Abstract
This document is intended for the person who installs racks and rack products, is qualified in performing installations, and trained in recognizing hazards in rack products.
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About this guide

HP Modular Cooling System 200/100 options installation guide

This installation guide includes instructions for installing the option kits that are compatible with the MCS-200/100. For more information, see the HP Modular Cooling System 200/100 User Guide on the HP website (http://www.hp.com/go/rackandpower).

Safety information

The HP Modular Cooling System 200/100 Rack is tested to the maximum pressure (PS) of 8 bar (116 PSI) without fluid trapped inside by closed, external valves.

If valves are installed on the external pipe work that might trap fluid inside the MCS-200/100 rack, you must take special precautions. To prevent severe plumbing failure due to extreme pressure, use an expansion tank with a preinstalled safety valve in the plumbing circuit connected to the unit.

Optimum environment and site preparation

⚠️ **CAUTION:** Contaminated water might cause decreased cooling capacity or disruption in service. The water flowing into the MCS-200/100 unit must meet the guidelines stated in the HP Modular Cooling System 200/100 Site Preparation Guide. The MCS-200/100 warranty does not cover damage caused by contaminated water.

_ITEMS: Before you begin the installation process, review the HP Modular Cooling System 200/100 Site Preparation Guide.

To provide optimum performance with minimum maintenance for your unit, environmental requirements must be met.

For more information about planning your unit configuration efficiently and organizing your site location before delivery of your MCS-200/100 unit, see the HP Modular Cooling System 200/100 Site Preparation Guide.

To route water lines to the MCS-200/100 unit, use one of the following methods:

- Through the top of the MCS-200/100 unit
- Through an opening in the raised floor
- Lying on top of the floor (MCS-200 unit only)

For more information on routing the water lines, see the Hook Up Kit (on page 26) installation instructions.
Ordering MCS-200/100 options

HP provides several option kits to complement or complete the MCS-200/100 rack. For more information about ordering MCS-200/100 options, see the HP website (http://www.hp.com), or contact the nearest HP authorized reseller.

<table>
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<th>MCS-200/100 option kit</th>
<th>Part number</th>
<th>Description</th>
</tr>
</thead>
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<td>Enables the rack doors to open automatically to maintain air flow and cooling to the servers in the event of an emergency.</td>
</tr>
<tr>
<td></td>
<td>(MCS-100) ADR kit</td>
<td>Included with the MCS-200</td>
</tr>
<tr>
<td>Hook Up Kit (on page 26)</td>
<td>BW971A</td>
<td>Required for connection between facility water and the MCS-200/100.</td>
</tr>
<tr>
<td>Rack Expansion Kit (on page 38)</td>
<td>BW977A</td>
<td>Enables the connection of a secondary rack of the same height and depth to the MCS-200/100, enabling the cooling of both racks.</td>
</tr>
<tr>
<td></td>
<td>(MCS-100) expansion rack</td>
<td></td>
</tr>
<tr>
<td></td>
<td>BW975A</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(MCS-200) expansion rack</td>
<td></td>
</tr>
<tr>
<td>Fan Kit (on page 49)</td>
<td>BW978A</td>
<td>Increases airflow and cooling capacity.</td>
</tr>
<tr>
<td>AC Transfer Switch Kit (on page 59)</td>
<td>BW979A</td>
<td>Enables redundant power supply.</td>
</tr>
<tr>
<td>Condensation Pump Kit (on page 66)</td>
<td>BW982A</td>
<td>Provides pumping condensation out of the unit.</td>
</tr>
<tr>
<td>Operator Display Kit (on page 71)</td>
<td>BW981A</td>
<td>Provides an overview and control of the unit.</td>
</tr>
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</table>
Automatic Door Release Kit

Overview

The HP Modular Cooling System 200/100 is designed with a safety mechanism in the event that the HP Modular Cooling System 200/100 Rack experiences a chilled water system pressure or cooling loss. If the MCS-200/100 rack experiences such a loss, the electromagnetic locks on the front and rear doors immediately deactivate. Release springs open the rack doors and allow air flow and cooling from the room to reach the servers in the rack.

Kit contents

- Front door kit contents (on page 7)
- Rear door kit contents (on page 9)
- Electromagnetic lock assembly contents (on page 10)

Front door kit contents

<table>
<thead>
<tr>
<th>Callout</th>
<th>Description (Quantity)</th>
</tr>
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<tbody>
<tr>
<td>1</td>
<td>Electromagnetic lock bracket (1)</td>
</tr>
<tr>
<td>2</td>
<td>Door release spring (1)</td>
</tr>
<tr>
<td>Callout</td>
<td>Description (Quantity)</td>
</tr>
<tr>
<td>---------</td>
<td>------------------------</td>
</tr>
<tr>
<td>3</td>
<td>Mounting hardware (1)</td>
</tr>
<tr>
<td></td>
<td>• M5 x 10-mm pan head screw (4)</td>
</tr>
<tr>
<td></td>
<td>• M5.5 x 13-mm self-tapping screw (4)</td>
</tr>
<tr>
<td>4</td>
<td>Electromagnetic lock assembly (1)</td>
</tr>
<tr>
<td>5</td>
<td>Spacer block (1)</td>
</tr>
<tr>
<td>6</td>
<td>Strike plate bracket (2)</td>
</tr>
<tr>
<td>7</td>
<td>2-inch x 1-inch plastic adhesive-backed strip (1)</td>
</tr>
<tr>
<td>8</td>
<td>Washer (4)</td>
</tr>
<tr>
<td>9</td>
<td>Electromagnetic lock cable (1)</td>
</tr>
<tr>
<td>Not shown</td>
<td>Adhesive cable management clip (6)</td>
</tr>
</tbody>
</table>
Rear door kit contents

<table>
<thead>
<tr>
<th>Callout</th>
<th>Description (Quantity)</th>
</tr>
</thead>
<tbody>
<tr>
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</tr>
<tr>
<td>2</td>
<td>Electromagnetic lock cable (1)</td>
</tr>
<tr>
<td>3</td>
<td>Mounting hardware (1)</td>
</tr>
<tr>
<td></td>
<td>• M5 lock nut (8)</td>
</tr>
<tr>
<td></td>
<td>• M5 x 12-mm flat-head screw (4)</td>
</tr>
<tr>
<td>4</td>
<td>Electromagnetic lock assembly (2)</td>
</tr>
<tr>
<td>5</td>
<td>Door release spring (2)</td>
</tr>
<tr>
<td>6</td>
<td>Strike plate bracket (2)</td>
</tr>
<tr>
<td>7</td>
<td>Washer (8)</td>
</tr>
<tr>
<td>Not shown</td>
<td>Cable tie wrap (12)</td>
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</table>
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<table>
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<tr>
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<tr>
<td>1</td>
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</tr>
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<td>2</td>
<td>Strike plate (1)</td>
</tr>
<tr>
<td>3</td>
<td>Rubber washer (1)</td>
</tr>
<tr>
<td>4</td>
<td>Roll pin (2)</td>
</tr>
<tr>
<td>5</td>
<td>Flathead screw (1)</td>
</tr>
<tr>
<td>6</td>
<td>Black cap screw (2)</td>
</tr>
<tr>
<td>7</td>
<td>Allen wrench (1)</td>
</tr>
</tbody>
</table>

Required tools

The following tools are required for installation:

- T-25 Torx screwdriver
- T-30 Torx screwdriver
- Flathead screwdriver
- M5 socket screwdriver
- Allen wrench (included in the kit contents)
- Measuring tape

A T screwdriver is optional to ease installation.
Installing the front automatic door release kit

1. Using a T-30 Torx screwdriver, remove the existing front door lock catches by removing the screw from each of the two front door lock catches.

2. Install the front electromagnetic lock ("Installing the front electromagnetic lock" on page 11).
3. Install the front strike plate ("Installing the front strike plate" on page 13).
4. Install the front door release spring ("Installing the front door release spring" on page 15).
5. Install the front magnetic lock cable ("Installing the front magnetic lock cable" on page 17).

Installation is complete.

⚠️ CAUTION: HP recommends keeping your latch handle locked and using the fixed door handles above and below the latch to open your rack front door.

Installing the front electromagnetic lock

1. On the front rack frame, count up from the bottom to locate the 40th and 42nd holes. Align the electromagnetic lock bracket with these holes (1).
2. To attach the electromagnetic lock bracket onto the front rack frame, use a T-25 Torx screwdriver to insert and tighten two M5.5 self-taping screws (2).

3. To secure the electromagnetic lock bracket, pull the bracket forward, and then tighten the thumbscrew on the top of the bracket.

4. Position the electromagnetic lock on top of the electromagnetic lock bracket so that the magnetic lock cable connector hangs from the bottom of the assembly.
5. To attach the electromagnetic lock to the electromagnetic lock bracket, use the Allen wrench to insert and tighten two black cap screws.

Installing the front strike plate

The MCS-200/100 comes with two different strike plate brackets for the front. One bracket is for the MCS installed with a HP 10642 G2 (1,200 mm deep) IT rack and is labeled with an "A." The other bracket is for the MCS installed with a HP 642 (1,200 mm deep) IT rack and is not labeled.

Install the front strike plate using two options:

- With the full lock position, attach the strike plate to the electromagnetic lock directly. This option offers a very high resistance by securing and locking the front rack door.
- With the half lock position, partially attach the strike plate to the electromagnetic lock. This option offers less resistance by only securing, not locking, the front rack door.
To install the front strike plate:

1. Using a T-25 Torx screwdriver, remove the two M5.5 x 10-mm screws from the inside of the rack front door.

2. Align the strike plate bracket to the holes on the rack front door.

3. Using a T-25 Torx screwdriver, insert and then tighten the two M5.5 x 13-mm screws to attach the strike plate bracket to the rack.

4. Assemble the strike plate:
   a. Insert a flathead screw through the strike plate (2).
   b. Slide a rubber washer onto the flathead screw in between the strike plate and strike plate bracket (3). Do not tighten the strike plate too tightly to the strike plate bracket. The strike plate should float on the rubber washer providing flexibility to align with the electromagnetic lock.

5. Install the strike plate:
   o To install the strike plate in the full lock position, align the strike plate assembly directly to the strike plate bracket, inserting the flathead screw into the third hole from the top of the strike plate bracket.
Use the Allen wrench to attach the strike plate assembly to the strike plate bracket by tightening the flathead screw.

- To install the strike plate in the half lock position, align the strike plate assembly to approximately 3/4 of the strike plate bracket, inserting the flathead screw into the fourth hole from the top of the strike plate bracket. Use the Allen wrench to attach the strike plate assembly to the strike plate bracket by tightening the flathead screw.

### Installing the front door release spring

1. Align the U-loop release spring with the holes in the spacer block.
2. Using a T-25 Torx screwdriver, insert and tighten two M5 x 10mm pan head screws into each hole in the spacer block.

3. Align the spring on the block with the two holes on the door.
4. Using a T-25 Torx screwdriver, insert and tighten two M5 x 10 mm pan head screws into each hole on the door.

5. Close the front door, and then verify that the release spring comes in contact with the frame.

6. Install the plastic adhesive backed strip to the frame by removing the adhesive backing and placing the plastic strip approximately 155 mm (6.1 inches) to the left of the end of the frame.
Installing the front magnetic lock cable

1. Plug the magnetic lock cable into the cable connector hanging from the bottom of the electromagnetic lock assembly.
2. Using the adhesive cable management clips, route the magnetic lock cable up and across the front of the rack to the panel connector on the MCS-200/100 rack.

3. Plug the other end of the magnetic lock cable into the panel connector on the transfer switch.

4. Using the remaining adhesive cable management clips, secure any excess cable.
Operation of the front door after installing the automatic door release kit

After you have installed the automatic door release kit to the front door of your rack, to avoid mishandling the latch handle of your door, HP recommends that you follow these guidelines when opening your rack front door.

1. Set your magnetic locks into the half lock position.
2. Insert the key into the latch handle of your rack front door, and lock the latch handle.
3. Use the fixed door handles above and below the latch handle to pull your rack front door open.

Installing the rear automatic door release kit

1. Install the rear electromagnetic locks ("Installing the rear electromagnetic locks" on page 20) to the top and bottom of the rear rack frame.
2. Install the rear strike plates ("Installing the rear strike plates" on page 22) to the top and bottom of the rear rack frame.
3. Install the right and left rear door release springs ("Installing the rear door release springs" on page 23).
4. Install the rear magnetic lock cable ("Installing the rear magnetic lock cable" on page 24).

Installation is complete.

Removing the rear door lock rods

1. Insert a flat-head screwdriver between the lock rod mounting points at the handle and the plate that secures it behind the plate.
2. Using a T-25 Torx screwdriver, remove the two M5.5 x 10 mm screws of the top lock plate, and then remove the plate.

Installing the rear electromagnetic locks

You can install the rear electromagnetic locks using two options.

- With the full lock position, you attach the strike plates to the electromagnetic locks directly. This option offers a very high resistance by securing and locking the rear rack doors.
With the half lock position, you partially attach the strike plates to the electromagnetic locks. This option offers less resistance by only securing, not locking, the rear rack doors.

To install the rear electromagnetic locks:
1. Align the electromagnetic lock on top of the electromagnetic lock bracket, routing the magnetic lock cable through the notch on the electromagnetic lock bracket.
2. Using the Allen wrench, insert and tighten two black cap screws to attach the electromagnetic lock to the electromagnetic lock bracket on the top of the rear rack frame.
3. Install the electromagnetic lock assembly.
   - To install the electromagnetic lock in the full lock position, align the electromagnetic lock assembly to the sixth round hole from the right on the top of the rear rack frame. To attach the electromagnetic lock assembly to the top of the rear rack frame, use a T-25 Torx screwdriver to insert and tighten the two M5.5 self-tapping screws into the inner row of rack holes.
   - To install the electromagnetic lock in the half lock position, align the electromagnetic lock assembly to either the fifth or seventh round hole from the right on the top of the rear rack frame. To attach the
electromagnetic lock assembly to the top of the rear rack frame, use a T-25 Torx screwdriver to insert and tighten the two M5.5 self-tapping screws into the inner row of rack holes.

4. Repeat steps 1 through 3 for the bottom, rear electromagnetic lock.

Installing the rear strike plates

1. Align the strike plate bracket to the two studs on the top of the rear rack right door.
2. Using an M5 socket driver, insert and tighten the two M5 nuts over the studs to attach the top strike plate bracket to the top of the rear rack right door.

3. Attach the strike plate assembly to the strike plate bracket (2).
   a. Using a hammer, insert the two roll pins into the two holes on the strike plate (4).
   b. Insert a flathead screw through the strike plate (1).
   c. Slide a rubber washer onto the flathead screw in between the strike plate and strike plate bracket (3).

   **NOTE:** Do not tighten the strike plate too tightly to the strike plate bracket. The strike plate should float on the rubber washer providing flexibility to align with the electromagnetic lock.
d. Using the supplied Allen wrench, tighten the flathead screw.

4. Repeat steps 1 through 3 for the bottom, rear strike plate.

Installing the rear door release springs

1. Align the door release spring with the studs on the rear right door.
2. Using an M5 socket driver, insert and tighten the two M5 lock nuts over the studs.

3. Close the rear right door and confirm that there is contact with the door release spring.

4. Repeat steps 1 through 3 for the rear left door.

Installing the rear magnetic lock cable

1. Plug one end of the magnetic lock cable into the cable connector hanging from the right of the upper electromagnetic lock assembly.
2. Plug the other end of the magnetic lock cable into the cable connector hanging from the right of the lower electromagnetic lock assembly.

3. Using the cable tie wraps, route the magnetic lock cable up the side of the rack to the panel connector on the AC transfer switch.

4. Plug the center connector of the magnetic lock cable into the panel connector on the AC transfer switch.

5. Using the remaining cable tie wraps, secure any excess cable.
Hook Up Kit

About this kit

Before the delivery of your HP Modular Cooling System 200/100 Rack, you must install this kit to your facility water line at the location of your MCS-200/100 unit installation.

For location recommendations, see the HP Modular Cooling System 200/100 Rack Site Preparation Guide on the HP website (http://www.hp.com/go/rackandpower).

Kit contents

<table>
<thead>
<tr>
<th>Item</th>
<th>Description (quantity)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Main hose assembly* (2)</td>
</tr>
<tr>
<td>2</td>
<td>90-degree elbow assembly (2)</td>
</tr>
<tr>
<td>3</td>
<td>Teflon gasket (2)</td>
</tr>
<tr>
<td>4</td>
<td>M6 screw (4)</td>
</tr>
<tr>
<td>5</td>
<td>5mm Hex L-key (1)</td>
</tr>
<tr>
<td>6</td>
<td>Warning label (2)</td>
</tr>
<tr>
<td>7</td>
<td>M5.5 x 10 self-tapping screw (8)</td>
</tr>
<tr>
<td>8</td>
<td>Hose mounting brackets with hose clamps (2)</td>
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<tr>
<td>9</td>
<td>Top cover plate (1)</td>
</tr>
<tr>
<td>10</td>
<td>Rear cover plate (1)</td>
</tr>
</tbody>
</table>

*Not drawn to scale. The actual length of the main hose is approximately 3.5 m (11.5 ft).
Required tools

- Two pipe wrenches
- 5-mm HEX L-key (included in your kit contents)
- (Optional) Hacksaw
- T-25 Torx screwdriver
- T-30 Torx screwdriver
- Phillips screwdriver

(Optional) Installing additional components to your facility water line

You can install the HP Modular Cooling System 200/100 Hook Up Kit in several configurations. The kit itself is sufficient to operate the MCS-200/100 unit; however, in the following circumstances, you might want to install additional components:

- Ball valves—To enable you to easily turn off the facility water to the MCS-200/100 unit for any reason, install ball valves between the connection of the water hoses and the facility water supply. If you do not install ball valves, water will drain from the facility piping when you disconnect the hose.
- Filter and bypass—To help improve the quality of water entering the MCS-200/100 unit, install a filter. To aid in the operation and cooling of your equipment, install a bypass for the filter.
- Pressure reducing valve—If the pressure of the MCS-200/100 unit exceeds its maximum operating pressure (approximately 116 psi or 8 bar), install a pressure-reducing valve.

For more recommendations and installation examples, see the HP Modular Cooling System 200/100 Rack Site Preparation Guide on the HP website (http://www.hp.com/go/rackandpower).
Orientation of the hose

The hoses have swivel nuts on both ends. One end has removable clamshells, the other end is crimped and is not removable. Mechanically, only the crimped-end hose is routable into the MCS-200/100; the clamshell-end is designed for the facility connection.

Routing the hose through the MCS-200/100

Determine how you will install the main hoses:

- Through an opening in the raised floor
For more information, see "Attaching the main hoses to the MCS-200/100 through an opening in the raised floor (on page 31)."

- Above the floor (for MCS-200 only)
  For more information, see "Attaching the main hoses to the MCS-200 above the floor (on page 32)."

- Above the unit
Installing the 90° elbow assembly

1. Insert the Teflon gasket into the swivel nut of the union at the 90° elbow assembly.

2. Hold the 90° elbow in the designated direction—towards the top for installation through the top of the unit, or towards the bottom for rear or bottom installation—and hand-tighten the 90° elbow assembly to the MCS-200/100 unit.
3. Use two wrenches to tighten the union an additional two flats. Be sure the direction of the elbow does not change.

Attaching the main hoses to the MCS-200/100 through an opening in the raised floor

1. Route the main hose through the opening in the raised floor at the opening in the bottom of the MCS-200/100.
2. Run the hoses up and connect them to the 90° elbow assembly.
3. Hand-tighten the hoses to the 90° elbow assembly.

<table>
<thead>
<tr>
<th>Callout</th>
<th>Component</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>Main water</td>
<td>Removes hot water from the</td>
</tr>
</tbody>
</table>
4. Use a pipe wrench to tighten the hose connections an additional two flats.

**Attaching the main hoses to the MCS-200 above the floor**

1. Use a T-30 Torx screwdriver to remove the two screws securing the bottom rear panel to the unit. Save the screws.
2. Reuse the screws to install the rear plate with the cutout facing the unit.

3. Route the main hose through the opening in the rear plate into the MCS-200.
4. Run the flexible hoses up and connect them to the 90° elbow assembly.
5. Hand-tighten the hoses to the 90° elbow assembly.
6. Use a pipe wrench to tighten the hose connections an additional two flats.

Attaching the main hoses to the MCS-200/100 through the top of the unit

1. Use a T-30 Torx screwdriver to remove the four screws securing the top panel to the unit. Save the screws.
2. Reuse the screws to install the top plate with the cutout facing the unit.
3. Route the main hose through the opening in the top plate into the MCS-200/100.
4. Run the hoses down, and then connect them to the 90° elbow assembly.
5. Hand-tighten the hoses to the 90° elbow assembly.
6. Use a pipe wrench to tighten the hose connections an additional two flats.
7. Use a T-25 Torx screwdriver and the eight M5.5 x 10 self-tapping screws from the kit (four screws per bracket) to secure the two support brackets to the rear frame.

   Secure the self-tapping screws in approximately equal distances between the hose connections in the MCS-200/100 and the top plate.

8. Open the clamps and then insert the hoses. Insert the screws that came with the clamps from the front of the MCS-200/100 to the back, and use a Phillips screwdriver to secure the hoses into the clamps.

(Optional) Shortening the hoses

1. Using the L-key (supplied with this kit), remove the four M6 screws on the clam shell clamp, turning each screw one turn until they are all equally loose and can be removed. Retain screws to reinsert later.
2. Remove the clam shell clamp from around the hose and remove the swivel nut from the end of the hose.

3. Using a hacksaw, cut the end of the hose to the desired length.

4. Insert the swivel nut into the end of the hose and then replace the clam shell clamp around the hose.

**NOTE:** The shorter screws do not reach the threads of the clam shell until the clam shell is tightened. Therefore, you must use the longer screws first to tighten and secure the clam shell, and then you can replace the longer screws with the original shorter screws.
5. Insert the four longer M6 screws included in the kit to secure the clam shell clamp around the hose.

6. Using the L-key, tighten the longer M6 screws one turn at a time, tightening all four screws evenly. The clamp must be tight enough for the four shorter M6 screws to reach.

7. One hole at a time, replace the longer M6 screws with the original shorter M6 screws.

8. When you have replaced all four longer M6 screws with the original shorter M6 screws, use the L-key to fully tighten each screw.

**Attaching the main hose to the facility water line**

1. Attach the main hoses to the facility water lines, and then hand tighten the swivel nut.
2. Use the hose wrench, included in the kit contents, to tighten an additional two flats.

(Optional) Attaching the warning label to the hose

**NOTE:** The warning label reminds you:

*Water will drain when disconnected from the facility piping.*

If your hoses require additional insulation, attach the warning labels to the insulated hoses.
Rack Expansion Kit

About this kit

The HP Expansion Rack Kit enables a connection to a secondary rack of the same height and depth of your MCS-200/100. When the expansion rack is installed, the MCS-200/100 cools both racks.

Kit contents

This kit includes the following:

- HP MCS-200/100 Expansion Rack (1)
- Automatic Door Release Kit (1)—MCS-200 only and optional for MCS-100
- Rack Hardware Kit (1)
- HP MCS-200/100 Baying Kit (1):
  - 1130-mm gasket (2)
  - 1870-mm gasket (3)
  - 4040-mm gasket (1)—MCS-200 only
  - Baying bracket (6)
  - T-30 screw (12)
  - Door sensor cable (1)
  - Cable ties (8)

Required tools

The following tools are required for installation:

- T-30 Torx screwdriver
- Adjustable wrench

Installing the expansion rack

The following illustrations show the MCS-200 cooling unit.
1. Using a T-30 Torx screwdriver, remove the eight M6 screws securing the MCS-200/100 one-piece side panel, and then remove the panel from the MCS-200/100.

2. Using a T-30 Torx screwdriver, remove the three side panel mounting brackets in the front and the three side panel mounting brackets in the rear (MCS-100).

3. To remove the panel that covers the cutout on the rear extension kit of the MCS-200, remove the eight (seven shown in the following illustration) thumb screws.
This step is not required for MCS-100.

4. Attach the gaskets included in the kit contents to the MCS-200/100:
   a. Remove the liner backing from each gasket.
   b. Attach the two 1130-mm gaskets to the top and bottom frames on the side of the MCS-200/100.
   c. Attach the three 1870-mm gaskets to the front, middle, and rear of the side of the MCS-200/100.
   d. Attach the 4040-mm gasket around the cutout of the rear extension.
This step is not required for MCS-100.

5. Position the expansion rack next to the MCS-200/100 where it will be bayed, ensuring that the rack feet are on solid flooring.

6. Use an adjustable wrench to adjust each leveling foot of the expansion rack, ensuring that the rack is level with the MCS-200/100.
7. Pull the pins on the four hinges of the left rear door on the expansion rack, and then remove the door.

8. Open the front and rear doors of the MCS-200/100 to access the baying bracket holes.

9. Install the six baying brackets included in the kit contents between the MCS-200/100 and the expansion rack. You must install the brackets in the same holes where you removed the side panel brackets.
   
   Use the following guidelines:
   
   o The top baying brackets must be installed in the holes directly under the top hinge of the rack door.
   o The middle baying brackets must be installed in the middle holes of the rack frame.
   o The bottom baying brackets must be installed in the holes directly above the bottom hinge of the rack door.

   To install the brackets:
   
   a. From the rear of the MCS-200/100 and the expansion rack:
      
      i. Loosely install the three baying brackets to the MCS-200/100, inserting one T-30 screw into each bracket.
      
      ii. Align the expansion rack with the remaining bracket holes.
      
      iii. Insert three T-30 screws into the remaining holes, through the baying brackets, and into the expansion rack frame.
      
      iv. Using a T-30 Torx screwdriver, tighten all six screws until the baying brackets are secure.
b. From the front of the rack, repeat the preceding step for installing the brackets in the rear of the rack.

10. Replace the rear door of the expansion rack:
    a. Align the door to the four hinge locations on the rack frame.
    b. Squeeze the pins on each hinge, and then insert each hinge into the hinge bracket.

11. Install the side panel removed from the MCS-200/100 to the open side of the expansion rack.
12. Connect the included sensor cable (3) to the front door sensor (1) and the rear door sensor (2).
a. Route and connect one side of the cable through the MCS-200 rear extension, or through the cutout located in the inner side-panel of the MCS-100. The cutout is located next to the cooling unit.
b. Connect the cable included in the expansion kit to the rear door sensor connector in the MCS-200/100 expansion rack, and then connect the other end of the cable to the rear door sensor connector in the main rack. Then, route the cable from the rear sensor to the front sensor along the MCS-200/100 expansion rack side panel.
c. Use the cable ties in the kit to secure the cable and coil any excess cable.

If necessary, press and hold the C key on the management module for five seconds so the module detects the additional door sensors in the expansion rack.
13. A cable in the top right corner of the expansion rack provides power to the door release kit of the expansion rack. Plug the cable into the output connector in the MCS-200/100.

Installation is complete.
Fan Kit

About this kit

The Fan Kit increases airflow and cooling capacity.

Kit contents

<table>
<thead>
<tr>
<th>Callout</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Ground wire</td>
</tr>
<tr>
<td>2</td>
<td>Fan assembly</td>
</tr>
<tr>
<td>3</td>
<td>Hex screws (4)</td>
</tr>
</tbody>
</table>

Required tools

The following tools are required for installation:

10 mm wrench, or ratchet with nut
Installing the fan

1. Open the front MCS-200/100 cooling unit door.

2. Remove the screws with a 10-mm wrench, or ratchet with nut, while holding the blanking panel of the fan location.
- Four screws for MCS-100

- Two screws for MCS-200
3. Disconnect the grounding wire routed from the frame to the blanking panel.

4. Turn the blanking panel 90 degrees and pull it out towards the front, passing through the left and right frame members.
MCS-100
5. Slide the fan sideways into the open spot, turn it 90 degrees, and push it towards the back of the unit until the previously screwed holes line up. Using a 10-mm wrench, or ratchet with nut, secure the fan with the option kit screws. The MCS-100 option kit contains four screws and the MCS-200 option kit contains two screws.
MCS-100
When sliding the fan into place, be sure not to pinch the cable.
6. Connect the power cable (3-pin connector) to the receptacle on the left side of the frame and the control cable (4-pin connector) to the receptacle on the right side of the frame. Connect the grounding wire provided in the option kit to the grounding point at the fan and at the frame. If the unit is powered on, the fan will start working.

7. Power on the MCS-200/100 unit, and then connect a network cable at the back of the server rack.
8. Obtain the IP address from the user display.

9. Log into the Modular Cooling System 200/100 web interface. Under **Setup> Cooling System> Advanced**, enter the quantity of fans installed in the Number of installed Fans section in the middle of the page.
AC Transfer Switch Kit

About this kit

The AC Transfer Switch Kit enables redundant power supply.

Kit contents

<table>
<thead>
<tr>
<th>Callout</th>
<th>Description (Quantity)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>AC transfer switch</td>
</tr>
<tr>
<td>2</td>
<td>IEC-309 power cable</td>
</tr>
<tr>
<td>3</td>
<td>L6-20 power cable</td>
</tr>
<tr>
<td>4</td>
<td>M6 thumb screw and washer</td>
</tr>
</tbody>
</table>

Required tools

The following tools are required for installation:

- T-30 Torx screwdriver
- T-25 Torx screwdriver
- 8 mm wrench or ratchet with nut

Installing the AC transfer switch

1. Open the front and rear IT rack doors.
2. Power down the MCS-100 unit.
3. Using a T-30 Torx screwdriver, remove the four screws of the front shipping bracket on top of the unit and remove the bracket, if installed.

4. Lift the front server rack canopy enough to gain access to the grounding wire. Disconnect the grounding wire.
5. Disconnect all cables from the back of the power distribution unit.

6. Remove the thumbscrew on the back of the power distribution unit, and then lift the power distribution unit out of the cooling unit. Using a ratchet with an 8-mm wrench, or ratchet with nut, and a T-25 Torx screwdriver, remove the adapter bracket. Discard the power distribution unit and bracket.
7. Place the AC transfer switch in the unit and use the thumb screw with the washer included in the option kit to mount it in place.

8. Connect all cables to the AC transfer switch, including both power supply cables on the left and control cables on the right.
9. Replace the top canopy and reconnect the grounding wire.

10. Connect the secondary power cord included in the option kit to the back of the MCS-100 unit.
11. Power on the MCS-100 unit and connect a network cable at the back of server rack.

12. Obtain the IP address from the user display.
13. Log into the Modular Cooling System 200/100 web interface. Under **Setup>Cooling System>Advanced**, select the **Enable** radio button for the Transfer Switch parameter.

14. To verify that both inputs are now showing, check the home screen or connect to A input or B input on the back of the unit.
Condensation Pump Kit

About this kit

The Condensation Pump Kit provides pumping condensation out of the unit.

Kit contents

<table>
<thead>
<tr>
<th>Callout</th>
<th>Description (Quantity)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>T-Piece</td>
</tr>
<tr>
<td>2</td>
<td>Zip ties (5)</td>
</tr>
<tr>
<td>3</td>
<td>Pump assembly</td>
</tr>
<tr>
<td>4</td>
<td>Screws (2)</td>
</tr>
<tr>
<td>5</td>
<td>Rivet zip ties (2)</td>
</tr>
</tbody>
</table>

Required tools

The following tools are required for installation:

- T-25 Torx screwdriver
- Wire cutter

Installing the condensation pump

1. Open the front and rear IT rack doors.
2. Power down the MCS-100 unit.
3. Open the rear door of the MCS-100 unit.

4. Place the condensation pump in the bottom rear of the unit with the bracket part with small tubing reaching into the stainless steel condensation pan and the other side of the bracket lined up with the rear bottom crossmember of the frame. The mounting holes must line up with the first and second holes from the right. Use a T-25 Torx screwdriver and mount the bracket with the two screws included in the option kit.

5. Using the two cable ties included in the option kit, clip the rear round holes of the frame. Mount the T-piece to the cable ties. Connect the blue tube routed from the top to the stainless steel condensation pan and to one side of the T-piece. Then, connect the short blue tube coming from the condensation pump to the other end of the T-piece. Shorten the tubing with a wire cutter, if needed.
6. Route the power cable (3-pin connector) to the top, inside the cooling unit, and connect it to the appropriate connector on the right at the rear panel. Route the signal cable (2-pin connector) to the top, inside the cooling unit, and connect it to the appropriate connector on the left at the rear panel.

7. Use the remaining cable ties from the option kit to tighten both cables together to the front of the perforated side panel. Remove excess cable tie material with a wire cutter.
8. Power on the MCS-100 unit and connect a network cable at the back of server rack.

9. Obtain the IP address from the user display (DHCP is enabled by default).
10. Log into the Modular Cooling System 200/100 web interface. Under **Setup>Cooling System>Advanced**, select the **Enable** radio button for the Condensation Pump parameter.
Operator Display Kit

Operator display overview

The operator display provides information on the system operation, viewable on the outside of the MCS-100 front door. When the management module issues an alarm or warning, warning and alarm messages appear on the operator display, as well as on the web interface Alarms menu and Alarm History menu. For more information, see the HP Modular Cooling System 200/100 Web Interface User Guide.

Operator display components

The operator display on the front door of the MCS-100 unit has a digital touchscreen.

To scroll through the menu options, press the appropriate button on the bottom of the screen.

About this kit

The Operator Display Kit provides an overview and control of the unit.
Kit contents

<table>
<thead>
<tr>
<th>Callout</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Display cable</td>
</tr>
<tr>
<td>2</td>
<td>Operator display</td>
</tr>
<tr>
<td>3</td>
<td>Mounting hardware</td>
</tr>
</tbody>
</table>

Required tools

The following tools are required for installation:

- 3.5-mm Allen wrench
- Long-nose pliers
- 13-mm wrench or ratchet with nut

Installing the operator display

1. Open the front and rear IT rack doors.
2. Open the front door of the MCS-100 unit.
3. On the inside of the door, use a 13 mm wrench, or ratchet with nut, to remove the (3) nuts and washers holding the blanking panel, and then remove the blanking panel towards the front. Discard the blanking panel, nuts, and washers.

4. Slide the operator display into the door cutout and hold it in place. Use long-nosed pliers to hold and slide the mounting tabs included in the display hardware into the small slotted holes on each side of the display. Use a 3.5mm Allen wrench to install the (2) screws included in the display hardware to the mounting tabs, and then tighten them.
5. Use the cable included in the option kit to connect the (2) connectors onto the bottom connections of the operator display. Route the other end with the 6-pin connector to the inside of the cooling unit and the frame with the hinges.

6. Check that the operator display boots with an HP logo and shows the HP Home Screen after 1 minute.
Acronyms and abbreviations

MCS
modular cooling system
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