



INSTALLATION AND OPERATOR'S MANUAL
FOR

DCC-4000

Digital Climate Control for Vintage Air GEN-IV-V systems

PARTS INCLUDED WITH THIS SYSTEM



DCC control box (x1)



DCC-4000 display (x1)



Mount brackets (x2)



Thumb nuts (x2)



HLC harness (x1)



DCC display harness (x1)



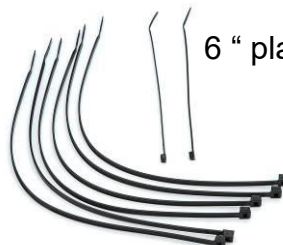
DCC controller harness (x1)



Clip temp sensors (x2)



Grommet temp sensors (x4)



6 " plastic ties (x2)

2 1/2" Vent sensor housings (x2)



2" Vent sensor housings (x2)

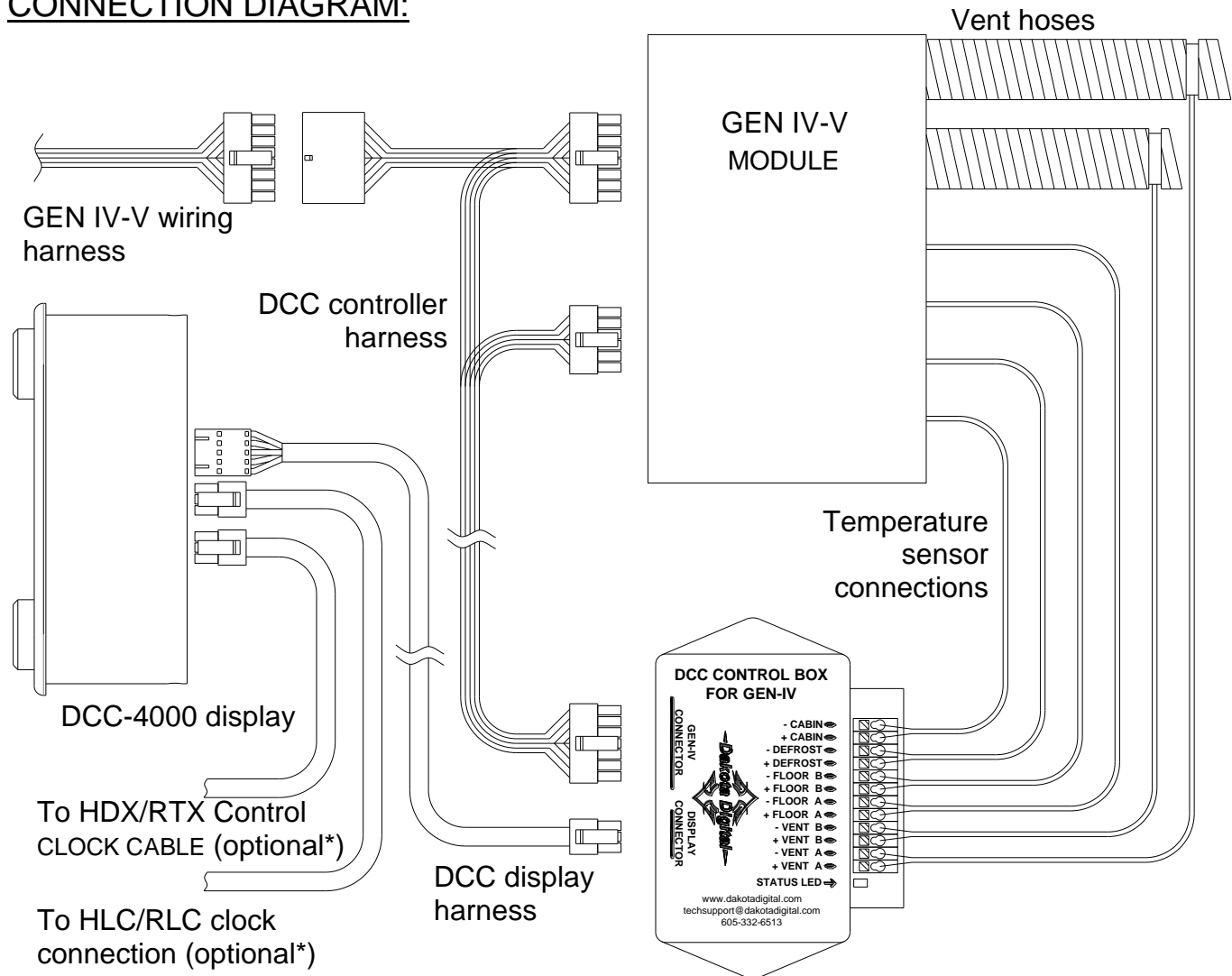
11" plastic ties (x6)



Cutout template (x1)

*GEN-IV-V: DCC-4000 compatible with both GEN-IV Systems and GEN-V Systems.

CONNECTION DIAGRAM:



WIRING:

Connect temperature sensor wires to control box. (For more details see STEP 7: WIRE TEMP SENSORS)

Plug the 5 pin connector of the Display Harness into the display. Route the other end of the cable to the DCC-control box and plug it into the control box connector labeled "DISPLAY CONNECTOR."

Connect the 14 pin connector of the DCC controller harness to the connector labeled "GEN-V CONNECTOR".

Route the DCC controller harness to the GEN-IV-V module.

Connect the 12 pin wire connector to the 12 pin connector on the GEN-IV-V module.

Connect the 16 pin wire connector to the 16 pin main wiring harness connector on the GEN-IV-V.

Connect the GEN-IV-V harness into the remaining 16 pin connector on the DCC controller harness.

(optional*) Using the HLC harness (2 six pin connectors) connect to either one of the 6 pin connectors on the DCC-4000 display. Connect the other end to the "CLOCK CABLE" port on HDX or RTX control box.

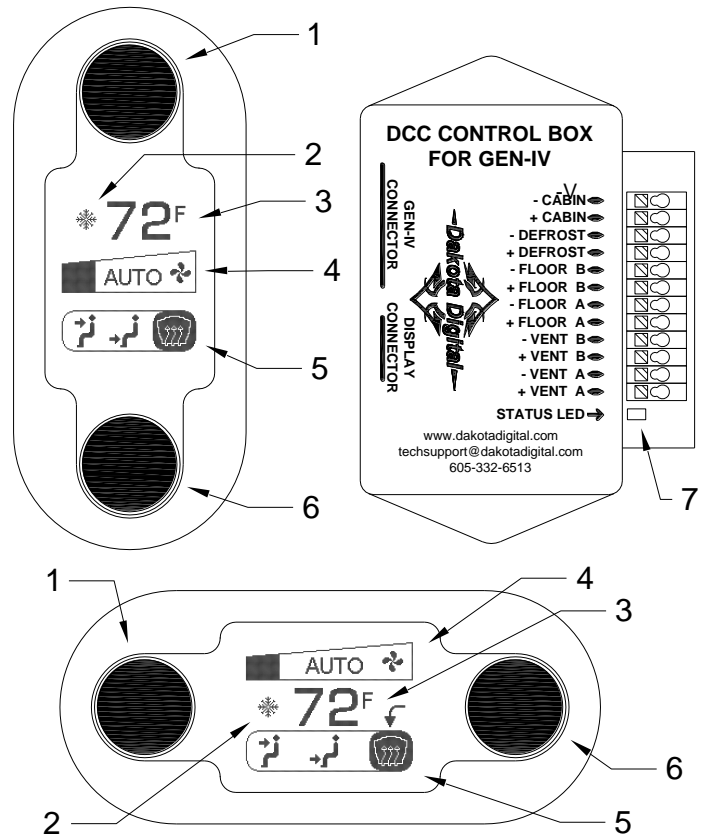
(optional*) If the HDX / RTX system has an analog clock, connect its HLC harness to the remaining 6 pin connector on the back of the DCC-4000 display.

If not already wired, wire the GEN-IV-V wiring harness as described in the GEN-IV-V manual.

*Optional connections for HDX/RTX theme matching. See NIGHT TIME DIMMING AND THEMES on page 7.

FEATURE DIAGRAM:

1. Temperature knob
Turn to adjust temperature
Press to toggle between AC and Econ
2. AC / ECON indicator
Shows snowflake for AC, and a snowflake in backslash-circle for Econ
3. Temperature display
Shows the set temperature
4. Fan speed display
Shows fan speed
5. Blower mode display
Shows location of air output
6. Blower knob
Turn to adjust fan speed and blower mode, push to select adjustment mode
7. Status light
Indicates current status of DCC control unit



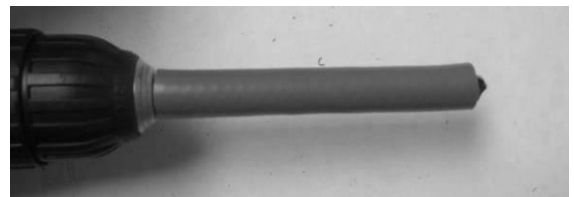
INSTALLATION:

NOTE: While installation is possible with the GEN-IV-V system already in the vehicle, it is easier to install some of the sensors when you have full access to all sides of the GEN-IV-V module. If the GEN-IV-V is not yet installed in your vehicle, we recommend installing the temperature sensors first.

STEP 1: INSTALLING THE DEFROST SENSOR

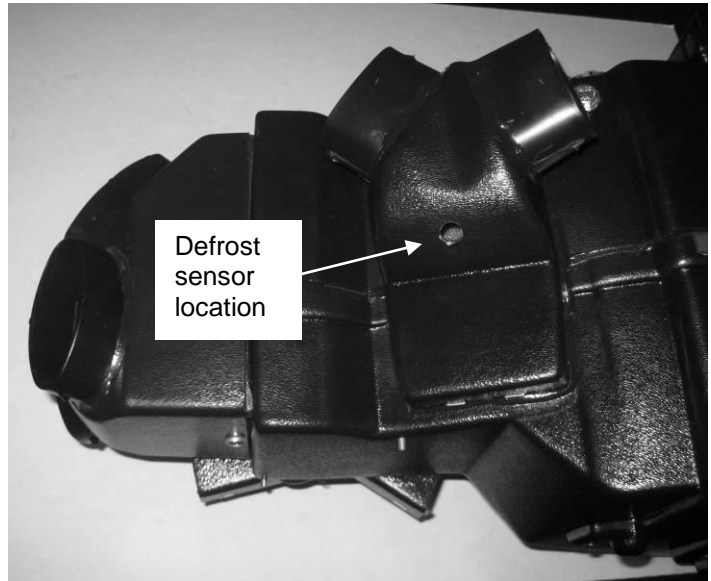
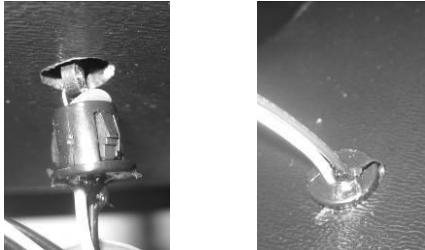
The supplied grommet type temperature sensors require a 3/8" hole to be drilled so they can be inserted into the housing. To prevent drilling too deeply, create a stop for your drill bit (see photos at right) with a piece of rubber hose or small block of wood that is long enough to allow just the tip (about 1/4") of the bit to protrude.

NOTE: As an alternative to drilling, one of the extra Vent Sensor Housings could be used to put the sensor in one of the defrost duct tubes. This should only be done if drilling the hole is difficult or impossible with an installed GEN-IV-V system. See STEP 5 for install method.



Using the 3/8" drill bit with the proper rubber or wood stop installed, drill a hole in the defrost duct in the location shown.

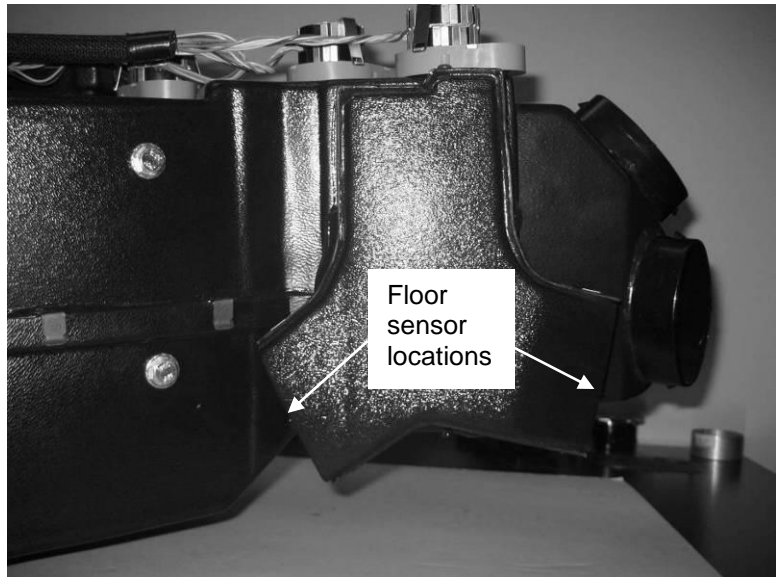
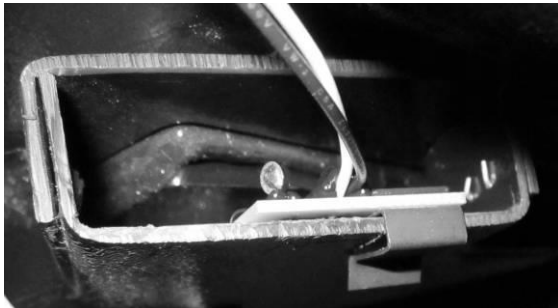
Insert one of the four supplied grommet type temperature sensors into the drilled hole with the wires pointing to the outside of the duct housing. The sensor should snap into the hole with the collar of the sensor resting against the housing.



STEP 2: INSTALLING THE FLOOR SENSORS

Push a clip type temperature sensor onto the side wall of each opening of the floor duct so that the sensor sits inside the duct at about the center of the opening.

It is recommended to label the free end of the sensor wires to ensure proper connection to the control box later.



STEP 3: INSTALLING THE CABIN SENSOR

Secure one of the grommet type temperature sensors to the grate of the blower fan using the supplied 6" plastic ties. The sensor should be mounted so that the silver colored element will be in the incoming airflow to the fan when the fan is running.

Be careful that the plastic tie, the sensor, or its wires will not contact the fan blades when the fan is running.

Label the wires for the Cabin Sensor for easier identification later.



STEP 4: INSTALL THE GEN-IV-V MODULE

Install the GEN-IV-V module if it has not yet been installed in the vehicle. Refer to the installation manual for the GEN-IV-V module for detailed instructions for your application.

STEP 5: INSTALL THE VENT SENSORS

The vent temperature sensors are mounted in the flexible duct tubing from the GEN-IV-V module. Determine which two tubes will have the sensor and cut the tubing a **minimum of 6"** away from the GEN-IV-V module. Choose tubes to vents that will blow the most air or blow most directly on passengers in the vehicle.

Of the four included Vent Sensor Housings, use the two that fit the diameter of the cut flexible tubing. Insert the two remaining grommet type temperature sensors into the predrilled holes in these Housings.

Work the Vent Tubes over both ends of the Sensor Housing and secure the tube on both sides of the housing using the provided 11" plastic ties. Make sure the plastic ties are positioned over the body of the Sensor Housing so the raised end of the Housing holds the Tube from slipping off.



STEP 6: MOUNT THE CONTROL BOX

Find a location to mount the DCC control box where the wires will reach without being pulled. There are two tabs on the case of the control box to allow for easier mounting.

STEP 7: WIRE THE TEMPERATURE SENSORS

Wire the temperature sensors' wires to the connection strip on the DCC control box. The small tab on the top of the connector can be pressed down with a screw driver to allow insertion of the stripped ends of the sensor wires. Connect the black wire to the "-" terminal. The other wire is connected to the "+" terminal.

Take care when connecting the sensors to the control box. If the sensors are connected to the wrong terminals, the controller will not control the temperature properly. Either Floor Sensor can be connected to either of FLOOR terminal (A & B). Similarly, either Vent Sensor may be connected to either VENT terminal.

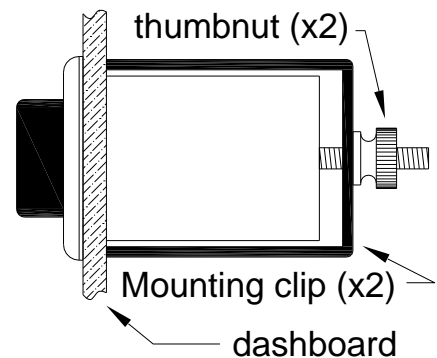
STEP 8: MOUNT THE DISPLAY

Determine your mounting location of the display and use the provided cutout template to make the opening for the display.

Insert the display into the opening from the front of the dash.

Place a mounting bracket onto each of the studs so that the two legs of the bracket contact the dash panel along the sides of the display unit.

Place a thumb nut onto each of the studs to hold the bracket in place. Tighten the thumb nut to push the bracket up against the back of the dash panel to secure the display in place.



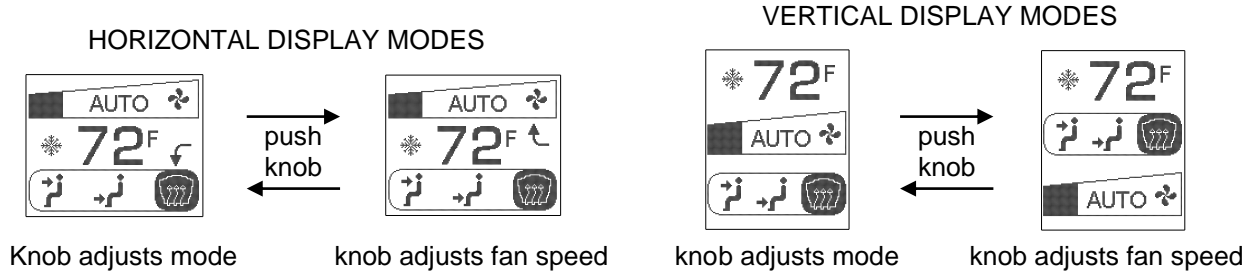
STEP 9: WIRING

(Refer to the wiring diagram and steps on page 2.)

OPERATION:

BLOWER KNOB (*knob on right side for horizontal, or bottom side for vertical*):

The blower knob handles two adjustments which can be selected by pressing the knob. Each press and release of the knob will toggle adjustment modes on the display as indicated below. For horizontal display modes, an arrow indicator points to the selected adjustment. For vertical displays the selected adjustment is on the bottom, closest to the knob.



MODE ADJUSTMENT:

In mode adjustment, turning the knob clockwise will move the slider toward the defrost mode. Turning the knob counter clockwise will move the slider toward the vent mode. If the slider is in the middle, floor mode is selected. Any blended mode along the scale may be chosen.

Mode adjustments are handled automatically when in auto mode. The word “AUTO” is displayed between the vent and floor icons in the blower mode display area, to indicate when the system is in auto mode.

Turning the knob past either end of the scale will set mode adjustment to auto mode.

FAN ADJUSTMENT:

In fan adjustment, turning the knob will change the fan speed. A clockwise turn will increase fan speed. A counter clockwise turn will decrease it. Turning the fan speed all the way down will turn the system off.

If the fan speed is under automatic control, “AUTO” will appear in the fan speed display area. Making adjustments to the fan speed will take the fan out of auto mode and the “AUTO” will no longer be displayed. Automatic fan speed can be turned back on by turning the knob past the maximum setting. The fan will also return to auto mode whenever an adjustment is made to the temperature setting.

TEMPERATURE KNOB (*knob on left side for horizontal, or top side for vertical*):

The temperature knob handles changes to the set temperature and AC mode.

TEMPERATURE ADJUSTMENT:

Turning the knob will change the temperature setting. A counter clockwise turn will decrease the temperature setting. A clockwise turn will increase the temperature setting.

A setting of 60F (16C) will put the system in full cool mode. The controller will cause the GEN-IV-V module to be driven in maximum A/C regardless of the temperature readings from the sensors.

A setting of 90F (32C) will put the system in full heat mode. The controller will cause the GEN-IV-V module to be driven to maximum heat regardless of the temperatures reading from the sensors.

For all other temperature settings, the controller will always work toward maintaining the air in the cabin at that set temperature. If the fan or mode is set to auto, the fan speed or airflow direction will also be adjusted in order to best achieve this set cabin temperature.

AC / ECON SETTING:

Pressing the knob toggles the AC mode between AC and Econ (snowflake symbol on or crossed out).

AUTOMATIC FAN:

The fan speed is automatically controlled by the DCC control unit in order to best achieve the set cabin temperature. However, the fan speed can be temporarily set to a faster or slower speed using the blower knob in fan adjustment mode. The fan will stay at this set speed until an adjustment is made to the set temperature. After an adjustment to the set temperature, the fan speed will return to automatic control.

AUTOMATIC MODE SELECTION:

When the system is turned on, the mode (direction of airflow between floor, vent and defrost) is automatically selected by the controller to best achieve the set cabin temperature. For heating, the airflow will be set to the floor and some defrost. For cooling, airflow will be set to the vents.

The location of airflow can be set manually by using the blower knob in mode adjustment mode. Once a change is made to the airflow location, that setting will remain in manual mode until the key is turned off and back on. Alternatively, automatic airflow can be turned back on by turning the knob past the ends of the selection bar until “AUTO” appears between the vent and floor icons.

TURNING SYSTEM OFF / ON:

The system can be turned off by turning the fan speed down past the lowest speed. The display will change to read “OFF” and the fan will be turned off. The AC will not run when the system is off.

Turning the fan speed back up will turn the system back on.

AC / ECON:

Pressing the temperature knob during normal operation will toggle the AC / econ mode. If the system is currently in AC mode, it will turn the AC off. If it is currently in econ mode, it will turn the AC on. AC mode is indicated by a snow flake next to the temperature reading. Econ mode is indicated by a backslash-circle over the top of the snow flake.

There are instances when the AC / Econ mode may not be overridden. Two of these instances are the full cool (60F setting) and the full heat (90F setting) modes. In these situations, the AC / econ state may appear to change for a short time after the knob is pressed but will then return to the previous setting.


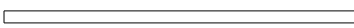
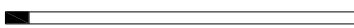
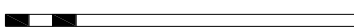



NIGHT TIME DIMMING AND THEMES:

The DCC-4000 has two color / brightness themes that can each be setup by the user, a day time theme and a night time theme. The night time theme will be displayed when the dim circuit in the stock GEN-IV-V harness is powered (when headlights are on). Otherwise the day time theme is used.

When the optional HDX/RTX clock cable is used to connect to an HDX/RTX gauge system, the DCC-4000 will match the color themes and brightness of the HDX or RTX gauge system instead of its internal themes.

STATUS LIGHT:

The DCC control box has a status light beside the temperature sensor connector to indicate status. The chart below describes the different status indications. (□ = LED on, ■ = LED off)

-  Constant power to controller, ignition is off. (Short flash every 4 seconds)
-  Key on, no errors, normal operation (Light on steady)
-  Controller and display are in setup
-  Controller is in Calibration mode, calibrating GEN-IV-V module
-  Key is on but system is turned off (One flash every 1.5 seconds)
-  Controller can't communicate with display (Two flashes)
-  One or more temperature sensors are disconnected or shorted to ground

SETUP:

To enter the setup menu, press and hold either of adjustment knobs while turning the key ON (do not start engine). The screen will display "SETUP." Release the knob and the system will enter the setup menu.

To scroll through the options in the setup menu, turn either knob. The currently active option will be highlighted. To select the option for change or viewing, press either knob while the option is highlighted. Settings that allow changes can be adjusted by turning either knob.

After the setting has been set as desired, press either knob again to save the setting and return to the previous menu or select the "BACK" option to return the previous menu without making changes.

When finished with setup, turn the key off. The system will return to normal operation with the new settings the next time the key is turned on.

Below is a brief description of the available menu options:

DISP ROTATION Display can be mounted vertically or horizontally and has no fixed "up" side. This option allows rotating the display graphics for the correct view:

- 0 DEGREES** This is a vertical mode (knobs are top to bottom)
- 90 DEGREES** This is a horizontal mode (knobs are left to right)
- 180 DEGREES** Upside down version of 0 DEGREES setting
- 270 DEGREES** Upside down version of 90 DEGREES setting

THEMES Allows setting of color themes seen when NOT connected to HDX or RTX gauge system. (Theme settings are overridden by any connected HDX or RTX system settings.)

- DAY & NIGHT** Sets the same theme for both day and night modes.
- DAY MODE** Sets just the day mode theme and leaves the night mode theme unchanged.
- NIGHT MODE** Sets just the night mode theme and leaves the day mode theme unchanged.

Each option above has the same set of preset themes to choose from plus two additional options listed below:

CUSTOM THEME This is a user customizable theme. On selecting this theme, you will be asked if you would like to customize the theme. Selecting "YES" will take you into the customize option for themes (covered below). Selecting "NO" will use the current custom theme.

NOTE: Two custom themes exist; a day custom theme and a night custom theme. Making changes to the custom theme in "DAY & NIGHT" mode will make changes to BOTH custom themes.

CUSTOMIZE Allows modifying the custom theme colors.

- KNOB COLOR** Sets the color of the knob ring light, or turns it off.
- READING COLOR** Sets the color of the sliders and temperature display.
- LABEL COLOR** Sets the color of the icons and labels in display.

LIGHTING Allows adjustment of the brightness of the display and knob ring lights. (Brightness settings are overridden by any connected HDX or RTX system settings.)

- NIGHT ALL LIGHT** Sets night brightness of display and knobs as a group (1-30)
- NIGHT KNOB** Sets night brightness of knob only. (OFF, 1-30)
- NIGHT DISPLAY** Sets night brightness of display only. (1-30)
- DAY KNOB** Selects between day knob light ON or OFF
- DAY DISPLAY** Selects between Normal or High brightness daytime display.

TEMP UNIT Allows selection of temperature scale used in display.

- FAHRENHEIT (F)** Shows temperature values in F
- CELSIUS (C)** Shows temperature values in C

TEMP SPAN Sets for temperature difference from set point at which the operation mode will change from heating to cooling or vice versa. If the system seems to often change between heat and cool mode, set this to a higher value. Range is 1.0F(0.5C) to 5.0F(2.7C). Default is 2.0F(1.1C)

SOFTWARE VER Displays the software versions for the display and controller. This information may be needed when contacting Dakota Digital for technical assistance.

CALIBRATE Select this option to begin GEN-IV-V calibration. (takes approximately 18 seconds) See “calibration of GEN-IV-V” below for more details.

CALIBRATION OF GEN-IV-V UNIT:

The GEN-IV-V module is capable of having its control inputs calibrated to a specific control setup. The factory default calibration of most GEN-IV-V modules should match the control method used by the DCC controller and shouldn't need calibration.

Some applications for the GEN-IV-V however use different calibrations to match the manual control levers or knobs used. These GEN-IV-V modules will then read the control signals from the DCC controller incorrectly and behave in unexpected ways. If the DCC unit is being installed into a previously installed and operating GEN-IV-V system or the system seems to not behave as expected, it is advised to calibrate the GEN-IV-V unit to the DCC controller.

Calibration is fully automated with the DCC controller and takes about 18 seconds. Simply put the system into setup mode (as described under SETUP) keeping the engine OFF, and select “CALIBRATE” from the menu. Select the “YES” option to confirm you want to calibrate.

The screen will display a wait message box while calibrating and the fan will run and change speeds several times during calibration. When calibration is complete, the system will return to the setup menu. Turn the key off and the GEN-IV-V module should now be calibrated to the DCC controller.

ERRORS:

If an error occurs, an error screen will display. Multiple errors can be scrolled by turning a knob. Pushing a knob allows changing settings but it will return to the error screen quickly. Errors should be corrected as the system will not be able to function properly with an error. See troubleshooting for help with specific errors.

DCC Specifications		
SUPPLY		
Voltage Range (BAT)	8 to 18 V	
Ignition	> 5 V	
INPUTS		
	Low Max	High Min
DIM (dash lamp)	3.1 V	3.8 V
CURRENT DRAW		
IGN off	≈ 0.2 mA	
IGN on	≈ 200 mA	

SERVICE AND REPAIR

DAKOTA DIGITAL offers complete service and repair of its product line. In addition, technical consultation is available to help you work through any questions or problems you may be having installing one of our products. Please read through the Troubleshooting Guide. There, you will find the solution to most problems.

Should you ever need to send the unit back for repairs, please call our technical support line, (605) 332-6513, to request a Return Merchandise Authorization number. Package the product in a good quality box along with plenty of packing material. Ship the product by UPS or insured Parcel Post. Be sure to include the RMA number on the package, and include a complete description of the problem with RMA number, your full name and address (street address preferred), and a telephone number where you can be reached during the day. Any returns for warranty work must include a copy of the dated sales receipt from your place of purchase. Send no money. We will bill you after repair.

Dakota Digital 24 Month Warranty

DAKOTA DIGITAL warrants to the ORIGINAL PURCHASER of this product that should it, under normal use and condition, be proven defective in material or workmanship within 24 MONTHS FROM THE DATE OF PURCHASE, such defect(s) will be repaired or replaced at Dakota Digital's option.

This warranty does not cover nor extend to damage to the vehicle's systems, and does not cover removal or reinstallation of the product. This Warranty does not apply to any product or part thereof which in the opinion of the Company has been damaged through alteration, improper installation, mishandling, misuse, neglect, or accident.

This Warranty is in lieu of all other expressed warranties or liabilities. Any implied warranties, including any implied warranty of merchantability, shall be limited to the duration of this written warranty. Any action for breach of any warranty hereunder, including any implied warranty of merchantability, must be brought within a period of 24 months from date of original purchase. No person or representative is authorized to assume, for Dakota Digital, any liability other than expressed herein in connection with the sale of this product.

TROUBLESHOOTING:

Problem	Possible cause	Solution
Display doesn't light.	Control box not connected or has no power.	Status light should blink once every 4 seconds with the key off and come on solid when key is on. If not check harness connection to control box and verify proper connections on GEN-IV-V wiring harness.
	Display harness is not connected or damaged.	Check display harness for proper connections and for cuts or pinched locations.
Status light flashes rapidly and controller doesn't respond.	DCC has inadvertently entered a factory test mode and needs to be reset.	Unplug the DCC controller harness from the DCC control unit. Wait for 2 seconds and then reconnect the harness to controller.
Display is dark or too dim.	Brightness setting is set too low.	Go into setup and adjust brightness setting.
AC or ECON changes back shortly after pressing temperature knob.	Controller is currently in a mode that doesn't allow overriding the AC / ECON function.	Try changing the temperature setting, especially if the temp setting is set to 60F (16C) or 90F (32C).
Display reads "OFF" and fan doesn't run.	System has been turned off.	Adjust fan speed to turn system back on.
System switches between blowing on the floor and through the vents often.	The temperature span may be set too small for your vehicle.	Go into setup and set the temperature span to a higher value.
Display reads COMMUNICATION ERROR	Communication between the display and controller was lost.	Check the display harness for damage or pinched locations and for proper connection.
Display reads "OPEN CABIN / VENT A / VENT B / FLOOR A / FLOOR B / DEFROST SENSOR"	Listed sensor appears disconnected.	Check the connection of the sensor wires for the sensor listed. Also check the sensor wires for breaks or pinched areas.
Display reads "SHORTED CABIN / VENT A / VENT B / FLOOR A / FLOOR B / DEFROST SENSOR"	Listed sensor appears shorted to ground.	Check for proper connection of listed sensor and check for pinched wires.
Controller doesn't remember temperature setting from when vehicle was last driven.	Constant power was lost to control box.	Ensure the +12v constant power of the GEN-IV-V harness has +12v with key off. The status LED on controller should blink once every 4 sec.
Fan speed, air output location, or temperature does not seem to match settings.	The GEN-IV-V may not be correctly calibrated to the DCC control signals.	Enter setup as described in "SETUP" section and keep engine off. Select "CALIB" from the menu to recalibrate the GEN-IV-V module to the DCC control signals.
System doesn't cool, even when set to lowest temperature setting.	GEN-IV-V may need calibration. Air conditioning system may need to be charged or may not be setup properly.	See "CALIBRATION" in setup section. Refer to the GEN-IV-V manual regarding system charging and troubleshooting.
Fan speed is low at startup.	DCC keeps fan low until the GEN-IV-V unit output air begins to change toward desired temperature.	This is normal operation and is done to prevent uncomfortable blasts of hot or cold air when the opposite is desired at start up.

⚠ WARNING: This product can expose you to chemicals including lead, which is known to the State of California to cause cancer and birth defects or other reproductive harm. For more information go to www.P65Warnings.ca.gov



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