

Q5X[®]

QT-AD10 SERIES Axient Digital Transmitters User Manual

Rev: 2.0
DOCID-M-006-0



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Overview

DOCUMENT DESCRIPTION

This manual describes the operation of Axient Digital transmitters in the QT-AD10 Family: PlayerMic, CoachMic and AquaMic. All transmitters operate in conjunction with:

- A Shure Axient Digital receiver.
- A microphone with a compatible Lemo connector.
- Q5X Gateway (remote control).
 - Handheld MicCommander (QG-H2).
 - Network Gateway (QG-N3).

Upon delivery, visit www.Q5X.com/support to:

- Update the firmware.
- Register the warranty.
- Download manuals.



MANUAL REVISION HISTORY

Rev 1.0	June 8, 2020	Original.
Rev 2.0	Aug 6, 2021	Compatibility updates Document format changes

Regulatory Information

FCC NOTICES

Information to users:

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions:

1. This device may not cause harmful interference.
2. This device must accept any interference received, including interference that may cause undesired operation.

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.

Warnings:

Wireless microphone users shall rely on the white space databases in part 15, Subpart H to determine that their intended operating frequencies are available for unlicensed wireless microphone operation at the location where they will be used. Wireless microphone users must register with and check a white space database to determine available channels prior to beginning operation at a given location. A user must re-check the database for available channels if it moves to another location. Changes or modifications not expressly approved by Quantum5X Systems Inc, could void the user's authority to operate the equipment. This module has been designed to operate with only the supplied integrated antenna or the supplied SSMA antenna for the 802.15.4 Radio. Replacing or modifying these antennas is strictly prohibited.

Regulatory Information

INNOVATION, SCIENCE AND ECONOMIC DEVELOPMENT CANADA (ISED)

This device contains license-exempt transmitter(s)/ receiver(s) that comply with Innovation, Science and Economic Development Canada's license-exempt RSS(s). Operation is subject to the following two conditions:

1. This device may not cause interference.
2. This device must accept any interference, including interference that may cause undesired operation of the device.

Approved antenna and connectors:

This radio transmitter IC:4614A-QTAD10A has been approved by Innovation, Science and Economic Development Canada to operate with the antenna types listed below, with the maximum permissible gain indicated. Antenna types not included in this list that have a gain greater than the maximum gain indicated for any type listed are strictly prohibited for use with this device.

This device operates on a no-interference, no-protection basis. Should the user seek to obtain protection from other radio services operating in the same TV bands, a radio license is required. For further details, consult Innovation, Science and Economic Development Canada's Client Procedures Circular CPC-2-1-28, Voluntary Licensing of License-Exempt Wireless Microphones in the TV Bands.

L'émetteur/récepteur exempt de licence contenu dans le présent appareil est conforme aux CNR d'Innovation, Sciences et Développement économique Canada applicables aux appareils radio exempts de licence. L'exploitation est autorisée aux deux conditions suivantes:

1. L'appareil ne doit pas produire de brouillage.
2. L'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement.

Le présent émetteur radio IC:

4614A-QTAD10A a été approuvé par Innovation, Sciences et Développement économique Canada pour fonctionner avec les types d'antenne énumérés ci dessous et ayant un gain admissible maximal. Les types d'antenne non inclus dans cette liste, et dont le gain est supérieur au gain maximal indiqué pour tout type figurant sur la liste, sont strictement interdits pour l'exploitation de l'émetteur.

Ce dispositif fonctionne selon un régime de non-brouillage et de non-protection. Si l'utilisateur devait chercher à obtenir une certaine protection contre d'autres services radio fonctionnant dans les mêmes bandes de télévision, une licence radio serait requise. Pour en savoir plus, veuillez consulter la Circulaire des procédures concernant les clients CPC-2-1-28, Délivrance de licences sur une base volontaire pour les microphones sans fil exempts de licence exploités dans les bandes de télévision d'Innovation, Sciences et Développement économique Canada.

Regulatory Information

Antenna / Connector Type	Manufacturer	Connector Type	Max Gain
¼" Wire Antenna	Q5X	MHF-4L	UHF 0 dBi, 2.45GHz 2 dBi
SSMA ¼" Whip Antenna	Sam Woo Electronics	MHF-4L- SSMA	UHF 0 dBi, 2.45GHz 2 dBi

RF Exposure Compliance:

The QT-AD10 module is granted with a modular approval for portable applications. The module is to be used by Quantum5X in their final products without additional FCC/ISED certification if they meet the certification conditions.

Module Integration into Host End Products:

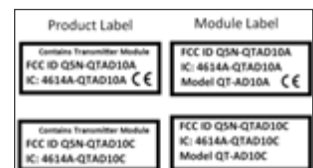
The QT-AD10 module transmitter has been designed by Quantum5X Systems Inc. to be used by Quantum5X as a building block for their wireless audio transmitter products. The module, as designed, is a standalone unit that is ready for integration into final form factor with the limitation for mobile use as specified in RF Exposure compliance. For proper usage of the module, the module integrator must ensure that the input power and input audio signal do not exceed the specified limits as outlined in the specification section. Failure to do so will result in damage to the module. Final product(s) after integration with this module shall be tested to comply with all applicable FCC requirements and Unintentional radiators (FCC section 15.107, 15.109 and ISED ICES-003) before declaring compliance to Part 15 of the FCC Rules and ISED ICES-003.

The module integrator may not do the following. Failure to comply with these restrictions will result in violation of the FCC certification.

1. Alter, modify or remove the module case.
2. Make changes to the Circuit Card Assembly of the module.
3. Remove, change or alter the integrated UHF antenna or the 802.15.4 antenna.

Labelling of the End Products:

The modular transmitter must be equipped with either a permanently affixed label. The modular transmitter must be labelled with its own FCC identification number, and if the FCC identification number is not visible when the module is installed inside another device, then the outside of the device into which the module is installed must also display a label referring to the enclosed module. This exterior label can use wording such as the following: "Contains Transmitter Module" or "Contains ". Any similar wording that expresses the same meaning may be used. Sample labels, that must be used for the module and the product, are shown on the right.



Introduction

TRANSMITTERS

The QT-AD10 series Axient Digital bodypack transmitters deliver impeccable audio quality and RF performance with wide-tuning, high density (HD) mode and encryption.

REMOTE CONTROL AUDIO SYSTEM (RCAS)

The Q5X remote control system is referred to as Remote Control Audio System (RCAS). The RCAS manages the transmitter settings rather than having settings adjusted on the transmitters. RCAS operates via RF and transmits through walls, clothing, uniforms, costumes and over longer distances than non-RF types of transmitter control. Remote operation eliminates the need to physically handle the transmitters after they are installed on the user. The RCAS is available in 2 gateway formats described below; Handheld MicCommander (QG-H2) or Network Gateway (QG-N3). Either format can be connected to MicControl software to allow the interface to manage up to 100 transmitters on a computer. The Network Gateway can be used to setup different control zones or to extend the control range of the RCAS System. RCAS allows the user to view, monitor and adjust any transmitter within the control range, specifically:

- The transmitter power state (ON or STBY) to conserve battery life when not in use.
- RF power and UHF frequency in the event of RF interference.
- Mic mute and mic offset.
- Transmitter naming and grouping for easy control.

HANDHELD MICCOMMANDER (QG-H)

The QG-H2 MicCommander is a handheld, stand-alone device used to control up to 32 Axient Digital QT-AD10 transmitters (as well as legacy analog QT-5000 and QT-5100 transmitters). A transmitter can be remotely configured using the simple interface of the MicCommander without physical access to the transmitter. The MicCommander operates independently from any other gateway or computer but can be connected to a computer by a USB cable to utilize MicControl software. It can override any setting made by the MicControl software and vice versa.

Introduction

NETWORK GATEWAY (QG-N)

The RCAS system can also be networked by ethernet using a QG-N3 Network Gateway to remotely control QT-AD10 and legacy analog transmitters utilizing MicControl software running from a computer on the same network. Multiple QG-N3 gateways can be added to an ethernet network to manage large venue installations. The QG-N3 is powered through a power over ethernet (PoE) switch or by a mini USB power supply.

MICCONTROL

MicControl is a Windows based software program used to conveniently setup and control QT-AD10 transmitters through a friendly Graphical User Interface (GUI). This is particularly useful when dealing with installations of multiple transmitters. MicControl can comfortably control up to 100 transmitters and can be connected to multiple QG-N3 Network Gateways via ethernet and QG-H2 MicCommanders via USB to cover large venues.

Power Management

All transmitters have rechargeable lithium polymer batteries with run times that vary from 2 - 16 hours depending on power level and form factor. The values in this table are typical of new batteries.

CHARGING

It is best to completely charge the QT-AD10 before use. To charge a transmitter, insert the supplied micro USB charging cable and connect to a USB power source. For the AquaMic, the charge dongle needs to be attached between micro USB charger and the AquaMic. The charge light will turn from red and to green once the unit is charged. If the charge LED is flashing green/red, there is a charging error. If this happens check and or replace the charging cable or the micro USB power supply. The battery will also not charge if the battery temperature is below 0° C or above 60° C. The battery charge level can be checked with a QG-H2 MicCommander or a QG-N3 gateway and MicControl.

Power Management

STORAGE MODE

When the QT-AD10 transmitter is in storage mode, the transmitter will be completely off and will not respond to any commands from the QG-H2 handheld MicCommander or QG-N3 Gateway. If the transmitter is in storage mode as opposed to a battery run down condition, when the charger is inserted it will wake up and report the battery level via the <Charge> LED and the MicCommander. There are three ways to bring a QT-AD10 out of storage mode and into standby mode:

- Connect the transmitter to a USB charger for any transmitter.
- Press the On/Off button for 3 seconds for the PlayerMic.
- Insert the reset key into the charge/data dongle for the AquaMic.

STANDBY MODE

In standby mode, the transmitter is transmitting a 2.4 GHz heartbeat every 1.5 seconds, and the transmitter is not transmitting the UHF carrier. The heartbeat contains configuration data, such as RF frequency, output power and mic offset. The heartbeat also contains status information such as battery level, mute status and 2.4 GHz channel. In standby mode, the transmitter will respond to commands to change parameters and to turn to the ON mode or storage mode. Transmitters with an On/Off button (not AquaMic) enter standby in three ways:

- Entering the "STBY" command from the MicCommander status and control menu (this is the only way to enter standby for the AquaMic since it does not have an On/Off button).
- 3 second hold of the On/Off button (PlayerMic only) will toggle between ON and STBY.
- 12 second hold of the On/Off button will reset the transmitter and return it to its prior mode.

ON MODE

In ON mode, the transmitter is transmitting the UHF carrier and continuing to send 2.4 GHz heartbeats every 1.5 seconds. In this state the transmitter will respond to commands to change parameters, and to turn to the standby mode or storage mode.

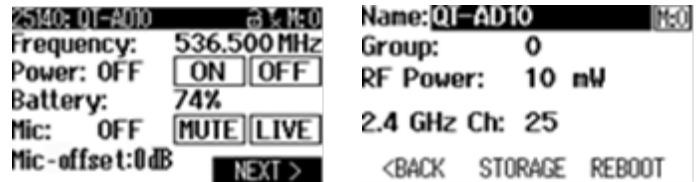
MicCOMMANDER

START-UP

Turn on the MicCommander by pressing the button on the top of the unit. Upon powering up, the MicCommander will display a list of transmitters to which it is currently registered. If the desired transmitter is not displayed on this Active Transmitters list, it must be “added.”

SETTINGS

Select a transmitter from the active transmitters list with the “ENTER” button to view or edit its settings. When selected, the menu on the left will appear, the menu on the right is accessed by selecting “Next”

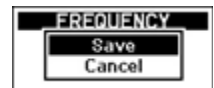


Frequency:

Frequency can be adjusted by moving the cursor to the frequency value using the navigational arrows then pressing “ENTER” button. This will bring up the screen shown on the right.



To change the MHz values use the UP/DOWN arrows. To edit the frequency’s kHz, press the “RIGHT” button to highlight them then use the “UP/DOWN” arrows again. The “ENTER” or “BACK” button can be used to save changes. Select “Save” to confirm or “Cancel” to cancel.



Power:

From this location the transmitter power can be set to ON or STBY.

Battery:

Battery is the percentage of battery life remaining. The “CHG” to the left of the percentage denotes that the device is currently charging.

Mic:

Mic is the microphone state, either Live or Mute. Muting will turn the audio off and leave the transmitter UHF carrier on. This function can be used to remotely mute a mic on any QT-AD10 transmitter or to override a physical mute switch on transmitters such as the QT-AD10 CoachMic.

MicCOMMANDER

Mic-Offset:

Mic-Offset is used to match audio levels of different types of microphones. If using a single transmitter, set Mic-Offset to 0dB. When pairing two or more transmitters to a single receive channel, there may be a difference in volume levels between microphones or instruments. If this occurs, use the Offset function to match the audio levels and eliminate audible volume differences between transmitters. To adjust the Mic-Offset if needed:

- Turn on the first transmitter. Perform a sound check to test the audio level. Turn off the transmitter.
- Turn on the second transmitter. Perform a sound check to test the audio level. If the level is different than that of the first transmitter, adjust the Mic-Offset to match the audio levels at the receiver. Turn off the transmitter.
- Repeat for any additional transmitters.

Name:

Name is a 15-character alphanumeric name which can be entered for each transmitter. Note that the receiver will not display all 15 characters of the full transmitter name.

Group:

Group is the group number (1-16) to which the transmitter belongs, allowing it to be controlled with group commands (see Group Commands below). To change the group to which the transmitter belongs, select the displayed group number and adjust it using the UP/DOWN arrows. Once satisfied, press the "ENTER" or "BACK" button and "Save" when prompted.

RF Power:

RF Power can be set from 2, mw, 10 mw, and 20 mw. 10 mw should be used to maximize battery run time.

2.4 GHz Channel:

The RCAS control channel default is 25, change this on the transmitter only if you are having control issues that can be seen when you have completed a 2.4GHz spectrum scan. See Device Configuration, the 2.4 GHz Channel description in Link ID section 3.5.

Storage Mode:

Storage Mode will disable all communication between the MicCommander and the transmitter. As well, the battery will not charge while the transmitter is in storage mode. To return to standby mode, the On/Off button needs to be pressed for 3 seconds or the transmitter needs to be connected to a charger.

MicCOMMANDER

Reboot:

Reboot will remotely cause the transmitter to do an MCU on reset. This returns the transmitter to its last known state.

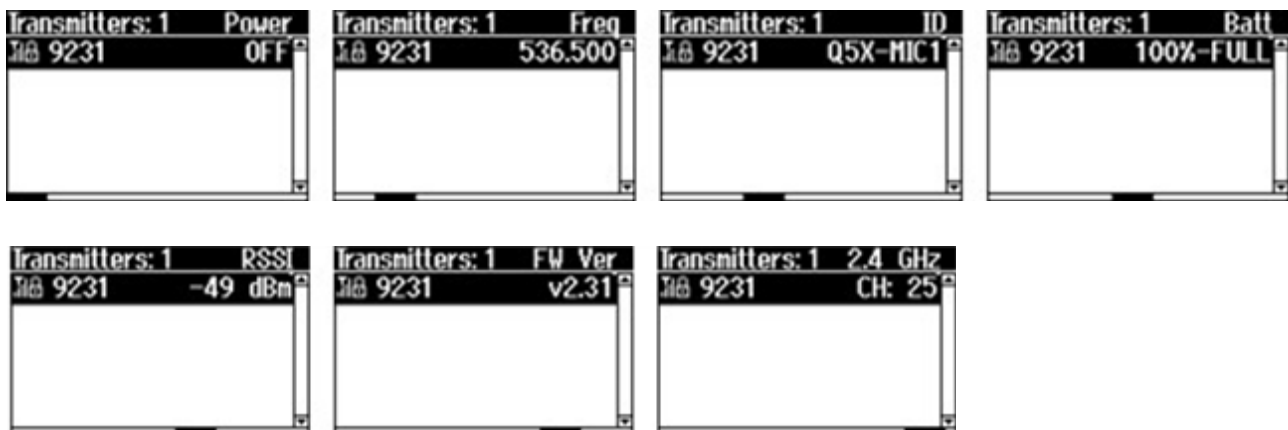
Main Menu:

The main Menu is accessed by pressing the “BACK” button. From here you can navigate and select other menus, including the “Transmitters” menu.

ACTIVE TRANSMITTERS LIST

Transmitters – Status and Control:

Active Transmitters menu will appear when first turned on. A list of all transmitters currently registered with the MicCommander will be displayed. The transmitter list has seven separate tabs. Tab 1 is displayed initially and indicated by the black line at the bottom left of the screen. Additional tabs (shown below) are displayed by pressing the right or left navigation arrows. The RSSI and Link Status Icon are displayed to the left of the transmitter serial number. When a transmitter is out of range or set to storage mode, data is displayed as series of question marks. From any of the Active Transmitter display tabs below, the transmitter setup menu can be accessed by pressing the “Menu” button once the desired transmitter has been highlighted. The Menu button will bring up a list of 15 items that are required for adding or removing a transmitter from the active transmitter menu, accessing special features of the selected transmitter, or for sorting the Active Transmitter list.



MicCOMMANDER

Adding/Removing Transmitters from Transmitter List:

Transmitters can be added by scanning for all active transmitters or by manually entering each transmitter serial number. To scan for all active transmitters, select scan. Once the list has populated select the desired transmitters and press the “Back” button to load selected transmitters into the active transmitter list. Only transmitters set to the same 2.4GHz channel and that have the same Link ID, or no Link ID will be able to be scanned or added to the transmitter active list. To manually add transmitters, select “Add” and enter the transmitter serial number by scrolling up or down from the last entered number. To remove a transmitter from the active list, select “Remove” or “Remove All”. “Remove” will remove the current selected transmitter from the active list, “Remove All” will remove all transmitters in the active list.

Linking:

Activate or deactivate linking security for the selected transmitters in the active transmitter list. Setting the Link ID of the MicCommander must be done under the Device Configuration Menu. See Link ID section 3.5 for more details.

Flash LED:

This feature will flash the Status LED very quickly 10 times, which can help locate a transmitter in a group of transmitters.

Sorting of Active Transmitter List:

Users can sort the Active Transmitter list by five different variables: serial number, transmitter name, RSSI, transmitter frequency and battery level. The list will remain sorted by the selected variable until the QG-H2 or QG-N3 is powered down. Users also have the option of using the transmitter serial number or the transmitter name as the device ID.

GROUP COMMANDS

Each transmitter can be assigned to one of 16 groups from the transmitter menu. Group setting allows a group of transmitters to be turned to on or standby by a single command sent from the RCAS controller. This allows for quick on or standby times for a large group of transmitters, which is especially useful when sharing receive frequencies between multiple transmitters during first and second half of a sporting event or between acts of a theatrical event.

MicCOMMANDER

DEVICE CONFIGURATION

Link ID:

Linking is a process to securely create a “collection” of RCAS devices that prevents unwanted access from RCAS controllers outside of the collection. Linking begins by setting Link ID on the MicCommander and then sending the ID to all QT-AD10 transmitters that will be part of the collection. To expand the RCAS control network, the same Link ID can also be shared between multiple MicCommanders (and other RCAS controllers). This allows additional users to control the same collection of linked transmitters. Steps:

- Select the Device Configuration tab from the Main Menu and then select Link ID.
 - Enter a 5-digit Link ID into the MicCommander manually or allow it to be auto-generated.
 - (LinkID range is from 1 to 65535)
 - Assign the same Link ID manually to additional MicCommanders if needed
 - Link/unlink the transmitters:
 - Highlight a desired transmitter on the Active Transmitter list
 - Press the “Menu” button, scroll down the list of transmitter features and select “Link”
 - Selecting Un-Link will clear the Link ID from the QT-AD10 transmitter.
- When the Link ID is cleared or set to 00000 any MicCommander can control that QT-AD10 transmitter.
- To clear a Link ID from a QT-AD10 transmitter where the Link ID has been forgotten or entered incorrectly, plug and unplug the charger 3 times in quick succession. This will put the transmitter into recovery mode for 2 minutes, indicated by the status LED flashing a RED/GREEN blinking pattern. While in this mode the QT-AD10 transmits on all 2.4G channels, allowing the easy identification and pairing of transmitters and MicCommanders that may be on different 2.4 GHz channels.

2.4 GHz Channel:

The RCAS control system operates in the ISM 2.4GHz RF spectrum with the 802.15.4 protocol and utilizes Zigbee channels 11 to 26. In this menu, you can change the control channel if there is interference from nearby devices that may be using similar technology like ZigBee or Bluetooth and WiFi communications. It is very important to make sure the MicCommander and the transmitters are on the same control frequency. Should you need to change the RCAS channel due to interference, it is important to first change all the transmitters you wish to control BEFORE changing the MicCommander control channel. If a transmitter is not on the same channel as the MicCommander it will still function as a UHF transmitter but will not be “seen” by the MicCommander and cannot be controlled or monitored.

MicCOMMANDER

MicCOMMANDER (QG-H2)

DEVICE CONFIGURATION CON'T

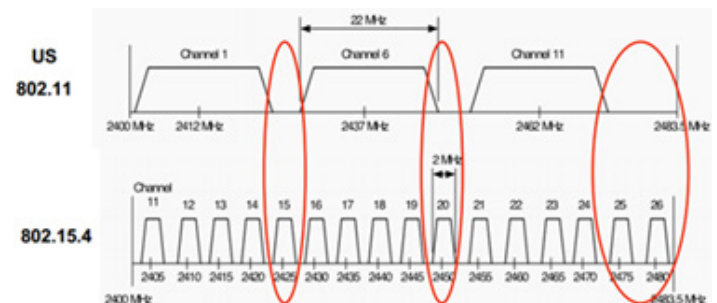
Default Channel:

Default is Channel 25 for RCAS as it is generally the channel with the least amount of interference. If the control process seems to be borderline, go to Tools, enter the 2.4 Spectrum mode and view the local activity on the 2.4GHz band.

Channel Selection:

It is important to ensure the QT-AD10 transmitter and MicCommander are on the same control channel. There are 16 pre-set channels which can be used; 11 to 26.

They are 5 MHz apart and 2 MHz wide so there is no overlap. The chart shows the channels and the specific frequency for each.



LCD Contrast:

The contrast level of the LCD display can be adjusted by selecting the value next to "LCD Contrast" and by pressing the up and down arrows change the value.

MicCOMMANDER

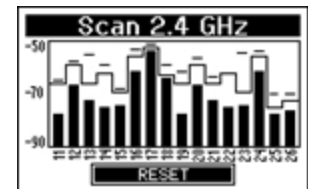
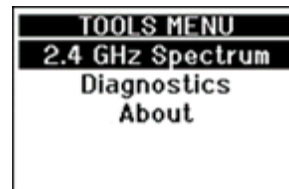
TOOLS

2.4GHz Spectrum:

View the spectrum and identify the best channel to operate the RCAS system on. Over time, the channel indicators will store the peak values for easy reference. Lower bars indicate less activity which is the desired result. Select Reset to clear the stored peak values to start a fresh scan.

Diagnostics:

Reserved for factory service functions.



MICCOMMANDER

TOOLS CON'T

Status LED:

Single Green Flash	<ul style="list-style-type: none"> • Transmitter is in standby mode and is waiting for a command • Battery has over 30% charge left
Double Green Flash	<ul style="list-style-type: none"> • Transmitter is in ON mode and is transmitting the UHF carrier • Battery has over 30% charge left
Single Amber Flash	<ul style="list-style-type: none"> • Transmitter is in standby mode and is waiting for a command • Battery less than 30% charge left
Double Amber Flash	<ul style="list-style-type: none"> • Transmitter is in ON mode and is transmitting UHF carrier • Batter has less than 30% charge left
Single Red Flash	<ul style="list-style-type: none"> • Transmitter is in standby mode and is waiting for a command • Battery is empty
Double Red Flash	<ul style="list-style-type: none"> • Transmitter is in ON mode and is transmitting UHF carrier • Battery is empty
10 Fast Green Flashes	<ul style="list-style-type: none"> • Transmitter has completed a boot sequence
Slow Red/Green/Red Flash	<ul style="list-style-type: none"> • Transmitter is waiting for Linking ID. • Enter by inserting and removing USB charger 3 times.
10 Fast Red Flashes	<ul style="list-style-type: none"> • Transmitter is going into Storage Mode. • In storage mode the transmitter is off and will no longer flash the LED or respond to any RCAS commands.
Solid Green for 2 seconds	<ul style="list-style-type: none"> • Transmitter is entering UHF ON mode
Solid Red for 2 seconds	<ul style="list-style-type: none"> • Transmitter is exiting UHF ON mode

MicCOMMANDER

TOOLS CON'T

Charge LED:

Solid Red	<ul style="list-style-type: none">• Charging
Solid Green	<ul style="list-style-type: none">• Fully charged
Flashing Red/Green	<ul style="list-style-type: none">• Charging error

Receiver

The QT-AD10 Transmitter family only works with the Shure Axient Digital Receiver, ADQ4 or ADQ2. Outlined below are some key steps to interface the QT-AD10 transmitter with the Shure Axient Receiver. For full details on the ADQ4 or ADQ2 please see: <https://pubs.shure.com/guide/AD4Q/en-US#>

Transmitter Telemetry:

The QT-AD10 transmitter communicates with the Shure receiver to update important information from the transmitter to the receiver, such as battery level, output power, mic offset and transmitter name.

Encryption:

The receiver features Advanced Encryption Standard (AES-256) to ensure that only the receiver that is keyed to the transmitter can monitor the audio content. When enabled, encryption is applied to all receiver channels. Encryption does not affect Dante audio signals, audio quality, or channel spacing.

- From the Device Configuration menu: Device RF > Encryption.
- Use the control wheel to select On.
- Press ENTER to save.
- Perform an IR sync to complete the encryption between the transmitter and the receiver. The encryption key icon will appear on the display of both the receiver and the transmitter.

Any change to the encryption status on the receiver such as enabling/ disabling encryption or requesting a new encryption key, requires a sync to send the settings to the transmitter. To remove encryption, use the control wheel to select Off and re-sync the transmitter to clear the encryption.

Transmission Modes:

The receiver offers two transmission modes to efficiently manage the available spectrum used by the transmitters. Operation mode varies according to region. In Brazil, High Density mode is used.

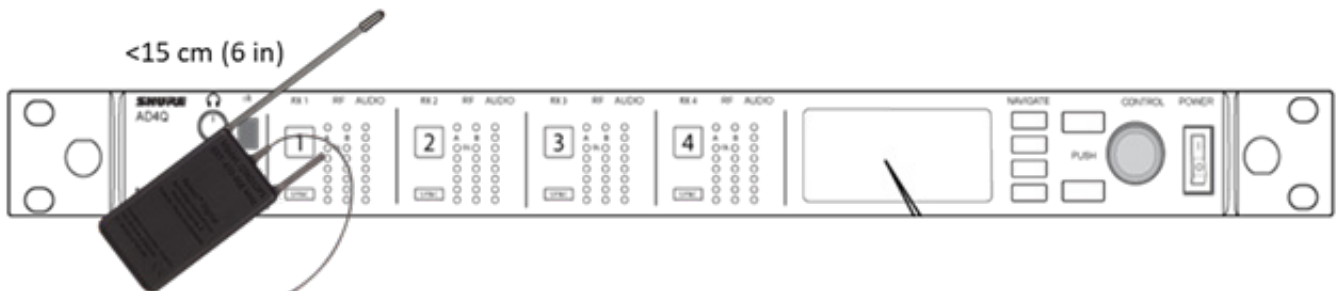
1. Standard mode employs channel spacing that allows for the operation of transmitters at various power levels. Standard mode is ideal for situations where spectrum is not limited or when you need to operate transmitters at higher power levels to increase range.
2. High Density mode creates additional bandwidth for more channels in crowded RF environments by transmitting at 2 mW RF power and narrowing the modulation bandwidth. High Density mode is ideal for applications where many channels are needed in a confined area, transmission distances are short, and the number of available frequencies is limited.

Receiver

IR SYNC:

Use IR Sync to form an audio channel between the transmitter and receiver. The receiver band must match the band of the transmitter. Any change to the encryption status on the receiver (enabling/disabling encryption) requires a sync to send the settings to the transmitter. New encryption keys for the transmitter and receiver channel are generated on every IR sync, so to request a new key for a transmitter, perform an IR sync with the desired receiver channel.

1. Select a receiver channel.
2. Tune the channel to an available frequency using group scan or manually tune to an open frequency.
3. Make sure the QT-AD10 is in standby mode or in the ON mode.
4. Press the SYNC button on the receiver.
5. Align the IR windows between the transmitter and the receiver so that the IR LED illuminates red. When complete, Sync Success! appears. The transmitter and receiver are now tuned to the same frequency.

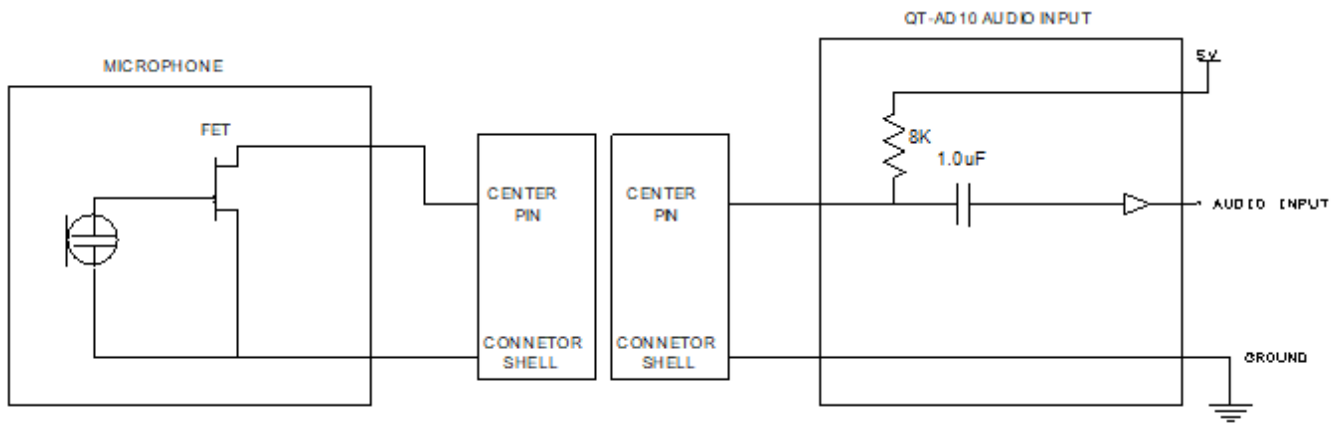


Specifications

Encryption	AES 256 Encryption
Audio Frequency Response	20 Hz – 20 KHz
Mic Offset Gain Range	-12 to 21 dB (in 1 dB steps)
Pre-amplifier Equivalent Input Noise (EIN) System Gain Setting ≥ +20	-115 dBV, A-weighted, typical
Maximum Input Level	1 kHz at 1% THD, 3 dBv (5.0V)
Input Impedance:	8.2K with 5 V Mic Bias
Audio Input Connector	Single Pin Lemo for PlayerMic (S) and CoachMic Six Pin Lemo for AquaMic
Occupied Bandwidth	<200 kHz
Channel-to-Channel Spacing	Standard Mode- 350 KHz. High Density Mode- 125 KHz
Modulation Type	Shure Axient Digital Proprietary
RF Output Power	2 mw, 10 mw, 20 mw (Avg)
Antenna Type	1/4 wave
Antenna Impedance	50 Ohm
Weight	13.55 g
Housing	AquaMic: Machined Aluminum PlayerMic: (S) Rubber Polymer CoachMic: Nylon
Operating Temperature Range	-20° C to 50° C
Storage Temperature Range	-20° C to 45° C

Specifications

Input Connector Diagram:

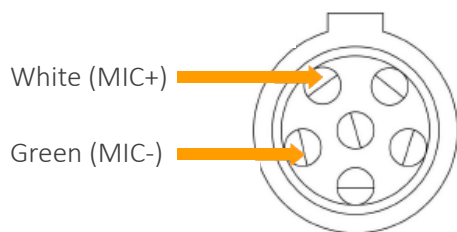


Frequency Bands and Transmitter RF Power

Band	Frequency Range (MHz)	RF Power (mW)
G56	470- 636	2/10/20
G57	470- 608	2/10/20
K55	606 – 694	2/10/20
X55	941- 960	2/10/20

6 PIN LEMO IN LINE MALE CONNECTOR REAR

FV G ◊ 03 ◊ 306 ◊ C LAC 2 7Z



Licensing Information

Licensing:

A ministerial license to operate this equipment may be required in certain areas. Consult your national authority for possible requirements. Changes or modifications not expressly approved by Q5X could void your authority to operate the equipment. Licensing of Q5X wireless microphone equipment is the user's responsibility, and licensability depends on the user's classification and application, and on the selected frequency. Q5X strongly urges the user to contact the appropriate telecommunications authority concerning proper licensing, and before choosing and ordering frequencies.

Certifications:

Certified under FCC Part 15, Subpart C, section 15.247 and Part 74 FCC ID: Q5N-QTAD10A and FCC Part 15, Subpart C, section 15.247 and Part 74 FCC ID: Q5N-QTAD10C

Certified by ISED in Canada under RSS-210 and RSS-247 IC:4614A-QTAD10A

RSS-123 and RSS-247 IC:4614A-QTAD10C

Meets essential requirements of the following European Directives:

- WEEE Directive 2012/19/EU, as amended by 2008/34/EC.
- RoHS Directive EU 2015/863.

NOTE: Note: Please follow your regional recycling scheme for batteries and electronic waste
This product meets the Essential Requirements of all relevant European directives and is eligible for CE marking.

Firmware Updates

QT-AD10 FIRMWARE:

Firmware is embedded software in each component that controls functionality. Periodically, new versions of firmware are developed to incorporate additional features and enhancements. To take advantage of design improvements, you can download and install new versions of the firmware from the Q5X website www.Q5X.com/support

Versioning:

When performing an update, first download firmware to the receiver, and then update transmitters to the same firmware version to ensure consistent operation. Shure Axient Digital receiver firmware can be updated using the Shure Update Utility. The Shure Update Utility is available for download from <http://www.shure.com/>. The firmware numbering for Shure devices uses the following format: MAJOR.MINOR.PATCH (e.g., 1.2.14). At a minimum, all devices on the network (including transmitters), must have the same MAJOR and MINOR firmware version numbers (e.g., 1.2.x).

Updating the Transmitter:

1. Download the firmware to the receiver.
2. Access the following menu from the receiver: Device Configuration > Tx Firmware Update.
3. Ensure that the QT-AD10 transmitter is in the ON mode (not Standby). Align the IR ports between the transmitter and the receiver. IR ports must be aligned for the entire download, which can take 50 seconds or longer. Tip: The red alignment LED will turn on when the alignment is correct.
4. Press ENTER on the receiver to begin the download to the transmitter. The receiver will display the progress of the update as a percentage.

Hardware Diagrams

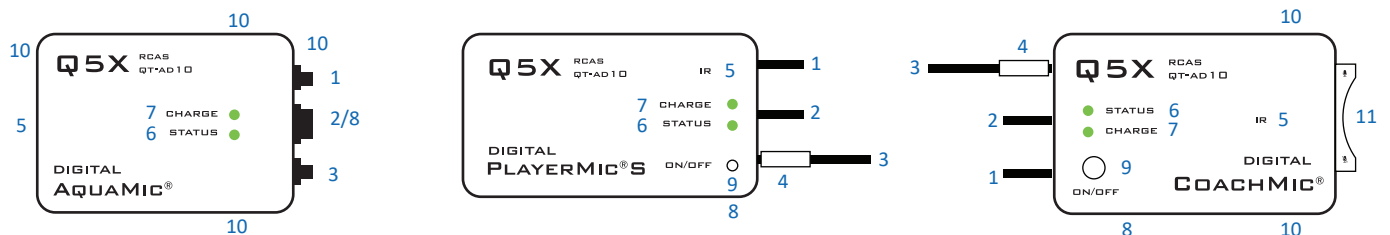
MICCOMMANDER DIAGRAMS



Key:

- 1. Navigation arrows
- 2. MENU button – Open special menu when available
- 3. BACK button – Return to previous menu
- 4. ENTER button - Select item
- 5. LCD Display
- 6. 2.4 GHz Antenna connector
- 7. Micro USB input
- 8. On/Off button, with LED heartbeat Indicator
- a. Transmitter Serial Number
- b. Transmitter Name
- c. Encryption
- d. Linking Status
- e. 2.4GHz RSSI
- f. Message que

TRANSMITTER DIAGRAMS



Common features:

- 1. 2.4 G antenna
 - 2. Audio input
 - 3. UHF antenna
 - 4. Serial number
 - 5. IR port
 - 6. Status LED
 - 7. Charge LED
 - 8. USB Port
- For the RCAS control channel.
Connects to a microphone with a special Lemo connector.
For RF signal transmission.
Unique serial number for RCAS identification and control on the antenna. (Back of the AquaMic.)
Infrared sync with the receiver for set-up, initiating encryption and installing firmware updates.
See user manual for details on LED patterns and colours.
Red = charging, green= charged and flashing red/green = error.
Charges the battery. (AquaMic charges through the same connector as the audio input.)

Unique features:

- 9. On/Off button
 - 10. Belt clip holes
 - 11. Rocker switch
- Manual power control between on, standby and storage modes. (Not part of the AquaMics.)
Allows vertical and horizontal placement. (Not part of the PlayerMics.)
Manual override rocker style mute switch.

Quick Start Guide MicCOMMANDER

This Quick Start Guide is an overview. Users are asked to review the entire manual for detailed instructions

Included Hardware:

- Handheld MicCommander remote control (QG-H2)
- Antenna

Users also need:

- Q5X Digital transmitter
- Microphone with special Lemo connector
- Shure Axient Digital receiver
- 2 AA batteries

Visit www.Q5X.com/support to:

- Update the firmware
- Register the warranty
- Download the manuals



Prepare the handheld MicCommander remote control:

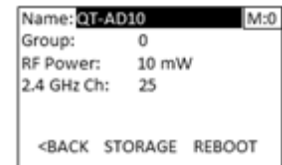
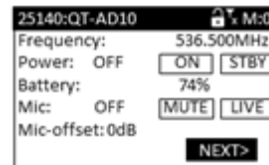
- Remove the rubber cover to access the battery chamber.
- Install 2 AA batteries. Lithium ion is recommended for best performance. Alkaline or Ni-MH are acceptable when battery type is changed in the device configuration menu.
- Replace the rubber cover and install the antenna on the top.
- NEVER power the unit without the antenna in place.
- Turn on the unit by pressing the power button on the top or by plugging the USB cable.
- The MicCommander will automatically shut off after two minutes.

Prepare the transmitter (QT-AD10):

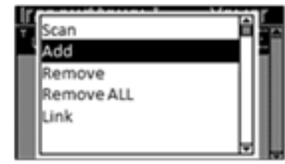
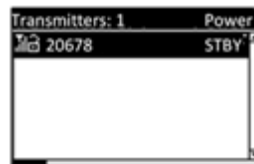
- Bring the transmitter out of storage mode (minimal battery draw) and into standby mode (detectable but the UHF radio is off) using either method below:
- Hold the ON/OFF button until the flashes change from rapid to slow, or
- Plug and unplug a powered charging cable into the side of the transmitter.
- Connect the microphone by pushing the mic connector ends together.

Pair the MicCommander and Transmitter

- The screen on the MicCommander displays the serial number of paired transmitters. The serial number is on the transmitter antenna or back.
- If the desired transmitter is not listed, press the <MENU> button to either scan for nearby transmitters or manually add the serial number. Use the arrow buttons to navigate the menu.



- Scan: Press <ENTER> to scan. Use the down arrow to select the transmitter. Use the side arrows to review information about the transmitter. Press <ENTER> to toggle the selection "x". Press <MENU> to access additional search functionality. Press <Back> to accept the addition of a transmitter to the list.
- Add: Use the down arrow to select "Add" and press <ENTER>. Use the navigation arrows to enter the serial number. Hold the arrow key for rapid scroll. Press <ENTER> to save.
- Select the desired transmitter and press <ENTER> to go to the transmitter menu.



Adjust:

Set the functions in the two transmitter menus of the MicCommander. Screen one includes frequency, power On/Off, battery level, mic mute/live and mic offset. To access screen two, navigate to NEXT> and press <ENTER> to adjust transmitter name, group, RF power, 2.4GHz channel, storage and reboot.

- **Frequency:** Highlight the frequency and press <ENTER>. Use the directional arrows to choose the desired frequency. Hold the arrow for rapid scroll. Press <ENTER>.
- **Mic-offset:** If using a single transmitter, set Offset to 0 dB. If there is an audible difference in the sound level between multiple transmitters, navigate to the Offset menu (Audio > Offset) in the transmitter to increase or decrease the Offset in real time to match the audio levels.
- **RF Power:** Select between 2, 10 and 20 mW. A lower power level will conserve battery life.
- **Storage:** Navigate to NEXT> and <ENTER>. Use the down arrow to go to STORAGE and press <ENTER>. Navigate to highlight CONTINUE on the warning screen and <ENTER>.

Quick Start Guide Digital AQUAMic

This Quick Start Guide is an overview. Users are asked to review the entire manual for detailed instructions

Included Hardware:

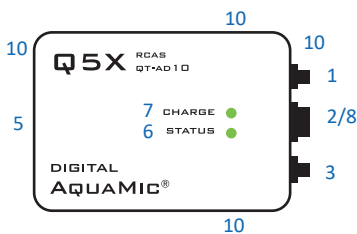
- Carrying pouch.
- Digital AquaMic transmitter (QT-AD10A or AL).
- SSMA Antennas (2.4 GHz and UHF) .
- Charging dongle (6-pin Lemo to Micro USB).
- Charging cable.
- Reset key.

Users also need:

- Q5X Gateway (remote control)
 - Handheld MicCommander (QG-H2).
 - Network Gateway (QG-N3).
- Shure Axient Digital receiver.
- Microphone (6-pin Lemo connector).

Visit www.Q5X.com/support to:

- Update the firmware
- Register the warranty
- Download the manuals



Key:

1. 2.4 G antenna - For the RCAS control channel.
2. Audio input - Connects to a waterproof microphone with a 6-pin Lemo connector.
3. UHF antenna - For RF signal transmission.
4. Serial number – The unique number for RCAS ID and control is on the back of the AquaMic.
5. IR port - Infrared sync with the receiver for set-up, initiating encryption and installing firmware updates.
6. Status LED - See manual for details on LED patterns and colours.
7. Charge LED - Red = charging, green = charged and flashing red/green = error.
8. Charging port - AquaMic charges through the same connector as the audio input using the charge dongle.
9. On/Off button – There is no manual power control button on the AquaMic to maintain the waterproof seal.
10. Belt clip holes - Allows vertical and horizontal placement.

Prepare the AquaMic:

- Connect the antennas to the labelled ports.
- Bring the transmitter out of storage mode (minimal battery draw) and into standby mode (detectable but the UHF radio is off) by using the charging dongle screwed into the charging port on end of the AquaMic.
- Plug and unplug a powered micro USB charging cable into the charging dongle.
- Replace the dongle with the 6-pin Lemo microphone.
- Do not over tighten the microphone or antenna beyond finger tight to avoid damaging the o-rings.

Battery Life:

AquaMic	8 hrs @ 2/10 mW	4 hrs @ 20 mW
AquaMic L	16 hrs @ 2/10 mW	8 hrs @ 20 mW

Prepare the Gateway remote control (H2 or N3):

Install the antennas on the top. (NEVER power the unit without the antenna in place.)

Power the Gateway as instructed in its manual. Turn on the unit by pressing the power button.

Prepare the AquaMic and Gateway remote control (H2 or N3):

The screen on the Gateway displays the serial number of paired transmitters. Press the <MENU> button to either scan for transmitters or add the serial number on the back of the AquaMic.

Adjust:

Set the functions in the two transmitter menus of the Gateway. Screen one includes frequency, power On/Off, battery level, mic mute/live and mic offset. Screen two includes: transmitter name, group, RF power, 2.4GHz channel, storage and reboot.

IR Sync:

Use IR Sync to form an audio channel between the transmitter and receiver. The receiver band must match the band of the transmitter. Select a receiver channel. Tune the channel to an available frequency using group scan or manually tune to an open frequency. Assure transmitter is in standby or ON mode. Press the SYNC button on the receiver. Align the IR windows between the transmitter and the receiver so that the IR LED illuminates red. When complete, "Sync Success!" appears on the receiver.

Use Tips:

The AquaMic is IP68 Certified waterproof to 100 ft (30.5 m). Audio quality and RF performance maybe be impacted if water is able to penetrate into a loose-fitting connector. To keep the AquaMic in top condition, rinse the AquaMic with fresh water after use, especially if used in saltwater.

Quick Start Guide Digital PLAYERMIC

This Quick Start Guide is an overview. Users are asked to review the entire manual for detailed instructions

Included Hardware:

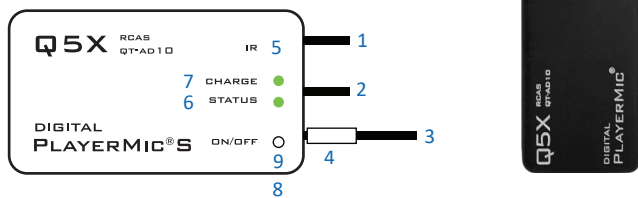
- Carrying pouch.
- Digital PlayerMic transmitter (QT-AD10P or PS)
- Micro USB charging cable

Users also need:

- Q5X Gateway (remote control)
 - Handheld MicCommander (QG-H2) or
 - Network Gateway (QG-N3)
- Shure Axient Digital receiver
- Microphone (1-pin Lemo connector)

Visit www.Q5X.com/support to:

- Update the firmware
- Register the warranty
- Download the manuals



Key:

1. 2.4 G antenna - For the RCAS control channel.
2. Audio input - Connects to a microphone with a one-pin Lemo connector.
3. UHF antenna - For RF signal transmission.
4. Serial number - Unique serial number for RCAS identification and control. (on the antenna)
5. IR port - Infrared sync with the receiver for set-up, initiating encryption and installing firmware updates.
6. Status LED (See manual for details on LED patterns and colours.)
7. Charge LED - Red = charging, green= charged and flashing red/green = error.
8. USB port - Charges the battery.
9. On/Off button - Manual power control between on, standby and storage modes.

Battery Life:

PlayerMic S	4 hrs @ 2/10 mW	2 hrs @ 20 mW
PlayerMic	8 hrs @ 2/10 mW	4 hrs @ 20 mW

Prepare the PlayerMic Transmitter:

Bring the transmitter out of storage mode (minimal battery draw) and into standby mode (detectable but the UHF radio is off) using either method below:
 Hold the ON/OFF button until the status LED changes from flashing rapidly to slowly, or
 Plug and unplug a powered micro USB charging cable into the side of the transmitter.
 Connect the 1-pin Lemo microphone

Prepare the Gateway remote control (H2 or N3):

Install the antenna on the top. (NEVER power the unit without the antenna in place.)
 Power the Gateway as instructed in its manuals.
 Turn on the unit by pressing the power button.

Pair the PlayerMic and Gateway remote control (H2 or N3):

The screen on the Gateway displays the serial number of paired transmitters.
 Press the <MENU> button to either scan for transmitters or add the serial number found on the PlayerMic antenna.

Adjust:

Set the functions in the two transmitter menus of the Gateway. Screen one includes frequency, power On/Off, battery level, mic mute/live and mic offset. Screen two includes: transmitter name, group, RF power, 2.4GHz channel, storage and reboot.

IR Sync:

Use IR Sync to form an audio channel between the transmitter and receiver. The receiver band must match the band of the transmitter. Select a receiver channel.
 Tune the channel to an available frequency using group scan or manually tune to an open frequency.
 Assure transmitter is in standby or ON mode.
 Press the SYNC button on the receiver.
 Align the IR windows between the transmitter and the receiver so that the IR LED illuminates red.
 When complete, "Sync Success!" appears on the receiver.

Use Tips:

When using the PlayerMic, it is suggested that a strain relief method be used to ensure that there is no direct pulling force on the microphone connector during use or during removal. One method is to loop the microphone cable back and tape the connector to the edge of the transmitter.

Quick Start Guide Digital COACHMIC

This Quick Start Guide is an overview. Users are asked to review the entire manual for detailed instructions

Included Hardware:

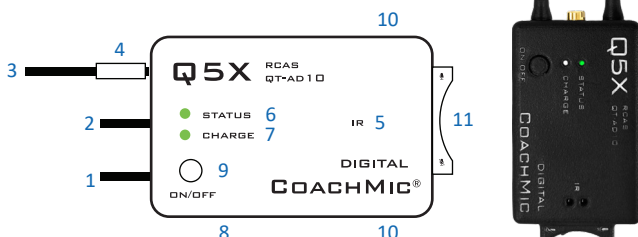
- Carrying pouch.
- Digital CoachMic transmitter (QT-AD10C)
- Micro USB charging cable

Users also need:

- Q5X Gateway (remote control)
 - Handheld MicCommander (QG-H2) or
 - Network Gateway (QG-N3)
- Shure Axient Digital receiver
- Microphone (1-pin Lemo connector)

Visit www.Q5X.com/support to:

- Update the firmware
- Register the warranty
- Download the manuals



Key:

1. 2.4 G antenna - For the RCAS control channel.
2. Audio input - Connects to a microphone with a one-pin Lemo connector.
3. UHF antenna - For RF signal transmission.
4. Serial number - Unique serial number for RCAS identification and control. (on the antenna)
5. IR port - Infrared sync with the receiver for set-up, initiating encryption and installing firmware updates.
6. Status LED - See manual for details on LED patterns and colours.
7. Charge LED - Red = charging, green= charged and flashing red/green = error.
8. USB port - Charges the battery.
9. On/Off button - Manual power control between on, standby and storage modes.
10. Belt clip holes - Allows vertical and horizontal placement.
11. Mute switch - Suspends audio transmission.

Prepare the CoachMic Transmitter:

Bring the transmitter out of storage mode (minimal battery draw) and into standby mode (detectable but the UHF radio is off) using either method below:

Hold the ON/OFF button until the status LED changes from flashing rapidly to slowly, or

Plug and unplug a powered micro USB charging cable into the side of the transmitter.

Connect the 1-pin Lemo microphone.

Battery Life: 8 hours @ 2/10 mW 4 hours @ 20 mW

Prepare the Gateway remote control (H2 or N3):

Install the antenna on the top. (NEVER power the unit without the antenna in place.)

Power the Gateway as instructed in its manual.

Turn on the unit by pressing the power button.

Pair the CoachMic and Gateway remote control (H2 or N3):

The screen on the Gateway displays the serial number of paired transmitters.

Press the <MENU> button to either scan for transmitters or add the serial number found on the PlayerMic antenna.

Adjust:

Set the functions in the two transmitter menus of the Gateway. Screen one includes frequency, power on/off, battery level, mic mute/live and mic offset. Screen two includes: transmitter name, group, RF power, 2.4GHz channel, storage and reboot.

IR Sync:

Use IR Sync to form an audio channel between the transmitter and receiver. The receiver band must match the band of the transmitter. Select a receiver channel.

Tune the channel to an available frequency using group scan or manually tune to an open frequency.

Assure transmitter is in standby or on mode.

Press the SYNC button on the receiver.

Align the IR windows between the transmitter and the receiver so that the IR LED illuminates red.

When complete, "Sync Success!" appears on the receiver.

Use Tips:

When using the CoachMic, the belt clips can be configured to wear the transmitter horizontally on the left or right side of the body, or vertically in a pocket. The mute function can be controlled by either the integrated rocker switch or wirelessly by the Gateway.



TECHNICAL SUPPORT AND SALES

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