



Series II HLY-3021 PERFORMANCE TACHOMETER

Introduction:

The Odyssey Series II gauges from Dakota Digital, Inc. incorporates the reliability and quality of our standard gauges, along with several unique features and easy mounting. These features include:

- Industry standard 3-3/8" gauge size.
- Push button tachometer calibration.
- 99,999.9 Hour Meter.
- 999.9 Resettable service hour meter.
- Adjustable shift indicator with an output for a light.
- High rpm recall.
- Weather-proof construction.
- Adjustable display update rate.
- Microprocessor stabilized readings.
- Night dimming with lens label lighting.
- Non-Glare, high contrast lens
- High Visibility VFD display for sunlight readability.

WIRING COLOR CODE FOR GAUGE:

RED	+12 volt power with key on
BLACK	ground for gauge
YELLOW	shift light output (Low current only! Use a relay for high current lights.)
GRAY	tach signal input
BROWN	not used
BLUE	night dimming
WHITE/RED	optional weak pull-up for computer tach signals.

POWER

Connect the red wire from the main harness to accessory power from the ignition switch.

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 is the main ground for display system. A poor ground connection can cause improper or erratic operation.

TACHOMETER

The gray wire connects to the vehicle tach signal. On point type and pointless distributors connect to the negative side of the coil. This will sometimes be labeled TACH or DIST. On distributorless ignition systems, connect to the tach output wire or to the negative wire of one of the coils. On MSD ignition systems connect to the tach output terminal.

For tach signals integrated into a vehicle wiring harness, consult a service manual to determine the color code and location of the tachometer signal. The tach signal from some engine computers requires a weak pull-up. Connect the white/red and gray wires together to the tach signal from the engine computer.

The tachometer is adjustable from 1 to 15 cylinder signals and calibration is discussed below. Diesel engines will usually require a diesel tach adapter DSL-1 or DSL-2, available from Dakota Digital, Inc. The tachometer will display rpm directly up to 9,990 and rpm x1000 for rpm over 10,000. The maximum rpm the tachometer will read is 17,900.

TACHOMETER CALIBRATION

The tachometer calibration is done using the function switch.

1. Make sure the key is off so the gauge is not powered.
2. Press and hold the function switch.
3. Turn the key on. The display will show "--".
4. Release the function switch. The display will switch between "CYL" (cylinder select), "SET" (warning set), and "SPd-" (update speed). The odometer will show "SELECT"
5. When "CYL" is displayed press the function switch.
6. Release the function switch. The rpm display will show the current cylinder setting and the lower display will show "ADJUST".
7. Press and release the function switch to change the setting. Each time the setting will increase by one.
8. When the desired value is displayed, press and hold the function switch. The calibration value will be stored.
9. Release the function switch. The gauge will now restart in normal mode with the new settings.

WARNING/SHIFT POINT SETTING

Changing the warning/shift point is done using the function switch.

1. Make sure the key is off so the gauge is not powered.
2. Press and hold the function switch.
3. Turn the key on. The display will show "--".
4. Release the function switch. The display will switch between "CYL" (cylinder select), "SEt" (warning set), and "SPd-" (update speed). The odometer will show "SELEct"
5. When "SEt" is displayed press the function switch.
6. Release the function switch. The rpm display will show the current warning setting and the lower display will show "WARN".
7. Press and release the function switch to change the setting. Each time the setting will increase by 100.
8. When the desired value is displayed, press and hold the function switch. The calibration value will be stored.
9. Release the function switch. The gauge will now restart in normal mode with the new warning setting.

SHIFT LIGHT OUTPUT

The shift light output is a ground switch that turns on whenever the rpm exceeds the warning point. It can handle 0.25A, equivalent to a 3W 12V bulb. Connect a low current indicator as follows: One wire from the light will connect to 12 volts, the other wire will connect to the yellow wire from the gauge.

If a large or high power light will be used, then a relay should be connected as follows: One of the coil wires should be connected to 12 volts and the other coil wire will connect to the yellow wire from the gauge. The relay contacts will be used to switch power to the light. Any 12volt automotive relay can be used, such as Dakota Digital's RLY-1 30A relay.

FUNCTION SWITCH

The function switch on the front of the speedometer allows access to all of the performance information. Pressing and releasing the function switch toggles through the different displays. The display sequence is as follows:

HOURS	>	00000.0	Hours in use
SERVIC	>	S 000.0	hours since last service
HI RPM	>	H 0000	high rpm recall
WARN	>	W 0000	current warning set point

The gear display is only available when a GSS-1000 universal gear shift sender is connected to indicate what gear the automatic transmission is in.

Each of the displays are described in more detail here:

HOURS

The hours display keeps track of and stores the time. No power is required to maintain the memory stored internally. The hourmeter has a range of 0 – 99,999.9 hours.

SERVIC

The service hourmeter keeps track of the hours since the last reset. The service hours are reset to zero by pressing and holding the function switch while the service hours is displayed. The service hourmeter has a range of 0 – 999.9 hours.

HI RPM

The high rpm recall keeps track of the highest rpm reached. This is reset to zero each time the tachometer is turned on and can also be reset by pressing and holding the function switch while the hi rpm is displayed.

WARN

The warn display shows where the warning point is currently set. Any time the rpm exceeds the warning point the display will flash "SHIFT" and the output for an external shift light will be turned on.

SERVIC

The service mileage can be used to keep track of the miles traveled since the last oil change or service. It is reset to zero by pressing and holding the function switch while the service mileage is displayed. The service mileage has a range of 0-9,999 miles.

TACHOMETER DISPLAY UPDATE ADJUSTMENT

The tachometer digital display update rate can be changed. Slower updates give a more stable reading, faster updates give quicker response. The HI RPM recall and SHIFT warning are always at 1/8 second update. The default setting is 1/2 second, which provides the most stable reading.

1. Make sure the key is off so the gauge is not powered.
2. Press and hold the function switch.
3. Turn the key on. The display will show "--".
4. Release the function switch. The display will switch between "CYL" (cylinder select), "SEt" (warning set), and "SPd-" (update speed). The odometer will show "SELECt"
5. When "SPD-" is displayed press the function switch.
6. Release the function switch. The rpm display will show the current display update setting and the lower display will show "UPDATE".
7. Press and release the function switch to change the setting. Each time the setting will increase by one. "SPd1" is 1/2 sec. update, "SPd2" is 1/4 sec. update, and "SPd3" is 1/8 sec. update.
8. When the desired value is displayed, press and hold the function switch. The setting will be stored.
9. Release the function switch. The gauge will now restart in normal mode with the new settings.

NIGHT DIMMING

Your display system has a dimming feature that dims the display intensity. Normally the system is at full brightness for daytime viewing. When the blue wire has 12 volts the display intensity will be reduced. Connect this to a park light or tail light circuit, then whenever the headlights are on the display will dim. To have the system at full brightness all of the time leave the blue wire disconnected.

MOUNTING:

The gauge requires a round hole 3-3/8" 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.

Troubleshooting guide.

Problem	Possible cause	Solution
Gauge will not light up	Red wire does not have power. Black wire is not getting a good ground. Gauge is damaged.	Connect to a location that has power. Connect ground to a different location. Return gauge for repair. (see instructions)
Gauge lights up, but displays "tACH" "Err"	Tach calibration is invalid	Gauge must be recalibrated (see instructions).
Gauge lights up, but displays just "Err" only	Gauge is damaged.	Return gauge for repair. (see instructions)
Gauge lights up, but speed will only show zero.	Gray wire is not connected properly. Ignition system not grounded properly. Gauge is not grounded properly.	Check connection from gray wire to tach signal wire. Check engine and ignition system grounds. Check gauge and engine grounds.
Tach reading is erratic or jumps around.	Gauge is not calibrated Tach signal wire is loose or broken. Poor ground connection.	Gauge must be recalibrated (see instructions). Check all wire connections and inspect wire for breaks. Check ground connection on tachometer and engine.
Tach reading is incorrect.	Update rate is too fast. Gauge is not calibrated correctly.	Reset display update speed slower. Gauge must be calibrated (see instructions).
Gauge will not dim.	Blue wire is not connected correctly.	Check wiring connections. Blue wire should have 12 volts with headlights on.
Gauge remains dim at all times.	Blue wire is getting power all of the time.	Connect blue wire to location that only has power when the headlights are on.

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 units. Should you ever need to send the unit back for repairs, please 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 a complete description of the problem, your full name and address (street address preferred), and a telephone number where you can be reached during the day. An authorization number for products being returned for repair is not needed. Do not send any money. We will bill you for the repair charges. Any returns for warranty work must include a copy of the dated invoice or bill of sale.

ODYSSEY SERIES DIGITAL GAUGE LIMITED WARRANTY

DAKOTA DIGITAL (the Company) 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 the Company's option) without charge for parts or labor directly related to repairs of the defect(s).

To obtain repair or replacement within the terms of this Warranty, the product is to be delivered with proof of warranty coverage (e.g. dated bill of sale), name, address, phone number, and specification of defects, transportation prepaid, to the factory. This Warranty is valid for the original purchaser only and may not be transferred.

This warranty does not cover nor extend to damage to vehicle electrical system. 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 express 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. IN NO CASE SHALL THE COMPANY BE LIABLE FOR ANY CONSEQUENTIAL OR INCIDENTAL DAMAGES FOR BREACH OF THIS OR ANY OTHER WARRANTY, EXPRESSED OR IMPLIED, WHATSOEVER. No person or representative is authorized to assume for the Company any liability other than that expressed herein in connection with the sale of this product.

The Company does not warrant that this product cannot be compromised or circumvented. THE EXTENT OF THE COMPANY'S LIABILITY UNDER THIS WARRANTY IS LIMITED TO THE REPAIR OR REPLACEMENT PROVIDED ABOVE AND, IN NO EVENT, SHALL THE COMPANY'S LIABILITY EXCEED THE PURCHASE PRICE PAID TO THE PURCHASER FOR THE PRODUCT.

Some states do not allow limitations on how long an implied warranty lasts or the exclusion or limitation if incidental or consequential damage so the above limitations or exclusions may not apply to you. This warranty gives you specific legal rights and you may also have other rights which vary from state to state.

Dakota Digital

3421 Hovland Ave
Sioux Falls, SD 57107
Phone: (605) 332-6513
FAX: (605) 339-4106

www.dakotadigital.com
dakotasupport@dakotadigital.com