Dakota Digital

MCL-4000 SERIES 1-7/8" LED HEAD TEMPERATURE GAUGE
MCL-4111S/R

MCL-4111 S/R   **Function**
RED   fused +12V with key on

BLUE   night dimming input (+)
BLACK   ground for gauge

RED   RED

YELLOW   YELLOW   Thermal Couple Sensor

* Do not extend sensor connection with standard wire.
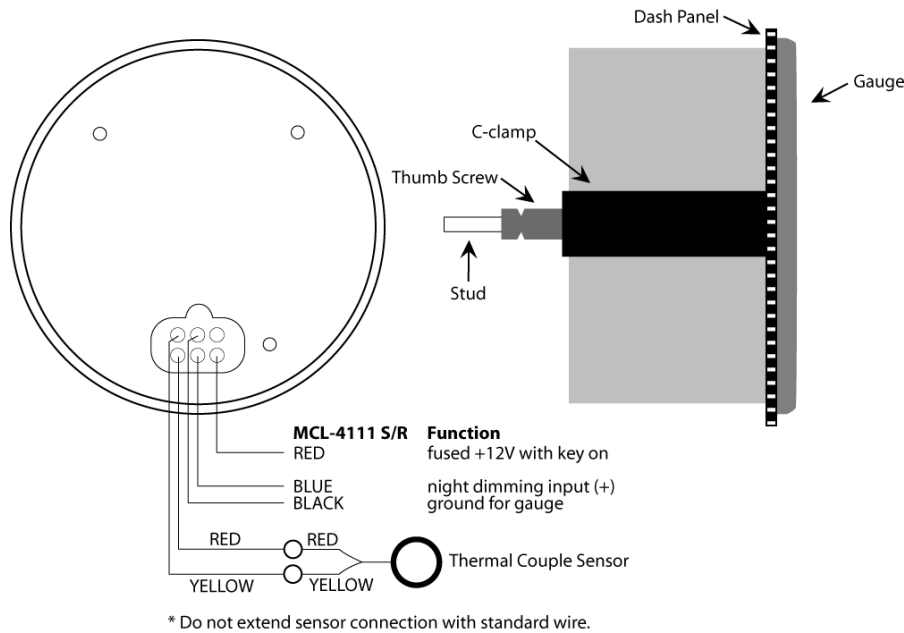
- Temperature range of 150 – 750 °F (65 – 400 °C) with 1° resolution
- User adjustable warning point from 300 - 600°F (148 - 315°C)
- Optional display dimming feature

MOUNTING
The MCL-4000 series gauge requires a round hole 1-7/8" 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 approximately 1-3/8". Gauge depth including the mounting studs is about 2-1/8".

GAUGE SETUP
The two sensor wires in the harness are used to enter setup and change/select settings. This is done by leaving the sensor wires unconnected at power up, and shorting the two wires together or releasing them to change/select settings. To short the wires, touch the red sensor wire to the yellow sensor wire. To release the wires, disconnect the sensor wires from each other and any other connections. The gauge moves through the setup in the following order:

"SEt" message > Software code > Fahrenheit/Celsius selection > High temperature warning > done

default settings: Fahrenheit scale   450 F high warning

1. Make sure the key is off so the gauge is not powered.
2. Disconnect sensor wires from sensor. Leave sensor wires unconnected and turn on key.
3. The display will show "SEt". Short sensor wires together. If you wait too long the gauge will return to normal operation. If this happens, turn the key off and start over.
4. The display will show "LH1", This is your software code. (Newer software versions may have a different code.)

5. Release the sensor wires. The display will read "F" for Fahrenheit or "C" for Celcius.
6. Momentarily short the sensor wires together and release to toggle between "F" and "C".
7. When desired temperature scale is displayed, short and hold the sensor wires to save the setting.

8. "HI" (high temperature warning) will be displayed. Release the sensor wires.
9. The current high temperature warning point will be displayed.
10. Momentarily short and release the sensor wires to change the high warning point. This value is settable from 300°F-600°F (149°C-315°C) in increments of 10°F (5-6°C).
11. When desired high temperature warning point is displayed, short and hold the sensor wires to save setting.

12. Display will read "---". Setup is complete.
13. Turn the key off.

POWER *RED WIRE*

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 *BLACK WIRE AND RING TERMINAL*

The black wire is the main ground for the gauge. The eyelet in the black wire should be placed on one of the mounting studs after the mounting clamp is installed and held on with one of the thumb screw nuts. The free end of the black wire should be connected to a good ground. A poor ground connection can cause improper or erratic operation.

THERMOCOUPLE SENSOR WIRES *RED AND YELLOW WIRE PAIR WITH RING TERMINALS*

The temperature sensor wires (red and yellow wire pair) have ring terminals for connecting directly to the sender or to the proper extension harness. Connect the red harness wire to the red sensor wire and the yellow harness wire to the yellow sensor wire. **The sender must be Dakota Digital part SEN-3111.** Sending units from other manufacturers will cause incorrect readings. Be careful to route the sensor wires away from power or sparkplug wires. Wires routed along side the sensor wires can cause interference and incorrect readings.

If you need to extend the sensor wires, there are extension harnesses available from Dakota Digital. When connecting an extension harness, match the wire colors as before, red connects to red, yellow to yellow. Standard wire cannot be used to extend the sensor connections as it will cause incorrect temperature readings.

The sensor wires are also used to change setup options in the gauge. The wires must be disconnected from the sensor to get into setup mode. The setup procedure is described under "GAUGE SETUP."

NIGHT DIMMING *BLUE WIRE*

Your display system has a dimming feature that reduces 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. The blue wire can be connected to +12v through a switch to allow the dimming feature to be turned on or off. To have the system at full brightness all of the time, leave the blue wire disconnected.

OPERATION

The cylinder head temperature gauge will read temperatures correctly in the range of 150°F to 750°F (65°C - 400°C). Because of the nature of the sender, the gauge will not read cold temperatures. The internal gauge temperature can reach temperatures in the range of 100°F – 160°F. This is the lowest temperature the gauge will be able to display. The gauge has an adjustable high temperature warning point. This can be set to indicate when the engine is beginning to overheat.

TROUBLESHOOTING GUIDE

Problem	Possible cause	Solution
Gauge will not light up	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 is damaged.	Return gauge for repair.
Gauge displays or flashes "EEE"	Sender wires not connected properly.	Check that red sensor wire connected to red wire in harness and that yellow sensor wire is connected to yellow wire in harness.
	Temperature is higher than range of sensor.	Check for correct mounting location of sensor and/or take measures to cool engine.
Gauge displays or flashes "---"	Gauge is at end of setup routine.	Turn key off, and then back on to restart the gauge.
Gauge lights up but does not read correctly.	Temperature unit not set correctly (F or C)	See "GAUGE SETUP" in manual to change setting.
	Loose connection on sensor cable terminal.	Reconnect sensor cable wire.
	Poor ground connection.	Move gauge ground wire to different ground location.
	Voltage or wiring problem in vehicle harness.	Check wiring harness for loose/damaged wires and check wire routing is not close to spark plug wires.
	Red and yellow wires in cable are shorted.	Check all splices and connections and check for pinched or damaged insulation.
	Red and yellow connections swapped.	Reconnect the red sensor wire to the red cable wire and connect the yellow sensor wire to the yellow cable wire.
	Sensor wires extended with standard wire.	Remove standard wire section and replace with correct extension harness.
Gauge always flashes.	High warning point set too low.	Adjust the high warning points using setup menu.
	Vehicle is overheating.	Check vehicle cooling system if applicable and allow vehicle to cool to a safe operating temperature.
Gauge will not dim.	Blue wire is not connected correctly.	Check wiring. Blue wire should have 12 volts when dimming is desired.
Gauge remains dim at all times.	Blue wire is getting power all of the time.	Connect blue wire to +12v through a switch or leave unconnected.
Gauge will not go into the SETUP mode.	Sensor wires from gauge are still connected to sensor or are shorted together.	Sensor cable wires from gauge must be completely disconnected from the sensor and from each other in order to enter setup.
Gauge displays "Er1"	Temp unit setup (F or C) needs to be set.	See "GAUGE SETUP" in manual to set the temp unit
Gauge displays "Er2"	Gauge is not calibrated correctly.	Gauge must be recalibrated, contact Dakota Digital.
Gauge displays "Er4"	High temperature warning point needs to be set.	See "GAUGE SETUP" in manual to set the high temperature warning point.
Gauge displays "Er" followed by a number.	Multiple errors have occurred and the error numbers have been added.	For "Er3" see solutions for "Er1" and "Er2" For "Er5" see solutions for "Er1" and "Er4" For "Er6" see solutions for "Er2" and "Er4" For "Er7" see solutions for "Er1", "Er2" and "Er4"

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.

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