

INSTALLING AN HSG80 OR HSZ80 ARRAY CONTROLLER

About This Card

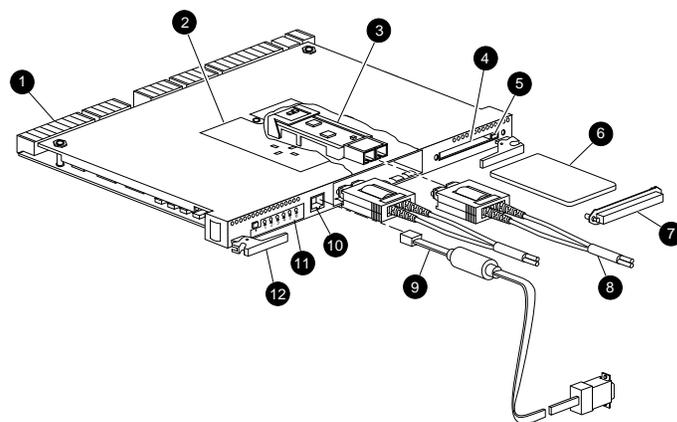
Follow these instructions to replace either an HSG80 ACS Version 8.x or an HSZ80 ACS Version 8.3 Array Controller.

NOTE: For instructions on upgrading a single-controller configuration to a dual-redundant controller configuration, see the appropriate *DIGITAL StorageWorks™ HSG80 Array Controller ACS Version 8.2 User's Guide*, *Compaq™ StorageWorks HSG80 Array Controller Version 8.x Maintenance and Service Guide*, or *Compaq StorageWorks HSZ80 Array Controller ACS Version 8.3 Maintenance and Service Guide*.

General Information

Figure 1, Figure 2, and Figure 3 provide general information about the specific host cable connection for each array controller.

NOTE: The maintenance port cable shipped with the HSG80 and HSZ80 array controller has a 9-pin connector for a PC connection only. If using a terminal instead of a PC, order the optional maintenance port cable from the local field service office.



CX07198A

- 1 Backplane connectors
- 2 Access door
- 3 Optical gigabit link module (GLM)
- 4 Program card slot
- 5 Program card ejection button
- 6 Program card
- 7 Program card electrostatic discharge (ESD) cover
- 8 Fibre channel optical cables
- 9 Maintenance port cable for a PC connection
- 10 Maintenance port
- 11 Operator control panel (OCP)
- 12 Release lever

Optional adapters for a terminal connection (9-pin D-sub to 25-pin D-sub, not shown):

- Male to female (null modem), part numbers: 173407-001 / 12-45238-01
- Male to male (null modem), part numbers: 173407-002 / 12-45238-02
- Male to male (modem), part numbers: 173407-003 / 12-45238-03

Figure 1. HSG80 array controller with optical GLM

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- EN 55022 (CISPR 22) *Electromagnetic Interference*
- EN 50082-1 (IEC 801-2, IEC 801-3, IEC 801-4) *Electromagnetic Immunity*
- EN 60950 (IEC 950) *Product Safety*

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INSTALLING AN HSG80 OR HSZ80 ARRAY CONTROLLER

Single Controller Configurations

Use this procedure for the following configurations:

- HSG80 ACS Version 8.2 Single Controller
- HSG80 ACS Version 8.3 Single Controller
- HSG80 ACS Version 8.4 Single Controller
- HSG80 ACS Version 8.5 Single Controller
- HSZ80 ACS Version 8.3 Single Controller

Use the steps in “Removing a Controller” and “Installing a Controller” to replace a controller. See the applicable array controller figure (Figure 1, 2, or 3) for clarification during the procedure.



CAUTION: ESD can easily damage an array controller. Wear a snug-fitting, grounded ESD wrist strap.

Removing a Controller

Use the following steps to remove a controller:

1. From the host console, dismount the logical units in the subsystem. If using a Microsoft Windows NT platform, shut down the server.

2. If the controller is operating, connect a PC or terminal to the controller maintenance port.

If the controller is not operating, go to step 6.

3. Run the fault management utility (FMU) to obtain the last failure codes, if desired.

4. Is a disk initialized with the SAVE_CONFIGURATION switch?

- Yes. Use the following command to save the current device configuration for “this controller:”

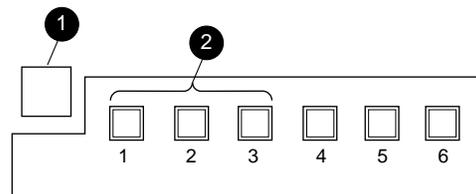
CONFIGURATION SAVE

- No. Locate existing information that will support the manual configuration of the subsystem. The new controller must be manually configured as described using the appropriate array controller User Guide or CLI Reference Guide.

5. Shut down “this controller” with the following command:

SHUTDOWN THIS_CONTROLLER

When the controller shuts down, the reset button ① and the first three light emitting diodes (LEDs) ② turn ON (see Figure 4). It might take several minutes for this indication to appear, depending on the amount of data that needs to be flushed from the cache module.



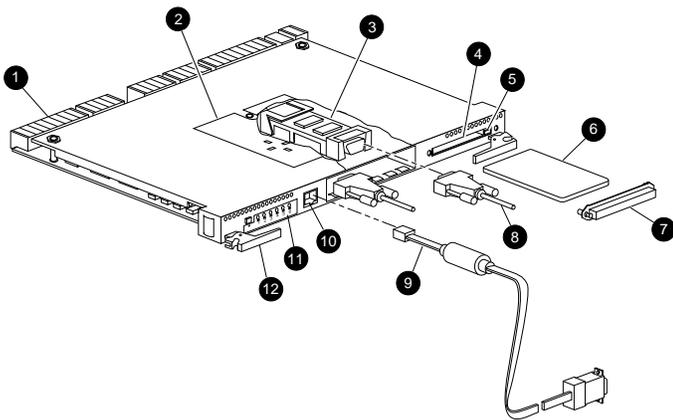
CXO6991A

Figure 4. Controller reset button and first three LEDs



CAUTION: The cache module might contain unwritten data if the controller crashes and the controller cannot be shut down with the SHUTDOWN THIS_CONTROLLER command.

6. Remove the program card ESD cover and the program card and save them in a static-free place for the replacement controller.



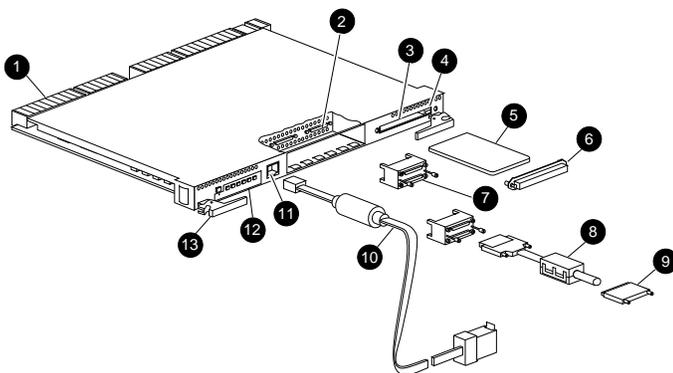
CXO7199A

- ① Backplane connectors
- ② Access door
- ③ Copper GLM
- ④ Program card slot
- ⑤ Program card ejection button
- ⑥ Program card
- ⑦ Program card ESD cover
- ⑧ Fibre channel copper cables
- ⑨ Maintenance port cable for a PC connection
- ⑩ Maintenance port
- ⑪ OCP
- ⑫ Release lever

Optional adapters for a terminal connection (9-pin D-sub to 25-pin D-sub, not shown):

- Male to female (null modem), part numbers: 173407-001 / 12-45238-01
- Male to male (null modem), part numbers: 173407-002 / 12-45238-02
- Male to male (modem), part numbers: 173407-003 / 12-45238-03

Figure 2. HSG80 array controller with copper GLM



CXO7200A

- ① Backplane connectors
- ② Host ports
- ③ Program card slot
- ④ Program card ejection button
- ⑤ Program card
- ⑥ Program card ESD cover
- ⑦ Trilink connector
- ⑧ Host bus cable with ferrite bead
- ⑨ SCSI terminator
- ⑩ Maintenance port cable for a PC connection
- ⑪ Maintenance port
- ⑫ OCP
- ⑬ Release lever

Optional adapters for a terminal connection (9-pin D-sub to 25-pin D-sub, not shown):

- Male to female (null modem), part numbers: 173407-001 / 12-45238-01
- Male to male (null modem), part numbers: 173407-002 / 12-45238-02
- Male to male (modem), part numbers: 173407-003 / 12-45238-03

Figure 3. HSZ80 array controller with trilink connector

7. Disconnect all host bus cables from the controller:
 - [HSG80] If extender clips are not installed on the cables, use thin needle nose pliers to disconnect the cables (see inset on Figure 5).

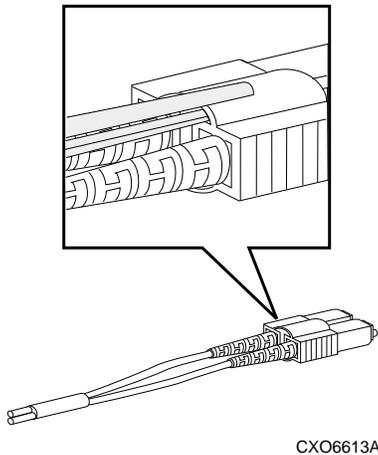


Figure 5. Using thin needle nose pliers to disconnect a fiber optic cable

- [HSZ80] Disconnect the tralink connector from the controller (the tralink connectors are reused, see Figure 3).
8. If connected to the operational controller, disconnect the PC or terminal from the controller maintenance port.
 9. Disengage both retaining levers, remove the controller, and place it in an antistatic bag or on a grounded antistatic mat.

Installing a Controller

Use the following steps to install a controller:

CAUTION: Carefully align the controller in the appropriate guide rails. Misalignment might damage the backplane.

IMPORTANT: Ensure the program card is not installed in the replacement controller.

1. Insert the controller into its bay and engage its retaining levers.
2. Connect all host bus cables to the controller:
 - [HSG80] cables only
 - [HSZ80] host bus cable with tralink connector
3. Connect a PC or terminal to the replacement controller maintenance port.
4. Press and hold the reset button while inserting the program card into the replacement controller.
5. Release the reset button and install the program card ESD cover on the controller.
6. When the CLI prompt reappears, display details about the configured controller using the following command:


```
SHOW THIS_CONTROLLER FULL
```
7. Configure the controller as described using the appropriate array controller User Guide or CLI Reference Guide.

NOTE: If the controller being installed was previously used in another subsystem, it will need to be purged of the old configuration (see CONFIG RESET in the using the appropriate array controller User Guide or CLI Reference Guide.).

IMPORTANT: In the following step, hold these buttons until the Port Buttons start FLASHING, before releasing the two buttons. This sequence causes a SAVE_CONFIGURATION or CONFIGURATION RESTORE to occur.

8. Does a disk contain the current device configuration saved on it?
 - Yes. Automatically restore the configuration as follows:

IMPORTANT: In the following step, hold the buttons until the Port Buttons start FLASHING, before releasing the two buttons.

- a) Press and hold the Port Button #6 (see Figure 6, ②), and then press and hold the reset buttons ① until the port buttons start FLASHING.

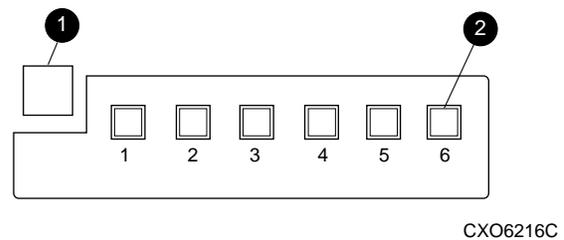


Figure 6. Reset and port 6 buttons

- b) Release the two buttons to initiate the configuration restore.
 - No. Manually restore the current device configuration using existing information and the appropriate array controller User Guide or CLI Reference Guide.
9. Using code-load/code-patch utility (CLCP), install any patches that were installed on the previous controller as described in the appropriate array controller User Guide or CLI Reference Guide.
10. Mount the logical units on the host. If using a Windows NT platform, restart the server.
11. Set the subsystem date and time using the following command in its entirety:


```
SET THIS_CONTROLLER TIME=dd-mmm-yyyy:hh:mm:ss
```
12. Disconnect the PC or terminal from the controller maintenance port.

Dual Controller Configurations

Use this procedure for the following configurations:

- HSG80 ACS Version 8.2 Dual-Redundant Controller
- HSG80 ACS Version 8.3 Dual-Redundant Controller
- HSG80 ACS Version 8.4 Dual-Redundant Controller
- HSG80 ACS Version 8.5 Dual-Redundant Controller
- HSZ80 ACS Version 8.3 Dual-Redundant Controller

Use the steps in “Removing a Controller” and “Installing a Controller” to replace a controller. See the applicable array controller figure (1, 2, or 3) for clarification during the procedure.

 **CAUTION:** ESD can easily damage an array controller. Wear a snug-fitting, grounded ESD wrist strap.

Removing a Controller

Use the following steps to remove a controller:

1. Connect a PC or terminal to the maintenance port of the operational controller.

The controller connected to becomes “this controller”; the controller being removed becomes the “other controller.”

2. Disable failover and take the controllers out of their dual-redundant configuration with the following command:

```
SET NOFAILOVER
```

3. Remove the program card ESD cover and program card from the “other controller.” Save them in a static-free place for the replacement controller.
4. Start FRUTIL with the following command:

```
RUN FRUTIL
```
5. If a replace the cache battery question appears, enter N(o).
6. Enter option 1, *Replace or remove a controller or cache module*, from the FRUTIL Main menu.
7. Enter option 2, *Other controller module*, from the Replace or Remove Options menu to remove the “other controller.”
8. Enter Y(es) to confirm the intent to remove the “other controller.”

 **CAUTION:** Wait for FRUTIL to quiesce the device ports—indicated by an “All device ports quiesced” message. Failure to allow the ports to quiesce might result in data loss. This might take several minutes.

NOTE: A countdown timer allows a total of two minutes to remove the controller. After two minutes, “this controller” will exit FRUTIL and resume operations. If this happens, return to step 4 and proceed.

9. Follow on-screen instructions to remove the controller.
10. Disconnect all host bus cables from the “other controller.”
 - [HSG80] If extender clips are not installed on the cables, use thin needle nose pliers to disconnect the cables (see Figure 5).
 - [HSZ80] Disconnect the tralink connector from the controller (the tralink connectors are reused, see Figure 3).
11. Place the controller in an antistatic bag or on a grounded antistatic mat.
12. Enter N(o) if a replacement controller is not available.
 - FRUTIL will exit.
 - Disconnect the PC or terminal from the controller maintenance port.

Enter Y(es) if a replacement controller is available and it will be installed now.

NOTE: If Y(es) was entered, go to step 6 in the next section and proceed.

Installing a Controller

Use the following steps to install a controller.

1. Connect a PC or terminal to the operational controller.

The controller connected to becomes “this controller”; the controller being installed becomes the “other controller.”

2. Start FRUTIL with the following command:

```
RUN FRUTIL
```
3. If a replace the cache battery question appears, enter N(o).
4. Enter option 2, *Install a controller or cache module*, from the FRUTIL Main menu.
5. Enter option 2, *Other controller module*, from the Replace or Remove Options menu.
6. Enter Y(es) to confirm the intent to install the “other controller.”

 **CAUTION:** Wait for FRUTIL to quiesce the device ports—indicated by an “All device ports quiesced” message. Failure to allow the ports to quiesce might result in data loss. This might take several minutes.

Carefully align the controller in the appropriate guide rails. Misalignment might damage the backplane.

NOTE: A countdown timer allows a total of two minutes to install the controller. After two minutes, “this controller” will exit FRUTIL and resume operations. If this happens, return to step 2 and proceed.

7. Follow on-screen instructions to install and start the controller.
8. Make sure that the program card is seated in the replacement controller, insert the controller into its bay, and engage its retaining levers.

NOTE: When fully seated, the newly installed controller restarts automatically.

9. Install the program card ESD cover on the “other controller.”
10. Wait for FRUTIL to terminate and then reconnect the host bus cables:

- [HSG80] cables only
- [HSZ80] host bus cables with tralink connectors

11. Configure the controller as described in the appropriate array controller User Guide or CLI Reference Guide.

NOTE: If the controller being installed was previously used in another subsystem, it will need to be purged of the old configuration (see CONFIG RESET in the appropriate array controller User Guide or CLI Reference Guide.).

12. Enable failover, and re-establish the dual-redundant configuration with the following command:

```
SET FAILOVER COPY=THIS_CONTROLLER
```

This command copies the subsystem configuration from “this controller” to the “other controller.”

13. If desired, verify the failover configuration with the following command:

```
SHOW THIS_CONTROLLER FULL
```

14. Disconnect the PC or terminal from the controller maintenance port.

This completes the hardware installation.