



***LIGHTNING***

**CCS Lightning  
User guide**

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## INTRODUCTION

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Thank you for your recent purchase of the CCS Lightning system. The CCS Lightning Cab Comfort System has been designed to provide all the comforts you expect at home made available in your truck.

With this in mind, this operator's manual describes the easy, simple to use system controller and all of the CCS Lightning's features and benefits.

All functions of the CCS Lightning are operated by the control panel. This document outlines the control panels' functionality and its basic operating method.

# CONTROL PANEL

## BUTTON LAYOUT



### 1. HEAT activation button

Enables/disables the heater function. When activated, the HEAT button will illuminate in red.

### 2. COOL activation button

Enables/disables the air conditioning function. When activated, the COOL button will illuminate in blue.

### 3. FAN control button

Allows the user to toggle between several fan speeds as well as an automatic mode. This button will illuminate when the fan is set into the automatic mode.

### 4. MAINTENANCE button

Allows the user to view the routine maintenance reminder screen, to toggle between °C to °F temperature units, to set the current time and to view system serial numbers. Button will flash when the maintenance reminder has expired.

### 5. ENTER button

Used when programming features, setting the clock, and other user input functions.

### 6. ECONO button

Enables the ECONO mode function. When activated, this button will illuminate.

### 7. SETUP button

Used to enable/disable several functions including the low battery voltage start, the keyless remote starter option, programmable timed start/stop and start on cold coolant temperature. Button is illuminated when timed start/stop is selected.

### 8. START/STOP button

Used to start and stop the APU as well as to reset any fault code messages.

### 9. SCROLL DIAL

Used to alter desired cab temperature and to scroll through menu functions.

### 10. CONTROL PANEL DISPLAY

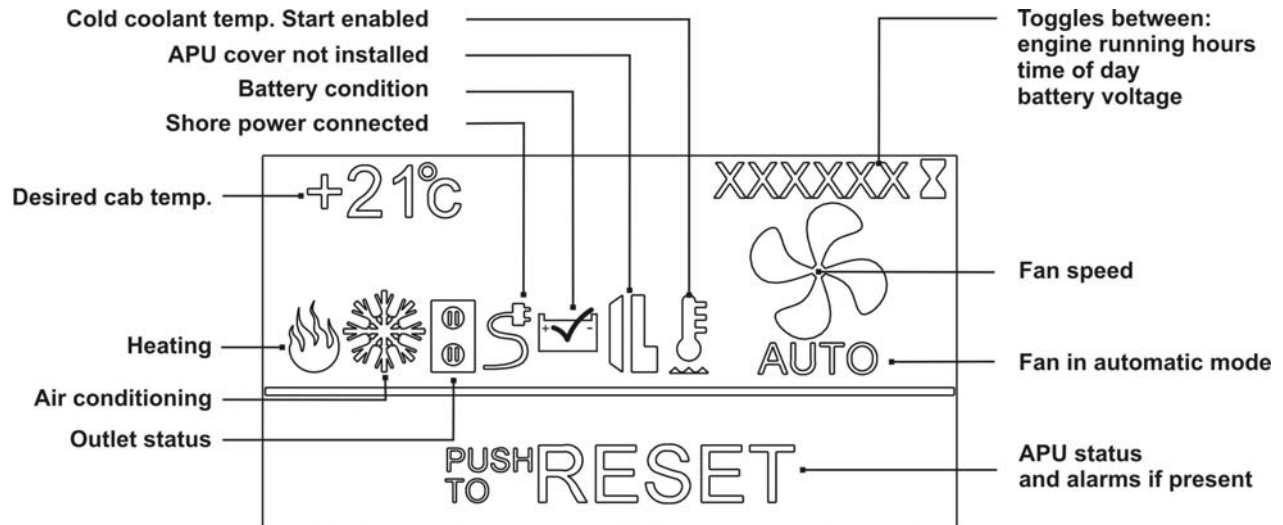
Shows current system status as well as a variety of maintenance and setup screens permitting further functionality and programmability.

### 11. KEYLESS REMOTE STARTER

Used to start/stop the APU from a range of up to 1000'. Sold as an option.

## MAIN SCREEN

The LCD status screen on the control panel displays all of the frequently used information for the Cab Comfort System. APU status and alarm notices also appear on this screen.



**Outlet status** (only displayed when APU is running or shore power is connected):



120VAC present

120VAC **not** present

1/2 capacity available

### Battery condition:

No icon System OK



System charging



Battery voltage low

### TO ADJUST LCD CONTRAST

1. Press and hold the **ENTER** button.
2. Using the **SCROLL DIAL**, adjust the contrast of the display.

### TO DIMM THE LIGHTS ON THE BUTTONS

1. Press and hold the **MAINTENANCE** button.
2. Using the **SCROLL DIAL**, adjust the brightness of controller buttons.

# OPERATING CCS LIGHTNING

## START / STOP BUTTON



### TO START APU

Press the **START/STOP** button on the **control panel**  
or  
press the **START/STOP** button on the **remote start keychain** (if equipped).

### TO STOP APU

Press the **START/STOP** button on the **control panel**  
or  
press the **START/STOP** button on the **remote start keychain** (if equipped).

### TO CLEAR A FAULT STATUS

Press the APU **START/STOP**.

The APU may not start instantly. The system will automatically manage it's own glow plug cycle, warm-up times, repeat crank attempts, and cool down times. No user input is required other than the start/stop command.

The APU may run for a short period after receiving a stop signal to allow various systems to cool down. Pressing and holding the **START/STOP** button again will bypass this timer and stop the APU immediately.

Pressing the **START/STOP** button during a start cycle will abort the start cycle.

Remote start option must be enabled for the system to function on remote start/stop input.

**All faults must be cleared for the APU to start.**

## HEATING BUTTON



The CCS Lightning heating system operates on 120 Volt AC power supplied by either the system APU or the optional shore power connection.

### TO START HEATING

1. Start the APU by pressing the **START/STOP** button.
2. Activate the heater by pressing the **HEAT** button. This button will illuminate in red when activated.

### TO SET TEMPERATURE

Using the **SCROLL DIAL** set the desired cab temperature. If the current cab temperature is cooler than the desired cab temperature, the heater will start and the "flame" icon will appear on the control panel display.

### TO STOP HEATING

Press the **HEAT** button on the control panel.\*

**Only 1/3 heating power is available with shore power. This is due to power limitations on standard 120V outlets.**

Heating will begin when the cab temperature falls below the desired temperature by 2°C (3°F).

Heating will stop when the cab temperature rises above the desired temperature by 1°C (3°F).

When the heater is turned OFF, the fan will continue to run for 30 seconds to cool the heating coils in the heater unit.

\* This will de-activate the heating function, but will not stop the APU.

## COOLING BUTTON



The CCS Lightning air conditioning system operates on 120 Volt AC power supplied by either the APU or the optional shore power connection.

### TO START COOLING

1. Start the APU by pressing the **START/STOP** button.
2. Activate the air conditioner by pressing the **COOL** button. This button will illuminate in blue when activated.

### TO SET TEMPERATURE

Using the **SCROLL DIAL** set the desired cab temperature. If the current cab temperature is warmer than the desired cab temperature, the air conditioner will start and the “snow flake” icon will appear on the control panel display.

### TO STOP COOLING

Press the **COOL** button on the control panel.\*

Cooling will begin when the cab temperature rises above the desired temperature by 2°C (3-4°F).

Cooling will stop when the cab temperature falls below the desired temperature by 1°C (3-4°F).

The air conditioning compressor will not start again within 2 minutes of stopping to prevent internal damage to the system.

Under some conditions, the compressor will automatically stop to prevent ice build up. It will restart automatically when the condition is relieved. The snowflake icon will disappear when this happens.

\* This will de-activate the cooling function, but will not stop the APU.

## FAN BUTTON



When power is available, the ventilation fan can be turned on to five speeds including an **AUTO** mode and **OFF** setting. The fan can be operated without the **HEAT** or **COOL** functions enabled.

### TO CHANGE THE FAN SPEED

1. Press the **FAN** control button on the control panel.
2. Continually pressing the **button** will toggle through the various fan speeds.

Just after the **HEAT function** is turned **OFF**, the fan speed will set and hold at its highest setting to cool the heating chamber for 30seconds.

The fan speed will be changed to its minimum value if the fan speed was set to **OFF**, but **HEAT** or **COOL** is functioning.

## MAIN SCREEN

Fan speed is indicated by the size of the **fan icon** in the upper right corner of the display.

When **AUTO** is displayed below the fan icon, the system is set to automatic fan speed mode. If no icon appears, the fan is **OFF**.

## ECONO MODE BUTTON



When **ECONO** mode is enabled, the generator will start and stop based on the requirements to heat or cool the cab.

When **shore power** is connected, the system will heat or cool using shore power regardless of whether **ECONO** mode is turned on or not. If shore power is unplugged while **ECONO** mode is enabled, the APU will start or stop based on heating or cooling requirements.

### TO ENABLE ECONO MODE

1. Set the desired cab temperature using the **SCROLL DIAL**.
2. Press the **ECONO** button.

Enabling **ECONO** mode will automatically enable both **HEAT** and **COOL** functions.

**ECONO** mode will automatically be disabled if

- the user manually turns the APU off/on
- a timed start/stop timer expires
- a fault occurs

**ECONO** mode will not cause the APU to start if

- the generator door is open
- a fault occurs

## MAINTENANCE BUTTON



Continually pressing the **MAINTENANCE** button will toggle between these **screens**:

### 1. THE MAINTENANCE SCHEDULE SCREEN

The maintenance screen can be used to assist in the scheduling of regular maintenance.

From this screen you will be able to view or reset the remaining time until the next scheduled maintenance of that particular item.

### TO RESET THE SCHEDULED MAINTENANCE PERIOD FOR AN ITEM

1. Press the **MAINTENANCE** button if not already within this screen.
2. Using the **SCROLL DIAL**, choose the desired maintenance item. The countdown timer will display the hours remaining before maintenance must be performed.
3. Press and hold the **ENTER** key to select the maintenance item to be reset. Turn the scroll dial until a confirmation screen appears.
4. Use the dial to scroll to the '**OK**' or '**Cancel**' selection.
5. Press the **ENTER** key while on the '**OK**' selection to reset the item to its default setting.
6. Press the **ENTER** key on the '**Cancel**' selection will cancel the change.

## 2. THE MAINTENANCE SETTINGS SCREEN

The MAINTENANCE button can be used to change back and forth from degrees Celsius to degrees Fahrenheit as well as to set the time of day.

### TO CHANGE THE TIME OF DAY

1. Continue to press the **MAINTENANCE** button until you reach the Maintenance settings screen.
2. Using the **SCROLL DIAL**, highlight the hours in the time of day selection.
3. Hold the **ENTER** key and rotate the dial until the hours have been set.
4. Repeat the above 2 steps for minutes, AM/PM selection and day of week.

### TO CHANGE FROM CELSIUS TO FAHRENHEIT SCALE

1. Continue to press the **MAINTENANCE** button until you reach the Maintenance settings screen.
2. Using the **SCROLL DIAL**, highlight the °C or °F setting.
3. Press the **ENTER** key to change between these settings.

Time changes take effect immediately.

**When changing the time of day, it is recommended that timed starts and stops be disabled as time changes take effect immediately.**

The change from °C to °F or vice-versa will take place immediately.

## 3. THE SERIAL NUMBERS SCREEN

The system Identification screen can be used to view software revisions and system serial numbers. These numbers are for viewing only and can't be changed.

## SETUP BUTTON



The CCS Lightning is capable of starting and stopping automatically due to any one of the following situations:

- Timer Start
- Timer Stop
- Low battery voltage
- Cold coolant temperature

All remote starts will attempt to crank the engine 3 times before locking out the engine and logging a fault.

The remote start will not attempt to crank the engine if the APU is in a fault state (indicated by the APU status board).

A keyless remote start or low battery start will set the generator to run for a period of 1 hour.

A cold coolant temperature call to start will set the generator to run for 2 hours.

Remote starts will not start the **APU** if the **APU** cover is open.

Remote stops will stop the **APU** regardless of whether the door is open or not.

All starts can be cancelled by the user by pressing the **APU** on/off button.

It is highly recommended that timed starts/stops and cold coolant temperature be **disabled when truck is in motion** to prevent the APU from running. (Lit **SETUP** button indicates at least one of these functions are enabled.)

## THE AUTO START SETUP SCREEN

Press the **SETUP** button to get to remote start/stop setup screen, from which any remote start/stop option can be enabled or disabled. This is particularly useful for disabling the generator in areas where engines are not permitted to run (engine bays, fuelling stations, repair situations etc). Remote start and stop times can also be set from this screen.

### TO ENABLE/DISABLE REMOTE START FUNCTIONS

1. Use the **SCROLL DIAL** to highlight **REMOTE START** function.
2. Press the **ENTER** button.

### TO PROGRAM TIMED STARTS /STOPS

1. Use the **SCROLL DIAL** to scroll between **TIMED START** or **TIMED STOP**. Highlight the desired function
2. If the timer is currently disabled, press **ENTER** to enable it. The set time and day of week\* will be shown.
3. Highlight the hours, minutes or day of the week selection to be changed.
4. Press and hold the **ENTER** button while turning the dial until the desired setting is reached.
5. Highlight the AM/PM and press **ENTER** to change between the two.

### TO DISABLE TIMED STARTS/STOPS

1. Use the **SCROLL DIAL** to scroll between **"TIMED START"** or **"TIMED STOP"**. Highlight the desired function
2. Highlight any portion of the time (except AM/PM). Press and release the **ENTER** key without turning the dial. The timer will now be shown as **disabled**.

### TO ENABLE/DISABLE LOW BATTERY START

1. Use the **SCROLL DIAL** to highlight **LO BATT START** function.
2. Press the **ENTER** button.

### TO ENABLE/DISABLE LOW COOLANT TEMP. START

1. Use the **SCROLL DIAL** to highlight **COOLANT TEMPERATURE** function.
2. Press the **ENTER** button.

Note that there is a delay before the APU will start to prevent false starts due to heavy loads being switched on.

\*If no day of the week is shown, timed start/stop will take effect every day.

The **APU** will **start/stop** at pre-programmed daily time.

Start/stop times are programmable within a 7-day period.

It is **highly recommended** to program timed stop if a timed start is set.

When a low battery voltage is detected, the **APU** will start and run for 1 hour to charge the system batteries.

The low voltage start level is factory set to 11.5 volts.

## SHORE POWER OPTION

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When purchased with the Shore Power Option, your CCS Lightning system can be operated on commercial electricity, without having to operate the APU.

### TO USE SHORE POWER:

1. Connect an external 120V power source to the outdoor shore power connector located on the driver's side of the vehicle.
2. From the main control panel, enable the features you want to operate (HEAT, COOL etc.)

### Notes:

- If the system was set to the ECONO Mode when shore power was connected, the APU will shut down automatically, and the automatic transfer switch will transfer incoming power to the Shore Power source.
- If the APU was running due to a manual run signal, connecting the Shore Power will not shut down the APU. The APU is considered the preferred source of power. Shutting down the APU will cause the automatic transfer switch to transfer incoming power to the Shore Power source.
- When connected to shore power, the entire CCS Lightning system is available except:
  - The outdoor receptacle is disabled.
  - Only the low HEAT setting is available.
- When connected to Shore Power, the system is limited to the amount of power available through that particular external power source. Overloading the external power source could cause the external breaker to trip or fuse to blow depending upon the system. The use of an appropriately sized extension cord will help to reduce the occurrence of blown fuses or tripped breakers.
- Truck battery system must be above 8.5 V for the transfer switch to engage.

## ROUTINE MAINTENANCE SCHEDULE

Maintenance Item	50 Hours	500 Hours	1000 Hours
Check oil and coolant level	Daily		
Check fuel / coolant lines and clamps	✓		
Check / adjust water pump belt tension	✓		
Change engine oil and filter	After first 50 hours	✓	
Check air filter (replace as necessary)		✓	
Change fuel filter element / drain water separator		✓	
Check / replace water pump belt		✓	
Clean CHEB inlet air filter		✓	
Adjust valve lash	800 hours – authorized dealer		
Clean remote radiator / heat exchanger fins			✓
Clean condenser fins			✓
Check Injector nozzle opening pressure	Every 2 years – authorized dealer		
Change coolant, fuel hoses and clamps (if necessary)	Every 2 years – authorized dealer		

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## ENGINE OIL SPECIFICATIONS

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Engine oil should be MIL-L-2104C or have properties of API classification CD grades or higher.

Engine oil volume is **5 Litres** or **5.2 quarts**.

Change the type of engine oil according to the ambient temperature:

Ambient temperature	Type of oil
Above 35°C (95°F)	SAE40 or SAE15W-40
Above 25°C (77°F)	SAE30 or SAE10W-30 SAE10W-40
0°C to 25°C (32°F to 77°F)	SAE20 or SAE10W-30 SAE10W-40
Below 0°C (32°F)	SAE10 or SAE10W-30 SAE10W-40
Below -20°C (32°F)	SAE5 or SAE50W-30

When using oil different from the previous oil, be sure to drain all the previous oil before supplying fresh oil to the crankcase.

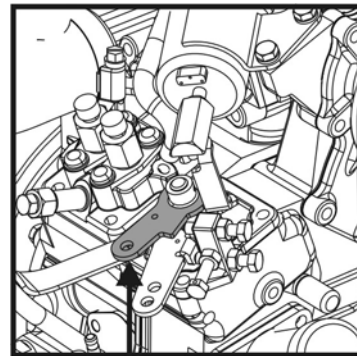
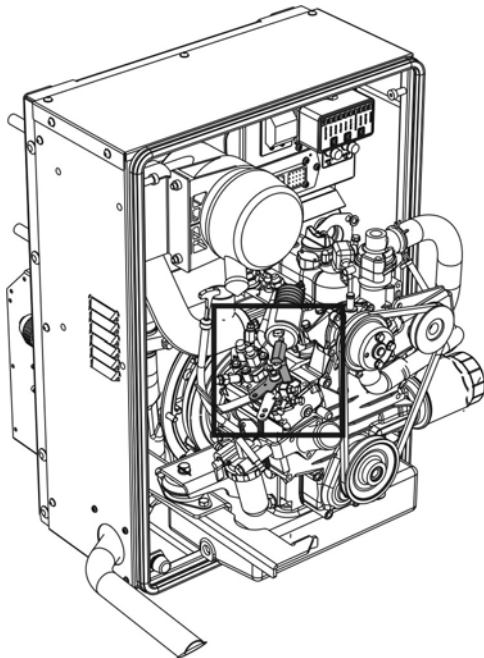
CALIFORNIA PROPOSITION 65



The engine exhaust from this product contains chemicals known to the State of California to cause cancer, birth defects or other reproductive harm.

## EMERGENCY STOP

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stop lever

In case of emergency pull engine stop lever.