Environmental Specifications for Kaleidescape Components
Engineering Bulletin

This document provides environmental specifications and guidance for designing proper cooling for Kaleidescape component installations. For more best practices in designing rack enclosure cooling for A/V components, refer to the white paper, A/V Installation Cooling.

Temperature

The maximum temperature of the air intake for Kaleidescape components is specified in the table below. The minimum air intake temperature for all Kaleidescape components is 41°F (5°C). Measure ambient air temperature within 1 in. (2.5 cm) of the front of the component, and at any rack enclosure air intake vents.

Component	Maximum air intake temperature
Strato Components	
Strato C Movie Player (K0217)	95°F (35°C)
Strato S Movie Player (K0509-1XXX)	95°F (35°C)
Terra Movie Server (K0108)	95°F (35°C)
Terra Movie Server (Compact) (K0110)	95°F (35°C)
Disc Server (KVAULT-DV700)	95°F (35°C)
Premiere Components	
1U+ Server (KSERVER-1550)	86°F (30°C)
M500 Player (KPLAYER-M500)	95°F (35°C)
M300 Player (KPLAYER-M300)	95°F (35°C)
Disc Vault (KVAULT-M700, VAULT-DV700)	95°F (35°C)

Legacy Components	
Strato Movie Player (K0509-0XXX, K0510)	95°F (35°C)
Alto Movie Player (K0507, K0508)	95°F (35°C)
Cinema One 2nd Generation (K0503)	95°F (35°C)
1U Server (KSERVER-1500)	86°F (30°C)
3U Server (KSERVER-5000)	86°F (30°C)
5U Server (KSERVER-2500)	86°F (30°C)
Cinema One (KCINEMA-1, KSYSTEM-120)	95°F (35°C)
1080p Player (KPLAYER-6000)	86°F (30°C)
1080p Mini Player (KPLAYER-300)	86°F (30°C)
Movie Player 2 (KPLAYER-5000)	95°F (35°C)
Movie Player (KPLAYER-2000, KPLAYER-2500)	86°F (30°C)
Music Player (KMUSIC-4000)	95°F (35°C)
Speed Reader (KSPEEDREADER, KSPEEDREADER-2)	86°F (30°C)
Reader (KREADER-2000)	95°F (35°C)

Some Kaleidescape components can be installed in a vertical orientation, and the maximum intake air temperature decreases for some components when mounted vertically. Refer to the Engineering Bulletin, Vertical Mounting of Kaleidescape Components.

The storage temperature range for all Kaleidescape components is 4°F to 140°F (-20°C to 60°C).

Relative Humidity

The operating relative humidity range (non-condensing) for all Kaleidescape components is 20% to 80%; the range is 5% to 90% for storage.

Maximum Operating Altitude

All Kaleidescape components have a maximum operating altitude of 10,000 ft (3,000 m).

Heat Output

The table below specifies maximum heat output for Kaleidescape components. These specifications can be used in combination with the room temperature to calculate the required airflow. See the section Calculating Rack Airflow in the whitepaper, A/V Installation Cooling.

Component	Maximum heat output
Strato Components	
Strato C Movie Player (K0217)	69 BTU/hr (20W)
Strato S Movie Player (K0509-1XXX)	102 BTU/hr (30W)
Terra Movie Server (K0108)	154 BTU/hr (45W)
Terra Movie Server (Compact) (K0110)	109 BTU/hr (32W)
Disc Server (KVAULT-DV700)	180 BTU/hr (52W)
Premiere Components	
1U+ Server (KSERVER-1550)	170 BTU/hr (50 W)
M500 Player (KPLAYER-M500)	143 BTU/hr (42 W)
M300 Player (KPLAYER-M300)	96 BTU/hr (28 W)
Disc Vault (KVAULT-M700, KVAULT-DV700)	180 BTU/hr (52 W)
Legacy Components	
Strato Movie Player with internal storage (K0509-0XXX) without storage (K0510)	88 BTU/hr (26W) 71 BTU/hr (21W)
Alto Movie Player with internal storage (K0507) without storage (K0508)	153 BTU/hr (45W) 132 BTU/hr (39W)
Cinema One 2nd Generation (K0503)	150 BTU/hr (45 W)
1U Server (KSERVER-1500) 1 TB or Smaller Disk Cartridges 2 TB or Larger Disk Cartridges	382 BTU/hr (112 W) 290 BTU/hr (86 W)
3U Server (KSERVER-5000) 1 TB or Smaller Disk Cartridges 2 TB or Larger Disk Cartridges	921 BTU/hr (270 W) 858 BTU/hr (251 W)
5U Server (KSERVER-2500)	853 BTU/hr (250 W)
Cinema One (KCINEMA-1, KSYSTEM-120)	310 BTU/hr (90 W)
Modular Disc Vault (KVAULT-10)	44 BTU/hr (13 W)
1080p Player (KPLAYER-6000)	150 BTU/hr (45 W)
1080p Mini Player (KPLAYER-300)	100 BTU/hr (30 W)
Movie Player 2 (KPLAYER-5000)	89 BTU/hr (26 W)
Movie Player (KPLAYER-2000, KPLAYER-2500)	75 BTU/hr (22 W)
Music Player (KMUSIC-4000)	68 BTU/hr (20 W)
Speed Reader (KSPEEDREADER-2)	358 BTU/hr (105 W)
Speed Reader (KSPEEDREADER)	375 BTU/hr (110 W)
Reader (KREADER-2000)	96 BTU/hr (28 W)

Airflow

The table below specifies maximum airflow generated by internal fans in Kaleidescape components. An installation enclosure must allow the specified airflow to easily escape the enclosure through exhaust fans or external vents.

Sum each component's airflow from the table to determine the minimum exhaust airflow required of an installation enclosure.

Component	Airflow
Strato Components	
Strato C Movie Player (K0217)	3.5 CFM (6 m³/hr)
Strato S Movie Player (K0509-1XXX)	5 CFM (8.4 m³/hr)
Terra Movie Server (K0108)	20 CFM (34 m³/hr)
Terra Movie Server (Compact) (K0110)	5 CFM (8.4 m³/hr)
Disc Server (KVAULT-DV700)	7 CFM (12 m³/hr)
Premiere Components	
1U+ Server (KSERVER-1550)	10 CFM (17 m³/hr)
M500 Player (KPLAYER-M500)	7 CFM (12 m³/hr)
M300 Player (KPLAYER-M300)	6 CFM (10 m³/hr)
Disc Vault (KVAULT-M700, VAULT-DV700)	7 CFM (12 m³/hr)
Legacy Components	
Strato Movie Player (K0509-0XXX, K0510)	10 CFM (17 m³/hr)
Alto Movie Player (K0507, K0508)	10 CFM (17 m³/hr)
Cinema One 2nd Generation (K0503)	10 CFM (17 m³/hr)
1U Server (KSERVER-1500)	10 CFM (17 m³/hr)
3U Server (KSERVER-5000)	40 CFM (68 m³/hr)
5U Server (KSERVER-2500)	30 CFM (50 m³/hr)
Cinema One (KCINEMA-1, KSYSTEM-120)	15 CFM (26 m³/hr)
1080p Player (KPLAYER-6000)	5 CFM (8 m³/hr)
1080p Mini Player (KPLAYER-300)	6 CFM (10 m³/hr)
Movie Player 2 (KPLAYER-5000)	2.5 CFM (4.2 m³/hr)
Movie Player (KPLAYER-2000, KPLAYER-2500)	2.5 CFM (4.2 m³/hr)
Music Player (KMUSIC-4000)	2.5 CFM (4.2 m³/hr)
Speed Reader (KSPEEDREADER-2)	45 CFM (77 m³/hr)
Speed Reader (KSPEEDREADER)	6.2 CFM (11 m³/hr)
Reader (KREADER-2000)	2.5 CFM (4.2 m³/hr)

Ventilation

Use the following guidelines when installing Kaleidescape components to ensure proper ventilation.

- Verify proper clearance for ventilation. The rack or other enclosure doors must not reduce the air space around the component to below the specified clearance.
    - Maintain 2 in. (5 cm) clearance in back.
    - Maintain 1 in. (2.5 cm) clearance in front and on sides.

- Maintain proper airflow path for ventilation.
    - Verify adequate cool air intake at front and bottom of component.
    - Verify hot air exhaust at back and top of component.

- Verify intake and exhaust vents are not obstructed by dust or particles.

The component front panel filters and traps coarse dust and particles. Exhaust vents also accumulate dust. Vents clogged with dust can lead to temperature increase and possible damage. If the component is not installed in an enclosure, the front panel and rear vents should be inspected every 4 months and cleaned if necessary, to provide adequate airflow. For units installed in enclosures, inspections should be performed based on the amount of filtering provided by the enclosure but at least annually. Refer to the Engineering Bulletins, Server Cleaning Procedures and Player Cleaning Procedures for detailed cleaning instructions.

Do not operate the component in a dusty environment. In case of sanding or other temporary dust source, turn off the component until the dust source is removed. If the internal surfaces of a component become coated with dust, the component will require servicing by Kaleidescape.

The figure below shows proper ventilation and airflow for components in a rack enclosure. The rack enclosure has a cool air intake at the bottom front and a hot air exhaust at the top.

Hot air exhaust at top

1 in. (2.5 cm) minimum clearance in front and sides

2 in. (5 cm) minimum clearance in back

Cool air intake at front bottom
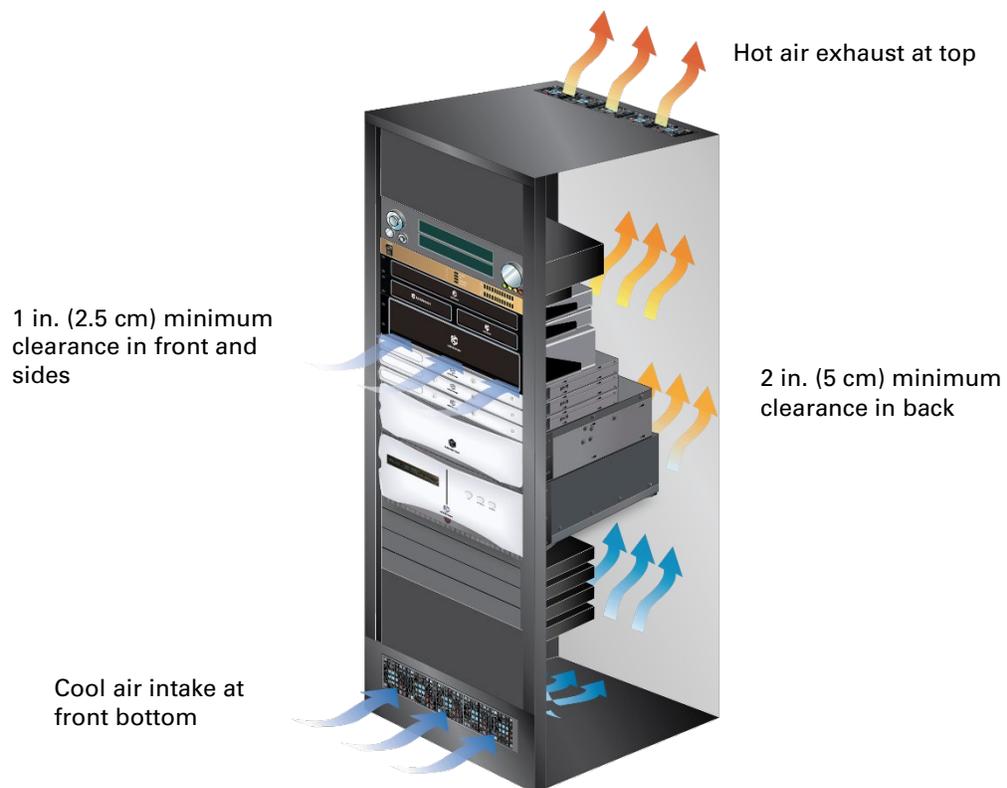
Kaleidescape Support

For additional information, contact Kaleidescape Support.

- Send an email message to support@kaleidescape.com.
- Call the support line at:
  +1 877-352-5343 Toll Free (US Only)
  +1 650-625-6160

Be prepared to provide the serial number of the Kaleidescape server. Serial numbers are printed on labels located on the backs or bottoms of all components and inside the front panels of the Terra, 3U and 5U Servers.

The Kaleidescape website always has the latest support updates.

www.kaleidescape.com