

Cinema Media Server



User Manual

Cinema Media Server CMS-5000



TD-001576-01-A



Explanation Of Terms And Symbols

The term "WARNING!" indicates instructions regarding personal safety. If the instructions are not followed the result may be bodily injury or death.

The term "CAUTION!" indicates instructions regarding possible damage to physical equipment. If these instructions are not followed, it may result in damage to the equipment that may not be covered under the warranty.

The term "IMPORTANT!" indicates instructions or information that are vital to the successful completion of the procedure.

The term "NOTE" is used to indicate additional useful information.



The intent of the lightning flash with arrowhead symbol in a triangle is to alert the user to the presence of un-insulated "dangerous" voltage within the product's enclosure that may be of sufficient magnitude to constitute a risk of electric shock to humans.



The intent of the exclamation point within an equilateral triangle is to alert the user to the presence of important safety, and operating and maintenance instructions in this manual.



Important Safety Instructions



WARNING! TO PREVENT FIRE OR ELECTRIC SHOCK, DO NOT EXPOSE THIS EQUIPMENT TO RAIN OR MOISTURE. Elevated Operating Ambient – The ambient operating temperature of the installation environment may be greater than room ambient. Consideration should be given to ensure that the maximum operating temperature range (0°C to 50°C, 32°F to 122°F) is not exceeded. Reduced Air Flow – Installation of the equipment should be such that the amount of air flow required for safe operation of the equipment is not compromised.

1. Read these instructions.
2. Keep these instructions.
3. Heed all warnings.
4. Follow all instructions.
5. Do not use this apparatus near water.
6. Do not submerge the apparatus in water or liquids.
7. Do not use any aerosol spray, cleaner, disinfectant or fumigant on, near or into the apparatus.
8. Clean only with a dry cloth.
9. Install in accordance with the manufacturer's instructions.
10. Do not install near any heat sources such as radiators, heat registers, stoves, or other apparatus (including amplifiers) that produce heat.
11. Only use attachments/accessories specified by the manufacturer.
12. Refer all servicing to qualified service personnel. Servicing is required when the apparatus has been damaged in any way, such as liquid has been spilled or objects have fallen into the apparatus, the apparatus has been exposed to rain or moisture, does not operate normally, or has been dropped.
13. Adhere to all applicable local codes.
14. Consult a licensed, professional engineer when any doubt or questions arise regarding a physical equipment installation.

Maintenance and Repair



WARNING! Advanced technology, e.g., the use of modern materials and powerful electronics, requires specially adapted maintenance and repair methods. To avoid a danger of subsequent damage to the apparatus, injuries to persons and/or the creation of additional safety hazards, all maintenance or repair work on the apparatus should be performed only by a QSC authorized service station or an authorized QSC International Distributor. QSC is not responsible for any injury, harm or related damages arising from any failure of the customer, owner or user of the apparatus to facilitate those repairs.

Lithium Battery Warning



WARNING! THIS EQUIPMENT CONTAINS A NON-RECHARGEABLE LITHIUM BATTERY. LITHIUM IS A CHEMICAL KNOWN TO THE STATE OF CALIFORNIA TO CAUSE CANCER OR BIRTH DEFECTS. THE NON-RECHARGEABLE LITHIUM BATTERY CONTAINED IN THIS EQUIPMENT MAY EXPLODE IF IT IS EXPOSED TO FIRE OR EXTREME HEAT. DO NOT SHORT CIRCUIT THE BATTERY. DO NOT ATTEMPT TO RECHARGE THE NON-RECHARGEABLE LITHIUM BATTERY. THERE IS A RISK OF EXPLOSION IF THE BATTERY IS REPLACED BY AN INCORRECT TYPE. BATTERY REPLACEMENT IS PROHIBITED!

Regulatory Information

FCC Statement



NOTE: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules.

These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

DCI/FIPS Security Compliance

The CMS-5000 is a FIPS-140-2 Certified device. It contains cryptographic devices and keys and must be handled correctly while in use and when removed from service. The end user of the CMS-5000 is classified by FIPS as a Cryptographic Officer and is responsible for placing and maintaining the projector system into a FIPS approved mode. In this capacity you agree to the following guidelines:

1. Do not attempt to dismantle or reverse engineer the device. Any attempt to gain access to the modules enclosed in the secure environment may result in loss of functionality and will void any warranty.
2. Ensure that at least two tamper seals are present on the CMS-5000 security module. Any attempt to remove, alter or replace the tamper label seals on the CMS-5000 secure enclosure will void the warranty.
3. The user assumes responsibility to change the standard passwords installed by the factory.
4. The user assumes responsibility for the protection of keys (KDMs) and the protection of passwords used to access the CMS-5000.
5. Ensure that one or more external tamper seals are affixed to the surface between the CMS-5000 and the projector body.
6. Perform or monitor the marriage between the CMS-5000 and the projector.
7. At end-of-life, perform or monitor the physical removal of the battery by separating the battery from the printed circuit board. The battery and the CMS-5000 should be disposed of in accordance with local or national legislation.

Product End of Life Information

This product was designed and built by QSC to provide many years of service, and is backed by our commitment to provide high-quality support. When it eventually reaches the end of its serviceable life, it should be disposed of in accordance with local or national legislation.

If you wish to discard electronic equipment, please contact your dealer or supplier for further information.



NOTE: The manufacturing date can be derived from the serial number which will have the format CWWYYxxxx (9 characters) or xxxxYYWWxxxxxx (14 characters) where 'YY' is the year of manufacture (20 = 2020) and 'WW' is the calendar week of manufacture.

RoHS Statement

The QSC® Cinema Media Server CMS-5000 is in compliance with European Directive 2015/863/EU.

The QSC Cinema Media Server CMS-5000 is in compliance with “China RoHS” directives per GB/T26572. The following table is provided for product use in China and its territories:

QSC CMS-5000 系列, 有毒有害物质或元素 (Toxic or hazardous Substances and Elements)						
多溴二苯醚 (PBDE)	多溴联苯 (PBB)	六价铬 (Cr(vi))	镉 (Cd)	汞 (Hg)	铅 (Pb)	部件名称 (Part Name)
0	0	0	0	0	X	电路板组件 (PCB Assemblies)
0	0	0	0	0	X	机壳装配件 (Chassis Assemblies)

本表格依据 SJ/T 11364 的规定编制。 (This table is prepared following the requirement of SJ/T 11364.)

0: 表示该有害物质在该部件所有均质材料中的含量均在 GB/T 26572 规定的限量要求以下。

0: Indicates that the concentration of the substance in all homogeneous materials of the part is below the relevant threshold specified in GB/T 26572.

X: 表示该有害物质至少在该部件的某一均质材料中的含量超出 GB/T 26572 规定的限量要求。

X: Indicates that the concentration of the substance in at least one of all homogeneous materials of the part is above the relevant threshold specified in GB/T 26572.

(目前由于技术或经济的原因暂时无法实现替代或减量化) (Replacement and reduction of content cannot be achieved currently because of the technical or economic reason.)

Warranty and Registration

For a copy of the QSC Limited Warranty, visit the QSC website at www.qsc.com

To register your product:

1. Go to the QSC website www.qsc.com and search for "registration".
2. Click Product Registration (Cinema).
3. Complete the registration form.

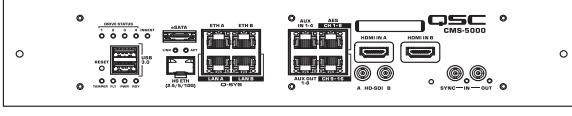



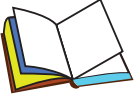
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Package Contents

	<p>1 CMS-5000 With selected Storage Option and Front Panel Option</p>		<p>2 LABEL, ANTI-TAMPER LB-004118</p>
 <p>1 CMS-5000 Security Guide TD-001589</p>	 <p>1 CMS-5000 Quick Start Guide TD-001577</p>		<p>1 QSC Warranty TD-000453</p>

Introduction

The innovative CMS-5000 Cinema Media Server supports JPEG-2000 decoding of high frame rate 4K and 2K images with advanced solid state storage. In addition to an eSATA port and 1G Ethernet ports, the CMS-5000 includes two USB 3.0 ports and a 10G Ethernet port to enable accelerated content ingest. The CMS-5000 supports immersive audio formats with rendering of up to 64 channels (DTS:X™) and can be directly interfaced with Q-SYS™, the QSC network platform for integrated sound, picture, and control.

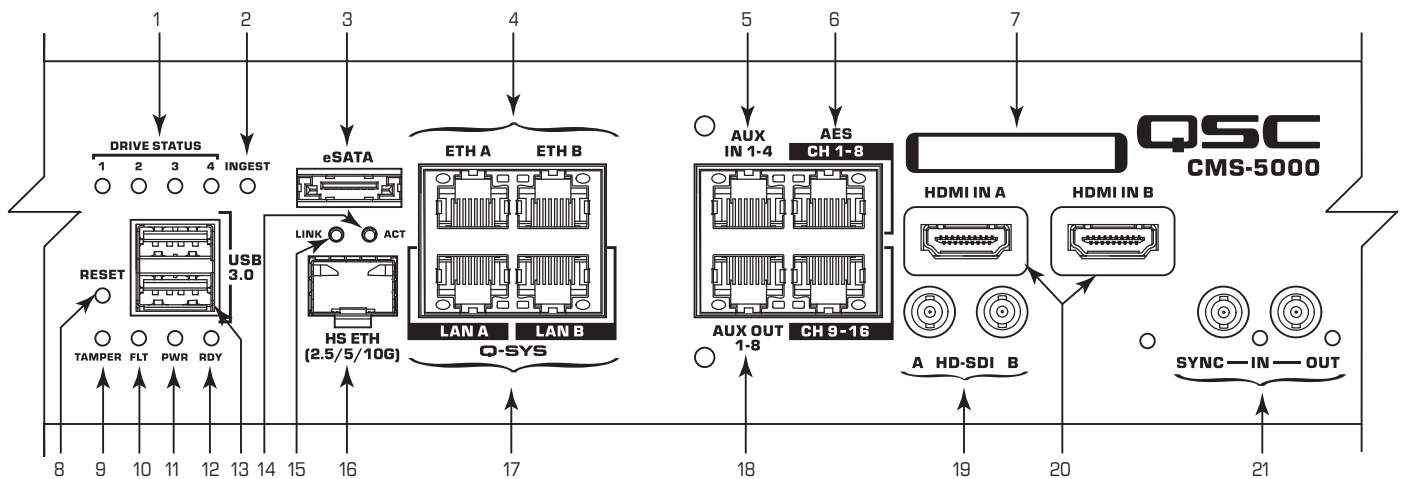
Front Panel Features



NOTE: Figure 1 does not show the mounting hole options in order to emphasize the connectors section



NOTE: At power up, the POWER LED is on and the READY LED is off. During CMS initialization, all the LEDs except POWER will blink. Once the READY light is on and no longer blinking, LEDs function as described below. Additional information about LED status during bootup and test is available in the Troubleshooting Guide.



— Figure 1 —

1. **DRIVE STATUS 1-4 LEDs** – Blue indicates activity on the installed SSD drives.
2. **INGEST LED** – Blue indicates DCP scan or ingest active from an eSATA drive.
3. **eSATA** – Used for ingest of DCP to onboard storage directly from a hard drive.
4. **ETH A and ETH B (CONTROL/DATA)** – Use these RJ45s to connect to a 10/100 or 1G Ethernet network to enable control and monitoring functions. Use the Ethernet network to connect the CMS-5000 to the following:
 - TMS
 - Library server
 - Closed-captioning transmitter
 - Cinema processor (automation control)
 - Other Ethernet-controlled devices

5. **AUX IN 1-4** – Four auxiliary AES digital inputs are provided for alternate content audio.
6. **AES CH 1-8 and AES CH 9-16** – In non-Q-SYS installations, these digital outputs include the main 5.1/7.1 channels (L,C,R,LS,RS,BL,BR and Lfe (Sub)), the HI and VI tracks, and may include up to 6 additional surround channels for immersive audio bitstreams. These outputs are connected to the cinema processor (e.g. DPM or JSD) for additional EQ and speaker processing. Routing of channels to these outputs as well as the Aux Out is configurable in the UI.
7. **Model and Serial Number** – Use the Serial Number when requesting content keys for the CMS-5000.
8. **RESET button** – Pressing the reset button will cause the CMS-5000 to reboot immediately.
9. **TAMPER LED**
 - **Flashing Red** – Indicates the projector service door is open.
 - **Solid Red** – Indicates a tamper event or non-recoverable error. The CMS-5000 is non-functional and will need to be returned to QSC.
10. **FLT LED** – Yellow indicates an error occurred during self-test. See the Troubleshooting Guide for more information.
11. **PWR LED** – Green indicates presence of 12V on rear connector to projector
12. **RDY LED**
 - **Flashing Green** - Indicates the CMS is booting up or awaiting marriage to the projector.
 - **Solid Green** - Indicates the CMS is ready to perform its functions.
13. **USB 3.0** – Both connectors support USB 3.0 and can be used for ingest.
14. **ACT LED** – Yellow indicates link on HS ETH, alternating yellow/green indicates activity on HS ETH.
15. **LINK LED** – Yellow indicates the HS ETH link is established at 5 Gbps. Green indicates HS ETH link is established at 10 Gbps.
16. **HS ETH** – This location has an SFP+ cage for connection to a 2.5G-10G fiber or Cat6 Ethernet network. This network is used primarily for transfer of the DCP from the library server or between CMS-5000s.
17. **Q-SYS LAN A and LAN B** – For systems that include a Q-SYS core, one or both of these ports are used to transfer audio from the CMS to the core.
18. **AUX OUT 1-8** – Eight AES digital outputs are provided. These can be used to output alternative audio tracks including HI, VI and alternate language tracks.
19. **HD-SDI A and B** – These connectors provide an interface to professional video devices. These support up to 3G dual link HD SDI.
20. **HDMI IN A and B** – These can be connected to video sources with HDMI outputs such as Blu-ray players, satellite receivers, laptops and STBs. These support the HDMI 2.0/HDCP 2.2 standard.
21. **SYNC IN and SYNC OUT** – These connectors are used to sync CMS-5000s in theaters where two projectors are being used for 3D content. It is a sync output on the ‘primary’ CMS and sync input on the ‘secondary’ CMS. LED's indicate activity.

Installation

Required Tools

- ESD strap
- #1 Phillips screwdriver

Installing the CMS-5000 into a Projector

1. Make sure you are familiar with the projector marriage process before starting the installation of the CMS-5000. Once you start the installation, the CMS-5000 must be married to the projector per the manufacturer's instructions before the CMS-5000 will be functional.
2. Make sure you have the correct front panel for the installation. There are unique front panels for the Barco, NEC, and Christie projectors.



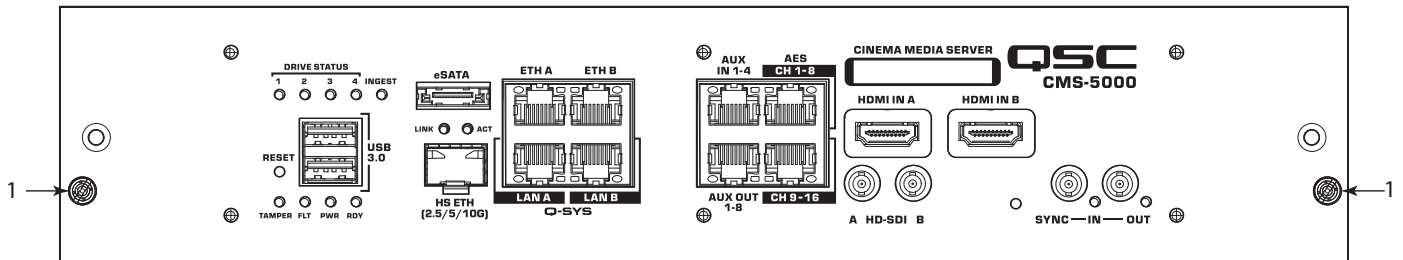
WARNING! Turn off the projector's power before removing the access panels.

3. Follow the manufacturer's instructions for removing the covers to allow access to the IMB slot. This may require the disconnection of the projector Ethernet connection.
4. If the installation has an Enigma card, disconnect the HD-SDI cables and disable/remove the Enigma card from the projector.



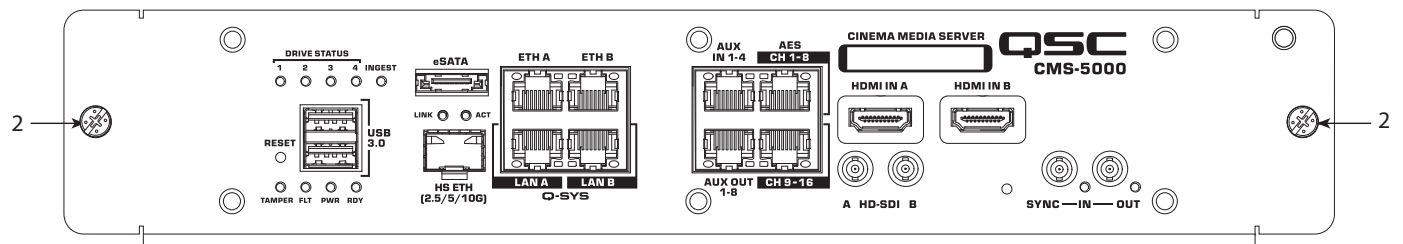
CAUTION! The CMS-5000 is not "hot pluggable" so be sure power to the projector is turned off.

5. With ESD protection in place, remove the CMS-5000 from its anti-static bag and slide it into the IMB slot on the projector. Make sure you properly seat the CMS-5000 in its slot.
6. Install front panel mounting screws. It is critical to install the CMS using all mounting hardware provided to ensure proper operation. Improper installation can result in video anomalies or other operational issues.



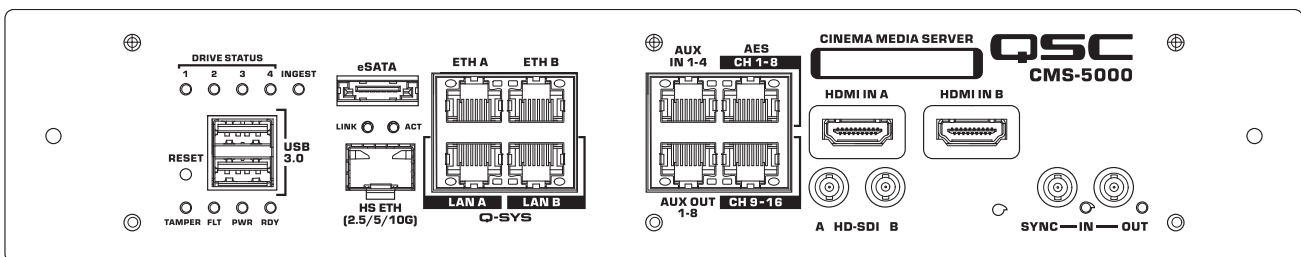
— Figure 2 — Barco

- a. For Barco projectors, install the two 6 mm mounting screws, one on each side of the front panel, to secure the CMS-5000 in its slot. (See Figure 2) Failure to install the mounting screws may allow the CMS-5000 to slip out of its slot and fail.



— Figure 3 — NEC

- b. For NEC projectors, the CMS-5000 is equipped with two captive screws in the front panel (See Figure 3). Use these screws to secure the CMS-5000. Failure to install the mounting screws may allow the CMS-5000 to slip out of its slot and fail.



— Figure 4 — Christie

- c. For Christie projectors, no mounting screws are required.

7. Attach the tamper label (included with the CMS-5000) across the edge of the CMS-5000 and the chassis of the projector such that the CMS-5000 cannot be removed without the label being affected. The label provides security detection if the CMS-5000 is removed.
8. Reinstall the projector panels according to the manufacturer's instructions.
9. If the projector's Ethernet cable was disconnected in step 3, reconnect it now.
10. Connect the AES/EBU audio cables to the audio ports. Refer to Figure 1 for the location of the ports and Table 3 on page 10 for pinout information. For optimum performance, use Cat 6a cables to provide the connection to QSC audio processors like the DPM 100(H), DPM 300(H), JSD-100 or JSD-60.
11. Optional – If the system requires a control network or Ethernet automation devices, install the Control network cable into the ETH A or ETH B port on the front of the CMS-5000. Refer to Figure 1 for the location of the ports.
12. For systems that have a Data network, typically used for transferring content between systems, install the data network Ethernet cable into ETH A, ETH B or the HS ETH port on the CMS-5000. Refer to Figure 1 for the location of these ports. For the HS ETH port an SFP+ module is required. See section Network and FTP Server Settings for recommended SFP+ module specifications.
13. If the CMS-5000 is being used with a Q-SYS core, install the Q-LAN™ network cables into the LAN A and LAN B ports (LAN B connection only required when using network redundancy).

Power-up

The CMS-5000 will begin to boot as soon as the projector is powered on. This will take several minutes. The chart below describes the various modes of the CMS as indicated by the front panel LEDs. Additional information on LED modes can be found in the Troubleshooting Guide.

— Table 1 —

	TAMPER	FLT	PWR	RDY
	RED	YEL	GRN	GRN
CMS-5000 Mode				
Unpowered	OFF	OFF	OFF	OFF
Initialization	ON	ON	ON	ON
Power On Self-test	OFF	FLASH	ON	FLASH
Awaiting Projector Marriage	OFF	OFF	ON	FLASH
Normal Operation	OFF	OFF	ON	ON
Service Door Open	FLASH	OFF	ON	OFF
Recoverable Error	OFF	ON	ON	OFF
Tampered (Return to factory)	ON	OFF	ON	OFF

Projector Marriage with CMS-5000

Projector marriage with the CMS is performed automatically once the marriage is initiated from the Projector. Prior to marriage, the RDY led will flash and you will not be able to log in to the CMS UI. Once marriage is complete, the RDY led will be ON.



NOTE: You cannot log into the CMS UI until marriage is complete. You can still access the logs by opening the online help (click on Help icon on upper right).

Barco

Initiate marriage as instructed by the projector instructions.

NEC

Initiate marriage as instructed by the projector instructions.

Christie

Initiate marriage as instructed by the projector instructions. In the IMB type field, select QSC, or Dolby IMB on older firmware versions.

Setup

CMS-5000 User Interface (UI) Software

Setup and control of the CMS-5000 can be performed using a Web UI Application available via HTTPS at the network address of your CMS-5000 through any of its ethernet ports. For example, if your CMS-5000 port's IP address is 192.168.1.100, open the following link in a web browser:

<https://192.168.1.100>

The CMS-5000 UI includes extensive online help information, available within each page of the UI. You can also access the CMS logs via the online help even if you are not logged in to the CMS.

Accessing CMS UI Through Projector Connection

The UI is also accessible through the projector network connection through port 43756. For example if the projector IP is 192.168.1.200, open the following link in a web browser:

<https://192.168.1.200:43756>



NOTE: While the CMS can be fully controlled via this port, you cannot ingest through this port.

Accessing CMS UI Through Q-SYS Designer

The UI can be accessed via Q-SYS Configurator. Select the CMS in the Configurator list and click on 'OPEN WEB UI'.

Browser Security Warnings

In some instances, accessing the CMS using a browser will cause a warning screen to be displayed. This is due to a connection being made to a web server using https that does not return the expected certificate. The purpose of this is to protect against questionable websites on the internet but does not apply when connecting to a web server on a known device such as the CMS. Depending on the browser used, click 'Advanced', 'Details', or 'Continue' and provide permission to continue to the site.

Default IP Addresses

Default IP configuration:

- ETH A : Static 192.168.1.100 mask: 255.255.255.0 GW: 0.0.0.0
- ETH B : DHCP
- Q-LAN A : DHCP
- Q-LAN B : DHCP
- HS ETH : Not configured

To change the IP: After marriage is complete, log in to the CMS-5000 UI and go to System ->Network to modify the IP settings. Alternately you can access the network settings via Q-SYS Configurator. You must be logged in as administrator or installer to modify the network settings.

Logging In

Factory default account and password information can be found in the Security Guide (TD-001589) shipped with the CMS-5000. If you do not have the Security Guide, please contact Technical Services for more information.

Access to various UI features will depend on the type of account used to login as follows:

— Table 2 — Login Account Types

Account Type	Privileges
Administrator	Create and delete accounts at all levels – Administrator, Installer, Manager, and Projectionist. Has all lower level privileges
Installer	Create or delete Installer, Manager and Projectionist level accounts. Update CMS-5000 system software. Change system level and hardware configuration settings. Has all lower level privileges.
Manager	Ingest content, build playlists and schedule shows. Has Projectionist level privileges.
Projectionist	Operate the CMS-5000 (play/stop/pause).

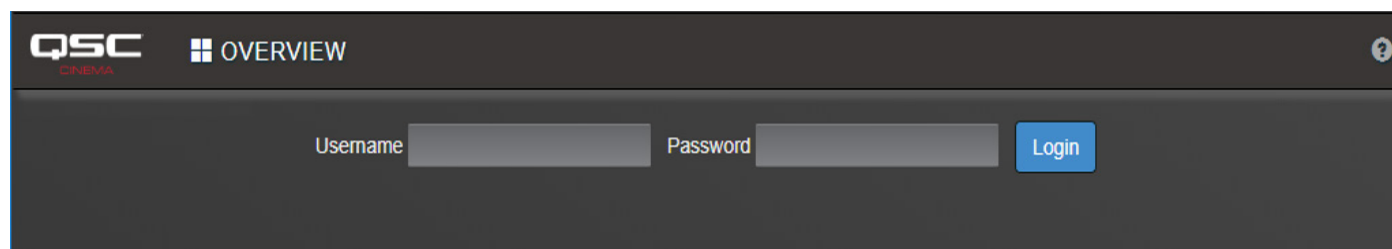


NOTE: If you are logged in with Administrator or Installer privileges, you can create additional user accounts with unique usernames and passwords. You are strongly advised to change the default passwords to prevent unauthorized access.



CAUTION! If the default logins have been changed and you no longer have the required user names and passwords to log in at manager or projectionist level, contact your installer to reset your manager and projectionist login data. If you no longer have the required user names and passwords to log in at administrator or installer level, the CMS will need to be returned to QSC for service to restore it to default factory settings. All content and configuration information on the CMS will be lost.

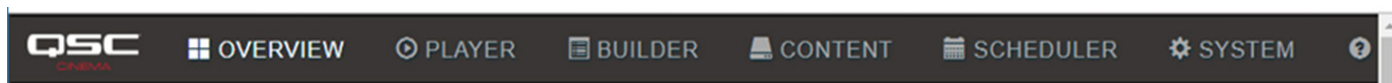
After accessing the UI via your browser as described above, the Username and Password text boxes display at the top of the page:



— Figure 5 —

Enter your username and password and click Login. After logging in, additional navigation buttons will appear on the top bar. Buttons shown will depend on your login privileges as indicated above. Context sensitive help is available for all controls accessible via the user interface.

Navigation Buttons



— Figure 6 —

OVERVIEW – Navigates to the Overview page. Here you can log in and view information about your CMS-5000, as well as export DCI certificates and log packages.

PLAYER – Navigates to the player page. Here you can control content playback, toggle the input source and manually trigger automation cues.

BUILDER (Manager privileges and above required) – Navigates to the Builder page. Here you can build and edit playlists. Playlists allow sequences of locally stored clips to be played in the player, and automation cues to be timed during playback.

CONTENT (Manager privileges and above required) – Navigates to the Content page. This page allows you to view and delete Clips, PKLs and KDMs stored locally on your CMS-5000. You can also ingest from remote locations and connected drives onto the CMS-5000 local storage, and monitor the transfer progress.

SCHEDULER (Manager privileges and above required) – Navigates to the Scheduler page. Here you can place playlists on a schedule for automatic playback.

SYSTEM (Installer or Administrator privileges required) – Navigates to the System page. Here you can monitor various logs and statistics, add or remove users and cues, and adjust settings to configure the CMS within the installation.

Server Setup

To access server setup, status and perform software updates, login to the CMS-5000 UI application with installer or administrator privileges and navigate to System->Server. The following can be accessed from this page.

Server Settings

At the Server Settings panel, you can modify the server's location, name, and time zone. Make sure to click on the SAVE button in the upper right to save any changes you make to the server.

- **Name and Location** – The server name set here will appear in the bottom status bar as well as on the Overview page. This is also how the server is represented in the Connected CMS list on the Overview page. The Location is shown on the Overview page.
- **Time** – The current server's UTC time is shown in this panel. You can set the time zone to your local time. On the scheduler and elsewhere in the UI, the time shown is based on the time zone selected here. You can also adjust the time by offsetting by up to +/- 6 minutes per year.

Updating the CMS-5000 Software

To update the CMS-5000 software, you must first download a valid installation file from QSC.com. To perform the update, click on the Update Server button in the Server Tools panel and follow instructions to perform the software update. The update will take several minutes. The CMS will reboot automatically once the update is complete. To maximize the efficiency of the update, avoid ingesting or playing content during the update process. If the update process is interrupted before completion, reboot the server before trying again. If the interruption occurs during transfer of the update file to the CMS, it will boot up to the prior version. If the interruption occurs while the software is being overwritten by the new version, the CMS will boot to the default factory software version (software version installed when the CMS was manufactured). In either case, you can repeat the update process.

CMS-5000 System Licenses

Some CMS-5000 features must be enabled with a feature license. You can view which licenses are currently installed on the Installed System Licenses panel on the System->Server page. You should see at least one license installed: SLCPK-5000-P. This key is installed on all production CMS-5000s and enables playback of encrypted content. Additional feature licenses are available for playback of 4K video, High Frame Rate video, and > 16 channels of DTS:X rendering. New feature licenses may be added in the future. Feature licenses are usually ordered along with the CMS and installed prior to shipment but you may contact QSC Sales to purchase additional licensed features. Once you have purchased the additional feature, it can be enabled as follows:

1. Contact QSC Technical Services to obtain an Entitlement ID (EID) for the software license you purchased.
2. On the Installed System Licenses panel, click on the Lock Code button (lower right) to obtain your CMS Lock Code.
3. Log on to the QSC Licensing Portal at <http://licensing.qsc.com/customerlogin> and log in using the EID.
4. Follow the instructions on the screen to activate your license. You will need to provide the CMS Lock ID when prompted and an email address to which the License Key file will be sent.
5. When you receive the License Key file, go to the Installed Licenses Panel and click on the Add System License button on the lower left to open the Add System License page. Click on the Choose File button and open the License Key file you were sent.
6. Click OK to complete the license installation.

Contact QSC Technical Services with any questions regarding the license installation procedure.

Adding or Modifying User Credentials

The CMS ships with default user credentials for all log in levels. It is recommended that these default settings be modified to prevent unauthorized access to the CMS. This can be done on the System->Users page. To modify or add users with installer, manager, or projector privileges, you must be logged in as an administrator or installer. You must be logged in with administrator to add or modify administrator accounts.



CAUTION! If the default logins have been changed and you no longer have the required user names and passwords to log in at manager or projectionist level, contact your installer to reset your manager and projectionist login data. If you no longer have the required user names and passwords to log in at administrator or installer level, the CMS will need to be returned to QSC for service to restore it to default factory settings. All content and configuration information on the CMS will be lost.

Network and FTP Server Settings

Network and FTP settings can be accessed by logging in to the CMS-5000 UI application with installer or administrator privileges and navigating to System->Network.

There are six network ports available on the CMS:

- **ETH A and ETH B** – these are 1G ports that can be configured with static IPs and routing or enabled for DHCP.
- **Q-LAN A and Q-LAN B** – these 1G ports are used to connect to a Q-SYS network. They can be configured with static IP and routing or DHCP enabled. Use both ports when using a redundant network configuration.
- **HS ETH** – This port requires installation of an SFP+ module and can communicate to a fiber or copper network supporting rates up to 10G. This is normally used for high speed ingest from a library server or between CMS-5000s.
- **Projector Port** – the CMS can be accessed through the same connection being used for the projector. This is ideal for initial setup when the other network port default settings do not allow easy network access. To access the CMS from this connection, enter the projector IP, specifying port 43756. For example if the projector IP is 192.168.1.200, open the following link in a web browser:

<https://192.168.1.200:43756>

Network Configuration Recommendations

The CMS-5000 uses ethernet networking to provide key features. Control of the CMS-5000, access to other devices used in playback for automation, network transfer of content through FTP, and Q-LAN transmission of audio are available. To ensure a stable and consistent experience using these features, please read and consider these recommendations when planning and building the ethernet network used in your installation.

Careful selection of the structure and equipment used in your network is required. Please consult your IT services provider for help with these decisions.

General Recommendations

Make a network map documenting the structure and connections in your network to make installation easier, and provide help to those diagnosing problems or installing new equipment in the future.

Set up the CMS with only one default gateway. Multiple default gateways can create unexpected behaviour. The default gateway is a router or route provider that allows access to networks outside the network segment the CMS is directly connected to. Choose the device that provides this access, if available, and set the default gateway on the network connection of the CMS that has the fewest hops (network switches/routers) to get access to it.

Direct internet access for the CMS-5000 is not recommended. In installations where external access is intended, please consult your IT services provider on how to create a secure connection without exposing the networks to the outside world.

CMS-5000 Control

Control of the CMS through the API and Web User Interface are available on all ethernet connections and through the projector on port 43756. The projector connection uses the routing of the projector internal communication, and may encounter firewall restrictions within the projector. For this reason it is recommended the projector connection only be used for initial setup and situations where communication may be otherwise compromised. In most installations we recommend a network be created and routed specifically for automation and control communication. One of the CMS-5000 network ports should be designated and setup to work on this network, ETH A or ETH B are recommended for this use. Q-LAN A and Q-LAN B are not recommended to avoid conflicts affecting audio quality.

Automation TCP/IP Connection

Control of other ethernet devices via TCP/IP commands can be accomplished on all ethernet connections of the CMS. It is recommended that these devices also be connected on the Control network used above.

Data Transfer (FTP)

FTP access is available on ETH A, ETH B and HS ETH ports on the CMS-5000. To ensure stability of both data and control operations on the CMS it is recommended that FTP be used on a separate network segment than Control and Automation. While this may not be feasible with smaller installations, separating these communication types onto different networks can increase responsiveness and stability of these features.

Q-LAN Network

When enabled and connected, the Q-LAN network ports will allow transmission of audio from the CMS to a Q-SYS Core, and network control of the CMS-5000 from Q-SYS. Due to the time sensitive nature of audio delivery it is highly recommended you limit usage of a network used for Q-LAN to audio transmission and control. FTP is not accessible on these ports. Please follow the Q-SYS guidelines for building a Q-LAN network, including switch and router selection that meet the Q-SYS requirements.

High Speed Ethernet SFP Requirements

Any 10G capable SFP+ module should work with the CMS-5000. Performance has been qualified using SR modules (“short range” - supports distances to 300m) and Copper modules (RJ45 connection, supports distances to 30m).

Whatever type of module is used on the CMS-5000, the other end needs to be of the same type (SR to SR, Copper to Copper, etc.). The CMS-5000 does not examine the manufacturer ID so any brand of module that meet the specifications shown below will work in the CMS-5000.

Fiber modules – 10G SFP+ Transceiver, SR, 850nm (most manufacturers call this out as SFP-10G-SR)



NOTE: When using a fiber connection, you must use 10G modules. The CMS will not operate with 1G SFP fiber modules.

Fiber optic cabling – Assuming SR Modules as described above, use LC-LC Duplex OM3 50/125 Multimode Fiber Cable

Copper modules – 10GBASE-T SFP+ Transceiver, RJ-45 (most manufacturers call this out as SFP-10G-T)



NOTE: These 10G capable modules can negotiate down to 1G, so it is possible to use the HS ETH port in a 1G network.

Copper cabling – Cat 6 cable or better.



NOTE: Most 10G SFP+ copper modules will be limited to a distance of 30m, rather than the typical 100m for 10GBASE-T connections.

SNMP

SNMP can be used to access CMS status remotely. SNMP access is disabled by default but can be enabled at the V1 or V3 level. For V3, select from the available user credentials to enable remote access for those users. The MIB file can be exported for use in a MIB browser or NOC system.

Projector/Video Settings

The CMS-5000 is designed to work in all projection systems with a TI Series 2 IMB-compatible interface.

Several settings can be set to optimize performance based on the projection system being used. These can be accessed by logging in to the CMS-5000 UI application with installer or administrator privileges and navigating to System->Projector.



NOTE: Make sure to click on the SAVE button in the upper right to save any changes you make to these settings.

- **Projector:** Select the correct manufacturer.
- **2K/4K:** Click on this button to select the projector resolution. When video received is different from the mode selected (e.g. video is 4K, projector is 2K or vice versa), the CMS will convert the video to the projector resolution prior to transmission using a higher quality algorithm than available in the projector.
- **3D System:** Select the 3D system being used so that the proper video correction algorithm will be applied prior to transmission. If you are not sure of the system to be used, select Other. The 3D content will still play correctly but no color or crosstalk correction will be applied. For Dolby 3D, use the Correction Wizard to optimize crosstalk color correction.

Audio Settings

The CMS supports up to 24 channels of AES audio output via the front panel RJ connectors and up to 64 channels of audio when used with Q-SYS. All CMS include DTS:X™ immersive audio rendering up to 16 channels and 64 channels rendering is available with an additional software license. Audio configuration can be accessed by logging in to the CMS-5000 UI application with installer or administrator privileges and navigating to System->Audio.

Video Alignment Delay

To align audio with video playback, use the audio delay slider. Up to 200 ms of delay can be set in either direction. If audio is lagging the video, set a negative delay. If audio is preceding the video, set a positive delay.

Q-LAN Audio Output Enable

Q-LAN output can be enabled or disabled. If disabled, no audio streams will be output to the Q-SYS network though you can still control the CMS via the Q-SYS CMS component in the Q-SYS design.

AES Channel Assignments

The default channel assignments for AES output channels 1-16 are based on the standard as called out by ISDCF Doc4 – 16 Channel Audio Packaging Guide as shown below. Any channel can be reassigned to any AES output as needed. If that output had already been assigned to a different channel, the channels will swap output assignments.

— Table 3 — AES CH 1-16 Default Audio Channel Mapping and Pinout

Source	DTSX Source (VBAP Ch #)	Output Channel	AES Pair/Channel	RJ / Pin
L	0	1	Pair1 / Ch1	AES1-8 / 1
R	1	2	Pair1 / Ch2	AES1-8 / 2
C	2	3	Pair2 / Ch1	AES1-8 / 3
LFE	3	4	Pair2 / Ch2	AES1-8 / 6
LSS	4	5	Pair3 / Ch1	AES1-8 / 4
RSS	5	6	Pair3 / Ch2	AES1-8 / 5
HI	–	7	Pair4 / Ch1	AES1-8 / 7
VI	–	8	Pair4 / Ch2	AES1-8 / 8
LC	6	9	Pair5 / Ch1	AES9-16 / 1
RC	7	10	Pair5 / Ch2	AES9-16 / 2
LRS	8	11	Pair6 / Ch1	AES9-16 / 3
RRS	9	12	Pair6 / Ch2	AES9-16 / 6
SYNC1	–	13	Pair7 / Ch1	AES9-16 / 4
SYNC2	–	14	Pair7 / Ch2	AES9-16 / 5
CH15	–	15	Pair8 / Ch1	AES9-16 / 7
CH16	–	16	Pair8 / Ch2	AES9-16 / 8
CH17	10	17	Pair9 / Ch1	AUX1-8 / 1
CH18	11	18	Pair9 / Ch2	AUX1-8 / 2
CH19	12	19	Pair10 / Ch1	AUX1-8 / 3
CH20	13	20	Pair10 / Ch2	AUX1-8 / 6
CH21	14	21	Pair11 / Ch1	AUX1-8 / 4
CH22	15	22	Pair11 / Ch2	AUX1-8 / 5
CH23	16	23	Pair12 / Ch1	AUX1-8 / 7
CH24	17	24	Pair12 / Ch2	AUX1-8 / 8

Q-SYS Channel Assignments

Audio channels are mapped to Q-SYS channels as shown in the following table. These assignments cannot be modified in the CMS but can be routed as needed in the core using Q-SYS Designer.

— Table 4 —Q-SYS Output CH 1-70 Audio Channel Mapping

DCP Source	DTS:X Source VBAP ch #	Q-SYS Channel
L	0	1
R	1	2
C	2	3
LFE	3	4
LSS	4	5
RSS	5	6
HI		7
VI		8
LC	6	9
RC	7	10
LRS	8	11
RRS	9	12
SYNC1		13
SYNC2		14
CH15		15
CH16		16
CH17 - 64	10-58	17-64
Aux In 1-4		65 - 68
HI		69
VI		70

DTS:X Settings

The minimum channel configuration supported for DTS:X is 15.1 and the maximum number of channels supported is 64. DTS:X configurations that require more than 16 channels require an additional software license (see "CMS-5000 System Licenses" on page 7)

In order to render DTS:X, you must import a VBAP file that describes the speaker configuration of your theater. The contents of the VBAP file can be imported, viewed and modified in the CMS User Interface. You must ensure any modifications made conform to the VBAP file configuration requirements. If the VBAP file is invalid, rendered audio may not play correctly or at all. You may also export the file for use in another system.

DTS:X VBAP Generator

The VBAP configuration file describes speaker placement within your auditorium in order to correctly render sound from a DTS:X or IAB soundtrack. Please contact QSC Support or DTS support for help in generating the VBAP configuration file. Detailed measurements of the Auditorium shape, speaker locations and heights are required to correctly generate this configuration. Remember to include floor slope and location as well as ceiling height at several locations when measuring the room.

The VBAP file will indicate speaker locations and map them to an output channel number. The output audio track targeting these speakers will be output in order as described in the tables above. URI exceptions indicating what speakers are part of the bed channel configuration (the main 5.1/7.1 etc speaker configuration) will be indicated in the VBAP configuration files. Aligning these outputs to match the channels of standard playback is recommended for reverse compatibility with non DTS:X or IAB content.

— Table 5 —DTS:X Audio Channel Mapping

Name	Abbrev.	URI tag	DCP Ch #
Left	L	urn:smpte:ul:060E2B34.0401010D.03020101.00000000	1
Right	R	urn:smpte:ul:060E2B34.0401010D.03020102.00000000	2
Center	C	urn:smpte:ul:060E2B34.0401010D.03020103.00000000	3
LFE	LFE	urn:smpte:ul:060E2B34.0401010D.03020104.00000000	4
LeftSurround	LS	urn:smpte:ul:060E2B34.0401010D.03020105.00000000	5
RightSurround	RS	urn:smpte:ul:060E2B34.0401010D.03020106.00000000	6
LeftSideSurround	LSS	urn:smpte:ul:060E2B34.0401010D.03020107.00000000	5
RightSideSurround	RSS	urn:smpte:ul:060E2B34.0401010D.03020108.00000000	6
HearingImpaired	HI	urn:smpte:ul:060E2B34.0401010D.0302010E.00000000	7
VisualNarration	VIN	urn:smpte:ul:060E2B34.0401010D.0302010F.00000000	8
LeftCenter	LC	urn:smpte:ul:060E2B34.0401010D.0302010B.00000000	9
RightCenter	RC	urn:smpte:ul:060E2B34.0401010D.0302010C.00000000	10
LeftRearSurround	LRS	urn:smpte:ul:060E2B34.0401010D.03020109.00000000	11
RightRearSurround	RRS	urn:smpte:ul:060E2B34.0401010D.0302010A.00000000	12
LeftTopSurround	TSL	http://dts.com/mda/channels#TSL	
RightTopSurround	TSR	http://dts.com/mda/channels#TSR	
LeftHeight	LH	http://dts.com/mda/channels#LH	
RightHeight	RH	http://dts.com/mda/channels#RH	
CenterHeight	CH	http://dts.com/mda/channels#CH	
TopSurround	TS	http://dts.com/mda/channels#TS	
LeftSurroundHeight	LHS	http://dts.com/mda/channels#LHS	
RightSurroundHeight	RHS	http://dts.com/mda/channels#RHS	
LeftSideSurroundHeight	LSSH	LSSHnoURIByDTS	
RightSideSurroundHeight	RSSH	RSSHnoURIByDTS	
LeftRearSurroundHeight	LRSRSH	LRSRSHnoURIByDTS	
RightRearSurroundHeight	RRSRSH	RRSRSHnoURIByDTS	
CenterSurround	CS	urn:smpte:ul:060E2B34.0401010D.0302010D.00000000	
LeftCenterHeight	LCH	http://dts.com/mda/channels#LCH	
RightCenterHeight	RCH	http://dts.com/mda/channels#RCH	

Automation Settings

The CMS has an built in library of devices and their associated automation cues that can be added to playlists for fully automated theater control. The cues provided can be edited as needed and additional cues can be added for a device as well. In addition, user-defined devices and cues can be created.

Activating and Creating Devices

To make device cues visible in the Builder and Player pages, the device must be activated during setup. The Automation device configuration can be accessed by logging in to the CMS-5000 UI application with installer or administrator privileges and navigating to System->Automation.

- To view all available devices, click the Show Inactive checkbox next to the Devices list. This will display all devices currently in the Automation library. You can select any device and edit to activate as described below. Alternately, you can use the create (+) button to open the Edit Devices page and select the device you wish to activate from the Choose Device dropdown list.
- To enable projector cues, open the Edit Devices page and select the projector type in which the CMS is installed. For all projectors, the IP address and port will be automatically populated with the correct default port and IP address of the internal server/projector connection for that projector type. This is the primary port that should be used to drive projector cues. When this is used, no other network connection needs to be established between the CMS and the projector. Click Save to activate the projector cues.

- To enable other devices' cues, the device must be activated by adding valid network IP and port values. Open the Edit Devices page, select the device, then enter the IP address and click Save. The ethernet port will be populated with the correct port number for the device but can be edited if needed. Make sure the network settings of the CMS ethernet port that is on the same network as the device has the correct IP, Subnet Mask and Gateway settings to enable the cues to reach the device.
- You can create a new device and cues by pressing the create (+) device button and selecting "<New Device>", then entering the name, IP, and port of your custom device. You will then need to create custom cues for that device. When creating the device, use the button below the Port text box to select whether the cue data is ASCII or Binary encoded to facilitate viewing and editing cues.

Editing and Testing Cues

If no device is selected, the Cues panel will list all available cues for devices shown in the Devices pane. Selecting a device will show just the cues associated with that device.

- Use the buttons to the right of the Cues panel to edit the cues as needed. While it is possible to edit existing cues, it is preferable to edit a copy in case a error is made and you need to start from the original cue. If the encoding of the cue text box is not valid for your device, edit the device settings and toggle the ASCII/Binary encoding switch as needed.
- Cues can be tested using the 'trigger cue' button (lightning bolt) to verify correct operation.
- To prevent unused cues from being listed on the Player and Builder pages, cues can be 'hidden' by selecting the cue and clicking the Hide (eye) button.
- Remember that a cue will only be shown on Player and Builder pages if its associated Device is active.
- Cue names must be unique.
- Binary character encoding is done in the "\x??" format, where ?? is the ascii value of the character in hexadecimal notation. Some commonly used values for reference:
 - \x0A Line Feed
 - \x0D Carriage Return
 - \x09 Tab character

Cue Bundles

Cue bundles can be created to trigger a series of cues under one cue.

- Use the buttons to the right of the Bundle Cues panel to open the Edit Bundle page and create the cue bundle. The page will only list active cues. If a cue you wish to use is not listed, make sure its associated device has been activated as described in Activating and Creating Devices to Enable Cues. Also make sure that cue has not been 'Hidden' as described in Editing and Testing Cues.
- Add desired cues to the cue bundle using the arrow button. Cues will be inserted above the currently selected cue in the Bundle Sequence
- To modify the order the cues fire in the sequence, set the delay for each cue. This will determine when that cue fires relative to the first cue in the sequence. The lowest resolution of time shown with each cue in the Edit Bundle page is seconds so if a smaller delay is called out you must click on the cue to view the value. When you exit the page and click on the name in the Bundle Cues pane, the actual delay is shown in the bundle sequence shown in the pane to the left.
- Names of Bundle Cues are unique, including names of Device Cues. i.e. a name can only be used once in the Cues and the Bundle Cues list.

Configuration Import/Export

To facilitate setup, configuration settings can be transferred from one CMS to another using the Config Import/Export utility available on the System->Server page.



NOTE: It is highly recommended that you use the Export tool to back up the configuration settings to facilitate server replacement and system debugging.

Each of the categories shown below can be transferred individually or in any combination:

- Server configuration – Server settings including name, location, time zone
- Video configuration – Projector settings including projector type, screen resolution (2K/4K) and 3D coefficients
- FTP Servers – Name, network address, and login credentials of attached FTP servers

- Automation – Enabled automation device data including name and network settings, cues, and cue bundles
- Audio Configuration – Audio delay, channel output assignments, VBAP file contents
- Network Configuration – Network settings for all ethernet ports including Q-LAN A, Q-LAN B, ETH A, ETH B and HS ETH. To prevent IP address conflicts, DO NOT import these settings to another CMS on the same network.
- SNMP Configuration – Access level, ports and host addresses. Due to security considerations, user credentials used to access SNMP at V3 level are not exported and will not be overwritten during import.

Restoring the Default Configuration

Use the Import configuration tool utility to restore default server settings. Simply open the Import Configuration page and click on Load Defaults. You will be able to select which of the above listed categories you would like to restore.

Q-SYS Setup

All setup required to enable CMS operation with Q-SYS can be done using Q-SYS software. Q-SYS Configurator can be used to modify network settings, download logs and access the CMS UI. Q-SYS Designer is used to route audio from the CMS to the desired processing and output to Q-SYS-connected amplifiers. The CMS component in Q-SYS designer also includes all the controls and status of the PLAYER page. These include playback and cue controls, playlist selection, current playlist and clip time elapsed and remaining, and player mode. These can be incorporated into a UCI for a customized user experience. Refer to the Q-SYS Designer help file for additional information on configuring the CMS in a Q-SYS system.

Once connected to a Q-LAN network, the CMS may be found using Q-SYS Designer software. Open the Configurator, and the Q-SYS Designer software should discover the CMS-5000. If the CMS is not discovered, check that the network settings allow access from the computer running the software to the CMS Q-LAN network. WIFI connections may not support discovery. Access to the CMS-5000 is password controlled, using the same credentials as the CMS Web UI. You will need to login with an Installer or Administrator account. Once accessed, the Configurator page for the CMS-5000 will allow setup of network and basic settings of the CMS-5000. You may also click the Open Web UI button to load the full CMS-5000 User interface.

The CMS-5000 is included as an I/O object in the latest Q-SYS Designer Software. Add the CMS-5000 to your design to allow access to the Q-SYS component and audio from the CMS-5000 in your designs! Once added, set the CMS-5000 properties to Dynamic Pairing = Yes, and use the Core manager page for your Q-SYS core to pair the CMS-5000 by network name. Your CMS should be available in the list once network name mode is selected.



NOTE: Q-LAN audio output from the CMS must be enabled via the CMS UI on the System->Audio page.

Operation

CMS Operational Status

The CMS operational status is summarized on the Overview page with additional status shown on the status bar at the bottom of the UI. Front panel LEDs also provide some indication of CMS status.

Overview page

This is accessible to all login levels and provides the following information:

- Currently loaded playlist and player state (play, stop, pause)
- Server name, location, serial number and software (firmware) version.
- Major component error status including ICP communications, selftest, system, security, RAID, and storage
- Access the CMS Certificate and Logs
- Access to Connected CMS list where you can transfer your log in to another CMS on the network (may not be available with initial release).

Status Bar

The status bar runs along the bottom of the UI and is accessible to all login levels and from all pages. It includes:

- Server name is shown at the far left.
- Alert list – this is next to the server name. The most recent of the most severe alerts is shown on the status bar until the alert list is cleared and may not reflect the current state of the CMS; click the alert to open a list of alerts that have been logged. The listed alerts can be saved to a file or cleared.

- Player state icon – on the right, shows the current state of the player (play, stop, pause)
- Connected FTP servers – hovering over an icon will show the name of the server. The color of the icon indicates the connection status to the server.
- Local time is shown on the far right. This reflects the selected time zone, offset and 12/24 hr setting.

Front Panel LEDs

The front panel LEDs reflect activity and status of the CMS:

- The CMS status LEDs indicate the bootup, power, tamper, and marriage state of the CMS.
- The Q-LAN and ETH port LEDs – the yellow LED on the upper left indicates connection to an active network, while flashing of the top right LED indicate activity on that port.
- Detailed description of all LED states can also be found in Front Panel Features and Power- Up sections.

Content Storage

The CMS-5000 includes local storage for content to be played. The storage consists of 4 SSD memory cards configured to provide RAID 5 redundancy, providing a high level of reliability coupled with significantly better performance compared to standard mechanical hard drives. Available storage options are shown in Table 6:

— Table 6 — Content Storage

Drive configuration	Effective Memory
4 x 500MB	1.5 TB
4 x 1TB	3.0 TB
4 x 2TB	6.0 TB

Due to the high reliability of SSD memory technology, the CMS drives are not field replaceable. Detailed status on the RAID storage system is available on the System->RAID page (you must be logged in as administrator or installer to access this page). In addition, this data is included as part of the Log package. The RAID usage and available space is also shown on the Content page when the Internal storage source is selected.








Viewing Available Content

Content ingest and management is performed on the Content page, available to log in levels of manager and above. On this page you can view the current contents of the local RAID storage as well as on attached drives and FTP servers. When selecting an external source to view its content (especially FTP servers), it may take some time to complete the initial scan and display the contents depending on the amount of content on the source. The CMS will automatically rescan FTP servers periodically to update the content list but the refresh button on the upper right of the content list can be used to refresh the list immediately. Current scan state of the connect drives and FTP servers can be shown by mousing over the source button on the Content page.

Content Status

Table 7 lists the meaning of the icons next to content currently on the RAID or on attached drives and FTP servers. Orange and yellow icons indicate the items are currently in a warning state or in operation. Red icons indicate items that are in an error state or are missing data and not available for playback. In addition, when viewing content on external sources, content titles in grey text indicate that content has already been ingested.

— Table 7 — Content Status Icons

Icon	State
	Unknown
	Status OK or Ingestable KDM
	Status OK KDM OK
	Corrupt, Missing Data or Not Playable
	Not Found or Schedules Conflict
	Transferring
	KDM Invalid or KDM Needed
	Refactoring, Rendering or Validating
	Missing Captions
	KDM Expires Soon
	KDM Not Valid Yet

Ingesting Content

Drive Ingest

Content can be ingested directly from hard drives connected to the front panel eSata port or USB 3.0 ports. The following file systems are supported (other file systems may work but will significantly slow ingest speed):

- EXT2, EXT3, EXT4

FTP Ingest

Content can be ingested from FTP servers that have been configured in System->Network page. See section Network and FTP Server Settings for more information regarding proper network setup for optimal FTP performance.

Building Playlists

Playlists can be created on the Builder page of the CMS UI. Any clip that has been ingested can be included in a clip. Start by creating a new playlist, then add clips to the sequence in the order you want them to playback. Cues can be added to clips. Timing of cues for a playlist is edited by clicking the cue icon, or clicking the edit (pencil) icon. You may also drag and drop clips and cues into the playlist timeline to add them.

Creating Schedules

A calendar of the scheduled playback of the CMS is available on the Scheduler tab. Click a day, a playlist and the add (+) button to open the add schedule interface. Select a time and confirm the date and playlist are correct, then click save to add a new scheduled playback to the calendar. Playlists that contain 3D content will automatically activate 3D mode setting when selected, but you can disable this if desired. Copy day functions and drag and drop options are also included to make scheduling playback easier. Scheduled shows will play at the selected date/time as long as Schedule mode is selected in the Player screen.

Scheduled shows must have at least 1 minute between them, or the schedule will report an error. The system will attempt to start shows if the playback is in a stopped state, but overlapped shows may cause some start times to get skipped. The Schedule mode will not interrupt ongoing playback to start a different playlist. The status of created Schedule items will show any warnings about the schedule. If there are no warnings associated with the schedule, the status will instead show warnings associated with the scheduled playlist (missing KDMs, missing Content, etc).

Playing Content

Playback of playlists and clips is controlled on the Player page of the CMS UI. This page is available to all login levels. Content can be played in a variety of manual modes, under the control of the scheduler, or under the control of an external device or system via its API.

Manual Modes

- **Play Rewind:** Play the loaded content, then reset the playlist to 00:00:00 after completion
- **Play Eject:** Play the loaded content, then eject the current content and leave the player in empty state.
- **Play Loop:** Play the loaded content, then reset to 00:00:00 and start playback again.
- **Schedule:** Use the scheduled shows from the Scheduler to automatically play at the specified dates and times.

Schedule Mode

Once Scheduled mode is selected the playback controls will lock and the next scheduled playlist will be loaded. Loading other content is disabled while in scheduled mode, but playback controls can still be used. The scheduled playlist will be shown with a countdown and list of the upcoming schedules. When the start time is reached the system will automatically initiate playback, as long as playback has not already been started. Once a playlist is playing it will not be interrupted by the next scheduled playback.

TMS Control

A TMS may be used to control the CMS-5000. The API used provides all of the above functionality to allow automated TMS control. Note that using the CMS-5000 User Interface to manually edit and control the CMS may interfere with the TMS intended functionality.

Q-SYS

The CMS component in Q-SYS Designer includes all the controls and status of the PLAYER page. These include playback and cue controls, playlist selection, current playlist and clip time elapsed and remaining, and player mode. These can be used directly from Q-SYS Designer or incorporated into a UCI for a customized user experience. Refer to the Q-SYS Setup section above and the Q-SYS Designer help file for additional information on configuring the CMS in a Q-SYS system.

Troubleshooting Guide

From time to time the CMS-5000 may encounter unexpected problems. Please provide detailed information and a log file when contacting QSC support in order to expedite and improve response.

If you encounter a malfunction it is important to note whether the error was a feature not working correctly, or the CMS-5000 becoming unresponsive. Information such as whether power cycling the projector restored functionality is very useful. Check the front panel status LEDs as described below for current status.

Accessing Logs

Logs can be downloaded from the Overview page at any log in level. In addition logs can be viewed and downloaded from the System->Logs page when logged in as administrator or installer. If you cannot log in, you can still access the logs via the online help by clicking on the help icon on the upper right. Information on diagnosing login failures and using the page will be displayed. A Link to download logs is available within the diagnosis steps.



IMPORTANT! In order to facilitate debugging of error conditions, logs should be downloaded as soon as possible after unexpected behavior has occurred.

Configuration Backup and Restore

When the server is installed or configuration options are changed it is highly recommended the Export Configuration functionality on the System -> Server tools page be used to create a backup. Open the Export Configuration interface and select all options. Save the downloaded configuration file in case of emergency. When a new server is installed, use the Import Configuration interface on the same page to quickly load all of the settings from the previous server. This can also facilitate returning the CMS to a known good state after changes have resulted in problematic performance.

Restoring Factory Default Configurations

Use the Import configuration tool to restore default server settings. From the System->Server page, open the Import Configuration page (on Server Tools panel) and click on Load Defaults. You will be able to select which of the categories shown in section 'Config Import/Export' you would like to restore.

Check Connections

One of the most common problems you may encounter with the CMS-5000 is a network disconnection. If a connection cannot be made to the CMS-5000, verify that cables are seated properly and indicator lights show activity on the network ports. Verify the LED indicators show a Normal Operation state in the LED Modes table below. Also verify that switches and routers that route the connection from the control computer to the CMS-5000 are turned on and functional.

Connect via Projector to Check Settings

If the CMS-5000 is still inaccessible, use the projector network connection to connect to the CMS-5000. Verify that the Projector the CMS is installed in is functional and accessible on the network. Then open a web browser, and use the projector's IP address to connect to the CMS. In the address bar of the web browser enter:

[https://\"projector's ip address\":43756](https://\)

If the CMS is functional and connecting to the projector this will bring up the CMS-5000 User Interface. Login as an Administrator or Installer level account and verify the network settings are correct on the CMS-5000.



NOTE: The CMS-5000 will respond to PING communication. Use a command line to send a PING to the CMS-5000 IP address to test communication. This command is usually "ping 'CMS-ip-address'". The CMS should respond to all received ping packets.

Rebooting the CMS

You can force the CMS to reboot using one of the following methods:

1. Reset the CMS from the UI by navigating to the System->Server page and clicking on the Reboot Server button on the Server Tools panel. If using with Q-SYS, the CMS can be reset from Configurator.
2. Using a pin or tip of a paper clip, press the reset button located inside the small hole to the left of the USB ports on the front panel until all the front panel LEDs turn on indicating the CMS is rebooting.
3. Power cycle the projector. Follow projector manufacturer safety guidelines when restarting the projector to protect the bulb from being "hot cycled".

LED Modes

The chart below describes the various modes of the CMS as indicated by the front panel status LEDs.

— Table 8 —

	TAMPER	FLT	PWR	RDY
	RED	YEL	GRN	GRN
CMS-5000 Mode				
Unpowered	OFF	OFF	OFF	OFF
Initialization	ON	ON	ON	ON
Power On Self-test	OFF	FLASH	ON	FLASH
Awaiting Projector Marriage	OFF	OFF	ON	FLASH
Normal Operation	OFF	OFF	ON	ON
Service Door Open	FLASH	OFF	ON	OFF
Recoverable Error	OFF	ON	ON	OFF
Tampered (Return to factory)	ON	OFF	ON	OFF



NOTE: If the PWR LED is the only one turned on, the CMS is unable to boot from the main firmware image. Follow the directions in the section below to force the CMS to boot to the default factory firmware image. The CMS will then be fully operational and will allow you to re-install and repair the main firmware image.



NOTE: If a Recoverable Error is indicated, power cycle the CMS-5000 to return to an operational state. If a reboot does not return the CMS to an operational state, contact Technical Services.

Force Boot to Factory Image

A factory default version of the CMS firmware is stored on the CMS-5000. This version will allow you to use the CMS, but is primarily recommended for re-installing the main firmware in cases of error. You can force the CMS to boot up to the factory default firmware version that was installed when the CMS was manufactured as follows:

1. Power off the CMS (you will need to power off the projector)
2. Using a pin or tip of a paper clip, press and keep pressed the restore button located inside the small hole to the left of the Sync inputs on the front panel (button is not marked)
3. Power up the projector and CMS as you continue pressing the Restore button.
4. In approximately 15 seconds, LEDs above the HS ETH port will flash green (left flash, right flash, left flash). This indicates the CMS is booting from the factory default image and you may release the Restore button

If you perform a software update while running the factory default image, the update will not affect the factory default; it will update the main firmware image. After a software update, the CMS will resume booting into main firmware.

If you need to return to the main firmware without running an update, perform the following procedure:

1. Power off the CMS (you will need to power off the projector)
2. Using a pin or tip of a paper clip, press and keep pressed the restore button located to the left of the Sync inputs on the front panel (button is not marked)
3. Power up the projector and CMS as you continue pressing the Restore button.

4. In approximately 15 seconds, LEDs above the HS ETH port will flash green (left flash, right flash, left flash). Continue to hold the reset pin.
5. In approximately 15 more seconds the LEDs above the HS ETH port will flash green twice. This indicates the CMS is booting from the main firmware, and you may release the Restore button

Reset Board

If the CMS does not power on when the projector main power is applied, or if an undiagnosable error in color output during playback should occur, it may be necessary to reset the CMS-5000 in the IMB slot of the projector. Note that this will break marriage with the projector. Do not proceed unless you are familiar with the projector's marriage procedure.

1. Attach adequate ESD protection to protect the electronics.
2. Shutdown and disconnect power from the projector.
3. Recommended: Take a photograph of all connections before disconnecting the CMS-5000.
4. Open any necessary side panels of the projector to expose the entire CMS-5000 faceplate.
5. Disconnect any cables attached to the CMS-5000.
6. Unscrew the two cage screws at the edges of the faceplate, if included (NEC and Barco models).
7. Pull directly out on the CMS-5000 faceplate to remove the card from the slot.
8. Inspect the edge connector for damage.
9. Reverse these procedures to reinstall, making sure to firmly seat the CMS in the projector slot.

Once the CMS is reinstalled, reconnect and power on the projector. Perform the marriage procedure to return the CMS-5000 to an operational state. See section LED Modes to determine the status of the CMS based on state of the front panel LEDs.

References

Quick Start Guide (TD-001577)

Basic information about CMS installation and setup can be found in the CMS-5000 Quick Start Guide that is shipped with the CMS and available at QSC.com.

Security Guide (TD-001589)

Information on default user accounts and passwords can be found in the CMS-5000 Security Guide that is shipped with the CMS or contact QSC Technical Services.

Application Programmer's Interface (TD-001592)

Information on the API that allows third-party software to control the CMS is provided by the CMS-5000 Application Programmer's Interface. Contact QSC Technical Services if you are interested in implementing the API in your software.

Specifications

General

Dimensions (HxWxD)	
Barco	2.5 x 12.6 x 8.66 in (63.5 x 320 x 222 mm)
NEC	2.22 x 12.6 x 8.66 in (56.4 x 320 x 222 mm)
Christie	2.24 x 11.5 x 8.66 in (56.9 x 292 x 222 mm)
Weight	3 lb (1.4 kg)
Physical Mounting	Fits Series 2 projector slot
Power	12VDC (supplied by projector), 50W max.
Compliance	DCI, UL, CE, FCC (Class B), EAC
Environmental Conditions	Operations: Between 10° C and 45° C with humidity conditions between 5% and 85% (non-condensing). Storage: Between -15° C and 45° C with humidity conditions between 5% and 95% (non-condensing). Service Life: 10 Years.
Country of Origin	U.S.A.

Front Panel Controls and Indicators

Status Indicators	LED: Power, Ready, Fault, Tamper, Drive Status, Ingest, Network status, Sync status
Ingest Ports	eSATA, 2 x USB 3.0, 2 x 1Gb Ethernet (copper), 2.5 – 10 Gb Ethernet (copper or fiber)
Alternate Content Inputs	2 x HDMI 2.0, 2 x HD-SDI (HD-BNC)
Audio I/O	68 Channels Q-LAN network audio out, 3 x RJ-45 AES Out (24 channels incl. HI/VI), 1 x RJ-45 AES in (4 channels)
Sync	In/Out, 2 x HD-BNC
Network	2 x RJ-45 Q-LAN A & B (for Q-SYS) and 2 x RJ-45 Ethernet (TMS, control etc)
Reset	Push button

As part of QSC's ongoing commitment to product development, specifications are subject to change without notice.



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QSC Self Help Portal

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*Q-SYS 24/7 Support is for Emergency assistance with Q-SYS systems only. 24/7 support guarantees a call back within 30 min after a message is left. Please include, Name, Company, Call Back Number and description of the Q-SYS emergency for prompt call back. If calling during business hours please use the standard support numbers above.

Q-SYS Support Email

qsyssupport@qsc.com

(Immediate email response times not guaranteed)