# 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 )

## SAFETY AND WARNINGS

Important information relating to installation and safety are contained in these instructions. Ensure that you have read and understand the instructions before installing and operating the PowerCORE 30 battery management system.

Installation of the PowerCORE 30 should be carried out by a suitably qualified person.

Always ensure that the PowerCORE 30 is installed and operated in a suitably ventilated location. A risk of explosion can occur due to dangerous gases being generated by batteries during normal operation.

A risk of fire can occur if insufficient cabling size and fusing is installed. This is the responsibility of the installer to ensure sufficient cabling size and fusing is installed.

Never attempt to charge batteries that are NON RECHARGEABLE.

Ensure that the batteries being charged, are located in a well ventilated area.

When connecting to mains supply, ensure that national wiring rules for your location or jurisdiction are followed.

## DIMENSIONS

Main Unit



## Touchscreen Main 7"



- NOTE : Allow a further 20mm of depth for connectors to rear of screen
- NOTE : Allow a further 20mm free space to each side of screen to allow for front screw mounting bracket.

## Touchscreen 3.5"



NOTE : Allow a further 20mm free space to each side of screen to allow for front screw mounting bracket.

#### MOUNTING

It is very important to install the PowerCORE30 into a dry, well ventilated area to aid efficient cooling. It is best to create the lowest possible ambient air temperature in the installation location. Installing the PowerCORE30 close to outside walls in tight enclosed cabinets will allow heat absorbed from outer walls to raise the temperature considerably. Continuous raised ambient temperature will de-rate the PowerCORE30 charging ability, and cause the charger to rest regularly. Choosing the correct location will aid charging, and prolong the life of the PowerCORE30. If your mounting location is tight in an enclosed compartment, ambient air temperature will rise very quickly if ventilation is insufficient. It is recommended that a ventilation 60mm hole be located under the PowerCORE 30 at the fan ventilation location to allow heat to be directed out of the compartment.

CRITICAL NOTE : Do not install the PowerCORE30 in an area where fuel fumes or flammable gas may be present. Serious injury or death could occur form fuel vapor explosion.

## **MOUNTING SURFACE**

The mounting surface should be a solid surface that can hold the weight of the PowerCORE30 under extreme conditions of vibration. Ensure PowerCORE 30 is secured with appropriate size screws.

The PowerCORE30 relies on under surface ventilation to allow heat to escape. The base of the PowerCORE30, when mounted, will be 15mm from the mounting surface. This is sufficient space for the cooling fan to extract heat from the PowerCORE30. It is critical not to obstruct the fan area with carpet, felt or similar surfaces that may intrude on the 15mm distance. It is also important to note, air extracted from the PowerCORE30, at times is hot air. Check the mounting surface temperature during the first full charging cycles to ensure the mounting surface will with stand the raised temperatures during Bulk charging.

## WIRING









## **AUTOMATION SWITCHING**

The PowerCORE 30 has 8 x internally auto resetting fused automation outputs that can switch DC loads .

Maximum output of all outputs combined = 80amps

Output 1 = Fused output 12A with dimming Output 2 = Fused output 10A Output 3 = Fused output 10A Output 4A = Fused output 8A Output 4B = Fused output 8A Output 4C = Fused output 8A Output 4D = Fused output 8A Output 4E = Fused output 8A

Each output is internally fused with resettable thermal fuses. No external fusing is required. Output 4 has 5 x individually fused outputs. This output is controlled by 1 x button (on screen) which will turn ON, and OFF together as one bank.

Connect 12v load wires to the "12V Output" terminals

Outputs on the PowerCORE30 built in automation connector, are pluggable, removable screw terminal connectors.





## SETTING UP THE SYSTEM

#### **ENTERING SETUP**



To enter the setup area, press the settings button located on the home page. The screen will prompt for the entry of a password.

The Setup password is : 6640 (ENTER)

#### **MAIN SETUP PAGE**



The main setup page is the entry point for setup of other functions - listed below. The main setup page will allow the removal of functionality from the main operating screens. The "HIDE" will remove the Expansion module buttons, Powercore buttons, battery monitor information or tanks monitoring information in any combination.

#### EXPAN MOD LABELS HIDE

If an expansion module is present on the systems network, then this option should be enabled. Pressing the "HIDE" button will disable the EXPANSION Module on the system. Pressing the "SHOW" button will enable the EXPANSION Module on the system. NOTE : It is important to hide this option if there is no expansion module present, otherwise the system will regularly flash an error whilst attempting to find the nonexistent expansion module.



Pressing an ON button , will enable a particular output button to be visible on the switching page. Generally , and spare or unused outputs are set to OFF.

To enter a label after turning a particular output on, press the black area of a blank label, or the label itself, and small keypad will pop up to enter the label with. Then press enter when the label complete.

## POWERCORE LABELS HIDE

Pressing the "HIDE" button will disable the switching and in turn hide the buttons associated with switching and controlling the PowerCORE built in outputs.

Pressing the "SHOW" button will enable the PowerCORE outputs switching on the system.



Pressing an ON button , will enable a particular output button to be visible on the switching page. Generally , and spare or unused outputs are set to OFF.

To enter a label after turning a particular output on, press the black area of a blank label, or the label itself, and small keypad will pop up to enter the label with. Then press enter when the label complete.

NOTE : OUTPUT 4 is the label for the Master button that turns on 5 x individually fused terminals on the PowerCORE outputs connector.

#### BATTERY MONITOR HIDE

Pressing the "HIDE" button will disable the battery monitoring feature from the system. Pressing the "SHOW" button will enable the battery monitoring feature on the system.



#### LOW VOLTAGE WARNING

When a low voltage warning is triggered, all outputs to the system are switched off and a Caution icon will appear.

The low voltage warning value can be set between :

MIN 9.5 V (Entered in millivolts as 95 default) and MAX 11.9 V (Entered as millivolts 119)

#### LOW VOLTAGE WARNING RESET

When a low voltage warning is active, the voltage will need to be raise over the RESET trigger point for the system to return to normal

The low voltage warning reset value can be set between :

MIN 12.0 V (Entered in millivolts as 120 default) and MAX 13.0 V (Entered as millivolts 130)

#### BATTERY CAPACITY

This setting represents the battery bank size that the PowerCORE30 will be charging. This setting will make all time and amp hour displays proportional to the battery bank size.

MIN 10 AH (Entered in amp hours as 10) and MAX 440 AH (Entered in amp hours as 440)

#### BATT TEMP SENSE

When the battery temp sense button is ON, the system will expect a temperature reading from the SHUNT MODULE Battery temperature sense port. It is always recommended to install the battery temp sensor to a battery terminal.

#### **BATTERY TYPE**

The two battery type options available for PowerCORE is "AGM " or "LITHIUM" . The "AGM" charge profile can be used for AGM , LEAD ACID, CALCIUM batteries.

#### DC DC MODE

THE DC DC MODE button will change the way PowerCORE will behave with respect to the DC DC input supply . The options are :

IGN WIRE - The recommended option to select is " IGN WIRE", where PowerCORE will look for a signal on the IGN input before it will enable and begin DC DC charging. As charge load increases on PowerCORE by a discharged battery, PowerCORE will experience a voltage drop on the DC DC cabling connected to its input terminal. If the voltage drop from vehicle / camper cabling and Anderson connections is too great, and drops below 10.5 volts, PowerCORE will disconnect from the Vehicle DC DC supply as a charge source. If the Vehicle input voltage is between 10.5v and 11v, depending on vehicle cabling size, the full 30 Amps may not be able to be supplied by PowerCORE to the house battery. Ensure all testing of voltages are performed on the input terminal to PowerCORE.

VOLT SENSE - In the event an ignition wire is not available to connect to PowerCORE, this option will look at the DC DC input voltage connected to PowerCORE, and automatically begin charging when a certain threshold is reached, and turn off when the voltage is too low.

DC DC CHARGING ON = 12.7V DC DC CHARGING OFF = 10.5V

IMPORTANT NOTE : It is critical to check your vehicle alternator type. If your vehicle has a smart alternator installed, and VOLT SENSE option is selected, over time it is possible the PowerCORE 30 DC DC circuitry can be damaged by the constant switching on and off under load. In this case, the PowerCORE30 will not be covered under the manufacturers warranty. If you are unsure if your vehicle has a smart alternator, the best option is to install an Ignition wire and select the "IGN WIRE" option.

#### TANK SETTINGS HIDE

Pressing the "HIDE" button will disable the tank monitoring feature from the system. Pressing the "SHOW" button will enable the tank monitoring feature on the system.

The PowerCORE 30 system can display up to 4 x tanks. The tanks can be calibrated to various tank sensor types that can output a 0 to 5V signal. The FinScan PRS - 1000 sensor is supplied pre terminated with the correct RJ12 plug for instant connection.

CALIBRATION procedure :

1. Fill tank to desired FULL level.

2. Read RAW SENSORE LIVE READING value, and enter it into CALIBRATE FULL text box at top of tank in TANK SETUP.

3. Drain tank to desired EMPTY level.

3. Read RAW SENSORE LIVE READING value, and enter it into CALIBRATE EMPTY text box at bottom of tank in TANK SETUP.



**INVERTER MODULE** 



Pressing the ON / OFF button for Inverter will enable the optional inverter module. The optional inverter module will remotely switch particular models of Inverters from on screen. Contact FinScan support for more information on Inverter models supported.

#### DIAGNOSTICS

This Diagnostics button will access a diagnostic page that shows raw data to aid support and trouble shooting.

#### SMART SHUNT

This button is for factory use only .

## **POWERCORE OVERIDE**

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



#### **EXPANSION MODULE OVERIDE**

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.



#### 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