

Dakota Digital

ODYR-24-1 and SLX-24-1 Air Bag Display and Control System

Introduction

This control system connects to a display module and pressure senders to allow monitoring and control of all four corners and optional monitoring of the tank pressure. Each bag can be manually raised or lowered as well as control of the front two together, rear two together, or all four together. The bag senders can be either 150 psi units or 400 psi units for high pressure systems. The tank sender is always the 400 psi unit.

This control system can also be connected to a remote transmitter system to allow individual remote control of the air bag system. The functions include individual corner up/down, all up/down, front up/down, and rear up/down.

IMPORTANT: *Make sure to always disconnect the negative cable from the battery if you are going to be working on or under the vehicle. Failure to do so can result in serious injury if the system is accidentally activated.*

Wiring

Main connector

RED	constant 12V power
BLACK	ground
YELLOW	12V accessory power
BLUE	night dimming (connect to tail light or head light circuit)
WHITE/GREEN	right rear down solenoid (not used for FRONT/REAR setup)
GREEN	right rear up solenoid (not used for FRONT/REAR setup)
WHITE/PURPLE	left rear down solenoid
PURPLE	left rear up solenoid
WHITE/ORANGE	right front down solenoid (not used for FRONT/REAR setup)
ORANGE	right front up solenoid (not used for FRONT/REAR setup)
WHITE/BROWN	left front down solenoid
BROWN	left front up solenoid

Sender connector

GREEN	right rear pressure sender (not used for FRONT/REAR setup)
PURPLE	left rear pressure sender (rear sender for FRONT/REAR setup)
ORANGE	right front pressure sender (not used for FRONT/REAR setup)
BROWN	left front pressure sender (front sender for FRONT/REAR setup)
GRAY	tank pressure sender
BLACK	ground to senders

Display connector

Mates to display

Remote receiver connector

Mates to ARR-2000 module harness connector

OPERATION AS DISPLAY AND MANUAL HEIGHT CONTROL SYSTEM

Operation:

The gauge needs only the RED and BLACK wires connected to light up. When the BLUE wire has 12 volts, it will dim the display for night viewing. **The senders must be Dakota Digital part SEN-03-1 or SEN-03-5.** Sending units from other manufacturers will cause incorrect readings. SEN-03 has 1/8" NPT threads. If other thread sizes are needed, an adapter fitting should be used to change the thread size. If a sender is giving an incorrect reading or is disconnected, the display will show "EE". If the sender is shorted to ground, the display will show "--".

The display will flash whenever one of the displayed pressures is out of the warning set limits.

When the system is first powered up it will be in the warning display mode. Four, three, or two bag readings will be displayed depending on which senders are connected. If one of the bag pressures is outside of the warning limits then that reading will flash and the warning output will be activated. Moving the joystick up, down, left, or right will not do anything. Pressing the joystick in and holding it for a couple seconds will switch to the tank display if the tank sender is connected. Pressing and releasing the joystick will switch to the manual control display.

When in manual display if any of the pressures are outside their warning limits the reading will not flash, but the warning output will be active. If the joystick is pressed and held to display the tank pressure the system will always go back to the warning display mode when the joystick is pressed again. The bags cannot be raised or lowered while the tank pressure is displayed. If no switches are pressed for 8 seconds then the system will automatically switch to the warning display mode.

The first manual control display has only one bag reading highlighted at a time. The bag matching the reading highlighted can be raised by moving the joystick up or lowered by moving the joystick down. Moving the joystick to the right or left will change which bag is highlighted. Pressing and releasing the joystick will switch to the next manual control display.

The second manual control display has both front or both rear bag readings highlighted at the same time. This screen will not be seen in two-bag setups. Moving the joystick up will raise both bags and moving the joystick down will lower both bags. Moving the joystick to the right or left will change which bags are highlighted. Pressing and releasing the joystick will switch to the next manual control display.

The final manual control display has all of the bag readings highlighted. Moving the joystick up or down will raise or lower all bags together. Moving the joystick left or right will have no affect. Pressing and releasing the joystick will switch back to the warning display mode.

Setting the sender type:

While the tank sender is always a 400 psi type, the bags will work with either 150 psi senders or 400 psi senders. The procedure for setting the sender type is as follows:

1. Push and hold in the joystick while you turn the key on. The display should light up and show "SETUP".
2. Release the switch. Push the joystick up or down until "SNDR" "TYPE" is displayed.
3. Push in and release the joystick. The display should show "xxx SNDR" "TYPE" where xxx is 150 for the 150 psi senders and 400 for 400 psi senders.
4. Each time the joystick is moved up the type will change.
5. When the desired sender type is shown push in and release the joystick.
6. The display will now show "SETUP" "DONE". Push in and release the joystick to exit setup or move the joystick down to select a different setup menu.

Setting the warning limit:

The low and high warning limits can be set to different values, also the front bag, rear bag, and tank warnings can each be set differently. The push button switch on the front of the display is used for setting the warning limit. The procedure for setting the warning limit is as follows:

1. Push and hold in the joystick while you turn the key on. The display should light up and show "SETUP".
2. Release the switch. Push the joystick up or down until "WARN" "SETUP" is displayed.
3. Push in and release the joystick. The display will now show "xxx FRONT" "HIGH" where xxx is the current front high pressure warning point.
4. Each time the joystick is moved up the high warning point will increase. When the joystick is moved down the high warning point will decrease.
5. When the desired high warning point is displayed push in and release the joystick. The display will change to " xx FRONT" "LOW " where xx is the current front low pressure warning point.
6. Move the joystick up or down to change the low warning values until the desired value is shown.
7. Push in and release the joystick. The display will change to "xxx REAR" " HIGH" where xxx is the current rear high pressure warning point.
8. Move the joystick up or down to change the high warning values until the desired value is shown.
9. Push in and release the joystick. The display will change to " xx REAR" " LOW" where xx is the current low pressure warning point.
10. Move the joystick up or down to change the low warning values until the desired value is shown.
11. Push in and release the joystick. The display will change to "xxx TANK" "HIGH" where xxx is the current high pressure warning point.
12. Move the joystick up or down to change the high warning values until the desired value is shown.
13. Push in and release the joystick. The display will change to "xxx TANK" "LOW" where xx is the current low pressure warning point.
14. Move the joystick up or down to change the low warning values until the desired value is shown.
15. Push in and release the joystick. The display will now show "SETUP" "DONE". Push in and release the joystick to exit setup or move the joystick down to select a different setup menu.

Using the auto raise feature:

This unit can optionally be set to adjust the bag pressures to a preset level every time the key is turned on. This feature can also be turned off. The auto raise will quit if the joystick is moved in any direction, the tank pressure drops to the same level as one of the bags, or 20 seconds has expired. If the unit times out or quits due to low pressure, it will begin scrolling between "TANK LOW", "LEFT EXIT", and "RIGHT RETRY" while showing your current tank pressure to the left of the screen. While this screen is showing, move the toggle to right and the system will try to adjust to the preset ride height again, move the toggle to the left to revert back to manual operation mode. The procedure to change the settings are as follows:

1. Push and hold in the joystick while you turn the key on. The display should light up and show "SETUP".
2. Release the switch. Push the joystick up or down until "AUTO" "RAISE" is displayed.
3. Push in and release the joystick. The display will now show "AUTO" "YES" if the auto mode is currently activated or "AUTO" "NO" if it is disabled.
4. To disable the auto raise, move the joystick up or down until "NO" is displayed. Push in and release the joystick. The display will now display "SETUP" "DONE".
5. To enable or change the auto raise, move the joystick up or down until "YES" is displayed. Push in and release the joystick.
6. The display will now show the current output speed control setting. There are eight settings, with 1 being for slow systems and 8 for very fast systems. Move the joystick up or down until the desired setting is displayed.
7. Push in and release the joystick. The display will now show the current pressure readings with one bag reading highlighted.
8. Move the joystick up or down to change the currently selected bag. Move the joystick left or right to select a different bag to adjust. When the bags are set where you want them, push in and release the joystick to save the settings. The display will now show "SETUP" "DONE".

SENDER WIRING

GRAY - connect to tank pressure sender (optional).

The GRAY wire should be left open if the tank pressure is not being monitored.

Sender Wiring for 4 bag systems:

GREEN - connect to the right rear pressure sender.
PURPLE - connect to the left rear pressure sender.
ORANGE - connect to the right front pressure sender.
BROWN - connect to the left front pressure sender.

Sender Wiring for 3 bag systems:

GREEN - DO NOT CONNECT.
PURPLE - connect to the rear pressure sender.
ORANGE - connect to the right front pressure sender.
BROWN - connect to the left front pressure sender.

Sender Wiring for 2 bag, front/rear systems:

GREEN - DO NOT CONNECT
PURPLE - connect to the rear pressure sender.
ORANGE - DO NOT CONNECT
BROWN - connect to the front pressure sender.

Sender Wiring for 2 bag, left/right systems:

GREEN - connect to the right pressure sender.
PURPLE - connect to the left pressure sender.
ORANGE - DO NOT CONNECT
BROWN - DO NOT CONNECT

Sender Wire Connection:

The SEN-03-1 has just a single terminal on top. Connect this to a wire that goes back to the controller. The sender case is the ground connection. Screw the sender into a grounded fitting or attach a ground wire to the case.

The SEN-03-5 has two terminals on top. Connect one to a wire that goes back to the sender input on the controller. Connect the other to a wire that goes back to the ground connection for the gauge. The polarity of the two wires on the sender does not matter.

Mounting:

The gauge requires a round hole 2-1/16" in diameter. It should be inserted into the opening from the front and the U-clamp will be installed from the back. Tighten the two nuts on the U-clamp so that the gauge is secure. Gauge depth to the back of the case is 1". Gauge depth including the mounting studs is 1-7/8".

The controller can be mounted to wood, metal, or plastic using screws with the four mounting holes, double sided tape, or hook and loop fasteners.

Troubleshooting guide.

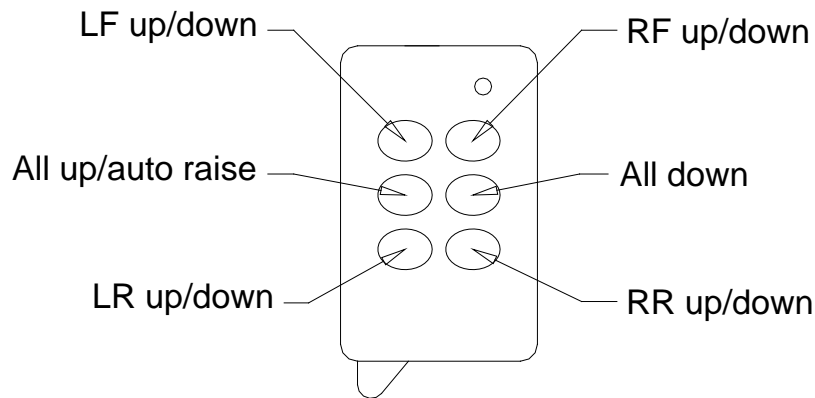
IMPORTANT: Make sure to always disconnect the negative cable from the battery if you are going to be working on or under the vehicle. Failure to do so can result in serious injury if the system is accidentally activated.

Problem	Possible cause	Solution
Gauge will not light up (red light is off)	RED wire does not have power.	Connect to a location that has power.
	BLACK wire is not getting a good ground.	Connect ground to a different location.
Gauge will not light up (red light is flashing slowly)	YELLOW wire does not have power.	Connect to a location that has power with the key on.
Gauge will not light up (red light is flashing rapidly)	The key is not on.	The ignition key must be turned on.
	Display harness is unplugged.	Seat connectors in tightly at both ends.
Gauge lights up, but displays "EE".	Gauge is damaged.	Return gauge for repair. (see instructions)
	Sender is not connected to gauge.	Connect wires from gauge to sender terminals.
Gauge lights up, but does not read correctly.	Wire between gauge and sender is broken.	Test and replace wire.
	Sender is not grounding properly.	Sender grounds through it's mounting threads. Make sure the threads are clean. Do Not Use Tape or Sealant on Sender Threads.
Gauge lights up, but displays "--".	Gauge is damaged.	Return gauge for repair. (contact factory)
	Sender is damaged.	Return for replacement. (see instructions)
Gauge lights up, but does not read correctly.	Sender wire is shorted to ground.	Check wire for damaged insulation, replace if necessary.
	Gauge is damaged.	Return gauge for repair. (contact factory)
Gauge lights up, but does not read correctly.	Loose connection on power wire.	Reconnect wire going to PWR terminal.
	Poor sender ground.	Make sure sender case is getting a solid ground.
Gauge flashes constantly.	Poor ground connection.	Move ground to different location
	Incorrect sender type.	Make sure sender has been replaced with the correct type (SEN-03-1 or -5). Reset the sender type.
Gauge flashes constantly.	Gauge is set for the wrong sender type.	Reset the sender type.
	Warning limits are not set properly.	Reset warning limits.
Gauge will not dim.	Vehicle has improper air pressure.	Check air level and air pump.
	BLUE wire is not connected correctly.	Check wiring connections.
Gauge remains dim at all times.	Gauge is damaged.	Return gauge for repair. (contact factory)
	BLUE wire is getting power all of the time.	Connect BLUE wire to a location that only has power when the headlights are on.
Bags will not raise or lower	Battery is very low.	Recharge or replace vehicle battery.
	Gauge is damaged.	Return gauge for repair. (contact factory)
Auto-Raise feature not working properly	Fuse is blown.	Test and replace 10 amp fuse if necessary.
	Gauge is not in control mode.	Press the switch until one or more of the bag readouts are highlighted.
Auto-Raise feature not working properly	Tank pressure too low	Wait for pressure to come up, then move joystick to the right to retry.
	Solenoid speed set improperly	Set your output speed control to the highest setting that will still allow your bags to raise.

OPERATION AS REMOTE CONTROL SYSTEM

The remote system is active when the large red power wire has power and the accessory power wire does not. This prevents accidental operation using the remote system while the vehicle is being driven. When the remote system is ready and waiting to operate the red light on the controller will be flashing slowly.

There are two modes of operation for the transmitter.

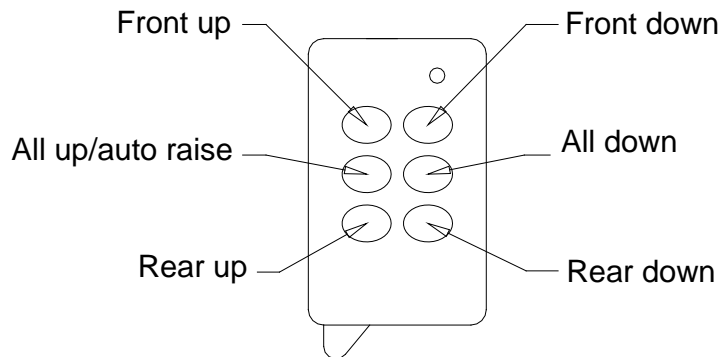


OPERATION FOR MODE 1

The key chain transmitter has six buttons. They are labeled I, II, III, IV, V, and VI.

Button I controls the left front bag. The first time it is pressed it will release air from the bag until the button is released. The next time it is pressed it add air into the bag until it is released. Button II controls the right front bag, button V controls the left rear bag, and button VI controls the right rear bag. They work the same as button I, reversing the bag direction each time it is pressed.

Button IV will lower all of the bags together. Button III will lower all of the bags together if the auto raise on power up is disabled. If the auto raise on power up is enabled then button III will begin the auto raise routine after a 3 second delay.



OPERATION FOR MODE 2

The key chain transmitter has six buttons. They are labeled I, II, III, IV, V, and VI.

Button I raises the front two bags together.



Button II lowers the front two bags together.



Button V raises the rear two bags together.



Button VI lowers the rear two bags together.



Button IV will lower all of the bags together. Button III will lower all of the bags together if the auto raise on power up is disabled. If the auto raise on power up is enabled then button III will begin the auto raise routine after a 3 second delay.

CHANGING THE REMOTE OPERATION MODE

1. Push and hold in the joystick while you turn the key on. The display should light up and show "SETUP" "MODE".
2. Release the switch. Push the joystick up or down until "REM" "SETUP" is displayed. Push in and release the joystick. The display should show "REM" "MODE".
3. Push in and release the joystick. The display should show 01 or 02 to indicate the current mode selected.
4. Push the joystick up or down to select a different mode. Push in and release the joystick to save the selected mode.
5. The display should show "SETUP" "DONE". Push in and release the joystick to exit the setup routine.

TRANSMITTER PROGRAMMING

All of the transmitters to be programmed into the system should be available. This sequence will erase any previously programmed transmitters. If a transmitter is lost or stolen, go through the programming sequence with the remaining transmitters and the lost one will be erased.

1. Push and hold in the joystick while you turn the key on. The display should light up and show "SETUP" "MODE".
2. Release the switch. Push the joystick up or down until "REM" "SETUP" is displayed. Push in and release the joystick. The display should show "REM" "MODE".
3. Push the joystick up or down until "REM" "PRGM" is displayed. Push in and release the joystick. The display should show "PRS 3" "TWICE".
4. Press button three twice on each transmitter. (If you wait too long it will exit the setup routine.)
5. Turn the key off when done.

BATTERY REPLACEMENT

Should the transmitter function become weak or erratic, the battery in the key chain transmitter may be weak. An indication of a weak battery is that the red indicator may have a dim glow to it when either button is pressed. If this occurs, first check the system by using the second transmitter provided. If the second transmitter functions properly, replace the battery in the defective transmitter by the following method:

- A. Use a small, flat screw driver or knife to pry the case apart next to the chain.
- B. Carefully separate the two case halves.
- C. Remove the battery noting the (+) and (-) position.
- D. Replace the battery with a new 12 volt type GP23A battery which is available at most electronic stores (Radio Shack, etc.).
- E. Carefully replace the top cover snap it into place.
- F. Check transmitter function.

TROUBLE SHOOTING GUIDE

IMPORTANT: Make sure to always disconnect the negative cable from the battery if you are going to be working on or under the vehicle. Failure to do so can result in serious injury if the system is accidentally activated.

Symptom	Possible Problem	Solution
System will not operate any of the solenoids.	Ignition key is on. Accessory input is powered Remote module is not plugged in.	Turn off ignition. Check connection to Acc. wire. Connect connections.
Air solenoids 'jump' or 'chatter'.	Weak or poor 12 volt connection.	Check 12 volt connection. Move to new terminal point.
Bags change direction in mid-travel.	Over loaded 12 volt power circuit.	Place receiver and windows on separate circuits. Check for loose connections. Increase wire size on power.
	Weak car battery. Transmitter signal is being disrupted.	Recharge or replace car battery. Move antenna away from power wires.
Transmitter has very short range on all functions.	Transmitter battery is weak. Antenna needs repositioning	See Battery Replacement. Move antenna out away from any high current wires.

When the system is ready to receive a transmitter signal, the red light should be flashing slowly. If it is not, begin checking the power and ground connections.

If none of these solutions solve the problem, or the problem occurring is not listed here, please call the Dakota Digital technical assistance line at (605) 332-6513 for further assistance or email to dakotasupport@dakotadigital.com.

Technical specifications

Minimum operating voltage	-	7 volts	
Maximum operating voltage	-	18 volts	
(operating at or near maximum rating for an extended time can damage unit)			
	with sender	SEN-03-1	SEN-03-5
Maximum pressure reading	-	150 psi	400 psi
Gauge Resolution	-	1 psi	2 psi
Accuracy (lower 2/3)	-	4 psi	8 psi (gauge and sender combined)
Accuracy (upper 1/3)	-	8 psi	16 psi (gauge and sender combined)
Typical current draw (@ 13.8V)	-	0.25 A	

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.

Dakota Digital

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