

Vertiv™ In-Rack Manifold Guide Specifications

1.0 GENERAL.

1.1 Summary

This specification covers the mechanical characteristics and general requirements for a rack-mountable fluid manifold to support cooling of single-phase, direct-to-chip (D2C) IT equipment (ITE). The manifold shall be designed to distribute fluid to multiple pieces of D2C-cooled ITE within a single rack.

1.2 Design Requirements

Manifold shall be marked as Recognized cETLus. Manifold system shall have a design operating pressure of ≥ 100 psi and operating fluid temperature range of 20-70C (or greater). Manifold shall support storage temperatures of -40C to 70C (or greater).

1.3 Submittals

Submittals shall be provided and shall include: dimensional/installation drawings, rack compatibility, fluid type compatibility information and accessory details.

1.4 Warranty

The system shall be provided with a warranty against defects in material and workmanship.

1.5 Serviceability

Manifold shall be designed so that all fluid connectors, drain valves and air bleeders are replaceable for service and maintenance.

1.6 Quality Assurance

- Manifold shall be designed and manufactured according to world class quality standards. The manufacturer shall be ISO 9001 certified.
- Manifold shall be factory tested, flushed, dried, sealed and pressurized with N2 before shipment.
- Manifold factory testing shall include helium leak testing per ASTM EE499
- Manifold factory testing shall include pressure testing per ASME B31.3.
- Manifold shall be DV tested to meet UL/CSA Strength Test (3x rated pressure)
- Manifold shall be DV shipping tested (shock/vibe, ISTA, etc.)

2.0 PRODUCT

2.1 Manifold

- Manifold shall be constructed of sanitary 304 stainless steel tubing with a surface finish Ra < 0.8 μ m.
- Manifold shall be designed with provisions for vertical installation inside the rack and shall be compatible with existing vertical rPDU mounting brackets/accessories.
- Manifold shall be designed to allow installation of supply and return manifolds on either the same or opposing sides of the rack.
- Manifold shall include a connection for singular input fluid feeder. This connection shall interface with a flexible hose; with the manifold feeder coupling attached to the opposing hose end.
- Manifold shall include threaded fittings for each ITE feeder coupling. These fittings shall be compatible with the selected ITE feeder coupling model. Threaded fittings must be a gasketed seal without the use of any thread sealant.
- Manifold SKU shall include provided brackets for installation into the rack; whether on the same or opposing sides of the rack.
- Manifold shall be designed to accommodate both top and bottom feed piping arrangements.
- The manifold shall be designed with provisions for complete fluid isolation.
- Manifold and all wetted components shall be compatible with all acceptable coolants for D2C liquid cooling (typ: Cold Plates); as defined by ASHRAE tc9.9 and Open Compute Project (OCP) guidelines unless specific fluid exclusions are defined. PG25 shall be acceptable.
- Air vent fittings shall be installed at all possible highest points of the installed manifold, accounting for top or bottom feed piping arrangements. Fittings must be compatible with an optional (or included) accessory air vent and must not be left open during shipment.
- Liquid drain fittings shall be installed at all possible lowest points of the installed manifold, accounting for top or bottom feed piping arrangements. Fittings must be compatible with an optional (or included) accessory drain valve and must not be left open during shipment.

2.2 Couplings (Manifold Feeder & ITE Feeders)

- Couplings shall be dry break type to prevent fluid leakage.
- Couplings should be specified to minimize fluid-side pressure drop to the maximum extent possible.
- Couplings shall be compatible with all acceptable fluids (per section 1.2)
- Couplings shall be constructed of materials compatible with manifold, components, and accessories to minimize corrosion.
- Couplings shall include indicator options (blue/red) to denote supply/return.
- Couplings shall be sized to match typical rack-level fluid flow requirements (Manifold Feeder) and individual, D2C-cooled, ITE fluid connections (ITE Feeders)

2.3 ITE Feeder Hoses – Provided (Ship Included)

- Hoses shall be flexible; with a bend radius $\leq 8x$ the hose inner diameter (id).
- Hoses shall be made of peroxide-cured EPDM.
- Hoses shall include factory-fitted dry break connectors designed to connect to the ITE feeder couplings on the manifold.

3.0 OPTIONAL COMPONENTS

3.1 Air Bleeder Valve (ABV) – Optional (Ship Loose)

- ABV shall be compatible with all acceptable fluids (per section 1.2)
- ABV shall be constructed of materials compatible with manifold, components, and accessories to minimize corrosion.
- ABV shall utilize automatic air venting; to allow venting as needed without user intervention.

3.2 Manifold Main Inlet & Outlet Hoses – Optional (Ship Loose)

- Manifold inlet & outlet hoses shall include factory-fitted isolation valves.