For Immediate Release

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Laird's Complete Thermal Management Systems Optimize Liquid Chromatography Equipment Capabilities

When combined with its advance temperature controllers, Laird's space-saving thermoelectric cooler assemblies offer precise temperature control and stability for liquid chromatography equipment…

August 11, 2016 – Laird Thermal Systems has simplified the product selection and thermal design process by offering standard and custom thermal management solutions that offer precise temperature control to optimize the performance of liquid chromatography equipment. Depending on the heat load capacity requirements of the high performance liquid chromatography (HPLC) equipment, these thermal systems are comprised of Laird's advanced SR-54 Series temperature controller in combination with either the Tunnel Series or PowerCool Series thermoelectric cooler assemblies.

Liquid chromatography is a technique used for analysis of mixtures by separating, identifying, and quantifying their constituent components. Liquid chromatography normally operates with smaller amounts of material and seeks to measure the relative proportions of analytes in a mixture. R&D laboratories in the pharmaceutical, food science and oil industries use these instruments for product development or reverse engineering.

Temperature control plays a major role in the liquid chromatography separation process by influencing the interactions taking place between the sample components and adsorbent. There are two major uses of thermoelectric Peltier technology in controlling temperature of HPLC instruments; temperature control of the sample tray by thermoelectric cooling and heating and the heating and cooling of the separation column.

Laird's Tunnel Series and PowerCool Series thermoelectric air-to-air cooling units are designed with efficiency, cost, and continuous reliable operation in mind. Additional design factors include

speed of cooling response, temperature stability, resilience against temperature cycling, and resistance to damage by moisture intrusion.

In modern HPLC equipment, Laird's thermal management systems are used to provide temperature stability and condensation protection. Depending on the mixture, precise temperatures control ranging from 4 to 40 degrees C is required. Heat load requirements typically range from 25 to 100W, with some new machines requiring up to 200W to increase sample testing throughput. In addition, many new HPLC instruments feature multiple sample storage chambers that have different cooling/heating requirements, increasing the overall system heat load.

The Tunnel Series thermoelectric cooler assemblies offer the most compact form factor with minimal number of airflow paths required to operate efficiently compared to traditional impingement flow thermoelectric cooler assemblies. This product is offered in air-to-air configurations and direct-to-air.

The PowerCool Series thermoelectric cooler assembly is designed for larger sample storage compartments with a higher heat load requirement. The PowerCool Series has a maximum cooling capacity of 200W. Both the Tunnel and PowerCool Series thermoelectric cooler assemblies cool via convection or conduction and utilize custom designed thermoelectric coolers to generate heat-pumping action, which achieve a high coefficient of performance (COP) to minimize power consumption. In addition, the solid-state construction offers low noise operation, long operating life of 40,000 hours MTBF and low maintenance.

Laird thermoelectric cooler assemblies are driven by the SR-54 programmable controller to deliver a complete thermal management solution. The SR-54 temperature controller provides monitoring and alarm functionality, including identification of a problematic fan, thermoelectric cooler, over-temperature thermostat and temperature sensor failure — all of which are critical to maximizing instrumentation equipment uptime. The ready-to-use controller requires minimal programming out of the box and can be easily adhered to a thermoelectric cooler assembly or system enclosure. The controller also lowers operational noise, as fans are turned off once the specified temperature has been reached inside the respective HPLC sample tray and separation column.

"The advantages of thermoelectric cooler assemblies over other types of thermal cycling devices are precise temperature control, compactness, faster temperature ramp rates and efficiency," said Anders Kottenauer, Senior Vice President of Laird's Engineered Thermal Systems Business. "With extensive analytical instrumentation temperature control experience, a diverse product portfolio, and a global footprint, Laird's compact thermoelectric cooler assemblies meet the stringent temperature control and mean time before failure demands of analytical instrumentation applications, including liquid chromatography equipment."

More information on the Tunnel Series thermoelectric cooler assembly can be found by visiting https://www.lairdthermal.com/products/product-series/tunnel-series

More information on the PowerCool thermoelectric cooler assembly can be found by visiting https://www.lairdthermal.com/products/product-series/power-cool-series

More information on the SR-54 programmable controller can be found by visiting https://www.lairdthermal.com/products/product-series/bi-directional-thermostatic-controllers

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About Laird Thermal Systems

Laird Thermal Systems develops thermal management solutions for demanding applications across global medical, industrial, transportation and telecommunications markets. We manufacture one of the most diverse product portfolios in the industry ranging from active thermoelectric coolers and assemblies to temperature controllers and liquid cooling systems. Our engineers use advanced thermal modeling and management techniques to solve complex heat and temperature control problems. By offering a broad range of design, prototyping and in-house testing capabilities, we partner closely with our customers across the entire product development lifecycle to reduce risk and accelerate their time-to-market. Our global manufacturing and support resources help customers maximize productivity, uptime, performance and product quality. Laird Thermal Systems is the optimum choice for standard or custom thermal solutions. Learn more by visiting www.lairdthermal.com