GF Piping Systems

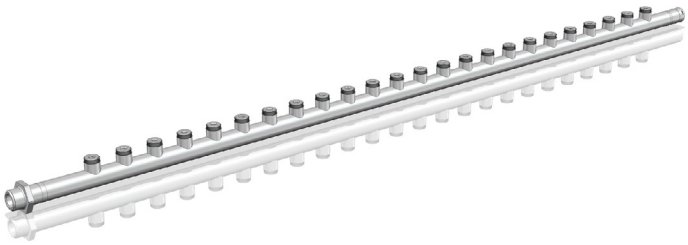
Fact Sheet

In-Rack Manifold

Custom-engineered manifold for direct liquid cooling

High-performance polymers for optimal flow and consistent rack cooling

GF's manifold solution is designed for direct liquid cooling in mission-critical environments, where reliability, safety, and peak performance are non-negotiable. A bespoke design ensures uniform, consistent coolant flow to every server tray in the ITE rack, avoiding thermal imbalances that can degrade CPU and GPU performance. The solution features accurate flow control, minimal pressure drop, and configurations tailored to your rack density , delivering outstanding cooling efficiency and long-term system reliability.



100%
cooling performance
Precision design ensures consistent cooling performance at every outlet port for optimal flow and efficiency.

100%
design flexibility
Open design with a variety of quick disconnects, main connections and customised requirements ensures seamless integration.

50%
less weight
Innovative polymer solutions offer significantly lower weight than metal alternatives without compromising on quality and reliability.

100%
quality tested
Every manifold undergoes a visual inspection and a rigorous pressure test before delivery to ensure maximum reliability and safety.

100%
reliability
Polymers don't contain any metals and provide a corrosion-free, long-lasting solution for reliable performance over years.

Technical data

General information

Pressure rating	PN10
Material	PVDF
Flammability Standard	UL 94 V-0
Color	Opaque
Temperature range	-20°C – 80°C -4°F – 176°F
Surface finish	Inner surface Ra < 0,5 µm (20 µin) for injected moulded and extruded components
Packing	Capped ports (dust protection)
System lifetime	25 years
Quality control	100% pressure tested with water before shipment
Designed in	Switzerland

The manifold is compatible with standard liquid coolants used in the direct liquid cooling application.

For chemical compatibility, check the free Chemical Resistance Tool:

More information gfps.com/chemres

Engineered Solution

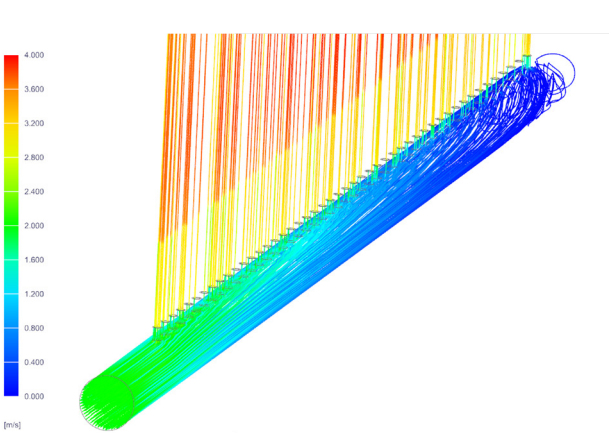
The custom-engineered manifolds are designed and fabricated based on customer-specific cooling requirements, including:	• Dimension • Length • Ports • Quick Disconnects
Configuration	Top/Bottom Feed
Optional	Air bleeder / draining / special ports

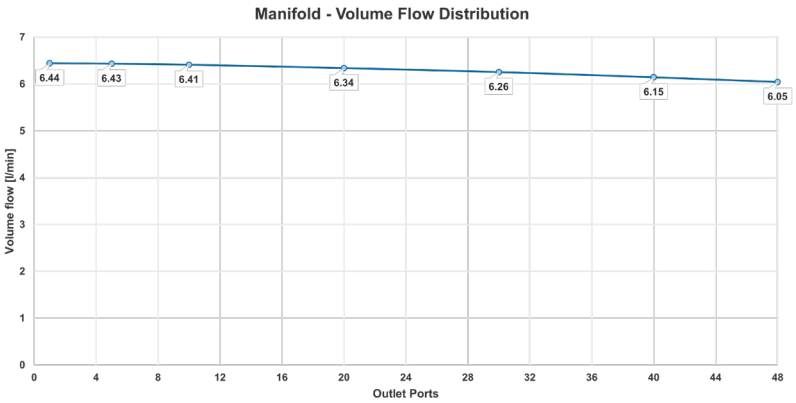
GF Proposal
Based on customer specific cooling requirements:

Fill in the Manifold Enquiry Form

Engineered manifold – Uniform cooling capacity

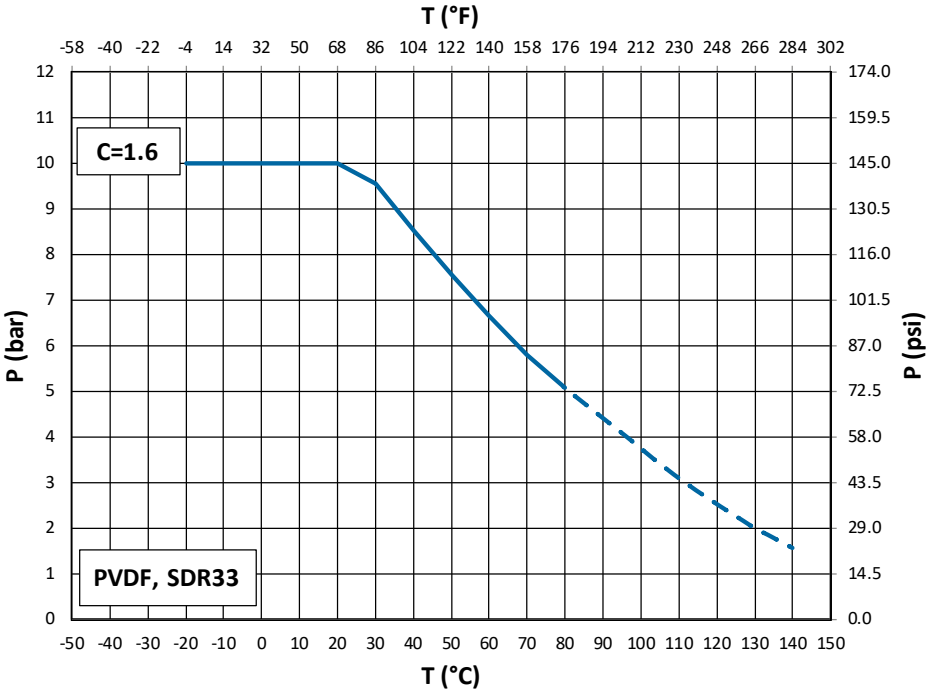
GF's engineering experts develop customized thermal solutions tailored to your direct liquid cooling application. The precision-engineered in-rack manifolds ensure a constant and uniform volume flow across all outlet ports, enabling reliable and efficient thermal management aligned with your chip and cold plate requirements. This helps maintain stable chip temperatures, supporting maximum computational performance and energy efficiency.





The illustration above visualizes a GF-engineered in-rack manifold design for a 132 kW direct-to-chip cooled 48U rack featuring 48 outlet ports. Its design is based on a temperature differential (ΔT) of 10 K for a 90% liquid-cooled rack, resulting in an overall volume flow requirement of 170 l/min using a propylene glycol-based heat transfer fluid (PG25). This unique design ensures a uniform flow distribution across all outlet ports, each delivering ca. 6 l/min to meet the cold plate requirements. The flexible production setup and stringent quality control processes enable swift delivery without compromising product excellence.

Pressure/Temperature Diagram



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Speak to an expert
Discover how polymer solution can transform your direct liquid cooling application.
www.gfps.com/data-centers