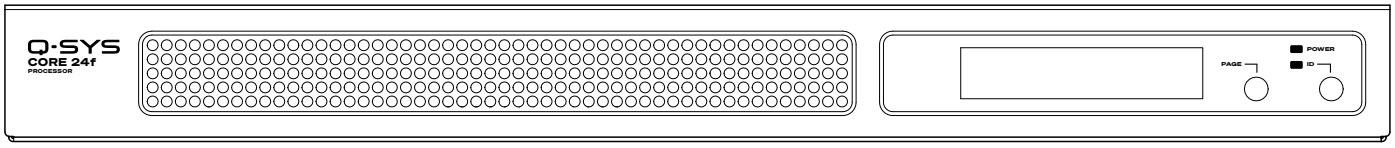
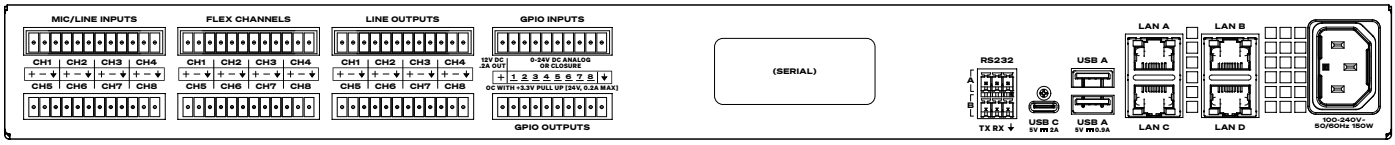
Hardware User Manual

Q-SYS Core 24f Series





WA-001710-01-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 lightning flash with arrowhead symbol in a triangle alerts the user to the presence of uninsulated dangerous voltage within the product's enclosure that may constitute a risk of electric shock to humans.

The exclamation point within a triangle alerts the user to the presence of important safety, 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 – If installed in a closed or multi-unit rack assembly, the ambient operating temperature of the rack environment may be greater than room ambient. Ensure that the maximum allowed operating temperature is not exceeded – see the "Environmental Specifications" section.

Reduced Air Flow – Installation of the equipment in a rack should be such that the amount of air flow required for safe operation of the equipment is not compromised.

1. Read, follow, and keep these instructions.
2. Heed all warnings.
3. Do not use this apparatus near water.
4. Do not submerge the apparatus in water or liquids.
5. Do not use any aerosol spray, cleaner, disinfectant or fumigant on, near or into the apparatus.
6. Clean only with a dry cloth.
7. Do not block any ventilation opening. Installation next to another unit within a rack should allow enough air flow required for safe operation.
8. Keep the side ventilation openings free of dust or other matter.
9. Do not install near any heat sources such as radiators, heat registers, stoves, or other apparatus (including amplifiers) that produce heat.
10. To reduce the risk of electrical shock, the power cord shall be connected to a mains socket outlet with a protective earthing connection.
11. Do not defeat the safety purpose of the grounding-type plug. A grounding type plug has three prongs, one of which is the grounding prong. The plugs are designed to fit only one way into the socket. The grounding prong is provided for your safety. If the provided plug does not fit into your outlet, obtain a power cord that is properly configured , or consult an electrician for replacement of the obsolete outlet.

    NOTE: The type of grounding plug depends on the country.

12. Protect the power cord from being walked on or pinched, particularly at plugs, convenience receptacles, and the point where they exit from the apparatus.
13. Do not unplug the unit by pulling on the cord; use the plug.

14. Only use attachments/accessories specified by the manufacturer.
15. Unplug the apparatus during lightning storms or when unused for long periods of time.
16. Refer all servicing to qualified service personnel. Servicing is required when the apparatus has been damaged in any way, such as when the power supply cord or plug is damaged, 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.
17. The appliance coupler, or the AC Mains plug, is the AC mains disconnect device and shall remain readily accessible after installation.
18. Adhere to all applicable, local codes.
19. 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 Q-SYS authorized service station or an authorized Q-SYS 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 WARNINGS

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.

WARNING!: The lithium battery safe operating temperature range is -20°C to +85°C. See the "Environmental Specifications" section for other parameters.

Environmental Specifications

- **Expected Product Life Cycle:** 10 years
- **Storage Temperature Range:** -20°C to +70°C
- **Storage Humidity Range:** 5% to 85% RH, non-condensing
- **Operating Temperature Range:** 0°C to +50°C
- **Operating Humidity Range:** 5% to 85% RH, non-condensing, with a maximum heat index of +50°C. At 85% RH, the maximum operating ambient air temperature is 32.8°C. Conversely, operating RH levels shall be de-rated in the presence of higher operating temperatures (above 33°C).

Environmental Compliance

QSC complies with all applicable environmental regulations. This includes (but is not limited to) global environmental laws, such as EU WEEE Directive (2012/19/EU), China RoHS, Korean RoHS, European RoHS, U.S. Federal and State Environmental Laws, and various resource recycling promotion laws around the world. For more information, visit:

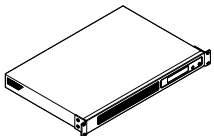
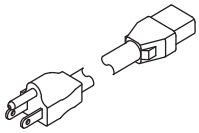
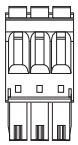
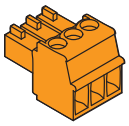
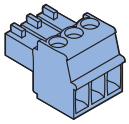
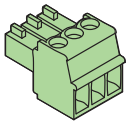
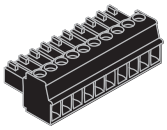
qsys.com/about-us/green-statement

FCC Statement

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.

What's in the Box

 1 Core 24f	 1 AC Power Cord	 2 RS232 Tx/Rx (black)	 1 QSC Warranty TD-000453
 8 Mic/Line In (orange)	 8 Flex Channels (blue)	 8 Line Out (green)	 1 Core 24f Safety and Regulatory Statements TD-001709
 2 GPIO (black)			

Introduction

The Q-SYS Core 24f is an ideal AVC processing solution for small to medium sized installations where ample DSP and a generous amount of network I/O are required yet locally integrated analog and control I/O is desired. The Q-SYS Core 24f satisfies a broad spectrum of application needs from meeting room environments, conferencing systems, retail establishments, houses of worship, judicial environments, education institutions and other general purpose processing applications. A Core 24f may be used as a stand-alone processor in many applications with no permanent connection to a network. However, a Core 24f can operate as the central processor in a networked system supporting a variety of end points such as video, audio, control or amplifier peripherals.

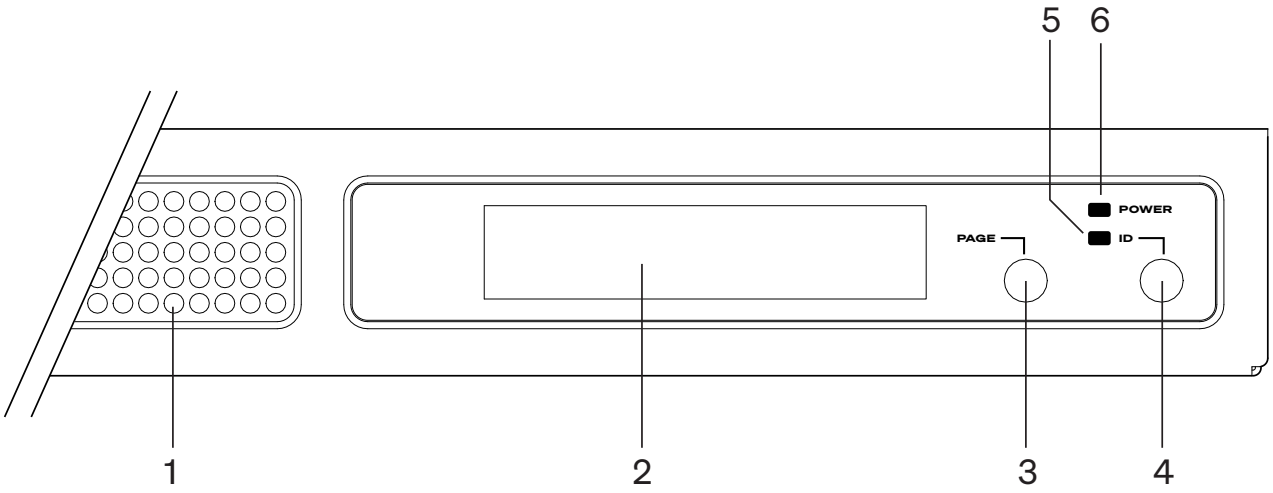
The Q-SYS Core 24f offers eight channels of fixed analog mic/line inputs, eight channels of fixed analog line outputs and eight channels of analog Flex I/O that is user-configurable as either analog mic/line inputs or analog line outputs on a per channel basis. The Q-SYS Core 24f includes 8 general purpose inputs and eight general purpose outputs along with two +12VDC sources. The Q-SYS Core 24f includes four LAN ports, two USB A ports, a USB C port and two COM ports. The Q-SYS Core 24f includes a 2×20 character OLED display and two front panel user buttons for screen navigation and utilities. The Q-SYS Core 24f is housed in a 1RU chassis offering multiple mounting options.

NOTE: The Q-SYS Core 24f processor requires Q-SYS Designer Software (QDS) for configuration and operation. QDS version compatibility information can be found here. Information about the QDS components related to the Core 24f, including their properties and controls, can be found in Q-SYS Help at help.qsys.com. Or, simply drag a Core 24f component from the Inventory into the Schematic and press F1.

Connections and Callouts

Front Panel

Figure 1 illustrates the primary attributes of the Q-SYS Core 24f front panel. Refer to the descriptions below.

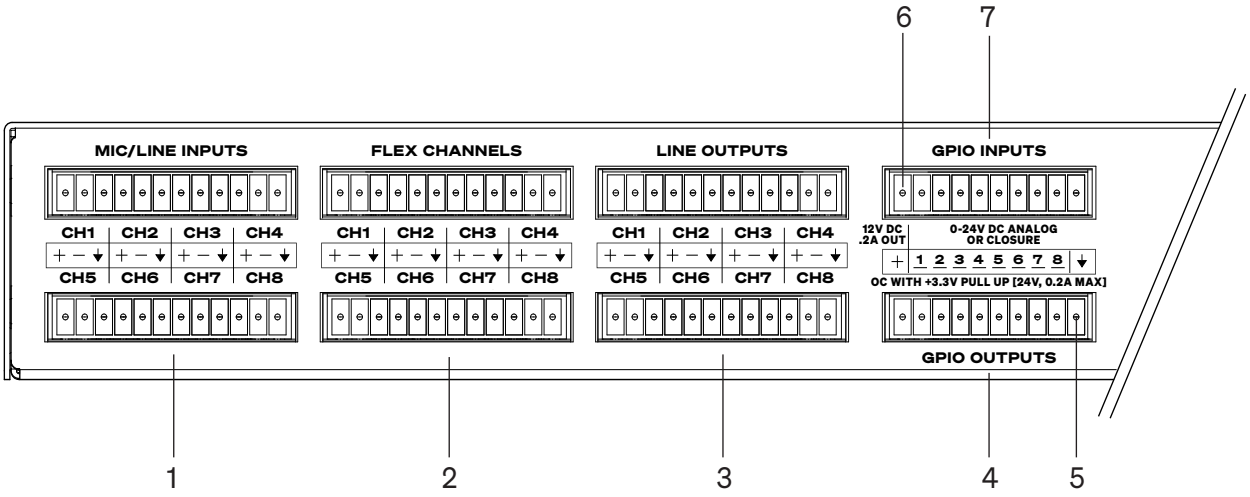


— Figure 1 —

1. Air intake vents
2. 2×20 character OLED display
3. PAGE button for screen navigation
4. ID button invokes ID feature
5. ID LED illuminates when ID feature is invoked
6. POWER on LED

Rear Panel - Left Side

Figure 2 shows the Q-SYS Core 24f rear panel, left side (analog audio and GPIO).

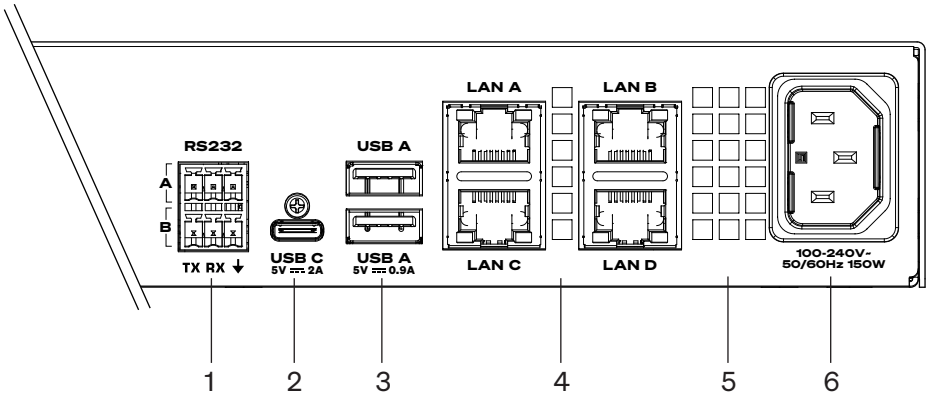


— Figure 2 —

1. Mic/Line Inputs (8 channels - orange) Balanced or Unbalanced plus +48V (P48) phantom power compliant with IEC 61938
2. Flex Channels (8 channels - blue) Configurable as Mic/Line Input or Line Output per channel
3. Line Outputs (8 channels - green) Balanced or Unbalanced
4. General Purpose Outputs (8 pins, 2-9) Open collector (24V, 0.2A max), with pullups to 3.3V or TTL output
5. Ground Reference (Pin 10 on each connector)
6. 12VDC Source (Pin 1 on each connector). Provides up to 0.2A per pin
7. General Purpose Inputs (8 pins, 2-9) 0-24VDC analog, potentiometer, TTL digital or contact closure input. GPI 1 may be configured as a word clock input.

Rear Panel - Right Side

Figure 3 shows the Q-SYS Core 24f rear panel right side (RS232, USB, LAN, and power).



— Figure 3 —

1. COM ports (dual)
   RS232, 3-terminal
2. USB C
   Host, Device or DisplayPort Alt Mode
   USB 3.1, source up to 2.0A to a Device
3. USB A ports (dual)
   USB 3.1, source up to 900mA per port
4. LAN ports (quad)
   Up to 2.5 Gbps per port
5. Exhaust vents (do not block)
6. AC mains inlet connector
   Supports universal (international) mains

LAN and USB Connections

- All LAN ports require CAT-5e communications cables (CAT-6 is recommended).
- USB C ports require USB C cables that include an E-Mark chip for SuperSpeed data rates and power delivery.
- USB A ports require USB 3.x compliant cables for any applications that require USB Super Speed. USB 3.x compliant cables are highly recommended for USB A/V Bridging applications and generally recommended for all applications. USB 2.x cables can be used for USB High Speed applications like Audio Bridging and HID Bridging.

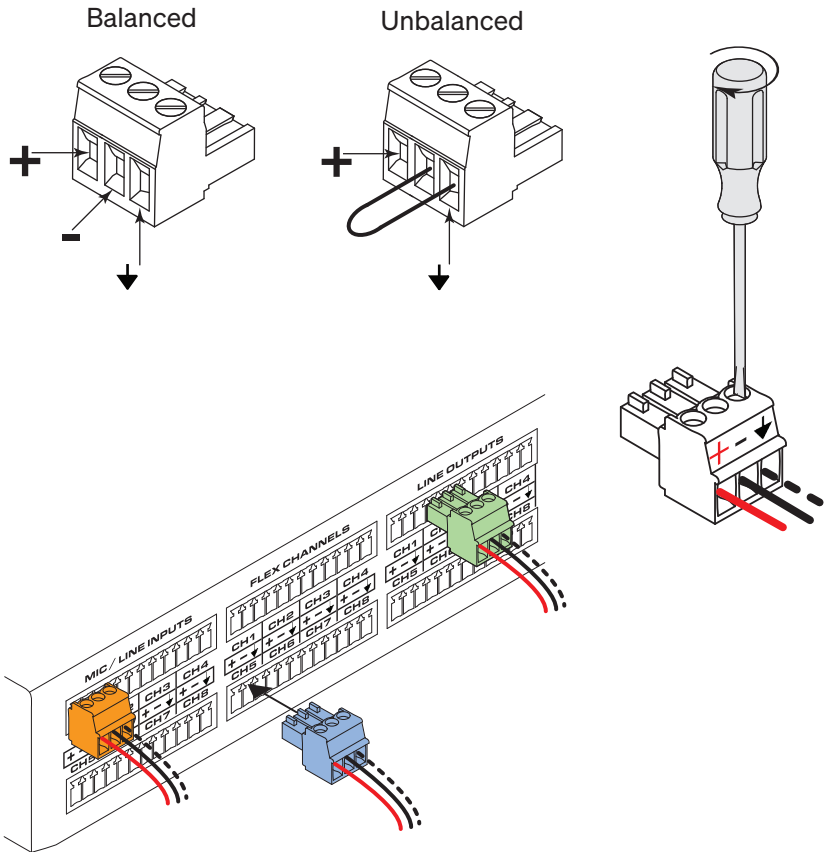
Audio and GPIO Connections

Figure 4 illustrates the various audio connections on a Q-SYS Core 24f. GPIO connections are similar. 3-terminal connector plugs are provided for all audio I/O and COM ports. 10-terminal connector plugs are provided for GPI and GPO connections.

When constructing audio cables, follow the connection wiring as shown in Figure 4.

3-Pin, color-coded, audio Euro connectors:

- Mic/Line Inputs (8 orange)
- Flex Channels (8 blue)
- Line Outputs (8 green)



— Figure 4 —

CAUTION!: A single audio channel consists of three pins. It is possible to plug in a connector that straddles two channels. Be sure that the plugs do not straddle two channels.

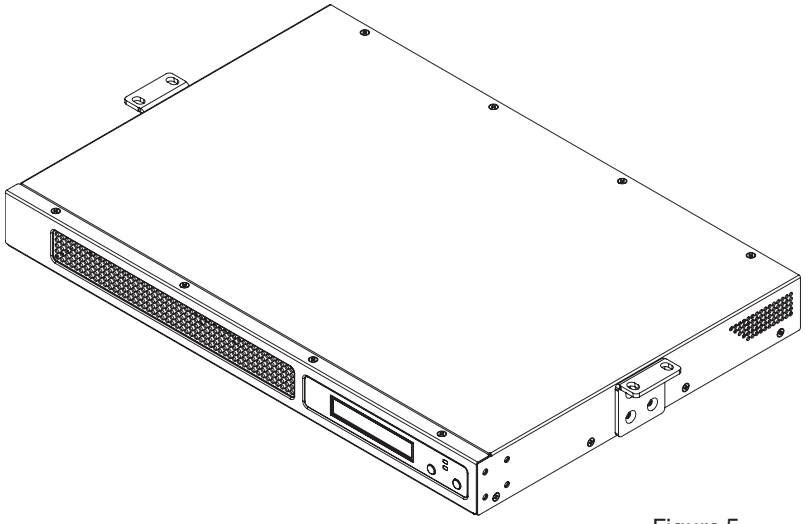
Installation

The Q-SYS Core 24f comes with rack ears pre-installed. These ears can be removed for desktop or credenza mounting.

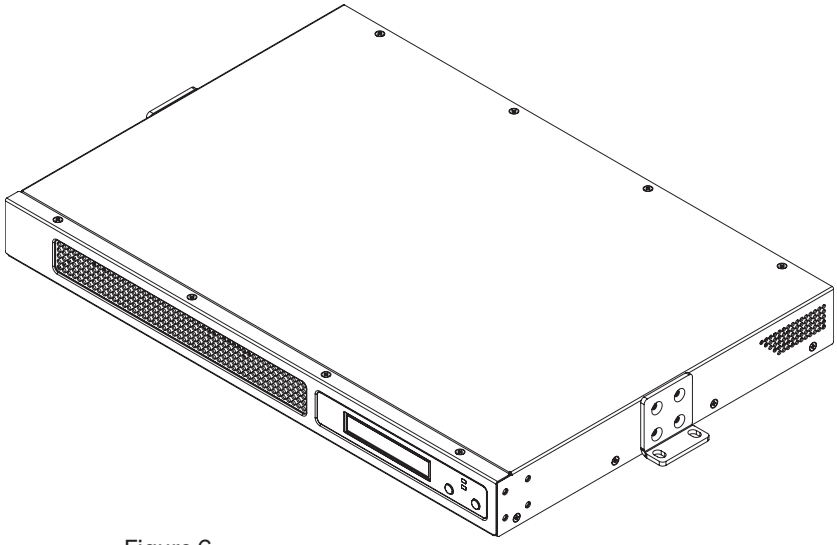
The forward rack ear positions support installation of the Q-SYS Core 24f into a standard IEC 60297 compliant equipment rack occupying one vertical rack unit (1-3/4").

WARNING!: Proper ventilation is required! A minimum of six inches of open space (free of objects) must be maintained behind the Q-SYS Core 24f as measured from the rear panel. A minimum of one half inch of open space must be maintained on each side of the Q-SYS Core 24f in the rack. It is recommended that some amount of space be maintained above and below the Q-SYS Core 24f to avoid thermal coupling with adjacent equipment. Installing a Q-SYS Core 24f directly on top of or below a power amplifier or other heat generating appliance can dramatically increase the heat load on the product and should be avoided. A fresh supply of moving air must be provided at the front and rear of a Q-SYS Core 24f in all installation types.

The supplied rack ears can be removed from the front of the chassis and relocated to the middle of a Q-SYS Core 24f chassis to accommodate surface mounting to the top or bottom of a table, shelf or other structure. The table, shelf or structure must be a cool surface. A Q-SYS Core 24f must not be installed on top of or below a structure that generates heat and where ventilation is inadequate. Note that the Q-SYS Core 24f must remain in a horizontal position! Wall mounting or any other mounting configuration where a Q-SYS Core 24f would be in a vertical orientation is not supported. Refer to Figure 5 and Figure 6.



— Figure 5 —



— Figure 6 —

Knowledge Base

Find answers to common questions, troubleshooting information, tips, and application notes. Link to support policies and resources, including Q-SYS Help, software and firmware, product documents, and training videos. Create support cases.

support.qsys.com

Customer Support

Refer to the Contact Us page on the Q-SYS website for Technical Support and Customer Care, including their phone numbers and hours of operation.

qsys.com/contact-us/

Warranty

For a copy of the QSC Limited Warranty,go to:

qsys.com/support/warranty-statement/