

**Service Information System**

Shutdown SIS

[Previous Screen](#)

◀ Product: MARINE ENGINE  
Model: C280-16 MARINE ENGINE TDX  
Configuration: C280-16 MARINE TDX00001-UP

## Systems Operation

### Marine Monitoring System II

Media Number -REN2490-06

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## Thermocouples

SMCS - 7498

### Operation of a Thermocouple

A thermocouple is a temperature sensor. The thermocouple consists of two different metals. The metals are joined together at one end. A small voltage is produced when the junction is heated. The change in voltage is interpreted by an electronic device in order to determine a change in temperature.

Caterpillar uses K type thermocouples. The K type thermocouples have ranges from  $-200^{\circ}\text{C}$  ( $-328^{\circ}\text{F}$ ) to  $1260^{\circ}\text{C}$  ( $2300^{\circ}\text{F}$ ). This temperature range corresponds to a voltage range of negative 5.9 mV to 51.0 mV.

### Thermocouples in Engine Protective Systems

Engine protective systems include sensors, contactors, and transducers. The sensors detect information about engine performance.

The signal is routed from the engine mounted junction box to terminals in the control panel. The signal travels through thermocouple wire. The thermocouple module converts the voltage into the parameter. The module sends the parameter to the processor. The signal is used in order to trigger alarms and the signal is used in order to display the parameter.