



DIAMONDPOWER
s y s t e m s

Operation And Service Manual

MODEL No. DPS6500





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SAFETY ALERTS

Throughout this manual, you will see notes labeled “Warnings” or “Cautions” to alert you to special instructions or precautions concerning a particular procedure that would be hazardous if performed incorrectly or carelessly.

Observe them carefully!

These safety alerts alone cannot eliminate hazards that can occur. Strict compliance with these special instructions when performing the installation and maintenance, plus common sense, are major accident prevention measures.



DANGER: Immediate hazards that will result in severe personal injury or death



WARNING: Hazards or unsafe practices that could result in severe personal injury or death



CAUTION: Hazards or unsafe practices that could result in minor injury or product or property damage.



NOTE: Information that is important to proper installation or maintenance, but is not hazard-related.

For example:



DANGER: A certified refrigeration technician must charge and test the HVAC.



EXHAUST – Inhalation of exhaust gas (containing carbon monoxide) may cause severe personal injury and/or death. Anyone suspected of suffering from CO inhalation should be removed from the hazardous area and be given medical assistance immediately.



WARNING – California Proposition 65 Warning: This product contains lead, a chemical known to the state of California to cause cancer and birth defects and other reproductive harm.

FUEL/BATTERIES: Extreme caution is needed when working near fuel or fuel-filled equipment. Do not operate equipment during fueling operations. Use eye protection when working near batteries, which contain acid and can explode. Do not smoke or use near open flames.

ELECTRICAL: Electric Shock can cause severe personal injury, burns, and even death. Before working on any unit, disconnect the batteries. Use only approved materials and methods when working on the electrical system, and follow local electrical codes. Never work on the APU or the electrical circuitry when the APU is running. Never work with electricity in wet conditions or when you are tired.

INTOXICANTS: Fuel, oil, coolant, and refrigerant are toxic and in some cases, carcinogenic. Wear eye and hand protection at all times. Remove contaminated clothing immediately and wash contaminated skin. Do not breathe in vapors.

HOT OR MOVING PARTS: Moving part can cause severe injury and/or death. Before working on any unit, shut it off and disconnect the battery. Do not start until protective covers have been replaced. Also, loose parts falling into rotating machinery can cause severe accidents. Always ensure bolts and clamps are correctly torque and secured. Inspect mechanical components periodically for damage, corrosion, and proper torque.

MISUSE: The APU is designed to provide electrical power for heating and cooling vehicles in normal on-road conditions. Never use the APU to power critical medical equipment or sensitive electronic equipment without the manufacturer's written approval.

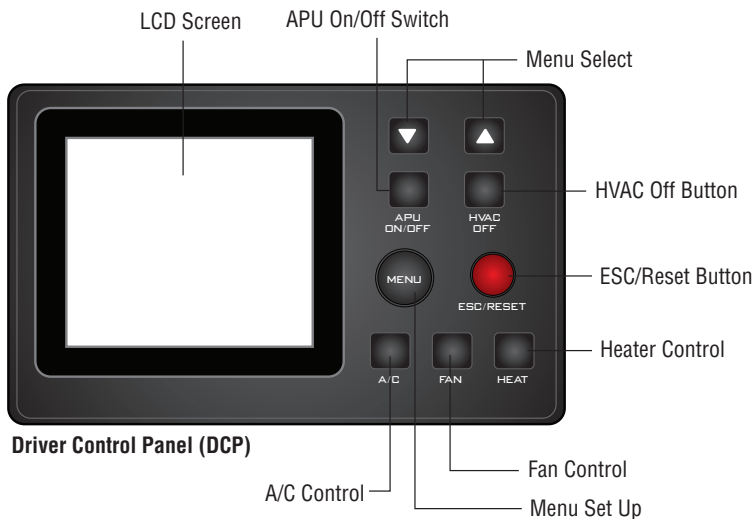


OPERATION OF MULTI-FUNCTION DRIVER CONTROL PANEL

1.1 STATUS CODES AND SIGNS

1.1.1 Multi-function Driver Control Panel Components

- HEAT/SUN (2) sign - When heat is visible, the heating system is heating on high power mode.
- HEAT/SUN (1) sign - When heat is visible, the heating system is heating on low power mode.
- SNOW FLAKE sign - When cool is visible, the A/C is cooling.
- FINGER/TEMP sign – Temperature set-up indicator.
- THERMOMETER = Indicates cab temperature.
- RPM sign – Indicates running APU engine RPM's (revolutions per minute).
- “FanH” sign – Indicates the fan speed is on high speed mode.
- “WIND” sign – Indicates the fan speed is on medium speed mode.
- “FanL” sign – Indicates the fan speed is on low power mode.
- “WT” sign – Indicates the water temperature.



STATUS CODES AND SIGNS

| | | | |
|------|------------------|------|---------------|
| | AC | FanL | Fan Speed/Low |
| | Heat/Low | | Cab Temp. |
| | Heat/High | WT | Water Temp. |
| 18°C | Temp/Set Up | rpm | Engine RPM |
| FanH | Fan Speed/High | | |
| | Fan Speed/Medium | | |



HOW THE DIAMOND POWER OPERATES

The Diamond Power has two adjustments for operation: Manual and Automatic.

Manual Mode

You start the APU from within the truck bunk using the APU button on the driver control panel (DCP). Once the APU is running, you can start and stop the fan, heater air conditioning using the DCP.

Once the heater or A/C is running, it will cycle (automatically turn on and off) in order to keep the truck bunk at the temperature you specify. The HVAC will continue to cycle until you turn it off. While the HVAC is cycling, the APU remains on and will only turn off when you manually turn it off using the button on the DCP. (Described Below), The APU automatically turns OFF and ON as required. When the APU is running, power is supplied to the power outlet in the truck bunk (except in high heat). In manual mode, the APU will turn off automatically if the Maximum Run Time is reached.

Automatic Mode

The Diamond Power has several functions that will start it in automatic mode.

FEATURE & DESCRIPTION

Comfort Monitor: The APU and HVAC automatically turn on to maintain a comfortable temperature in the truck bunk. When the desired temperature is met, the APU and HVAC automatically turn off. When the temperature is again out of range, they will both turn on again, and cycle heat air conditioning as needed.

Timer: At the specified time, the APU and HVAC automatically turn on. During the specified timer duration, the HVAC cycles on and off to maintain the desired temperature. If the temperature is again out of range, they will both turn on again, and cycle heat and air conditioning as needed. Cold

Temperature Operation: The APU and heater on the HVAC automatically turn on in order to prevent the APU engine and truck engine from getting too cold. (Turning on the heater creates a “load” that makes the APU work harder and therefore warm up faster). Both the APU and HVAC turn off automatically once the preset duration time expires.

Battery Monitor: The APU automatically turns on for 90 minutes in order to recharge the batteries. The HVAC does not turn on. After the 90 minute run time, the system will sense voltage for 10 minutes, before restarting if needed.

There are indicators on the DCP that flash when the APU and HVAC are running. If you enter the truck bunk and APU or HVAC is on but you did not start it, you can assume it has started in one of the automatic modes, as described above. On the DCP, one icon will be flashing steadily: this is the icon for the mode that is currently operating.

Whenever the Diamond Power is running in automatic mode, if you then press the heat, A/C or fan buttons on the DCP, the Diamond Power will switch to manual mode. The APU will not automatically turn off! This icon on the DCP will also stop flashing.



Automatic Operation and Minimum Time Off

All these automatic functions work on a “minimum time off”: the Diamond Power must be off for at least 10 minutes before the automatic function will turn it on again. For example, the Timer function may be set to turn on the Diamond Power at 10:00 a.m. You have been running the Diamond Power in manual mode. You turn off the Diamond Power at 9:55 a.m. The Timer will only turn on the Diamond Power again 10 minutes later, at 10:05 a.m.

Clock

In order to use the Timer correctly, you must set the DCP clock.

Maximum Run Time

You can set the maximum time that the APU is allowed to continuously run in manual mode.

MANUAL OPERATIONS

1.2.1 Starting the APU “One Touch Start”

Press and hold then release the  switch once.

The display shows “APU starting”. When  stops flashing, then the APU has started successfully.

The APU startup sequence consists of 20 seconds of glowing and up to 10 seconds of cranking.

If the sequence fails, “restarting” appears for six seconds. Then the startup sequence automatically repeats up to five times. Or until the APU starts.

If “crank limit” appears, see troubleshooting section appears.

1.2.2 Stopping the APU


Press .

The APU will stop. The display shows “APU OFF”.

1.2.3 Turning the Heater ON/OFF

1.2.5 Press  to activate the heater.

The display shows “heat low”.

The heater will turn on only if the temperature is too low (to adjust the temperature, see below). When the heater is on,  appears.





Press  again to switch between high and low heat to heat the truck bunk more or less quickly. In “heat high” mode, the power outlet is disabled.

The heat or A/C will turn off when the specified temperature is reached.



Press  to deactivate heating.

1.2.4 Heating: Setting the Temperature

Press  or  when the heater is on (“heat low” or “heat high” shows).

The notch on the temperature bar moves. The heater will automatically turn on and off to maintain this temperature.

1.2.6 Turning the A/C ON and OFF



Press  to activate the A/C.

The display shows “A/C low”.

The A/C will turn on only if the temperature is too high.





Press  again to switch between high and low A/C to cool the truck bunk more or less quickly.



Press  to deactivate the A/C.

1.2.6 A/C Setting the Temperature

Press  or  when the A/C is on (“A/C low” or “A/C high” shows)

The notch on the temperature bar moves. The A/C will automatically turn on and off to maintain this temperature.

1.2.7 Fan Operation

You can still have the fan working even when the temperature is not low or high enough for the heat or A/C to come on.

The fan operation is independent of the air conditioning and heat modes. When the fan speed is manually set to high or low, the fan will return to that setting when the desired temperature has been reached as the air conditioning or heat cycles off.



Press  to toggle between low, high and off.

The speed of the fan may automatically change when the heat or A/C comes on, then automatically change back when the heat or A/C goes off.



AUTOMATIC OPERATIONS

1.3.1 Password Protection

You can reset a password to the DCP, the you can protect one or more functions so that only a person who knows the password can set the function.

On a newly installed DCP, the password is always 9999, which means that no password protection is in place.

To password-protect functions, first change the factory password; see 'Setting up for Password Protection'. All functions will now be password protected. Then remove password protection from chosen functions, as desired; see 'Protect Functions with a Password'.

If you know the password, you can change it at any time, if you need to. Note that if you change the password to 9999, you will remove password protection from all functions.

If the password is ever lost, contact your dealer to reset the password to 9999.



Setting up for PASSWORD PROTECTION

Press .

Press  or  until "Set/Change Password" is displayed, then press.

"Enter password" is displayed with 4 blank squares, one for each digit in the password. The first digit flashes.

Press  or  until the first number in the password is displayed.

For Example, if you password is "432" press  "4" shows, then press .

Repeat each digit in the password.

Press  again entering the last digit. "new password" is displayed.

Repeat the above steps to enter the new password. "confirm" is displayed.

Enter the new password again, then press  to exit this function.



Protect Functions with a PASSWORD

Press .

Press  or  until "password protect" is displayed, then press .

If this menu item does not appear, then you have not yet changed the factory password from 9999. Change the password and then try again. "Enter Password" is displayed with three blank squares, one for each digit in the password. The first square flashes.




Press  or  until the first number in the password is displayed, then press .



Repeat for each digit in the password.

Press  again after entering the last digit.

The first feature that can be password protected is displayed with “yes” or “no” (indication whether it is currently password protected).


Press  or  to change the “yes” or “no”

Press  to move to the next feature.

Or press  or  to skip to the next feature.

1.3.2 Entering the Password

When you try to set up a function, you may be prompted to enter the password.

Press  or  until the first number in the password is displayed, then press .

Repeat for each digit in the password.

Press  again after entering the last digit.

1.3.3 Setting the Clock

You can set the clock on the DCP. This clock is used by the timer function. If you use the timer function, remember that as you move from one time zone to another, you must adjust the clock. Otherwise the timer will start the APU at the wrong time.

The clock settings remain even when the APU is turned off.

Press .

Press  or  until “clock” is displayed, then press .

If “enter password” is displayed enter your password. If you do not know the password, then you cannot setup the function.

The clock function takes you through several settings: 12/24-hour-clock, hour set, minutes set, am/pm-set (for 12-hour-clock only), and day of the week.

Press  or  to change the setting.



Press  to move to the next setting. Or press  to cancel any changes you have not yet accepted.


When done, press  to exit.

1.3.4 Temperature Monitor

You can specify the temperature you want in the truck bunk. When the truck bunk goes 2 degrees above or below this temperature, the APU starts and the HVAC turns on until that temperature is reached or for fifteen (15) minutes, whichever is longer.

Turning Temperature Monitor ON and OFF

Press  .

Press  or  until “temperature monitor” is displayed then press .

If “enter password” is displayed, enter your password. If you do not know the password, then you cannot set up this function.

Press  or  to display “ON or “OFF”.

Press  to confirm this setting.

The current setting remains until you change it; turning off the APU or manually starting the APU does not permanently cancel this setting.

Setting the TEMPERATURE


Press .

Press  or  until “temperature monitor” is displayed then press .

If “enter password” is displayed, enter your password. If you do not know the password, then you cannot set up this function.

Press  or  to display “set”.

Press  to confirm this setting. The current temperature is displayed.

Press  or  to scroll to the desired temperature.

Press  to confirm this setting. Or press  to cancel and retain the current temperature.

Press  to exit.



1.3.5 Timer




You can set up Diamond Power so that the APU and HVAC run automatically for a specified time on specified days of the week. There are two timers, so you can set up two schedules.

For example, one schedule may be to run every day at 6:00 p.m. for .5 hours and the other schedule may be to run every Monday at 6:00 a.m. for .5 hours.

You must set up the timer as follows: Specify the day and time you want to run the APU, specify the duration (the length of the time you want the APU to run for) and specify the temperature you want maintained in the truck bunk while the APU is running.

Turning Timer ON or OFF

Press .

Press  or  until “timer 1” or “timer 2” is displayed then press .

If “enter password” is displayed, enter you password. If you do not know the password, then you cannot set up this function.


Press  or  to display “ON” or “OFF”.

Press  to confirm this setting.

The current setting remains until you change it; turning off the APU or manually starting the APU does not cancel the timer function.


Setting the Start Time/Day

Press .

Press  or  until “timer 1” or “timer 2” is displayed, then press .

If “enter password” is displayed, enter you password. If you do not know the password, then you cannot set up this function.

Press  or  to display “set start”.

Press  to confirm this setting. The current start time is displayed.


Press  or  to set the hours, minutes and day.

Press  to confirm each setting.





Setting the DURATION

Press .

Press  or  until “timer 1” or “timer 2” is displayed, then press .

If “enter password” is displayed, enter you password. If you do not know the password, then you cannot set up this function.

Press  or  to display “set duration”.

Press  to confirm this setting. The current duration time is displayed.

Press  or  to scroll to the length of time to run the APU.

Press  to confirm this setting. Or press  to cancel and retain the current duration to exit.

Press  to exit.

Setting the TEMPERATURE for the Timer



Press .

Press  or  until “Timer 1 or Timer 2” is displayed, then press .

If “enter password” is displayed, enter you password. If you do not know the password, then you cannot set up this function.

Press  or  to display “Set Temp”.

Press  to confirm this setting. The current temperature is displayed.

Press  or  to scroll to the desired temperature.

Press  to confirm this setting. Or press  to cancel and retain the current temperature.

Press  to exit.

1.3.6 Cold Temperature Operation




You can set up the APU so that it automatically runs for a specified time whenever the ambient temperature goes below a specified value. This feature ensures that the APU engine and truck engine do not get so cold that they will not start.

This feature is not intended to maintain a comfortable truck bunk temperature; instead, see “temperature monitor.



Turning Cold temperature operation On and Off


Press .

Press  or  until “temp start” is displayed, then press .

If “enter password” is displayed, enter you password. If you do not know the password, then you cannot set up this function.

Press  or  to display “set temp”.

Press  to confirm this setting. The current start temperature is displayed.

Press  or  to scroll to the desired start temperature.

Press  confirm this setting. Or press  to cancel and retain the current start temperature.

Press  to exit.

Setting the START TEMPERATURE


Press .

Press  or  until “temp start” is displayed, then press .

If “enter password” is displayed, enter you password. If you do not know the password, then you cannot set up this function.

Press  or  to display “set temp”

Press  to confirm this setting. The current start temperature is displayed.

Press  or  to scroll to the desired start temperature.

Press  to confirm this setting. Or press  to cancel and retain the current start temperature.

Press  to exit.

Setting the Frequency

Press .



Press  or  until “temp start” is displayed, then press .

If “enter password” is displayed, enter your password. If you do not know the password, then you cannot set up this function.



Press  or  to display “set frequency”.

Press  to confirm this setting. The current frequency is displayed in hours.

Press  or  to scroll to the amount of time you want the APU to run before automatically shutting off.

Press  to confirm this setting . Or press  to cancel and retain the current start temperature.

Press  to exit.

1.3.7 Maximum Run Time

You can set the maximum time that the APU is allowed to run continuously. If the APU runs for longer than the specified time, it automatically shuts off. You can then start it manually, if desired; the “run time” clock will start counting again.

Press  .

Press  or  until “maximum run time” is displayed, then press  .

If “enter password” is displayed, enter you password. If you do not know the password, then you cannot set up this function.

Press  or  to display “ON” or “OFF”.

Press  to confirm this setting.

Setting the DESIRED RUN TIME


Press  .

Press  or  until “maximum run time” is displayed, then press .

If “enter password” is displayed, enter you password. If you do not know the password, then you cannot set up this function.

Press  or  to display “set”.

Press  to confirm this setting. The current frequency is displayed.

Press  or  to scroll to the desired number of hours.

Press  to confirm this setting. Or press  to cancel and retain the current frequency.

Press  to exit.




1.3.8 Battery Monitoring

You can set the APU so that it automatically runs for 90 minutes when the truck batteries are low.

When you set up this feature, you must enter the current voltage of the batteries(see”set the initial voltage”). The Diamond Power can then calculate how much the voltage drops, as the batteries are used.


Set the INITIAL VOLTAGE

Press  .

Press  or  until “calibrate voltage” is displayed, then press.

If “enter password” is displayed, enter your password. If you do not know the password, then you cannot set up this function.

Press  or  to set the current voltage of the batteries.

Press  to confirm this setting.


Turning BATTERY MONITORING ON and OFF

Press  .

Press  or  until “battery monitor” is displayed, then press  .

If “enter password” is displayed, enter you password. If you do not know the password, then you cannot set up this function.

Press  or  to display “ON” or “OFF”.



Press  to confirm this setting.

The current setting remains until you change it; turning off the APU or manually starting the APU does not permanently cancel this setting.

The APU starts if the battery voltage goes below the level you specify here.

Setting the Voltage Level

Press  .



Press  or  until “battery monitor” is displayed, then press .

If “enter password” is displayed, enter your password. If you do not know the password, then you cannot set up this function.



Press  or  to display “set”.

Press  to confirm this setting. The current voltage level is displayed and flashes.

Press  or  to scroll to the desired voltage.

Press  to confirm this setting. Or press  to cancel and retain the current voltage.

Press  to exit.