



Environmental Specifications for Kaleidescape Components

March 2012

Using This Document

This document provides environmental specifications and guidance for designing cooling for Kaleidescape component installations. For best practices in designing rack enclosure cooling for A/V components, refer to *A/V Installation Cooling* at www.kaleidescape.com/go/av-installation-cooling.

Temperature

The maximum air intake temperature for Kaleidescape components is specified in the table below. Note that if a system is installed in a rack enclosure, and the system includes a 1U/3U/5U Server, then the maximum air intake temperature for the rack enclosure is 86°F (30°C). The minimum air intake temperature for all Kaleidescape components is 41°F (5°C). When measuring the ambient air temperature, do so 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
Cinema One (KCINEMA-1, KSYSTEM-120)	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)
DV700 Disc Vault (KVAULT-DV700)	95°F (35°C)
M700 Disc Vault (KVAULT-M700)	95°F (35°C)
M500 Player (KPLAYER-M500)	95°F (35°C)
M300 Player (KPLAYER-M300)	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	86°F (30°C)
Reader (KREADER-2000)	95°F (35°C)

Some Kaleidescape components can be mounted vertically, which decreases the maximum intake air temperature. For more information, refer to *Vertical Mounting of Kaleidescape Components* at www.kaleidescape.com/go/vertical-mounting.

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. (3000 m).

Heat Output

The table below specifies the maximum heat output for Kaleidescape components. These specifications can be used in combination with the room temperature to calculate the required airflow.

For more information, see the section on *Calculating Rack Airflow in A/V Installation Cooling* at www.kaleidescape.com/go/av-installation-cooling.

Component	Maximum heat output
Cinema One (KCINEMA-1, KSYSTEM-120)	310 BTU/hr (90 W)
1U Server (KSERVER-1500) with:	
250 GB or 750 GB Disk Cartridges	385 BTU/hr (112 W)
1 TB Disk Cartridges	385 BTU/hr (112 W)
2 TB Disk Cartridges	295 BTU/hr (86 W)
3 TB Disk Cartridges	470 BTU/hr (138 W)
3U Server (KSERVER-5000) with:	
750 GB Disk Cartridges	925 BTU/hr (270 W)
1 TB Disk Cartridges	925 BTU/hr (270 W)
2 TB Disk Cartridges	700 BTU/hr (205 W)
3 TB Disk Cartridges	990 BTU/hr (289 W)
5U Server (KSERVER-2500)	855 BTU/hr (250 W)
DV700 Disc Vault (KVAULT-DV700)	160 BTU/hr (46 W)
M700 Disc Vault (KVAULT-M700)	180 BTU/hr (52 W)
Modular Disc Vault (KVAULT-10)	90 BTU/hr (26 W)
M500 Player (KPLAYER-M500)	145 BTU/hr (43 W)
M300 Player (KPLAYER-M300)	95 BTU/hr (28 W)
1080p Player (KPLAYER-6000)	155 BTU/hr (45 W)
1080p Mini Player (KPLAYER-300)	105 BTU/hr (30 W)

Component	Maximum heat output
Movie Player 2 (KPLAYER-5000)	90 BTU/hr (26 W)
Movie Player (KPLAYER-2000, KPLAYER-2500)	75 BTU/hr (22 W)
Music Player (KMUSIC-4000)	70 BTU/hr (20 W)
Speed Reader (KSPEEDREADER-2)	360 BTU/hr (105 W)
Speed Reader (KSPEEDREADER)	375 BTU/hr (110 W)
Reader (KREADER-2000)	95 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 the enclosure's exhaust fans or external vents. Use the airflow in the table to determine the minimum exhaust airflow capacity in an installation enclosure.

Component	Airflow
Cinema One (KCINEMA-1, KSYSTEM-120)	15 CFM (26 m ³ /hr)
1U Server (KSERVER-1500)	10 CFM (17 m ³ /hr)
3U Server (KSERVER-5000)	40 CFM (68 m ³ /hr)
5U Server (KSERVER-2500)	30 CFM (50 m ³ /hr)
DV700 Disc Vault (KVAULT-DV700)	7 CFM (12 m ³ /hr)
M700 Disc Vault (KVAULT-M700)	7 CFM (12 m ³ /hr)
M500 Player (KPLAYER-M500)	7 CFM (12 m ³ /hr)
M300 Player (KPLAYER-M300)	6 CFM (10 m ³ /hr)
1080p Player (KPLAYER-6000)	5 CFM (8 m ³ /hr)
1080p Mini Player (KPLAYER-300)	6 CFM (10 m ³ /hr)
Movie Player 2 (KPLAYER-5000)	2.5 CFM (4.2 m ³ /hr)
Movie Player (KPLAYER 2000, KPLAYER-2500)	2.5 CFM (4.2 m ³ /hr)
Music Player (KMUSIC-4000)	2.5 CFM (4.2 m ³ /hr)
Speed Reader	45 CFM (77 m ³ /hr)
Reader (KREADER-2000)	6.2 CFM (11 m ³ /hr)

Ventilation

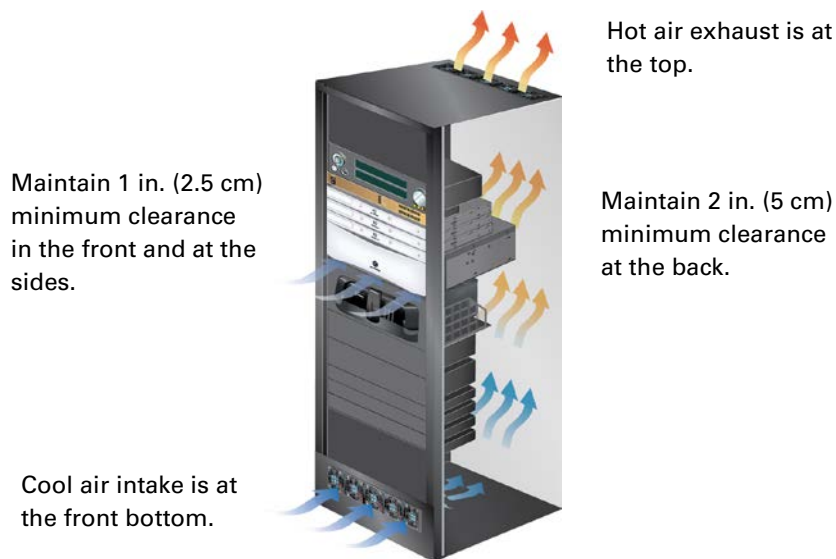
Use the following guidelines when installing Kaleidescape components to ensure proper ventilation.

- ▶ Verify proper clearance for ventilation. The rack or other enclosure doors must not reduce the air space around components below the specified clearance.
- ▶ Maintain 2 in. (5 cm) clearance at the back.
- ▶ Maintain 1 in. (2.5 cm) clearance in the front and at the sides.
- ▶ Maintain proper airflow path for ventilation.
- ▶ Verify adequate cool air intake at the front and bottom of all components.
- ▶ Verify hot air exhaust at the back and top of all components.
- ▶ 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 a component is not installed in an enclosure, the front panel and rear vents should be inspected every 4 months and cleaned if necessary to ensure adequate airflow. For detailed cleaning instructions refer to *Server Cleaning Procedures* at www.kaleidescape.com/go/server-cleaning.

Do not operate components in a dusty environment. In case of sanding or another temporary dust source, turn off all components 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 the recommended 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.



Notices

Document Title: Environmental Specifications for Kaleidescape Components

Document Number: 101-0097-00

Publication Date: March 2012

Permanent Link: www.kaleidescape.com/go/enviromental-specs

This document is for informational purposes only. Kaleidescape makes no representations or warranties, express or implied, regarding the accuracy or completeness of the information contained herein and Kaleidescape shall have no obligation to provide updates to this information in the future.

Copyright © 2009–2012 Kaleidescape, Inc. All rights reserved. Kaleidescape and the Kaleidescape logo are trademarks of Kaleidescape, Inc. and are registered in the United States and certain other jurisdictions. Other trademarks and trade names are owned by third parties and may be registered in some jurisdictions.