



# Alternative Heater Termination Methods:

**Improve Reliability and Reduce Cost**

FLEX | RIGID FLEX | HEATERS | ASSEMBLY

All Flex Solutions Inc. | Phone: (612) 351-6009 | Toll-Free: (866) 341-4815

## Application:

### Improving reliability by replacing wire harnesses in medical diagnostic instruments.

Most heater designs have a need for multiple conductors, typically two for the heater element and two for integrated temperature sensors. All Flex was given the task of redesigning a heater that was being used in a medical diagnostic instrument. The goal was to reduce the amount of interconnects, reduce cost, and increase reliability.

By switching from a conventional wire harness to a flex lead All Flex's Design Engineers increased the reliability of the connection and reduced the amount of space and weight of the heater. While All Flex's polyimide-based heaters already increase space savings, the elimination of wire interconnects can also make a significant impact. By using a flex lead the cost of parts and production is also decreased substantially.

In the example below the wired version of this heater has 22 connections, creating 22 possible locations for failure. Whereas the flex lead version has only 10 connections, a reduction of almost 55%.

### SPECIFIC IMPROVMENTS:

- **Reduced Weight by 75%**
- **Reduced total cost by 70% by eliminating connector(s)**
- **Decreased area needed by 75%**
- **Increased reliability by 70%**

### Disclaimer:

Data presented for informational purposes only. Actual values and/or usage is for reference. Contact All Flex for details.

	Wire Lead	Flex Lead
Heater	2 Wires	0
Sensor One Connection	2 Wires + 2 SMT Solder Joints	2 SMT Solder Joints
Sensor Two Connection	2 Wires + 2 SMT Solder Joints	2 SMT Solder Joints
Wires to Terminal Crimping	6	0
Crimp Terminal to Mating Connector	6	0
Heater to ZIF Connector	0	6
Total Electrical Transitions	22 Total	10 Total