

SoftCal™ and the DT-470 Series Silicon Diode Temperature Sensor



The Lake Shore DT-470 Series silicon diode temperature sensors incorporate remarkably uniform sensing elements that exhibit precise, monotonic temperature response in the range from 1.4 K to 475 K. Temperature characteristics are extremely stable and predictable, and exhibit excellent uniformity from device to device. It is this diode feature that makes the use of SoftCal™ possible. Through the use of a two-point or three-point SoftCal calibration procedure, the absolute accuracy of the sensor can be significantly improved.

The two-point SoftCal calibrations are made at liquid nitrogen temperature (77.35 K) and 305 K. The resultant accuracy for the DT-470 diode sensor will be:

±1.00 K	2 K	to	<30 K	(no change below 30 K)
±0.25 K	30 K	to	<60 K	
±0.15 K	60 K	to	<345 K	
±0.25 K	345 K	to	<375 K	
±1.00 K	375 K	to	<475 K	

The three-point SoftCal calibrations are made at liquid helium temperature (4.2 K), liquid nitrogen temperature (77.35 K), and 305 K. The resultant accuracy of the DT-470 diode sensor will be:

±0.50 K	2 K	to	<30 K
±0.25 K	30 K	to	<60 K
±0.15 K	60 K	to	<345 K
±0.25 K	345 K	to	<375 K
±1.00 K	375 K	to	<475 K

The actual data points are included in **boldface** type in the accompanying SoftCal Calibration Table.