IQOYA TALK

Portable IP audio codec

Applies from firmware version 01.03d

V 1.0

February 2020

Important Safety and Warranty Information

Follow these instructions and keep them in a safe place! Keep in mind that damages due to failure to observe the instructions contained in this manual are not covered by warranty.

GENERAL WARNINGS

Use the codec only under the specified environmental conditions. Avoid installation in extreme weather conditions and exposure to direct sunlight or heating equipment. Avoid moist or humid locations.

Do not open the codec, as there are no user-serviceable components inside. Opening the cabinet may present a shock hazard, and any modification to the product will void your warranty. Refer all servicing to qualified service personnel.

Power supply

The device is to be connected to a power supply as specified in this manual and marked on the equipment. Make sure the power cord is not damaged. Do not route the power cord where it may be crushed, bent, exposed to heat or damaged in any way.

BATTERY

This device contains a lithium-ion battery. When shipped to the customer for the first time, the battery is delivered in shipping mode. To enter "use" mode, the battery must first be placed in the external charger for a few minutes. The equipment is supplied with replaceable batteries. If used with an incompatible battery, an explosion may occur.

CLEANING

Clean only with a soft, dry cloth. If necessary, after disconnecting the unit's cables, wipe it with a soft cloth dampened with mild soapy water, then with a fresh cloth with clean water. Wipe dry immediately with a dry cloth. NEVER use benzene, aerosol cleaners, thinner, alcohol or any other volatile cleaning agent. Do not use abrasive cleaners, which may damage the finish of metal or other parts.

CONNECTING 3rd PARTY EQUIPMENT

This codec can provide high voltages on the inputs, so the broadcasting equipment must be suitable. Digigram declines all responsibility for any damage to equipment connected to the codec.

RADIO FREQUENCY (RF) SAFETY INFORMATION:

Radio frequency (RF) energy from cellular devices can interact with certain electronic devices and cause electromagnetic interference (EMI). To meet the requirements for compliance with exposure to radio frequencies, follow all regulations regarding the use of radio equipment.

Using your device near other electronic equipment may cause interference if the equipment is not properly protected. Follow all manufacturers' instructions and recommendations.

In general, observe the restrictions for any environment in which you use the device.

Do not cover the device.

To satisfy radio frequency exposure compliance requirements, the antenna and transmitter in the IQOYA TALK must be at least 20 cm from all persons and must not be used in conjunction with any other antenna or transmitter.

WIFI

This equipment has been tested and found to comply with the limits for a Class B digital service, 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 not guarantee that interference will not occur in particular installation.

If this equipment does cause harmful interference to radio and television reception, which can be determined by turning the equipment off and on, the user is encouraged to try correct the interference by one 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 to be connected.
- Consult the dealer or an experienced radio/TV technician for help.

FCC Caution: Any charges or modifications not expressly approved by the party responsible for compliance could void the user’s authority to operate this equipment.

This transmitter must not be co-located or operating in conjunction with any other antenna or transmitter.

Radio Exposure Statement: This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with minimum distance 20cm between the radiator and your body.

VEHICLE

When using your device in a vehicle: If installed incorrectly in a vehicle, the operation of the wireless device may interfere with vehicle electronics. To avoid such problems, use qualified personnel to install the device. The installer must check that the vehicle electronics are protected against interference.

END OF LIFE DECLARATION

Digigram hereby declares that all materials, components and products supplied are in compliance with RoHS & WEE directives. This product should be disposed of in accordance with local laws and regulations. As the product contains a battery, it must be disposed of separately from household waste and must not be incinerated. It must be deposited in a recycling center or workshop.

GUARANTEE AND DISCLAIMER

This equipment manufactured by Digigram is guaranteed against defects in materials and workmanship for two years from the date of original purchase. During the warranty period, we will repair or, at our option, replace a product which turns out to be defective free of charge to Digigram, provided that return authorization has been granted.

For return authorization, contact the relevant Digigram unit (see http://www.digigram.com/Contact). This warranty does not apply if the product has been damaged by accident or misuse or as a result of service or modification made by a person other than a Digigram member.

With the exception of the guarantees set out above, Digigram does not offer any other guarantee express or implicit. Digigram can in no way be held liable for indirect damage resulting from the use of this product. The use of this codec is subject to the LICENSE and GUARANTEE conditions of Digigram, which can be found on http://www.Digigram.com/ before using this product.

BATTERY WARRANTY

Digigram expressly disclaims any warranty on the battery. The manufacturer's warranty applies. Contact the battery manufacturer for any warranty claims. To contact the battery manufacturer, visit their website at https://www.rrc-ps.com .

TABLE OF CONTENTS

You have just acquired a Digigram IQOYA TALK audio IP codec and we congratulate you!

IQOYA TALK is a portable IP codec and part of the ONE IP Audio Solution.

This manual will guide you through installation, configuration and operation.

1. IMPORTANT INFORMATION

Certification under progress.

Declaration of ROHS conformity available upon request to DIGIGRAM.

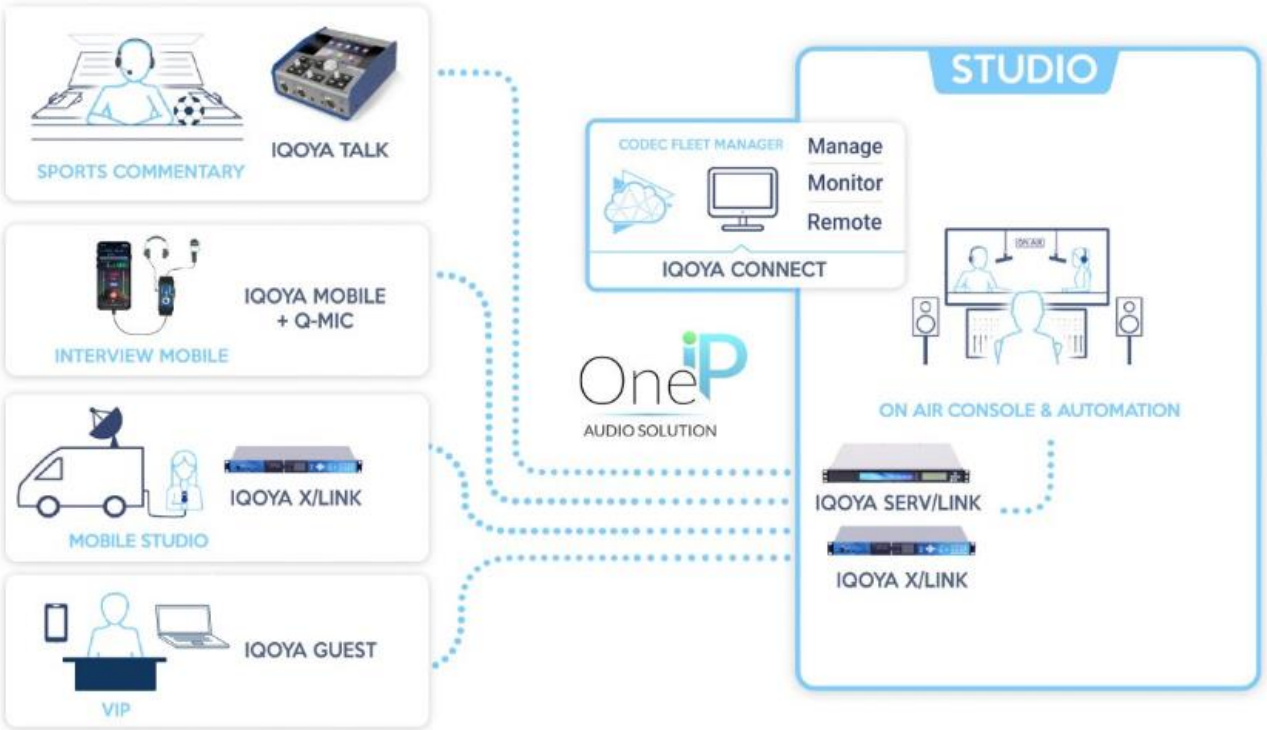
Electrical safety:	**Electromagnetic compatibility:**
International: *EC 60950 1 (2005)* ***Europe:*** *European Directive 2006/95 / EC "Low Voltage Directive"* *EN60950 1 (2006)*	***International:*** *CISPR22 (2005) Class B + A1 / 2005 + A2 / 2006* ***United States:*** *FCC rules Part 15 Class B* ***Europe:*** *European Directive: EMC 2004/108 / EC* Europe: *Disturbance Emissions: EN55022 (2006) + A1 / 2007 Requirements for Information Technology Equipment (ITE)* *Immunity: EN55024 (1998 + A1 / 2001 + A2 / 2003) (ITE)* *Harmonics: EN61000-3-2 (2006)*
RoHS: *European directive 2002/95 / EC aka "RoHS"*	***Note: In order to guarantee compatibility with standard EN55024, please use shielded network cables!***

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 instruction, 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 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 circuit different from that to which the receiver is connected.*
- *Consult the dealer or an experienced radio/TV technician for help.*

2. ONE IP AUDIO SOLUTION

Digigram One IP is a complete solution for an easy management of live remote broadcasting operations. It is based around a secure SIP infrastructure, IP audio codecs for journalists/reporters and studios, and web applications for centralized control and monitoring.



The following Digigram IP audio codecs are part of the One IP Audio solution.

IQOYA TALK is a portable audio codec dedicated to remote live operations with multi-guest contribution, and allows for reliable requiring high reliability audio transmission and broadcast audio quality.

IQOYA SERV LINK & IQOYA X/LINK are ranges of 1U rack IP audio codecs designed for use in studios and OB Vans, and covering the needs from one stereo (or two mono) live contributions up to 64 simultaneous live contributions, and offering various audio connectivities (analog, Ravenna/AES67, MADI, Dante).

To conduct on-field interviews, Q-MIC is a powerful battery-free microphone preamp for smartphones (1 mic/line input, 1 headset output).

ONE IP also comes with an intelligent infrastructure that enables interconnectivity between all IP codecs. **IQOYA CONNECT** is both a SIP infrastructure allowing successful and secure SVP communications and a web application allowing radio engineers to:

- Centralize contact list and call profile management , and centralize the configuration of codecs,
- Discover codecs automatically,
- Send invitations allowing one-click connections to reporters and guests,
- Place or accept calls from any codec of the fleet.

The complete **ONE IP** Audio solution was designed to work independently, but its real strength lies in its unified application.
The user interface of all remote broadcast codecs will remain the same, making it easier for the user to switch between them. In the studio, content from OB vans, portable codecs or smartphone applications will be received, controlled and managed through a single interface.

3. BEFORE STARTING

CONTENTS OF THIS PACKAGE

The package consists of the following components:

- 1 x IQOYA TALK portable codec
- 1 x Lithium / Ion battery
- 1 x external power supply with cable
- 4 x cellular antennas
- 1 x Wi-Fi / Bluetooth antenna
- 1 x USB-C Cable
- 1 x external battery charger with cable
- 1 x extraction tool for SIM card drawer

BATTERY

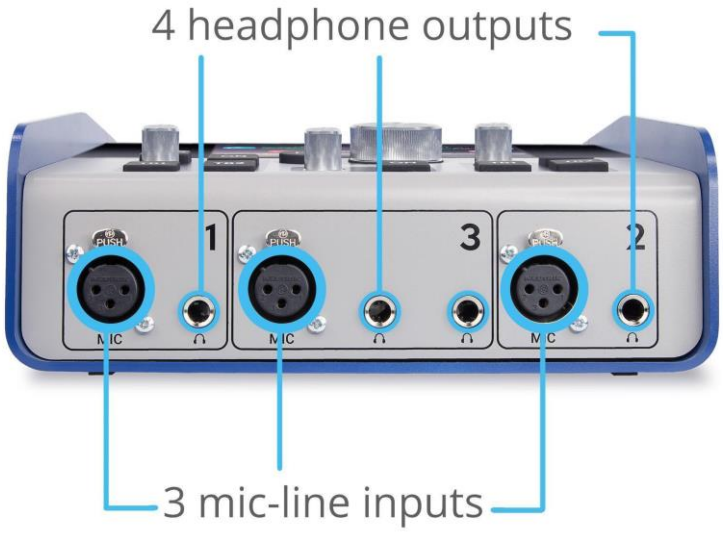
On each side of the IQOYA TALK there is a compartment to accommodate a battery (the second battery is supplied as an accessory).

To insert battery 1, carefully unscrew the cover on the left side of the device, battery 2 is located on the right side of the device.
IQOYA TALK does not charge the battery, to do so please use the external battery charger supplied. Connect the battery charger to the mains and plug the battery following the picture below.

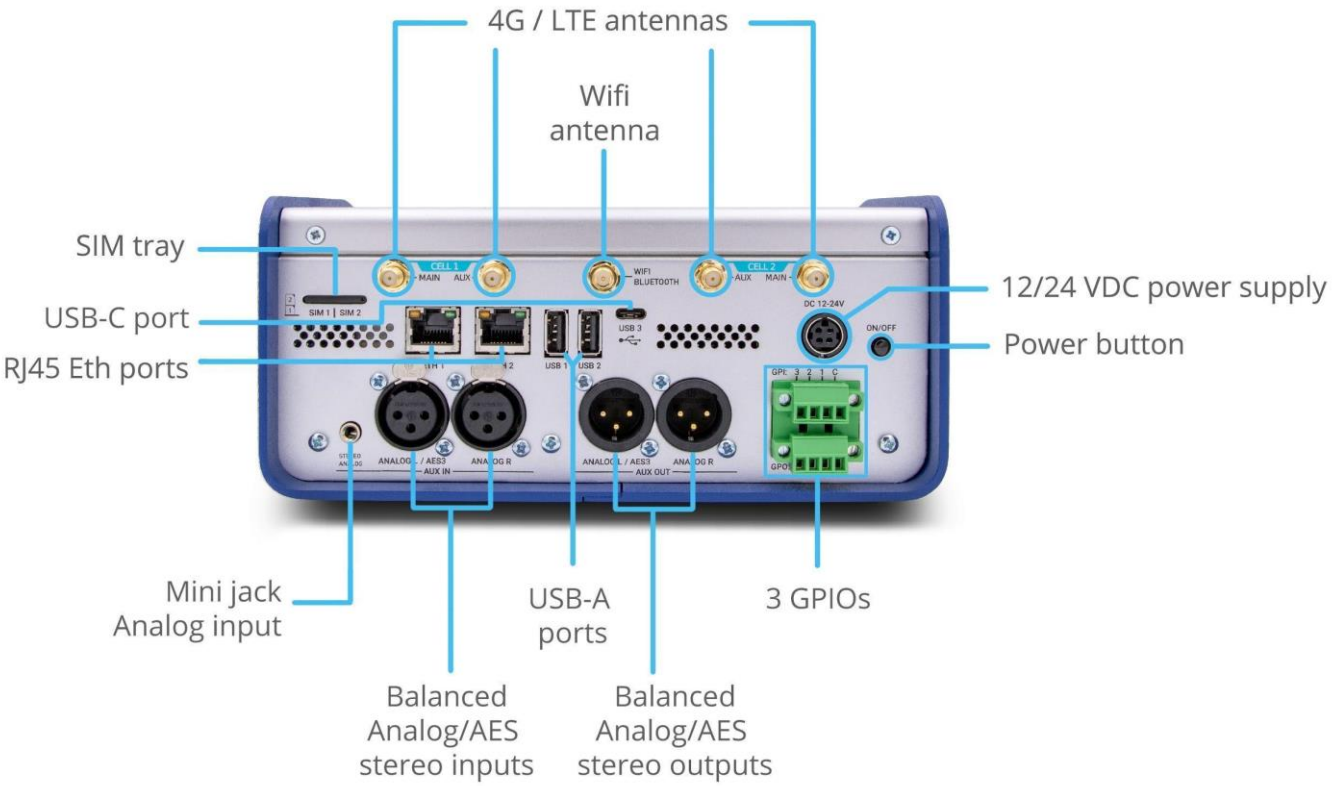
For the shipment of the product, the battery is put into "shipping" mode by the manufacturer. To enter "use" mode, the battery must first be placed in the external charger for a few hours (until the LED become green).

FRONT PANEL

The front panel allows connecting three microphones (XLR) and four headsets (6.35 mm jack socket).
The three zones provide independent management of the journalist ('TALENT 1'), a partner ('TALENT 2') and two guests ('GUEST') with a headset each and a shared microphone.



BACK PANEL



Power

Before plugging in the power cord, make sure it is not damaged.

ON/OFF

The power button has 2 functions:

If codec off:

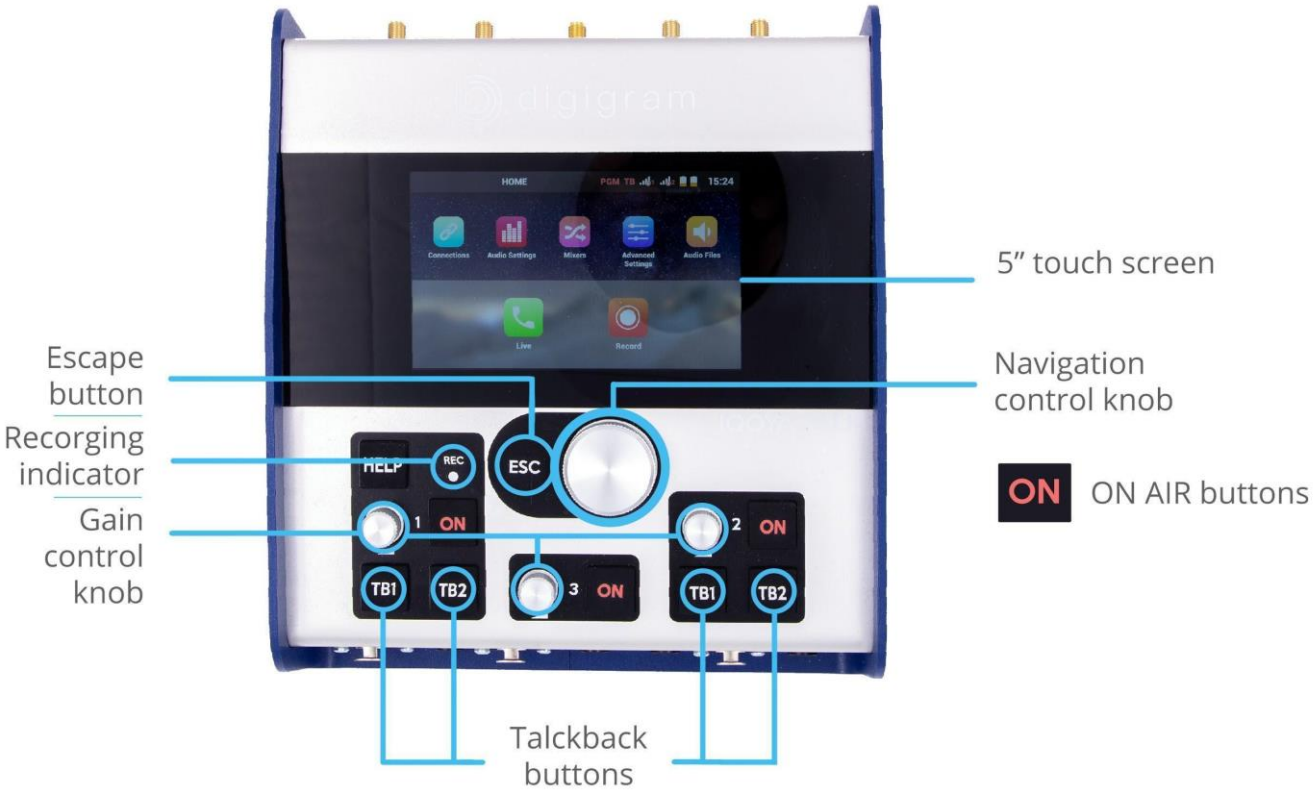
- Codec starts up regardless of the duration of the push and the state of the codec (off or Standby).

If codec already powered on:

- A short press launches a pop-up window offering the choice between 'Power OFF' or 'Reboot'.
- A long push (> 3-5 s) turns off the equipment ('*hard shut-down*').

You can exit the pop-up window by clicking on the cross.

TOP PANEL



Push buttons and rotary knobs:

NAVIGATION CONTROL KNOB

All parameters of IQOYA TALK are accessible through the main control knob, two types of action are available:

- Rotation: scan the clickable or input fields of the displayed menu
- Short press on one of the fields: validation of the field

ESC KEY

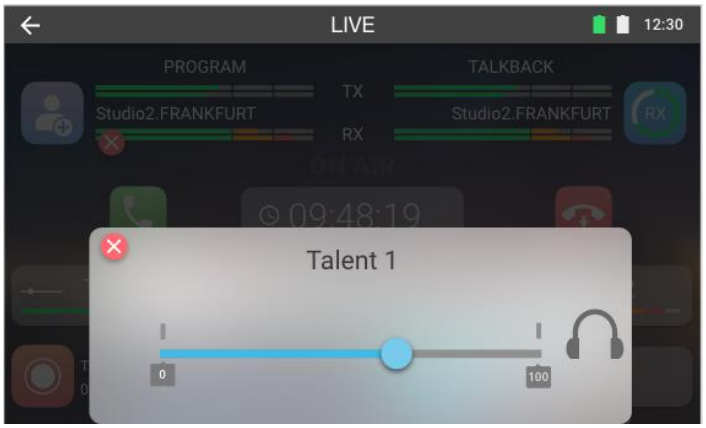
Return to the previous page and validation. ESC does not cancel the action that was performed on the page, except for the pages that explicitly request the validation of a setting by clicking onto the green '**Apply**' button.

GAIN CONTROL KNOB

IQOYA TALK has three small rotary knobs, two types of action are possible:

Rotation:

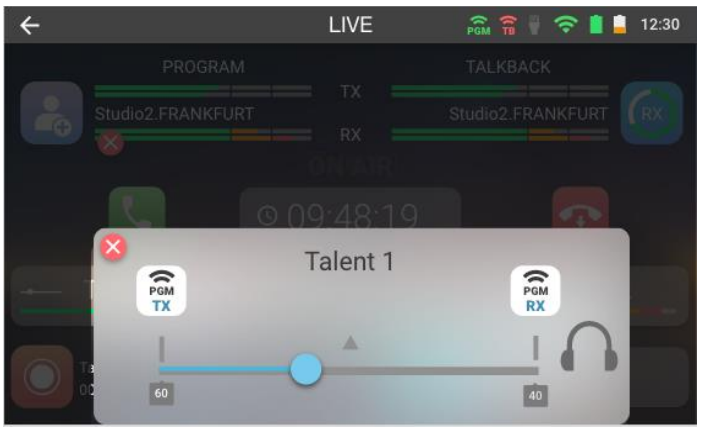
Opens a pop-up window to view the headphone level (active fader) and adjusts the headphone volume control (this volume can also be configured from Audio Settings/Outputs).



Push:

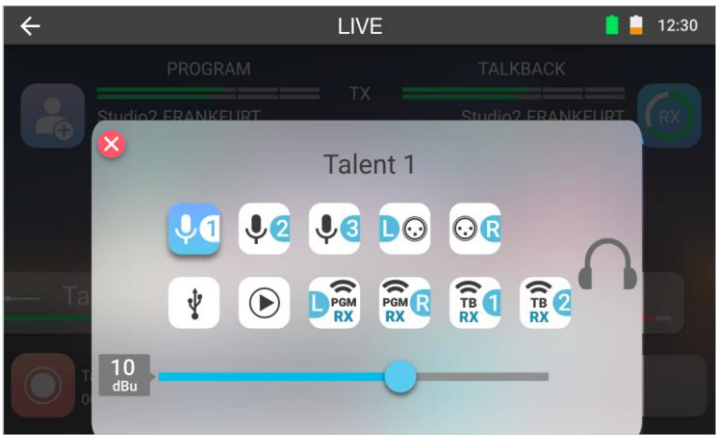
Opens a pop-up window which allows to make adjustments depending on the mode activated in A*dvanced settings* > *Headphones* (default mode: **Radio**).

- In **Radio mode**: allows to adjust the balance between the TX Program bus (Mix master of the sources selected in the Mixer Program TX screen) and RX Program (Mix of sources: PGM RX Left - Right + TB1 - TB2).



In the case shown above for headphones 1, the user modifies the balance of the TX / RX mix in order to increase the TX mix in his headphones over the RX mix.

- In **TV mode**: Adjusts the level of each input source selected on the **HP Mixer** page (this level can also be configured from Mixers HP1).



Pressing the selected icon gives access to the source level setting.

HELP KEY

For the time being, this feature is not activated. The HELP key will be available after a firmware upgrade.

ON AIR BUTTON

The ON AIR button allows to mute or active its dedicated Mic/Line input.
Remember: Check your Mixer tab to configure your Mic/Line output path (TX Program, Headphones, and AUX).

TB1/TB2 KEYS

Work only on “TALENT 1” and “TALENT 2” zone.
In communication, pressing the TB1 or TB2 pushbutton:

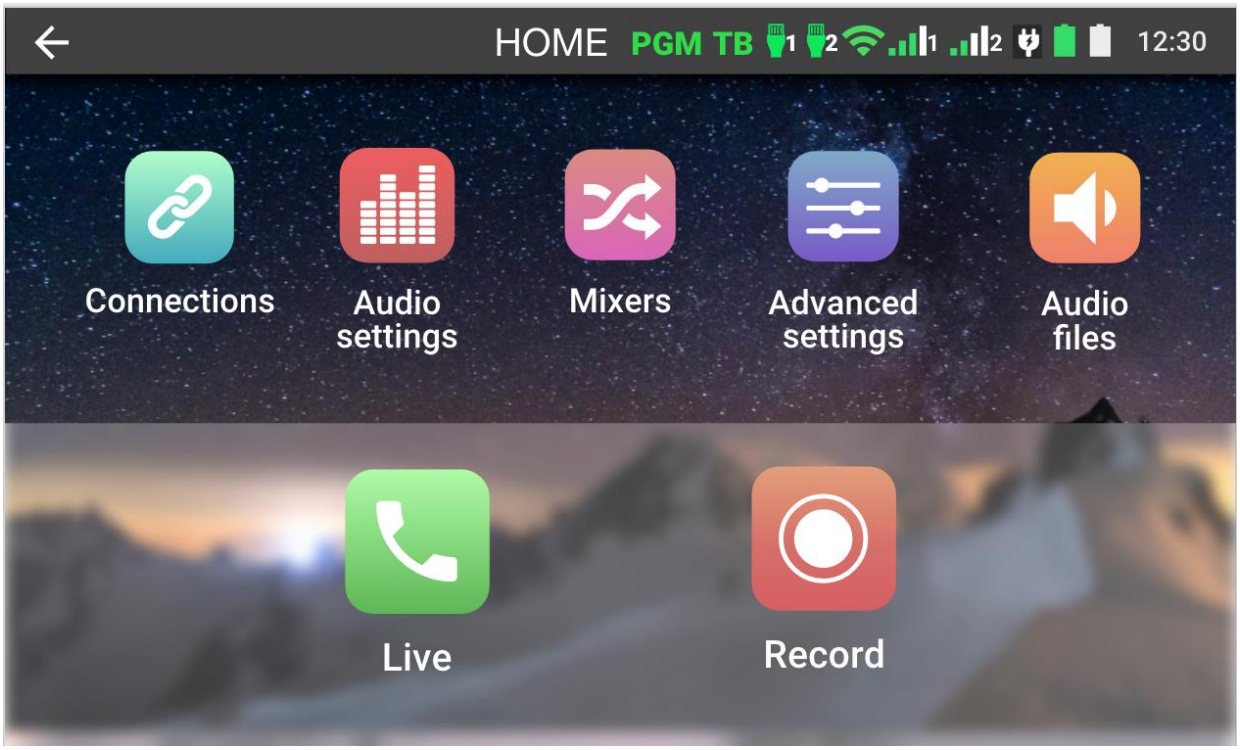
- Mutes the corresponding Mic/Line input on the AUX, Program TX and REC outputs.
- Routes this input to the selected TB output with a “Push to talk” behaviour. If both the same TB buttons are pressed, then the inputs are mixed.

For outputs, HP1 & HP2 can only monitor RX Talkback channels according to the settings made in the mixer menu (for both TV and Radio modes).

4. HOME MENU

The HOME screen is the main menu of the codec. It is divided into two horizontal areas:

- An upper zone intended for the **technician**. This area lists the icons for the parameter setting of the codec by order of importance.
- A lower zone intended for the **journalist/presenter.** This area includes the ***Live*** *and* ***Record*** icons. These menus enable access to the operating functions.



HEADER

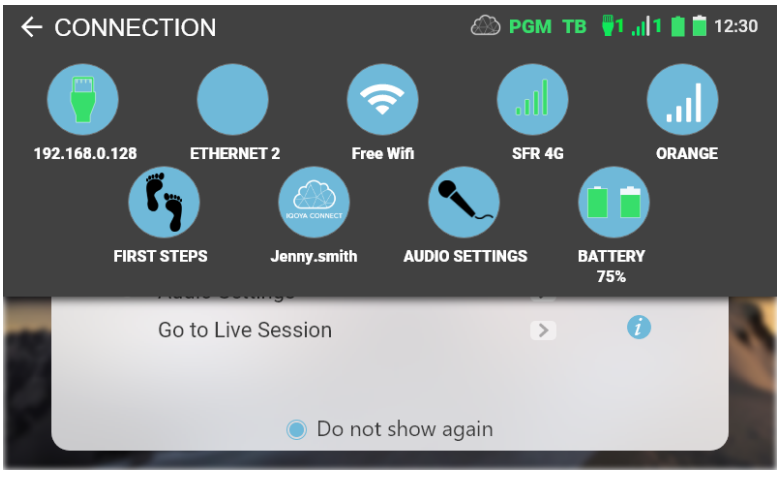
TOP

The top area of the screen is a status bar displayed at all times. The following information is displayed from right to left:

- Time of day. To set up the time go to NTP server.
- Battery presence (Batt 2 on right side; Batt 1 on left side) and battery charge level:
    - If a battery is present: the battery pictogram displays a color corresponding to its current charge level.
    - If no battery is inserted: the battery pictogram is gray.
- Mains power status (grey power plug if plugged in, otherwise no logo)
- CELL 2 network status and quality (if module activated, otherwise no logo)
- CELL 1 network status and quality (if module activated, otherwise no logo)
- Wi-Fi network status and quality (if module activated, otherwise no logo)
- ETH 2 presence (green Ethernet socket, otherwise no logo)
- ETH 1 presence (green Ethernet socket, otherwise no logo)
- Connection status to the TB SIP infrastructure (green or red depending on the registration status, or nothing if disabled)
- Connection status to the PGM SIP infrastructure (green or red depending on the registration status, or nothing if disabled)
- Menu name (e.g.: Home)

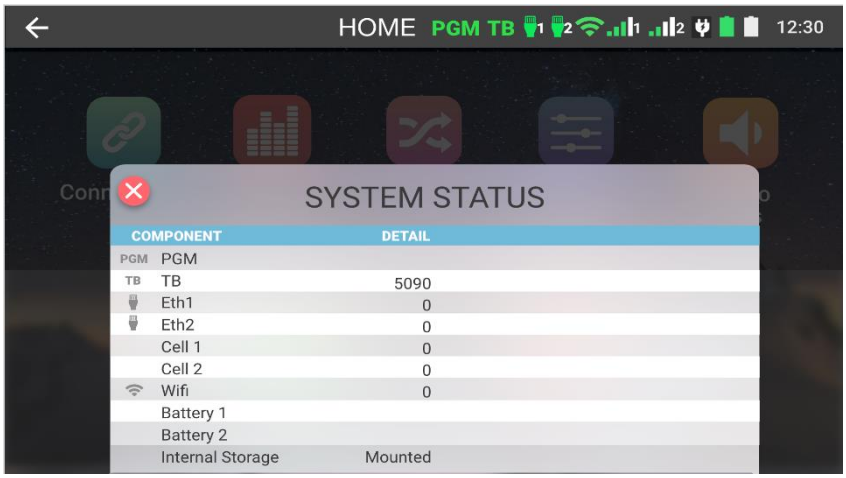
HEADER SHORTCUTS

Thanks to this sliding menu, access to all the configuration menus quickly by clicking on the wanted icon. Brief information on the system status are visible for a best global view.



SYSTEM STATUS

The Header is clickable, it displays status/presence information on the various network interfaces, batteries and internal storage.



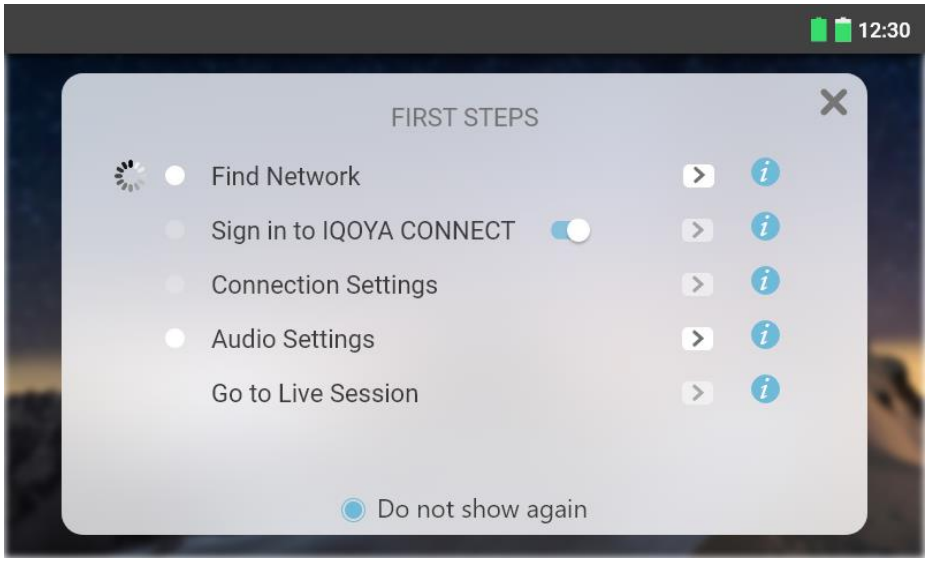
FIRST STEPS

The First Steps menu had been created to help set up all the TALK menus, in the right order.
By following the instructions, the device will display what to carry out through all the configuration process, step by step.
To use this menu:

- Select “Display this screen at startup” to have this page at each system restart
- Scroll the header down at any moment and click on “FIRST STEPS”

To enter in a menu and modify its set up, click on: 

To get information about a step, click on: 



FIND NETWORK

This step analyse all the networks and detect the available ones. At the end of the research, IQOYA TALK will be connected at the best network founded. This DIGIGRAM technology is called SMART NETWORK DETECTION.

If no network have been found, or the connection strength is not enough, the network menu had to be manually configured.
Go to HOME > CONNECTIONS > NETWORK.

SIGN IN TO IQOYA CONNECT (optional)

This step requires an IQOYA CONNECT configuration. It will load from an organization an IQOYA TALK dedicated configuration.
Please, refer to IQOYA CONNECT for more information on this service.

Put the switch in “ON position” to activate an IQOYA CONNECT account automatic connection, and in “OFF position” to deactivate this function.

Automatic connection:

- **If the last used account was not “signed out” when the device was switched off and was marked as “REMEMEBER ME”, then the IQOYA CONNECT connection process will be launched.**
- If the last used account was “signed out” and / or is not marked as “REMEMER ME”, then no IQOYA CONNECT connection will be launched.

If no IQOYA CONNECT account connection is established, the IQOYA CONNECT identification must be done manually.
Go to HOME > CONNECTIONS > IQOYA CONNECT, and follow the process.

CONNECTION SETTINGS

This step look for a PROGRAM and TALKBACK connection through a SIP registration. This step is checked when at least PGM connection is established (PGM displayed in Green on the header).

When an IQOYA CONNECT account is used, then the IP codec instances are integrated when loading the configuration.
When no IQOYA CONNECT account is used, then the IP codec instances have to be manually configured.

If no PGM connection is found, check all SIP registrations.
Go to HOME > CONNECTIONS > SIP

If SIP registration are made and no connection are created, look after the stream strategy.
Go to HOME > CONNECTIONS > STREAM.

If the entire IQOYA TALK audio network needs to be checked, open the troubleshooting menu for an overview.
Go to HOME > CONNECTIONS > TROUBLESHOOTING

AUDIO SETTINGS

This step force a user to go at least once in this menu to configure their audios settings. Here, he makes his microphone gains and check after the headsets volume.

To be checked, this step had to be done even if an IQOYA CONNECT account is used and had loaded the settings.

If still no sound is heard, check the mixers : audio rooting can be wrong.
Go to HOME > MIXERS

When an IQOYA CONNECT account is used, then IQOYA CONNECT mixers parameters are integrated when loading the configuration.
If a personal IQOYA CONNECT mixer is configured in its personal web zone, then his parameters are loaded instead of the organization.

GO TO LIVE SESSION

If all the previous steps are checked, then the user can go to Live Session.

When an IQOYA CONNECT account is used, then Contact list and Call Profile list are integrated when loading the configuration.
When no IQOYA CONNECT account is used, then IP codec instances have to be manually configured / selected to receive a PROGRAM and TALKBACK stream. The studio can also call the IQOYA TALK to prevent the entry of these data.

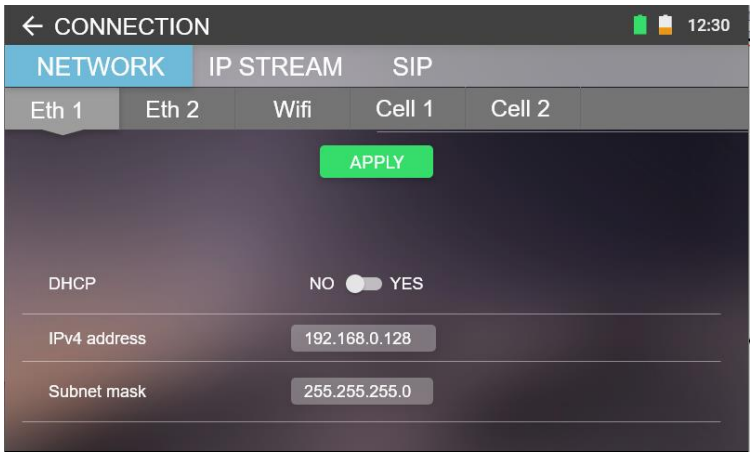
Now, the Live Session can begin.

5. CONFIGURATION MENUS

CONNECTION

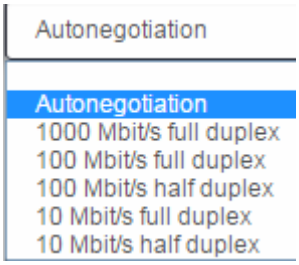
NETWORK

The first tab of this menu is NETWORK, it allows to configure each network interface: Ethernet 1, Ethernet 2, Wi-Fi, Cellular 1, and Cellular 2.



Parameters for the Eth1 and Eth2 interfaces:

Parameter	Meaning	
Physical address	Displays the physical address automatically of the Ethernet module.	
DHCP	Allows enabling/disabling DHCP (Dynamic Host Configuration Protocol). Click on the switch to disable DHCP. When DHCP is activated, it disables the following parameters. *Default value: YES (enabled).*	
IPv4 address	**DHCP Off** Allows to type in a static IP address for this Ethernet interface.	**DHCP On** Displays the IP address automatically set through DHCP.

Subnet mask	**DHCP Off** Allows to type in the mask of the subnet to witch the Ethernet port belongs to.	**DHCP On** Displays the subnet mask automatically set through DHCP.
Default Gateway	**DHCP Off** Allows to type in the gateway IP address. Streams sent through this interface will go through this gateway.	**DHCP On** Displays the gateway IP address automatically set through DHCP.
Primary DNS	**DHCP Off** Allows to type in the IP address of a DNS server.	**DHCP On** Displays the IP address of the DNS server set through DHCP.
Secondary DNS	**DHCP Off** Allows to type in the IP address of a secondary DNS server.	**DHCP On** Displays the IP address of the secondary DNS server set through DHCP.
Speed and duplex mode obtained	Displays the current speed and mode of the Ethernet interface.	
Speed and duplex mode asked	Allows selecting the working mode of the Ethernet interface. Possible values are as follows:  We recommended to select the “Autonegotiation” mode.	
Negotiated speed and duplex mode	If Autonegotiation mode has been chosen, the negotiated speed and duplex mode is displayed.	

APPLY **Click on “APPLY” before leaving the page to save the changes.**

Parameters for the Wi-Fi interface:

This feature is currently not available, and will be after a firmware upgrade.

Settings for the Cell1 and Cell2 interfaces:

These settings need to be configured only once.

Parameter	Meaning
Status	Once a SIM card has been inserted into the SIM card tray, the corresponding menu will become available. This parameter allows enabling/disabling the interface. *Default value: disabled.*
APN (Access Pin Name)	Enter the parameter given by the network operator.
Pin CODE	If needed, enter the parameter given by the network operator.
Dial up number	If needed, enter the parameter given by the network operator.

Click on "APPLY" before leaving the page to save the changes.

IQOYA CONNECT

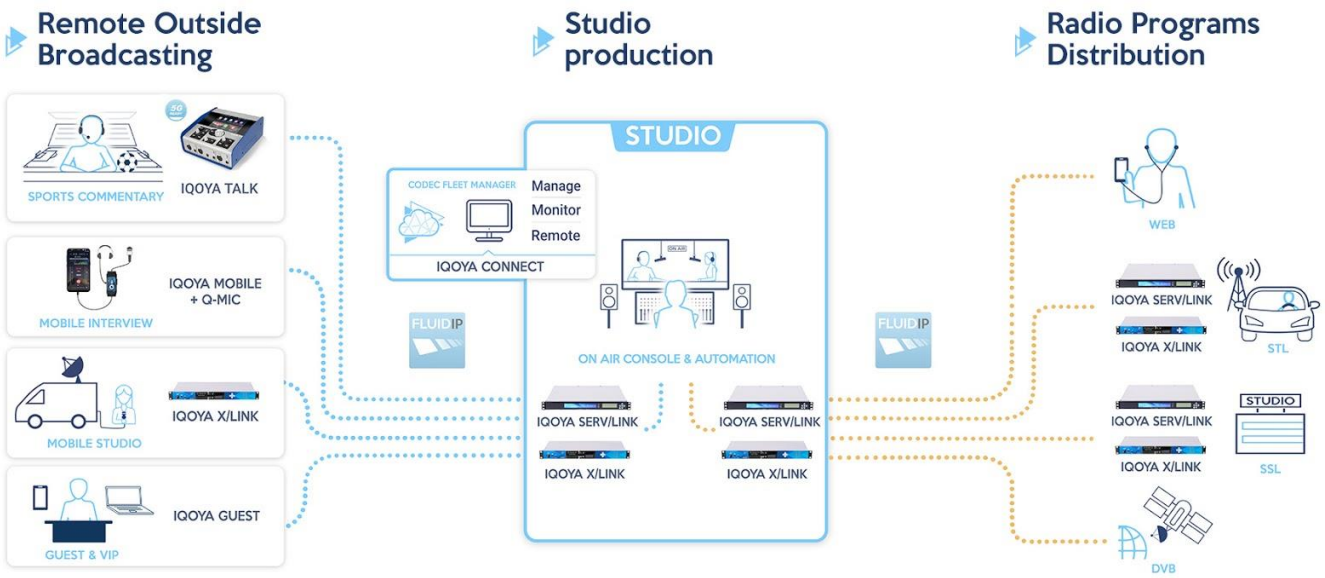
The IQOYA CONNECT tab allows to identify with an IQOYA CONNECT account.
This account loads the IQOYA TALK set up from an organization that has sent it a configuration through its own IQOYA CONNECT service.
If the user is identified but no organization has sent it configuration, IQOYA TALK will not load any data.

The loaded data are:

- Contact list
- Call Profile list
- IP codec instances
- Audio I/O settings
- Mixers settings **(If a personal mixer is configured, then these parameters are loaded instead of the organization).**

IQOYA CONNECT

What is IQOYA CONNECT?
IQOYA CONNECT is a simple and powerful cloud-based service designed to give broadcasters the ability to establish stable communications and secure connections between IP codecs through our audio over IP infrastructure, along with complete control over their entire codec fleet.
More on https://iqoya-connect.digigram.com/ .



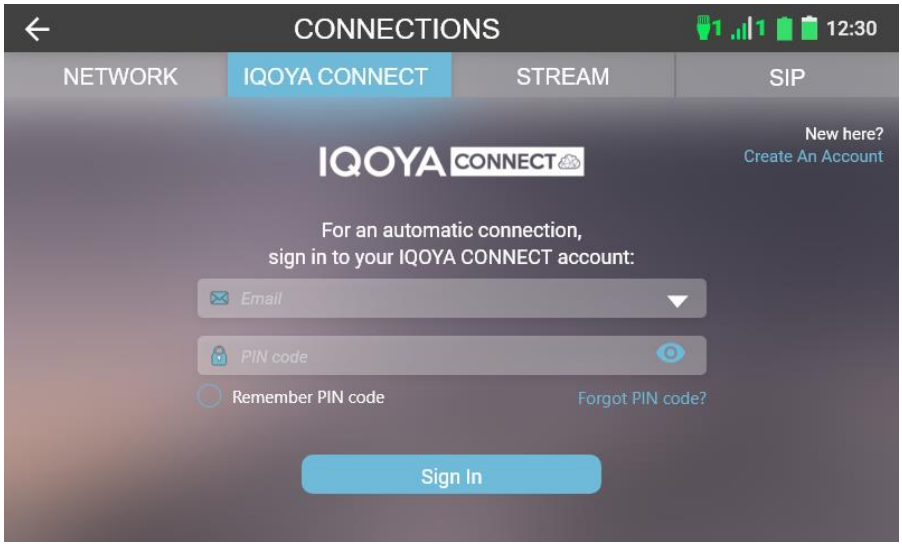
Identification

This main page allows to sign in to an IQOYA CONNECT account.
Enter here:

- An email address (already registered to IQOYA CONNECT)
- Its PIN code (between 4 to 8 numbers)
  This PIN code can be changed in the IQOYA CONNECT personal web zone.
- Then, click on “Sign In” to launch the process.

In “Create an Account” you can create an IQOYA CONNECT account from the wanted email address.
An email from DIGIGRAM will be sent to the email address provided with the process to follow.

In “Forgot PIN code”, ask for a new PIN code for an existing IQOYA TALK account. Provide the email of the account where the password was forgotten. An email will be sent to this same email address with a new PIN code.



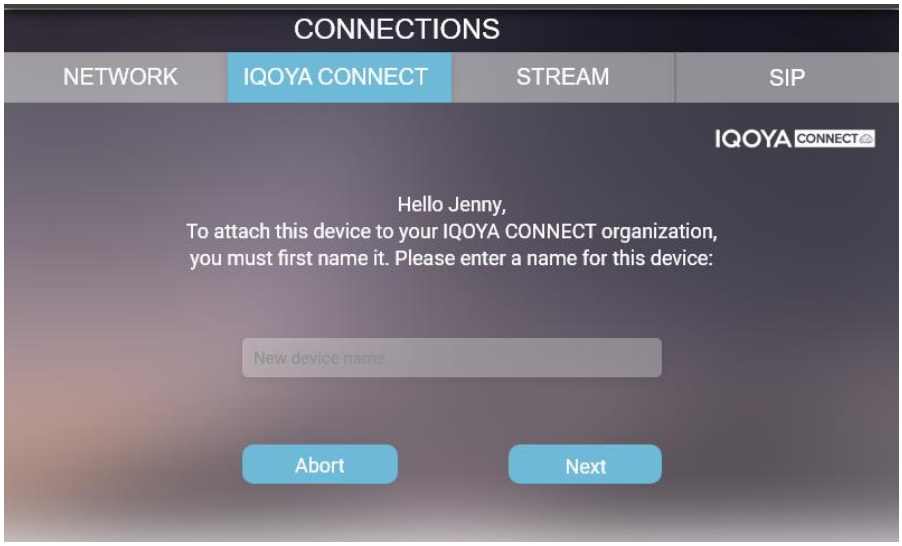
Attach the codec to an organization (Role: CODEC FLEET MANAGER):

As a Codec Fleet Manager, the ability to choose to which organization the TALK could be attached is given.
This process appears only if:

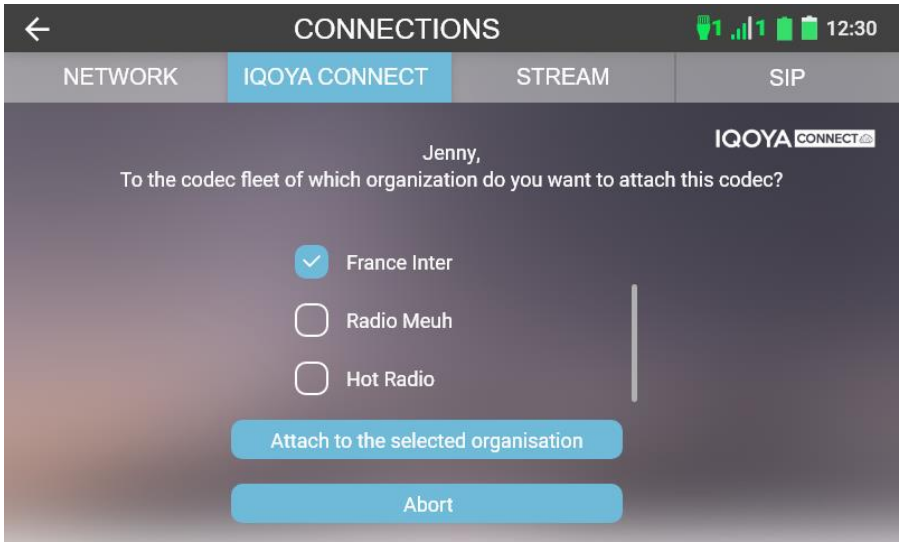
- the user is a “Codec Fleet Manager”
- the TALK is not attached

Canceling an attachment is achievable only from the IQOYA CONNECT web platform, in “Codec Fleet” menu.

The process begins by adding a name to the device. By default, the device name is proposed.



Then, the device asks which organization the TALK should be attached to join the fleet of codecs wanted.
If the TALK should not have any attachment, click on “Abort”. The attachment process will be stopped.

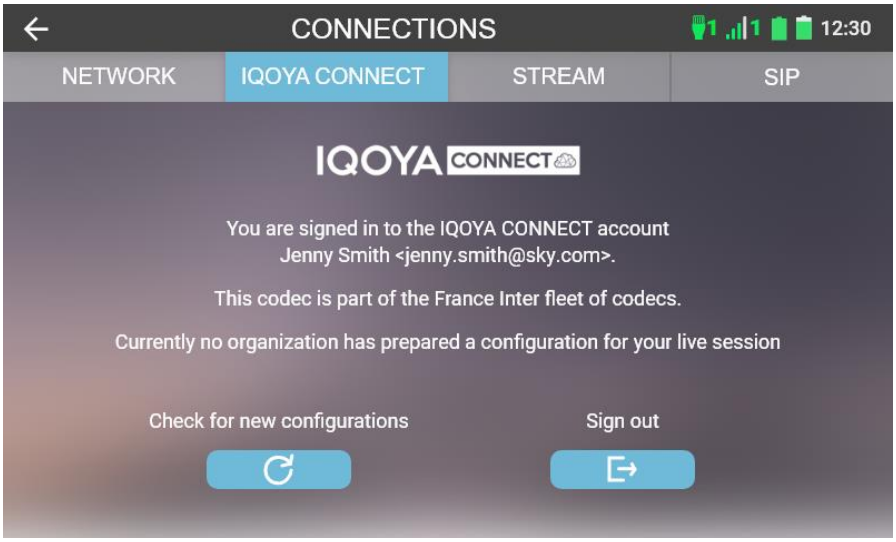


<u>Connection to an organization (Role: CONTRIBUTOR):</u>

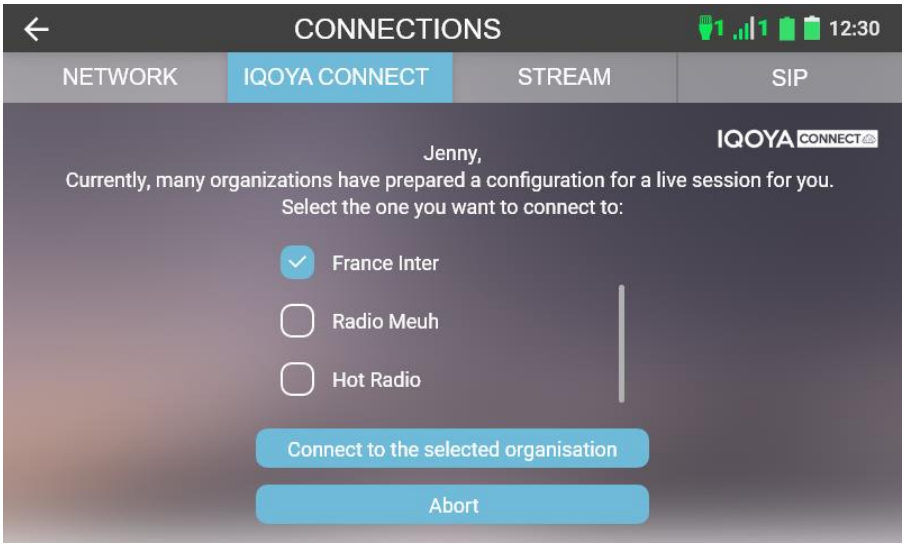
As contributor, the device will look for organizations (which have sent configuration authorisations) to load its assigned parameters.

The screen displays depending on the use case:

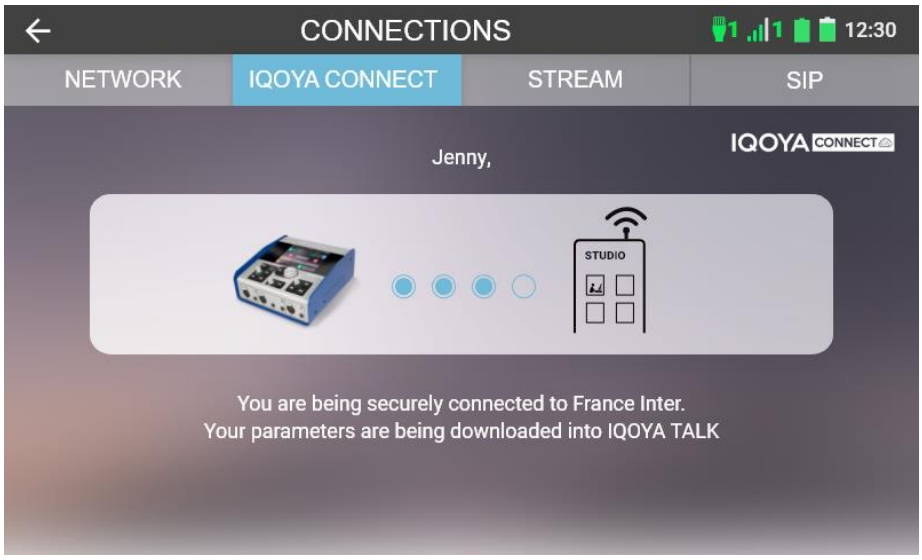
- A message indicating that no configuration was prepared from any organization. If the IQOYA TALK is part of a fleet of codecs, the organization to which it is attached is displayed. Two actions are proposed: “Check for new configurations” and “Sign out”.



- A message indicating that many organizations have prepared a configuration for this TALK, and allowing to choose between these organizations to make a connection and then load the prepared configuration. When an organization is chosen, the synchronisation is launched.

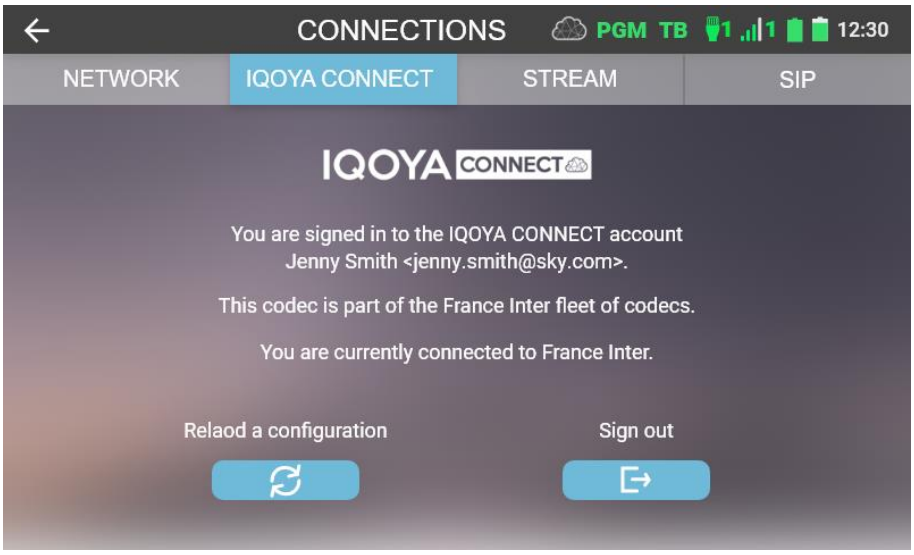


- That a connection is in progress, if there are only one organization that had prepared a configuration for this TALK.



After a connection between the organization and the contributor, the prepared configuration is launched into the IQOYA TALK.

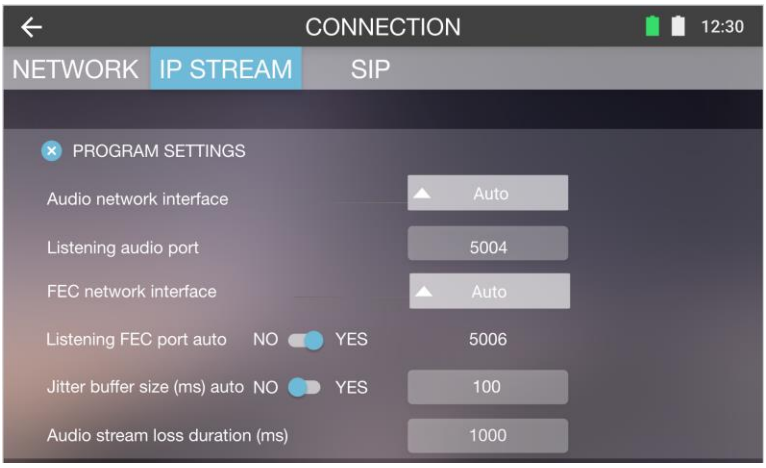
The screen display a message indicating that a connection authorization was found from an organization. If the IQOYA TALK is part of a fleet of codecs, the organization to which it is attached is displayed. Two actions are proposed: “Reload a configuration” and “Sign out”.



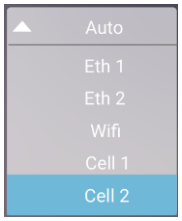
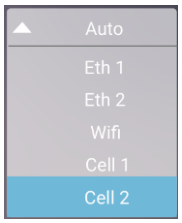
An IQOYA TALK can be attached to an organization (X) and had connections with another organizations (A, B, C…) to launch there prepared configurations.

STREAM

The STREAM tab allows to configure the network parameters related to the *Program* and *Talkback* audio streams. This tab is also used to configure the *FEC* and *Dual Streaming features*.



Program and Talkback settings:

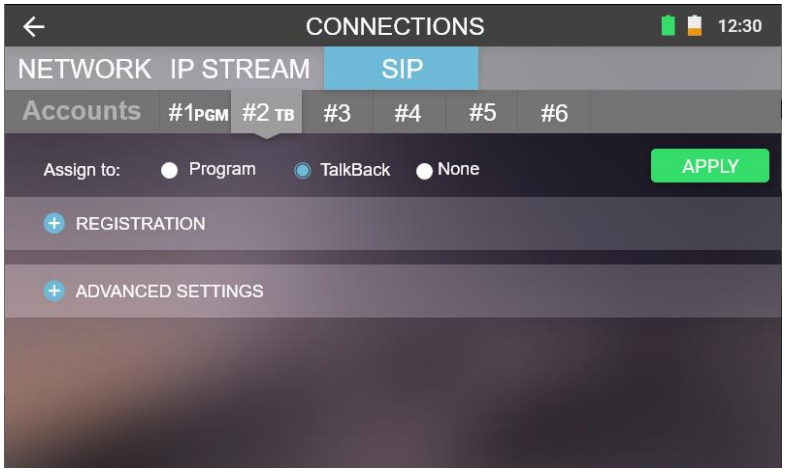
Parameter	Meaning
Audio network interface	The network interface used by the IP codec instance to listen to the SIP signaling.  Use “Auto” if you do not have instructions from your IT team on this.
Listening / Source audio port	Number of the UDP port used by the IP codec instance to listen to the IP audio stream coming from the remote party. Value range: 1024 to 65535.
FEC network interface	The network interface used by the IP codec instance to listen to the FEC signaling.  Use “Auto” if you do not have instructions from your IT team on this.
Listening / Source FEC port	Number of the UDP port used by the IP codec instance to listen to the FEC stream coming from the remote party, if there is one.

	It is recommended to select Auto. Value range: 1024 to 65535.
Jitter buffer size (ms)	Size of the jitter buffer for the IP audio stream received from the remote party in milliseconds. The larger the buffer, the more the IP codec instance is immune to the network jitter but the higher the latency.
Audio stream loss duration (ms)	When the IP codec instance no longer receives the IP audio stream from the remote party for a duration equal to this parameter value, a hang-up is triggered as if the hang-up button has been pressed. The value is expressed in milliseconds and must be greater than 100ms.

SIP

It is possible to configure up to 6 SIP accounts.

Only 1 SIP account per type of communication (PGM or TB) can be configured.



The parameters are described below:

Registration:

SIP account parameter	Meaning
Display name	Name given to this SIP account. This name will be presented to the remote party at call time. It is pre-configured as follow: - **iqoyatalk-XXXXX-program** - **iqoyatalk-XXXXX-talkback** (XXXXX being the 5 last digits of the product's serial number)
Account name	Name that will be used to register with the SIP server. (also called SIP registrar)
Server domain	Domain name OR the IP address of the SIP server providing the SIP account. (also called SIP registrar)
Authentication name	Leave empty if you want to use the same name as Account name.
Authentication password	The access to the SIP server is usually protected by an authentication name and password. This is the password of the SIP account on the SIP server.

Advanced Settings:

With some SIP infrastructures you might have to adjust advanced parameters. Click on the advanced settings to access to the advanced parameters:

Parameter	Meaning	
Server port	Listening port of the SIP server providing the SIP account. This parameter is optional, if no listening port is provided, then the default SIP listening port is used, which is **5060**.	
Transport protocol	The protocol to be used to transport SIP signaling: It can be UDP or TCP. The choice depends on your SIP infrastructure.	IQOYA CONNECT, Digigram's SIP infrastructure, supports both but UDP is preferable ; although with some LTE providers, TCP is needed for the registration to work.
Listening port	Port to be used by the IP codec instance to listen to the SIP signaling. IQOYA TALK proposes you a free port. Keep the default value to avoid port conflicts.	
Registration every (seconds)	This is the refresh period of the SIP registration in seconds. It is not recommended to enter a value below 30s. The default value is 120.	
Proxy		
Proxy activation	Enable/disable the use of a SIP proxy.	
Presence		
Presence activation	Enable/disable the SIP presence service. Do not disable the SIP presence service if you use Digigram's SIP infrastructure IQOYA CONNECT.	
Notification lease (seconds)	This is the refresh period of the subscription to the presence service. The lease value must be greater than the field 'Registration every (seconds)'. *Default value: 300s*	
Net topology-related settings		
Connection to public internet	Select the proposition that best matches with your internet connection topology. Ask you IT team if you don't know.	If you are using IQOYA CONNECT, Digigram's SIP infrastructure, choose "Direct connection" because IQOYA CONNECT integrates a NAT traversal solution.
Direct connection	Displayed only if "Connection to public internet" is …… *Default settings*	

Using router's public address	Displayed only if "Connection to public internet" is "From behind NAT specifying public address". Enter the public IP address of the device.
Using STUN server	Displayed only if "Connection to public internet" is "From behind NAT using STUN". This is the IP address or domain name of a STUN server and the listening port of the STUN server.
Others	
Fallback FEC scheme	The IP codec instance enables the FEC scheme given here when the SIP signaling coming from a third party codec requires a FEC stream without specifying any FEC scheme. In this case, the FEC scheme used by the third party codec needs to match this fallback FEC scheme. Note that this field is only relevant with third party codecs through SIP, and has no use for a communication between two Digigram codecs.

Click on "APPLY" before leaving the page to save the changes.

SIP CONFIGURATION:

To configure a SIP account, first choose its type (Program or Talkback), then the main parameters must be configured from the registration menu.

The advanced parameters are to be filled according to your use case.

If you don't want to use SIP accounts right away, you can create a contact in the *LIVE* menu and use a RTP address.

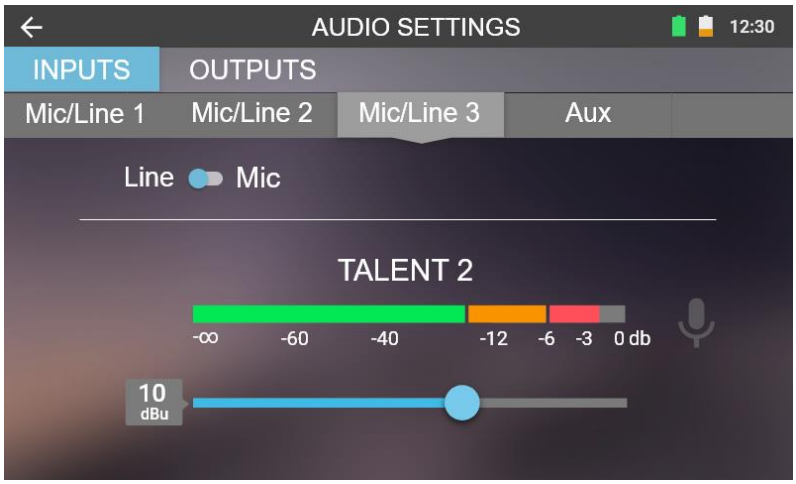
AUDIO SETTINGS

The Audio settings menu allows you to configure the audio levels for each input and output of IQOYA TALK.

INPUTS

For Mic/Line inputs 1, 2 and 3, the Inputs menu allows to select the type of input (Line or Microphone) and to apply the gain.

Mic/Line 1, 2 and 3 Inputs:
Microphone Gain range: 0 to +51 dB
Line Gain range: -20 to +31 dB



In case of a microphone input, it allows to:

- Apply phantom power (48 V)
- Pre-configured high pass filter (80 Hz with a slope of 12 dB/Octave).

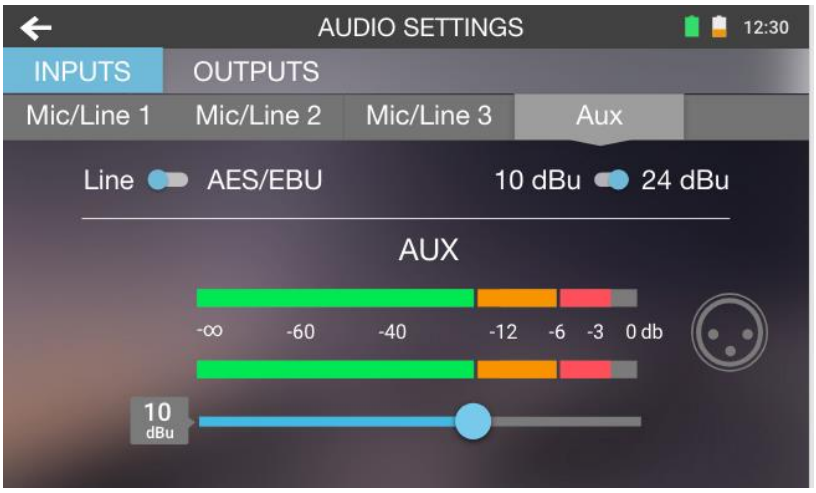
IQOYA TALK has an auxiliary input with XLR connectors (which accepts analog or AES/EBU signals) or a stereo 6.35 mm jack for analog signals.

Depending on the selected input, the maximum input level can be set (10 dBu or 24 dBu).

Aux Inputs:

Line Gain range: -76 to +15 dB

AES/EBU Gain range: -76 to +15 dB



OUTPUTS

For HP 1, 2 and 3, the Outputs menu give access to the volume adjustment for the headphone outputs.

This setting is also accessible from the small physical rotary knobs.

HP 1, 2 and 3 Outputs:

Volume range: -21 dB to +24 dB

PHOTOOOOOOO

The Aux output also allows defining whether it is a line or an AES/EBU output.

AUX Outputs:

Line Gain range: -21 to +24 dB

AES/EBU Gain range: -21 to +24 dB


AUDIO SETTINGS
PGM
TB
12:30
INPUTS
OUTPUTS
HP 1
HP 2
HP 3
Aux
Line
AES/EBU
AUX
-∞
-60
-40
-12
-6
-3
0 db
10
dBu

MIXERS

The Mixers menu provides three functions:

- **route an input source**
- **adjust the level of the input source**
- **adjust the level of the output master mix**

IQOYA TALK includes 2 distinct mixer modes for 2 different use cases:

- TV mode
- Radio mode

The choice of this mode is made on the page Advanced settings/Headphone.
By default, Radio mode is selected.

ROUTING OF AN INPUT SOURCE

Routing allows to assign an input source to an output (right or left).
It is done by a simple touch on the source's grid point:

- Not Activated 
- Activated 

ADJUSTING THE SOURCES'INPUT LEVEL

Add level at each of your inputs to make a mix that correspond to your needs and preferences.

The source level is adjusted by clicking on: 

Sources Inputs:
Digital level range: -76 dB to +15 dB
Double clicking on the main rotary knob brings the fader level back to 0 dB

SETTING THE MASTER MIX LEVEL

Master Mix allows to set a level on the final mix.
Do not confuse levels with volumes, which are configurable in the Audio Settings Outputs.

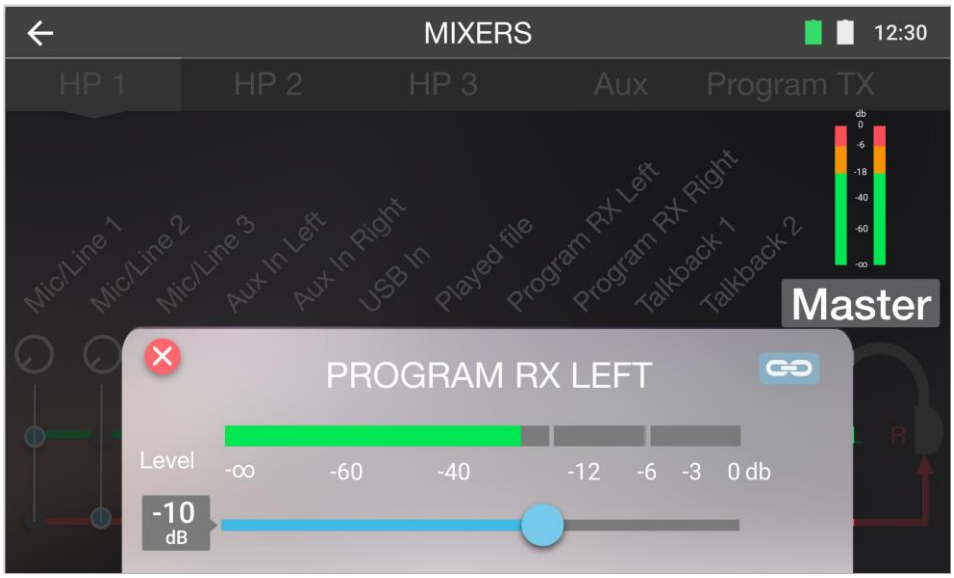
The master mix setting is adjusted by clicking on: 

Master Mix Outputs:
Digital gain range: -76 dB to +15 dB
Double clicking on the main rotary knob brings the fader level back to 0 dB

Chaining the sources:

Stereo / Two Mono:
Chaining between channels *Left* and *Right* is possible for AUX IN, PROGRAM TX and PROGRAM RX sources.

By default, chaining is enabled.



Stereo sources:
Audio sources USB IN and PLAYED FILE are automatically stereo.

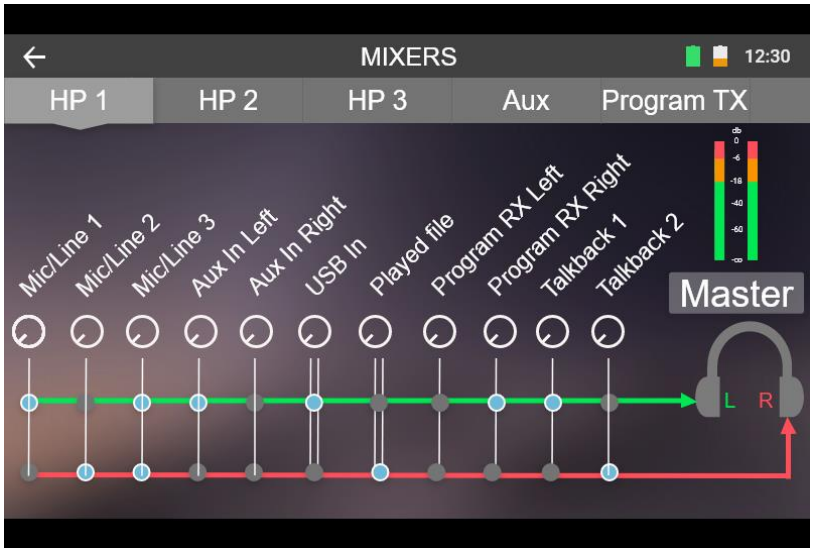
Distribution of signals for stereo inputs (USB in*, Played File):

- **if the points are on L and R, then the Left input signal is sent on Left and the Right input signal is sent on Right.**
- **if the point is on Left, then the input stereo signal is sent on L**
- **if the point is on Right, then the input stereo signal is sent on R**

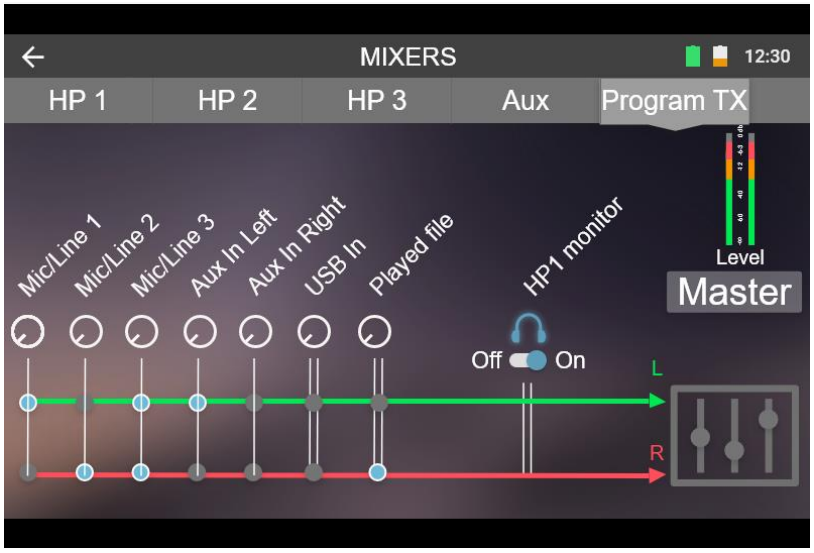
TV MODE

In TV mode, it is possible to make an independent mix for each of the five outputs (HP1, HP2 & HP3, AUX and TX Program), represented by five different tabs.

Note: For output HP3 (“Guest” headphones), Talkback sources 1 & 2 are not accessible:

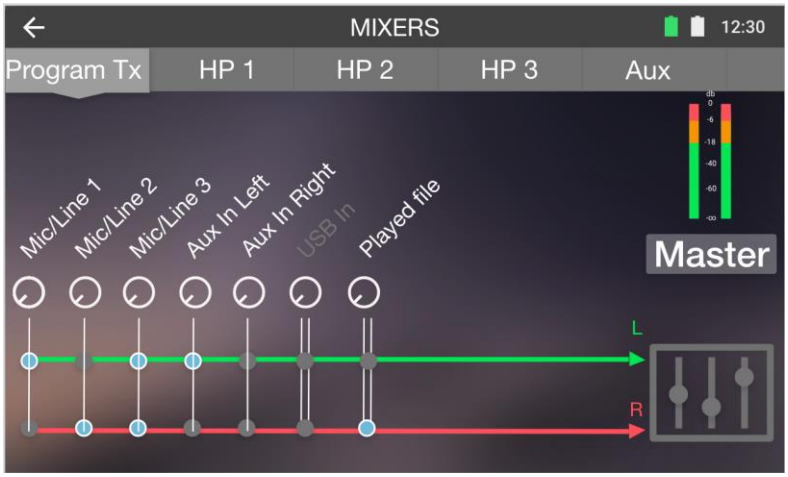


In the TX Program tab, a button is used to monitor the PGM TX mix, which is streamed towards the studio, in the HP1 headphones.
When the button is turned back to OFF, then the HP1 headphones monitor their mix again. To prevent the user forgetting to reset the button to OFF, leaving the page will switch the button to OFF.

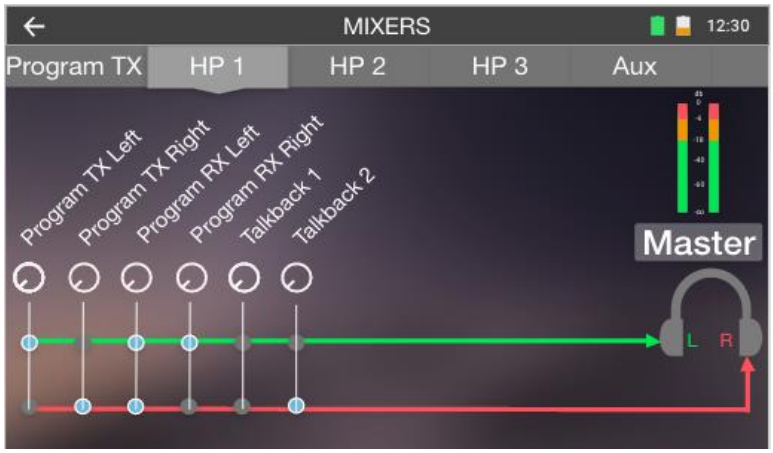


RADIO MODE

In Radio mode, the TX Program mix also becomes an input source that can be monitored in each of the headphones outputs.



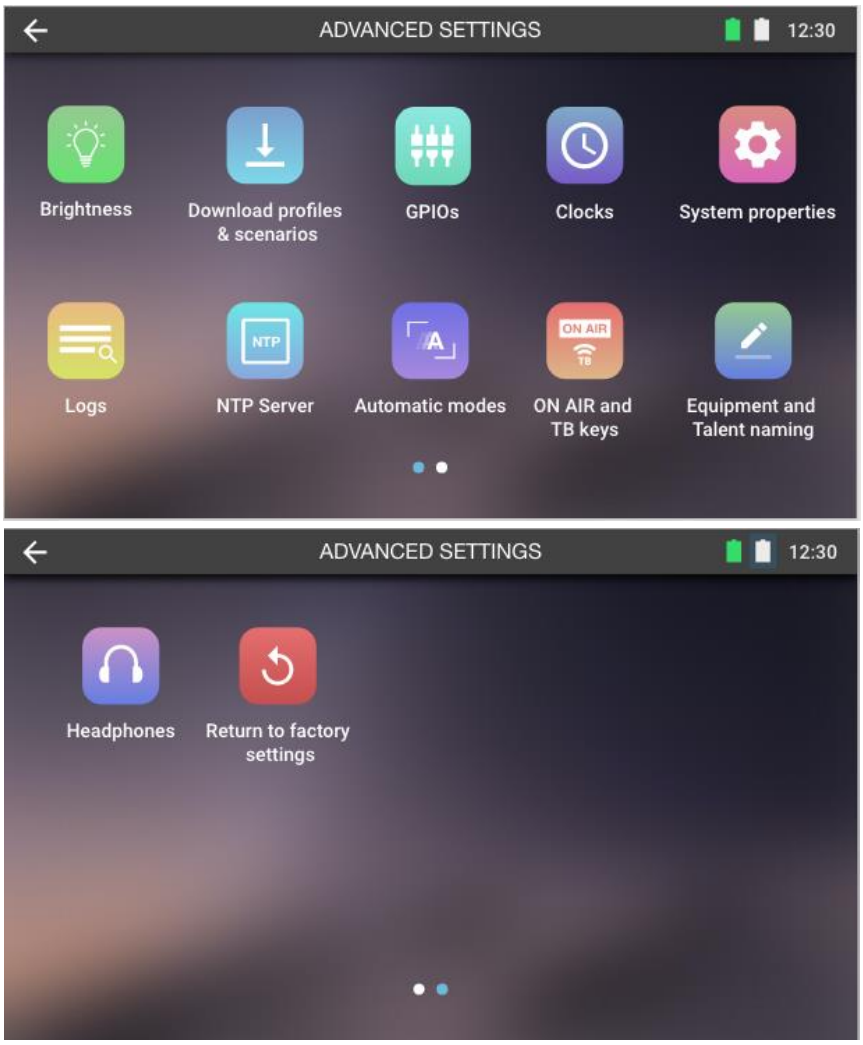
For HP1 and HP2 headsets, in addition to the TX Program mix, it is possible to monitor the sources coming back from the studio (RX Program, Talkback 1 and Talkback 2).



Note: For the HP3 output (“Guest” headphones), Talkback sources 1 & 2 are not accessible:

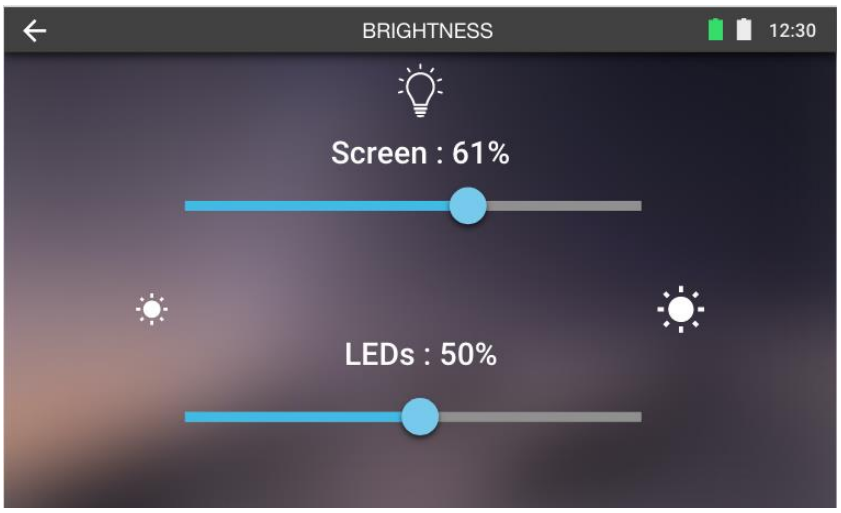
ADVANCED SETTINGS

The advanced settings menu allows to set the internal workings of IQOYA TALK.



BRIGHTNESS

This screen allows you to independently adjust the brightness level of the touch screen and keyboard.

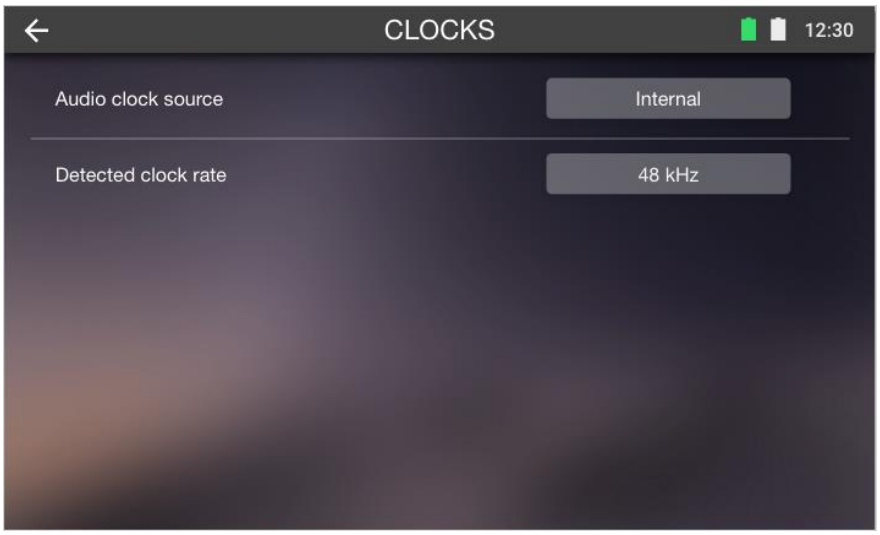


CLOCKS

This page allows defining the Iqoya Talk sampling clock source.

The clock source can be:

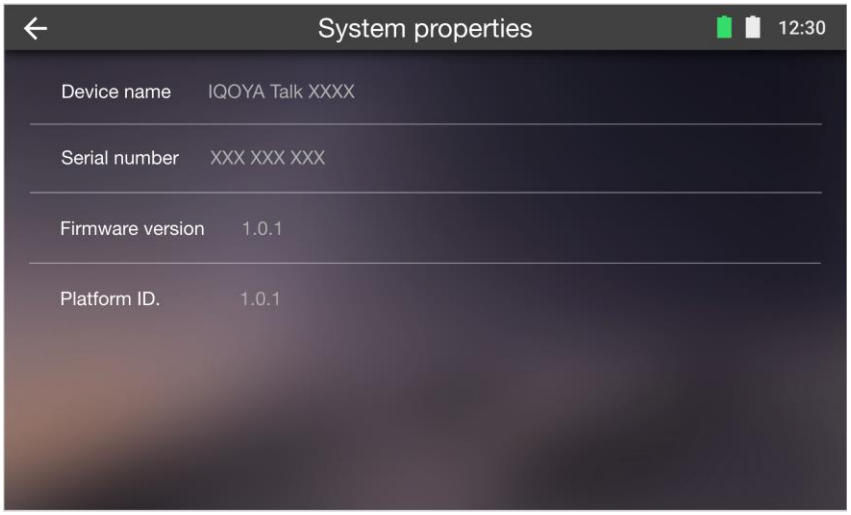
- Internal: on-board clock (48 kHz or 44.1 kHz).
- Extracted from an AES/EBU input at 22.5 kHz.



SYSTEM PROPERTIES

This screen displays the system properties of the IQOYA TALK unit.

This information will be required in case of product support.



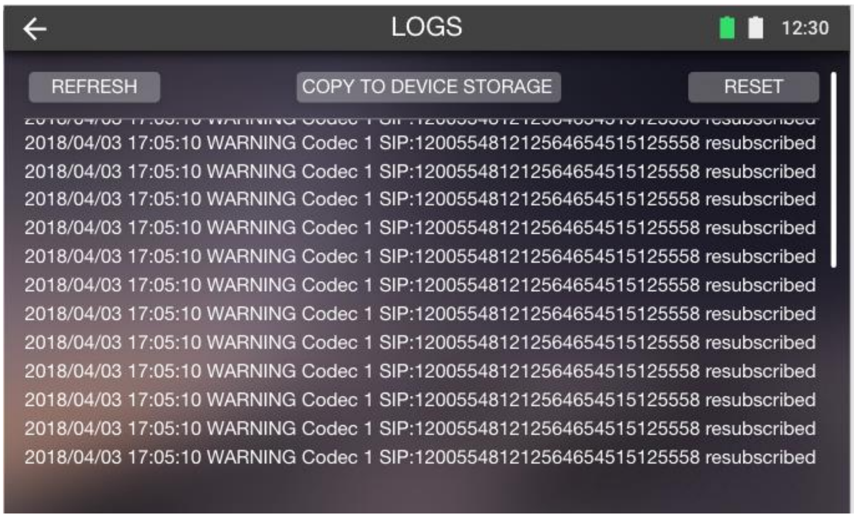
Parameter	Meaning
Organisation	The name of the owner of the equipment, for example the name of the radio station. Edit the name in: DEVICE AND TALENT NAMING.
Device Name	Name given to the equipment. Edit the name in: DEVICE AND TALENT NAMING.
Host Name	Logical name given to the device on the network. *By default:* **iqoyatalk-XXXXX** (XXXXX being the 5 last digit of the product's serial number).
Serial number	Serial number of the unit. This number is set in factory and cannot be changed.
Firmware version	Version of the firmware running on the unit. The firmware can be updated.
Platform ID	Identifier of the unit. This number is required for applying optional features.

CHANGEMENTS!!!!

LOGS

This page allows viewing and downloading the log file of IQOYA TALK.
This log file gives information about the internal behaviour of the product, and is useful for advanced diagnostics.
This log file is stored internally and restart at each power cycle.

Refresh: allows to refresh the page content.
Reset: clears all the traces.
Copy to device storage: allows to download the log traces into the internal memory.

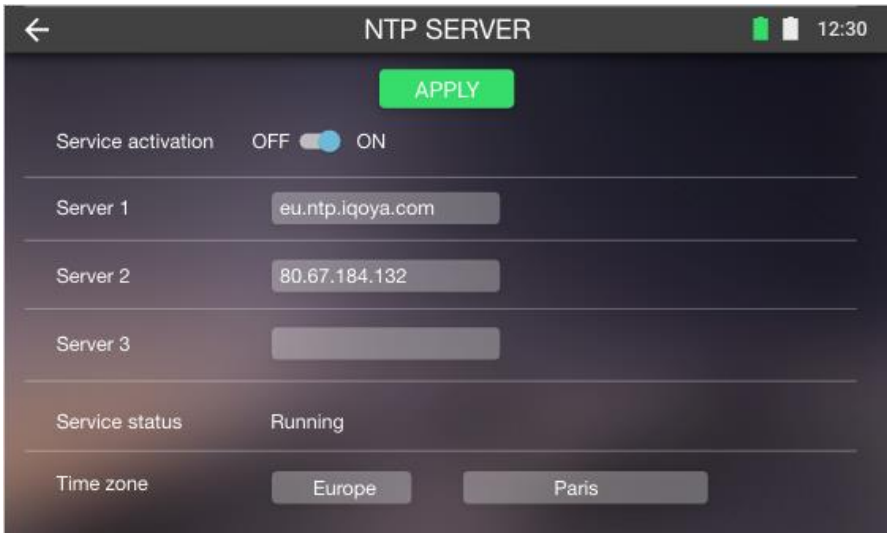


NTP SERVER

This page allows to:

- Configure the date and time synchronization to an NTP server.
  By Default: NTP service activated on **80.67.184.132 ?????** NTP service is activated by default
- Defining the time zone and city location. By default.
  By Default: IQOYA TALK is delivered with the time in UTC.

Click on the **"ON/OFF"** switch to activate/deactivate the NTP service. Enter the IP address or domain name of the NTP server. Up to 3 servers can be configured.
Once IQOYA Talk is synchronized on the NTP server, the field "Service status" displays "Running".



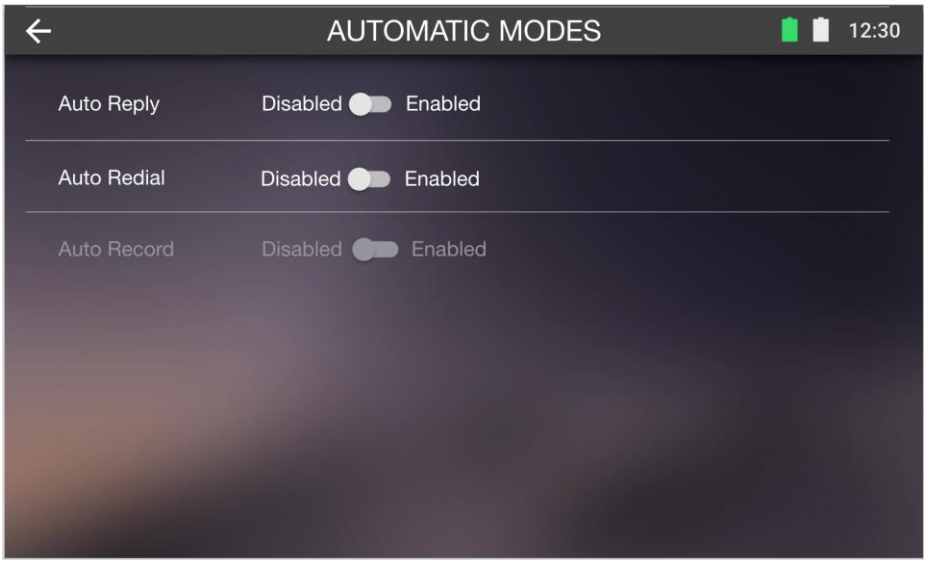
Depending on your location, a NTP server can be used as follow:

World region	NTP server domain
Europe	eu.ntp.iqoya.com or ntp.iqoya.com
USA	us.ntp.iqoya.com
Australia and South East Asia	au.ntp.iqoya.com

APPLY **Click on "APPLY" before leaving the page to save the changes.**

AUTOMATIC MODES

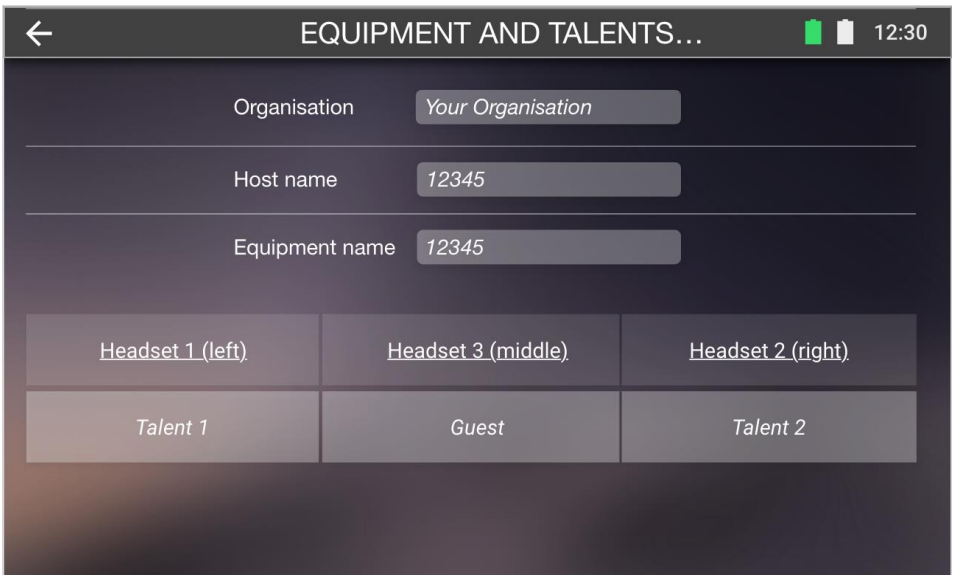
Two automatic modes are available on Iqoya Talk.



Parameter	Meaning
Auto Reply	When auto reply is activated, an incoming call will be automatically accepted without confirmation.
Auto Redial	When auto redial is activated on the caller's side, only the caller can terminate the communication. If the callee hangs up, the communication is automatically re-established by the caller device.

DEVICE AND TALENT NAMING

Several elements of the IQOYA TALK can be renamed as follows:

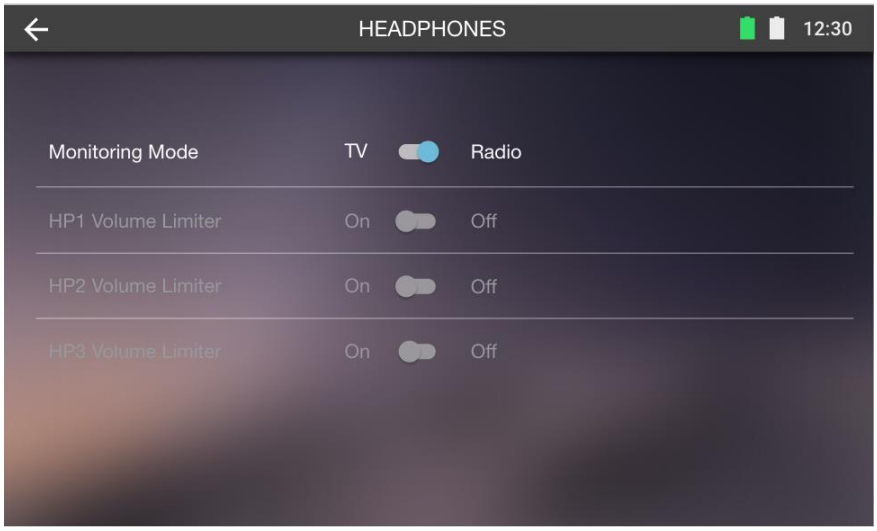


Parameter	Meaning
Organisation	The name of the owner of the equipment, for example the name of the radio station.
Host Name ?????	
Device Name	Name given to the equipment.

For each one of the three microphone inputs, it is possible to personalize the name.
By Default: Headset 1 (left) is Talent 1; Headset 2 (right) is Talent 2 and Headset 3 (middle) is Guest.

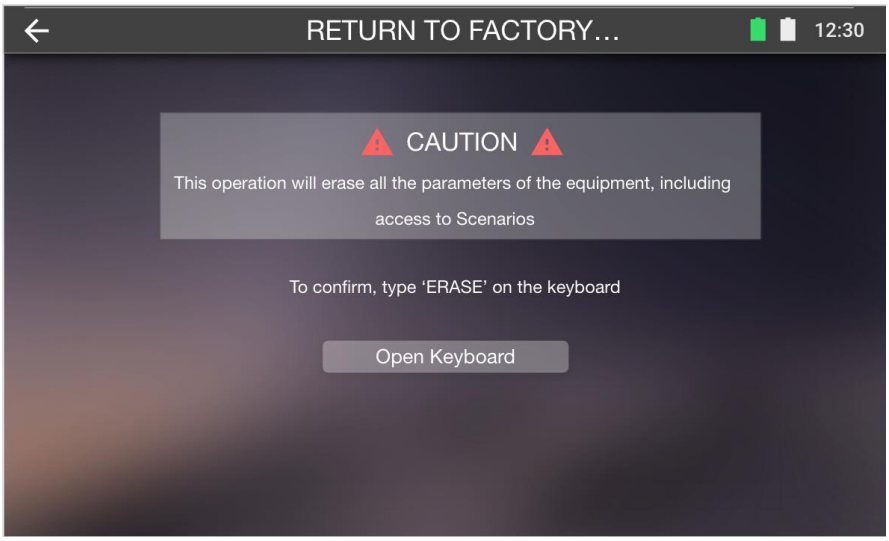
HEADPHONES

This menu allows you to choose the monitoring mode for the three headsets (TV Mode or Radio Mode).



RETURN TO FACTORY SETTINGS

This menu allows to do a factory reset, it is a software restore to its original system state by erasing all of the information stored on the device in an attempt to restore the device to its original manufacturer settings.
Doing so will effectively erase all of the data and settings that were previously on the device.



AUDIO FILES

This menu displays the recorded and / or imported audio files present in the internal storage.
It shows the name of the file, its duration, its size and the date the file was saved (or the date of the file). It is possible to rename or erase an audio file.

- To change the file name:
- To erase an audio file:

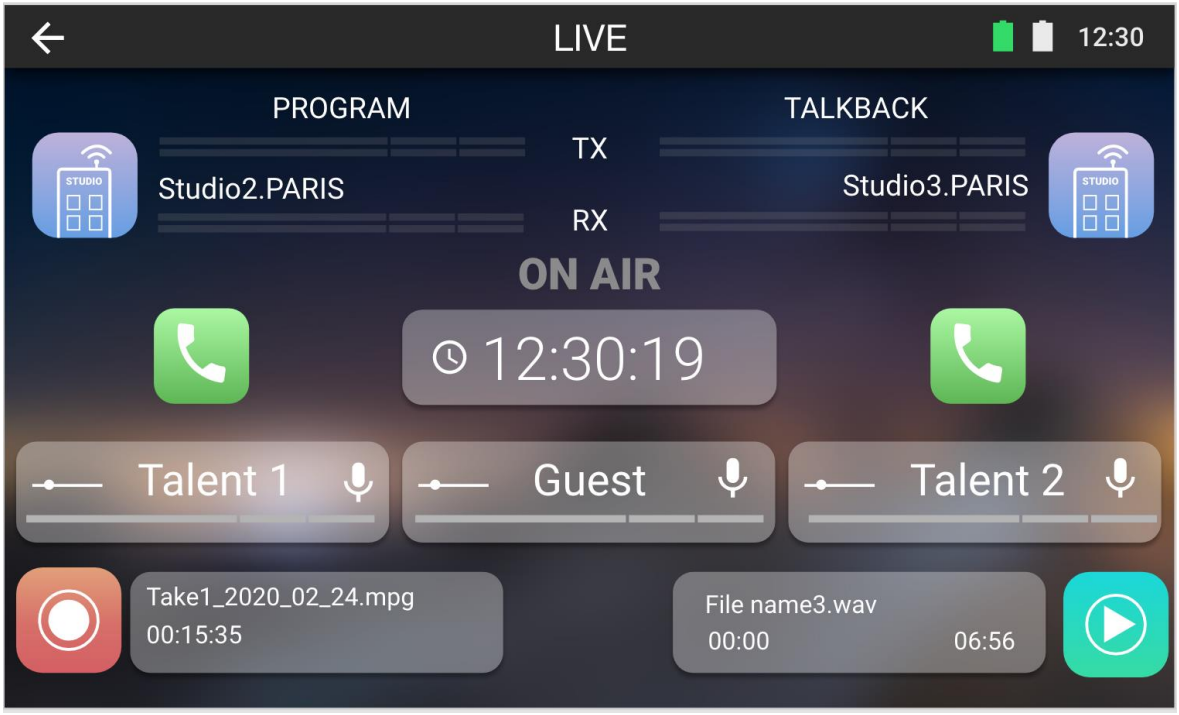
The audio track that is selected will be placed in the player on the LIVE menu.

6. OPERATING MENUS

LIVE

The LIVE Menu is the operating screen for the journalist or presenter. From here, he can launch the following actions:

- Make a Program or Talkback call
- Hang up a Program or Talkback call
- Create a new contact in the contact list
- Create an audio profile
- Record an audio file
- Select an audio file from a list and play it
- Adjust any of the three microphone input gain
- Schedule a timer



To make a call, press:  . Then, to hang up a call, press:  .

At the start of a call, the device will analyze the jitter buffer size.

The calibration is shown by this icon (about 30 seconds): 

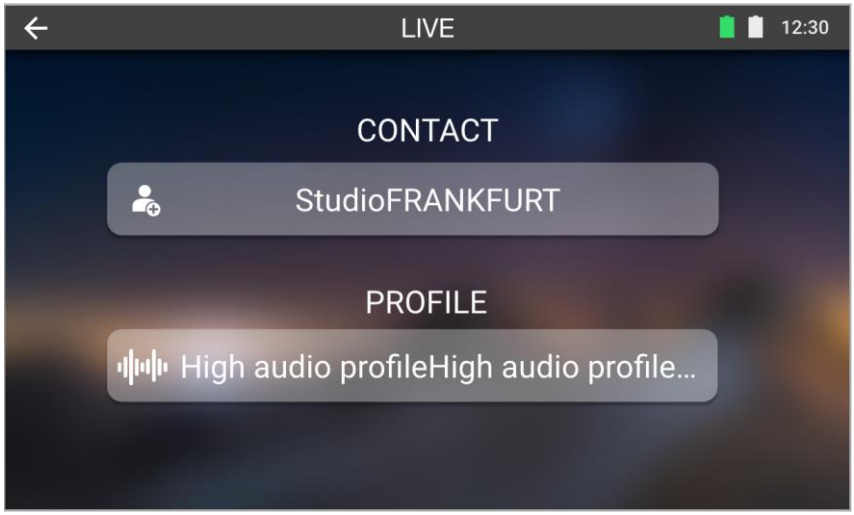
When the calibration is finished, the device will displays the status of the adaptive buffer size. 

The “AUTO” mode appears only if the Jitter buffer size is selected as “AUTO: ON” in STREAM tab (HOME > CONNECTION > STREAM). 

Live Contact and Profile

From Program or Talkback, the proposition settings are the same.

- In CONTACT, select the contact to receive.
- In PROFILE, select the audio quality profile that match with yours needs and the studio configuration.



Contact

This page allows selecting a contact or creating a new one.

- To modify a contact:
- To erase a contact:

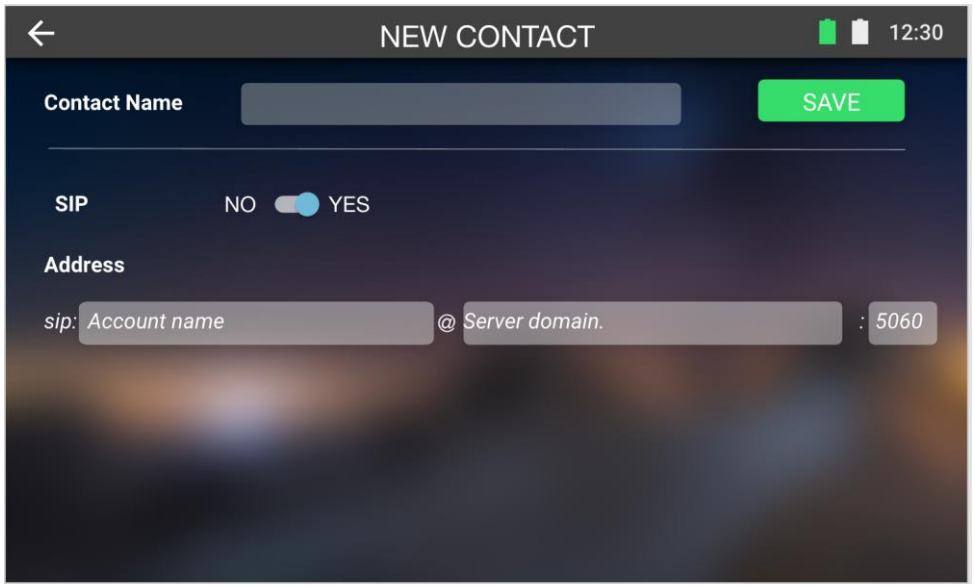
To create a new contact by an IP codec registration (SIP or RTP), press:

New Contact

This page allows creating new contact.

Add a contact by using as desired:

- a SIP address (SIP is a protocol of connection between the codecs)
- a RTP address



Parameter	Meaning	
Contact name	Name that will be displayed in the contact list.	
SIP	If YES: Connection via SIP Server provides the most automated and comfortable way to establish a connection between codecs.	If NO: The connection will be symmetric RTP.
SIP address	The SIP address of the IP codec instance, one per registration. The address is: **sip_account_name @ sip_server_domain : sip_server_port** *By Default:* SIP Server Port = 5060	
RTP address	The address is: **remote_party_IP_address : remote_party_audio_listening_port**	

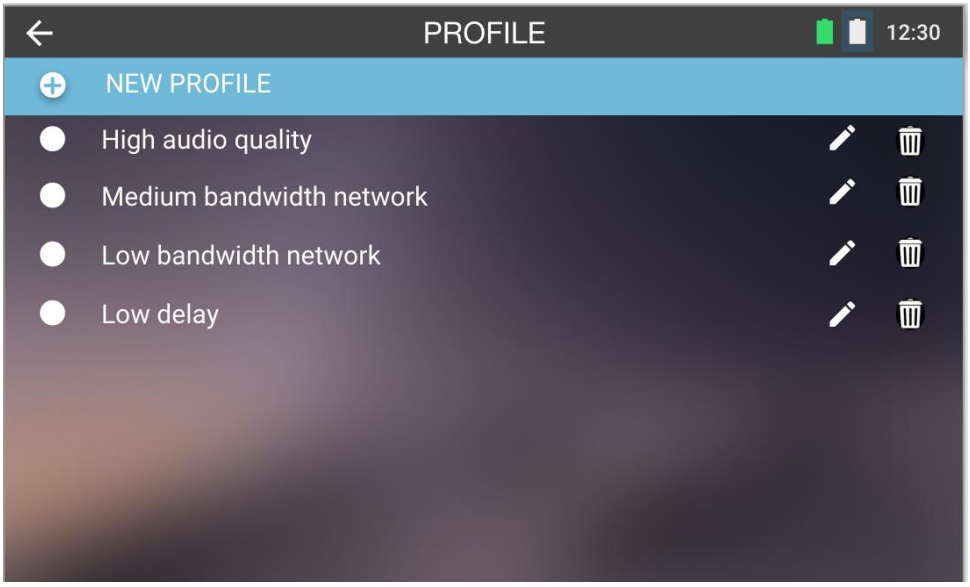
	Indicate if the receiver codec is a DIGIGRAM codec, then the metadata will be transmitted.

Profile

This page allows selecting an audio profile or creating a new one.

- To modify an audio profile:
- To erase an audio profile:

To create a new audio profile, press:

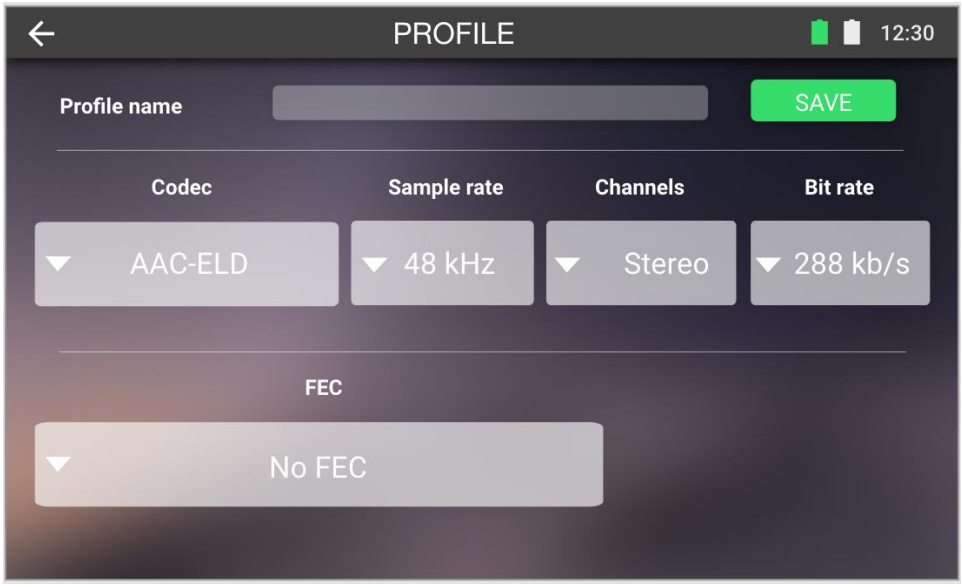


New Profile

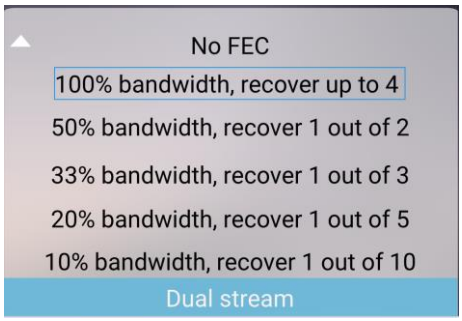
This page allows creating new audio profile.

Fill in the following information:

- Codec
- Sample Rate
- Channels Mode
- Bite Rate
- FEC / Dual Stream



Parameter	Meaning
Codec	A large number of encoding formats is available on IQOYA TALK: ● linear 12/16/20/24-bits PCM ● ITU G.711_ALAW/_ULAW /G.722 ● ISO MPEG-1/2 Layer I, Layer II, Layer III ● AAC-LC, HE-AACv1 (LC+SBR), HE-AACv2(LC+SBR+PS), AAC-LD, AAC-ELD ● Opus / OPUS+INBANDFEC
Sample rate	Frequency of the encoded audio, to be selected from the list box. 8 kHz 16 kHz 48 kHz It can be different from the device's sampling frequency
Channels	Select if the audio stream encoding is stereo or mono.
Bit rate	Bit rate of the encoded audio.
FEC / Dual Stream	A Forward Error Correction (FEC) can be selected. FEC is a technique used to reduce data transmission errors on unreliable networks by sending additional information allowing to correct them. It consists in sending additional packets so that the decoder can recover lost ones. The amount of additional frames defines the recovery performance.

	 Select: - FEC on 1 stream: means that additional data are sent in the IP audio stream (in-band). - FEC on 2 streams: means additional data are sent as a second IP stream. - Dual stream: means that the IP steam is duplicated in a second IP stream.
Delay	If dual stream is selected, the duplicated stream can be delayed to offer time diversity. - When no delay is selected, primary stream and redundant stream are sent at the same time. - When a delay is selected, redundant stream is delayed compared to the primary stream from 100 ms to 1000 ms.

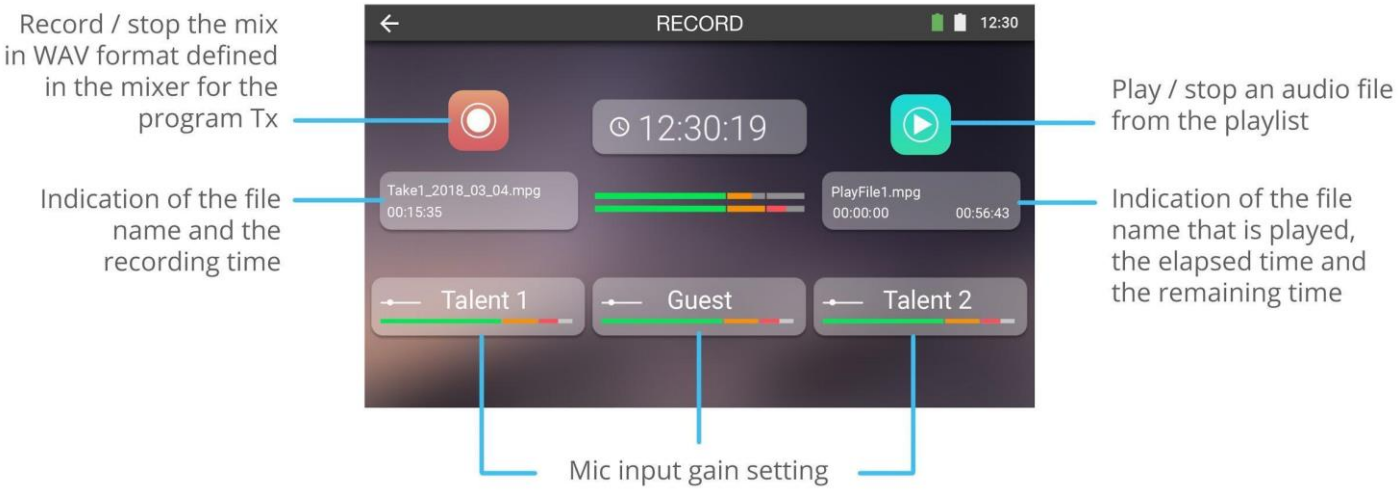
APPLY **Click on "APPLY" before leaving the page to save the changes.**

RECORD

The record page allows you to record in an audio file the TX program output.
It is not necessary to be in communication to make a sound recording.

From this page, a journalist can:

- Record an audio file
- Select an audio file from a list and play it
- Adjust the three microphone input gain
- Schedule a timer



7. SPECIFICATIONS

AUDIO

- 3 Mic inputs, Microphone / Line level adjustment
  48 V phantom power
- 4 headphone outputs, individual
  mix bus on each output
- 1 analog or AES/EBU stereo input
  Line level
- 1 mono or stereo program on independent IP connections
  2 Talkback channels for users 1 and 2
- 11 input / 10 output embedded mixer

CONNECTIVITY

- 2 Gigabit Ethernet ports for EBU/ACIP and AES67audio streams
- 2 integrated 4G / LTE modules, approved in Europe, USA and Asia
- 1 integrated dual band wifi / bluetooth module
- 3 GPIOs controllable by GUI
- 2 USB A ports for files
  1 USB C port for streaming audio to PC

ENCODING AND STREAMING

- Dual streaming / Configurable FEC
- Encoding : G711/G722, MPEG-1/2 Layer II
  MPEG-4 AAC-LC, AAC-LD/ELD, HE-AACv1/v2, Opus
- Compliant with ACIP (EBU Tech 3326 and Tech 3368)

GENERAL

- Lockable external power supply 12-24 V DC
- H x W x D: 95 x 200 x 220 mm ($3^{47}/_{64}$ x $7^{7}/_{8}$ x $8^{21}/_{32}$)
- Weight : 2,35 Kg (5,1 lb) incl. 1 battery
- Operating temperature 0-45 ° C

8. APPENDIX

APPENDIX A

Firmware update

Digigram may decide to release updates to the embedded firmware. It may then become necessary to update your devices. To update the firmware, follow the process described below:

Step 1:

Download the new firmware (in your user zone or one of our links sent by email).

Step 2:

Make sure IQOYA TALK is connected to mains (making a firmware update on battery power is strongly not recommended).

Step 3:

Connect your IQOYA TALK to your computer using the supplied USB cable.

Step 4:

A pop up message will be displayed on the screen of your IQOYA TALK to accept to share data between the devices. Click on **YES** icon.

Step 5:

When the screen displays the message below, open the files explorer of your computer

Step 6:

Open the folder corresponding to the IQOYA TALK.

Step 7:

Copy-paste the downloaded file into the “Firmware Update” folder of the IQOYA TALK storage.

Step 8:

Disconnect the USB cable when the transfer completed.
(Make sure to always eject the drive from the operating system before disconnecting the USB cable).

Step 9:

After disconnect the USB cable, click on **NOW** option to launch the update process. The update step can take up to 5 minutes.

APPENDIX B

Typical Latency Values

The latency you encounter for a connection between an IQOYA TALK and another IP codec depends on the audio format chosen, the network and the functionalities that the devices provide - and use.
See the table below for maximum latency values in a half-duplex configuration, without failover mechanism or FEC, with the buffer size set to 0, on an optimized network.

Audio type	Audio formats	Latency	Description
PCM	24 bits	26 ms	
MPEG	256 kbps	76 ms	Layer II
AAC-LC	128 kbps	100 ms	
AAL-LC + SBR	96 kbps	220 ms	Aka HEv1
AAC-LC +SBR + PS	48 kbps	246 ms	Aka HEv2
AAC-LD	160 kbps	56 ms	
AAC-ELD	160 kbps	48 ms	

All measurements were made on stereo samples at 48 kHz.

Network impact on latency

A basic principle: the more your network/architecture components are of quality, the less latency you will encounter – nevertheless.
In case your network presents disturbances, IQOYA TALK allows you to:

- Absorb the network jitter by choosing an appropriate buffer size
- Choose a FEC scheme to make your stream resilient to packet loss with the AAC option, choose an AAC with error resilience (making the coding itself more robust against errors).

However, keep in mind that each of these features will increase the overall latency of your link: The more features you need to apply here and there to compensate for the suboptimal operation of a link in the chain, the more processing and / or tape resources you need to use. This makes it not really efficient in terms of latency…

Impact of additional features on latency.

Basic principle: the more functionality you add, the less room you have for optimizing latency.
Having said all of this, here is the best scenario for low latency:

- Half-duplex link without any fail-over!
- In full-duplex, the latency will be slightly increased.

APPENDIX C

Available FEC

FEC (Forward Error Correction) is a mechanism which consists in sending redundant information (redundant frames) to the decoder so that it can compensate packet transmission errors on unreliable networks.
A FEC scheme can be selected when defining the parameters of the stream to be generated (Send page) and/or to be received (Receive page).

FEC requiring no additional stream

Redundant frames are sent in the same packets as the IP audio stream.
The FEC to be selected is **"+50% bandwidth, recovery 2, 1 stream (audio)".**
Its characteristics are: +50% bandwidth, additional delay of 2 frames, recovers 1 lost packet at 100%, recovers 2 consecutive lost packets at 75%.

FEC requiring an additional stream

- Standard FECs

Redundant frames are sent as a second stream of data. The used UDP port is: port of the IP audio stream + 2.
Selectable FEC schemes are:

- **+100% bandwidth, recovery up to 4, 2 streams (audio + FEC)**
  +100% bandwidth, additional delay of 3 frames, recovers 3 lost packet at 100%, recovers 4 consecutive lost packet at 80%
- **+50% bandwidth, recovery 1 out of 2, 2 streams (audio + FEC)**
  +50% bandwidth, additional delay of 1 frame, recovers 1 lost packet over 2 consecutive packets.
- **+33% bandwidth, recovery 1 out of 3, 2 streams (audio + FEC)**
  +33% bandwidth, additional delay of 2 frames, recovers 1 lost packet over 3 consecutive packets.
- **+20% bandwidth, recovery 1 out of 5, 2 streams (audio + FEC)**
  +20% bandwidth, additional delay of 4 frames, recovers 1 lost packet over 5 consecutive packets.
- **+10% bandwidth, recovery 1 out of 10, 2 streams (audio + FEC) – From firmware 2.31**
  +10% bandwidth, additional delay of 9 frames, recovers 1 lost packet over 10 consecutive packets.

- Redundant dual streaming

Redundant dual streaming is activated by selecting an appropriate "Dual stream" FEC. A dual stream FEC consists in considering the redundant stream as an FEC.
In addition, the duplicated stream can be delayed to offer time diversity, thus avoiding that a network disturbance affects the same frames on the primary stream and on the FEC stream. Selectable delay is from 0 to 1000 ms, by steps of 100 ms.

Notes:

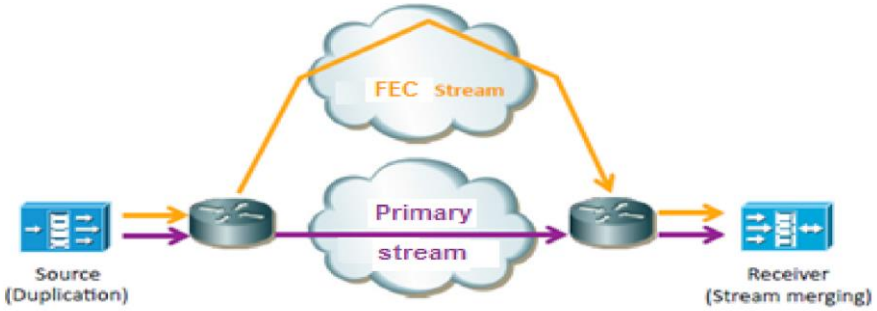
- When in-band audio format signaling is enabled, FEC stream is sent to the same IP address as the primary stream, and on UDP port + 2.
- When in-band audio format signaling is disabled, it is possible to define different destination address and port for the FEC stream.

APPENDIX D

Redundant dual streaming

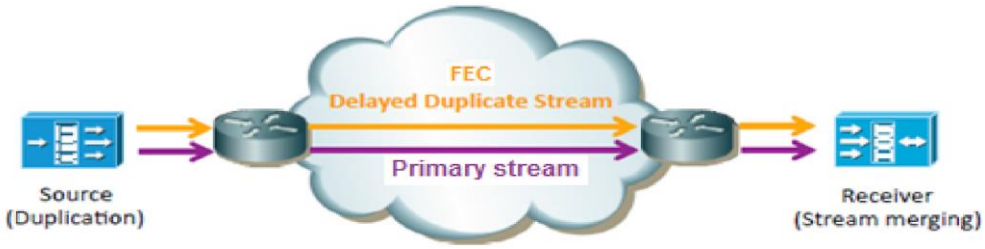
Spatial diversity

IQOYA can be configured to send the same AoIP stream on two distinct networks, typically through Eth0 and Eth1 interfaces. On the decoding side, IQOYA automatically synchronizes both received streams. Using separate network paths ensures that potential network failures are statistically uncorrelated, enabling the reconstruction of a unique unperturbed stream.
Terminology used for the two redundant streams is: primary stream, and FEC "dual" stream for the duplicate stream.



Time diversity

IQOYA doesn't only propose passive duplication as on most codecs. It also allows delaying the duplicate stream compared to the primary stream. Although the primary stream and the FEC stream are configured to use different networks, it is quite common that some network components are common to both networks (last mile router for instance). The selected delay avoids that temporary failures occurring on common network components impact both a primary frame and its duplicate frame.



Multicast and unicast can be used for redundant dual streaming, and different UDP ports can also be used for the primary stream and the FEC stream.

A typical redundant dual streaming configuration is as follows:

- Enter the destination IP address and UDP port of the primary stream. The IP address can be the public IP address of the Ethernet interface of the IQOYA that decodes the stream, or a multicast address.
  Select the IP interface used to send the stream in case of multicast.

- Select a “Dual stream” FEC, with or without time delay. The IP address can be the public IP address of another Ethernet interface of the IQOYA that decodes the stream, or a multicast address.
  Select the IP interface used to send the FEC stream.

Notes:

- When in-band audio format signaling is enabled, FEC stream is sent to the same IP address as the primary stream, and on UDP port + 2.
- When in-band audio format signaling is disabled, it is possible to define the destination address and port of the FEC stream.

Portable IP audio codec

For technical support please contact your supplier

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