

Export Model:

The export model has power share levels of 2.5, 7.5, 10, 15, and 25 Amps. The following table shows the effective power share if a Freedom Combi™ Inverter/Charger with a serial number less than 100,000 is used.

REMOTE POWER SHARE	POWER SHARE USED BY FREEDOM	
	MODEL:	FILE
	SN	≤ 70746
25		NA
15		30
10		20
7.5		15
2.5		5

Specifications:

Models: 84-2056-00: Control Panel w/no data cable
 84-2056-01: Control Panel w/25' data cable
 84-2056-02: Control Panel w/50' data cable

Size: 5.75" (L) X 3.75" (W) X 0.93" (D)

Cutout Size: 4.875" (W) X 2.875" (H)

Environmental: Water: splash resistant
 Operating temperature range: 0-70 C

Weight: 3 Oz.

Power: Power for the Remote Control Panel is supplied by the Freedom Combi Inverter/Charger.

WARRANTY

Your Heart Interface Freedom Remote Control Panel is under limited warranty for 30 months from date of purchase.

Terms of this warranty are detailed on the warranty registration card. Please complete this card and return it to Heart Interface to register your warranty.

If the unit requires service, contact Heart Interface by telephone. The service technician will ask you for the serial number of your unit. Please have this information ready.


A return authorization number will be required on all returns. This number is issued by the service technician and should be written on the outside of the package and all documentation included with the unit.

You must ship the unit to Heart Interface or a field service center freight prepaid.

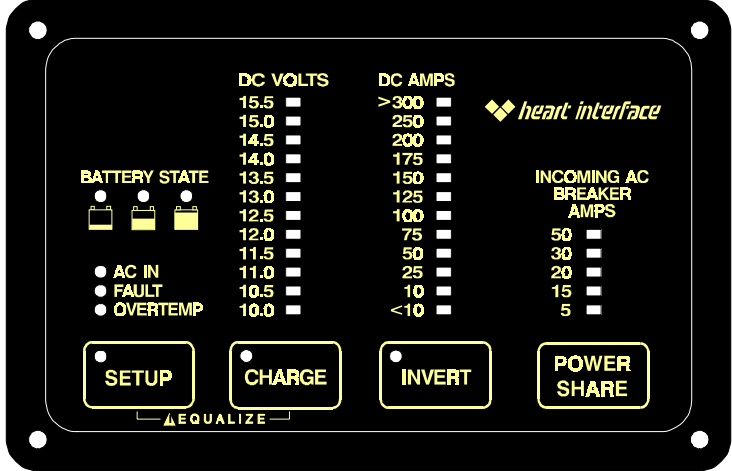
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Remote Control Panel



- Control your Freedom, Freedom 458 Series and Freedom Marine Series Combi™ Inverter/Charger
- DC system monitoring of DC Volts, Battery Charger output current, Inverter input current, Battery State and Power Share
- Additional features on Freedom 458 and Marine Series include Battery Capacity, Type and Idle Mode settings
- Easy to install

Manual Contents:

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A Valley Forge Company

Part Number 890039 5/98

Introduction:







Congratulations! You have purchased a powerful electronic instrument. In order to understand, use, and install it, **PLEASE** read this manual. Henceforth in this manual, "Freedom" will refer to the Freedom Combi_{TM} Inverter/Charger while "458" or "458 Series" will refer to both the Freedom 458 Series Combi_{TM} Inverter/Charger and the Freedom Marine Series Combi_{TM} Inverter/Charger.

Installation:

During installation of the Freedom, the Freedom Inverter/Charger may have power applied to it. If using a 458 Series, the AUXILIARY SWITCH on the inverter must be in the Off position. Refer to the owner's manual for position details. The FreedomRemote may be mounted up to 50 feet from the Freedom Inverter/Charger. Cut a hole in an appropriate location using the mounting template supplied. Route the data cable from the remote to the inverter. Routing the data cable away from AC and DC wires will minimize the potential for interference. Plug the data cable into the Freedom Remote and the Freedom Inverter/Charger. Secure the Remote Control Panel using the supplied screws.

Power Up Indications and Default Values:

When power is first applied to the remote, there is a delay of up to 4 seconds, while the remote and the Freedom Inverter/Charger establish communications.

LED	Indication	Meaning
BATTERY STATE		Assumed battery state (will take approx. 15 min. to reflect actual value)
 AC IN	On	If external AC Power is available
 FAULT	Off	If operation is normal
 OVERTEMP	Off	If operation is normal
 CHARGE	On	Freedom charging
 INVERT	Off	Invert function Off

Normal Operation Indications:

The Freedom Remote shows AC IN (status), DC VOLTS, DC AMPS (charger or inverter current), and INCOMING AC BREAKER AMPS setting plus CHARGE, INVERT and BATTERY STATE. The display is updated once per second.

Normal Operation Mode - Controls:

The remote comes On automatically when the Freedom Inverter/Charger is connected to a charged battery or external AC power. The following buttons are used:

LED Indication	Fault LED	Error Detected	Possible Solution
OVERTEMP On	Off	Over temperature shutdown.	Increase air circulation and allow to cool.
BATTERY STATE Empty blinking	On	Low Battery Shutdown. (too low to continue inverting)	Charge Batteries.
Empty On	On	Battery Overload. (excessive ripple voltage during charge)	Select lowest Power Share setting. Turn off DC Loads. Restart Charger.
15.5 VDC blinking (31.0 VDC in 24V system)	On	High battery shutdown.	Check other charging sources connected to the battery.
AC IN blinking	On	AC Backfeed. (external AC power detected at inverter output)	Disconnect Incoming AC power and correct wiring.
INVERT blinking	On	Inverter overload. (too much AC load on inverter)	Reduce AC load on inverter. Reset by pressing INVERT Off and On.
CHARGE blinking	On	Charger overload. (Battery voltage too low to charge)	Check batteries. Turn Off all DC loads. Restart charger.

NOTE: For error conditions not shown above, disconnect Freedom Remote for 30 seconds. If condition persists, disconnect incoming AC power from Inverter Charger and remove positive battery lead for 30 seconds.

Equalize Procedure:

EQUALIZE mode must be started manually. To begin equalizing, enter **SETUP** mode, then hold both **SETUP** and **CHARGE** until the BATTERY STATE LEDs start blinking.

Equalizing should only be engaged after the batteries have been fully charged by the normal battery charging cycle. The Equalizing charge cycle lasts approximately 8 hours. The Equalize charge cycle can be terminated at any time by interrupting the external AC power to the charger or by pressing **CHARGE**. The unit will return to normal display and operation after the completion of the Equalize cycle.

How often should you equalize? It is recommended that after 30 deep cycles or every 6 - 8 months the batteries should be equalized. Check with the battery manufacturer for specific battery requirements.

Battery State LEDs:

The BATTERY STATE LEDs indicate the approximate state of the battery bank. It is based on the battery voltage sampled over a period of time under the present load conditions. The battery state does not represent the actual Amp-hour capacity remaining in the battery.



Lowest State: Voltage is low. Charging is recommended. In charge mode, indicates Charge.



Middle State: Battery is in normal range. In charge mode, indicates Acceptance.



Highest State: Battery voltage is at its highest and the battery is charged. In charge mode, indicates Float.

Note: Depending on battery size and condition, loads connected to the battery may affect the battery voltage and the BATTERY STATE display.

Error Indications:

The FAULT LED indicates a possible error has been detected and the Freedom Inverter/Charger has shut down to protect itself and the electrical system. The source of the error must be corrected before restarting the Freedom's inverter or charger functions. However, an OVERTEMP error will reset automatically, and operation will resume, when the unit has cooled sufficiently. Refer to the table on page 7 for troubleshooting.



Blinking indicates SETUP mode. SETUP is explained on page 4.



When the CHARGE LED is On (solid green), the Battery Charger is ON and charging. When the LED is Off, the charger is Off. Charging automatically begins when external AC power is detected.



When the INVERT LED is On (solid green), the Freedom Inverter is inverting (making AC power from the DC battery source). When the INVERT LED is Off, the inverter is Off.

When external AC power is present (AC IN LED On) and the INVERT LED is blinking green, the inverter is in standby, waiting for external AC power to be removed to begin inverting. When there is no external AC power, a blinking green LED indicates the inverter is in the Idle Mode. Idle mode is explained in detail in the SETUP section.



POWER SHARE limits the amount of external AC current used by the charger. If the total AC load is larger than the AC power available, the external AC circuit breakers may trip. Reduce the POWER SHARE setting to reduce AC power consumption by the charger and transfer loads thus reducing the total AC load.

Before you plug in to an external AC source, note the breaker size. Press POWER SHARE until the appropriate "INCOMING AC BREAKER" LED is On. For example, plug in to a 15 Ampere external AC power source, press POWER SHARE until the 15 Amp "INCOMING AC BREAKER" LED is On.

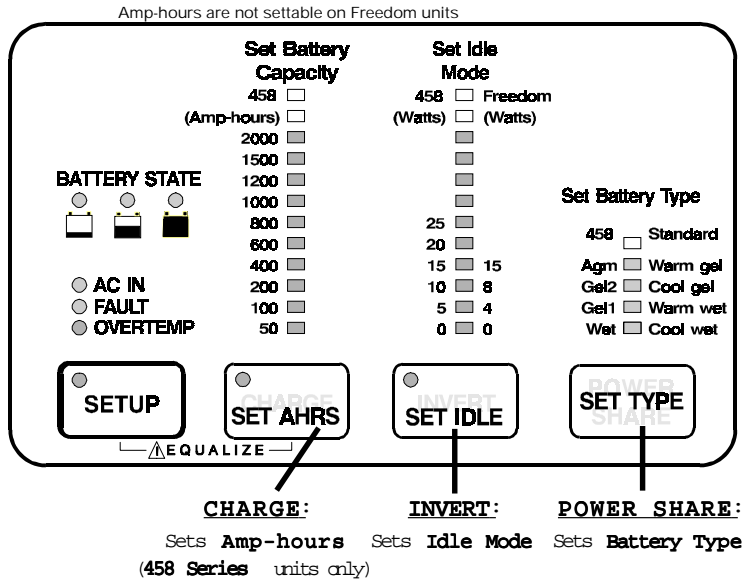
Setting the POWER SHARE feature to a lower "INCOMING AC BREAKER" size may limit charger output. Available POWER SHARE settings may vary by inverter/charger model.

Only the settings that the Freedom Inverter Charger supports are allowed. The following table shows the effective power share if a Freedom Combi_{TM} Inverter Charger with a serial number that is less than 100,000 is used.

REMOTE POWER SHARE	POWER SHARE USED BY FREEDOM				
	MODEL: SN	F10 ≤ 100,000	F20 ≤ 70699	F25 ≤ 70801	F25 ≥ 70802
50		NA	NA	OFF	OFF
30		30	30	NA	NA
20		20	20	50	30
15		15	15	30	20
5		10	10	20	5

Set Up Mode:

Enter the SETUP mode by pressing and holding **SETUP** for 5 seconds until the LED blinks. The Freedom Remote is connected to a 458 Series if at least one DC VOLTS LED is On. After 5 seconds of no activity, the Freedom Remote automatically exits from the SETUP mode. Use the Freedom Remote buttons to select SETUP features. Refer to the following template:



SET AHRS

Battery Capacity (Amp-Hours)

Applies only to 458 Series

Using CHARGE, set the Amp-Hour rating of the battery bank. The Freedom **458 Series** inverter/charger uses this information to determine the charge parameters for the battery. Default setting: Varies.

SET IDLE

Idle Load (Watts)

Changing this setting is not normally recommended.

Using INVERT, select Idle setting. If present inverter loads are less than the selected value, the inverter will remain in Idle Mode. Idle mode prevents unnecessary power drain on the battery. When an AC appliance is turned On and the load draw exceeds the idle value, the unit begins full power inverting. When the appliance is turned Off, the inverter returns automatically to Idle mode. A setting of "0" disables Idle Mode.

Default setting: Freedom - 4 Watts, **458 Series** - 5 Watts.

SET TYPE

Battery Type

This setting is important. Check your settings.

Using POWER SHARE, set the Battery Type. The charger uses this information to set charging values for the 3 stage automatic charger. Be sure to set the correct type.

Default: Freedom - Cool (<80 °F) Wet cell, **458 Series** - Wet cell

Setting the Battery Type correctly is important.

458 Series selections: Wet, Gel 1, Gel 2 or AGM.

Freedom the following selections apply:

Cool Wet Cell: < 80 ° F.
 Warm Wet Cell: > 80 ° F.
 Cool Gel Cell: < 80 ° F.
 Warm Gel Cell: > 80 ° F.

Low Power Mode:

When no external AC power is available, the remote panel LED's can be turned Off to conserve battery power. Turning off the INVERT function (with external AC absent) activates the low power mode.

In this mode, if one of the front panel keys is pressed, the display will become active. Press **SETUP**, **CHARGE**, or **POWER SHARE** and the unit will display data for a short period of time, then return to the Low Power Mode. If **INVERT** is pressed, the selected function is activated and Low Power Mode is cancelled.

Equalizing Charge Mode:

The Freedom Remote has a special charging mode that improves the condition of wet cell batteries. Equalizing helps maintain battery capacity and extends life by deliberately overcharging batteries for a short period of time. Do not equalize gel cell batteries.

CAUTION: Equalizing may cause the DC system voltage to exceed 16 volts. Be sure to disconnect any equipment not rated for this voltage. Equalizing causes the battery to release hydrogen from your battery and may reach explosive concentrations in a closed environment. Make sure the battery area is well ventilated. Do not smoke or operate spark causing devices in the vicinity of batteries being equalized.