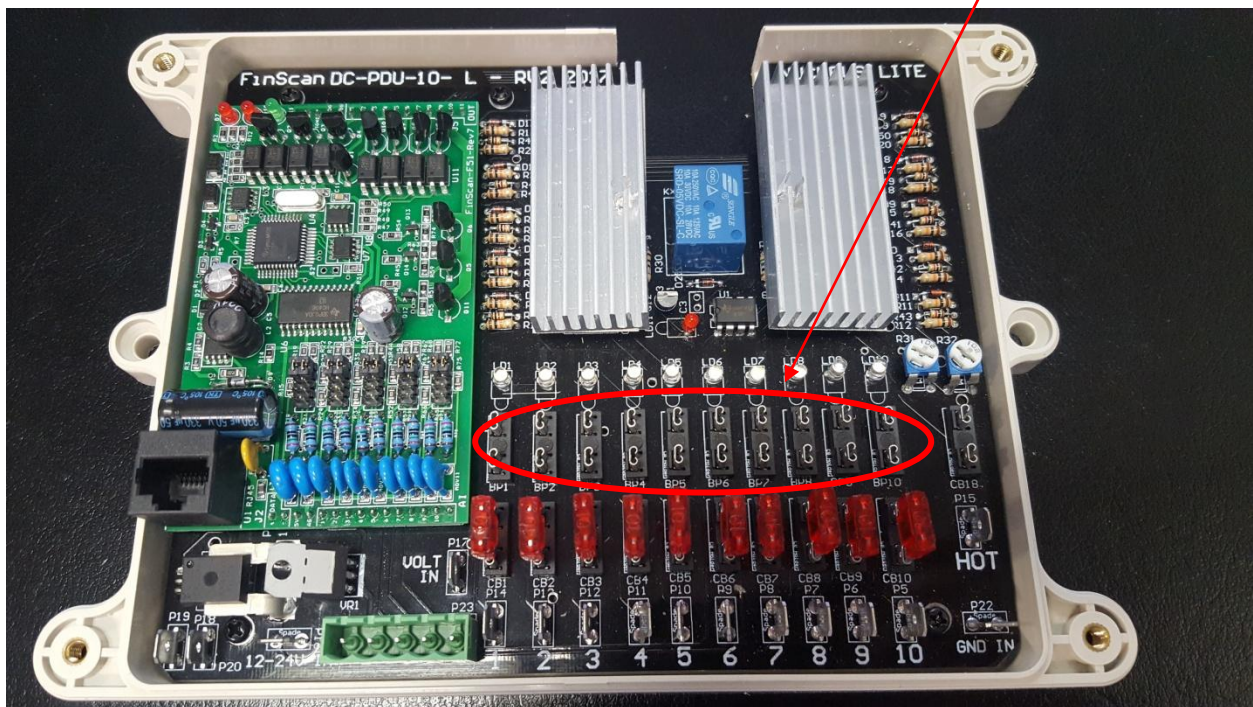
Located at the large green connector end of the charger, press the "Override" toggle switch to the ON position. This will turn on power to all outputs connected to the PowerCORE switching connector.



EXPANSION MODULE OVERRIDE

Located inside the expansion module, unscrew the plastic lid to reveal the fuses located inside. By moving the fuses for each circuit, the expansion module acts as a simple fuse box and applies fuse protected power to the connected DC load for emergency power.

Bypass circuits . Move fuses here
in case of emergency to supply
power to connected DC loads.



SPECIFICATIONS

AC Input voltage range	220 - 240vAC - 50-60Hz	
Output Current	30 amp continuous	
Charge voltage	14.4v	
Float voltage	13.5v	
DC - DC Input voltage	10.5v - 28v DC - Low voltage or low current limitation due to cabling will cause a lower DC DC current output.	
Solar Input	18 - 24v DC current draw will not exceed 500W. Extra solar capacity will not cause damage.	
Cooling	Quiet Thermal / Speed controlled fan	
Over temperature shutdown	Yes	
Operating temperature	-30°C to 50°C	
Short circuit protection	Yes	
Memory store on disconnect	Yes	
USB data logging	Yes - Optional	
Automation Output 1 - digital switching	Lights - with built in dimming - 12A	
Automation Output 2 - digital switching	DC - 10A	
Automation Output 3 - digital switching	DC - 10A	
Automation Output 4 - digital switching	Bank switch Outputs 4 to 8A each	
Automation Outputs protection	Auto reset fuse - internal	
Remote control and monitoring	Yes - WIFI connection via Android or iOS	
Compliance	Safety - IEC60335-2-29 EMC - RCM-5533	