

Dakota Digital

SERIES 3

VACUUM FLUORESCENT DIGITAL DASHBOARD

The latest in digital dashboard technology for the street rodder, car, and truck enthusiast.

INSTALLATION AND OPERATION MANUAL

Please read this before beginning installation or wiring.

MODEL VFD3-92C-PU

92-94 Chevrolet Full Size Pickup kit

Dakota Digital

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INSTALLING THE DISPLAY SYSTEM

The first step in installing your new digital gauge kit will be to remove the instrumentation cluster from your vehicle. The front plastic bezel must be removed first. Once this has been taken off, you can begin removing the instrument cluster. There are four screws which hold the instrument cluster in, two on each side. It may be necessary to move the heater vent duct or radio to get to the screws.



Figure 1

Once the instrument cluster has been removed, take the four screws out which hold the black hood onto the cluster. Remove the hood.

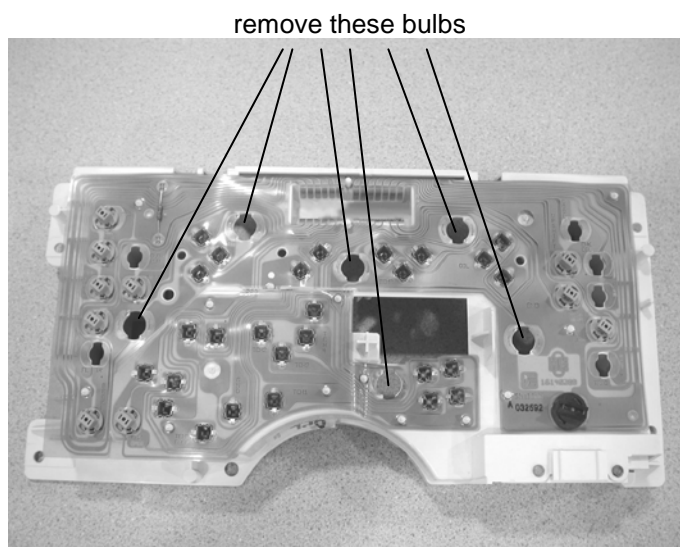


Figure 2

Turn the gauge housing over so you can see the back side. Unplug the four wire, black connector found in the center of the back side. Remove the six large gray light bulbs. Do not remove any of the small gray bulbs, or the large black bulb by the gear shift position indicator. The bulbs are taken out by rotating it counter-clockwise 1/8 turn and then pulling it. Turn the housing back over so the front is facing you.



Figure 3

The gauges consist of a single panel which can be pulled out of the housing. Remove this since they will no longer be used. The pin connections for the gauge panel holds it in very tightly so some force will be required. Start by working gently along the outside edges. Once it is out, you will see a small green circuit panel in the lower right side of the housing. Remove this also.

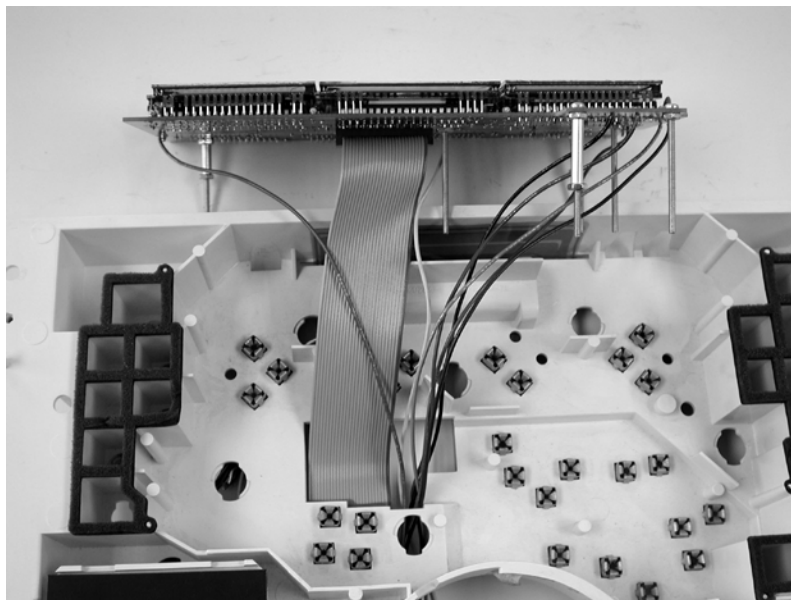


Figure 4

You are now ready to install the digital gauge panel. The screws sticking out of the back side will insert into the housing to make connection with the vehicle senders and wiring. The colored wires and flat gray cable coming out of the back side of the display panel will be routed out the hole in the center of the housing.

Carefully place the display panel into the housing and press down evenly on the display panel until it hits the bottom and stops.

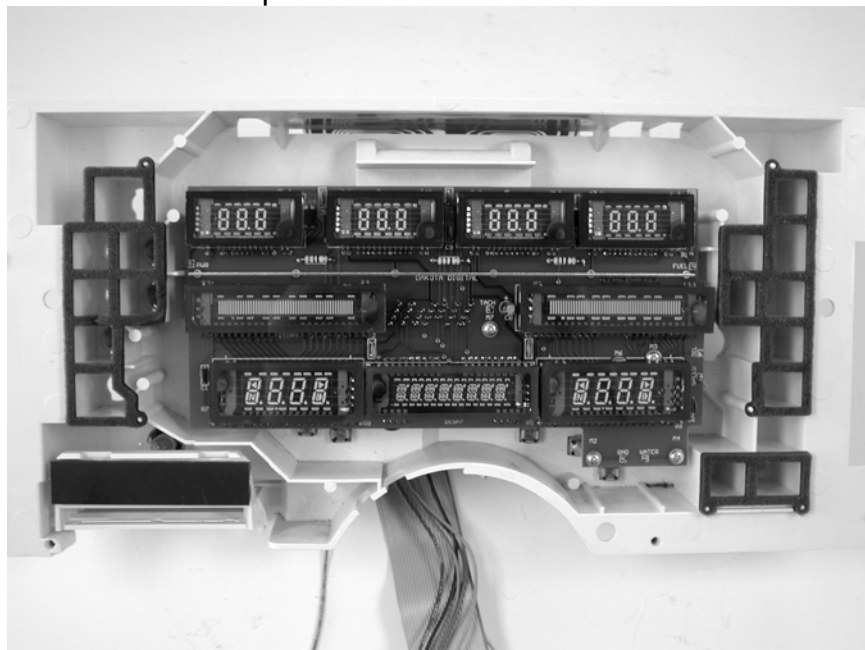


Figure 5

Place a washer and nut onto a screw sticking out of the back side of the housing. This will help ensure that the display panel does not vibrate loose.

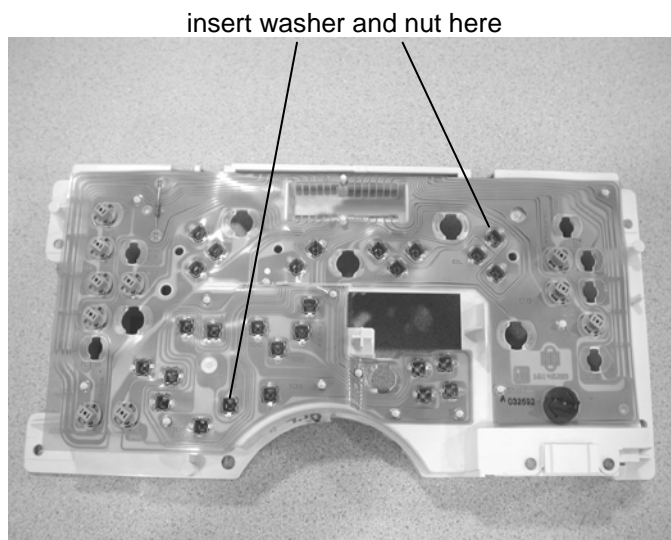


Figure 6

You are now ready to install the new lens onto the hood. Remove the two screws on the top side of the instrument cluster hood which hold the curved plastic lens on. Set the clear plastic lens aside.

Place a bead of clear or black silicone RTV around the bottom inside edge of the hood from the front side. The lens will be placed onto the front, inside lip of the hood and the RTV will hold it into place. The RTV will need several hours to cure before the hood can be placed back onto the instrument housing.

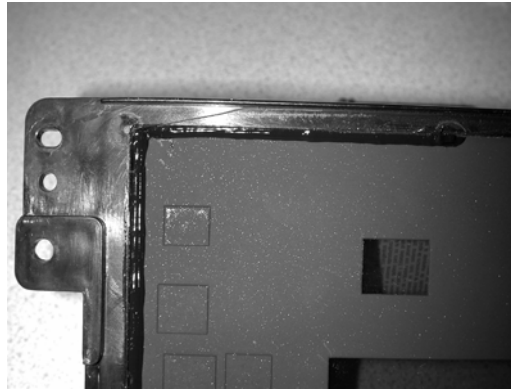


Figure 7

Once the RTV has cured, place the hood and curved plastic lens back onto the housing and secure it using the six screws that were originally in it.

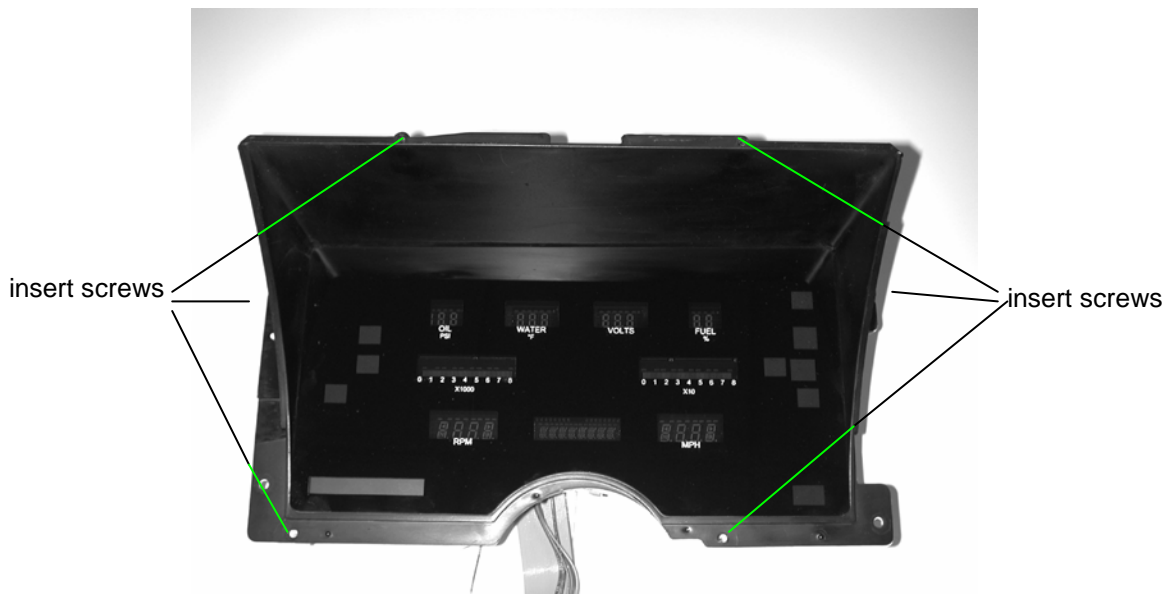


Figure 8

The wires coming out of the back of the housing will connect to the control box terminal strip. See the following section for wire color and location. After connecting the wires, the gauge housing is ready to go back into the dash. Reverse the disassembly procedure to put your dash back together. The control box can be mounted up under the dash or against the fire wall. The control box can be secured using screws, Velcro, or nylon cable ties. The system uses the original vehicle senders so you are now ready to drive away

Special Wiring Information for 92-94 pickup kits

CONTROL BOX

The color code for the wires from the display panel are as follows:

Wire color	Control box terminal
RED	12V
BLACK	GROUND
BROWN	SPEED
YELLOW	TACH
GREEN	WATER
GRAY	OIL
PURPLE	FUEL

GAUGE DIMMING CONNECTION

In order for the automatic dimming feature of the display system to operate properly, the "DIM" terminal must be connected to the park light circuit. The **BLUE** wire supplied with the system can be used to connect the DIM terminal to the park light circuit on your headlight switch. This will be a brown wire on position "A" of the headlight switch connector. The display system will dim whenever the "DIM" terminal has 12 volts applied to it.

Wiring Detail

+12V

The RED from the new gauge display cluster will provide power. This provides accessory power from the fuse panel or vehicle wiring harness. This terminal should have power when the key is on or in accessory position. In addition to powering the display system, this is also where the voltmeter gauge senses the vehicle electrical system voltage.

Never connect this to a battery charger alone. It needs to have a 12 volt battery connected to it. Battery chargers have an unregulated voltage output that will cause the system to not operate properly.

GROUND

The BLACK wire from the new gauge display cluster will provide a ground. This is the main ground for the display system.

Proper vehicle grounding is extremely important for the gauges to read and operate correctly. The engine block should have heavy ground cables to the battery, frame, firewall, and body. Failure to properly ground the engine block or the control box can cause incorrect or erratic operation.

DIMMING

The gauges are designed to dim down when the headlights are turned on. This is to reduce the display intensity at night so the gauges do not cause eye strain or reduced night vision. The blue wire supplied will need to be connected to the original headlight switch. This is discussed in detail in the special wiring instructions.

The default dimming method is to have the system to dim to a preset level when the lights are turned on. This preset brightness is adjusted in the setup menu "DIM". See DIM ADJ for a description of the second method.

DIM ADJ

The second method allows you to have a dash mounted control to vary the brightness while the headlights are on. This requires a 10k potentiometer or Dakota Digital's DIM-1 kit. A stock headlight rheostat will not work. The dash mount dimmer has two wires, one connects to the DIM ADJ terminal and the other connects to ground. The dash mount dimmer will only vary the display brightness when the DIMMING terminal has power.

SPEED

This system can accept 4000 ppm – 128000 ppm speed signals. The speedometer has been pre-calibrated to match the original speedometer. The speedometer is fully adjustable to allow for different tires and gear ratios. Calibration is discussed in a later section.

TACH

The tachometer wire is supplied from the original gauge cluster. **DO NOT USE SOLID CORE SPARK PLUG WIRES WITH THIS DASHBOARD SYSTEM.** Solid core ignition wires cause a large amount of electromagnetic and radio frequency interference which can disrupt the system operation.

The tachometer is compatible with almost all gasoline engines. The engine cylinder selection, display update rate, tach signal type, and rpm warning point can be adjusted in the setup menu under "TACH". If a diesel engine is being used then you will need a tach interface, such as Dakota Digital's DSL-1 or DSL-2.

WATER

This system is designed to use the original GM water temperature sender. Other senders will cause incorrect readings. The sender mounts on the engine block or into the intake manifold so that the end of the sensor is in the engine coolant flow. The sender gets its electrical ground connection to the engine block through its threads. *Do not use Teflon tape or thread sealant on the sender threads.* Doing so can cause incorrect readings or cause the gauge to display an out of range indication.

If the water display shows "---" this indicates that the control box is sensing a short to ground or out-of-range error from the sender or sender wire. If the water display shows "EEE" this indicates that the control box is sensing an open circuit or out-of-range error from the sender or sender wire. If either indication remains on the display, inspect the sender wire for damage, check the routing of the sender wire, check the sending unit grounding, and check that the correct sending unit is connected.

OIL

This system is designed to use the original GM oil pressure sender. Other senders will cause incorrect readings. The sender gets its electrical ground connection to the engine block through its threads. *Do not use Teflon tape or thread sealant on the sender threads.* Doing so can cause incorrect readings or cause the gauge to display an out-of-range indication.

If the oil display shows "—" this indicates that the control box is sensing a short to ground or out-of-range error from the sender or sender wire. If the oil display shows "EE" this indicates that the control box is sensing an open circuit or out-of-range error from the sender. If either indication remains on the display, inspect the sender wire for damage, check the routing of the sender wire, check the sending unit grounding, and check that the correct sending unit is connected.

FUEL

The display system will usually use the fuel sending unit that is already in the tank.

The fuel sender type is selected using the setup menu under “FUEL”. The settings are discussed later in the section on internal adjustments.

The fuel gauge will initially be set for the stock GM fuel sender. If the fuel display shows “EE” this indicates that the control box is sensing an open circuit or out-of-range error from the sender. If it remains on the display, inspect the sender wire for damage, check the routing of the sender wire, check the sending unit grounding, and check that the sender selection is set correctly for the sending unit that is connected.

SW 1 or Speed switch

The SW 1 terminal is used for selecting the various speed, distance, and performance displays and also for entering the setup menu. The SW 1 input is activated by a ground connection. The push button switch supplied (or any normally open switch) is wired by connecting one terminal to SW 1 and the other terminal to a ground. When the button is pressed and released, the speed message display will change. When the button is pressed and held for a few seconds, any re-settable information displayed will be zeroed. On systems with two message displays the one below the speed is dedicated to speed/performance messages. On systems with one message display the speed/performance and rpm/warn messages will use the same display.

SW 2 or Tach switch

The SW 2 terminal is used for selecting the various rpm, engine, and warning displays and also for entering the demonstration mode. The SW 2 input is activated by a ground connection. The push button switch supplied (or any normally open switch) is wired by connecting one terminal to SW 2 and the other terminal to a ground. When the button is pressed and released, the tach message display will change. When the button is pressed and held for a few seconds, any re-settable information displayed will be zeroed. On systems with two message displays the one below the tach is dedicated to rpm/warn messages. On systems with one message display the speed/performance and rpm/warn messages will use the same display.

To enter DEMO mode, press and hold the switch while turning the key on.

CHECK

This will not normally be connected since the original SERVICE ENGINE SOON bulb will still be used.

Whenever the check input is grounded the system will display “ENGINE” on the message display. This message can be cleared by pressing and holding switch 2.

With some ECM's a 12 volt light bulb may need to be connected in addition to our CHECK input in order to provide proper current loading. In this case both the bulb and our display system indicator would both come on when the check engine wire was set.

BRAKE

This will not normally be connected since the original BRAKE and ANTI-LOCK bulbs will still be used.

Whenever the BRAKE input is grounded the system will display "BRAKE" on the message display. This message can be cleared by pressing and holding switch 2.

CRUISE

This will not normally be connected.

The CRUISE terminal can be used as a cruise engaged indicator. The CRUISE input is activated by a ground signal from a compatible cruise control harness. Whenever the CRUISE input is grounded the system will display a small "c" to the right of the speedometer

WAIT

This will not normally be connected.

The WAIT terminal can be used as a wait to start or glow plug indicator. The WAIT input is activated by a 12 volt signal from the glow plugs. Whenever the WAIT input is powered the system will display "WAIT" on the message display. This message can be cleared by pressing and holding switch 2.

4x4

This will not normally be connected.

The 4x4 terminal can be used on four wheel drive vehicles. The 4x4 input is activated by a ground signal from a switch on the transfer case. Connect a wire from this terminal to the switch on the transfer case. Whenever the 4x4 input is grounded the system will display "4 WD" on the message display. When signal turns off, the system will display "2 WD" on the message display.

HI BEAM

This will not normally be connected since the original turn signal bulbs will still be used.

The HI BEAM terminal is activated by a 12 volt signal from the headlight high beam wire. When the terminal has 12 volts, an indicator will light up to the lower right of the speedometer display.

LEFT

This will not normally be connected since the original turn signal bulbs will still be used.

When this terminal has 12 volts, an arrow will light up to the left of the speedometer display. An existing wire from the vehicle for the left turn indicator can be used or a new wire can be connected from the turn signal switch.

RIGHT

This will not normally be connected since the original turn signal bulbs will still be used.

When this terminal has 12 volts, an arrow will light up to the right of the speedometer display. An existing wire from the vehicle for the right turn indicator can be used or a new wire can be connected from the turn signal switch.

SHIFT

The SHIFT terminal is an output for a relay or small light. The output is ground-activated when the preset rpm limit is exceeded. This output can turn on a 4 Watt or smaller 12 volt bulb or can activate a relay to turn on a larger bulb. To wire a warning light to this output, connect one wire from the bulb to 12 volt accessory power and connect the other wire to the SHIFT terminal.

GEAR SHIFT INDICATOR INPUT

This will not normally be connected since the original PRNDL indicator will still be used.

The GR terminal is used for the gear shift indicator. The indicator is built into every system but it will not light up unless a Dakota Digital GSS-1000 gear shift sending unit is connected to tell it what gear the transmission is in. The gear shift sending unit is not included with the system and must be purchased separately. The GR terminal will connect to the FIRST terminal a GSS-1000. Follow the instructions in the GSS manual for use with a single wire display system.

When the gear shift sending unit is connected, the gear name will be shown on the message display.

MESSAGE DISPLAYS

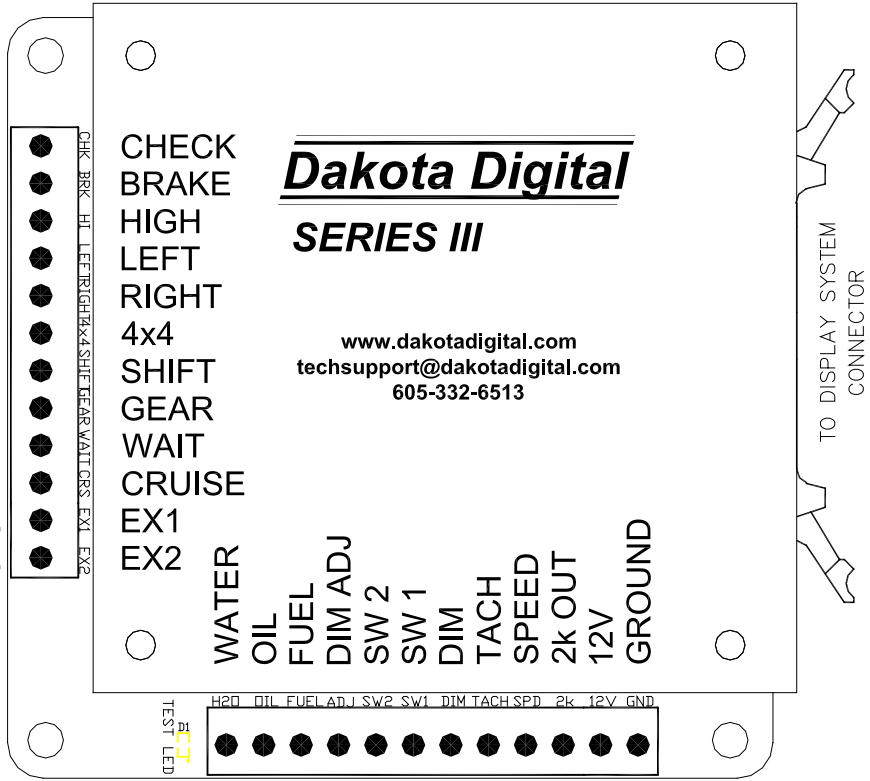
On systems with two message displays, switch 1 will toggle between the speed message displays and switch 2 will toggle between the tach message displays.

On systems with one message displays, switch 1 will either switch from the tach message to the speed message or toggle to the next speed message. Switch 2 will either switch from the speed message to the tach message or toggle to the next tach message.

<u>Speed message displays</u>	<u>DESCRIPTION</u>
ODOMTR	odometer mileage (0-999,999)
TRIP	trip odometer mileage (0-999.9)
SERVIC	miles since last service (0-9,999)
0-60 T	0-60 mph time in seconds (0-25.5)
HI SPD	high speed recall (0-255)
QUARTR	¼ mile time in seconds (0-25.5)
QT MPH	end of ¼ mile speed (0-255)
KPH xxx	kph conversion (or mph conversion if metric)

<u>Tach Message displays</u>	<u>DESCRIPTION</u>
HI RPM	high rpm recall (0-18,000)
RPM-WN	rpm warning point (displays "SHIFT" when exceeded)
ENGINE	check engine indicator
BRAKE	brake warning indicator
4 WD	4 wheel drive indication
WAIT	diesel wait to start indicator
GEAR	gear shift position indicator
HOURS	hours system has been on with tach signal (0-999.9)

CHECK ENGINE INDICATOR INPUT
 BRAKE SYSTEM WARNING INPUT
 HIGH BEAM INDICATOR INPUT
 LEFT TURN SIGNAL INDICATOR INPUT
 RIGHT TURN SIGNAL INDICATOR INPUT
 4 WHEEL DRIVE INDICATOR INPUT
 RPM WARNING/SHIFT OUTPUT
 1-WIRE GEAR INDICATOR INPUT
 WAIT TO START INPUT
 CRUISE ENGAGED INPUT
 CURRENTLY NOT USED
 CURRENTLY NOT USED



TEST LED
 H2O OIL FUEL ADJ SW2 SW1 DIM TACH SPD 2k 12V GND

"HEARTBEAT" STATUS LIGHT
 WATER TEMPERATURE SENDER INPUT
 OIL PRESSURE SENDER INPUT
 FUEL LEVEL SENDER INPUT
 NIGHT DIMMING ADJUSTMENT INPUT
 TACH SELECT SWITCH INPUT
 SPEED SELECT SWITCH INPUT
 GAUGE NIGHT DIMMING INPUT
 TACHOMETER INPUT
 VEHICLE SPEED SENSOR INPUT
 2k PPM SPEED OUTPUT
 +12 VOLT ACCESSORY POWER IN
 TO MAIN CHASSIS OR ENGINE GROUND

GAUGE SYSTEM FEATURES

Mileage readings

- Million mile odometer
- Re-settable trip mileage (0-999.9)
- Re-settable service mileage (0-9999)

Performance readings

- High speed recall. This is reset at power up and can be manually reset.
- High rpm recall. This is reset at power up and can be manually reset.
- 0-60 mph (0-100kmh) time. This is reset automatically when speed is zero.
- ¼ mile time. This is reset automatically when speed is zero.
- ¼ mile end speed. This is reset when the ¼ mile time restarts.

Hour meter

- Re-settable hours (0-999.9)

English/metric conversion

- Alternate speed can be displayed on message display.

Demonstration mode

- Holding switch 2 while turning on the key will start the system going through a preset sequence of readings. To exit the demo mode, turn the key off. You may also wire up a separate switch to power the gauges for demo mode without powering the entire vehicle.

Built-in Indicators

- Left/Right Turn signal indicators
- High Beam indicator
- Check Engine indicator
- Brake warning indicator
- 4x4 indicator
- Wait to Start indicator
- Cruise control indicator
- Gear position indicator which displays full gear word

Special outputs

- Shift output to turn on external light
- Selectable 2000 ppm or 4000ppm speed output for cruise or ECM

Setting up the control box

SETUP MENU

Main Menu	Sub Menu	DESCRIPTION
SPEED	AUTO	auto calibrate speed
	ADJUST	adjust calibrate speed
	UNIT	select mph F or kph C units
	OUTPUT	speed output rate
		MPH F
		KPH C
		2K PPM
		4K PPM
TACH	ENGINE	set engine cylinder setting
	UPDATE	set rpm update rate
	WARN	set rpm shift warning point
	SIGNAL	select normal or low voltage tach signal
		NORMAL
		LO VLT
FUEL	SENDER	set fuel sender type
		CUSTOM
		GM 30
		GM 90 – stock fuel sender
		GM 250
		F 10
		F 150
		V 180
		SW 33
		CUSTOM TEST
WATER	UNIT	select mph F or kph C units
	WARN	set high temp warning point
	TEST	display sender ohm reading
OIL	WARN	set low psi warning point
	TEST	display sender ohm reading
DIM	change preset night dimming	
DONE	restart system with new settings.	

SPEEDOMETER SETUP

Press and hold SW 1 switch while turning the key on and starting the engine. Once the engine is running, release the switch. When "SPEED" is displayed, press the switch again and then release it. The message display should switch between "AUTO", "ADJUST", "UNIT", and "OUTPUT".

METRIC SELECTION

If you are setting the system up for metric displays, press the switch when "UNIT" is displayed.

Press and release the switch until "KPH C" is displayed.

Press and hold the switch until "DONE" is displayed.

SPEED CALIBRATION

There are two methods for calibrating the speedometer, auto cal and adjust. Either one can be used. Auto cal requires that you have one measured mile marked out (km for metric). Adjust requires you to follow another vehicle going at a set speed or timing your self over a mile to determine your speed.

Auto Cal

When "AUTO" is displayed press and release the switch. The speedometer will display "CAL", the fuel, volt, oil, and water will display normally, and the message display will show zeroes. You should now begin driving the measured mile. The message display will count the number of pulses received from the sensor. The message display cannot be used to determine when a mile has been driven. Once you reach the end of your marked mile, press the switch again. The calibration is now done.

Adjust

When "ADJUST" is displayed press and release the switch. The system will restart with "ADJUST" on the message display. The fuel, volt, oil, water, and tach will operate normally. The speedometer will show the speed reading. Begin driving at a known speed. Press switch 1 to increase the speedometer reading and press switch 2 to decrease the speedometer reading. When the speedometer is correct you can stop and restart the system. The new calibration will be saved.

Speed Output

If a speed output signal is need for an ECM or cruise control, the 2k ppm terminal can be used. This will normally provide a 2000 pulse per mile signal after the speedometer has been calibrated. If you need a 4000 pulse signal, go to the SPEED setup menu and then select "OUTPUT".

Press and release the switch until 4K PPM is displayed.

Press and hold the switch until "DONE" is displayed.

FUEL SETUP

The control box can read 7 different types of preset fuel senders and can also be programmed for a custom fuel sender setup. Press and hold SW 1 switch while turning the key on. Release the switch. When "FUEL" is displayed, press the switch again and then release it. The message display should switch between "SENDER", "CUSTOM", and "TEST".

Sender Selection

When "SENDER" is displayed press and release the switch.

Press and release the switch until the desired setting is shown. The preset types are listed in the table below.

Press and hold the switch until "DONE" is displayed.

Sender type	Menu	Empty R	Full R
GM 0-30 ohm	GM 30	0 ohms	30 ohms
GM 0-90 ohm	GM 90	0 ohms	90 ohms
GM 40-250 ohm	GM 250	40 ohms	249 ohms
FORD 73-10 ohm	F 73	73 ohms	10 ohms
FORD 20-150 ohm	F 150	20 ohms	150 ohms
VDO 10-180 ohm	V 180	10 ohms	180 ohms
SW/SUN 33-240	SW 33	240 ohms	33 ohms
User programmed	CUSTOM	User settable	User settable

Custom Fuel setup

You will either need to have the sender out of the tank, or begin with the tank empty and add fuel during the setup.

When "CUSTOM" is displayed press and release the switch.

The speed display will show the current sender resistance seen by the control box.

The message display will show "SET 00". Move the float to the empty position and then press and release the switch.

The message display will show "SET 33". Release the switch and move the float to 1/3 full and then press and release the switch.

The message display will show "SET 66". Release the switch and move the float to 2/3 full and then press and release the switch.

The message display will show "SET 99". Release the switch and move the float to the full position and then press and release the switch. The new sender is not stored under the "CUSTOM" sender selection.

The message display will show begin going back through the main menu. When "FUEL" is displayed, press and release the switch.

When "SENDER" is displayed press and release the switch.

The current sender setting will now be displayed. Press and release the switch until "CUSTOM" is displayed.

Press and hold the switch until "DONE" is displayed.

TACHOMETER SETUP

The control box can be set to read from 1-15 cylinder ignition signals. It can also be set to read either 12 volt tach signals or 5 volt tach signals found on some engine computers. The digital tachometer update rate can be adjusted between slow, mid, and fast. The rpm warning/shift point can be adjusted from 2200 – 14800. The tachometer will read from 350 – 17,500 rpm. At rpm's above 9990 the reading will be displayed as rpmx1000 (12,000=12.00).

Press and hold SW 1 switch while turning the key on. Release the switch. When "TACH" is displayed, press the switch again and then release it. The message display should switch between "ENGINE", "UPDATE", "WARN" and "SIGNAL".

Engine cylinder setup

When "ENGINE" is displayed press and release the switch.

The current cylinder setting will be displayed.

Press and release the switch until the desired setting is displayed.

Press and hold the switch until "DONE" is displayed.

Display update setup

When "UPDATE" is displayed press and release the switch.

The update setting will be displayed. (1=slow, 2=mid, 3=fast)

Press and release the switch until the desired setting is displayed.

Press and hold the switch until "DONE" is displayed.

Rpm warning setup

When "WARN" is displayed press and release the switch.

The current warning point will be displayed.

Press and release the switch until the desired setting is displayed.

Press and hold the switch until "DONE" is displayed.

Tach signal setup

When "SIGNAL" is displayed press and release the switch.

The setting will be displayed. (NORMAL or LO VOLT)

Press and release the switch until the desired setting is displayed.

Press and hold the switch until "DONE" is displayed.

WATER TEMP SETUP

Press and hold SW 1 switch while turning the key on. Release the switch. When "WATER" is displayed, press the switch again and then release it. The message display should switch between "UNIT", "WARN" and "TEST".

METRIC SELECTION

If you are setting the system up for metric displays, press the switch when "UNIT" is displayed.

Press and release the switch until "KPH C" is displayed.

Press and hold the switch until "DONE" is displayed.

Temp warning setup

When "WARN" is displayed press and release the switch.

The current warning point will be displayed.

Press and release the switch until the desired setting is displayed.

Press and hold the switch until "DONE" is displayed.

OIL PRESSURE SETUP

Press and hold SW 1 switch while turning the key on. Release the switch. When "OIL" is displayed, press the switch again and then release it. The message display should switch between "WARN" and "TEST".

Pressure warning setup

When "WARN" is displayed press and release the switch.

The current warning point will be displayed.

Press and release the switch until the desired setting is displayed.

Press and hold the switch until "DONE" is displayed.

DIM PRESET SETUP

Press and hold SW 1 switch while turning the key on. Release the switch. When "DIM" is displayed, press the switch again and then release it. 88 or 888 will be displayed on the fuel, oil, volt, and water displays. The system will dim down to the current preset level.

Press and hold SW 1 until the desired night brightness is shown. When the system reaches its lowest brightness it will start over again at full brightness.

Once the night brightness is correct, press SW 2 to save it.

WIRE COLOR CODE FOR GM WIRING HARNESS

On the connector that originally plugged into the instrument cluster:

Function	Color
+12 volt	Pink/Black or Pink
Ground	Black
Oil sender	Tan or no wire if mechanical
Water sender	Dark green
Fuel sender	Pink or light brown (should not have power)
Left turn	Light blue
Right turn	Dark blue
High beam	Light green
Brake warn	Tan/white or tan

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 Limited Lifetime 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 for the lifetime of the original vehicle it was installed in, 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. 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 GUIDE

This is a list of some problems and their solutions which may be encountered when installing your instrumentation system. If you cannot determine what the problem is or how to solve it, please call our technical assistance line (605) 332-6513 or email to dakotasupport@dakotadigital.com.

*** A note on vehicle grounding. ***

The most common cause of problems with electric gauges is poor ground connections. The engine block has the highest ground currents of any point in the vehicle. The ignition system, electric gauge senders, starter, alternator, etc. all use the engine block for a ground point. Since the alternator is grounded directly to the engine block all ground currents in the entire vehicle must pass through the engine block while the engine is running. A weak or loose connection can cause all kinds of random problems that may difficult to track down. The engine block should have heavy ground straps to both the chassis and the body. The main negative cable from the battery should be connected directly to the engine block.

Symptom	Possible Problem	Solution
System does not light up and LED off.	Control box may not be getting power. Control box may not be getting a ground. The control box may have an internal problem	Check if the control box has 12 volts connected to it. Check if the control box has a proper ground connection. Do not use a battery charger to power the system. Contact Dakota Digital's service department with a description of the problem.
System does not light up and LED is on steady.	Control box may be getting too low of a voltage.	Check if power to control box is at least 11 volts. Do not use a battery charger to power the system.
System does not light up and LED is flashing.	The display system may not be getting power.	Insert the connector on the display system wiring harness into the slot on the side of the control box. Be sure the pins line up properly. Check the display system wiring harness for broken or cut wires.
One display does not light up at all, all others work correctly.	The display panel corner of the display is white or the display is cracked or broken	Return the display panel to Dakota Digital for repair. Include a phone number and address.
The tachometer will not show a reading.	The control box is not connected to the engine properly The engine cylinder setting is incorrect. The tach signal setting is incorrect.	Make sure the control box is connected to your particular ignition system properly. Refer to the tach setup section of the installation manual. Refer to the tach setup section of the installation manual.

Symptom	Possible Problem	Solution
The tachometer reading is incorrect.	The tachometer signal wire is loose or broken. The engine cylinder setting is incorrect.	Check the connections at both ends of the wire. Refer to the tach setup section of the installation manual.
The speedometer will not show a reading.	The speed sending unit is not connected to the control box properly. The speed sending unit being used is not compatible with the control box. The speed sending unit is not connected to the transmission properly. The sending unit wire is picking up noise from nearby wires.	Check that both speed sending unit wires are connected to the control box properly. Use the speed sending unit supplied with the display system. Check that sender is mounted properly. Check that transmission has the appropriate internal parts. Isolate the sending unit wire from motor and ignition wires.
The speedometer is reading too fast or too slow.	The speedometer is not calibrated.	Refer to the Speed Calibration section of the installation manual.
With the engine running and the vehicle sitting still, the speedometer reads higher than zero.	A tachometer wire is too close to the speed sensor wire. There is a ground problem between the speed sensor and the control box.	Reroute or isolate the tachometer wire away from the speed wire. Make certain the ground wire for the speed sensor is connected directly to the control box ground.
A display shows "EE"	Sending unit for that gauge is not connected to the control box. Sending unit is not getting grounded. On the water or oil, the sending unit is not the correct type. On the fuel, the control box may be set for the wrong fuel sender.	Check the wire from sending unit to the control box for breaks. Make sure that the sending unit is wired to the correct terminal. Make sure the sending unit is grounded properly. Make sure the water and oil senders have clean threads. Use the water and oil senders that were supplied with the system. Refer to "Fuel Setup" section of the installation manual to ensure that the settings match your fuel sender.
A display shows "- -"	The sending unit wire for that gauge is shorted to ground.	Repair or replace shorted wire.
Fuel displays "FL"	The control box is set to an invalid fuel sender setting.	Refer to "Fuel Setup" section of the installation manual to ensure that the settings match your fuel sender.

Symptom	Possible Problem	Solution
The fuel display reads backwards, incorrectly, or does not change.	The control box may be set for the wrong type of fuel sender.	Refer to "Fuel Setup" section of the installation manual to ensure that the settings match your fuel sender.
	The fuel sender may not be connected to the control box properly.	Check the connections at both ends of the fuel sender wire. Make sure the fuel sender is grounded properly.
	The fuel sender may not be operating properly. The fuel sender may have a non-standard resistance range.	Check the fuel sending unit with an electrical multi-meter. Use the custom fuel sender setup. See the Fuel Setup section of the manual for instructions.
The oil or water display reading is incorrect.	The engine block may not be grounded to the chassis frame or body properly.	Use heavy ground cables from the battery to the engine block. Make sure both ends of the cable have clean metal-to-metal connections. Use a braided ground strap to ground the engine block to the chassis. Use a large braided ground strap to ground the engine block to the body or fire wall.
	The threads are not grounding to the engine block.	Make sure no thread sealant is used on any of the threads.
	The sending unit wire is picking up noise from nearby wires.	Isolate the sending unit wire from motor and ignition wires.
	The sending unit is not compatible with the control box The sending unit has failed.	Use the sending unit provided the display system. Return the sending unit to Dakota Digital for replacement.

Symptom	Possible Problem	Solution
The gear shift indicator does not light up.	The optional gear shift sending unit is not connected to the control box.	Connect the sending unit to the control box using the instructions supplied with the sending unit.
The gear shift indicator does not operate properly.	The gear shift decoder is not connected properly.	Check the connections to the transmission linkage and to the control box. Check gear shift decoder Installation manual.
The internal turn signal and high beam indicators do not light up.	The control box is not connected to the vehicle's electrical system properly.	Check the wires connected to the HIGH, LEFT, and RIGHT terminals on the control box.
The check engine indicator does not operate properly.	The control box is not connected to a TPI control module.	This feature is designed to work with engine control systems that provide an active low signal.
The check engine indicator stays on all of the time.	The Engine Control Module (ECM) needs to see the load of a light connected to it.	Connect a light or similar load to the ECM along with the control box.
The Function switches do not operate properly.	The push-button switches are not connected to the control box. The wrong type of switch is being used.	Momentary push-button or toggle switches must be connected to the SW1 and SW2 terminals as described in the manual. The switch terminal connected to the control box should normally be open. When the the switch is activated, the terminal should make contact to ground.
The display system starts up in the demonstration mode and remains in it.	Sw 2 terminal is constantly connected to ground.	Disconnect or replace the SW2 switch.

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