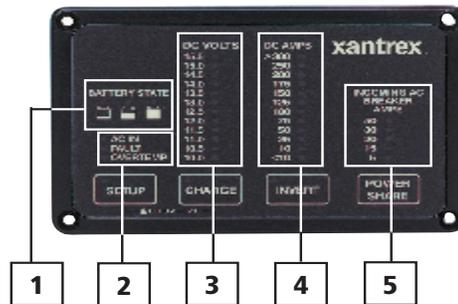


## Freedom 458 Remote Control Panel

### Operation and Set-up

The Freedom Remote Panel provides important information about the status of your Freedom 458 Inverter/Charger system at a convenient location. Easy to read tri-color bar graphs display battery voltage, discharge/charge current, battery state/charge mode, fault conditions and power share settings.



#### 1. Battery State

- ▶ Three tri-colored LEDs indicate approximate state-of-charge for the battery bank in Invert Mode.
- ▶ During Charge Mode, LEDs indicated charge stage: Bulk, Acceptance and Float. (See "Reading the AC In Status Indicator", Page 3)

#### 2. Status Indicators

- ▶ AC IN shows availability of external AC Power to the input of the Freedom 458 Inverter/Charger. (See "Reading the AC In Status Indicator", Page 3)
- ▶ FAULT LED indicates when a fault condition is detected.
- ▶ OVERTEMP indicates when the unit has shutdown due to an over temperature condition. The unit will automatically reset when the unit cools down.

#### 3. DC Volts

- ▶ DC Volts bar graph indicates battery

voltage sensed at the Freedom 458 Inverter/Charger.

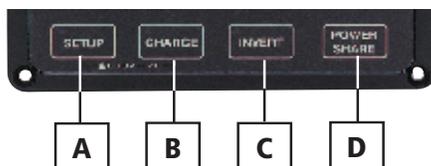
- ▶ Can be used in conjunction with FAULT LED to determine High or Low battery conditions.

#### 4. DC Amps

- ▶ Shows the flow of current in or out of the Inverter/Charger.
- ▶ In Invert Mode the bar graph indicates the flow of current being used by the Inverter to power AC loads.
- ▶ In Charge Mode the bar graph indicates the current being drawn by the battery from the Charger.

#### 5. Incoming AC Breaker Amps

- ▶ Power Sharing limits the amount of external AC current used by the charger. Also works to reduce the Chargers output Amperage.



#### A. Setup

- ▶ Push and hold SETUP to access advanced features such as Amp Hour setting, Idle Mode and Battery Type settings. (See "Reading the AC In Status Indicator", Page 3)

#### B and C. Charge and Invert

- ▶ Independent control of the Inverter and Charger.

#### D. Power Share

- ▶ Push to set Incoming AC Breaker Amps to limit the amount of external AC current used by the charger.

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# Freedom 458 Remote Control Panel

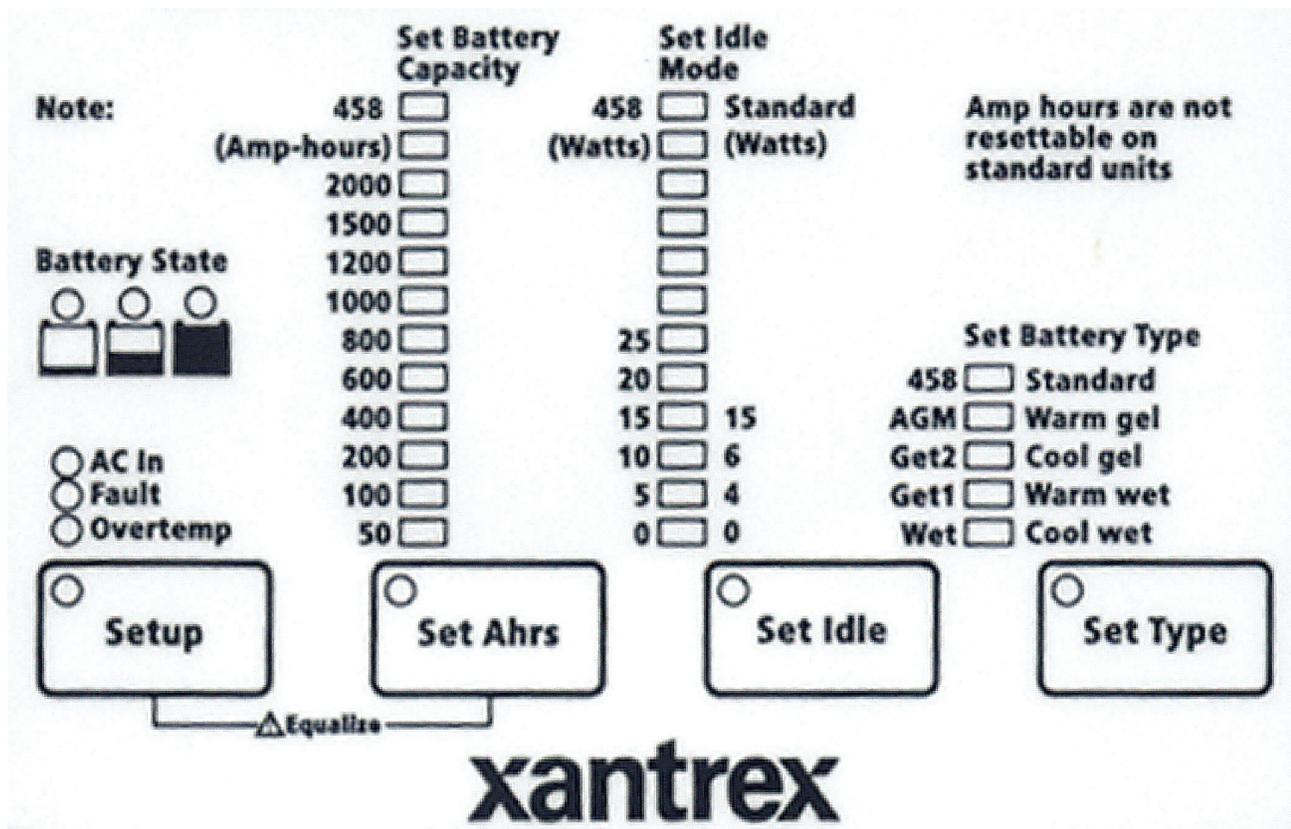
## Operation and Set-up

### Setting Up Your Inverter/Charger

- ▶ Use the Freedom Remote with your Freedom Inverter/Charger system. All functions are programmable from the Freedom Inverter/Charger front panel and advanced features allow special set-up to meet your particular battery bank size requirements.
- ▶ The Freedom Remote can be set for one of four different battery types including wet, gel 1, gel 2, and AGM gel types.
- ▶ Press and hold SETUP until it blinks.

### Set-up Default Values

**Note:** As seen on the back of the Freedom 458 Remote Control Panel:

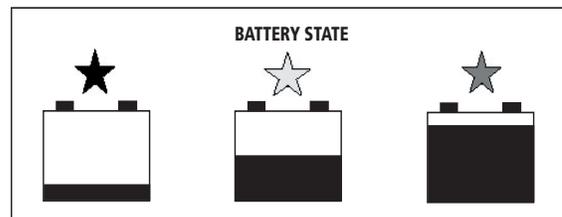


- ▶ **Set-up Amp Hours:** Set to battery bank Amp Hour capacity
- ▶ **Set Idle:** RV applications recommend 0
- ▶ **Battery Type:** Set to Battery Type

# Freedom 458 Remote Control Panel

## Operation and Set-up

### Reading the Battery State LEDs



- ▶ **Inverter Mode:** Lowest State. Voltage is low and charging the batteries is recommended.
- ▶ **Charge Mode:** Indicates charger is in Bulk charge stage.



- ▶ **Inverter Mode:** Middle State. Battery is in normal range.
- ▶ **Charge Mode:** Indicates charger has reached Acceptance stage.



- ▶ **Inverter Mode:** Highest State. Battery voltage is at its highest and the battery is fully charged.
- ▶ **Charge Mode:** Indicates Float stage has been reached.

### Reading the AC IN Status Indicator

- ▶ **Charge Mode:** Indicated by the AC IN status indicator LED being illuminated and shorepower connected or generator will be running.
- ▶ **Inverter Mode:** Indicated by the AC IN status indicator LED *not* being illuminated. Battery power is being consumed.

# Freedom 458 Remote Control Panel

## Operation and Set-up

### Operating your Remote Control

This remote panel is used in conjunction with the Freedom series of inverter/chargers to control and monitor the operation of the unit. The Freedom unit is both a DC and AC inverter, and a 12 volt DC battery charger, so the panel will report different measurements depending on which mode the unit is in. The remote is really two different panels; when charging it is a charger display panel, and when inverting it is a battery monitor and inverter display.

When the motorhome has AC power available to the inverter/charger, either from shorepower or from a generator, the Freedom unit becomes a 3-stage battery charger and allows the circuits on the inverter to be powered from the AC source (AC pass through). When this situation exists the AC IN light will be on and the CHARGE light will be lit. This happens automatically when an AC source becomes available (hooking up to shorepower for example). At this time the Freedom remote panel becomes a charge indication panel. The battery state indicates which stage of charge the unit is in. The first indicator is for **Bulk** charge which provides 75-80% of the charge needed and requires a large amp draw as it raises the battery voltage. The middle indicator shows the charger in the second stage which is **Absorption**, charging the battery bank the rest of the way at a constant high voltage and allowing the amp draw to decrease through the cycle. The last indicator shows that the charger is in **Float** state, and that the batteries are full and being held at 13.5 volts with a 3 amp charge rate. Whenever the charger light is on, the DC volt indicators will show charger output voltage, and the DC amps will show how many amps the charger is putting out. The charger will also handle any DC loads that are required, thus keeping the batteries fully charged.

When the unit is in inverter mode the remote will display the battery voltage, amperage draw from the batteries, and the battery state. To fully understand the readings from the panel, you need to know that the lights for volts and amps are lit when that number is reached and are not approximate. Example, the 12.5 volt light indicates that the voltage is a minimum of 12.5 and a maximum of 12.9. The 13.0 volt light will not come on unless there is a minimum of 13 volts. The same is true with DC amps which show the amount of amps being drawn from the batteries at that moment. The battery state lights provide basic information as to the capacity of usable power in the battery bank. The first battery depiction is of a 1/4 full battery and is indicated with a red light, telling the user that charging will be required soon. The middle battery indicator signifies that you are in normal operating range, while the third depiction shows the batteries to be fully charged. When a heavy load is applied to the inverter, the battery state will drop as will the DC voltage. Depending on how long the load is on, those readings may rise after the load is turned off. The indicated battery state will change as DC voltage drops.

Set-up should only have to be changed if there is a change in the system, such as changing the type of batteries. **Equalization** of batteries should take place annually or, under heavier usage, every 30 full charge and discharge cycles. **Power Share** is used to limit the amount of power the charger and the circuits on the inverter can use. Moving the Power Share down will prevent the tripping of shore power breakers. This has no effect while in inverter mode, only when AC is present.