



Series II HLY-3111 CYLINDER HEAD TEMPERATURE

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 2-1/16" gauge size.
- Weather-proof construction.
- A warning feature that flashes the gauge readout when outside operating limits.
- User adjustable warning points.
- Microprocessor stabilized readings.
- Quick-Start feature to provide accurate readings quickly after being powered up.
- Night dimming with lens label lighting.
- Non-Glare, high contrast lens.
- High Visibility VFD display for sunlight readability.

Operation:

The red wire should be connected to a 12 volt accessory feed. The case provides the gauge ground. Connect the ring terminal from the black wire to a screw at the top rear of the case. Attach the loose end of the black wire to a main vehicle ground. When the blue wire has 12 volts, it will dim the display for night viewing. The red and yellow wires with ring terminals are for the temperature sender input. **The sender must be Dakota Digital part SEN-3114.**

Sending units from other manufacturers will cause incorrect readings. This cable cannot be extended with standard wire. If a sender is not connected properly, the display will show "EEE".

The cylinder head temperature gauge will operate and read correctly between the temperature range of 150 - 750° F(65 - 400°C). Because of the nature of the sensor used, the gauge will not read cold temperatures. The power circuitry inside the gauge will elevate the internal gauge temperature to 100°-160°F. This is the lowest temperature the gauge will be able to display. The gauge has a user adjustable high warning level. This can be set to indicate when the engine is beginning to overheat.

WIRING COLOR CODE FOR GAUGE:

RED	+12 volt power with key on
BLACK	ground for gauge and case (the ring terminal should attach to the top screw on the case.)
BLUE	night dimming
RED with ring terminal	To RED wire on sensor cable.
YELLOW with ring terminal	To YELLOW wire on sensor cable.

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 1-1/2". Gauge depth including the mounting studs is 2-3/8".

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 the gauge. A poor ground connection can cause improper or erratic operation. The black wire loops over to the top screw on the back of the case. This ensures a good case ground connection.

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.

SENSOR CONNECTION

The head temp gauge uses a thermocouple sensor to measure the temperature. A thermocouple actually measures the temperature difference between the ends of its wire. The thermocouple consists of the bolt on sensor and the cable which connects it to the gauge. Because the thermocouple only measures the temperature difference, the gauge has a temperature sensor so that the temperature at the gauge end of the thermocouple wire is known. The gauge then adds the two temperatures together to display the actual head temperature.

Connect the red wire with the ring terminal to the matching red wire with a ring terminal. Connect the yellow wire with the ring terminal to the matching yellow wire with a ring terminal. Be careful to route the sensor cable away from any power or spark plug wires. Wires routed along side the sensor cable can cause interference and incorrect readings.

The red and yellow sensor wires are also used to change gauge setup choices. The section below describes how to change between Fahrenheit and Celsius as well as how to change the high temperature warning point. The sensor wires will need to be disconnected from the head temp sensor to go into the setup mode.

Setting the warning limits and temperature setup:

The red and yellow sensor wires are used to enter and change the warning settings. The wires will need to be disconnected from the sensor before proceeding with this.

1. To enter the set mode, turn the key on with the red and yellow sensor wires not connected. The gauge will display "SEt".
2. Touch the red and yellow sensor wires together. The gauge will display "F" or "C". (If you wait too long the gauge will exit the setup routine and you will need to repeat step #1).
3. Release the sensor wires. The gauge will display the current temp unit. "F" is for °F and "C" is for °C.
4. Each time you momentarily touch the sensor wires together the setup will change.
5. When the desired setup value is displayed, keep the wires touching for about 2 seconds. The gauge will display "HI".
6. Release the sensor wires. The gauge will display a number between 300 - 600 (148 - 315C).
7. Each time you momentarily touch the sensor wires together the number will change.
8. When the desired high warning value is displayed, keep the wires touching for about 2 seconds. The gauge will display "--".
9. Turn the key off.

Troubleshooting guide.

Problem	Possible cause	Solution
Gauge will not light up	Red wire does not have power.	Connect to a location that has power.
	The gauge case is not getting a good ground.	Connect the ground to a different location.
Gauge lights up, but does not read correctly.	Gauge is damaged.	Return gauge for service. (see instructions)
	Loose connection on sensor cable terminal.	Reconnect cable wire.
	Poor ground connection.	Move ground to different location
	Red and yellow wires in	Check all splice connections and
	inspect cable	for pinched or damaged insulation.
	sensor cable are shorted	See "Setting temperature setup" in the manual.
	Temperature unit is not set correctly (F or C)	Check wiring harness for loose or damaged wires.
	Voltage or wiring problem in vehicle wiring harness.	Gauge must be returned for service. (see instructions)
Gauge lights up, but displays "Er0".	Gauge is damaged.	Connect red and yellow sensor wires
Gauge lights up, but displays from "EEE".	Sender is not connected to gauge.	gauge harness to sensor harness.
	Sensor wire between gauge and sender is broken.	Test and repair wire.
	Sender is damaged.	Replace sender.
	Gauge is damaged.	Return gauge for service. (see instructions)
Gauge lights up, but displays "Er3".	Gauge is not calibrated correctly.	Gauge must be recalibrated. (contact factory)
Gauge lights up, but displays "Er4".	Temp unit setup (F or C) needs to be reset.	See "Setting temperature setup" in the manual.
Gauge lights up, but displays "Er5".	Gauge warning points need to be reset.	See "Setting the warning limits" in the manual.
Gauge flashes constantly.	Warning limits are not set properly.	Reset warning limits.
	Vehicle is overheating.	Check coolant system.
Gauge will not dim.	Blue wire is not connected correctly.	Check wiring. Blue wire should have 12 volts to dim gauge.
Gauge remains dim at all times.	Blue wire is getting power all of the time.	Connect blue wire to a switch that has power only when the gauge should dim.
	Battery is very low.	Recharge or replace vehicle battery.
	Gauge is damaged.	Return gauge for service. (see instructions)

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.

Technical specifications

Minimum operating voltage	-	7 volts
Maximum operating voltage	-	17 volts
(operating at or near maximum voltage for an extended time can damage unit)		
Maximum temperature reading	-	750°F (400°C)
Gauge Resolution	-	3-4°F (2-3°C)
Gauge accuracy	-	±10°F (±5°C)
Typical current draw (@ 13.8V)	-	0.2 A

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.

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Some states do not allow limitations on how long an implied warranty lasts or the exclusion or limitation of 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