AATON DIGITAL

CantarX3 - User Manual
v.3.211.C7

Inspired from a manual written by Pierre Bézard at the request of Aaton-Digital and with the technical resources of Tapages & Nocturnes.

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I. GENERALITIES

The Aaton Cantar X-3 is a stand-alone portable 24-track digital audio recorder. It records on one 250GB internal SSD disk (upgradable to large size), on up to two SD-HC/SD-XC cards (recommended minimum speed 80Mb/s) and on an external USB media that can be connected to one of the three available USB ports.
It is powered by two on-board SBS Lithium-Ion batteries or by an external power supply via its XLR-4M port.
The Cantar X3 is a waterproof and dustproof machine with an outer shell made of aluminum.

1. Inputs & Outputs locations and descriptions:

a. Top:

- **8 mic in** (1) with 4 x XLR-3F (MIC inputs 1, 2, 5 et 6) and 2 x XLR-5F (MIC inputs 3&4 et MIC 7&8)
- **4 line in** (2) with 2 x XLR-5F (LINE inputs 1&2 et 3&4)
- **2 AES-42** pairs(3) on 2 x TA3M (1&2 et 3&4) - Can be also be used as AES-3 inputs

b. Left side:

- 1 x timecode I/O(4) on lemo 5
- 8 digital I/O (5) en Sub-D25F (Inputs and outputs AES-3, 1 to 8)

c. Right side:

- 2 slots fpr SD-HC ou SD-XC cards
- 2 USB 2.0 ports to connect a keyboard or external media (USB ports can be used for a wired keyboard or wireless keyboard dongle, or to connect and external media. Due to the 500mA limitation of USB 2.0, an additional USB cable might be necessary when connecting power hungry external disk
- 1 RJ45 port for DANTE Networking (give access to 32 I/O DANTE) 1 port RJ45 for Ethernet connection
- 1 Wifi Antenna to broadcast a Wifi network generated by the Cantar.

Note: With the latest firmware, the Wifi antenna allows you to send audio files to a computer, or enter metadata from external devices (tablet, computer...) equipped with a browser and able to connect to the Wifi network generated by the Cantar.

d. Rear side:

- **8 analog outputs**(6) on a Sub-D25F
- **1 external DC power input** (7) on XLR-4M (13-18V DC 4 A)
- **1 DC Output** on hirose 4 F (8), power output, V Batt (500mA max)
- **1 «Option»** port on Mini Delta Ribbon (This port also allows timecode, ASCII data, Wordclock I/O, Tally, AES 5&6 outputs, power supply and ON/OFF control) Can also be used to connect a Cantarem
- **1 BNC SDI** connector (N/A)
- **1 DVI out** pour sortie vidéo DVI-D (N/A)
- **2 slots for On-Board batteries SBS Li-Ion** 14.4V 49Wh 3.4Ah

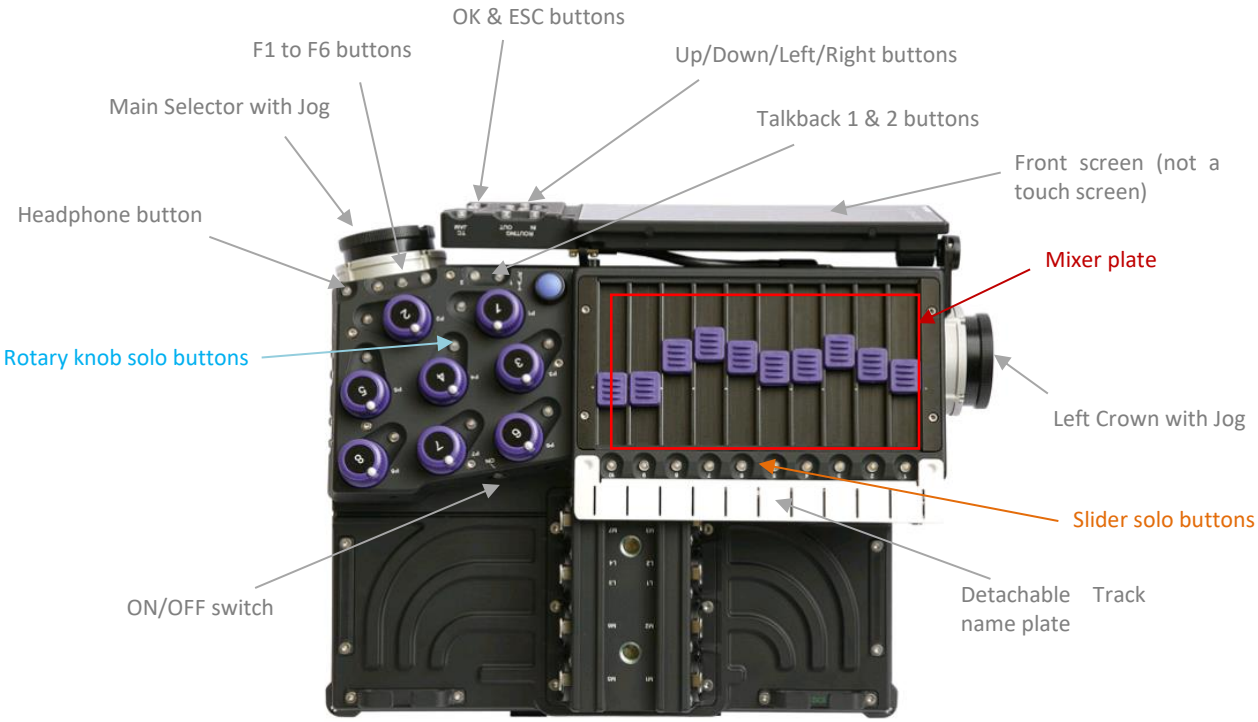
Note: The Cantar automatically manage seamless transition from one power source to another. As soon as a new priority source is available, it makes it its main source; if this source becomes empty or absent, it switches to the next source. The priority of the power sources is defined as follows: XLR-4M input, then internal battery 1, then internal battery 2.

e. Bottom

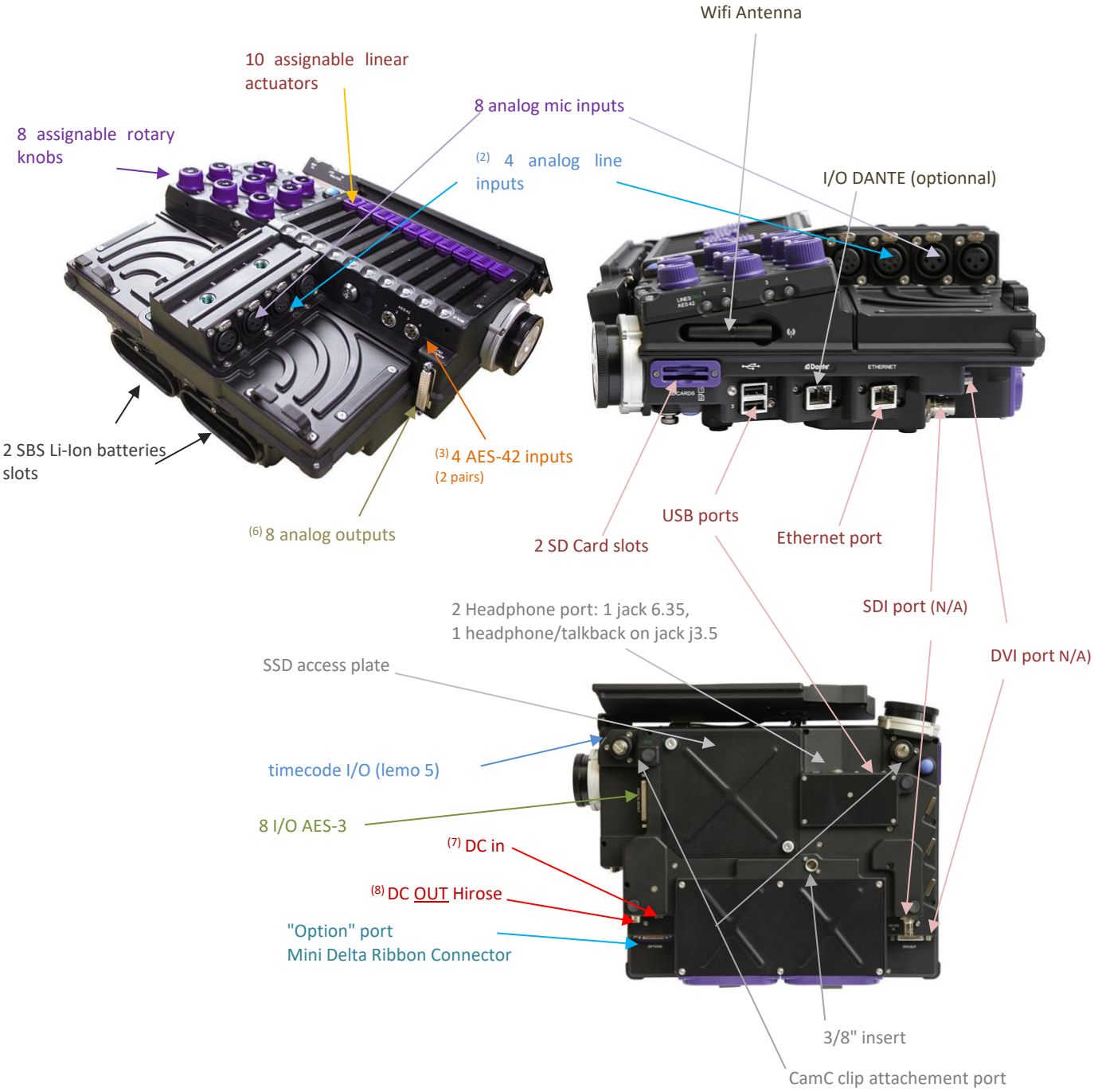
On the lower side are 2 Cam-C Clip attachment points for a shoulder strap, a 3/8" threaded insert for securing the recorder on support devices. A detachable cover plate giving you access to the internal SSD (SATA and M2 SATA on later CantarX3) as well as the power inputs fuses

f. Front Panel

- **1 x 3.5 mm Jack** for Headphone output and External Talkback Mic - Nokia LRMG pinout
- **1 x Jack 6,35mm** for headphone output (LRG pinout)
- **1 USB 2.0 port** to connect a keyboard or external media

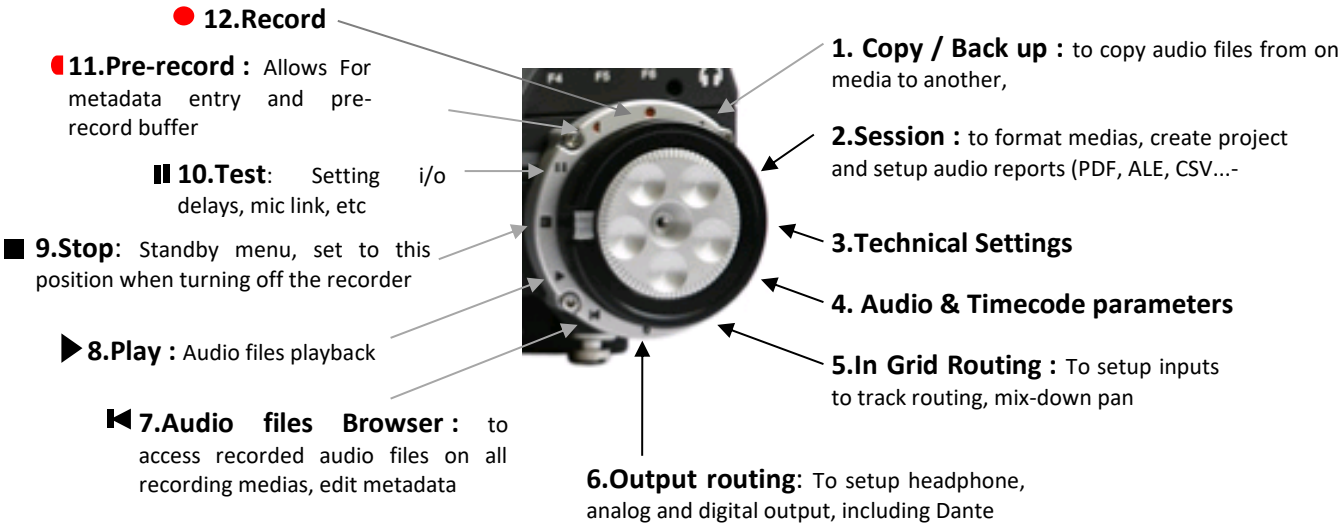


2. General Overview



a. Rotary Main selector

All 12 positions give quick access to the recorder operating menus



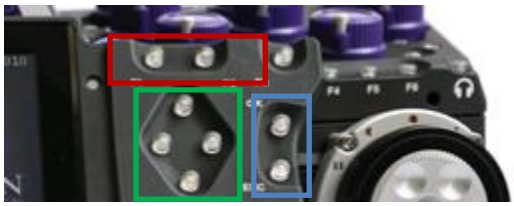
Located in the center of the Main Selector, an jog wheel allows navigation within the menus and incrementing of parameter values.

If this functionality is enabled in the AUDIO & TIMECODE menu (4 o'clock position), holding Shift while turning the Main Selector to the "Audio File Browser", "Play", "Test", "Pre Record" and "Record" positions allows you to access the Playback & Record version of these menus (see corresponding chapter).

b. Left Crown

Quick access and modification of presets within each menus. The jog wheel of the left crown has the same functionality as the one on the Main Selector.

c. Boutons F1 à F6, U, D, L, R, OK, ESC



Buttons F1 to F6 alone or in combination with the blue Shift button provide access to many functions depending on the menus you are in.

Up/Down/Left/Right direction keys (U, D, L, L, R : Up, Down, Left, Right) are used to navigate through the menus and increment the values of selected parameters. The OK button allows you to confirm a value or action, ESC allows you to exit a submenu or cancel an action in progress.

d. TALK 1 & 2 buttons– Talkback

These buttons are used to activate the Cantar's 2 talkback circuits.
The Cantar has 2 slate microphones inputs, 1 internal microphone (located at the bottom right, under the screen) and an input for an external microphone (located on the Minijack 3.5 mm 4-pin headphone jack, Nokia LRMG phone wiring).

By default, the internal and external Talkback microphones operate simultaneously, refer to menu 4. AUDIO & TIMECODE to determine which one is preferred

- Submenu "Internal slate mic level" (to be set to -96dB if you do not want to use it)
- «Jack 3.5 slate mic level»
- «Jack 3.5 bias power» (if your external slate microphone needs a power supply)

"Talk1" or "Talk2" keys send signals from the internal microphone and the external Minijack 3.5 microphone to the headphone outputs, and to all outputs where the Talkback is routed (Lines, AES, Dante), via Menu 6.OUTPUT ROUTING.

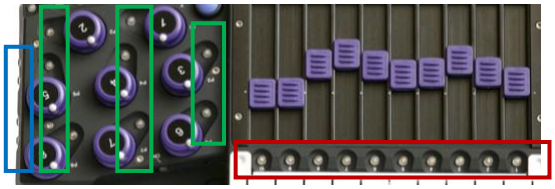
"Shift" + "Talk1" or "Shift" + "Talk2" send the talkback signal to the outputs and to the tracks (to record a comment for example): in menu 4. AUDIO & TIMECODE, the "Talk to tracks" submenu allows you to route the signal:

- To all tracks («All tracks»)
- Only to the Mix Down (Mix Tracks)
- To a chosen track (Track 1 to «24).

e. ON Button

The ON Button is located behind the rotary encoders, Press on it to turn on the Cantar. In Stop mode, it allows you to turn the Cantarx3 off.

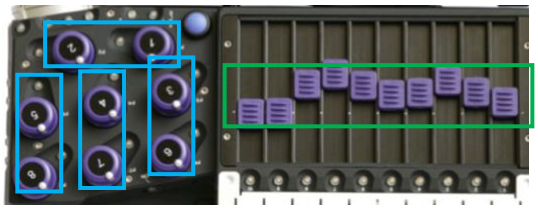
f. SOLO buttons overview



CantarX3 features :

- 8 SOLO buttons located next to the rotary encoders: they open the solo setting and monitoring of the inputs/outputs/tracks associated with these encoders, and access to their configuration.
- 10 SOLO buttons located next to each linear actuators: they open the solo setting and monitoring of the inputs/outputs/tracks associated with these sliders, and access to their configuration
- 4 SOLO buttons, on the right side of the machine, allow solo setup and access to the configuration of the Line inputs and, via Shift+Solo, the AES-42 inputs.

g. Rotary and linear actuators



CantarX3 has 8 rotary encoders located on the upper right side of the recorder. They can be assigned to adjusting the gain of all types of inputs (Mic, Line, AES-42, AES-3), tracks, or analog outputs.
Press Shift + any of the rotary encoders solo buttons) for 3 sec to access the assignation pop-up window

10 magnetic linear actuators located on the mixer plate can also be assigned to adjust the gain of all types of inputs, tracks, or analog outputs. The sliders are interchangeable and are available in different colors. (Shift + SOLO for 3 sec. gives access to the assignment menu).

II. POWER ON, POWER OFF

1. Power ON

Press the ON button located behind the rotary encoders.
If the Cantar detects a new filming day, it will prompt you once switched on to create a new Day folder (accept with OK or refuse with ESC) (see opposite).

2. Power OFF

Put the Main Selector in the STOP position, press the ON button, a dialog box will open asking for confirmation to shut down the machine: press OK to confirm the shutdown (or ESC to cancel it).

3. Emergency shutdown

As on a computer, the Cantar has an emergency shutdown mode, by holding down the ON button for more than 10 seconds (no need to be in STOP mode).

4. Rescue Mode

Following an unexpected shutdown (no battery, emergency shutdown, system error), if ON is pressed, the Cantar will restart with an automatic procedure and display a dialog box with 3 choices:

Make your choice and validate with OK.:

- Reboot
- Shut Down
- Load Firmware

5. Low power mode

Via menu 3.TECHNICAL SETTINGS: "Low power in stop" (p.37), it is possible to configure the Cantar to go into standby mode after a set time (15 sec, 30 sec, 1 min, 2 min, or never). When the Main selector is switched to the STOP position, the Cantar will go into standby after the set time has elapsed (following a warning screen, this procedure can be interrupted with ESC).

In standby mode, the Cantar's screen goes off, the buttons F1 to F3 blink, and all functions are switched off, including the AES and DANTE inputs/outputs and audio outputs.

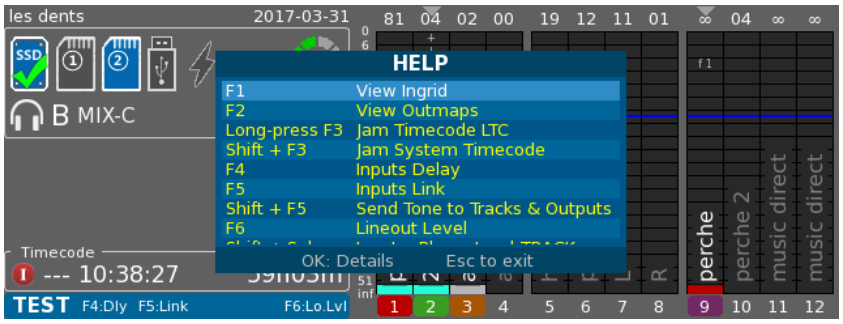
To exit Standby mode, simply press one of the F1, F2, or F3 buttons or change the position of the Main Selector.

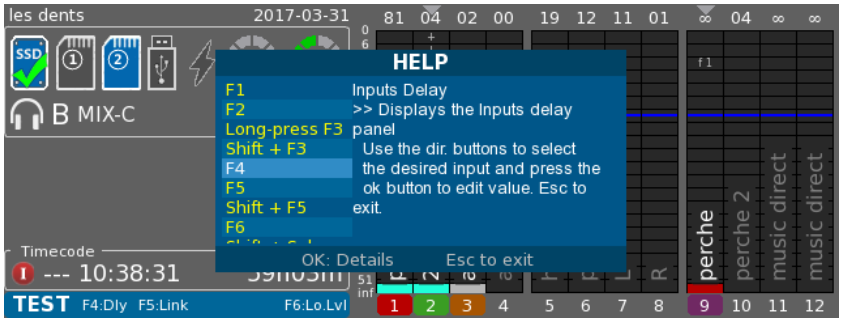
Cantar X3 in standby mode can be left ON for up to a day before the batteries run out

III. HELP screen

The Cantar has many specific shortcuts keys for each menu. It is possible to display a reminder of the shortcuts available in the menu in which you are operating by pressing Shift (blue button) 3 times.

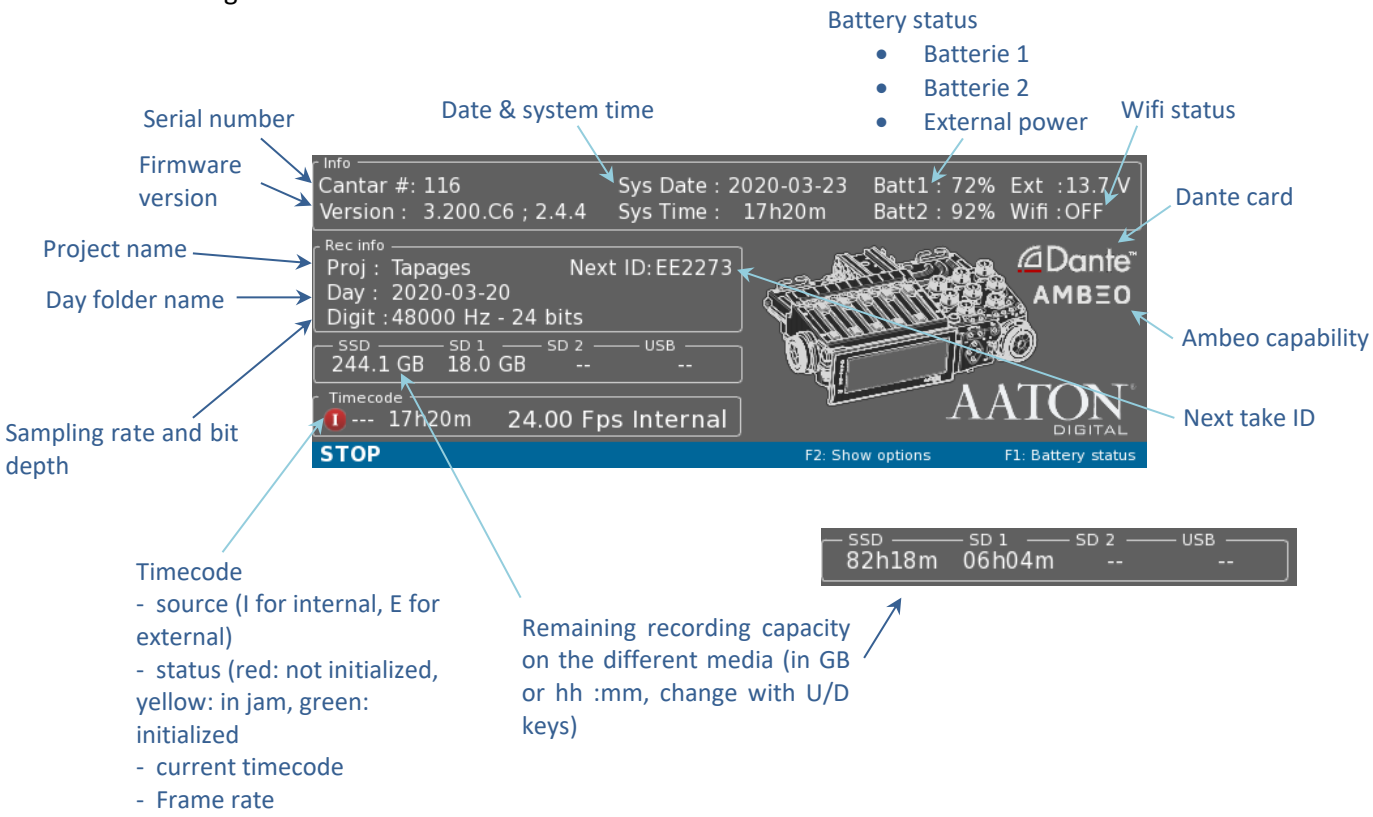
It is then possible to navigate within this shortcut window: press OK to display a description of the action performed by the shortcut key.





IV. STOP MENU

When the Main Selector is in the STOP menu (9 o'clock position), the Cantar displays a screen showing several information :



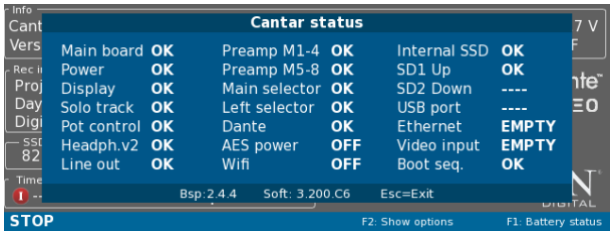
- The STOP mode is the mode in which the Cantar requires the least amount of energy.

It is necessary to be in this mode to turn off the Cantar (with the ON button).

- It is also possible to configure the Cantar to automatically switch to standby after a given time and as soon as it enters STOP mode (see Menu 3.TECHNICAL SETTINGS: "Low Power in stop" p.37).

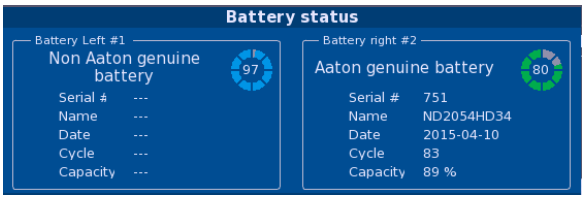
- Pressing F6 opens a dialog box asking you if we want to create a new recording folder.

- Pressing F3 or F5 displays a "Cantar Status" window indicating the status of the various CantarX3 internal & external components (after few seconds).



- Pressing F1 opens a dialog box indicating the status of the two internal batteries:

- For non-Aaton batteries, and prior to firmware V3.211.C7, only the remaining battery capacity is shown.
- For Aaton batteries, the following information is provided: the serial number of the battery, its name, date of manufacturing, number of cycles, and remaining capacity.



- With firmware V3.211.C7 and subsequent versions, extended battery information is available for all compatible SMB smart battery

- Pressing F2 opens a dialog box indicating whether the machine is equipped with the additional options (in Fig. opposite, these are not installed) :

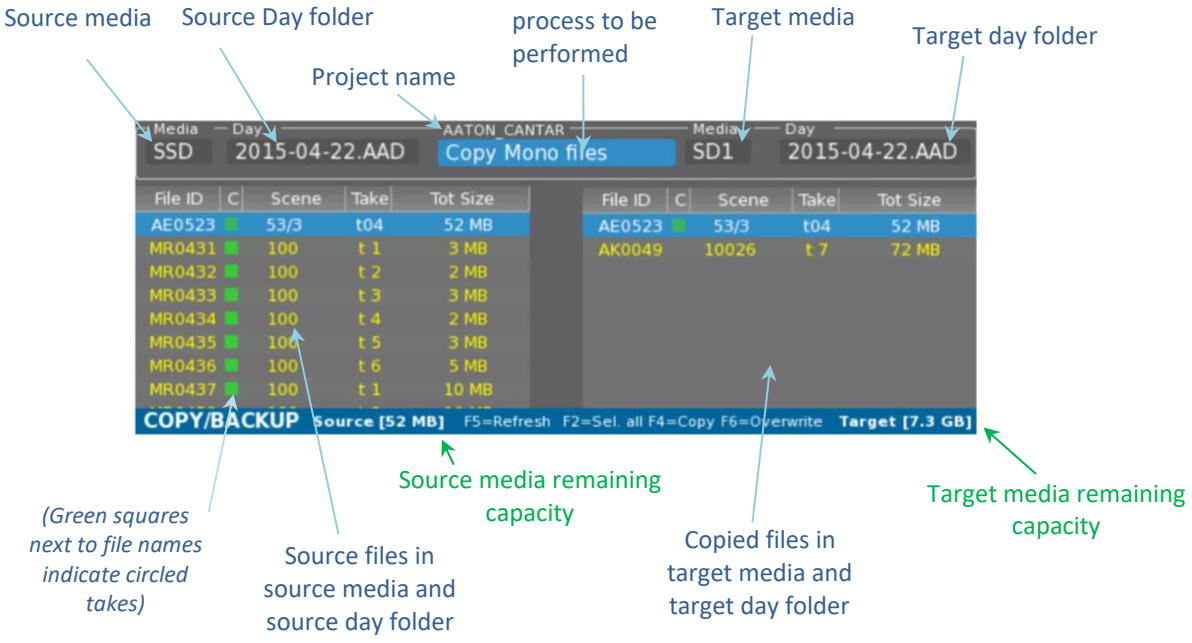
- Option Dante plus
- Auxiliary / SubGroups option
- AatonMix option

For more information on the additional options available, see XVIII. ADDITIONAL OPTIONS

V. MENU 1. : COPY & BACKUP

Setting the Main Selector to Menu 1 (at 1 o'clock position) allows you to manage backups of sound files. You can:

- **Copy** files from one media to another (SSD, SD1, SD2, USB)
- **Interleave** mono files in stereo or polyphonic (Interleave process**)**
- **Restore** files from the trash folder (Trash)



1. Backup parameters

The top bar of the screen allows you to configure the parameters of the Source Media and Destination Media: which Media, which Recording Day, which type of action to perform.

Navigation through the different parameters is done using the Jog or Up/Down/Left/Right keys. Press OK to enter the parameter setting or validate a setting, and ESC to exit the parameter.

a. Source & target

It is necessary to define which will be the Source Media (the one from which the audio files will be copied) and the Destination Media (the one where the audio will be copied).

Media Source and Media Destination can be the SSD disk, one of the 2 SD cards, or a Media connected to one of the USB ports.

Note: *if several media are connected to the USB ports, the Cantar will only take into account the one that was first connected to one of the 3 USB ports.*

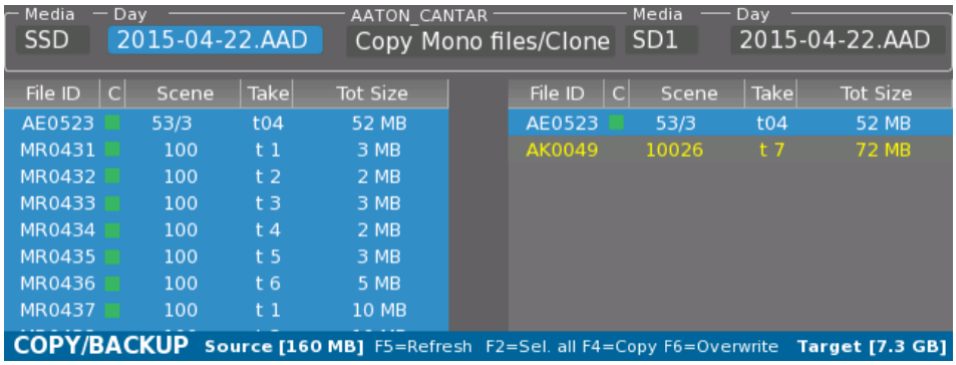
- The "Day" selection box also allows you to select the **entire project** (FULL PROJECT).
- If the **Report Setup** parameter of the SESSION menu (2 o'clock position of the main selector) is activated for at least one format, a sound report is automatically generated on the target media at the end of the copy process (attention: not in case of Idle Backup!).
- The Project selected for the backup session is indicated in the middle of the screen, at the very top. The selected project can be changed via the SESSION or AUDIO FILE BROWSER menus.
- A window refresh can be activated by pressing F5.

Several copy modes / actions to perform are available (parameter accessible in the middle at the top bar)::

- **Copy Monophonic files/Clone**: allows to copy files from source to destination without modifying the files format
- **Copy Polyphonic files**: generates a polyphonic file on the target media, from monophonic files of the source media.
- **Copy Stereo Mixdown** ("Copy Mxdwn files"): generates a Stereo Mix Down file on the destination media, from monophonic files of the source media
- **"Copy Mono + Mxdwn" and "Copy Poly + Mxdwn":** generate a copy of the mono file or with creation of a polyphonic file + creation of a stereo Mixdown (which will appear in a different folder) from monophonic files of the source media.
- **Copy Reports**: Allows you to copy the sound report only.

Note: Sound report parameters are set in the SESSION menu.

2. Backup process

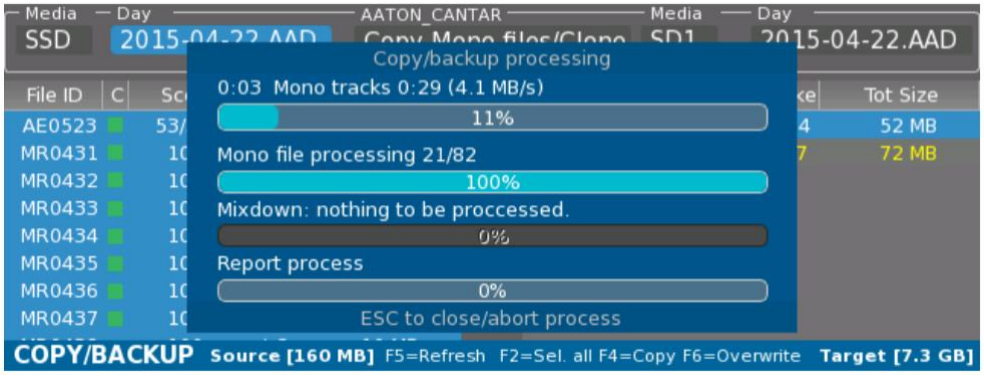


You can copy one or several files.

A single file can be selected using the Up & Down buttons.
Several files can be selected by holding Shift + Up & Down.
You can select all files in the Source Media using the F2 button (Sel All).

While scrolling through the Source Media files with the Up & Down buttons, if a file is already present on the target media it will automatically be highlighted on the target file list (example Fig. above with file AE0523, highlighted on the left and right window)

- **Copy: F4 key**. In this mode, if a file already exists on the target Media, it will not be overwritten, and the Cantar will move on to the copy of the next file
- **Overwrite: F6 key.** In this mode, when copying, the files of the same name already present on the target Media will be overwritten and rewritten.



At the end of the copy / backup procedure, if their copy is activated in the SESSION menu, the sound reports will be automatically generated

At least one sound report is generated for each shooting day (DAY FOLDER, "Day Folder"), it gathers all information relating to the sound files present in this Day Folder.

Note: Copying a file from the Trash folder ("TRASH") of the Source Media to a Destination Media restores that file. Copying a file from one day folder to another day folder can be done using the trash folder: From the SESSION menu, delete the desired file, it will automatically be stored into the project trash folder, select the trash folder as your source folder then copy it into the desired day folder of your target media

3. Reminder on the folders extensions created by the CantarX3: AAD, AAN & AAX

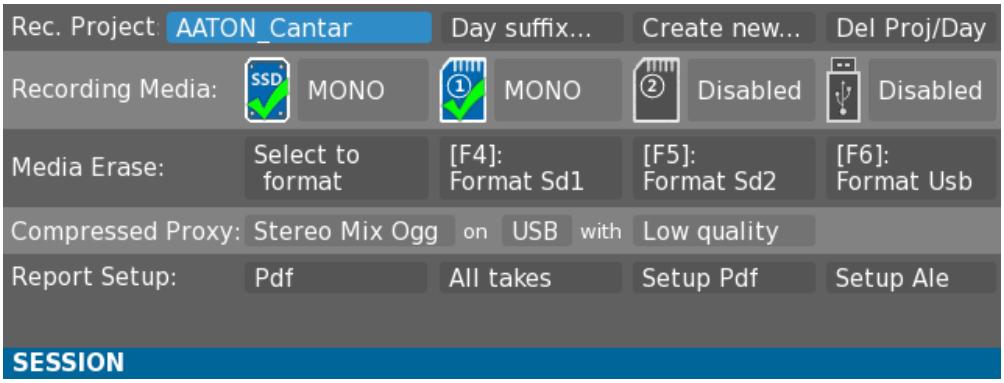
The Cantar creates different Day Folders according to the types of audio files they contain:

- **Monophonic files** are stored in a folder named YYYY-MM-DD.**AAD**
- **Polyphonic files** are stored in a folder named YYYYY-MM-DD.**AAN**
- **Interlaced stereo Mix Down files** are stored in a folder named YYYYY-MM-DD.**AAX**

VI. MENU 2. SESSION - CREATE AND MANAGE YOUR PROJECT AND SOUND REPORTS

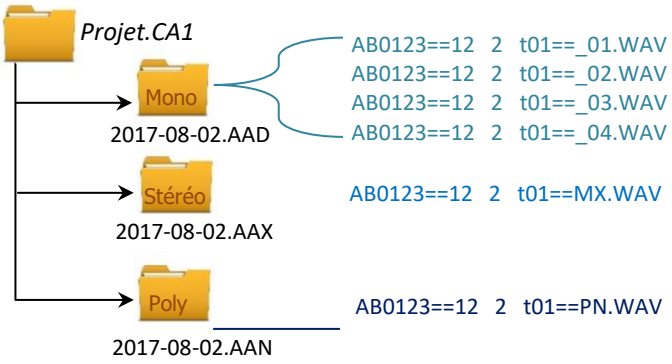
Rotate the Main Selector on the 2 o'clock position to access the SESSION Menu.

This Menu allows the management of Projects and Medias as well as the parameters of sound Reports.



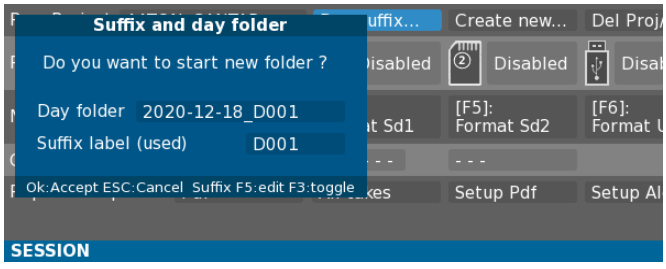
1. Project and media management

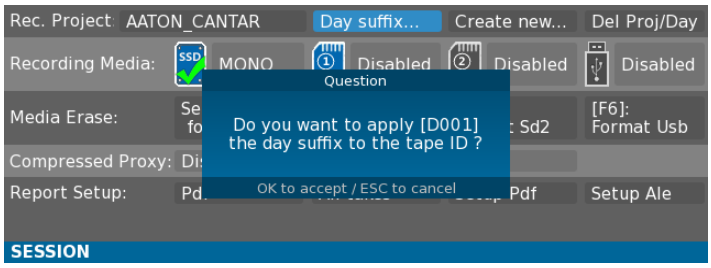
- Each project is assigned to a specific folder .CA1 (which is only created when you start recording after creating the new project)
- Each shooting day corresponds to one or more sub-folders, depending on the chosen parameters (recording sounds in Mono and/or Poly and/or generating a Mix Down)
- **Monophonic files** are stored in a folder named YYYY-MM-DD.**AAD**
- **Polyphonic files** are stored in a folder named YYYYY-MM-DD.**AAN**
- **Interlaced stereo Mix Down files** are stored in a folder named YYYYY-MM-DD.**AAX**

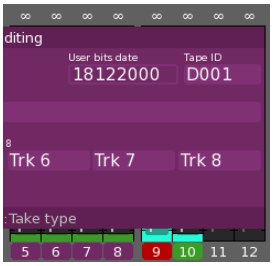


Basic Cantar X3 tree structure diagram

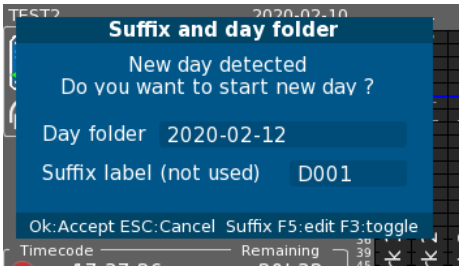
- By selecting the "Day Suffix" parameter on the top bar of the SESSION menu screen, it is possible to add a suffix to the name of the daily folder and create different folders on the same date (for example to distinguish 2 episodes of a mini-series that would be shot on the same day).
The day suffix can contain a maximum of 8 characters and can be used to fill in the tape ID field





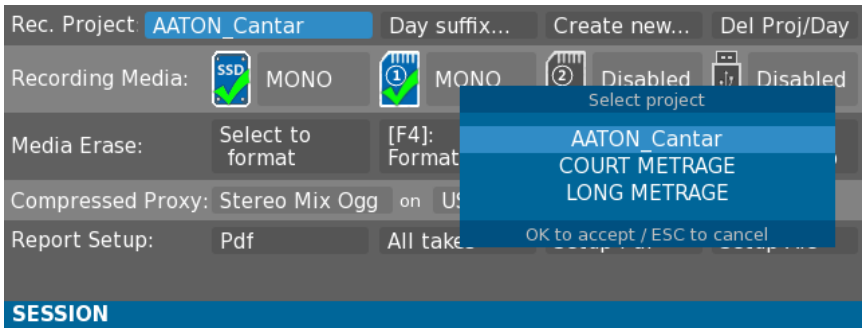


Note: As soon as the Cantar detects a change of date when turned ON, it will opens a window asking the user if she/he wants to create a new Day Folder. If the user refuses, with ESC, (for example, during a night shoot, just after midnight) The same question will be asked each time the recorder is turned on (see opposite)



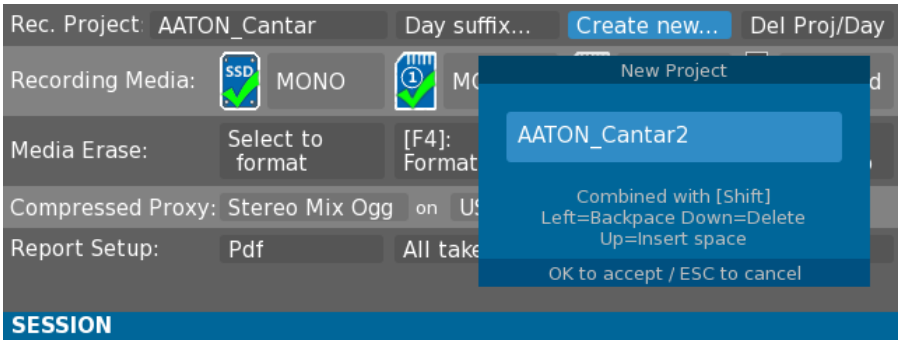
a. Project

- Selecting a project



Select the "Rec Project" parameter and press OK to choose the working Project, the one in which the audio files will be stored.
The list that appears shows all the projects that have already been created from the first Media where recording is enabled (so if you disable recording on the SSD but leave it active on the SD1 card, the list that appears will include the projects recorded on this card).

- Creating a new project



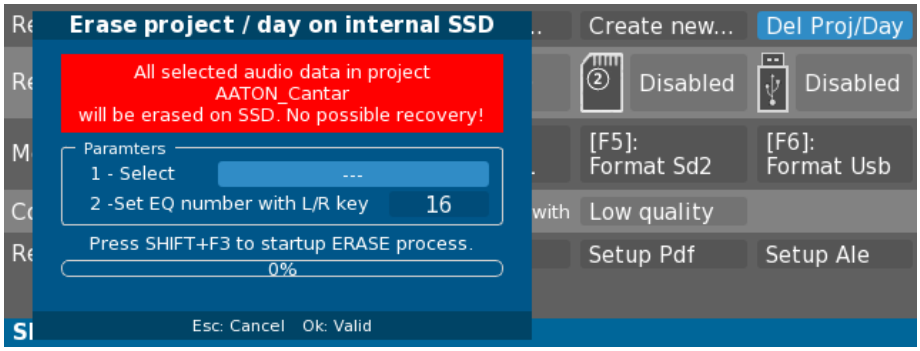
Select the "Create new" parameter Press OK, a dialog box opens (see Fig. above). Use a keyboard

connected to one of the three USB ports or the main selector jog wheel to name your new project. If you validate before entering a name, the Cantar will name this project "AATON_CANTAR" by default.

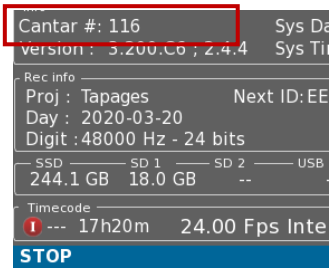
Creating a new project does not automatically create a new Project folder and a new Day folder (so this new project will not appear in the Backup Menu right away, for example): these folders will be created after the next Record. There is no "empty" project in the Cantar.

- Deleting a project or a day from the SSD

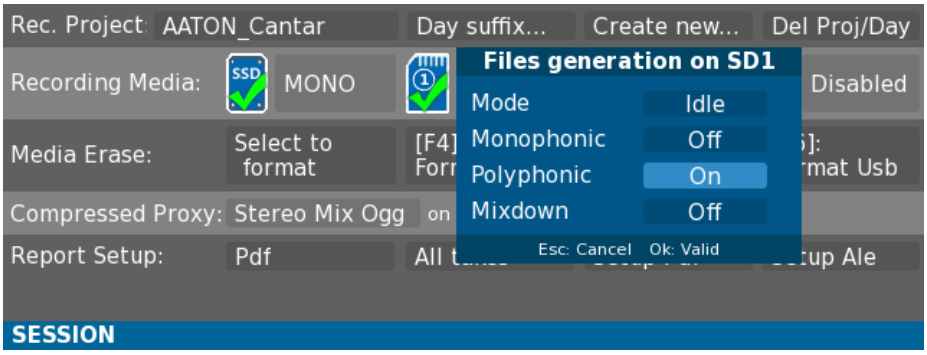
The Cantar allows us to erase a project or a shooting day on the SSD media. Select the "Del Proj/Day" parameter, press OK. A dialog box opens, asking you if you want to erase the whole project (FULL PROJECT) or a day of your choice.
This action is irreversible, so for safety reasons the machine asks you to enter the Cantar's serial number with the Left & Right keys, before starting the operation with Shift + F3 (see Fig. below). When the deletion operation is completed, exit the window with ESC.
Your Cantar serial number can be seen in the STOP menu



The Cantar serial number can be seen in the STOP menu.
- With numeric serial numbers, enter the full number, for example 116 (see opposite)
- With alpha numeric serial numbers, enter the last numeric digits, for example with sn: 19BS0001, enter 1 or sn: 19BS0106, enter 106



b. Médias management



Use the Up/Down/Left/Right buttons to highlight a media and press OK to set the recording mode for that media.

Three modes are available:

- **Live Rec**: the media is a recording media, the sounds will be directly recorded on it.

- **Idle:** the media is a backup media: the backup of sounds from the main media will be performed after each take, as soon as the Main Selector is switched to TEST mode (see the section dedicated to Backup Idle in the 10.THE TEST MODE menu (this mode is useful for using media with a low data transfer speed).
- **Disable:** The media is not used**.** In the above picture, the SD card 1 has been set as backup Idle media of Polyphonic files.

For each of the media, the Cantar can record :

- **Monophonic files**: one file per track, named "XXnnnn==SSSSS+NN==_TT.wav".

- "XXnnnn" is the Cantar identifier (File ID), which cannot be chosen, and which ensures that each file has a unique name in all circumstances.
- " == " is the separator (which can be " = " or " _ " according to the parameters defined in menu 3.TECHNICAL SETTINGS: "File Naming")
- "SSSSS†NN" is the take name and type (e.g. 122/3t2).
- " _ " is the separator before the track number.
- " TT " is the track number from "01" to "24".

Note that different take name templates are available in the 3.TECHNICAL SETTINGS: Scene &Take template menu (p.32).

- **Stereo Mixdown Files**: Stereo interleave of left and right Mixdown files
- **Polyphonic files:** polyphonic interleave of all tracks.

- If Menu 4.AUDIO & TIMECODE: "Polyphonic Mode" (see p.51) is set to "Original", the number of channels is determined by the highest track number used. Empty tracks will be replaced by digital blank.

(Example: we only record tracks 1 and 8, so we have 2 active tracks but our polyphonic file will contain 8 tracks: 1 useful, 6 empty, 1 useful track).
This procedure allows you to keep the right track count when importing into post-production tools.

- If Menu 4.AUDIO & TIMECODE: "Polyphonic Mode" is set to "Compact", only the armed tracks will be interlaced.

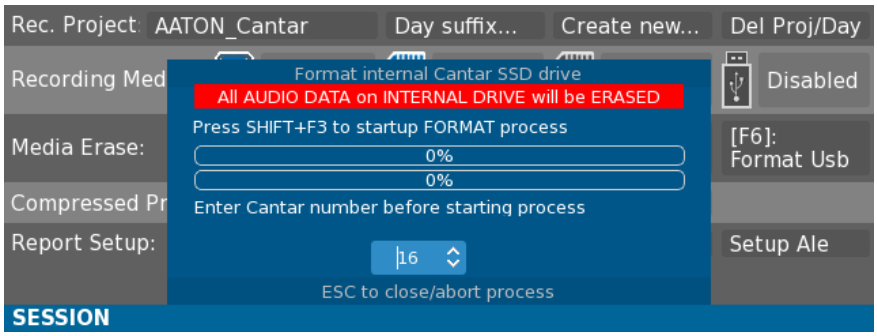
c. Media Erase

Select the "Format..." field located under the desired media to format it. Press OK, a confirmation window will open. (You can also open the formatting windows for SD1, SD2, USB media with F4, F5 and F6 respectively). Confirm the procedure with Shift + F3:
Caution: all information present on the media will be deleted.

- Formatting the SSD drive

For added safety, the SSD disk formatting is protected: the dialog box will ask us to enter the serial number of your Cantar with the Up & Down buttons before proceeding (see below).
The Cantar serial number can be seen in the STOP menu.

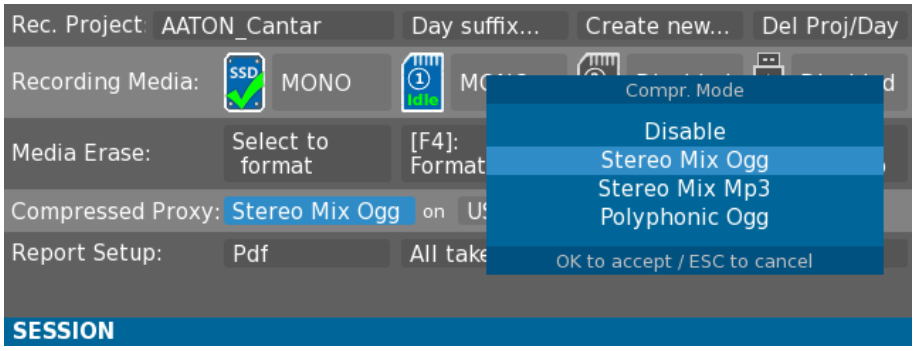
- With numeric serial numbers, enter the full number, except the first 0, for example with sn: 030, enter 30 or sn: 116, enter 116
- With alpha numeric serial numbers, enter the last numeric digits, for example with sn: 19BS0001, enter 1 or sn: 19BS0026, enter 26



d. Data compression proxy

In addition to the standard recording procedures (Monophonic, Polyphonic, Stereo Mixdown), the Cantar X3 can generate a compressed audio file. Select the different parameters from the "Compressed Proxy line and press OK to set them.

2 formats are available: Ogg-Vorbis (to generate a stereo Mixdown or polyphonic files) and MP3 (to generate a stereo Mixdown only). Each data reduction process can be activated on SD or USB medias.



Please note that this data reduction is lossy and can be set between low, medium and high quality.

2. Sound reports

Sound reports are created:
- Automatically at the end of a copy in menu 1.COPY/BACKUP (if at least one audio file is copied).
- Manually, in menu 7.AUDIO FILE BROWSER, "Snap Report" option with F6 (see p.89).

a. Report type

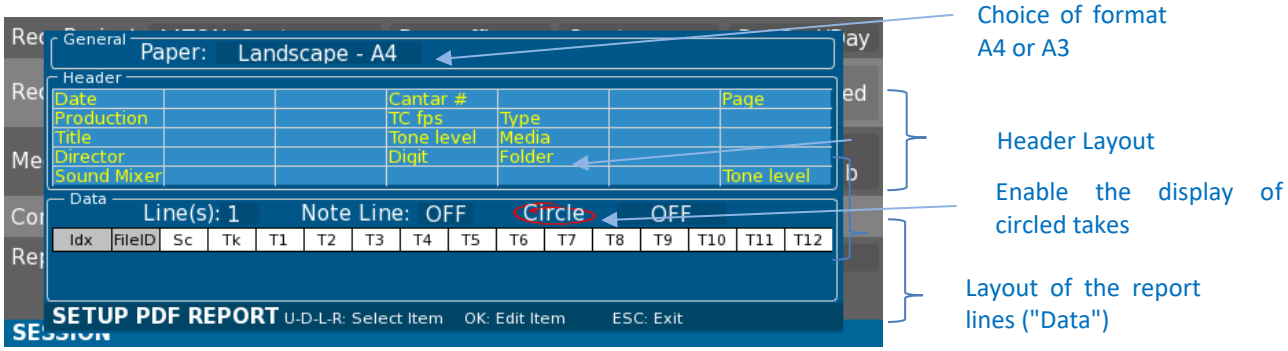
The first box in the "Report Setup" line allows you to choose to generate a PDF and/or CSV and/or ALE report.

- **PDF**: the file contains all the information of the project, according to the layout defined in the "Setup PDF" sub-menu.
- **ALE:** Avid Log Exchange, allows you to import specific metadata into AVID Media Composer, including synchronization with video files. The "ALE Setup" menu allows you to specify the video format used by the camera (between "720 / 1080 / HD1 / HD2 / PAL / NTSC") and the frame rate (choose "Auto" if it's the same than the Cantar's parameters set in the 4.AUDIO & TIMECODE menu).
- **CSV:** takes all the information from the PDF file but as a text file, editable via a spreadsheet program such as Excel for example.

The Cantar sound report default format is an A4 sheet in landscape orientation. Since version 2.87.C4, a sound report in A3 format is also available, allowing to display up to 28 columns per page. To do this, in the "Setup PDF Report" window (see fig 23), select "Paper: Landscape - A4" and press OK and choose "Landscape - A3".

Setup PDF

The "Setup PDF" box allows you to configure the header and location of the sound report data. Select this box and press OK.



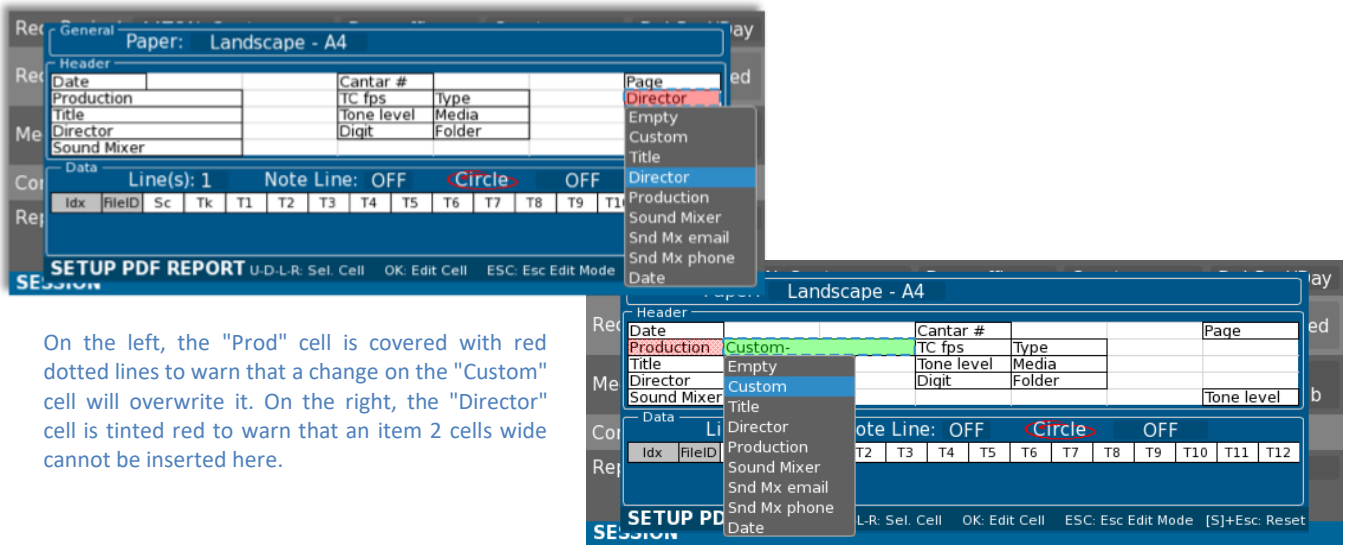
- Header

The PDF report header is composed of 5 rows and 7 columns.

Note that any change detected in the header during report generation leads to the creation of a new page (for example, if the title of the film production is modified).
Use the L/R/U/D direction buttons to highlight the header ("Header" frame, as in Fig. above) and press OK to enter the header settings (a cell will be highlighted).
Then use L/R/U/D to select a cell and press OK to edit it.

Pressing OK once allows you to validate the type of data you want to enter in this cell (Prod, Director...).
Pressing OK a second time allows you to modify the content of the cell (name of the production or director for example).

Some data require 2 cells, others 1 cell. If you change the type of data, and a data with 2 cells will replace a data with 1 cell, and thus threatens to overwrite a neighboring cell, the latter will be covered with red dotted lines to warn the user.
Similarly, if one wants to place a two-cell wide data type on the rightmost cell of the report, the rightmost cell will turn red to warn that this operation is not possible (see Fig. below).



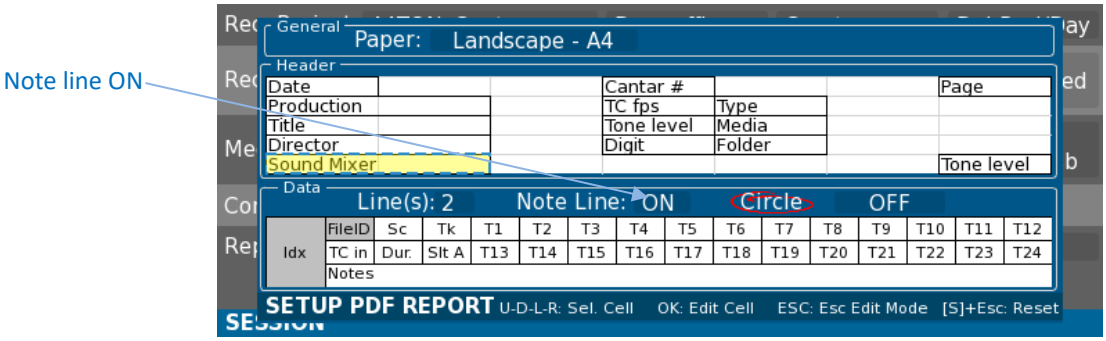
On the left, the "Prod" cell is covered with red dotted lines to warn that a change on the "Custom" cell will overwrite it. On the right, the "Director" cell is tinted red to warn that an item 2 cells wide cannot be inserted here.

To return to the default layout, on a single line or on the entire report, press Shift + ESC, choose "Current Line" or "All Lines" and confirm our choice with OK.

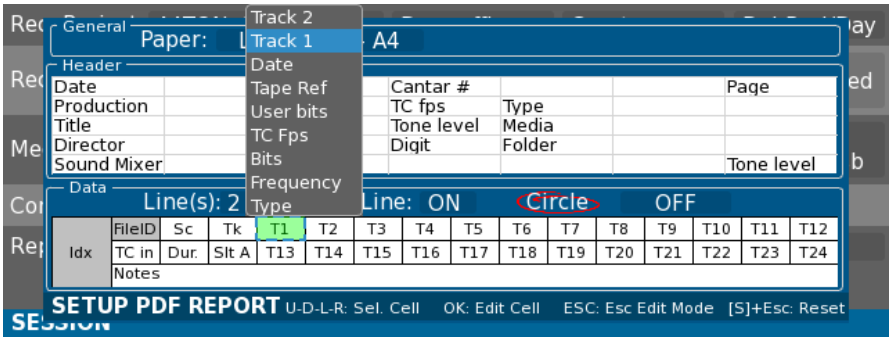
- Data

Each take can be associated with one or two lines of data, and possibly one line of notes. Note that the Note line item must be activated for the notes to appear in the sound report.

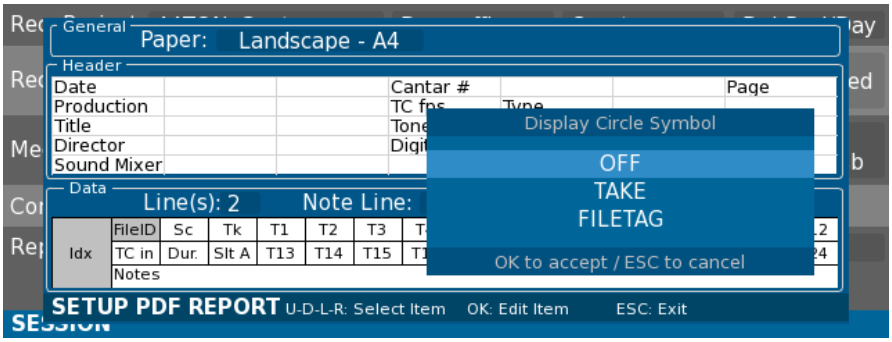
Each data line can have up to 16 columns, the first column always indicating the take index on the page ("Idx"), and the second column of the first line, the Cantar identifier associated with the file ("File ID"), which cannot be modified (see Fig. below: these two boxes are grayed out).



All the other boxes can be customized: to do so, highlight the "Data" field to manage the data report items; press OK. Select a box with U/D/L/R and press OK: a drop-down menu will show us all the types of information that can be inserted in the box (see below Fig.). Make your choice with Up & Down and validate with OK.



At users' preference, the circled takes can be indicated in the PDF by a red circle around the file identifier (file ID) or the take number.



VII. MENU 3. : TECHNICAL SETTINGS

Place the Main Selector on Menu 3 (at 3 o'clock) to access the TECHNICAL SETTINGS Menu. This menu allows you to modify the technical parameters of the recorder

Parameter	Value
Sc/Tk template	NNNx/NNx.tNNN
Sc. increment.	Numeric (No reset)
File naming	Cantar original
Vum. mxdn shifted	OFF
Vum. grid	ON
Vum. line level	-18 dB
Vum. gradian	OFF
Vum. red zone	-9 dB
Vum. yellow zone	-30 dB

NNNx/NNx.tNN template fits the mostly used Sequence/Scene.

The 'all X' template is totally open, giving the Operator maximum flexibility.

Both templates can be selected with or without the take indicator. If without is chosen, take indicator can still be entered but will not appear in the take metadata or in the file name.

TECHNICAL SETTINGS

The left part of the screen shows the menus, between which the user can move with the Jog or the Up & Down arrows.
The right part of the screen presents the description of the operation relevant to the highlighted menu.
Press OK to enter the highlighted menu, the Jog wheel and Up & Down arrows allow you to move between the different settings.
Press OK to validate the selected setting, and the ESC key to exit the menu.

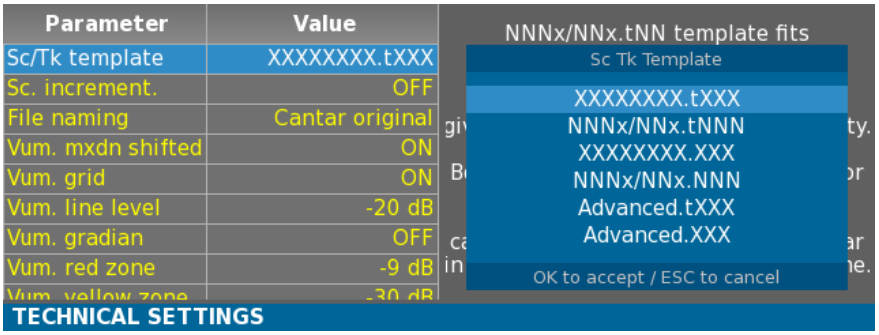
1. Scene & Take Template

This menu allows you to choose the take name structure between:
- a standard structure: NNNx/NNx.tNN (structure of type: Seq/scen.Type of take&Take number) or NNNx/NNx.NNN (without indication of the type of take)
- an open structure XXXXXXXXXX.tXX or XXXXXXXXXX.XX
- an advanced structures (allowing the use of extra digits to identify Seasons, Episodes, Special Effects, 2nd Team...)

The basic structure of the take names ("Scene") in the Cantar follows the following pattern:
nnnA/nnA.tnn for "Sequence, Slate, Take Type, Take Number".

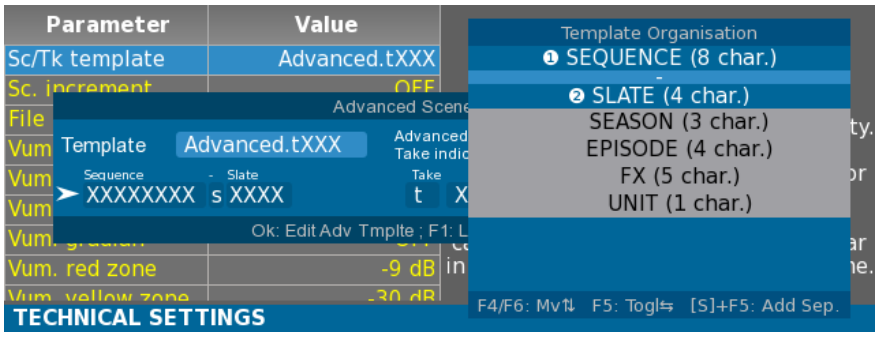
- **Sequence**: 3 characters available + a 4th character (space, letter "A" to "Z" or "a" to "z", number "0" to "9")Plan : 2 + 1 characters
- **Take Type:** the take type can be modified in PRE-REC mode or during REC with the F5 key, or by hand in menu 7.AUDIO FILE BROWSER.
  - "t" = time sync (basic type) ; - "p" = pick-up ; - "w" = wild track (sound only) ; - "a" = announce ; - "n" = not good (not good; in this case the take number is not automatically incremented, e.g. for an interrupted, unclapped take)- "r" = rehearsal- "g" = sound guide (control sound)
- **Take number**: 3 characters available

Note: Two structures exist, with or without the indication of the Type of Take. If the "without" version is chosen, the Take Type can still be modified in 11.PRE RECORD mode (see p.130) but it will not appear in the file name or in the Scene and Take metadata (Bext chunk, iXML).



Starting with software version 2.88, the Cantar offers new advanced templates: these templates allow you to add additional information fields in the name of the audio file.

Once the template is chosen, a dialog box allows you to add / remove (with F5) and arrange (with F4 and F6) the new fields: SEASON (4 characters), EPISODE (4 characters), SEQUENCE (8 characters), SLATE (4 characters), FX (5 characters), UNIT (1 character). All these fields can be edited in PPR mode when editing metadata (see XIV./MENU 11. : PRE RECORD MODE (PPR) p.130).
With these advanced templates, an filename can be composed of :
SEASON + EPISODE + SEQUENCE + SLATE + FX + UNIT + TAKE TYPE + TAKE NUMBER
It becomes then possible to have very detailed file names, mentioning, for example, the season, the episode, but also to identify the effect scenes (FX), or the 2nd crew (UNIT) during the filming of a TV series.



2. Scene increment

This menu allows you to modify the way the shortcut "Schift" + "Up / Down" works in PPR mode.
If you have not chosen an advanced Scene & Take template (see above), this shortcut allows you to automatically increment the last character of the name of the Sequence (Scene). In the case of a sequence name written as "Sequence / Scene" (for example "12 / 1" or "37 / 13"), this shortcut allows to increment the last character of the scene name.
Different options are possible:
- "**Off**": the shortcut is disabled
- "**Alphabetic** (Sequence reset Slate)" and "(No reset)": the shortcut Shift + Up performs an increment in the form of a letter: 22 → 22A → 22B
- "**Numeric** (Sequence reset Slate)" and "(No reset)": the shortcut performs a numeric increment of the last character: 22 → 23 → 24

The "Sequence reset Slate" option only works if an advanced Scene & Take name template ("Advanced.tXXX" or "Advanced.XXX") has been chosen in the previous menu and a separate field is available to name both the Sequence and Slate. In this case, the "Sequence reset Slate" option ensures that a change in the sequence name resets to 1 (in the case of numerical incrementing) or to

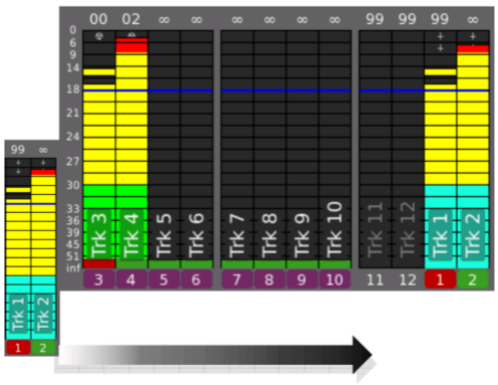
blank "..."(in the case of alphabetical incrementing) the slate number of the next take. If "No reset" has been chosen, a change in the sequence name will have no effect on the slate identification
- If the order of shots in a shooting sequence follows the order of editing (22/2 is shot first, then 22/4, 22/1 and finally 22/3 for example), it is easier to enter the next shot number on a one-by-one basis.
- If the shooting order does not follow the editing order (the first shot of the sequence will always be 22/1, then 22/2, 22/3 and 22/4, whatever the shot values), the option "Numeric (Sequence reset Slate)" can be used to quickly name the next shot with Shift + Up/Down.
- In the case of a movie where shots are incremented with letters (as we can see in the United States), the "Alphabetic" option can be useful.
- Finally, in the case of a movie where the shot number is independent of the sequence number (as can be seen in England: for example shot 22/4 will be followed by 59/5, 59/6, 59/7, then 12/8, 12/9 etc.), the "Numeric (No reset)" option can be used to quickly rename the upcoming shot.

3. File Naming

Specifies the Cantar's names for the audio files :
- Default name "Original Cantar": XXnnnn==SSSSSSSS†NN==_TT (AA1000== sc tk ==_N.WAV; block separation with the == sign)
- Only with underscores (low dashes): each " = " is replaced by a " _ " ("AA1000__sc_tk___N.WAV")

4. Vum Mxdn shifted

If set to ON, moves the VU meters of all Mix Down tracks to the right of the screen (for TEST, PRE REC, REC modes) no matter the tracks numbers chosen for the Mix Down tracks (see below).



5. Vum grid

Enables / disables the horizontal lines that appear on the VU meters (see above).

6. Vum. line level

Allows you to change the level of the blue line used as a reference for the modulation level: it can be placed freely between 0 and -50 dB, at -∞, or deactivated (see above: the line here is at -18 dB).

7. Vum. Gradian

By default, VU meters show a color variation from green (low sound) to red (sound close to saturation) (see above). When Gradian is set to ON, the distinct green, yellow and red areas of the VU meter no longer appear and the colors show a gradual color variation.

8. Vum. red zone

Sets the level above which the VU meter turns red (between 0 and -50 dB, at -∞, or OFF).

9. Vum. yellow zone

Sets the level above which the VU meter turns yellow (between 0 and -50 dB, at -∞, or OFF).

10. Vum. scale

Allows you to set the display pattern of the VU meter:
- **Original**: VU-meter identical to the Cantar X1/X2 scale in dB (the part from -20 to 0 dB occupies the upper third of the screen)
- **Expanded**: Zoom on the upper part of the VU meter (the -20 to 0 dB part occupies the upper half of the screen)

11. Vum. Speed

Sets the velocity of the VU meters, between 1 (slow) and 5 (fast).

12. Peak hold

Sets the duration of the VU meter peak indication between 0.5 and 5.0 sec. The peaks are indicated by a red rectangle at the top of the relevant VU meter.

13. Set system date

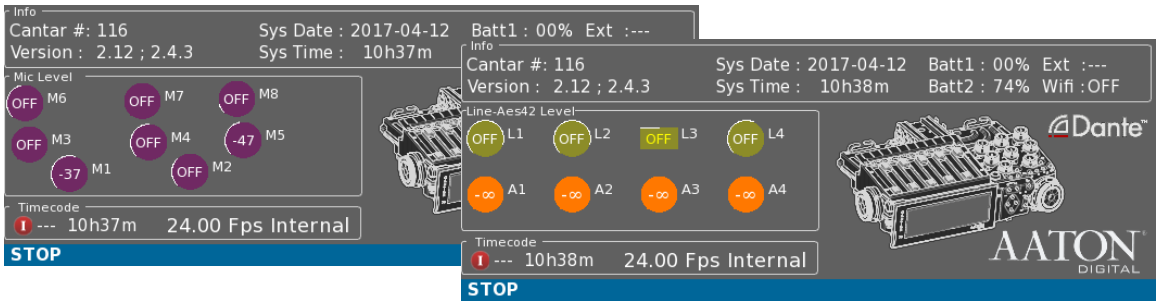
Allows you to configure the current date, used by the Cantar to create the Recording Day Folders. They have the structure YYYYY-MM-DD (for Year - Month - Day).
This date is also written on the header of the sound report.

14. Set system time

Allows you to configure the System Time (STC), which is the time that the CantarX3 computing system takes as reference.
It is therefore recommended to set this System Time to the time of your watch.
Beware, this System Time is not the reference timecode of our files! It is simply the system time, even if it is possible to ask the Cantar to jam this STC to make it the timecode reference of the audio files (in TEST mode, with Shift+F3 then OK).
For all questions about timecode, see also "Facts & Figures : **The management of Timecode by the Cantar"**

15. Display input level

If this menu is enabled, as soon as the position of an encoder or slider is changed in STOP, TEST, PRE REC (PPR), and REC modes all the input levels of rotary encoders or linear actuators of the same type will be displayed..



The menu allows you to choose a display: to the nearest dB, to the nearest 0.5 dB, to the nearest 0.1 dB, or OFF (example: above, the display is set to the nearest dB, see Microphone input 1).
The display will appear as soon as an encoder or slider changes position, and will remain visible for a few seconds.

16. Display Track Attenuation

When this menu is enabled, any change in the position/level of a track's controller (slider or rotary encoder) will be displayed in dBFS:
- Above the VU meters ("**Top of vumeter**") (values between +0 and +12 dB will be displayed in orange); in this case the level of the signal modulating on the tracks is not displayed.
- On a dedicated window on the left of the screen (which will temporarily and simultaneously display the level of all 24 tracks) ("**Dedicated panel**"); in this case the level of the modulating signal on each track will be displayed above the corresponding VU meter.
- Or nowhere ("**OFF**")

17. Backlight

This menu allows you to adjust the screen backlight. Press OK to enter the menu, use the Left & Right keys to change the "Automatic mode" setting ON or OFF and the Up & Down arrows to change the lighting value (from "Auto Offset" if automatic mode is desired, or from "Level in manual" otherwise). Confirm with OK.
It is possible to choose a manual adjustment (by selecting: "Automatic mode: OFF"), with values between 8 (very dark) and 255 (very bright). It is also possible to choose an automatic adjustment ("Automatic mode: ON"). We then define the Auto offset, i.e. the attenuation that the Cantar operates according to the brightness it receives
In automatic mode, the Cantar detects the ambient brightness thanks to a sensor located between the right edge of the screen and the F1 key.

Keep in mind that screen backlighting is a major source of power consumption and that turning it to full power may not always be necessary..

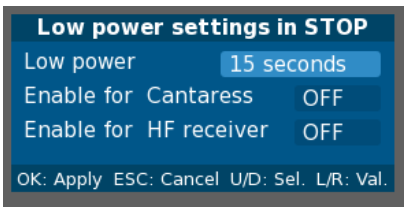
18. Led level

Allows you to adjust the brightness of the LEDs (solo buttons, F keys...), between 0 val (off) and 63 val (maximum brightness).

19. Souriquette LED

Allows you to adjust the brightness of the LEDs of the AATON Souriquette, a Cantar control accessory. Values range from 0 (monochrome and low value) to 11 (from 1, the brightness will be multicolor).

20. Low power in stop

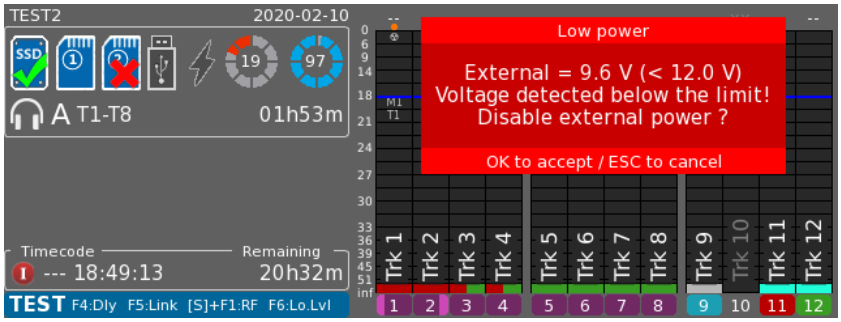


This menu is used to configure the Cantar standby mode and, if necessary, to switch off the Cantaress and the HF receivers (if controlled by the Cantar Hydra system, see p.150). When the Main Selector is switched to the STOP position, the Cantar will go into standby mode after 15 sec, 30 sec, 1 min, 2 min, or never ("OFF") (after a warning screen, where you can interrupt the standby mode with ESC)
In standby mode, the Cantar's display will turn off, buttons F4 to F6 will flash, and all functions will shut down, including AES and DANTE inputs/outputs and feeding audio to the outputs. To exit Standby mode, simply press any one of F4, F5, or F6, or change the position of the Main Selector.

A Cantar in standby mode can be left on for up to a day before the batteries run out, which can be a useful way to save battery power..

21. External voltage limit

Allows you to adjust the external power supply voltage below which the Cantar will send an alert message to the user, asking him if she/he wants to disable the external power supply that has become too low (voltage to be chosen between 10.5 and 12V) (see below).



22. Keyboard layout

Allows you to choose the external keyboard configuration (QWERTY, AZERTY...). Note that the Cantar must be rebooted for the changes to take effect.

23. File network access

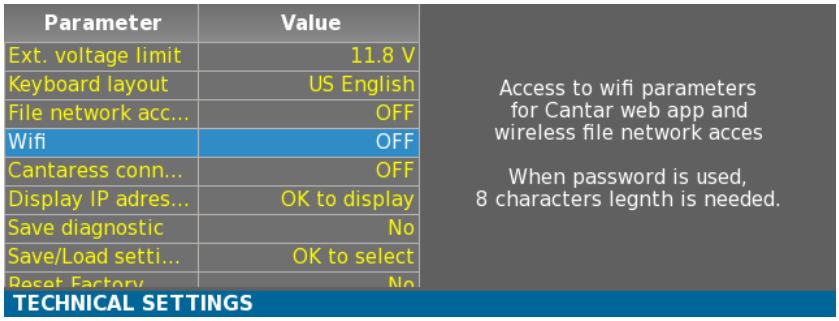
If enabled ("ON"), allows access to the Cantar's media (SSD, SD1, SD2) from a computer via the Ethernet port.
The disks can be accessed by configuring a network link according to the information given by the Cantar
- On a Mac computer: by connecting to the address smb://X3-XXXXXXXXXXXXXXXXXXX
- On a Windows computer: by connecting to the address \X3-XXXXXXXXXXXXXXXXXXX

(XXXXXXXXXX being the serial number of the Cantar for example: 83 for Cantar n°083) - Login: cantar; password: x3 .

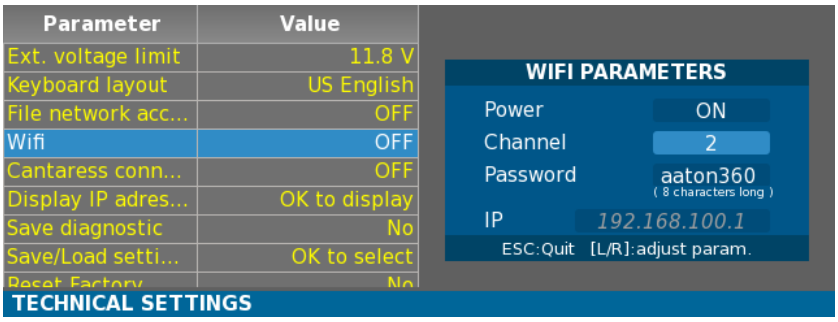
Notes: If the Cantar is directly connected to a computer without going through a DHCP server, the Cantar will automatically be assigned an IP address (169.256.XX.XX).
For a Windows computer: Depending on the version of the OS, the Cantar may take up to 1 minute before it is automatically assigned an IP address, in the meantime it is not possible to connect the Cantar to a network. Early versions of the Cantar firmware allowed read-only media access, but latest firmware versions now also allow the operator to have write access.

24. Wifi

Enables / disables the Cantar's WIFI module.

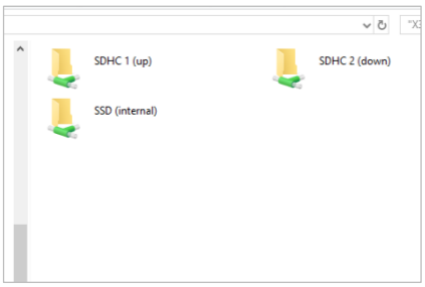


If enabled ("ON"), a WIFI network will be generated by the Cantar via the antenna located on the right side of the machine (above the SD card slots). This network will be named: CANTAR_X3_XXXX (XXXX being the Cantar serial number).



Press OK: a window will appear in which you can navigate with the U & D keys or the Jog wheel and change the parameters with the L & R keys (see above). You can then determine :
- Whether the WIFI network is ON or OFF
- The network WIFI channel
- The network password
- The recorder IP address
The WIFI network provides 2 features:
- The wireless File network access : allows to connect to the Cantar's media (SSD, SD1, SD2) to retrieve audio files without a wired connection (note that the transmission rate is quite slow, around 10Mo/min)
- Metadata entry of the takes from any device with a browser (tablet, smartphone, computer)File network access sans fil :

After activating the Cantar's Wifi module and connecting to this network from a computer (using the password provided by the Cantar, by default "aaton360") :
- Open a file explorer or finder
- In the navigation bar, enter the network address proposed by the Cantar (Windows : \X3-XXXX ; Mac OSX : smb://X3-XXXX , with XXXX being the Cantar serial number)
- Validate the connection with the identifier ("cantar") and password ("x3") proposed by the Cantar.
- A window displays an access to the SSD, SD1 and SD2 disk.



25. Cantaress connection

Enables the use of an AATON Cantaress control surface connected to the CantarX3 by selecting its serial number.

26. VNC server

Using a VNC client on your PC or MAC device (for example. Real VNC Viewer), you can connect it to the Cantar through the local network. The VNC client will displayed the Cantar screen and allows a basic remote of the recorder. The regular keyboard arrow keys, “enter” keys and short cuts can be used in the VNC client interface.
[CTRL+ESC]=toggle PRE-REC/RECORD [CTRL+F3]= TEST [CTRL+F4]=STOP [CTRL+F5]=PLAY...
Note: The mouse won't be supported, and the shortcuts can't be customized. The display accuracy depends of the network in use (WIFI or Ethernet cable connection).
Use IP address 192.168.100.1, Password: aaton360

27. Display IP adress

Displays the Cantar IP address

28. Save diagnostic

Allows you to generate a diagnostic file on one of the Cantar's external media (SD1, SD2, USB).
Such a file, for example following a bug, makes it possible to "memorize" all of the Cantar's parameters at the time of the problem. Sent to Aaton, this file can facilitate the analysis of the problem

After a bug, the following actions can also help:- Take a screenshot with Shift+F7 on a keyboard connected to the Cantar or with your smart phone to better keep track of an error message.
- Perform a "Save diagnosis" to keep track of the Cantar's parameters at the time of the problem.

Press OK: a dialog box appears, asking you on which external media you want to save the diagnostic file (or "No" to cancel the action). Select the media with the Up & Down keys or the Jog wheel and confirm with ok - Email the file to Aaton Digital: support@aaton.com

From any Menu and main selector position, a diagnostic file can also be generated by simultaneously pressing either:
6 Solo buttons of the embedded mixer, slider 1 to slider 6
4 Solo buttons of the rotary pot, pot 1 to pot 4
If a problem happens, always generate the diagnostic file before rebooting the recorder. After a reboot, the event memory is reset and no longer contains records of the problem

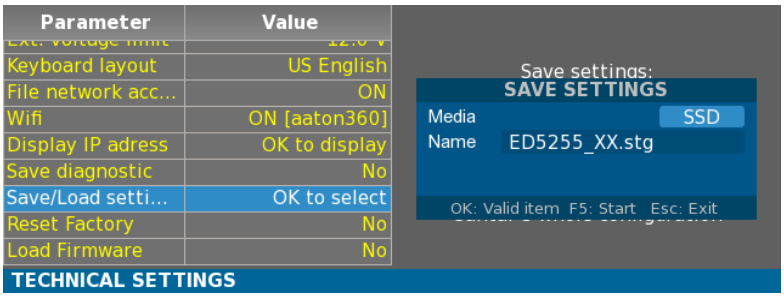
29. Save/Load settings

Allows to save the recorder configuration as a whole: parameters, input and output routings, track name library, encoder/slider assignments. This backup can be done on any of the Cantar's media:
When recalling a configuration (from any media), we can choose to recall only certain elements (routings, encoder and slider assignments...) and leave the others unchanged.

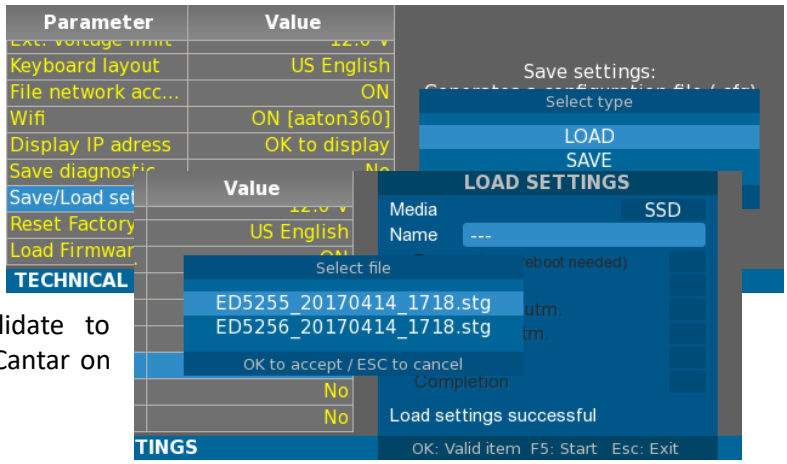
b. saving parameters

This action creates a configuration file (.cfg extension) on the media of your choice.

Press OK, then select "SAVE" and validate with OK: a dialog box appears, allowing you to choose the media on which you want to save your configuration (choose with the Left & Right keys or the OK key; no validation), and to rename your file.
By default, the Cantar selects an automatic name based on the Filetag currently in use followed by the current date and time. Press F5 to launch the backup.



c. Loading parameter



Press OK, then select "LOAD" and confirm with OK.
In the dialog box that opens, highlight the box associated with "Media" and change the desired media with Left & Right or OK (no confirmation).
With the Up & Down keys: highlight the box associated with "Name" and validate to display the list of files detected by the Cantar on the chosen media

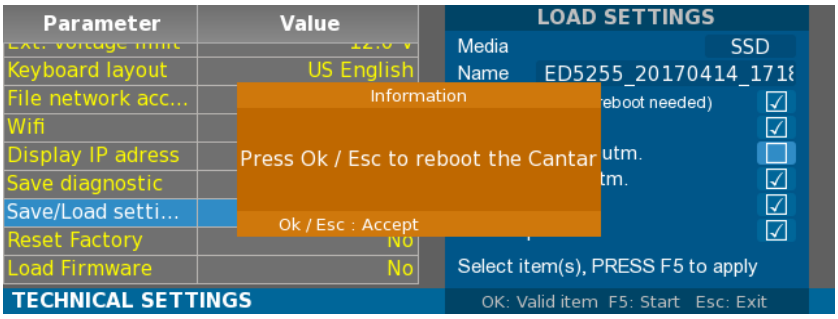
If the Cantar does not react to a validation of the field "Name", it means that it cannot find any configuration file saved on this media.

Select the desired configuration file and confirm with OK.
You will then have access to all the Cantar settings stored in this configuration file. The Up & Down keys can be used to highlight settings and mark/unmark them with OK.

- **Parameters** : The general parameters of the Cantar (sampling frequency, VU-meters, etc.)
- **In-Grid** : The 26 input routing configurations
- **Headphone Outmaps** : the 26 headphone output configurations
- **Line / AES Outmaps** : the 26 Line and AES output configurations
- **Assignment** : the assignment of rotary encoders, mixer sliders and Cantarem sliders (I & II).
- **Completion** : the track name library (see the section on Menu 11.PRE RECORD).

The unchecked settings will not be taken into account when the configuration file is recalled. It is thus possible to recall only input routings, or headphone output routings, or to switch very quickly from one slider assignment configuration to another.

Note: The recall of the general parameters ("Parameters") will require to reboot the machine.
Note that it is not possible to delete a configuration that has been saved, except by formatting the media.
Once you have made your choice in the settings you wish to recall, press F5 to load the configuration.
A message tells you that the procedure has been successful ("Load settings successful"), or asks you to confirm the Cantar's reboot if you wish to recall your general settings ("Parameters") (see below).



30. Reset factory

Allows you to recall the factory settings.
Pressing OK brings up a dialog box, which allows you to recall either :
- The settings of all the parameters of each menu ("Parameters") (this choice will also affect the assignments of the encoders and sliders and the metadata)
- Input/Out Routing Configs only
- All the parameters of each menu and the input/output routings.

31. Load options

Allows you to load the Cantar's optional features (available since version 3.200.C6) from an SD card or USB key. Enter the menu with OK: the Cantar indicates which option files have been detected (CMU files), on which media, or it indicates "No file found" if no .CMU files are present on the removable media. If needed, you can restart a scan of the available media with F5. Select a file, confirm with OK or cancel with Esc. In STOP mode, press F2 to check your Option status

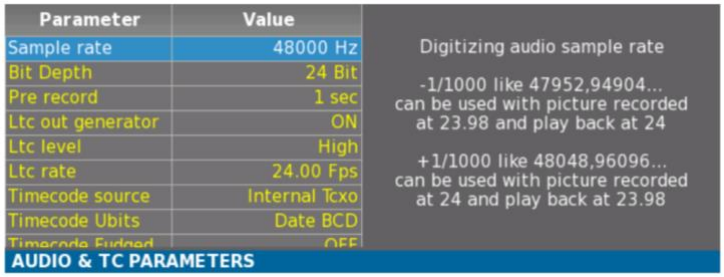
32. Load Firmware

Enables you to update the Cantar Firmware and Operating System.
- Download the update from Aaton's website (http://www.aaton.com/software-updates).
- Extract the update file (.csv extension), which is normally contained in a zip file, to a USB media or SD card.
- Ensure that the Cantar is connected to a reliable power source (use two sources: the external power supply and one internal battery).
- Insert the USB media or SD card into the Cantar, open the dialog box in the "Load firmware" menu with OK.
- The Cantar tells us the update files it found on USB and SD cards. Select the desired update and confirm with OK to start the procedure.

WARNING:
Loading a new version of the software can update the content of the FPGA. After an update, the Cantar will restart and update the FPGA. A dedicated window will then display the progress bar of this operation. As recommended by the Cantar's screen, DO NOT STOP THE MACHINE DURING THE UPDATE. For safety, use at least two parallel power sources (for example, 2 batteries or a battery and an external power source), with sufficient reserve power.

VIII. MENU 4. : AUDIO & TIMECODE PARAMETERS

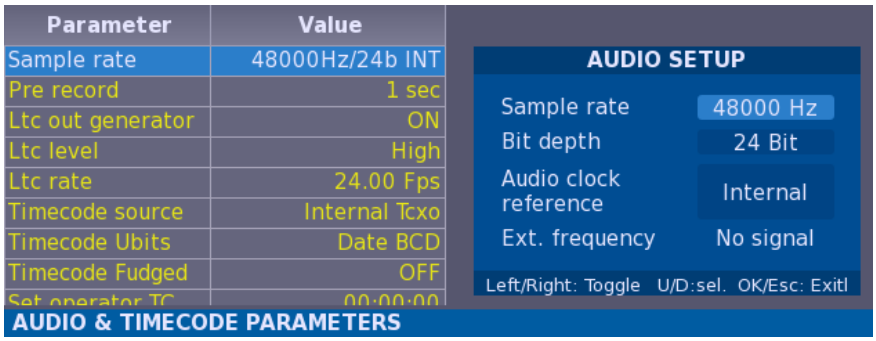
Set the Main Selector to MENU 4 (at 4 o'clock) to access the AUDIO & TIMECODE PARAMETERS Menu.
This menu allows you to change the parameters related to audio and timecode.



The left part of the screen features a menu on which the user can move with the Jog or the Up & Down arrows.
The right part of the screen provides a description of the action relevant to the highlighted menu.
Press OK to enter the highlighted menu, use the Jog and Up & Down arrows a to move between the various parameters.
Press OK to confirm the selected item and the ESC key to exit the menu.

1. Sample rate / Bit Depth

Defines the sampling frequency, and the quantization, at which our audio will be recorded.
This menu also allows you to define whether you want to use an internal or external reference clock (Wordclock). Enter the menu with OK, use the Up & Down keys or the Jog to choose the parameter to be modified and the Left & Right keys to change its value.



Notes :

- Available sampling frequencies are: 44100 Hz, 47952 Hz, 48000 Hz, 48048 Hz, 95904 Hz, 96000Hz, 96096 Hz, 191808 Hz, 192000 Hz, 192192 Hz.
- The available bit depths are 16-bit and 24-bit.
- The Wordclock input is located on the Mini Delta Ribbon Connector ("Options" connector) Pin 21 = Wordclock In and Pin 22 = Ground.
- Sampling rates at -1/1000 such as 47952,94904 can be used if the image is recorded at 23.98 frame/s and projected at 24. Frequencies at +1/1000 such as 48048, 96096 can be used if the image is recorded at 24 frame/s and projected at 23.98

2. Pre record

Determines the duration of the pre-record buffer: to be chosen between 0 (OFF) and 30 seconds (15 seconds max at 96kHz, 5 seconds at 192kHz ±1/1000).
The memory buffer is loaded when the main selector is in PRE REC mode.
The pre-record duration is automatically taken into account in the timecode calculation, especially when the Cantar is in external timecode mode.

3. Timecode : Ltc out generator

Enables or disables the external LTC generator (LTC: longitudinal time code). When this menu is activated, the Cantar replicates its internal timecode (or the external timecode it receives), and outputs it on its lemo 5 connector (located under the screen on the left).
In PLAYBACK mode, if the "ON with playback TC" option has been selected, the Cantar outputs the timecode of the audio files it is playing . If the "ON without playback TC" option has been selected, the Cantar will play back its current timecode.

4. Timecode : Ltc level

Allows to manage the output level of the timecode signal if "Ltc out generator" is ON. Three levels are available: "Low", "Medium", and "High".

5. Timecode : Ltc rate

Determines the frame rate assigned to the timecode.
The frame rates 24, 25, 29.97df and 30 are intended to be used if the camera itself has a frame rate of 24, 25, 29.97df or 30 fps. In this case the timecode will be indicated with separations in the form of ":".
The 23/29 frame rates, mode A (Avid v11.3.2), B (Basic), C (Compensated) are intended for use when the camera operates at HD23.976 and HD29.97. By default in this case, choose mode C.
In this case the timecode will be indicated with separations marked as "*". In this menu the following choices are available: 24, 25, 29.97df, 30, 23.98ndf mode A, mode B, mode C, 29.97ndf mode A, mode B, mode C.

6. Timecode source

Allows you to determine the source of the timecode :
- "Internal Tcxo" : the timecode takes as reference the internal quartz of the machine.
- "External LTC": the timecode takes as reference the signal incoming on the LTC input (lemo 5 under the screen on the left) from an external source. The internal timecode of the Cantar will be reset to the incoming LTC each time the record is activated (REC mode).

7. Timecode User-bits

To determine the content of the User bits that are indicated in the take metadata, and included in the outgoing timecode signal on the Lemo 5 socket of the Cantar-X3.
When editing metadata in 7.BROWSE menu (p.85) and 11. PRE RECORD menu (p.128), the "User bits" and "Tape ID" ("Tape ID") parameters can be filled in automatically or manually depending on the parameters selected in this menu.

- **Hexa by user :** User bits are entered manually as metadata (scene, take...)
- **Hexa by LTC input :** the User bits field is automatically updated with the external LTC User bits taken for reference
- **Tape ref. Ascii :** the first 4 characters of the "Tape ID" are encoded as ASCII characters
- **Tape ref. hexa :** the first 4 characters NNNNN of the "Tape ID" are noted as User bits 0000NNNN (the use of numeric characters is recommended).

- **Date BCD :** the date associated with the audio automatically determines the content of the User bits, in ISO format (e.g. if the audio is recorded on the date 25/02/2019, the User bits will automatically be written 25021900).

8. Timecode Fudged

If this menu is "ON", the time stamp of the audio file corrects the timecode errors of some HD cameras, whose timecode may drift during the day.
Warning: If necessary, the timecode may be offset by up to 60 ms.
To avoid timecode errors this setting is not saved when the Cantar is switched off.

9. Set Operator Timecode

If you enter a timecode value in this menu and validate it, the Operator TC (OTC) immediately becomes the new timecode reference, and will be written on the next recorded audio files.
In STOP, TEST, PRE REC, REC mode, the "OTC" logo is displayed in the lower left corner (see below: The management of the timecode by the Cantar p.54).

10. Set RecRun TC

If this menu is activated, Record-Run TC or RecRun TC becomes the new timecode mode. With Record Run, the Timecode counts up whenever the Cantar is recording
In STOP, TEST, PRE REC, REC mode, the "RTC" logo is displayed at the bottom left (see below: The management of the timecode by the Cantar p.54).
Note: Record-Run mode then remains active until a different timecode source is selected; in this case the timecode will return to its default Free Run mode (Time of Day, or Free Run, Timecode runs continuously and what is written to the audio files is the 'time of day' or whatever point the Free Run Timecode has counted to when recording is started)

11. Clap Detector

Selects the channel that is used for automatic clap detection input ("AutoSlate detection").
For example, if "Track 1" is selected, after the start of the recording, the Cantar will automatically try to identify a clap-like sound on track 1 and place a clap marker at this exact position on the take.
The following choices are available: OFF (clap detection disabled), MIC IN 1 to 8, LINE IN 1 to 4, TRACK 1 to 24.
Note: The design of automatic clap detection gives it a 95% chance of correctly identifying a clap. In this case the content of the "Slate-TC" box on the sound report appears in italics, to indicate that this automatic value should be either confirmed or ignored.
Users can also manually perform a clap detection by pressing F4 within 6 seconds after the clap.
Manual detection: In the case of a multi-camera shoot, resulting in several successive claps, the Cantar will place several markers called "SA", "SB" ... "SJ". A maximum of 10 claps can be marked in this way. The quality of the detected clap is indicated on the screen, with a minimum of 25%; a clap rated 75% has a high chance of being correctly detected.
Automatic detection: ("AutoSlate detection"): if after starting the Record, the F4 key is not pressed, the AutoSlate function will detect the highest sound impact of the take with a 95% probability of detecting the clap; in this case the content of the "TC Slate" box on the sound report will appear in italics

To set up the display of the claps timecode in the sound report, go to menu 2.SESSION: Report Setup

12. Mixdown Limiters

Enables a digital limiter on MixDown Left & Right tracks separately.
If your Cantar X3 is equipped with the optional feature SUB GROUP, this menu also allows the activation of a limiter on Auxiliaries 1 & 2, separately.

13. Fader Max Level

Determines the level of amplification provided by the mixdown actuators (linear slider or rotary encoders) when they are at the maximum end of their range.
Three choices are available:

- 0 dB (the actuators only act as an attenuator, and do not modify the sound level when they are at the end of their stroke)
- +6 dB
- +12

14. EQ location

Determines if the channel's three band equalizers are located :

- on audio inputs only ("EQ on inputs only"), affects your ISO tracks
- on post fade tracks only (EQ on post fade only), affects the Mix Down channel only
- or on both ("EQ available on both")

Note : if you activate an EQ in post-fader mode, this EQ will not be audible on the relevant track, but only on the channel of the Mix Down where this track is sent (or on its post-fader version if it is also recorded on a new track).

***Example**: For the needs of a scene, we want to record an actor we are supposed to hear through a telephone. We would like to record him:*
- without EQ, on a track
- with an EQ imitating a "phone" sound, in the Mix Down and/or on another track.

If we have the actor on Mic 1 input, assigned to Track 1, then we can activate the EQ in "post-fade" mode and configure it as we want.
In this way, we can record :
- The actor with his normal voice on ISO track 1 (T1)
- The actor with the "telephone" EQ on the Mix Down
- The actor with the "telephone" EQ on a extra ISO track routed with P1 (post fade signal of T1)
Telephone effect that can be reused when editing live feeds or for the image editor.

15. Phantom Mic gain

Enables a +6 dB gain on the microphone inputs on which phantom power (+48V) is activated.

- Regular : Enabling or disabling phantom power on a microphone input does not change the level of the input.
- +6 dB boosted : activating phantom power on an input automatically adds +6 dB of gain.

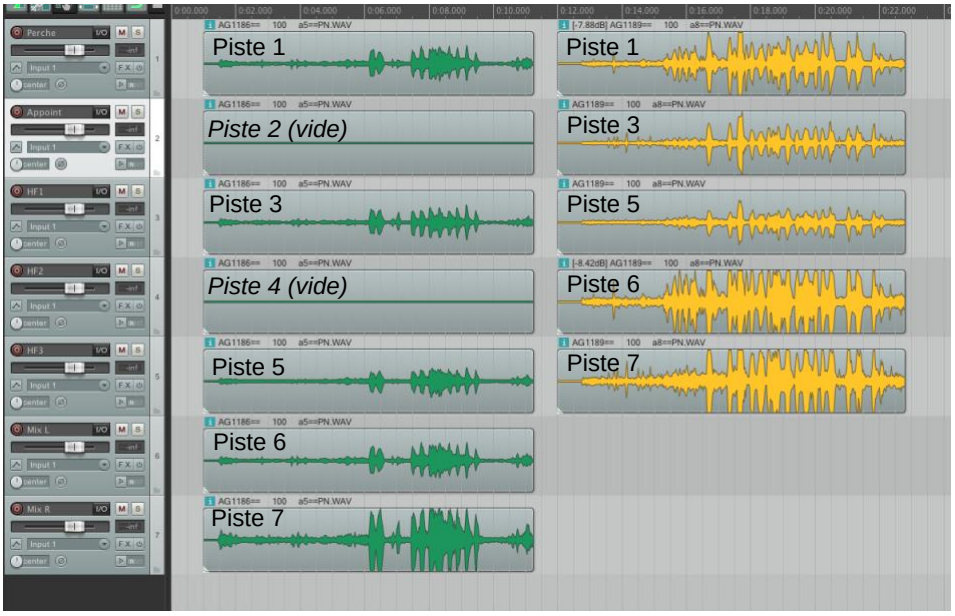
Note that by default when phantom power is turned off on a microphone input, e.g. for a dynamic microphone, the gain is automatically increased by +12 dB; see the section on TEST Mode, p.100.

16. Polyphonic mode

Sets the polyphonic interleave mode for audio

- **Original** : Unused or disarmed tracks, located between two active tracks, are interlaced as empty tracks, preserving the order of the tracks when imported into the post-production software.

- **Compact** : Unused or disarmed tracks, located between two used tracks, are not interleaved with the others. The resulting files will be lighter, but the track order will not be retained in the post-production software.



Exemple : We record on tracks 1 to 7. Tracks 2 and 4 are disabled.
In "**Original**" mode (**green tracks above**), the disabled tracks still appear as empty tracks. Tracks 1, 3, 5, 6 and 7 will therefore remain in sequential order.
In "**Compact**" mode (**yellow tracks**), tracks 2 and 4 have not been interleaved. In our post production software, we have no empty tracks, but tracks 1, 3, 5, 6 and 7 are "compacted" and lose their original arrangement.

17. Tone Level

Sets the level of our 1kHz Tone test signal. The following choices are available :

- OFF
- -18 dBFS
- -20 dBFS

In TEST, PRE REC (PPR), REC modes, pressing Shift+F5 sends a sinusoidal signal at 1kHz (the "tone") to all tracks, the Mix Down, and all outputs regardless of their routing.
- Releasing the Shift key before the F5 key locks the sending of the 1kHz signal until the Shift, F5 or ESC key is pressed.
- Releasing the F5 key first will immediately stop the 1kHz signal.

18. Rec Beep

Allows you to enable the triggering of a "beep" tone when starting and/or stopping the recording (the routing of this beep can be modified in the following menu). Three choices are available:

- OFF (disabled)
- Start : activate a beep tone at the start of the recording
- Start + Stop : activate a beep at the start of the recording, a double-beep at the end of the recording

Note: in the case of a recording driven by an external signal (see the "Remote Rec" menu below), the beep and double-beep ensure that the recording is started / stopped.

19. Beep routing

Defines to which outputs the rec beep (see previous menu) is sent, between :

- Headphone outputs
- Line outputs
- AES outputs
- The Dante outputs

These 4 choices can be combined. Enter the menu with OK, move through the different parameters with the Up & Down keys and change their status to "ON" or "OFF" with the Left & Right keys or OK. Exit the menu with ESC.

20. Disarmed Tracks

Specifies whether the tracks that are disabled for recording (with Shift + track SOLO button in TEST, PRE REC, REC mode, or with Shift+F3 in the 5.IN GRID ROUTING menu) are:

- Muted ("**OFF**") : the audio signal received on these tracks will neither be recorded, nor sent to the outputs, nor audible if this track is set to Solo.
- Disabled for recording, and not sent to the mix, but not muted ("**ON**"): the VU meters of deactivated tracks will always react, they will always be audible when playing Solo, and their audio signal will always go to the outputs (you will be able to disable the recording of a channel that you still want to send in the audio returns, such as a sample music for example)

21. Remote Rec

Enables ("ON") or disables ("OFF") recording control from a third party device, using the Cantar's Option port (located underneath the machine, to the left rear, above the XLR-4 M socket).
If Remote Rec is enabled, the recording can be started and stopped remotely, only if the Cantar is in PRE REC (PPR) mode. Contact Aaton Digital for signal wiring information

22. Playback and Record

Enables ON/OFF "Playback and Record" feature. This feature makes it possible to use Rec & Play, i.e. to record an audio file while launching the playback of another audio file. This feature offers two operating modes that can have different applications :

- The **Live** mode: allows you to load an audio file that is already stored on one of the CantarX3 media, to select one or more channels on this file, to define entry and exit points for playback zones, and to play these zones while recording a new file.
- The **Clone** mode: allows you to re-record the ISO tracks of a previous file while re-mixing the Xl and Xr signals in order to record a new modified Mix Down.

Once this parameter is activated, you can navigate through the PLAYBACK AND RECORD, BROWSE, PLAY, TEST, PRE RECORD (PPR) & RECORD Menus, holding Shift while turning the Main Selector to the position that usually corresponds to these menus. See the section on Playback and Record (p.137).

23. Enable Ambeo

Enables B-format ambisonic decoding for the Sennheiser AMBEO VR microphone. Activating this

menu allows you to assign ambisonic sources in the In grid menu (see Menu 5: IN GRID ROUTING p.66) (up to 2x4 ambisonic sources can be assigned, or two Ambeo VR microphones).
in TEST menu, access the microphone configuration with the shortcut "Shift + OK" (see Menu 10: TEST MODE: Ambeo, p.125).

24. Slate Mic : Internal slate mic

Allows you to adjust the level of the Cantar's internal talkback microphone, between -96 (microphone off) and 0. Enter the menu with OK, change the value with the Up & Down keys, confirm with OK.
The internal microphone of the Cantar is located on the front of the unit, next to the main selector behind the ESC button when the front screen is in the closed position

25. Slate Mic : Jack 3.5 slate mic

Allows you to adjust the level of the external talkback microphone, plugged into the Mini Jack 3.5 headphone socket, between -96 (microphone off) and 0. Enter the menu with OK, change the value with the Up & Down keys, confirm with OK

26. Slate Mic : Jack 3.5 bias power

Enables ("ON") or disables ("OFF") the power supply of the external microphone plugged into the Mini Jack 3.5 headphone take. The activation of Bias Power is recommended when using an electret microphone.

27. Slate Mic : Talk full duplex

Selects, when Talkback is used (with TALK 1 & 2, or Shift + TALK 1 or 2), whether :

- Headphone monitoring and output remains unchanged: sending the talkback microphone does not mute the other sources sent to the headphone or outputs where the talk is routed **("ON" mode**)
- Only the talkback microphone is sent to the headphone or outputs, interrupting all other sources sent **("OFF" mode**).

28. Slate Mic : Talk to tracks

Determines whether to route the Slate Mic (activated with Shift + Talk 1 or 2) :

- to all tracks ("All tracks")
- only to the Mix Down (Mix Tracks)
- to a track of your choice ("Track 1" to "24").

29. Slate Mic : Talk to headphones

Specifies if you want the talk back microphone signal to be sent to your headphone outputs when talk back is activated.

a. Notes on CantarX3's Talk back function

The TALK 1 & 2 buttons are used to activate one of the Cantar's 2 talkback channels.
Both talkbacks pick up the signal from the Cantar's internal microphone (located in the bottom right-hand corner under the screen) and, if necessary, from an external microphone connected to the j3.5 headset socket via a j3.5 4-pin socket (NOKIA LRMG telephone wiring).

By default the internal and external slate microphones work simultaneously, please refer to menu 4. AUDIO & TIMECODE to determine which one is preferred by adjusting their level:

- Internal slate mic level" sub-menu (set to -96dB if you do not want to use it)
- "Jack 3.5 slate mic level"

- "Jack 3.5 bias power" (if our external microphone needs power).

Pressing Talk1 or Talk2 send the signals from the internal microphone and the external 3.5 jack microphone to the headphone outputs, and to all outputs where respectively "Talk 1" and "Talk 2" are routed (Lines, AES, Dante; but NOT to the tracks). "Talk 1" and "Talk 2" do not correspond to different microphones but to different talkback circuits.

Pressing **Shift + Talk1** or **Shift + Talk2** sends the slate signal (coming from the internal or external slate microphone according to our parameters) to the outputs but also to the tracks. This can be useful to record a comment for example. In menu 4. AUDIO & TIMECODE, the sub-menu "Talk to tracks" allows you to route the slate signal:
- to all tracks ("All tracks")
- only to the Mix Down (Mix Tracks)
- to a track of your choice ("Track 1" to "24").

Notes:
- If you use a 4-pin Jack 3.5 headset (NOKIA wiring) plugged into the Cantar's Jack 3.5, the use of the microphone does not interfere with the use of the headset. The Jack 6.35 headset output is then free for a second headset.
- In the IN GRID ROUTING menu, sending the Slate Mic to one or more tracks is symbolised by a black dot surrounding the number of the relevant track(s) (see 5.IN GRID ROUTING menu: "Talk to Tracks").

30. Beep Level

Adjusts the level of the record/stop beep sent to the headset.

31. Headphone safety level

Allows you to adjust the threshold of the Headphone clamp in 1 dB steps between -96 and 96 dB.
This setting can also be made with the "headphone" button + "Shift" + "Jog" in the menus: 6.HEADPHONE OUTMAPS, 8.PLAY, 9.STOP (attention, in this menu the shortcut acts but it is not displayed!), 10.TEST, 11.PPR, 12.REC.
Once a Headphone Safety Level has been selected, the system is set up in such a way that the limiter always triggers itself at the same sound pressure level, regardless of subsequent changes to the headphone level.

For example, if a threshold of -6 dB is chosen, with a headphone level set at -9 dB; this means that the limiter will activate for any signal whose level exceeds a sound pressure level P corresponding to a digital level of 0dB (full scale level) - 6dB, heard with a headphone level at -9dB.
If we change our headphone level to -11dB, i.e. 2dB less; then the threshold of the headphone limiter will increase by 2dB, automatically going to -4dB. In fact, any signal that is -6 dB from a level set at -9 dB (i.e. -9-6=-15 dB) is -4 dB from a level set at -11 dB (-11-4= -15). Thus the level of the Headphone Clamp adapts continuously to correspond to the same sound pressure level whatever the listening level.

The headphone limiter is enabled and disabled in TEST mode with "Headphone" Button + "Shift" (not the other way round!). The headphone symbol, visible on the left side of the display in TEST, PRE REC (PPR), REC mode, will appear in yellow when the limiter is activated, and in white when it is deactivated.
If the headphone limiter activates on a signal that is too loud, the quality of the sound being listened to may be degraded. The headphone symbol flashes red for 3 seconds.
In any case, the operation of the headphone limiter does not affect the recorded audio!

How to set up our Headphone Safety Level :

- After disabling the Headphone Safety Level, adjust your headphone level so that a sound of up to 0dB on the VU meter is still tolerable.
- Activate the Headphone Safety Level and apply a threshold of 0dB with Headphone Button + Shift + Jog. This way, whatever our subsequent headphone level, any sound that exceeds the tolerable level will be attenuated.

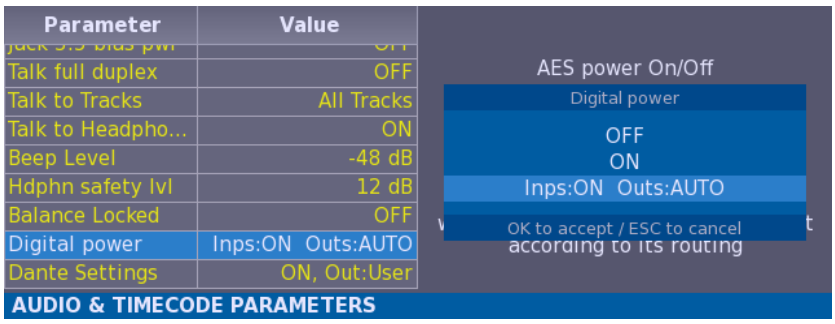
Reminder: The headphone level can be changed with Headphone Button + Jog.

32. Balance Locked

If this menu is activated, when several inputs/tracks are linked together (F5 button in TEST mode), then any action on the rotary or linear actuators controlling the level of the Slave inputs to the Master input will be locked, unless the Shift button is held down while making the level change.

33. Digital Power

Enables/disables digital conversion, for AES-3 inputs/outputs and AES-42 inputs. AES-3 inputs/outputs and AES-42 inputs cannot be used if the "Digital Power" menu is not activated.



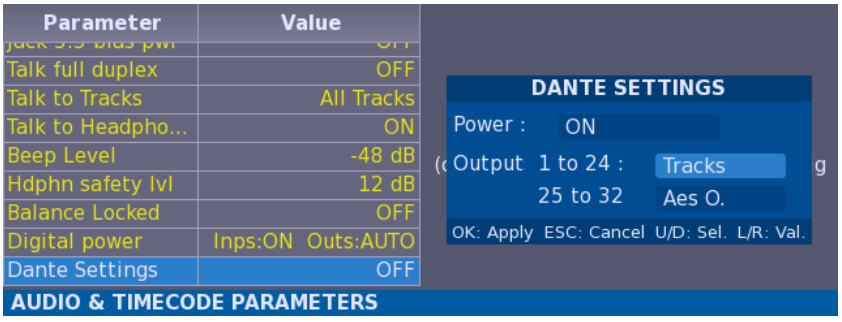
You will still be able to route them normally in our tracks and outputs, assign them to encoders/sliders and solo them... but they will not be active. This menu offers 3 options:

- Digital Power "OFF"
- Digital Power "ON"
- «Inps : ON Outs : AUTO». In the latter case, in order to save energy, Digital Power is activated on the inputs, but is deactivated on the AES outputs as long as no signal is routed to them. When routing a signal to a specific digital output, for example, Digital Power will be automatically activated for that particular output.

Please note that deactivating the digital conversion extends the autonomy of the CantarX3.

34. Dante Settings

Allows the management of the Dante module (for the Dante card, optional). This menu allows you to enable (ON) or disable (OFF) this module.



It also allows us to define whether the Dante outputs are factory configured, in which case we will have :

- On the **Dante** outputs **1 to 24**: our **tracks 1 to 24** ("Output 1 to 24: Tracks")
- On **Dante** outputs **25 to 32**: a copy of our 8 AES-3 (Do1 to Do8) outputs (Output 25 to 32: Aes O.)

Or, instead of the factory setting, it may be set to be user-defined :

- «Output 1 to 24 : User»
- «Output 25 to 32 : User»

If the latter option is chosen for at least one of the output groups (1 to 24 or 25 to 32), then in Menu 6.OUTPUT ROUTINGS, a new page appears, accessible with the F3 key, which allows these outputs to be configured (see Menu 6.: 4. Dante outputs, p.80).

Note that deactivating the Dante module extends the autonomy of the Cantar. 

IX. THE CANTAR'S TIMECODE MANAGEMENT

First of all, it is important to know that the recorder manages two independent time clocks

- **The time of day**, or calendar time, is simply the time it is (System Time or STC). The Cantar uses it as a system reference, to create the Recording Day Folders and to fill in the files' metadata.
- **The timecode**, or synchronisation time: this is a more accurate time (±0.5 image shift over 8 hours) . It is used as a time stamp for the recorded audio files.

1. System Time Management (STC)

The System Time (watch time) can be changed using Menu 3.TECHNICAL SETTINGS: "Set system Date" and "Set System Time" p.34.
Highlight the menu with the Jog or the Up & Down keys, enter the menu with OK, navigate through the parameters with the Left & Right keys and change their value with the Up & Down keys or the Jog, then confirm with OK.

2. Timecode management

The Cantar can take into account two types of timecode source:

- From its internal quartz (TCXO)
- From an external timecode source (External LTC).

This choice is defined in Menu 4.AUDIO & TIMECODE PARAMETERS: "Timecode source": "Internal Tcxo" or "External LTC" (see p.45).

a. From its internal quartz (TCXO)

When the user chooses to use the internal quartz crystal of the Cantar as a timecode reference, he can choose the following timecode modes:

- FREE RUN (OTC)

In this mode, the user defines an arbitrary time, called Operator TC or OTC, from which the Cantar will generate a timecode. OTC is set in Menu 4.AUDIO & TIMECODE PARAMETERS: "Set operator TC".

In TEST mode, the logo (I) (for: "internal") in the lower left corner becomes green followed by the letters OTC and the current timecode value.

- FREE RUN (JTC)

It is also possible to jam an external timecode (JTC) from another machine. This timecode will give the reference value from which the Cantar will generate the timecode.
in TEST mode, connect the external timecode source to the Lemo 5 socket on the Cantar (on the left under the screen) then press and hold down F3.
A "Do you want to Jam External LTC timecode? window appears: press OK. After a few moments, another window will indicate the success or failure of the Jam procedure.
If unsuccessfull, check that the Cantar is setup to receive an external timecode, and that the external device is configured to send timecode. If necessary, check the cable.

If successful, the logo (I) at the bottom left of the screen turns green followed by the letters JTC and the current timecode value

- 24H RUN (STC)

In this mode, the System time is used as the timecode reference (STC).
To do this, in TEST mode, press Shift+F3. A window "Do you want to Jam system time ?" will appear: press OK. After a few moments, another window will inform us about the success or failure of the operation; this is the "calendar init".

The logo (I) at the bottom left of the screen turns green followed by the letters STC and the current timecode value.

- REC RUN

In INTERNAL TCXO, the start value of REC RUN is set in Menu 4.AUDIO & TIMECODE PARAMETERS: "Set RecRun TC" (p.46).
The REC RUN timecode starts with each new recording and stops when the recording is stopped. The resulting files therefore appear as if they were recorded in a continuous sequence.
If the timecode of the Cantar is sent to another device, via its Lemo 5 socket (LTC Out Generator mode activated in menu 4.), the outputted timecode will follow the same rule and values.

To better differentiate the time stamp of two successive audio files, the timecode is automatically incremented by 2 seconds between each file.
The timecode shift takes into account the possible duration of Pre-Rec.
The REC RUN must be reset each time the Cantar is switched on: to avoid any timecode ambiguity, the Cantar will then propose a REC RUN value at the next hour (for example at 02:00:00 if the previous take ended at 01:34:15).
The logo (I) at the bottom left of the screen turns green followed by the letters RTC and the current timecode value.

b. External TC

In Menu 4.AUDIO & TIMECODE PARAMETERS: "Timecode Source", select "EXT LTC" so that the Cantar's timecode follows the one he receives on the Lemo 5 socket.
The TC will automatically jam with each triggered recording
In TEST, PRE REC, REC mode, the logo (E) in the lower left corner of the screen turns green, followed by the letters LTC and the current timecode value.

If no external timecode is received by the Cantar, a message "Jam Failed: No LTC" is displayed when the recording is stopped.

Note: *If the source of the external timecode is a camera, it is usual for the sound recorder to start recording first. However, some cameras will not output timecode until they are recording; to avoid any problems, the timecode indicator on the Cantar will flash yellow until the camera starts recording and the Cantar catches the incoming timecode as soon as it is available to synchronise the entire take correctly. Likewise, when finalising the audio file, the Cantar will stamp the file with the last valid timecode value it received, in order to avoid errors due to incorrect timecode transmission when the camera is turned off*

3. The Timecode Indicator

In STOP, TEST, PRE REC (PPR) and REC modes, the Cantar displays a timecode indicator in the form of a coloured letter

- I for "Internal" (internal timecode, for STC, OTC, PSTN, JTC modes)
- E for "External" (external timecode, for LTC mode)

The logo colour indicates :

- In green: the timecode is correctly initialised. 
- Flashing yellow: the timecode is not jammed, or the Cantar does not detect its timecode source. 
- In red: the timecode has not yet been initialised.. 

Next to the timecode logo :

- **OTC** - means operating in Operator Time Code (timecode value entered manually by the operator).
- **STC** - System Time Code (System Time is the timecode reference)
- **RTC** - it operates in RecRun Time Code
- **JTC**: - it operates with a timecode jammed from an external source.
- **LTC**: - it operates with an external Longitudinal Time Code

When the Cantar is switched on, the timecode logo remains red until the operator has enabled a timecode source.

SUMMARY OF THE PROCEDURE FOR SEVERAL SHOOTING SITUATIONS:

1. The Cantar is master: it operates on its internal day time clock

In menu 4.AUDIO & TIMECODE: "Timecode Source", select "Internal Tcxo". 

In TEST mode: Jam the System Time with Shift+F3.

2. The Cantar takes its timecode from a master timecode box (but does not stay continuously connected to it).

The timecode box is connected to the TC Lemo 5 socket of the Cantar.
Select 4 "Timecode Source": "Internal Tcxo". In TEST mode: jam the incoming timecode by pressing and holding down F3. 

3. The Cantar is permanently connected to an external master timecode box.

Select 4 "Timecode Source": "External LTC" In TEST mode, the Cantar should automatically display the incoming timecode, without further manipulation. 

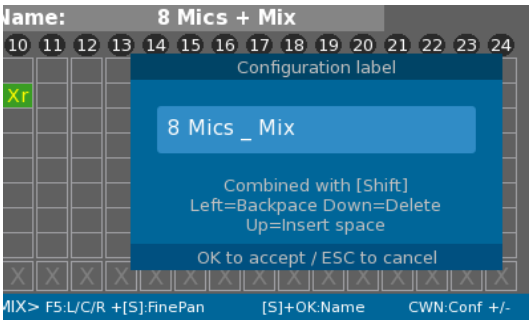
X. MENU 5. : IN GRID ROUTING

Position the Main Selector on Menu 5 (at 5 o'clock) to access the IN GRID ROUTING Menu.
This menu allows you to change the input routings.
20 input routings are programmable and can be quickly recalled (from 1 to 20).

1. current InGrids

The current InGrid routing can be selected with the Left Selector. The name of the routing used and track assignment are automatically displayed as you scroll from one configuration to another.
Note: A routing configuration can be copied/pasted using the shortcuts F4 (copy current routing) and Shift + F4 (paste to new routing).

2. Routing names



Each routing configuration can be named, with a maximum of 12 characters, with the shortcut Shift + OK.
Use the U/D/L/R direction keys and the jog key to select characters and change their values and press OK to confirm. You can also use a keyboard connected to one of teh three USB port

3. Inputs

The IN GRID ROUTING Menu is in the form of a grid with 24 columns representing our 24 tracks, and 8 rows representing 8 entries. At the very bottom, an additional line indicates the assignment in the Mix Down.
Note: If the AatonMix option has been enabled, an extra line appears at the bottom of the screen indicating the assignment in the AatonMix groups.

Each of the 8 lines symbolises an input number, e.g. by positioning yourself on the third line, you can choose to assign the input Mic 3, Line 3, AES 3, etc...
Note: this routing system allows you to route several inputs to the same track (for example, Mic 1 and AES 6 inputs) but not 2 inputs with the same number to the same track (not the Mic 1 and AES 1 inputs for example) (except for the Dante inputs which can be routed anywhere)

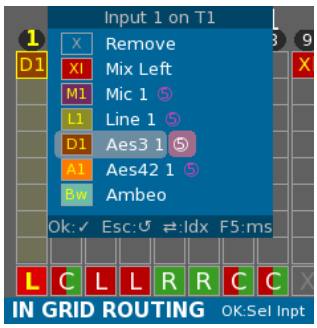
Reminder: The Cantar X3 allows us to configure the various sources as follows:
- 12 analogue inputs: 8 Mic and 4 Line inputs (M1 to M8 and L1 to L4)
- 12 digital inputs: 8 inputs in AES-3 (D1 to D8) and 2 pairs of AES-42 inputs (which can also be used in AES-3) (A1 to A4)
- 24 Post-fader tracks: a version of the tracks (Tracks) affected by the track level (Track Gain) and a possible equalizer (P1 to P24) (see below)
- 32 Dante inputs (optional) (N1 to N32)
- 2 x 4 Ambeo B-format ambisonic channels: Bw to Bz and Cw to Cz
- 2 Mixdown channels: Xl and Xr

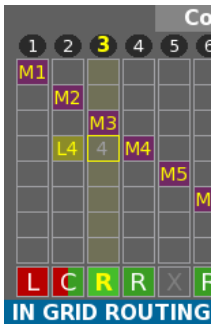
4. Assignment of inputs to tracks

Any input can be assigned to any track (including the Mix Down Xl and Xr channels).

a. Add an input

Use the Left, Right, Up & Down keys or the Jog key to move the yellow selection square on the grid. Move to the desired track (columm 1-24) press OK. A window will appear with the various possible entries (see opposite)
Use the Up & Down buttons to move between the types of inputs offered, change the input number with Left & Right and confirm with OK. Note that several sources can be assigned to the same track (see opposite: track 2 receives M2 (Mic2) and L4 (Line 4)





b. unselect an input

Use the Left/Right/Up/Down buttons to place the yellow selection square on the input you wish to unselect.

- Press OK to display the list of possible entries and select "Remove".
- Or press ESC twice.
- Or press the SOLO button assigned to the corresponding input.

To quickly assign / unassign an input: position yourself on a track, on any row, and press the SOLO button of the encoder/slider associated with the desired input (Mic, Line, AES, etc

To quickly unassign several inputs on the same track: position yourself on the desired track and hold down the ESC key. All the inputs assigned to this track will be unassigned.

The **left** and **right Mix Down** channels Xl and Xr can also be assigned to the tracks

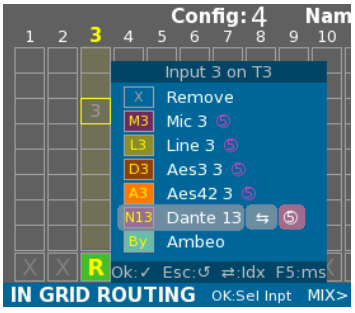
An **MS pair** can only be assigned to adjacent odd-even tracks: M (Mid) on an odd track and S (Side) on an even track.

The **"Postfade N" input** is the output of track n°N with the settings applied to this track (gain, equalizer...). It is thus possible to route a track in Post Fader to another track. The Postfade input has a delay of 1 sample compared to the Pre-Fader track.

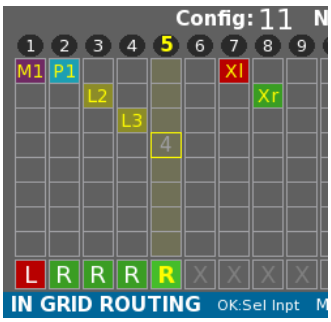
If menu 4.AUDIO & TIMECODE: **"Digital Power" is "OFF**", you will still have access to the assignment of the digital inputs (but they will not work).

if the menu 4.AUDIO & TIMECODE: **"Dante Power" is "OFF**", we will not have access to the assignment of the Dante inputs on the tracks (but the Dante inputs already assigned before being disabled will still be visible).

To assign an input with a **number greater than 8,** for DANTE (optional) or Postfade inputs, open the list of available inputs, choose your input type, and navigate with the Left & Right keys to adjust the input number (see opposite).



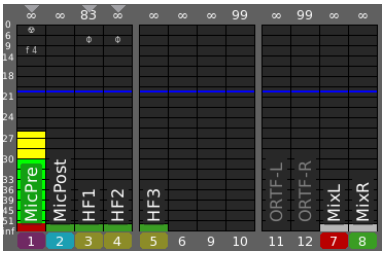
c. Note on Post-Fade tracks :



A post-fader track can be assigned to another track. In the example opposite, for example, we have assigned our mic input 1 to track 1and the post-fader level of track 1 to track 2

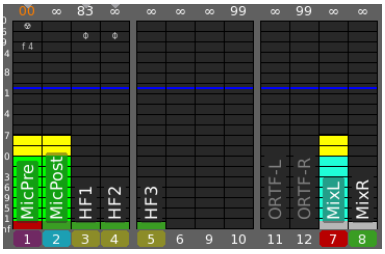
For example, you want to directly record a microphone (M1) at a mixed level (Mix down post-fader split). One way of doing this is to mix directly with the encoder controlling the input gain level. However, to avoid any errors, it is preferable to first assign the microphone input M1 to a track T1 that will remain at a pre-fader level then have a post fader level of the same input recorded on a extra track, P1 on T2. If we have missed our mix, or if we have opened our track too late in relation to the dialogue, we will have recorded the signal on a spare track.

In our example, the back-up track is track 1: by acting on the fader of track 1, we can safely mix our signal, sent to track 2 at mix down level



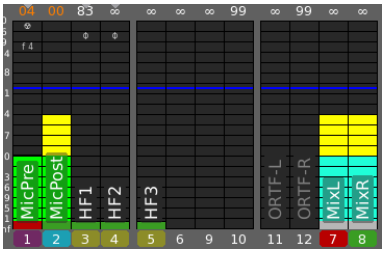
Track 1 is sent to Track 7 (Mix L), track 2 is sent to Track 8 (Mix R)

Mic 1 is recorded on T1, no signal sent to the Mixdown tracks (Fader track 1 is set to -inf, fader track 2 is set to -inf.)



Track 1 is sent to Track 7 (Mix L), track 2 is sent to Track 8 (Mix R)

Fader Track 1 is set to 0, fader Track 2 is set to -inf: identical Post fader signal of track 1 is sent to track 2 and to track 7 (mixL)



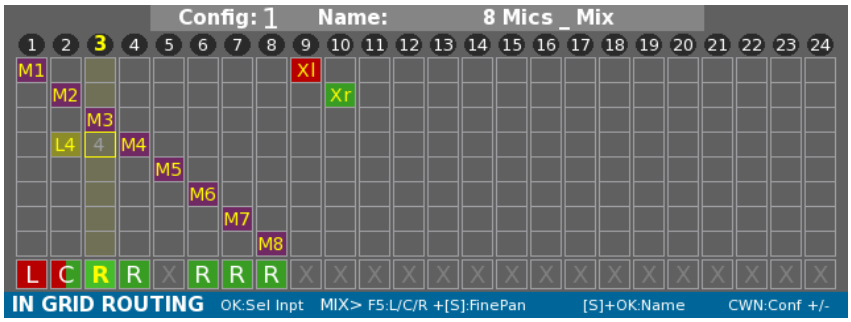
Track 1 is sent to Track 7 (Mix L), track 2 is sent to Track 8 (Mix R)

Fader track 1 set at +4dB, fader track 2 set at 0 : Track 2, post fade of track 1 shows a 4dB stronger signal than on track 1. we have the same level in Mix Left (where track 1 is sent via the +4dB fader) and Mix Right (where track 2 is sent via the 0 db fader) as on track 2.

5. MixDown Pan-Pot

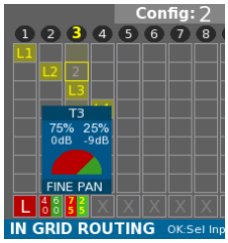
Each track can be sent to the Mix Down through a Pan-Pot setting. The Pan-Pot is shown on the last line (line n°9) and indicates whether it is sent to the Mix Down to the Left, the Center or the Right.

- L: the track is sent to the left (channel Xl)
- R: The track is sent right (channel Xr).
- C: the track is sent to the centre, i.e. to the right and left (channels Xl and Xr)
- X: The track is not sent to the Mix Down.

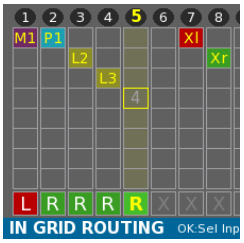


Toggle F5 to successively select whether to send the tracks to L, C, R or X (not sent to the mix-down)

Note: To decode an MS stereo pair in the Mix Down, it is mandatory to send Mid and Side to the center. It is not possible to act on the Side Pan Pot alone.



Fine adjustment of the Pan Pot is also possible by pressing Shift + F5 and using the L & R buttons or by turning the Jog.
Then the letter of the Pan Pot is replaced by a percentage indicating the degree to which the track is sent left and right in the Mix Down.
When adjusting the setting the left and right sending will be indicated in percentage and dB (see opposite).



Note that it is possible to send Postfade tracks in the Mix Down, but not Mix Down tracks in the Mix Down!

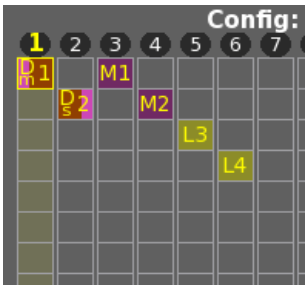
Note: De-assigning an input from a track does not remove the Pan Pot setting from that track (see Track 5 on opposite Fig 61).

6. MS management

Starting with version 3.100.C5, it is possible to declare an MS pair on all types of inputs (Mic, Line, AES, AES42, Dante, etc).

On the input routing grid, on the desired track, press OK to display the list of available inputs: a "Ⓢ" symbol is displayed to the right of the inputs, which can be declared as part of an MS pair. Highlight the desired input: Pressing F5 will declare this input as part of an MS pair Confirm with OK: the Cantar automatically assigns this input to our track as Mid or Side, and the corresponding input Side or Mid to the adjacent track.

Here, by selecting input D1 on Track 1, and pressing F5, this input appears in its MS version: if enabled, the Cantar will assign not only D1 as Mid channel on Track 1, but also automatically D2 as Side channel on Track 2.



- If you position the box on an odd track (Track 1, 3, 13...) then in the list of available inputs, only the selection of an odd input allows you to declare an MS pair (Mic Input 1, Line 3, Post-Fade 7...): this input can then only be the Mid of the MS.
- If the track has an even number (Track 2, 4, 14...) then only the selection of an even input allows a MS pair to be declared (Mic Input 2, Line 4, Post-Fade 8...): this input can then only be the Side of the MS.
- It is only possible to declare a MS pair on 2 inputs of the same type: two Mic, or Line, or Dante, or AES inputs... It is therefore not possible to declare a MS pair between a cardioid microphone connected to Mic 1, and a bidirectional digital microphone connected to AES42-2 for example

a. Decoding the MS in the Mix Down:

For MS pairs/pairs, it is only possible to send to the Mix Down the track associated with the Mid (for the track associated with the Side, this action is locked). Furthermore, only 4 Pan Pot positions are available:
- M (mid) is sent to the left and S (side) is not sent in the Mix Down.
- M is sent to the right and S is not sent in the Mix Down.
- M and S are not sent in the Mix Down.
- M and S are sent to the centre (to do this, send M to the centre)

In the latter case only, the MS will be decoded left-right in the Mix Down, post-fader, and the width of the stereo image can be adjusted by modifying the level of track S (or the gain of the bidirectional microphone).

b. Listening to the MS

Several solutions are available for listening to a decoded left-right MS pair:
- Decode the MS pair in the Mix Down and listen to the Mix Down (send the Mid and Side tracks to the Centre in the Mix Down: it will be decoded automatically)
- Without sending the MS in the Mix Down: in 6.OUTPUT ROUTING mode, create a listening configuration in which you hear the Mid track in the left ear and the Side track in the right ear (see section dedicated to Menu 6.: OUTPUT ROUTING, p.71), or M and S in the Centre. Then the Cantar will automatically send a decoded MS signal in the monitoring.
- The MS tracks can also be put in double-solo mode: in TEST, PRE REC, REC mode, hold down the Solo button on the M mic track and then press the Solo button on the S mic track. As long as you keep both buttons pressed, you will hear the MS signal decoded left-right in Solo

As a reminder, in all the above cases it is necessary to have previously declared our MS couple in the routing.

Note: If you wish to record a left-right decoding of our MS pair on the iso tracks, simply record the Post-Fade signal of the two tracks where our MS pair is affected: it will then be recorded decoded, regardless of the Mix Down assignment that has been chosen.

7. Track Settings

a. Arming/Disarming

Press Shift+F3 to arm or disarm the currently selected track (by placing the yellow selection square on that track), or press Shift + solo button associated with that track. An disarmed track will not be recorded. Depending on the setting selected in menu 4.AUDIO & TIMECODE: "Disarmed Tracks" (p.49), this track may also not be heard in TEST, PRE REC (PPR), REC mode.

b. Track level:

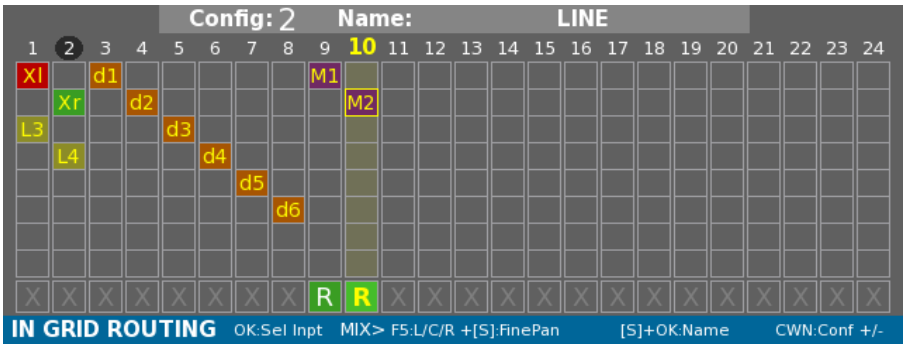
If no encoder or slider is assigned to a track, it is possible to change its level by selecting it on the IN GRID ROUTING grid then pressing Shift and turning the Jog.

8. Declaring an input as Mix Down

It is possible to get an external source and declare it as our Mix Down.
For example, if we connect our microphones to an 8-channel console. We want to mix our sources internally in the console and receive this stereo mix on two Line 3 & 4 inputs of the Cantar, declaring

them in the sound report as our Mix Down. We get in parallel the outputs of the 8 console channels on our digital inputs, which we simply assign to our tracks.
To do this, you must assign Xl and Xr to two tracks in the Cantar, and route inputs L3 (on the same track as Xl) and L4 (on the same track as Xr) to these same tracks. If no other source is routed to the Mix Down tracks, these two channels will get the mix made in our console as it is, and will be declared in the sound report as our Mix Down

Note that it is still possible to add other tracks to the Mix Down, for example: having too few inputs on our console we need to connect two additional HF receivers directly on our Cantar, connected to Mic 1 & Mic 2 inputs. We can always decide to route these two inputs to two tracks, which we will send to the right in the Mix Down (Xr). They will be combined with the right channel of the mix made on our console and sent to the Cantar... (see Fig. below).



9. Talk to tracks

Pressing the Shift + Talk 1 or Talk 2 buttons will send the Slate Mic to the outputs and tracks.
The Menu 4.AUDIO & TIMECODE: "Slate Mic: Talk to tracks" allows you to choose whether you want to route the Slate Mic: to all tracks ("All tracks"), to one of the tracks only, or to the Mix Down tracks ("Mix Tracks"). The tracks to which the Slate Mic is routed are symbolized on the Input Routing page by a black dot surrounding the number of those tracks (see above, where only Track 2 receives the Slate Mic).

10. Ambeo ambisonic routing management

Since version 3.100.C5, the Cantar-X3 offers the possibility of recording a B-format decoded ambisonic audio with Sennheiser's Ambeo VR microphone. This function is activated in MENU 4 : AUDIO & TIMECODE PARAMETERS : Enable Ambeo.
Simply connect the 4 outputs of your Ambisonic microphone, in order (yellow, red, green, blue) to 4 microphone inputs whose numbers follow each other (Mic 1 to 4 for example). Assign these 4 inputs to any 4 tracks, in order to record the A format directly from the microphone.

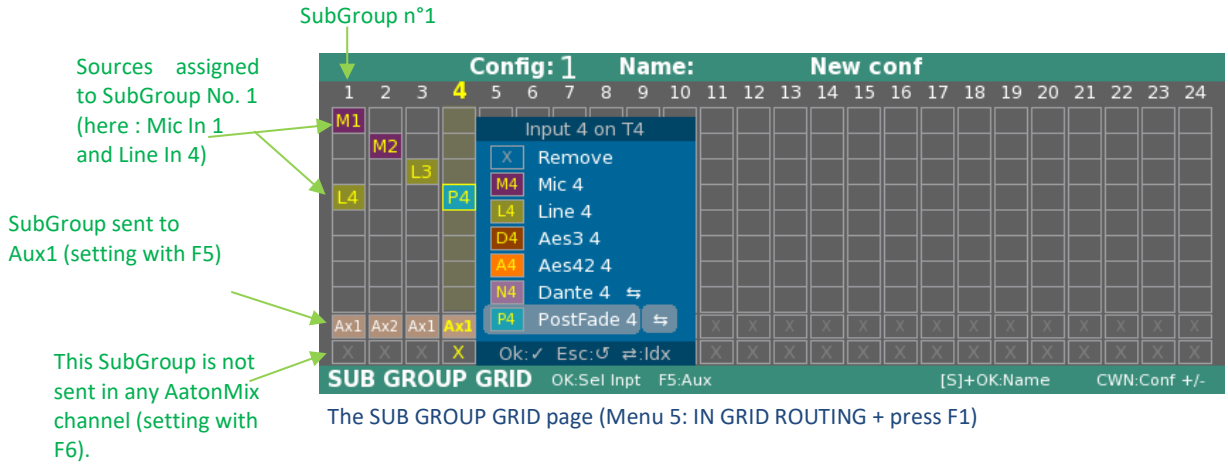
In TEST mode, link these 4 inputs. Then, the shortcut Shift + OK will allow you to configure the Ambisonic decoding. you can generate 4 audio sources encoded in B format: Bw, Bx, By, Bz or Cw, Cx, Cy, Cz. In the input routing grid, you can assign these 4 sources to any tracks allowing you to directly record them encoded in B format.
The Cantar can manage 2x4 ambisonic channels or 2 Ambeo VR microphones simultaneously.

11. SubGroups (optionnal)

If the Cantar is equipped with the extended options of version 3.200.C6, you can route all input sources to 24 SubGroup channels ("SubGroups" S1-S24).
These channels work like mix busses: you can assign any type of input, ISO post-fader tracks or Mix Down tracks to them. You can monitor these subgroups channels in your headphone or send them to any type of physical output via menu 6. HEADPHONE OUTMAPS and LINE OUTMAPS.
These SubGroups channels can also be assigned, via a level control, to two Aux1 and Aux2 auxiliaries, which can not only be listened to and sent to physical outputs, but also recorded and sent to the Mix Down.

a. How does it work?

To access the SubGroup Assignment page, set the Main Selector to 5.IN GRID ROUTING, and press the F1 key. This will display the SUB GROUP GRID page. You can also exit this page by pressing F1.



The SUB GROUP GRID page (Menu 5: IN GRID ROUTING + press F1)

Each column corresponds to a SubGroup S1 to S24 (column 1 to SubGroup 1, etc.), in the same way that they corresponded to Tracks on the In Grid Routing.
All you have to do then is assign your sources to the SubGroups, exactly as you would assign your sources to the tracks on the In Grid Routing (Left & Right or Jog to move to the desired column, Up & Down to move to the desired location, Ok to display the list of available sources, choose your source, validate with Ok).

Up to 8 sources can be combined on the same SubGroup (see above: The SUB GROUP GRID page (Menu 5: IN GRID ROUTING + press F1)). These sources can be :

- Analogue inputs (Mic, Line)
- Digital inputs (Aes3, Aes42, Dante)
- Post-Fade tracks
- Our Mix Down Left & Right Xl and Xr channels

At the bottom of each column you will find 2 cells on top of each other:

- The top one specifies the Auxiliary channel in which our SubGroup may be sent: we make our choice with F5 (Aux 1, Aux 2, X (none)).
- The one at the bottom indicates the AatonMix channel to which our SubGroup may be assigned, exactly as in the In Grid Routing page for Tracks: we make our choice with F6 (assignment to AatonMix channel 1, 2, 3, 4, or X (none)).

- With Shift+F6 we activate/deactivate the AatonMix channel of the column on which our cursor is placed (the square turns blue if the channel is activated).
- The SubGroup on which we positioned our cursor can be muted / de-muted with Shift + F3.

b. What for ?

The SubGroups and auxiliaries make it possible, primarily, to offer a different mix of sources than the one sent to the Mix Down or to our outputs.

Application example: *A duo of musicians is to be recorded, in multimicrophony: a singer accompanied by a guitar, and a drummer. We have one microphone for the singer, one for the guitar, 3 for the drums. Each musician has a return feed, connected directly to the Cantar's physical outputs. But each one asks us to have, in his headphone return, a mono reduction of all our sources, with a different balance: for example the singer wants to hear mostly his voice and his guitar, and the bass drum, and a little less the rest of the drums; and the drummer asks us for a balanced return of his drums, a lot of voice, and a little guitar.*

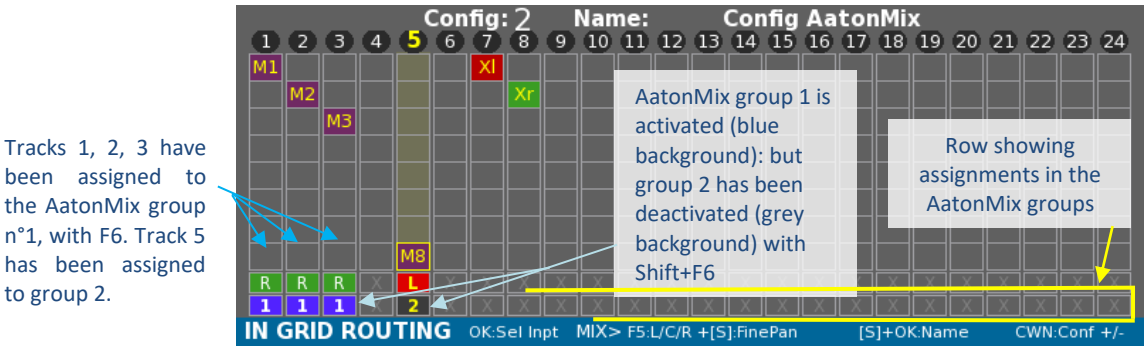
Such mix would be impossible to differentiate without the SubGroups and Auxiliaries: but in our case, we can assign each of our 5 mics to two different SubGroups channels (we will therefore use 10 SubGroups, 2 for each mic), assign our SubGroups to our 2 Auxiliaries, and have a different setting level of these SubGroups in our Auxes (in Test Mode, by associating them to our Sliders for example). If we send the Aux1 in our Line Out 1 connected to the singer's headphone return, and the Aux 2 in the Line Out 2 connected to the drummer's headphones, we can offer them a custom balance.

12. Assignment to AatonMix channels (optional)

If the Cantar is equipped with the additional options of version 3.200.C6 and above, you can assign all 24 tracks to one of four AatonMix groups.
When activated, the AatonMix automatic mixing function detects, within each group, the audio tracks assigned to that group that receive the lowest signals (considered non-useful) and it lowers its/their Post-Fade level automatically, in order to favor the audio channel of the group that receive the strongest signal.
As soon as a strong signal is detected on an attenuated track, the attenuation is cancelled and the signal is again recorded normally at the encoder/slider/jog level assigned to that channel

> Please note that the AatonMix only affects the Post-Fade signal of the tracks, so it will only influence the Post-Fade recorded signal and/or the Mix Down channels. Under no circumstances will the AatonMix alter the level of the ISO Pre-Fade recorded channels.

The AatonMix is composed of 4 AatonMix groups: 1, 2, 3, 4. Each group is assigned to as many tracks as you want.



Assignment of tracks in AatonMix groups.

In 5.IN GRID ROUTING mode: at the very bottom of the routing grid there is a line dedicated to the assignment in the AatonMix groups.

- To assign a track to an AatonMix group: place the cursor on the column corresponding to the desired track, and press F6 to choose to assign this track to the groups: 1, 2, 3, 4, or X (none).
- Press Shift+F6 to enable / disable the group to which the selected track is assigned: the number of an enabled group is written on a blue background; the number of a disabled group is written on a grey background.

Note 1: Activating / deactivating a group affects the group as a whole: in Fig. above, if you move to track 3 and press Shift+F6, AatonMix group No. 1 will be deactivated for track 1 & track 2

Note 2: Assignment of tracks to AatonMix groups is independent of the chosen configuration: in Fig. 69 above, our tracks 1, 2, 3 would remain assigned to group n°1, and track 5 to group n°2, even if we changed Input Routing configuration with the left selector Crown.

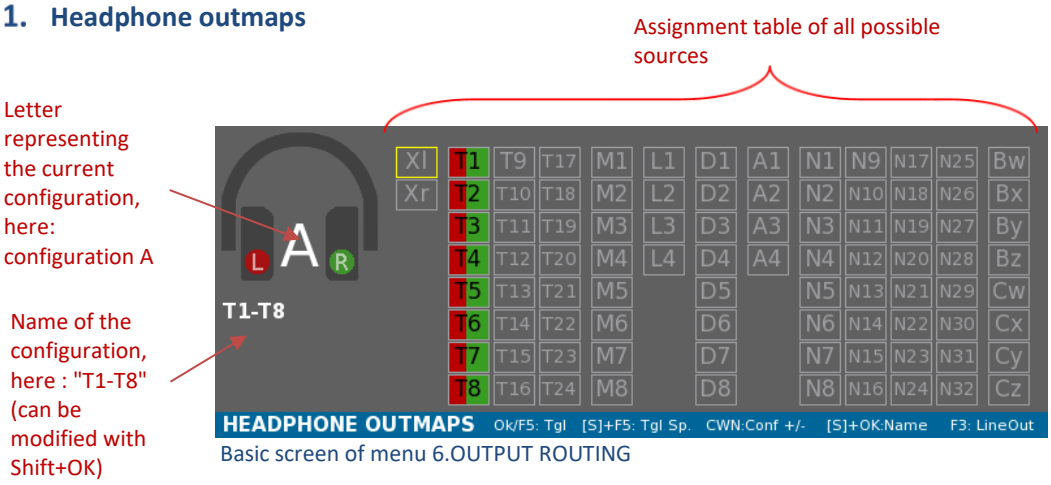
Note 3: Aaton Mix groups can be assigned to both Tracks and Sub-groups - the Post fade levels of each tracks and Sub-groups within the same AatonMix group will be affected by both track and Sub-group level

XI. MENU 6. : OUTMAPS (HEADPHONE, LINES, AES) (OUTPUT ROUTING)

Place the Main Selector on Menu 6 (at 6 o'clock) to access the OUTPUT ROUTING Menu.

This menu allows you to manage the output routings: headphone output, line output, AES output, Dante output (for recorder equipped with the AUDINAT Dante card).

1. Headphone outmaps



Basic screen of menu 6.OUTPUT ROUTING

26 headphone outmaps are available (from "A" to "Z"). They determine the mix of inputs and tracks that will be sent to both the Jack 6.35 and Jack 3.5 headphone sockets located below the Cantar's front screen.

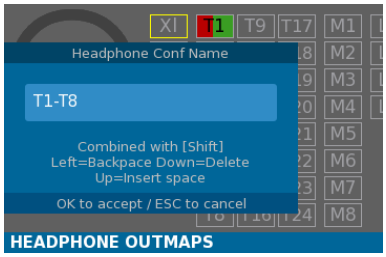
a. Configuration in use

The configuration used is symbolised by a letter on the left of the screen (cannot be changed: the 1st configuration will always be A, the 2nd will always be B, etc.). The available sources are displayed in the form of a grid covering the ¾ width of the screen.
To change the configuration used, rotate the Selector Crown on the left of the Cantar.

Note: as in the In Grid menu, it is possible to copy/paste the routing of a configuration, by pressing Shift + F4 (copy) then Shift + F6 (paste). The entire routing of a configuration can be deleted with Shift + Esc.

b. Configuration name

It is possible to name each of our configurations (max. 12 characters) by pressing Shift + OK (see opposite).
Use the direction keys U/D/L/R and the Jog to select the characters and change their value, then confirm with OK. You can also use a USB keyboard.



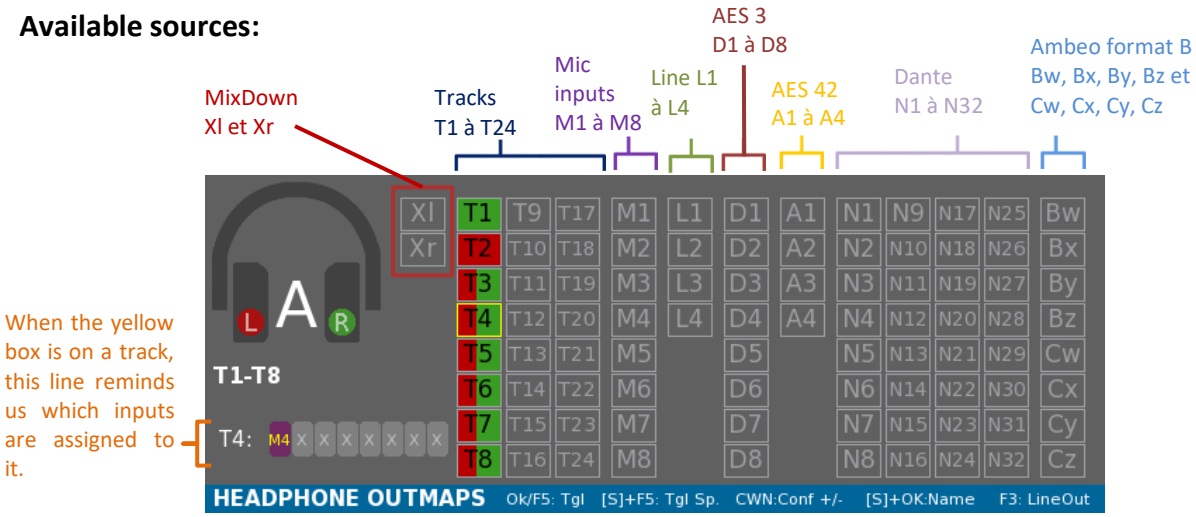
c. Sources

Each source can be sent to the Left Ear (symbolised by the colour Red) and/or the Right Ear (colour Green) (see the colours associated with Xl and Xr in 5.INPUT ROUTING mode).

A source sent to the Left Ear will be coloured with a Red background.
A source sent to the Right Ear will be coloured with a Green background.
A source sent to both the Left & Right Ears will be colored Red and Green (see below, which also displays the available sources).
Cursor navigation through inputs and tracks is done with the Left/Right/Up/Down direction keys or with the Jog.

- Press F4 to enable/disable sending to the Left Ear.
- Press F6 to enable/disable sending to the Right Ear.
- Press F5 to toggle between Left-Center-Right and None (gray background).

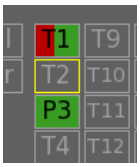
Available sources:



Track 1 T1 is sent to the right ear (green), T2 to the left ear (red), T3 to T8 are sent to the middle.

Notes:

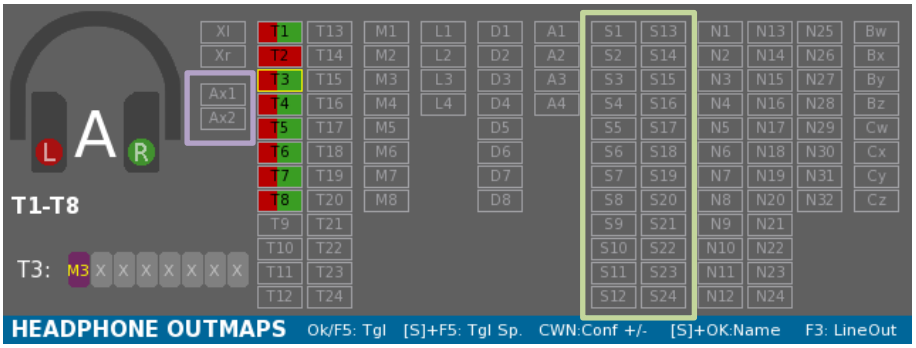
- A track can be routed Post-fader in an Output (headphone or other; by default tracks are assigned Pre-fader): to do this, place the selection square on this track and press Shift + F5 to switch it to Postfade mode. Repeat the action to choose left or right send (see opposite: track 3 post-fader P3). This track will then be heard via the level and/or equalization modifications applied to it..



- On MS pairs: if an MS pair has been declared in 5.INPUT ROUTING mode, and assigned to 2 tracks 1 and 2, then listening to these tracks, with 1 (Mid) listened to on the left and 2 (Side) on the right (or 1 and 2 in the center), allows us to hear the MS decoded left-right (see also 63).

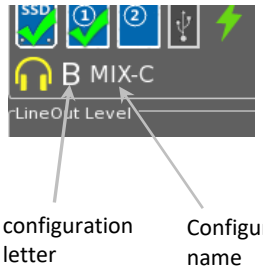
- If a Sennheiser Ambeo VR ambisonic microphone is used, then it is possible to assign the B-format channels "Bw" to "Bz" (or "Cw" to "Cz") for monitoring. If the B-format channels have been assigned to 4 tracks for recording, then there will be no difference between listening to these tracks, or listening to the B-format channels they receive).

- If the Cantar is equipped with the Dante +, SubGroup, AatonMix options, it becomes possible to monitore SubGroups and Auxes (and to send them to Line and Digital outputs). Fig. below shows this extended Headphone Outmaps grid.. For more information on these options, see XVIII. ADDITIONAL OPTIONS, p.156..



Extended "Headphone Outmaps" grid offering monitoring of Auxes "Ax1" and "Ax2" and SubGroups S1 to S24 (optional)

d. Management of Headphone output routings in other operating menus



When the Main Selector is in the Test (10 o'clock), Pre Record (PPR) (11 o'clock) or Record (12 o'clock) position, the headphone configuration in use is indicated below the media icons. See the headphone icon, along with the letter and (if applicable) the name of the configuration in use.. *Reminder: the icon is yellow if a headphone limiter is activated (with helmet button + Shift)*

In these menus, you can change the current Headphone setting by turning the Selector Crown (left). The letter and name will then change automatically along with the selected configuration.

Pressing F2 displays the Outmap grid as if the Main Selector was set to 6 o'clock. You can check the current configuration, access other configurations (left crown) and modify it if necessary.

Headphone output reminder: the headphone level can be displayed in the 6.Output Routing menu by pressing the Headphone Button on the right of the machine. It can be modified by keeping the Headphone Button pressed while turning the Jog (This action is also possible in STOP mode (9h) even if no window appears).
A headphone limiter can be activated with Helmet Button + Shift, see menu 4.AUDIO & TIMECODE: "Headphone Safety Level"

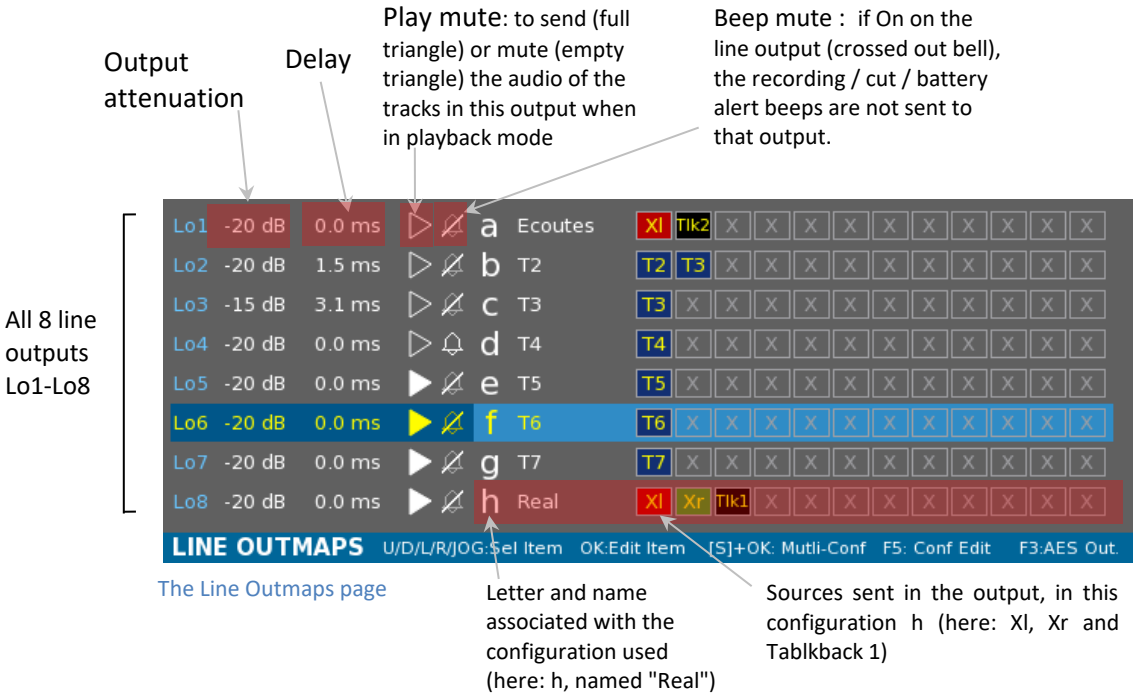
2. Line Outputs setting

The Cantar X3 features 8 line outputs, all available via a single Sub D25 F located on the left side of the machine near the AES 42 inputs.

Up to 26 output configurations can be stored (from "a" to "z"). There are also 4 unmodifiable configurations: Muted, Headphone L, Headphone R, Headphone L+R (see below).

The line outputs can be edited in menu 6 (6 o'clock position of the main selector). When on the Headphone Outmaps Settings page, press F3 to display the Line Outmaps page.
Pressing F3 again will display the "AES Outmaps" page, then the "AES3 MDR Out" page (AES outputs from the Options port) and finally the "Dante Out" page (optional).
Pressing F3 again will finally bring us back to the "Headphone Outmaps" page.

The 26 programmable configurations for the line outputs (from "a" to "z") are different from the 26 headphone configurations (from "A" to "Z") but are identical to those of the AES outputs. Thus, any modification to the "c" configuration, made on the "Line Outmaps" page, for example, will also affect this configuration on the "AES Outmaps", "AES3 MDR Out" and "Dante Out" (optional) pages.

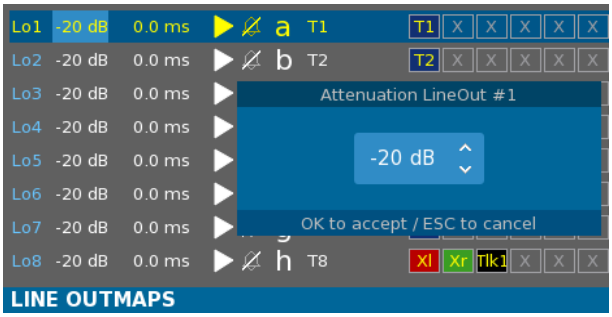


The Line Outmaps page

On this page you can see 8 lines corresponding to your 8 line outputs.
On each line, 5 parameters can be modified:
- attenuation level
- delay applied on output
- play mute option: is the audio of the takes played back sent to this output?
- beep mute option: are the rec and stop beeps and warning beeps sent to this output?
- the letter telling us which configuration is used for this output, and its name.

Press Up & Down to select a line, Left & Right (or Jog) to select a parameter to be changed, and OK to enter that parameter.
To quickly change the value of a selected parameter (including the choice of output configurations), hold Shift while turning the Jog.
When a line is selected, the corresponding Output Configuration is sent to our headphone.

a. Output attenuation



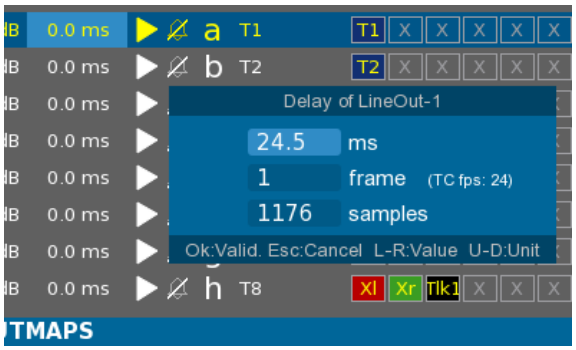
Use the Up & Down keys to move to the line corresponding to the desired output, then Left & Right or Jog to select the output level.
Press OK: a window will open, change the output level with the Up & Down keys or the Jog. Confirm with OK or cancel with Esc.

Notes:

- If an output level is associated with an encoder/slider (on the Mixer integrated in the Cantar or on the Cantarem for example), you can no longer modify this level via this menu: the attenuation of this output is then greyed out (but its value will follow the movements of our encoder/slider).
- The maximum value of the output level is 0 dB, so it is only possible to attenuate it.
- The output attenuations can also be displayed and modified in TEST mode (Main Selector at 10 o'clock) by pressing F6. See 10.THE TEST MODE, p.124.

b. Delays

All analogue outputs and the 8 AES3 outputs can be delayed (but not the Dante outputs or the AES Out of the Option port), between 0 and 43690 samples (which corresponds to about 910 ms with a 48 kHz sampling rate).



To activate the delay: use the Left & Right keys or the Jog key to select the second item on the line..
Press OK to display the delay window: it allows you to enter our values in milliseconds, frames and samples. As all these values are linked, each modification on one of them will automatically modify the two others.
Enter the values with Left & Right or the Jog and confirm with OK or cancel with Esc.

Note: For input delays it is also possible to set the delays in meters (see chapter on input delays p.122).

c. Play Mute

This setting, symbolised by a full or empty triangle, allows you to choose whether, when playing back a take, the sound of the tracks being played back should be sent to the outputs where these tracks are assigned.
Select this setting with the Left & Right buttons or the Jog and press OK to change its value.

- Full triangle: when a take is played back, all the tracks that are assigned to this output will send the playback audio to it.
- Empty triangle: in play mode, this output will continue to play the direct incoming live sound of the tracks assigned to it.

***Example**: Track 1, receiving the Boom, has been assigned to output 1, which feeds the set's audio network. The "Play Mute" setting makes it possible to choose whether, during playback, you want to send the audio from track 1 played back to output 1 (full triangle) or let the incoming live audio from track 1 be sent to output 1 (empty triangle).*
In the first case, the director, equipped with his or her own monitoring system, will hear the sound of the played back takes at the same time as the audio mixer; in the second case, he or she will continue to hear live the audio captured by the boom, even if the audio mixer plays back a take.

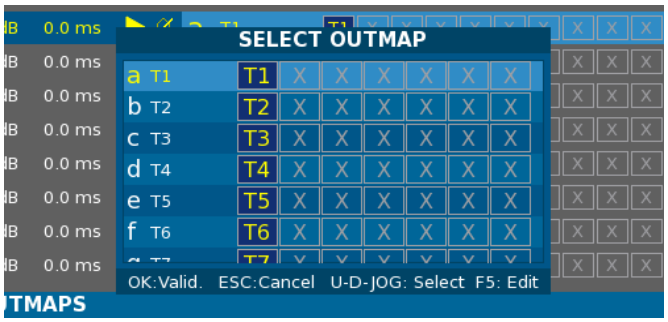
d. Beep Mute 

Recording start and stop beeps, and alert beeps may or may not be sent in an output.
This setting is symbolised by a bell: select this setting with the Left & Right keys or the Jog key and press OK to change its value.
If the bell is crossed out, the beeps will not be sent to that output.

e. Configuration used

For each Line output, the configuration in use can be changed by selecting the line corresponding to that output and turning the Selector Crown. The letter associated with the configuration, its name and routing are automatically modified.

It is also possible to highlight the 5th item on the line using the Left & Right keys or the Jog key, and press OK: a window will appear showing the 26 available Output Configurations.
Use the Up & Down keys to navigate through the configurations, and OK to choose one that will be applied to your output



Please note that 4 special, non-modifiable configurations are accessible, just before configuration "a" :

- The Muted Ø Configuration, where no source is routed to the output.
- The Heaphone Left configuration
- Headphone Right configuration
- Headphone L+R configuration,

Each of the 3 reproducing the routing sent respectively to your headphone on the left, on the right, or both.

- Modifying configurations

Select a configuration and press F5 to access the Configuration Edit window ("Configuration Edit").

Caution: Keep in mind that changes applied to a configuration will affect all outputs for which that configuration was chosen. The analog and digital outputs share the same configurations, so any

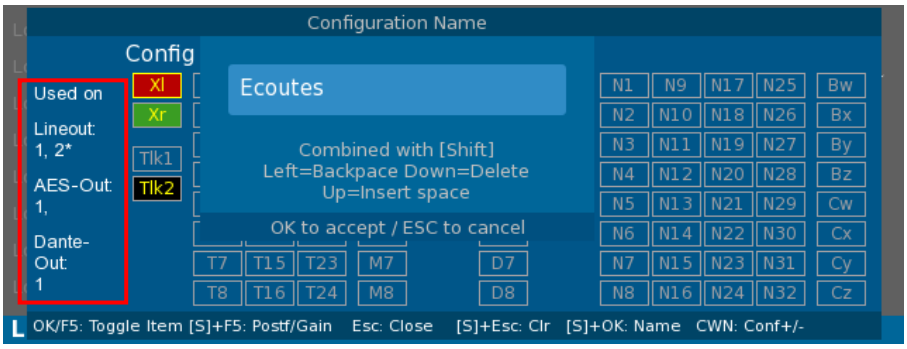
change to the "a" configuration will apply to the Line outputs and the AES outputs to which it was assigned (and also to the AES3 MDR Out and Dante outputs).
For example, if configuration "a" was applied to Line output 1 and AES output 3, then any changes to configuration "a" will affect both Line output 1 and AES output 3.

In the "Configuration Edit" window, a message on the left side of the window reminds you to which outputs (Line, AES...) the configuration you are editing is currently applied.
(An asterisk next to the name of an output means that it is assigned a Multiple Outmap - see below - example with "Lineout: 1.2*").

Within the "configuration edit" window you can select the configuration you wish to modify with the Left Selection Crown.

- Name

Each configuration can be renamed (max. 12 characters) with Shift + OK.



Naming an output configuration. On the left, a reminder of the outputs to which this configuration is applied

- Sources

All types of sources that can be assigned to our headphones can be sent to a Line Output (Xl and Xr channels, Pre and Post-Fade tracks - with Shift+F5 -, Microphone and Line inputs, AES3, AES42, Dante, Ambeo inputs; also SubGroups and Auxes with options).
Use the Left/Right/Up/Down keys or the Jog to navigate through the proposed sources and press OK to activate or deactivate the assignment of a source.

- Talk

In addition, it is also possible to assign talkback Tlk1 and Tlk2 signals (sent by the talkback buttons 1 and 2 respectively) to outputs.
Pressing these two buttons activates the internal and external slate and will send the signal to the headphone and to all Output Configurations (Line, AES, Dante) where Tlk 1 and/or Tlk 2 are routed (see also menu 4.AUDIO & TIMECODE p.50).
Example: If Talk 1 is routed to Line 3 Output and Talk 2 is routed to Line 4 Output :
Pressing the Talk 1 button will send the Slate Mic to Line Out 3 but not to Line Out 4.
Pressing the Talk 2 button will send the Slate Mic to Line Out 4 but not to Line Out 3.

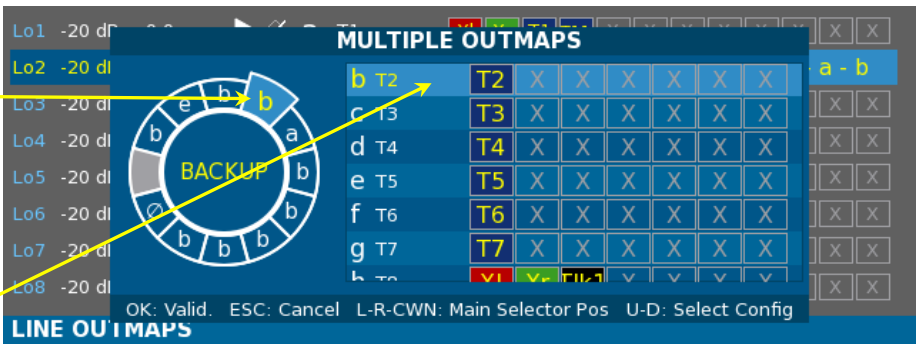
Reminder: Pressing Shift + Talkback button 1 or 2 will send the Slate Mic to the Outputs but also to the tracks (depending on the choice made in menu 4.AUDIO & TIMECODE: "Slate Mic: Talk to tracks").

f. Multiple Outmaps

The Cantar allows a different output configuration to be applied to a single line output depending on the position of the Main Selector. This is the Multiple Outmaps function.
From the "Line Outmaps" page, use the UP or DOWN keys to highlight the output line then press Shift + OK: the "Multiple Outmaps" configuration window appears.

Main Selector positions: select the desired position with the Left Selector Ring or Left & Right keys (here: we are in position 1: Backup Menu).

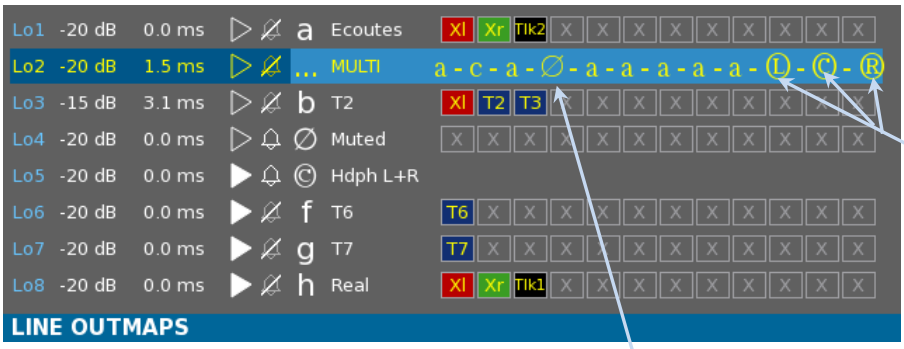
With Up & Down or the Jog you move through the 26 output configurations, to choose the one associated with the main selector position.



For Line Output 2, we have assigned Configuration "b" (Track 2 only) when the Main Selector is in Position 1: Backup. However, if the Main Selector is switched to Position 2: Session, this output will automatically be assigned Configuration "a"

In this window, the Main Selector is shown on the left, with a letter for each available position (except the STOP position, where no sound goes to the outputs anyway).
The Left & Right buttons or the Left Selector Ring allow you to move between the different Main Selector positions available.
For each Main Selector position, the Jog or the Up & Down buttons are used to select the Output Configuration associated with that position, out of the 26 available Configurations (from a to z, plus the Muted "ø", Headphone L, Headphone R, Headphone L+R configurations) recalled on the right side of the window.
When all Main Selector positions are assigned as desired, you can confirm with OK or cancel with ESC.

When a Multiple Outmap is associated with an output its output configuration is symbolised by a series of letters (and Mute "ø" symbols) identifying the 12 configurations chosen for the 12 Main Selector positions (the first letter corresponds to the Record position, the second to the Pre Rec menu, etc., counter-clockwise). The word "MULTI" is displayed on the same line (see below).



L, C, and R circled respectively represent the configurations Headphone L, Headphone L+R, Headphone R

Muted configuration (STOP menu)

Example of Multiple Outmap use : *We want to send the director our entire mix during the takes and rehearsals. The rest of the time, he likes to get feedback on what's happening on the set, but we'd like to keep the actors' privacy by not sending their HF microphones in the director return between scenes.*

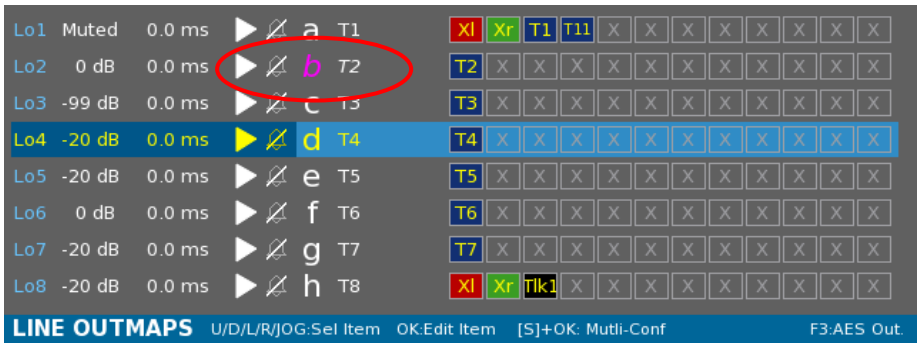
We can therefore configure our outputs so that :
- In Test (between two scenes), we only send the boom in the director return
- In Pre Rec and in Rec, we send our Mix Down
So, as soon as we're ready to shoot, all we have to do is switch to Pre Rec mode to a send the entire mix to the return system. As this output configuration is independent of our headphone monitoring, we can listen to the actors' HFs between two takes to check for mic noise or equalization, without sending them to the returns.

If a Multiple Outmap has been assigned to an Output, then when the left Selector Crown is turned to scroll through the available configurations, it will scroll in order :
- Headphone L, Headphone R, Headphone L+R configurations.
- Our Multiple Outmap "Multi
- The Muted configuration
- The "a" to "z" configurations
So we can always change the configuration and then return to our Multiple Outmap if necessary.

g. Output settings in other menus

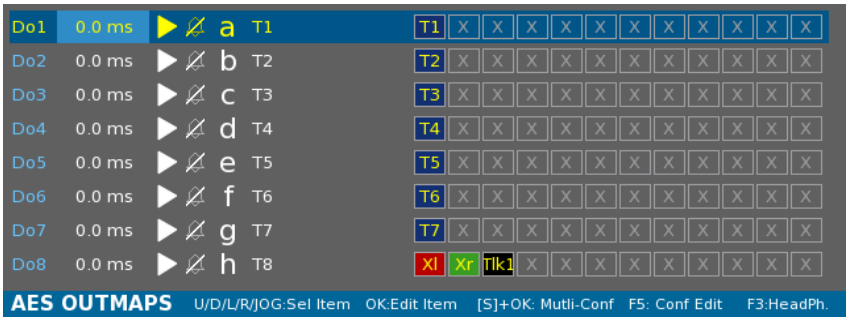
When the Main Selector is in Play, Test, Pre Record (PPR) or Record Mode, it is also possible to change our output configurations as follows:
- Press F2 to display the Output Routing window: you will see the Headphone Output Setup window (as when the Main Selector is in menu 6).
- Press F3 to go to the Line Outputs Configuration window and then to the AES Outputs Configuration window.
in TEST mode, it is also possible to display and manage the Line output levels by pressing F6.

Note: In this case, if a Multiple Outmap has been assigned to one of our outputs, the configuration currently in use (depending on the position of the Main Selector) will be indicated in purple (below: see Line Output 2).



3. AES outputs setting

The Cantar X3 has 8 AES-3 inputs (called "D1" to "D8") and 8 AES-3 outputs (called "Do1" to "Do8") accessible via a Sub-D25 connector located on the left side, under the recorder You can manage all 8 outputs on the "AES Outmaps" page



the AES OUTMAPS window

26 Configurations (Outmaps) (from "a" to "z") are available for each AES output.

Warning! As a reminder, these 26 configurations are shared with the Line Outputs: any modification on the "a" configuration, for example, will affect all types of outputs for which this configuration has been chosen.

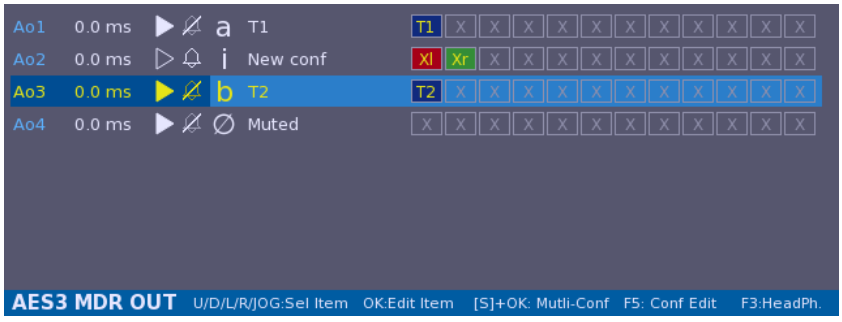
The AES Outputs can be configured in Menu 6. OUTPUT ROUTING; in this menu you can access the "AES Outmaps" page by pressing F3 twice.
In Play, Test, Pre Rec (PPR) and Rec modes, it is possible to view/modify our AES Outmaps by pressing F2 to display the Headphone Outmaps and then pressing F3 twice.

Unlike the Line Outputs, the Cantar's AES Outputs do not have a level control.

The AES outputs are managed in the same way as the LINE outputs. Please refer to the previous paragraphs for more details.

4. AES3 on MDR26 outputs setting

The Cantar X3 has 4 AES-3 outputs on the Mini Delta Ribbon Connector ("Options" port, at the rear of the machine, above the XLR-4F port). They are labelled "Ao1" to "Ao4" on the "AES3 MDR OUT" window (but are labelled as AES 8 to 12 outputs on the "Configuration Edit" windows).
26 Configurations (Outmaps) (from "a" to "z") are available for each output.



The AES» MDR OUT window

Warning! As a reminder, these 26 configurations are shared with the Line Outputs: any changes to the "a" configuration, for example, will affect all output types for which this configuration has been chosen.

The management of these outputs is done in the same way as for the AES Outmaps. Please refer to the previous paragraphs for more details.

5. DANTE outputs (optionnal)

As an option, every CantarX3s can be equipped with a 32 DANTE inputs/outputs card (Ethernet port "Dante" on the right side of the machine) allowing you to add 32 inputs/outputs of digital audio
DANTE is a protocol created by Audinate, allowing the transport via CAT5e, CAT6 or fibre optic cables of audio channels, metadata and synchronisation signals. In fact, it allows the transport of audio channels between machines equipped with the Dante protocol, via a network configuration PC or MAC application : Dante Controller

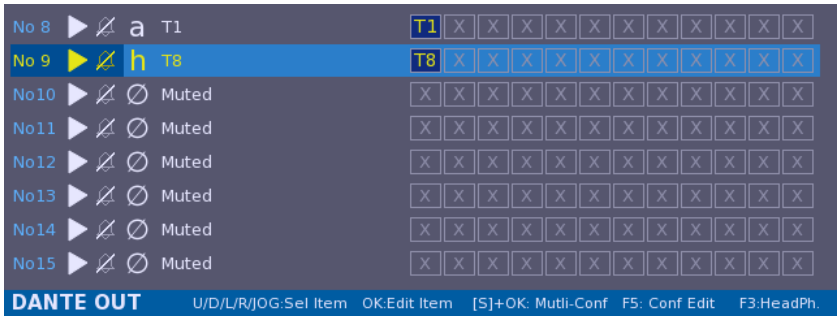
a. Outputs setting

As default, the Dante Out window does not appear in the 6.OUTPUT ROUTING menu. In the basic settings, the Dante outputs are already set up:

- On the first 24 Dante outputs (Dante Out 1 to 24) are routed tracks T1 to 24.
- On the last 8 outputs (Dante 25 to 32) are routed a copy of our 8 AES-3 outputs (Do 1 to 8).

This standard setting can be modified in 4.AUDIO & TIMECODE PARAMETERS "DANTE SETTINGS" (p.54) by selecting "User" instead of "Tracks" and "AES O.".
In this case, in MODE 6: OUTPUT ROUTING, an additional page "Dante Out" appears which allows us to freely set the Dante outputs . Press F3 to access it
Depending on the parameters chosen in the menu 4.AUDIO & TIMECODE - DANTE SETTINGS, this window will display 24 to 32 lines. Use the Up & Down arrows or the Jog to scroll through them.
- Unlike the Line outputs, the Dante outputs have neither a delay nor an output level.

The Dante outputs management is done in the same way as for the Line outputs.
Please refer to the previous paragraphs for more details.



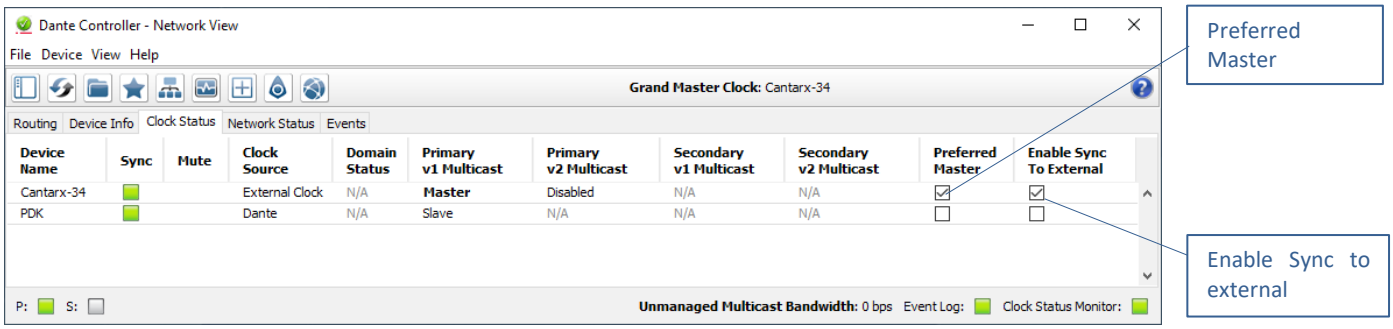
The DANTE OUT window

b. Dante card and Dante network configuration

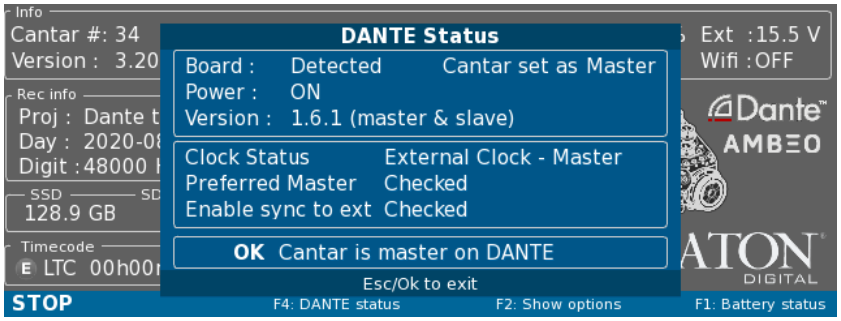
- If needed, Download the DANTE controller free application from the AUDINATE web site https://www.audinate.com
- Connect both the computer running Audinate Dante Controller and your CantarX3 (using the DANTE socket on the CantarX3) to the same Dante network.
Power ON your CantarX3.
- Go to the **AUDIO & TIMECODE PARAMETERS** menu (4 o'clock position of the main selector) to power ON the Dante board : **Dante settings: ON**
- Starting with firmware version 3.211.C7 the recorder internal AUDINATE Dante card can be set as master of the Dante network or slaved to the Dante network
- For previous firmware versions, it must be set as master

- Master mode

The cantar **Audio clock reference** should be set to **Internal** or **External wordclock - (AUDIO & TIMECODE PARAMETERS** menu (4 o'clock position of the main selector) **sample rate** sub-menu)
Open Audinate Dante controller and select the Cantar as preferred master on the Dante network

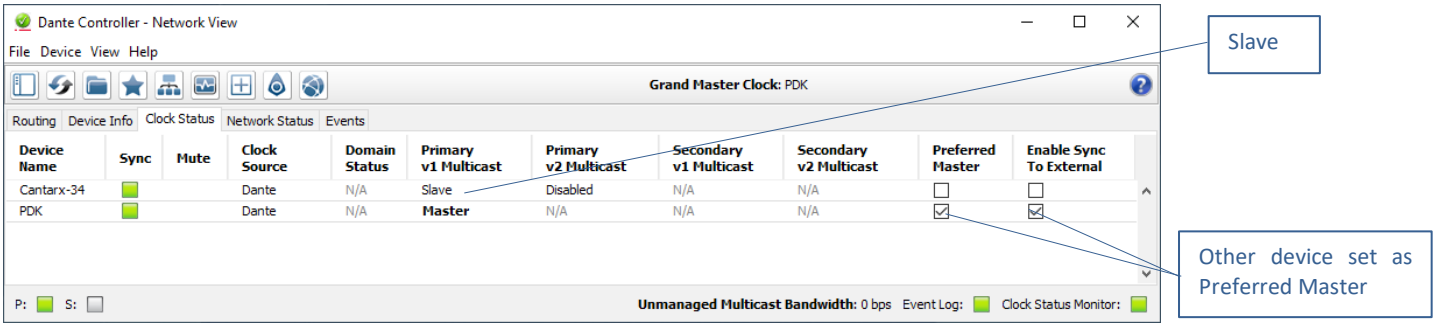


With the CantarX3 in STOP position (9 o'clock position of the main selector), Press F4 to access the DANTE Card status and verify the proper setting of both the Dante Controller and Cantar as MASTER on the Dante network

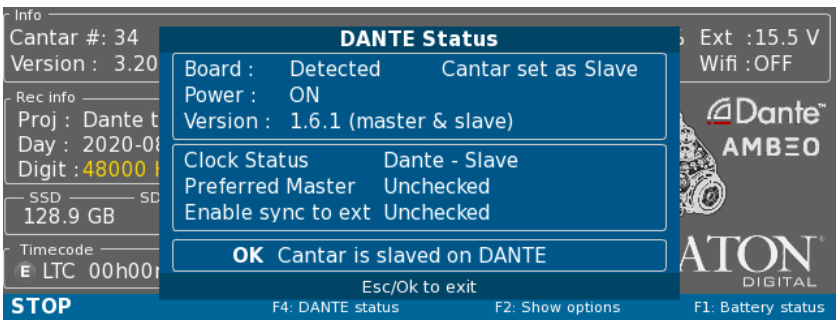


- Slave mode

Go to the **AUDIO & TIMECODE PARAMETERS** menu (4 o'clock position of the main selector) highlight the **sample rate** sub-menu, press **OK** , use the arrow **UP** & **DOWN** to select the **Audio clock reference** item , use the LEFT or RIGHT to set it to **Dante clock**
Open Audinate Dante controller and select the Cantar as slave on the Dante network



With the CantarX3 in STOP position (9 o'clock position of the main selector), Press F4 to access the DANTE Card status and verify the proper setting of both the Dante Controller and Cantar as SLAVE on the Dante network



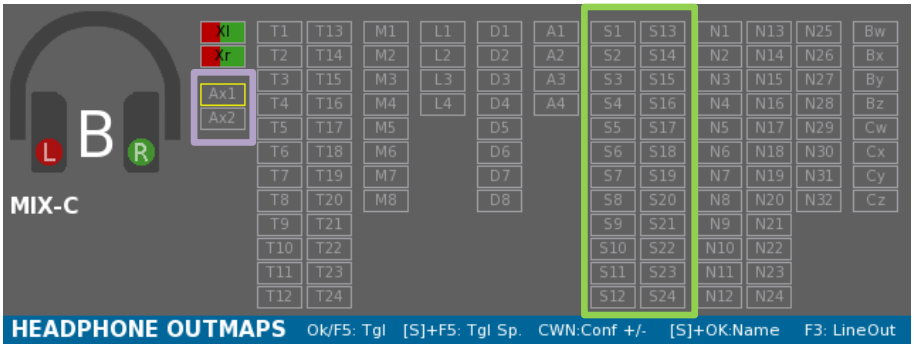
6. SubGroup channels and Aux channels management (optional)

If the Cantar is equipped with the additional options of version 3.200.C6 and above , all our sources can be routed to a total of 24 SubGroup channels ("SubGroups").

These channels work like mix busses: we assign our sources to them (which can be any type of input, post-fader tracks or our Mix Down), we can monitor to these subgroups channels via the headphone output or send them to any type of physical output via menu 6. HEADPHONE OUTMAPS and LINE OUTMAPS.
These SubGroups can also be assigned, via a level control, to two Aux1 and Aux2 auxiliaries. These can not only be listened to and sent to physical outputs, but can also be recorded and sent to the Mix Down.

For more details on subgroups, see chapters 5.IN GRID ROUTING: Sub Groups (p.66) for their assignment; 10.THE TEST MODE: Sub Groups (p.109) for their management; and finally XVIII. ADDITIONAL OPTIONS (p.156).

In the 6.OUTPUT ROUTING menu, you can access the Ax1 and Ax2 cells for Auxes 1 & 2, and the S1 to S24 cells for SubGroups 24 (see below).



The Headphone Outmaps page displaying SubGroups (green rectangle) and Auxes (purple rectangle)

On the Headphone Outmaps page, SubGroups and/or Auxes are fully configurable, with the same monitoring and PanPot settings as for our other sources.

SubGroups and/or Auxes can also be routed to Analog and digital outputs (see below: Aux 2 and SubGroup 1, as well as Talkback 1 and Track 1 have been assigned in Configuration a).

The management of SubGroups and Auxes on the Line Outmaps page: here, the Aux 2 "Ax2" and SubGroup1 "S1" have been assigned to Listening Configuration A, renamed "Ecoutes", and sent to Line Outputs 1 and 2.

XII. MENU 7. : AUDIO FILE BROWSER

Place the Main Selector on Menu 7 (at 7 o'clock) to access the AUDIO FILE BROWSER Menu.

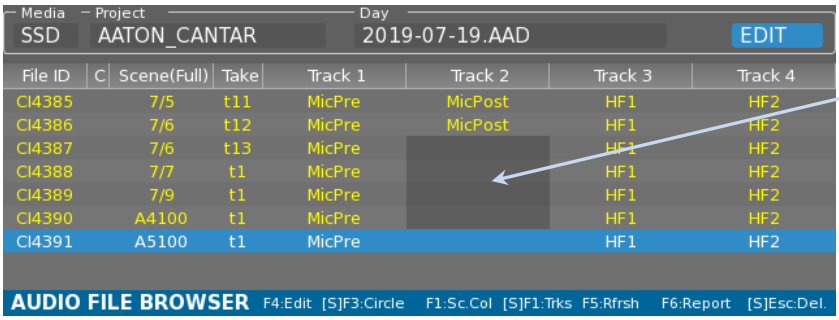
This menu allows you to :
- View the audio files contained in all the medias
- Inspect and/or modify Metadata
- Put in the trash, get out of the trash or delete files
- Repair files that were incorrectly closed during the recording process.

1. Browser

From the screen upper banner choose the Media (SSD, SD1, SD2 or USB), Project folder and the Day folder (.AAD, .AAN or AAX) you wish to access
Select the desired field with the Left & Right buttons and press OK.

Notes:

- If needed, you can refresh the Project List by reselecting your Working Media or by pressing F5, and refresh the displayed Day File by reselecting your Working Project.
- F1 allows you to display short (Short), long (Full) sequence names or all the fields available with the advanced templates.
- Shift + F1 allows you to display the track names (see below). Press Shift + F1 again to scroll through the track names 4 by 4.

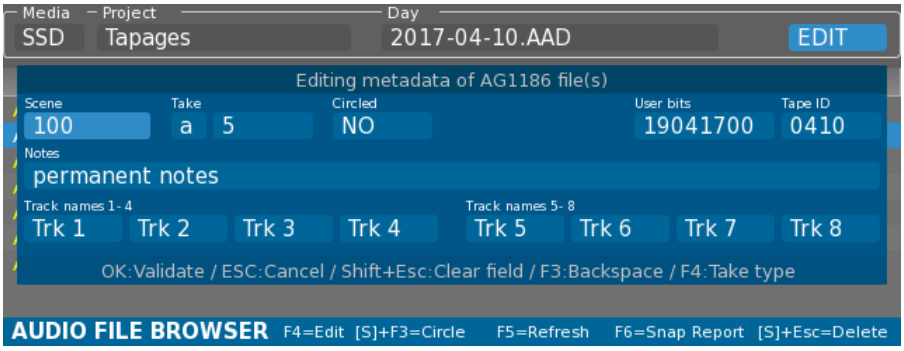


A shaded field indicates that the track was disabled for this take.

2. Modifying Metadata

a. Editing a single file

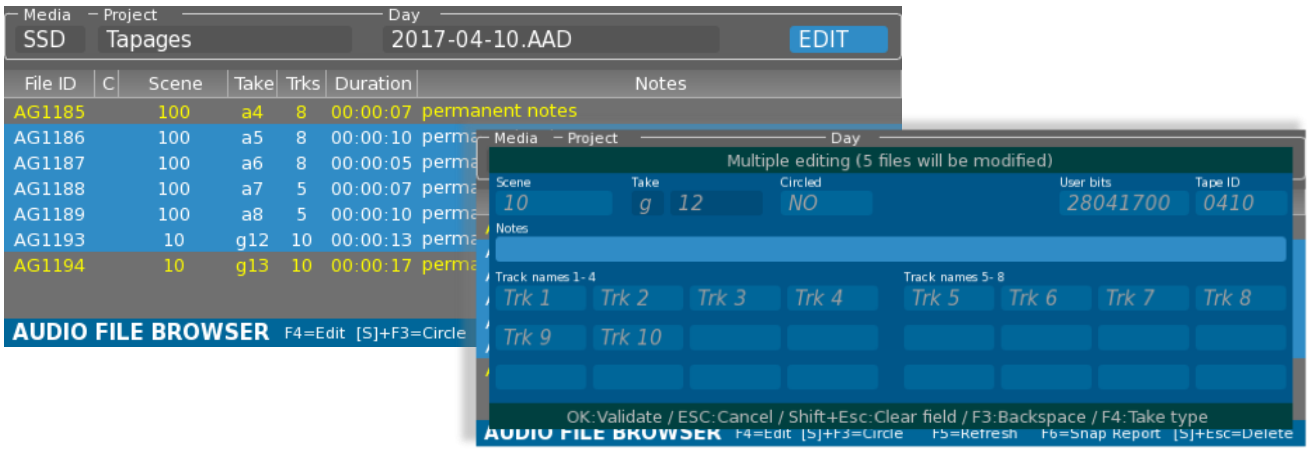
- Highlight a file with the Up & Down buttons
- Select EDIT from the top banner and press OK to open the Edit window (see below), or press F4 .
- Select the desired field with the Left & Right keys or the Jog key and press OK to enter and modify it:
- if no keyboard is available, press Left & Right or use the Main selector Jog to move the chareacter selection box from one character to another (note that moving the box after the last character or before the first one moves it to the next or previous field respectively).
- Press the Up & Down keys or Left selector Jog to change the selected character
- Press OK to confirm a modification and move to the next field.
- Press ESC to exit the field editing mode
- Press ESC or F4 again to close the EDIT window



Notes:
- changes do not take effect until the EDIT window is closed.
- **Circled takes:** from the EDIT window or the file List, Shift + F3 allows you to quickly circle / un-circle the selected file. A circled take is marked by a green square to the right of its identifier in the Take List.
- **Take Type:** from the edit window of a single take, the Take Type (Take Type: t, p, w, a, n, r, g) can be quickly modified with the F5 key or the Up & Down when editing the field

b. Batch editing of multiple files

To edit several files metadata at the same time, you can select them by holding down the Shift button while pressing the Up & Down buttons.
In the top bar, select EDIT and press OK (or press F4). (see below).



Fields are filled in with the metadata of the last file on the list. They are shown in grey but can still be modified: select a field and press OK to modify it.
Depending on the speed of our Media, and the number of modifications required, the Cantar will display a progress bar while it updates the metadata of the selected takes.
Beware of errors: the Cantar does not offer a rewind feature!

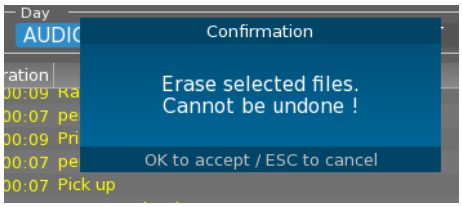
3. Trash

c. Deleting a file:

Select the desired files with Shift + Up & Down keys, then press Shift + ESC.
A dialog box tells us that these files will be placed in the SSD trash (Trash) and asks us if we want to delete these files from other media. Make your choice and validate with OK.

Note that the trash folder can can be accessed from the "Day" field: select the "Day" field on the top bar and press OK. Select AUDIO_TRASH from the list and validate.

From there, we can definitively delete a trashed file: select the desired file and press Shift + ESC, a dialog box reminds us that this action is irreversible (see opposite).

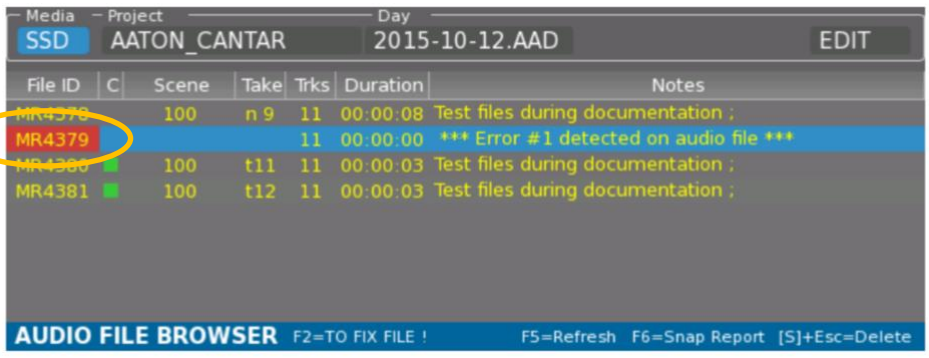


d. Restoring a trashed file:

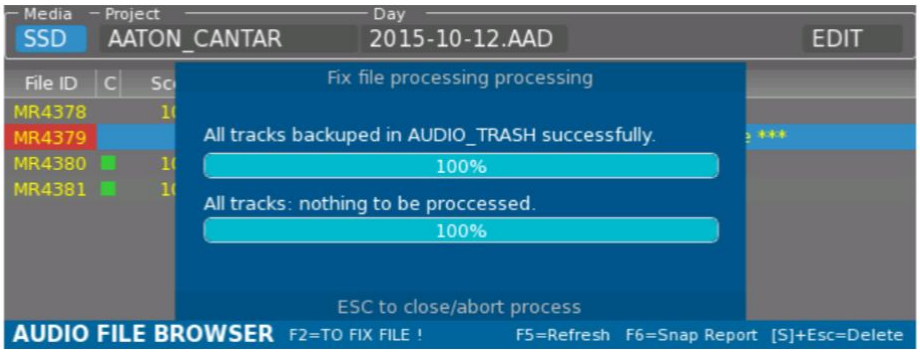
In Menu 1.BACKUP (p.21), copying a trashed file from the TRASH folder in the Source Media to a Destination Media restores the file to a Day Folder.

4. Fixing Files

When a file is not correctly finalized (due to a power failure during recording, a system error, or a media error), the file ID is colored in red in the Browser menu. It is not possible to edit the metadata in this file because it lacks the necessary iXML data.

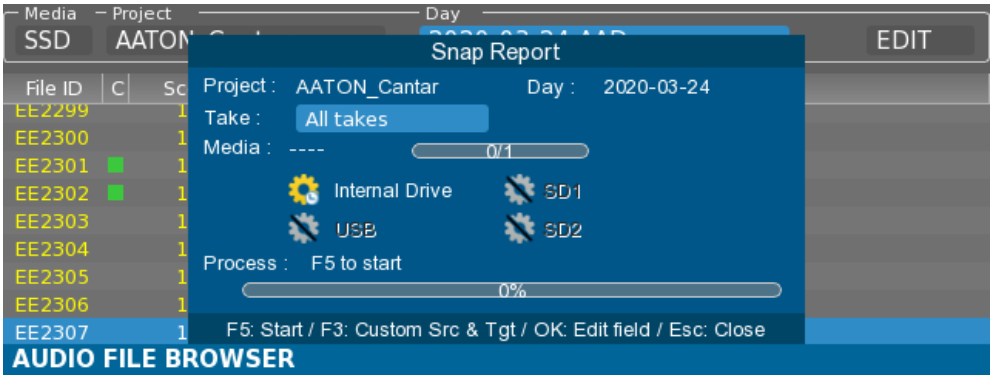


However, it is possible to try to repair this file (fix Take) by pressing F2. The original take (which has not been properly finalized) is then copied to the trash (Audio_Trash) for safety, and the repaired file is inserted into the appropriate Day File list (see below).



5. Snap Audio Report

From the Browse mode window, a Sound Report can be generated by pressing F6.
Generating a Snap Report will start a scan of the Project Folder and Day Folder currently in use, and will list the Mono, Stereo and Poly files currently on the medias. The Snap Report will therefore be a sort of " snapshot " of the sound files currently available on the recording medias and their metadata.

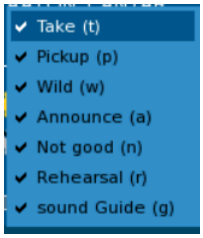


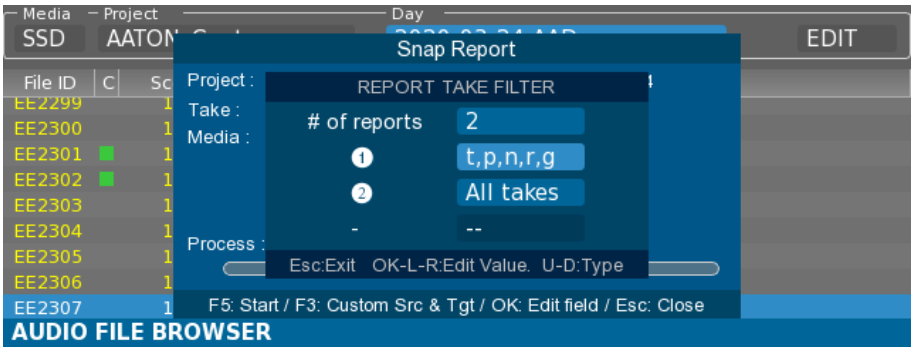
- Scheduled: at least one sound file has been found (mono .AAD, stereo .AAX, poly .AAN)
- Inactive: no sound file was found
- Report in progress
- Report is completed

a. Choice of the different types of takes that will be listed in the reports

The Snap Report procedure can filter the takes according to their type (take, pickup, wild track...). Select the "Take" field and press OK: you can choose to generate up to 3 sound reports, each displaying the metadata of one or more types of takes.

Select the desired number of reports in the "# of reports" box with Left & Right. Position yourself on the line of a report with Up & Down and press OK: a list appears where the desired types of takes can be selected. Navigate through the different types with Up & Down, select / unselect them with Left & Right (see opposite). Confirm with OK.





In Fig. above, 2 sound reports are about to be generated:

- The first one (t, p, n, r, g) will display metadata only for takes of the following types: take (t), pickup (p), no good (n), rehearsal (r), sound guide (g) (thus neither wild tracks (sound only, w), nor announcements (a)).
- The 2nd report will display the metadata of all types of takes ("All takes")

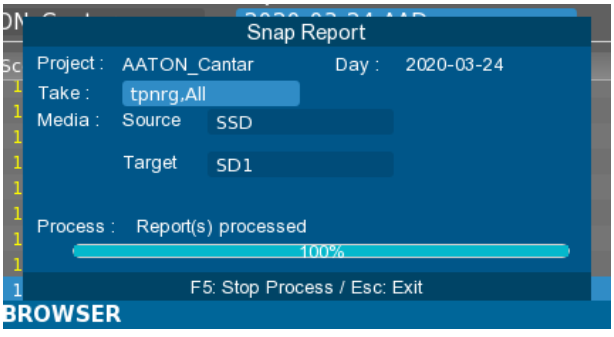
Reminder of the take prefix available:

- «t» = time sync
- «p» = pick-up
- «w» = wild track
- «a» = announce
- «n» = not good
- «r» = rehearsal
- «g» = sound guide

b. Choice of source and destination

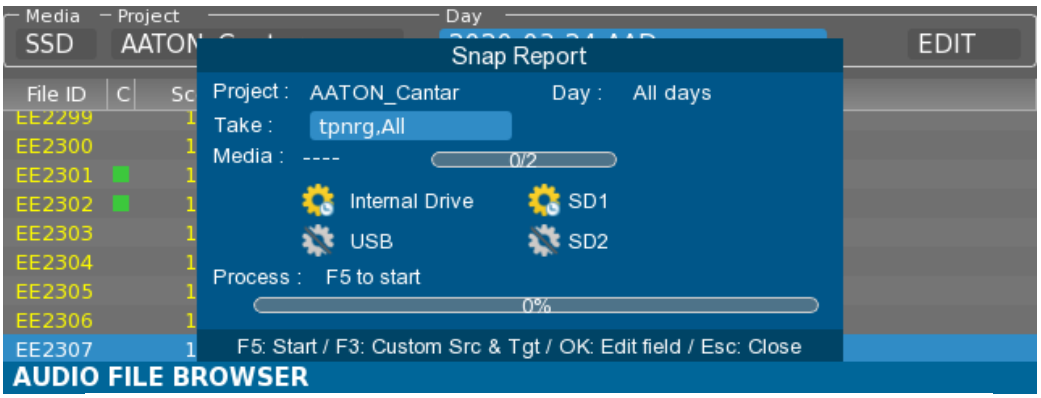
In the Snap Report window, press F3.

Select the Source and Destination ("Target") of our sound report, using the Up & Down keys, and press OK to enter the settings. In the list that opens, navigate with the Up & Down keys and confirm with OK.
The "Source" is the media where the takes whose metadata will be listed in the sound report are located. You can decide that the source and the destination are on the same media (SD1 for example).



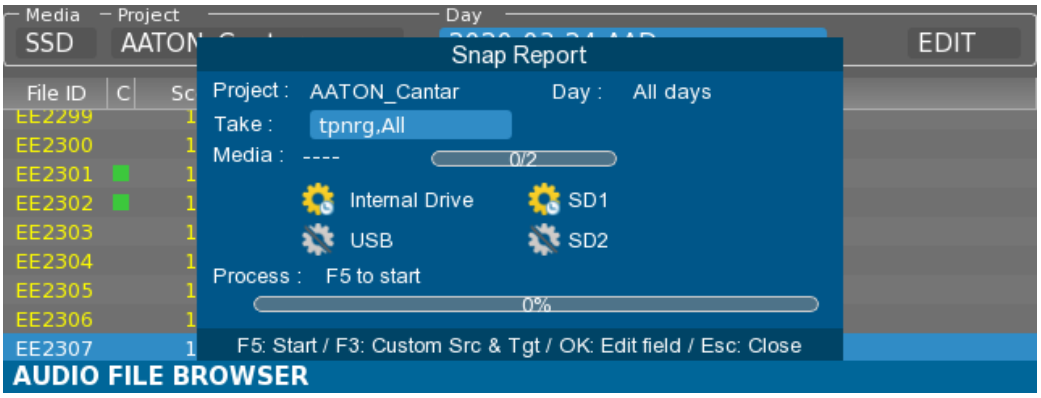
c. Generating the sound report

When all parameters have been chosen, press F5 to start generating the sound reports (see below).



Generating our two sound reports ("tpnrg" and "All takes") on the SD1 card

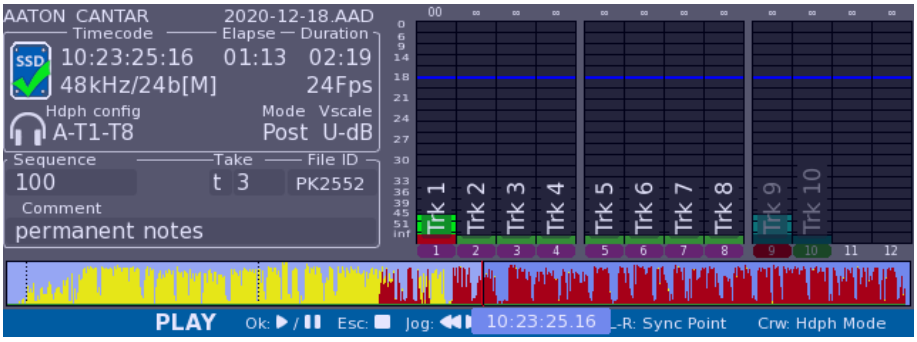
Note: The Snap Report procedure can launch a scan of all the Day Folders of our Project: to do so, on the Browse menu window, press Shift + F6



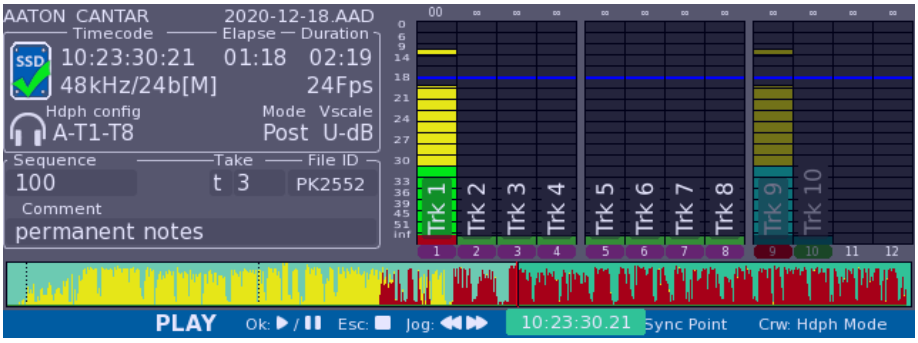
XIII. MENU 8. : PLAY MODE

Place the Main Selector on Menu 8 (at 8 o'clock) to access PLAY Mode.

This mode allows you to play the audio files from the Project Folder and Day Folder selected in Menu 7.Audio File Browser. The audio files are represented by a Waveform (calculated during recording) that includes possible markers indicated by the operator and the clap detection process.



When not playing back the audio file (Stop or Pause), the background of the Waveform or Timeline is blue (see Fig. above). During Play, it is green (see Fig. below).



1. Commands

- Start Play/Pause: Press OK.
- Switch to Stop: Press ESC
- Scrolling through the waveform: Jog
- Switch monitoring to Pre/Post fader: press Shift + F2

- Go to file Next / Previous: press Up & Down
- Go to the next / previous synchronization point / marker: press Left & Right
- Changing the headphone configuration in use: Turn the left Selector Crown.
- See the Headphone configuration currently in use: press F2
- To change the Metadata of the take: Press F4.
- See the Input Routing applied for this file: press F1
- For records longer that 1min 30s, holding Shift and toggling the Left/right keys opens a magnified window of the waveform for accurate cursor positioning and moves the cursor -/+1 frame
- Pressing Shift + F6 adds a marker at the cursor position, with a maximum of 10 markers per audio file

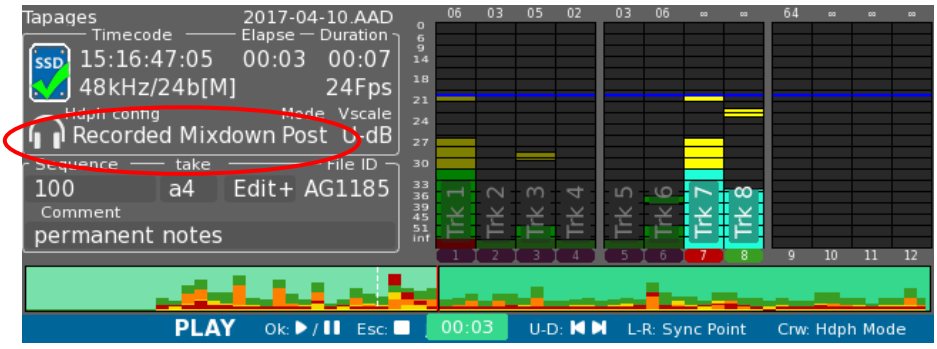
2. Headphone configurations

In Play mode, 3 types of Headphone Settings are available by turning the Left Selector Crown :
- "**Recorded Mixdown**": allows you to listen to the Mix Down tracks, mono centered.
- "**Tracks-Mono**": allows you to listen to all tracks except the Mix Down, mono centered.
- **Classic "A" to "Z"** Configurations: allows you to listen to the tracks according to the Configurations defined in Menu 6. Headphone Output Routing

Note: The tracks can be set to play Pre / Post fader with Shift + F2. Listening to them in Post fader mode allows you, for example, to adjust the levels, focusing on some tracks rather than others, or to check the boom-HF mix. This monitoring mode also allows you to listen to any EQs activated on these tracks.

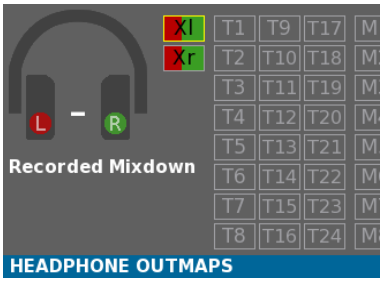
a. Recorded Mixdown

In this monitoring mode, only the tracks corresponding to Mixdown Left (Xl) and Mixdown Right (Xr) are listened to.
The tracks will be sent to the headphone, centered mono. The VU meters of all other tracks are then grayed out (see Fig. below).



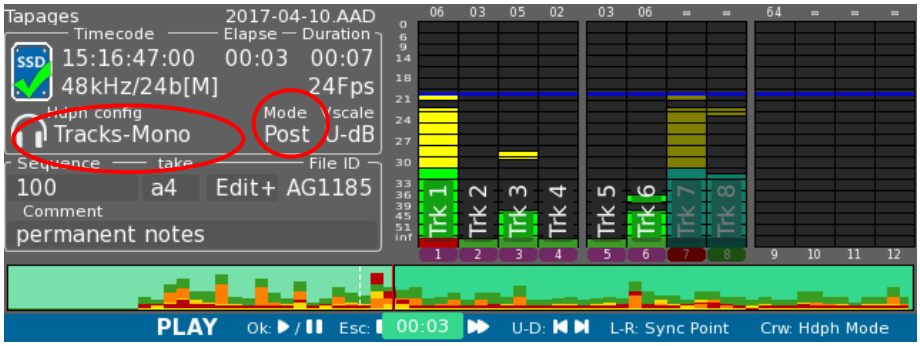
Recorded MixDown monitoring

This mode is represented on the Headphone Routing grid (accessible with F2) by the logos Xl and Xr sent to the centre.



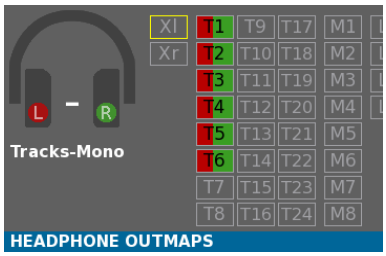
b. Tracks-Mono

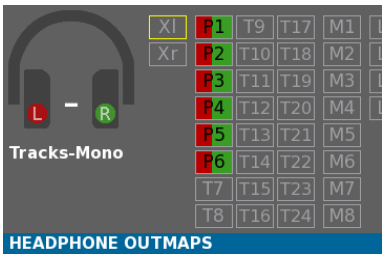
In this mode, all tracks other than the Mix Down tracks are sent to the headphone, in Mono centered, Pre or Post fader levels



Tracks-Mono mode monitoring

This mode is represented on our Headphone Routing grid (accessible with F2) by showing all our recorded tracks mono centered in the headphone
The track logos are modified according to the monitoring mode chosen: "T" in Pre-fader mode (so T1 for track 1, etc.) and "P" in Post-fader mode



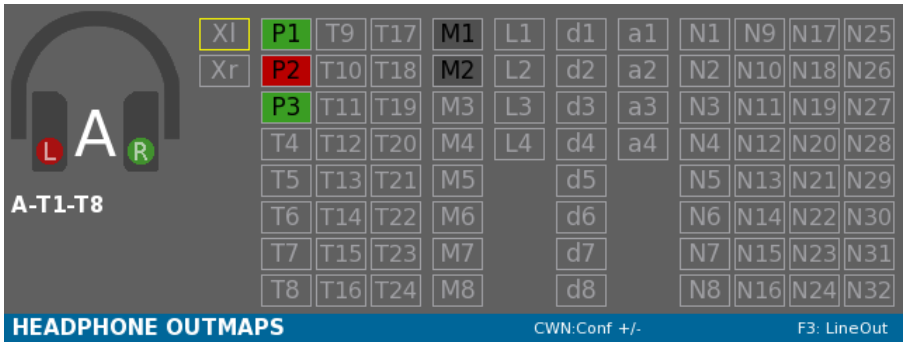


c. Classic "A" to "Z"

In this mode, the user-defined Configuration (from "A" to "Z") in the 6.Output Routing menu (see p.70) determines which sources will be sent to the headphone.

Depending on the "Pre" or "Post" mode chosen with Shift+F2 (and indicated to the right of the headphone logo: "Mode"), the tracks will be played in :
- Pre-play-fader (in which case the position of the sliders/encoders assigned to the tracks does not affect their level during playback)
- Post-play-fader (in which case the playback level of the tracks is determined by the position of the sliders/encoders assigned to them).

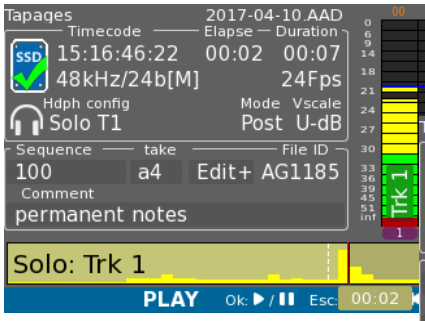
Notes:
- The tracks attenuation level is indicated at the top of the VU-meters.
- If no slider/encoder is assigned to a track being played back, its level can still be modified by soloing that track (solo another track and turn the left Selector Crown to access the desired track) and turning the Jog while holding down the Shift button.
- VU-meters of the tracks not sent to the headphone (not included in the configuration) are grayed out.
- On the Headphone Routing grid accessible with F2: you will find all the sources assigned for monitoring in this configuration, with their choices of Pan Pot
- The track logos are represented according to the monitoring mode chosen with Shift+F2: "T" in Pre-fader mode (including T1 for track 1, etc.) and "P" in Post-fader mode.
- Only tracks can be activated for playback in our Headphone Configuration, other sources such as inputs are grayed out to show that they are inactive



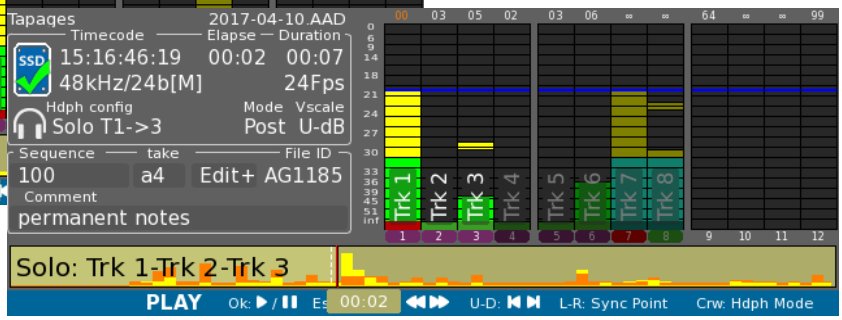
d. Track Solo

In Play Mode, it is also possible to listen to only one or more selected tracks. These tracks are then played in Mono, Center, Pre-Fader (at the level at which they were recorded).
The Timeline displays only the Waveform corresponding to the selected track(s) soloed.

To activate/deactivate the solo monitoring of a selected track, press the Solo button assigned to the desired track, If a track is not assigned to an encoder / slider: Solo any track, then turn the left Selector Crown to scroll through the Track Solos and select the desired track.

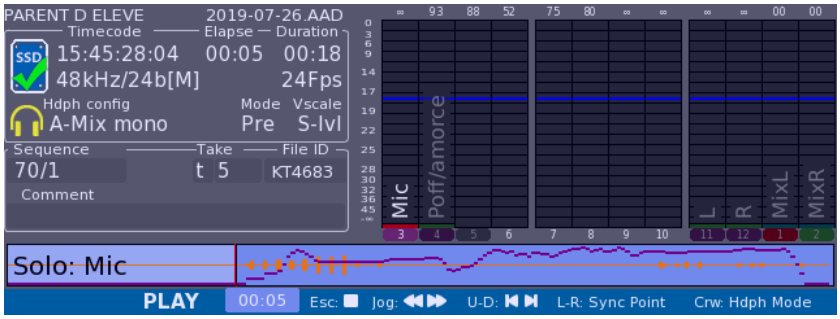


Solo of track 1



When a track is set to Solo, holding Shift and pressing the Solo buttons of other tracks will also set them to Solo (the Waveforms will overlap, the Cantar indicates which tracks are in Solo) (see Fig above).
Press ESC to return to the previous Headphone Configuration.
On the VU meters, tracks other than the one(s) set to Solo are grayed out (see Fig. above).

Since version 2.72, level variations on a track are stored as automations, embedded in the audio file, and are displayed in Play Mode when a track is soloed (see above, the purple curve).



3. Routing

The In Grid routing of the recorded files can be displayed by pressing F1: the Input Routing grid corresponding to the played back take is displayed, showing the inputs' assignment to the tracks and the tracks assignment to the Mix Down

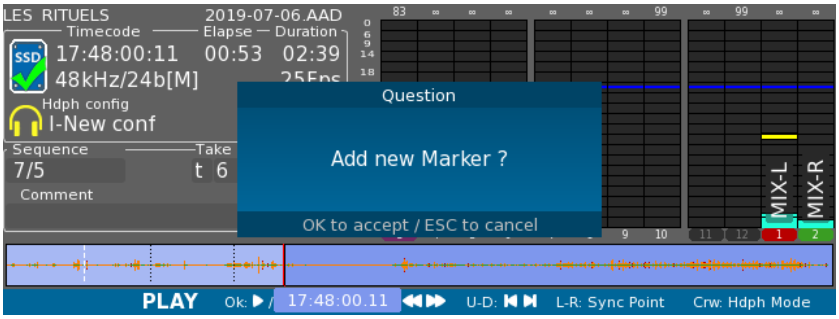
4. Sync Points and markers

a. Synchro points

The sync points indicate the identification of slates: either as a result of manual detection (with Shift+F4 during recording) or as a result of Automatic Clap Detection. They are symbolized on the timeline by a vertical white dotted line.

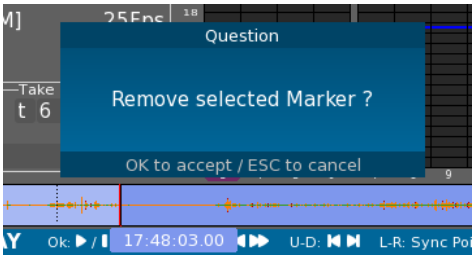
b. Markers

Markers are marks placed by the operator during recording by pressing F6 (to identify a particular moment, e.g.... boom or HF noise). They are symbolized on the timeline by a black dotted vertical line. In Play mode, it is also possible to place markers, on the fly or in pause mode, with Shift + F6: a dialog box will open asking us to confirm the creation of a marker at the position of the scroll bar.



Creating markers in play mode

To delete a marker: position the scroll bar on the desired marker, press Shift + F6 again: a dialog box asks us to confirm the deletion.
To move from one marker / sync point to another on the Timeline, use the Left & Right keys (pressing Left to the left of the first marker or sync point resets the playback point to the very beginning of the take).



5. Waveform display

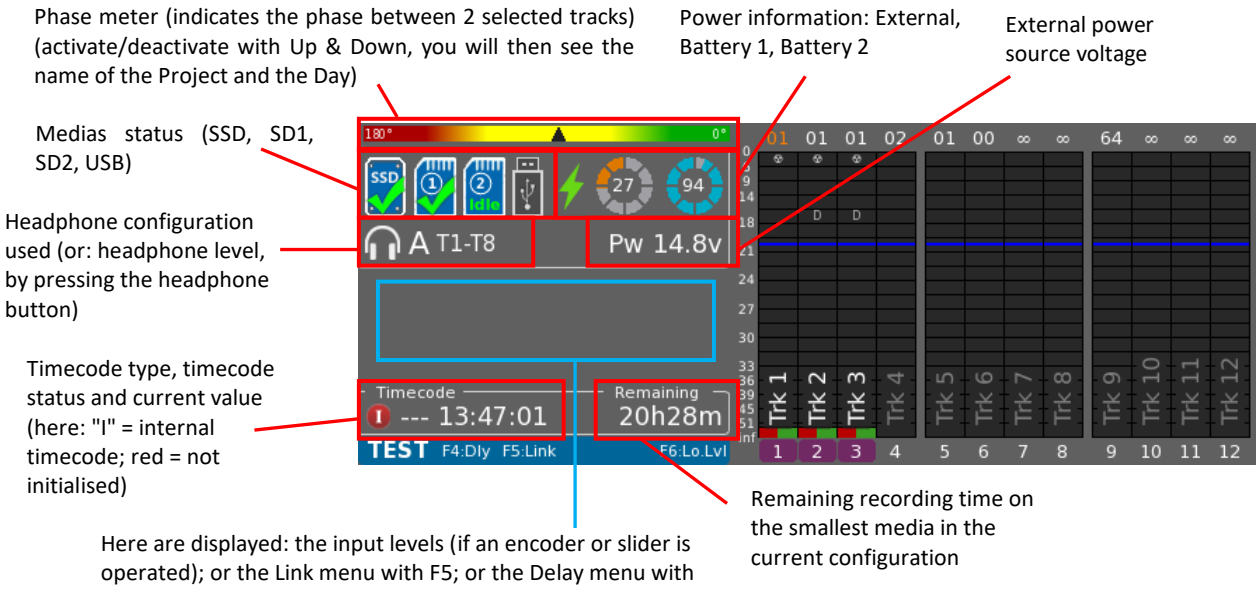
Shift + F3 changes the waveform display mode between :

- S-lvl: Display of the electrical voltage, positive and negative voltages
- S-dB: Level display in dB, positive and negative levels
- U-lvl: Voltage display, positive voltages only, for larger display
- U-dB: Level display in dB, positive levels only

XIV. MENU 10. : THE TEST MODE

Set the Main Selector to Menu 10 (at 10 o'clock) to access the TEST Mode.
This Mode allows you to manage all input parameters (Phantom Power, Phase Inversion, Filter, etc...).

The screen is divided into two parts:
on the left side, various information on the status of the machine, Media, timecode, etc., and on the right side the tracks VU meters

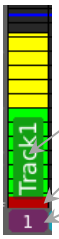


(Cliquer sur une rubrique en maintenant la touche Ctrl pour être reporté au paragraphe correspondant)

6. Right side of the screen: the VU-meters

The VU meters are automatically displayed according to the number of tracks activated in the 5.IN GRID ROUTING menu. They are set in groups of 4, with a minimum of 12 VU meters displayed. For example, if less than 12 tracks are used, 12 VU meters will still be displayed. If 13 tracks are used, 16 VU meters will be displayed, etc.

- A triangle above the VU-meter represents the Limiter (if it is enabled on an input routed to that track). The triangle is grey if the Limiter is enabled but not yet activated, it flashes yellow as soon as it comes into effect (and flashes for 3 seconds after it has stopped being active).
- A red rectangle symbolises a Clip (saturation)
- A horizontal blue line across the VU-meters provides a visual reference of our operating level (it can be adjusted in menu 3.TECHNICAL SETTINGS: "Vum. line level" p.33).
- The VU meter colours can be configured in menu 3.TECHNICAL SETTINGS: "Vum. gradian"



- The name of the track is written at the bottom of the VU meters.
- Above the track number, a Red, Green or Red and Green rectangle tells us how the track is sent in the Mix Down (here: it is red = sent in XI).
- The track number is displayed under each VU meter. It takes the colour of the type of the first input assigned to this track in the IN GRID ROUTING menu (purple for a microphone input, khaki for a line input...).

Above the VU meter, depending on the option activated in menu 3.TECHNICAL SETTINGS: "Display Track Attenuation", the Track Level can be displayed.

Depending on the parameters activated on each displayed:

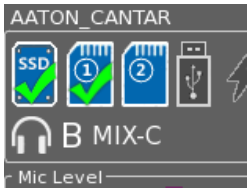
When phantom power is activated (Shift + F4).
Activation of a phase opposition (F6).
Activation of a filter (Up & Down).
Activation of a digital equalisation (Shift + F3).
the activation of a Delay (F4).

Link membership ("M1" to indicate that the first input routed on this track is master of Link Group 1, "-1-" to indicate that it is slave of Link Group 1).

If more than one source is routed on this track, each symbol (except the phase opposition symbol) is replaced by a + sign..
If no sound is detected on a track throughout a take, when the recording is stopped the Vu-meter will display "Silent Rec" until the Main Selector switches to another Menu. See also Menu 12.RECORD: "Silent Rec".

7. Left side of the screen: Media status

The 4 available media (internal SSD, SD 1, SD 2, USB) are represented by colored icons :



- **Grey** = Missing and unused media
- **Violet**: the media is seen by the Cantar but the Cantar cannot use it. Try to unplug/replug this media, or format it.
- **Blue** = Media available but not used
- **Blue with green check mark**: Media present and ready to be used for recording (or Backup Idle if "Idle" is written)
- **Blue with a red cross**: Full media, or badly formatted, or missing media, or defective media, when it is supposed to be used for recording (e.g. SD card ripping). Check our media.

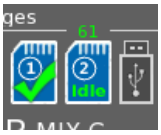
Orange and Red: Media is slow. The Cantar must then use its internal audio buffer to allow normal writing of data, however it may warn us that the slowness of the Media may cause problems, depending on the recording parameters (number of tracks, sampling frequency and quantization).

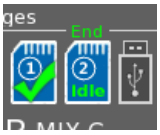
- **Orange**: the Media is slow, the completion of the recording may take some time
- **Red**: Very slow media, recording can generate errors if the audio buffer is full.

It is recommended to use slow media in Idle mode rather than "Live Rec" recording.

- "Idle": The Media is used as Backup Idle Media. When the Main Selector is switched to TEST Mode,

the Idle Backup procedure starts. Its progress is then indicated as a percentage above the media icon until "End" is displayed





Notes:
- The red and orange colours may appear at the start of the recording but disappear shortly afterwards if the Cantar has managed to compensate for the slowness of the media.
- Three USB ports are available on the Cantar (numbered 1, 2, 3) but only 1 is used for recording: the first one that has been connected to a Media and activated.
- If an error forces the Cantar to stop recording for a Media (card removed, Media full...), the recording will continue without interruption on the remaining Medias.

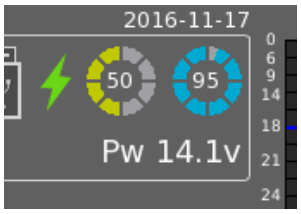
CAUTION: The Cantar controls the filling of its Audio buffer in such a way that if a safety limit is reached, recording on Media that is too slow will be deactivated as a precaution.

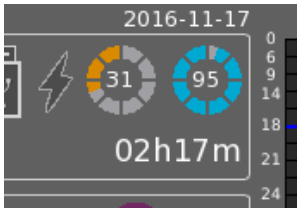
8. External power & Batteries status

At the top center of the screen, a lightning logo indicates the presence (green lightning) or absence (grey lightning) of an external power supply connected to the XLR-4F port.

To the right of this symbol, two circles respectively represent the Cantar's internal batteries 1 & 2. The circle becomes more colorful when the battery is full, the colour varies from blue (for a full battery) to red (for a nearly empty battery) and changes to a flashing grey when the battery is completely empty or is removed.
A number in the center of the circle represents the percentage of charge remaining for that battery, from 100 for a full battery to 00 for an empty battery.

Notes: If an external power supply is connected, its voltage is indicated under the internal battery logos. If no external power supply is connected, an indication of the estimated remaining battery life is shown under the internal battery logos (see images opposite).





9. Solos monitoring

In the TEST, PRE RECORD and RECORD modes, it is possible to monitor :
- One single input (Mic, Line, AES-3, AES-42)
- One single track
- One single output (Line Out).

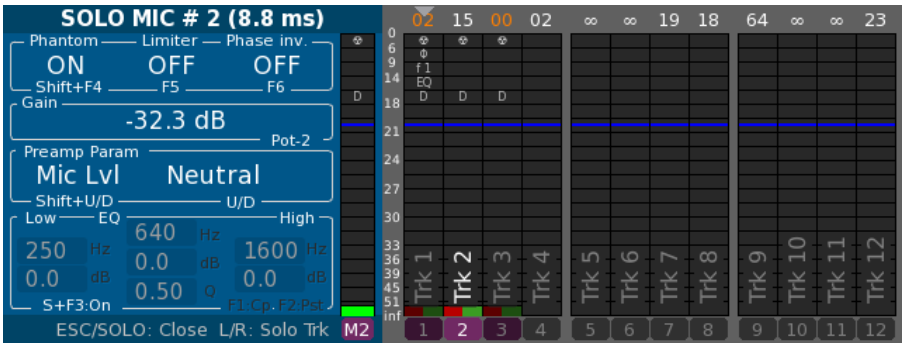
The audio from the Solo input/track/output is sent directly to the headphone in the center.
By activating the Solo on an input, you can also access a number of parameters (Phantom Power, Limiter, Filter...). Activating a Solo also allows you to modify the level of an input that is not assigned to an encoder or slider.

To activate a Solo on an input/output/track : Press the Solo button associated with the encoder or slider assigned to this input/output/track (for example: press the Solo button next to rotary encoder 1 to set Mic 1 input to Solo if this encoder controls this input).

- If no encoder or slider is assigned to the desired source: set any source to Solo and hold down Shift while turning the Left Selection Crown to navigate between the Solo categories (Mic, Line, AES 3, AES 42, Track, Line Out): once on the type of Solo we are interested in, release Shift and turn the Selection Left Crown to scroll through the Solos of that type to the one we are interested in.
A short press on a Solo button opens a Solo window; a new short press on this button or ESC closes the window.
A long press on a Solo button opens the Solo window until the button is released (temporary mode).

When a Solo window is open :
- Pressing another Solo button immediately displays a new Solo window.
- Turning the Left Selector Crown switches to Solo from the previous/next source of the same type.
- Holding Shift + turning the Left Selector Ring changes the type of source that is set to solo: Mic In -> Line In -> AES-3 In -> AES-42 In -> Track -> Line Out -> Mic In etc.

a. Solo of a microphone input («Mic»)



In addition to listening to the input, the analog Mic Solo Mic window allows you to :
- Enable/disable phantom power, limiter and phase opposition
- Modify the preamp parameters: Pre-attenuation (Microphone, Mid, High, Line level), gain (with the Jog, if no encoder / slider already controls it) and Filter.
- Change the digital equalisation settings

- Phantom power

Press Shift+F4 to turn Phantom Power (48V) ON or OFF.
If the power supply is switched off, e.g. for a dynamic microphone, the preamplifier gain is automatically increased by +12dB.
Menu 4.AUDIO & TIMECODE: "Phantom Mic gain" allows you to activate a +6dB increase on the preamplifier when phantom power is activated on an input. The level difference between an input with or without phantom power is then only 6dB.

- Limiter

Press F5 to enable/disable the Limiter ON or OFF.. When the Limiter is ON, a grey triangle appears above the track to which this input is assigned. If the signal reaches the Limiter threshold (-6dBFS), the triangle will flash yellow.
- Thanks to the dynamic range provided by 24-bit quantization, the signal level can be adjusted so that it does not exceed -20 dB on average, without fear of drowning the useful signal in the background noise.
- If the signal reaches 0 dBFS, a red rectangle indicating a "clip" appears above the VU meter.

- To maintain the balance between linked channels, the same Limiter will be applied on their preamplifiers (see below the Link section p.119).
- The limiter is not configurable.

- Phase inversion

Press F6 to enable/disable phase inversion ON or OFF.
Note: This action is also possible without going through the Solo window, by pressing Shift + Solo button of an input (attention, not to be confused with Shift + long press Solo button which opens the encoder/slider assignment window).

- Gain

If no encoder / slider is associated with a microphone input, its gain can be modified by turning the jog. This information is indicated at the bottom right of the "Gain" field (opposite: "Pot-2" indicates that this input is controlled by encoder n°2).
The available attenuation ranges from 0 to -89.8dB and then to -∞.

- Filters

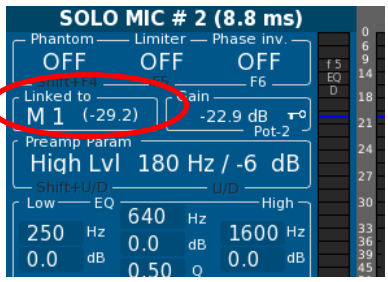
Press the Up & Down buttons to change the filter setting.
The Cantar X3 implements a 3rd order anti-rumble low-cut filter at 30Hz (-3dB at 30Hz then -18dB per octave). This is the "Neutral" position.
A long press on the Down button deactivates this anti-rumble filter: this is the "Extreme LP" position.
Pressing Up gives access to 3 series of low-cut filters with cut-off frequencies of 60, 120 and 180Hz with slopes of -6 or -12dB per octave.

- input level parameter

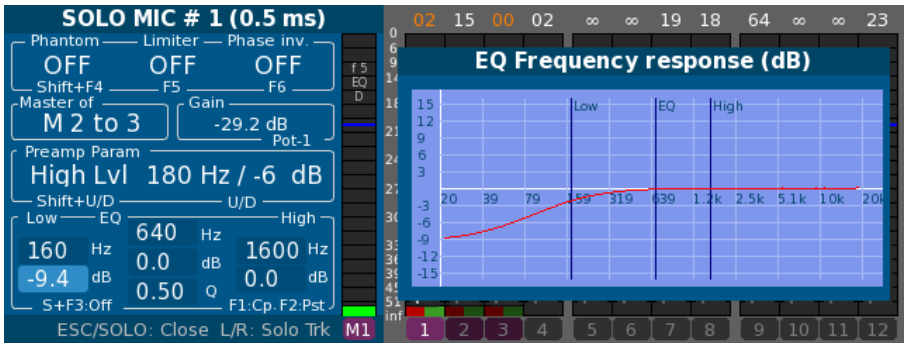
The Cantar X3 offers 4 Microphone input levels ("Preamp Parameter"), making it possible to adapt to all types of sources. Press Shift + Up & Down to switch between Mic ("Mic"), Mid, High, or Line levels.
- Mic Level: Default level for all microphone inputs.
- Mid Level: attenuates the input by 10dB.
- High Level: attenuates the input by 26dB.
- Line Level : attenuates the input by 38dB.
Note: Phantom power can be enabled at any level, but switching to Line Level will automatically switch off phantom power if phantom power is enabled.

- Link

This field appears if the input is linked to others: it is then indicated whether the input is Master (and of which inputs) or Slave (and of which inputs). For the Slave inputs, the Limiter, Phantom Power, Attenuator and Filters can only be changed on the Master input of the group (see section Link below p.119)



- Digital Equalization



Press Shift+F3 to enable/disable digital equalization ON or OFF.

3 bands can be used: Low-Shelf, High-Shelf, and Parametric EQ.

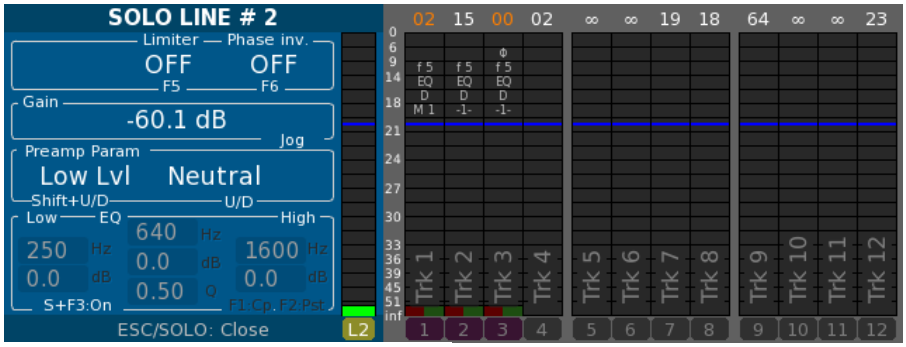
The cut-off frequencies of all filters can be adjusted from 30Hz to 16kHz with a gain of up to ±15dB in 0,1dB increment. The parametric EQ also has a width (Q) setting ranging from 0.05 to 1.

Once digital equalization is activated with Shift+F3, the parameters are accessed by pressing OK, one of the equalization field is then highlighted and the graph associated with the EQ appears.

Use the direction buttons to select a parameter and turn the jog to change the value (Press "Shift" + Jog for faster changes). The graph shows the changes in real time.
Press ESC to exit the Digital equalization window.
Copy/Paste: Press F1 to copy the currently viewed Digital Equalization settings.
Open the equalization of another input, press F2 to paste these parameters.

b. Solo Solo of a Line input

To open a Line Solo window, press the Solo button associated with the encoder/slider assigned to this line input. Alternatively, press the Solo Line buttons on the right side of the machine.



Solo setting of the input Line n°2

- Gain

If a Line input is not associated with an encoder/slider (whether on the Cantar Mixer, or on a Cantarem), its attenuation can be modified by setting this input to Solo and turning the Jog.
The available attenuation ranges from 0 to -89.8dB and then to -∞.

- Attenuator

Press Shift + Up & Down to switch between High Level and Low Level.
- Low Level: Default on all line inputs.
- High Level: an attenuation of 20dB is applied to the input

- Filter

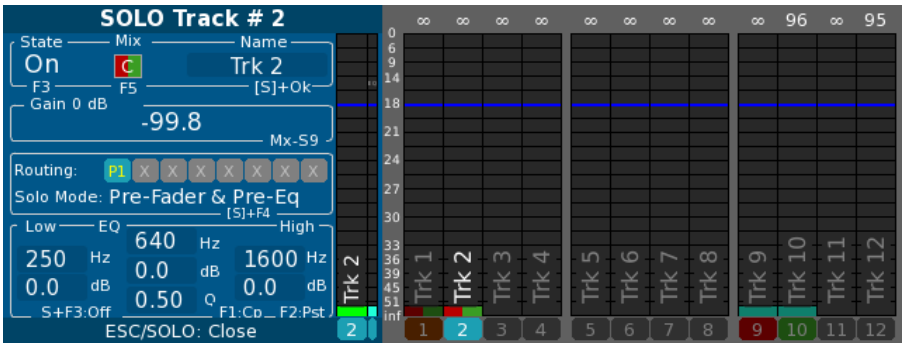
Press Up & Down to change the filter between "Neutral" (low-cut at 30Hz, -18dB/octave), 60Hz/-6dB and 60Hz/-12dB. The "Extreme LP" mode is not available for Line inputs.

- Other parameters

Refer to the "Microphone" paragraph above for the other parameters accessible in Solo mode: Limiter, Phase inversion, Link, Digital equalization.

c. Solo of a Track

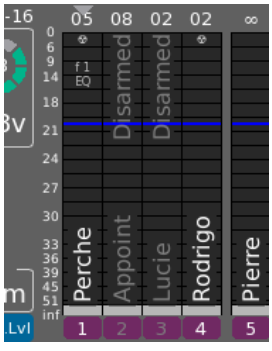
There are 4 ways to set a track to Solo mode:
- By pressing the Solo button on the encoder/slider assigned to this track (see "Assigning encoders/sliders" p.115).
- If this track is not associated with an encoder/slider: by putting any track in Solo and turning the Left Selection Crown to scroll through the Solos of tracks until you find the one you are interested in.
- By pressing any Solo button (inputs, outputs,tracks...), then holding down Shift while turning the Left Selection Crown, to navigate between Solo categories: once on the Solo tracks ("Track"), release Shift and turn the Selection Crown to scroll through the Solo tracks until you find the one you are interested in.
- By setting an input to Solo and pressing Left or Right buttons: the Solo window will then display the first track on which this input is routed. Pressing Left or Right again will bring us back to the Solo window of the first input routed to this track.



- Status (track armed/unarmed)

When a track is set to Solo, pressing F3 either arms or disarms it (i.e. activates or deactivates it: in the latter case the audio will not be recorded nor sent to the Mix Down.

If you are recording Polyphonic files, with the 4.AUDIO & TIMECODE menu: "Polyphonic Mode" in Original mode and if the disarmed track is followed by other armed tracks; then this track will still be recorded, empty, to maintain the order of our multitrack (it will then require the same disk space as the others).



When working in Monophonic recording, where disarmed tracks are not recorded, disarming a track can save disk space.
When a track is disarmed, its VU meter is grayed out and labelled "Disarmed" (see Fig. opposite).

The audio signal of a disarmed track can still be sent to outputs, VU meter, Solo, Postfade if "Audio Stream ON" is selected in menu 4.AUDIO & TC: "Disarmed Tracks"
It is also possible to disarm a track by pressing Shift + Solo Button of the track in question, in TEST or PRE RECORD mode. (Be careful not to confuse this with a long press on Shift + Solo button which opens the encoder/slider assignment window).

- PanPot Mixdown

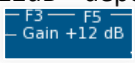
When a track is in Solo mode, the F5 key is used to modify the PanPot of the track to the Mix Down (Left, Centre, Right). Press Shift+F5 to access the Fine Pan and turn the Jog to adjust its value. Confirm with OK.

- Track name

Press Shift + OK to change the track name. Once in Edit mode, use the Left & Right keys or the Jog to select a character, Up & Down to modify it (if you don't have a keyboard), and confirm with OK or cancel with ESC.

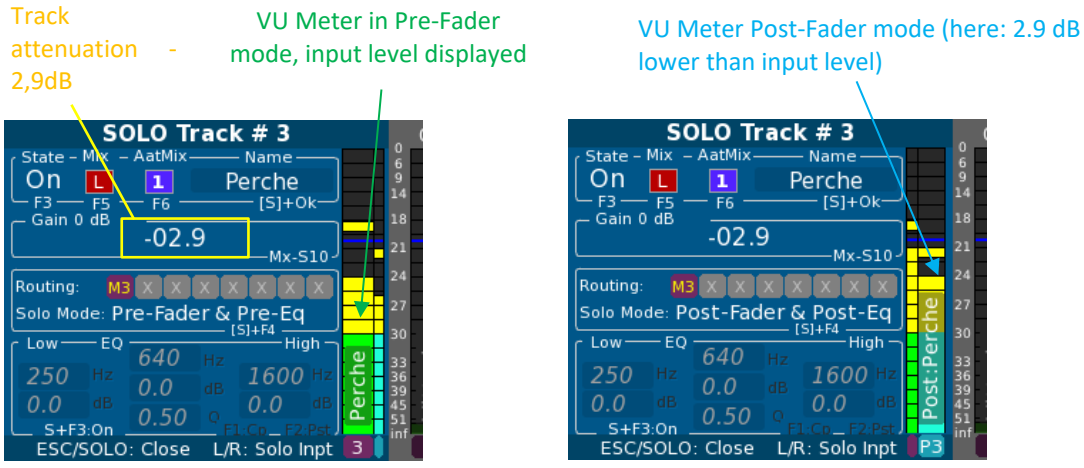
- Gain

If a track is not associated with an encoder/slider, its "Gain" level can be modified in the Solo window by turning the Jog.
Note: the "Gain" field specifies the maximum value "0dB", "+6dB", "+12dB" depending on the parameter chosen in menu 4.AUDIO & TC: Fader Max Level, p.47.



- Monitoring and display Pre/Post fader

From the Track Solo window, pressing Shift+F4 makes it possible to listen to the track in Pre or Post-fader solo mode. This option can be used, for example, to adjust an equalizer (if you have activated the possibility of post-fader equalization, see menu 4.AUDIO & TC "EQ location", p.47).
The size of the 2 peak meters displayed, Pre and Post, changes according to the option selected

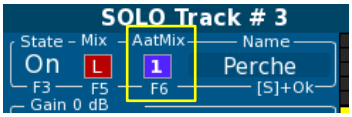


On the left side Pre-Fader & Pre-EQ display: The Pre-Fader peak meter (leftmost) is wider. On the right, Post-Fader & Post-EQ display is the opposite. Note that between the Pre and Post-Fader signals, you can see the difference of -2.9 dB applied to the gain of our track.

- Digital EQs

If Menu 4.AUDIO & TC: " EQ Location" (p.47) is set so that EQs are allowed on post fade sources, then digital EQ is available on each track.
Note that these EQs are only active on the post fade signal, i.e. only on the signal sent to the Mix Down

If the Cantar is equipped with the additional options of version 3.200.C6, soloing a track allows us to see if it is sent to an AatonMix channel.
Press F6 to change this assignment, between X (not assigned) and AatonMix channels 1 to 4. The color of the number tells us whether the channel concerned is activated (blue square) or deactivated (grey square). See opposite Fig., which shows Track 3, assigned to AatonMix group 1, activated.

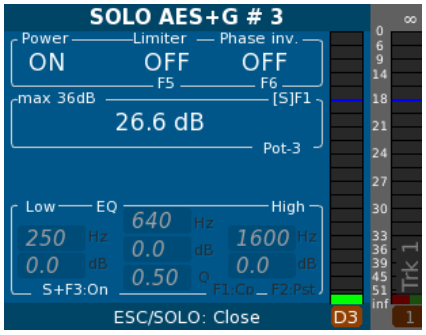


d. Solo of an AES-3 input (digital inputs D1 to D8)

An AES input can be set to Solo by pressing the Solo button of the encoder/slider associated with this input. Alternatively, press any Solo button and hold down Shift while turning the Left Selector Crown to navigate between Solo categories: once on Solo "AES+G", release Shift and turn the Selector Crown to scroll through the Solos from AES-3 inputs to the desired Solo window

The Solo window of an AES-3 input shows :

- If the "Digital Power" is ON or OFF: this is the activation of the Cantar's analogue/digital converters. **Note**: Menu 4.AUDIO & TIMECODE: "Digital Power" must be ON for the AES inputs/outputs to work.



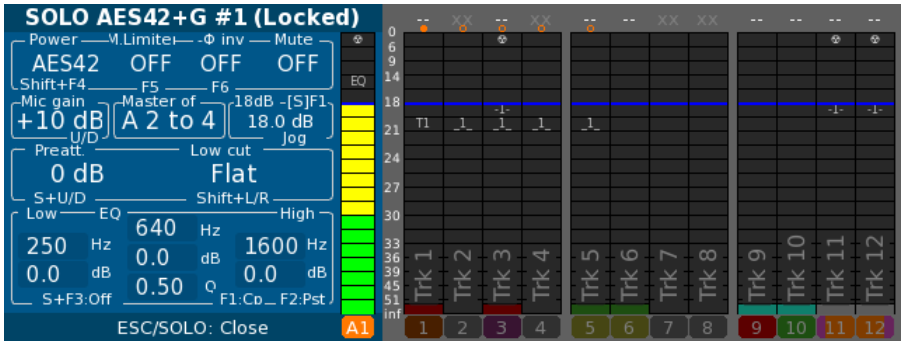
- The digital gain applied to the input (if an encoder/slider is assigned to this input, the indication is below the gain frame (opposite: "Pot-3"); otherwise, the gain can be modified with the Jog). The gain of the digital inputs has a minimum of -∞ and a maximum to be chosen with Shift+F1 from 0 to +36dB)
- The limiter (activated or deactivated with F5)
- Digital equalization of the input (enabled/disabled with Shift+F3) (refer to the paragraph dealing with digital equalization for Solo Micros, above, for more details)
- Phase inversion of the input (activated/deactivated ON or OFF with F6)

e. Solo of an AES-42 input (inputs A1 to A4)

An AES-42 input can be set to Solo by pressing the Solo button on the encoder/slider associated with that input. Alternatively, press Shift + Line Solo button on the right hand side of the machine; or press any Solo button and hold Shift while turning the Left Selector Crown to navigate between Solo categories: once on Solo "AES-42+G", release Shift and turn the Selector Crown to scroll through the Solos from AES-42 inputs to the desired Solo.

The Solo window displays the input status:
- Locked (if a valid digital signal is detected on this input)
- Unlocked (if no valid digital signal is detected on this input). In the latter case some of the features of the Solo page will not be accessible.

When an AES-42 input is in Solo mode, Shift+F4 switches this input to AES-3 or AES-42 (with power).
Note: Switching an AES-42 input to "Power: AES-3" or "AES-42" will automatically activate the general Digital Power in menu 4.AUDIO & TIMECODE: "Digital Power".

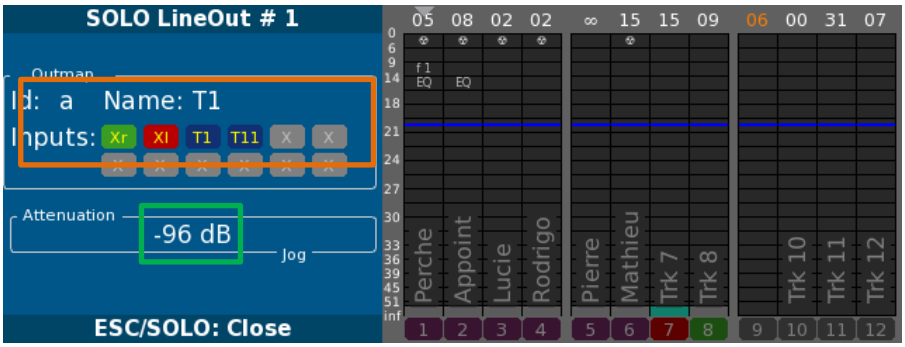


If the AES-42 signal carries information readable by the CantarX3, the recorder will be able to retrieve it and display it. Depending on this, the status of the Limiter, Mute, Mic gain, Pre-Attenuator, Low cut Filter and information about the unit can be displayed (see above).

- The "Mic gain" is the gain directly integrated into the digital microphone connected to the input. This gain applies to both versions of the digital input (with and without digital gain). If this Mic gain is available it can be adjusted with the Up & Down buttons.
- The "Digital gain" is the digital gain that the Cantar applies to the AES-42 input: this gain can be adjusted with an encoder/slider assigned to the input or with the Jog, with a minimum of - ∞ and a maximum to be chosen with Shift+F1 from 0 to +36dB.
- A "Device Info" frame displays any information retrieved from the digital microphone: manufacturer and product name, microphone delay (in samples).
- The Low cut filter offers the positions "Flat" (neutral), "40 Hz / -3dB", "80 Hz / -3dB" and "120 Hz / -3dB".
- The Pre-attenuation parameter offers the values "0dB", "-6dB", "-12dB", "-18dB".
- The digital equalization can be activated with Shift+F3 and modified (refer to the paragraph dealing with digital equalization for Solo Micros, above, for more details).

f. Solo of a Line Out

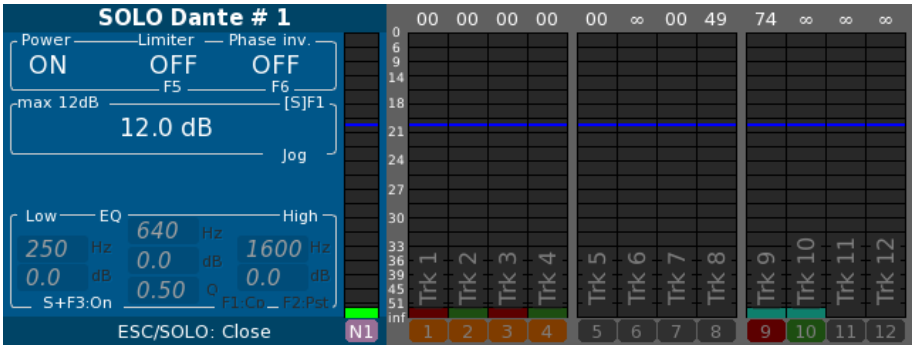
Any Line output can be set to Solo by pressing the Solo button on the encoder/slider associated with that output. Alternatively, press any Solo button and hold down Shift while turning the Left Selector Crown to navigate between Solo categories: once on the "Line Out" Solos, release Shift and turn the Selector Crown to scroll through the Solos from Line Out # 1 to 8 ("Line Out # 1 to 8") (see Fig below)



The output configuration used (here: "Id: a") and its name (here: "T1") are indicated. A box also reminds which sources are assigned to this output.
The attenuation setting is also accessible in this window: it can be modified with the encoder/slider assigned to this output or, alternatively, with the jog (see Fig. above). **Note** that in TEST mode, pressing F6 opens a setting window for all Line Output levels, another way to modify them

g. Dante input Solo (optional):

Available if the CantarX3 is equipped with the Dante option card and the Dante + option of version 3.200.C6 and above)
A Dante input can be set to Solo by pressing the Solo button on the encoder/slider associated with that input. Alternatively, press any Solo button and hold down Shift while turning the Left Selector Crown to navigate between Solo categories: once on the "Dante" Solos, release Shift and turn the Selector Crown to scroll through the Dante input Solos to the desired one.



The Solo window of a Dante input shows :

- If the "Dante Power" is ON or OFF: *Menu 4.AUDIO & TIMECODE: "Dante Settings" (p.54) must be ON for Dante inputs/outputs to work.*
- The digital gain applied to the input (if an encoder/slider is assigned to this input, the indication is under the gain frame (opposite: "Mx-S1" is Mixer Slider 1); otherwise, the gain can be modified with the Jog).
- The maximum gain is to be chosen with Shift+F1 from 0 to +36dB.
- A limiter (enabled or disabled with F5)
- A phase inversion (enabled/ disabled ON or OFF with F6)
- Digital equalization (on/off with Shift+F3) (refer to the paragraph on digital equalization for Solo Micros above for more details)

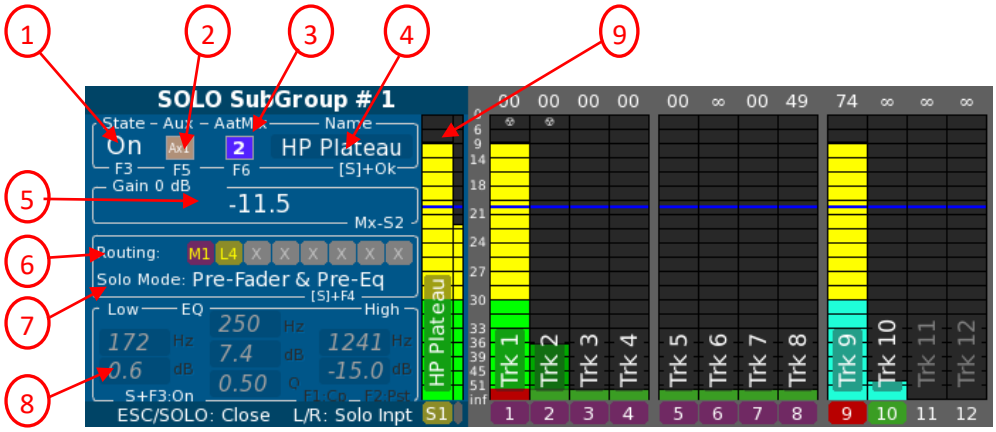
h. Soloing SubGroups (optional)

If the Cantar is equipped with the additional options of version 3.200.C6, 24 SubGroups and 2 Auxiliaries are available. The SubGroups function as mix busses: we assign our sources to them (which can be any type of input, post-fader tracks or our Mix Down), and we can listen to these subgroups in our headphones, or send them to any type of physical output.
We can also assign all 24 SubGroup channels to the two Aux channels which can be assigned to recording channels (T1-T24) and sent to the Mix Down.
It is not possible to modify the level of the Auxes, nor to assign them to an encoder/slider, nor to display them in Solo.

To modify SubGroup channels level sent to the Aux channels, press the Solo button of the encoder/slider associated with the desired SubGroup. Alternatively, press any Solo button and hold down Shift while turning the Left Selector crown to navigate between Solo categories: once on the Solo "SubGroup", release Shift and turn the Selector Crown to scroll through the Solos of SubGroup and to the desired one.

As a reminder, the assignment of sources to SubGroups and Auxes is done via the 5.IN GRID ROUTING menu

The assignment of SubGroups and Auxes to the monitoring and Output Configurations is done via the 6.OUTPUTS ROUTING menu (see page 82).



Solo window of SubGroup 1

The Solo window of a SubGroup shows : (above)

1. If this SubGroup is ON or OFF (enabled) (enabled / disabled with F3, or with Shift+F3 on the selected SubGroup in Menu 5: IN GRID ROUTING).

2. The Auxiliary channel to which this SubGroup is assigned: select Aux1, Aux2, or X (none) with the F5 key. Here: SubGroup 1 is assigned to Aux1.

3. The automix AatonMix channel ("AatMix") to which this SubGroup is assigned: this assignment is changed with F6, between X (not assigned) and AatonMix channels 1 to 4. The colour of the number tells us whether the channel concerned is activated (blue square) or deactivated (grey square). Here: SubGroup1 is assigned to the AatonMix 2 channel, which is activated. (For more information on AatonMix, see XVIII. ADDITIONAL OPTIONS , p.157).

4. The name of this SubGroup, which can be changed with Shift + OK. Here: "HP Plateau".

5. The digital gain applied to the input (if an encoder/slider is assigned to this input, the indication is below the gain field; otherwise the gain can be modify with the jog). Here: the gain is -11.5 dB, it is controlled by Slider 2 of the "Mx-S2" Mixer panel.

6. A reminder of the sources assigned to this SubGroup. Here: Mic In 1 and Line In 4.

7. The Solo Mode (can be changed with Shift+F4, between "Solo Pre-Fader & Pre-EQ" and "Solo Post-Fader & Post-EQ").

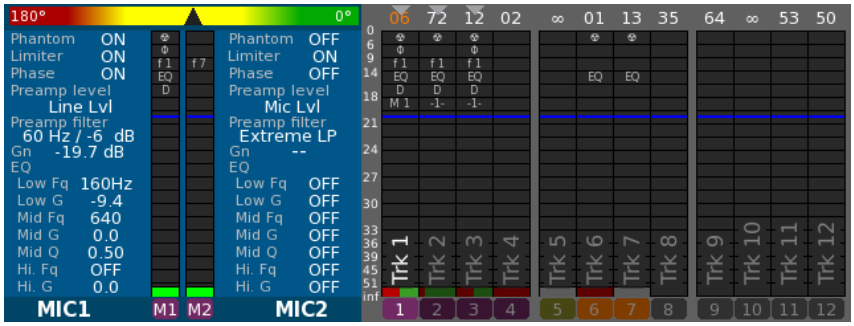
8. Digital equalization of the SubGroup (enabled/disabled with Shift+F3)
(the equalizer must have been activated on the Post Fade sources in menu 4. AUDIO & TIMECODE PARAMETERS: "Eq location).

9. The Vu meter, divided into 2 parts Pre-Fader and Post-Fader. So, if our gain for this SubGroup is -11.5dB, then the left Pre-Fader peak meter will indicate a level 11.5dB higher than the right Post-Fader peak meter.

10. Double Solo et Phase-meter

a. Double-solo of Mic inputs or tracks

It is possible to enable a Double Solo to allow 2 Microphone inputs or 2 tracks to be compared.
To do this, hold down the Solo button of a 1st Mic/Track input, and press the Solo button of a 2nd Mic/Track input. The first source will be heard in the left ear and the second in the right ear.
Another way to enable a Double Solo is to set one input to Solo and then hold Shift + Solo button on another input.



Note: It is not possible to put in Double Solo a track + a microphone input. It is also not permitted to set Line or AES inputs or outputs to Double Solo.

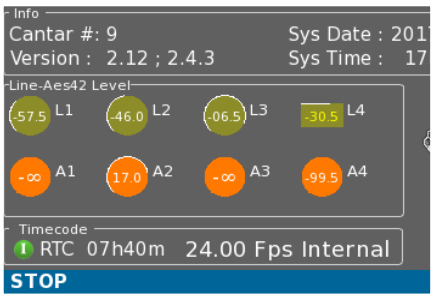
b. Phase meter

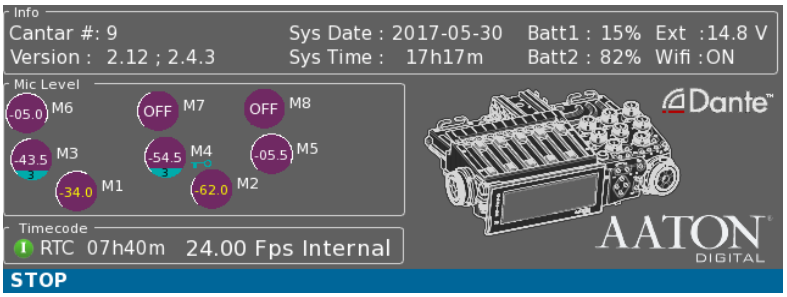
A Phase meter is displayed at the top of the Double Solo window. It represents the phase correlation between the two inputs, between 180° to the left and 0° to the right. Two identical sources will be correlated at 0°, two sources in perfect phase opposition at 180°.
In the TEST, PRE RECORD (PPR), RECORD or PLAY Modes, the Phase meter can also be displayed pressing the Up key. (pressing Up again will display the Project name and the current Day).
The phase is then measured between the last 2 inputs or tracks used for a Double Solo. These 2 sources are indicated on the Phase meter bar

11. Inputs, tracks & outputs level display

c. Input levels

In STOP, TEST, PRE RECORD (PPR), or RECORD mode, if the menu 3.TECHNICAL SETTINGS: "Display Inputs Level" is "ON" (see p.34), any modification of the position of an encoder/slider opens a Level window on the left side of the screen. Levels of all sources of the same type will be displayed.



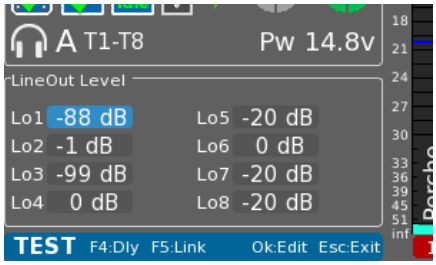


Depending on the parameter set in the menu, the levels can be displayed with an accuracy of ±0.1 dB, ±0.5 dB, or ±1 dB

Notes:
- An input is marked "OFF" if it is not used in the input and output routing (Line, AES, Headphone) currently in use. The Cantar will then automatically switch this input off for energy saving purposes.
- The input level is represented as a circle if the input is associated with a rotary encoder (or jog controlled) or as a rectangle if the input is associated with a slider (from the Cantar Mixer, a Cantarem 1 or 2 or a Cantaress).
- The membership of an input to a Link group is symbolized by a colored strip at the bottom of the circle/rectangle corresponding to this input, bearing the number of the group concerned. If the Link group balance is "Locked", a key symbol appears near the levels of the Slave inputs (see above Fig.: Microphone inputs 3 & 4) (for more details, see the section: Linking inputs).

d. Track levels

In TEST, PRE RECORD (PPR), or RECORD mode, if menu 3.TECHNICAL SETTINGS: "Display Tracks Attenuation" is enabled then any change in a track level can be displayed. Depending on the settings in this menu :
- If the "Dedicated Panel" option is chosen, any modification of the level of a track will open a Level window on the left part of the screen
- If "Top of Vumeters" is chosen, the level of each track is only indicated above the corresponding VU-meter (negative values are indicated in white, positive values in orange) (see figure on the right).



Dedicated Panel

Top of Vumeters

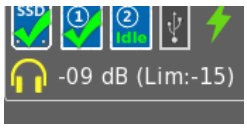
Remarques : Since version 2.72, track level variations are memorized in the form of automations, which are indicated when the file is played and when a track is soloed (see MENU 8.: PLAY MODE)

e. Headphone level

- Level

To display the Headphone level, press the Headphone Button (above the Main Selector).
In TEST, PRE RECORD and RECORD modes, the Headphone level is displayed on the left side of the screen, next to the Headphone logo or, if a window is already hiding the left side of the screen, this level is displayed in a window in the middle of the screen.
To modify the level of the Headphone, hold down the Headphone button and turn the Jog.

- Headphone limiter (Safety clamp)



For safety, a headphone limiter can be enabled and set. To enable/disable it ON or OFF, keep the Headphone button pressed + Shift (not the other way around!). The headphone logo shown on the left side of the screen appears in white when the limiter is deactivated, in yellow when it is activated.

To quickly change the limiter threshold: hold down the Headphone button + Shift and turn the Jog.
This threshold responds in real time to the headphone level: for example, if it is set to -10 with a headphone level at -5, then if we change the headphone level to -4, the threshold will go down to -

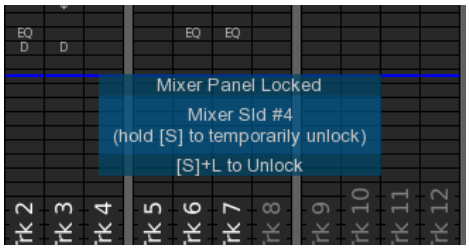
11. The idea of the system is to lower the threshold of the limiter in order to always ensure the same safety threshold.
If the limiter works on levels that are too high, the audio quality of the signal will be affected, and the headphone logo will flash red for 3 seconds.
(For more details on the Headphone Safety Clamp, see section 4.AUDIO & TIMECODE PARAMETERS: "Headphone Safety Level")

12. Locking the control panel ("Locking Panel")

In TEST and PRE RECORD mode, it is possible to lock the rotary encoders and/or sliders of the Cantar Mixer. Once locking is enabled on one of the panels, each encoder or slider concerned will be deactivated and the position at the time of locking will be memorized. The encoder/slider positioncan be modified, but this will have no effect on the audio level.
The locking of the control panels is memorized when the Cantar is switched off.
An encoder/slider that is locked can still be enabled temporarily by holding down Shift while being manipulated.

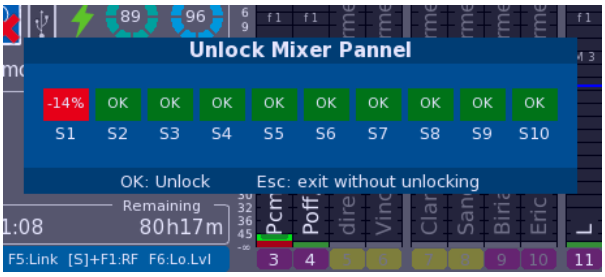
a. Locking the Cantar Mixer

The Cantar Mixer can be locked by pressing Shift + Left buttons for 3 seconds (see below).



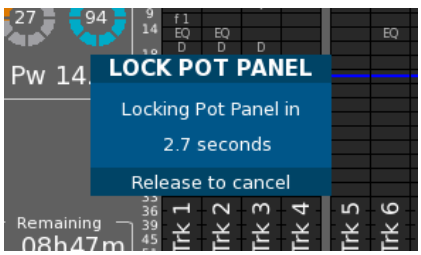
If an attempt is made to act on a slider when the corresponding panel has been locked, a window reminds us of the temporary unlocking procedure (see Fig. above right).

The Mixer is unlocked with Shift + Left. An unlock page appears: if a fader has changed position after locking the Mixer, this page shows us the difference in position, so that we can reconstruct the position of our faders at the time of locking (see example below: slider 1 has been lowered by "-14%"). Press OK to unlock

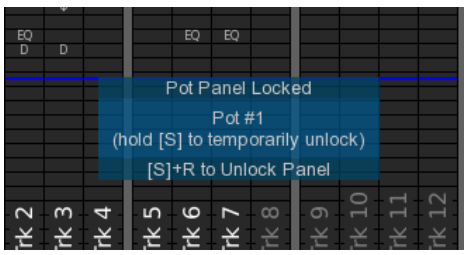


b. Locking the rotary encoder panel

The rotary encoder panel can be locked by holding Shift + Right for 3 seconds.

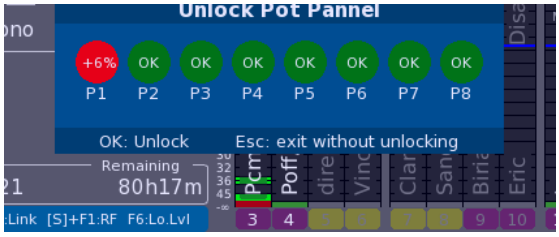


Locking the encoder panel.



If we try to act on a slider/encoder when the corresponding panel has been locked, a window reminds us of the unlocking procedure (see above)

Unlock with Shift + Right. If an encoder has changed position after the panel has been locked, the unlock page shows the position difference, so that we can reconstruct the position of our encoders at the time of locking (see example below:: encoder 1 has been modified by "+6%"). Press OK to validate and unlock the panel



13. Tone Generator

In TEST, PRE RECORD (PPR) or RECORD mode, press Shift + F5 to send a 1kHz signal to all tracks, the Mix Down, and the outputs. The signal level can be set in menu 4.AUDIO & TIMECODE PARAMETERS: "Tone Level".
Release F5 before the Shift key and the signal sending stops.
Release Shift before F5 to lock the signal sending: then the signal will remain enabled until Shift, F5 or Esc is pressed.

14. Talkback

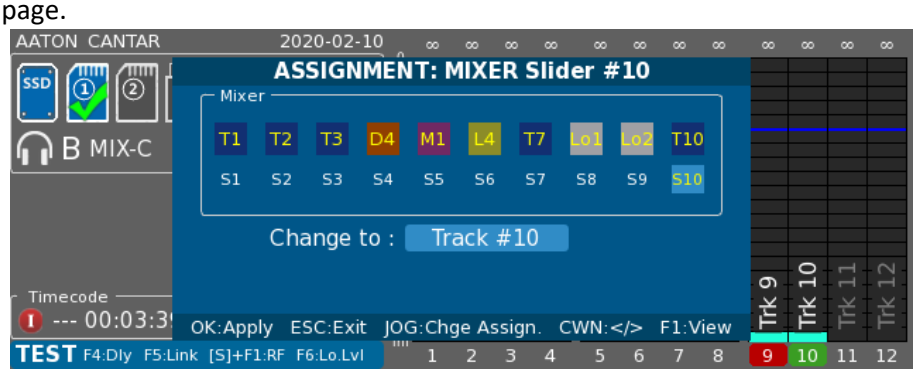
Press the "Talk 1" and "Talk 2" buttons to the left of the F4 button to enable the talkback microphones to be sent to talkback circuits No. 1 or No. 2 of the Cantar, respectively.
The Cantar can manage 2 "Slate" Talkback microphones: an internal microphone (located under the screen, to the left of the Main Selector), and an external microphone which can be connected to the 3.5 mm 4-pin Minijack socket. It is their two summed signals that are sent into the talkback circuits: the Talk 1 & 2 buttons do not determine which microphone is used (internal or external) but in which talkback circuit their summed signal is sent.
The management of these two microphones is done via the menu 4.AUDIO & TIMECODE PARAMETERS: "Internal slate mic"
The "Talkback 1" and "Talkback 2" circuits can be assigned in the headphone and/or in the outputs.
Pressing Shift + Talk 1 or 2 will also send the signal to the tracks, depending on the settings chosen in menu 4.AUDIO & TIMECODE PARAMETERS.

15. Assigning controllers: Rotary encoders/sliders

Any Slider or Encoder in the CantarX3, Cantarem, Cantarem 2 or Cantaress (if applicable) can be assigned to any input (Mic, Line, AES-3, AES 42, Dante (optional)), to any track or to any Line Output (or unassigned).
These assignations are made in TEST, PRE REC (PPR), and REC modes, via the Assignment Window.
This window can be accessed by holding Shift + solo button of an encoder / slider for 3 seconds (caution: not to be confused with a short press, which will cause another action: phase inversion for an input, arming/disarming for a track).
This window includes a different page depending on the type of controller considered, whether it is the encoders ("Pot"), the sliders of the Mixer, or the sliders of a Cantarem, Cantarem 2 or Cantaress.

Fig. 118: Mixer slider assignment window

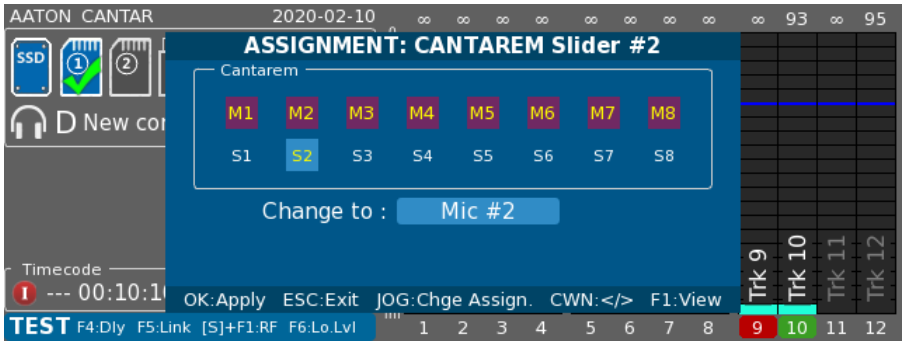
Press any of the solo buttons associated with the type of controller you want to use to display the corresponding page.



The desired controller can then be selected by navigating with Left & Right or the Selector Crown, or by pressing the Solo button associated with that controller (example Fig. above: Solo button on Slider 10 highlights the S10 box).
Change the assignment of this controller with Up & Down or Jog: the "Change to:" field allows you to scroll through the different inputs available (Microphone, Line, AES-3, AES-42...), tracks 1 to 24 and Line Outputs 1 to 8 (or the option: "Unassigned"). Once you have made your choice, press OK to confirm.

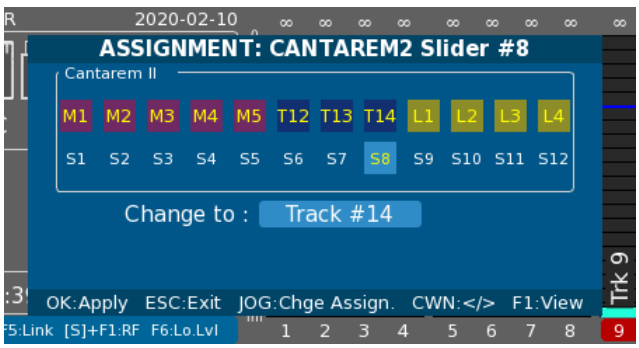
a. Assignation of the Cantarem Sliders

Note: The Cantarem connects to the CantarX3 via a specific Mini Delta Ribbon cable connected to the "Option" port at the rear of the Cantar X3..
To open the Assignment Window of the Cantarem, press Shift + solo button of a Slider of the Cantarem during 3 seconds (the operation) works as well with the Shift buttons of the Cantar or the Shift Diamond buttons of the Cantarem). To highlight a particular Slider, use the Left & Right keys, or turn the Selection Crown, or press the Solo button associated with that Slider.
Once a slider is highlighted, press Up & Down or rotate the Jog to change its assignment (see Fig.). Confirm with OK.



b. Assignation of the Cantarem2 sliders

The Cantarem 2 connects to any USB port on the Cantar-X3.

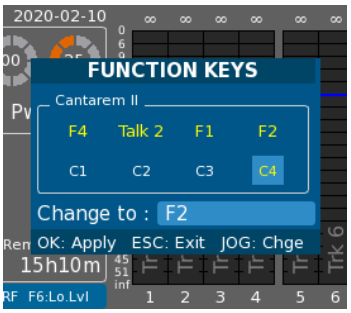


- Sliders Assignment

To open the Assignment Window of the Cantarem 2, press Shift + Solo button of a Slider of the Cantarem 2 for 3 seconds (you can use the Shift button of the Cantar or one of the Cantarem 2's). Highlight a

particular Slider with Left & Right or the Selection Crown, or by pressing the Solo button associated with that Slider.
Once a slider has been highlighted, press Up & Down or rotate the Jog to change its assignment.

- Function Keys (C1 to C4)



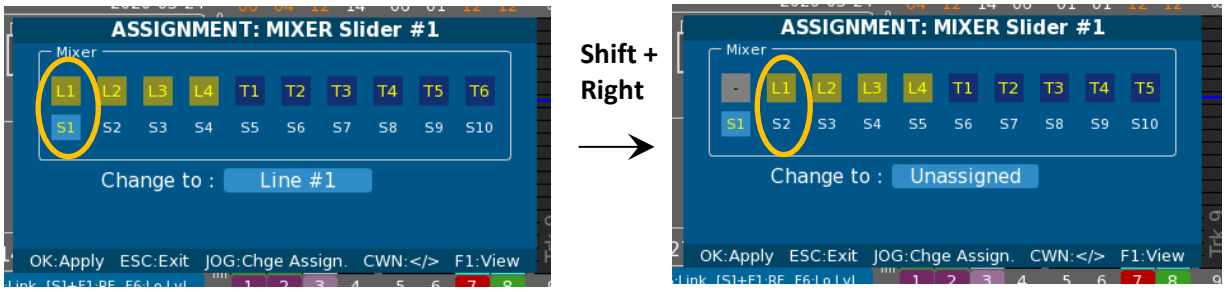
To open the Cantarem 2 Function Key Assignment Window, press the 2 Shifts buttons of the Cantarem 2 and one of the four function keys. Highlight a particular key with Left & Right or the Select Crown, or by pressing the Solo button associated with that key.
This feature allows you to duplicate, on buttons C1 to C4, the function of one of the following commands: Talk 1, Talk 2, or one of the buttons F1 to F4.

It is possible to connect both a Cantarem and a Cantarem2 to the CantarX3, giving 12+8 = 20 user-defined sliders in addition to the Cantar's embedded sliders.

Notes on the controllers assignments:

- Assigning a source to a controller erases the previous assignment of that source to another controller. The latter then becomes unassigned. It is not possible to have 2 controllers assigned to the same source.
- Assignments can be shifted en bloc to the left or right on the Assignment Window: press Shift + Encoder or Slider Solo button for 3 seconds to open the Assignment Window; highlight an Encoder/Slider, and press Shift + Left or Shift + Right (to shift our assignments to the left or right respectively).

- With Shift + Left: all assignments to the right of the highlighted Encoder/Slider (including this one) are shifted to the left.
- With Shift + Right: All assignments to the right of the highlighted Encoder/Slider (including this one) are shifted to the right.



Shifting the assignments to the right

- Caution, Sliders at the ends of the window may become unassigned.

When an assignment panel is open (for encoders or sliders), pressing F1 displays an overview of all assignments on all encoder types of the Cantar-X3 and its control surfaces (see below).

The TECHNICAL SETTINGS: "Save/Load Settings" menu allows you to save the complete current configuration but to only recall the encoder/slider assignments. This can be a means of quickly changing the assignment configuration.

16. Timecode

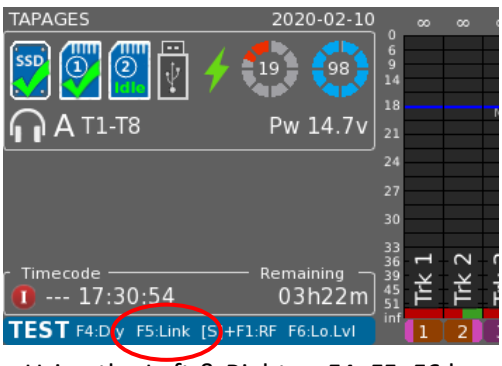
The TEST, PRE RECORD (PPR), RECORD modes allow you to view the status of the timecode, via the "Timecode" field at the bottom left of the screen.

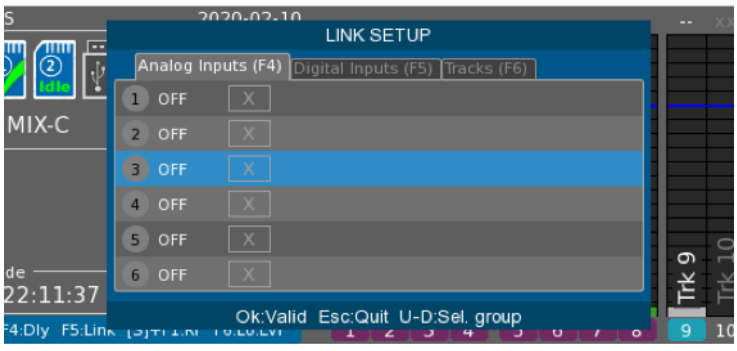
For details on how Timecode works, refer to the section "TO KNOW: TIMECODE MANAGEMENT BY CANTAR" at the end of the chapter dedicated to menu 4.AUDIO & TIMECODE PARAMETERS

17. Input or track Linking Setup

- Since version 3.100.C5, the Cantar-X3 allows you to link several kinds of sources: Analogue inputs (Mic, Line), digital inputs (AES3, AES42, but not Dante inputs) and tracks
- Up to 6 groups can be created for each of these three categories.
- A single Link group can include a maximum of 8 sources.
- A source can only be master of sources of the same type, and of higher ordinal number:
- Line input 2 will only be able to master Line inputs 3 to 4, but not Line 1; AES input 5 will only be able to control AES inputs 6 to 8, and so on.
- The Phantom Power, Limiters and Filters of the Master input are applied at the same time to the Slave inputs (for example if Mic-1, which has Phantom Power enabled, is linked to Mic-2 & 3, which do not: then the Phantom Power will automatically be enabled on these 2 inputs).
- The phase inversion setting remains independent.

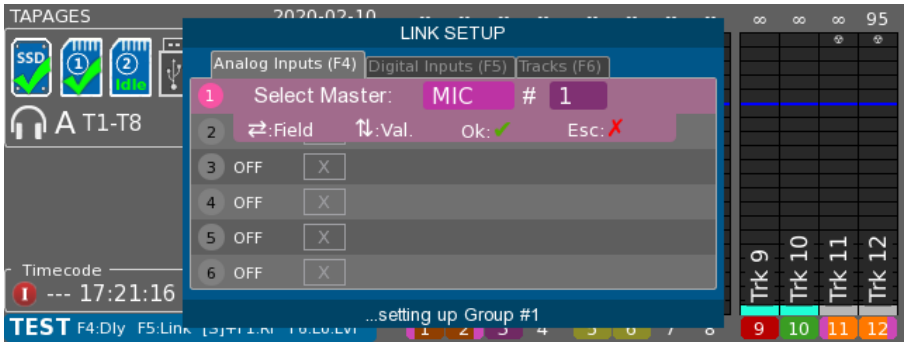
This function can only be accessed from the TEST menu, pressing F5 :



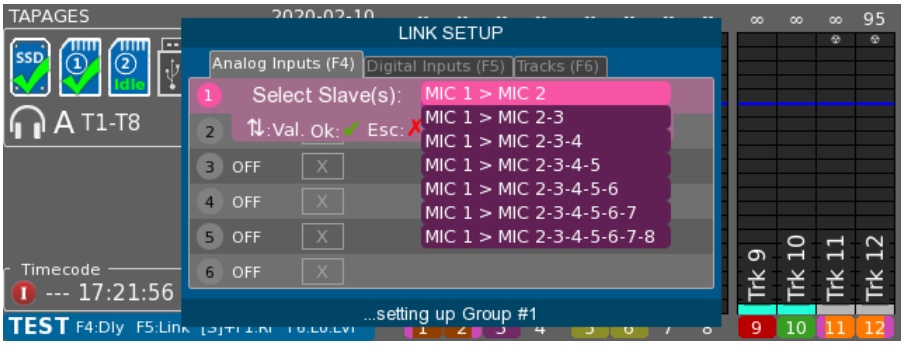


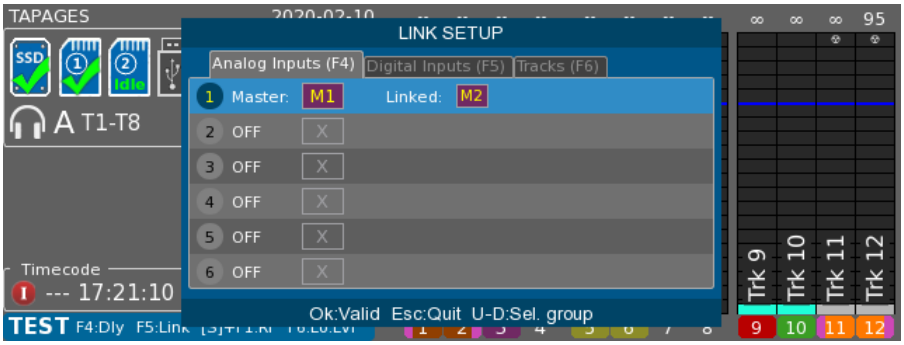
- Using the Left & Right or F4, F5, F6 keys, select the page that corresponds to the source you want to link (analogue inputs, digital inputs, or tracks).

- Using the Up & Down buttons, select the identifying number of the group you wish to create, from 1 to 6.
- Press OK: on the line that appears, use the Up & Down and Left & Right buttons to select.
- The type of source you want (MIC, LINE...AES3, EAS42...) , in the box on the left (choose "OFF" to deactivate the group) (see below).
- The source you want to declare as Master, in the right box.

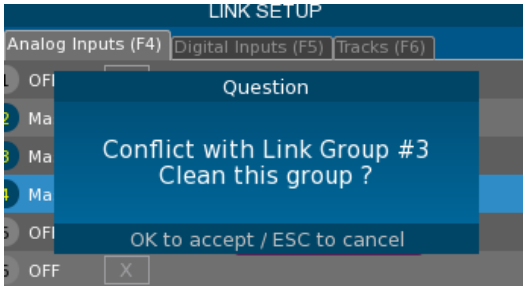


Once you confirm your choices with OK: a drop-down menu appears, showing the different possible Link configurations for this source: make your choice with Up & Down or Jog and confirm with OK.

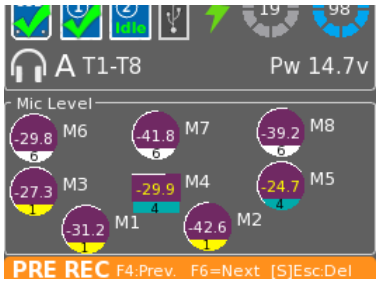




The Link Setup window now displays the settings for the link group..
Press ESC or F5 to exit this window.

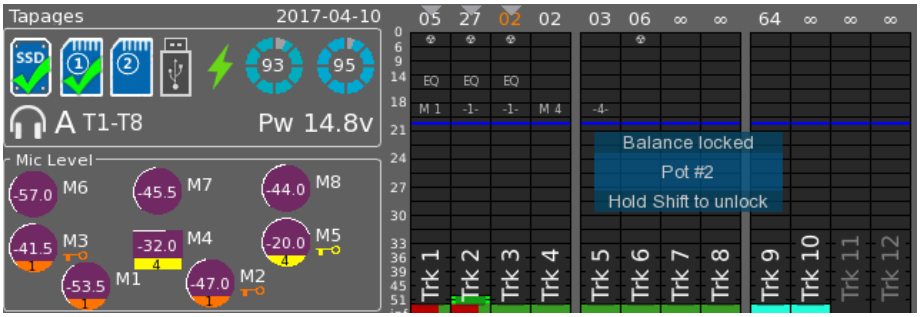


It is not possible to assign the same source to more than one link group. If the assignment of our Master and Slave sources contradicts the assignments of another group (we want to assign input 3 to two different groups, for example), a window warns us, and suggests that we disable (with OK) the other group to which this input is already assigned (see opposite Fig.)



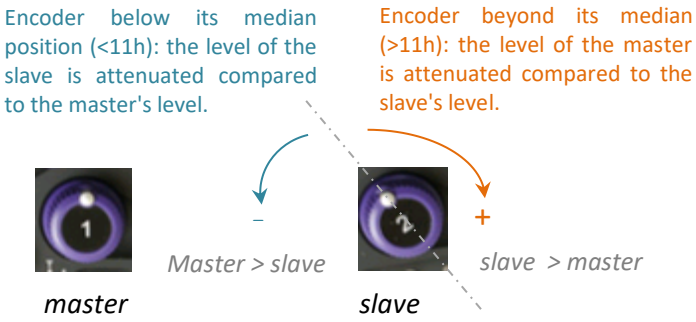
If the menu 3.TECHNICAL SETTINGS: "Display Inputs Level" has been enabled, then as soon as the position of an encoder/slider is modified, the level of the inputs of the same type (Microphone input, line...) appears for a few seconds. The membership of an input to a Link group is symbolized by a colored band at the bottom of the circle/rectangle corresponding to this input. In this colour band, a number indicates the master input of this group (example opposit a "1" on the yellow band of encoders M1, M2, M3, indicates that this group is controlled by Mic Input 1).
The input level is displayed in dB.

If the menu 4.AUDIO & TIMECODE PARAMETERS: "Balance Locked" is ON, then only the level of the Master inputs can be changed: any operation of encoders/sliders assigned to Slave inputs will have no effect (see below Fig.), unless Shift is held down while manipulating them.
Enabling the "Balance Locked" menu is symbolized in TEST mode by the display of a key next to the circles/rectangles that symbolize the Slave inputs. This key flashes when the encoders/sliders of these inputs are manipulated as a reminder that they are locked (below: for inputs M2 and M3).



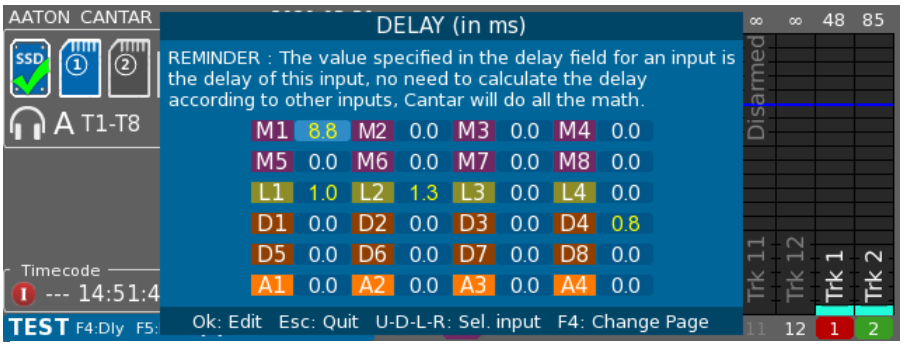
Managing the levels between master and slave(s) :

For a Stereo pair, the encoder/slider assigned to the slave input is used to adjust the balance (with a middle position at 11 o'clock) :



If there is more than one Slave input, the position of the encoder/slider assigned to each Slave input determines a margin of ± 12dB applied to that input relative to the value of the master input.

18. Inputs Delays



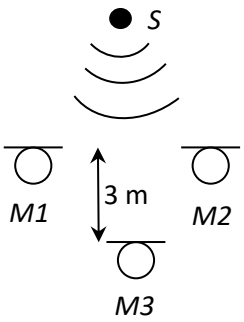
Input delay display window (accessible with F4)

All analogue and digital inputs can be delayed from 0 to 2045 samples. This corresponds to a maximum delay of 42.6 ms at a sampling rate of 48kHz.

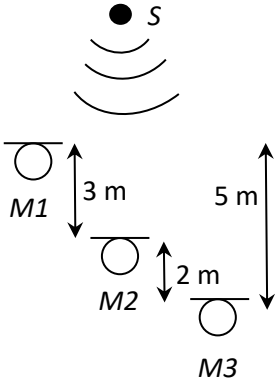
The speed of sound (0.3 m/ms) or latencies in signal processing (up to 3.8 ms for some HF transmissions) cause "phase" effects between different microphones picking up the same source. The idea is therefore to delay the sound arriving from the microphones closest to the source, to give time for the sounds arriving from the microphones furthest away to arrive. On many recorders, the manipulation therefore consists of manually delaying the inputs one by one.

The Cantar-X3 offers a different delay system: the delay of one input must be indicated on that input so that this value is applied to all the other inputs.

With the Cantar X3, you must indicate as a delay value the delay of one of our inputs, on this input. The Cantar will then automatically apply this delay value to our other inputs, so that in the end all our sound sources are correctly adjusted.

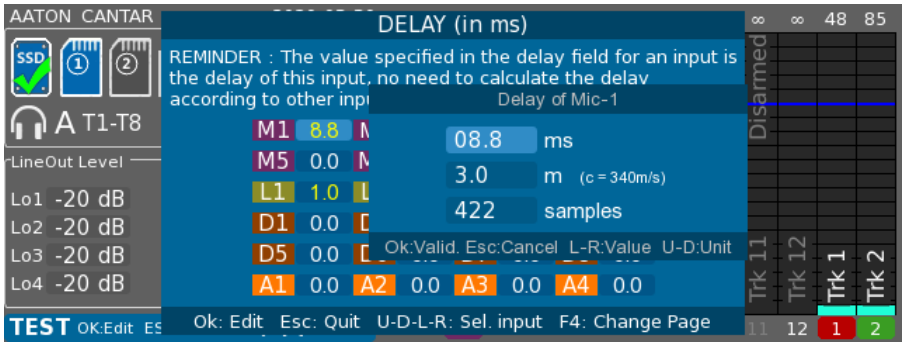


***Example 1**: An S source is recorded with 3 microphones, M1, M2 and M3. M1 and M2 are at the same distance from S, but M3 is 3 meters further down the axis.*
So we calculate that the sound will arrive at M3 with a natural delay of 3/340 = 0.088s or 8.8ms due to the speed of sound.
On the Cantar, on the Micro 3 input receiving M3, a delay of 8.8ms will therefore be entered.
The Cantar will then apply this delay to our other two inputs Mic 1 and Mic 2: by delaying them by 8.8ms, it will ensure that the sound from our 3 microphones arrives with perfect phase coherence.



***Example 2**: An S source is recorded with 3 microphones, M1, M2 and M3. In the axis, M1 and M2 are 3m apart and M1 and M3 are 5m apart (i.e. M2 and M3 are 2m apart).*
On the Cantar, on our Microphone 3 input receiving M3, we will therefore indicate a delay of 14.7ms equivalent to 5m (to indicate that M3 is located 5m further away than our closest mic from S). Similarly, on the Microphone 2 input receiving M2, we will indicate a delay of 8.8ms equivalent to 3m.
The Cantar will then apply a delay of 14.7ms to M1 and 14.7-8.8 = 5.9ms to M2, to delay each of them as much as if they were located at the same position as the microphone M3. Thus, all our sources signals are automatically reset to reach the inputs at the same time (with M3, the microphone furthest from S, being the reference). The sound from our 3 microphones arrives with perfect phase coherence.

A Press F4 to display the Delay Window, press F4 again to change the page. The Left & Right keys or the Jog key can be used to select one of the available inputs (Mic, Line, AES-3, AES 42, Dante). Press OK to change the delay value.



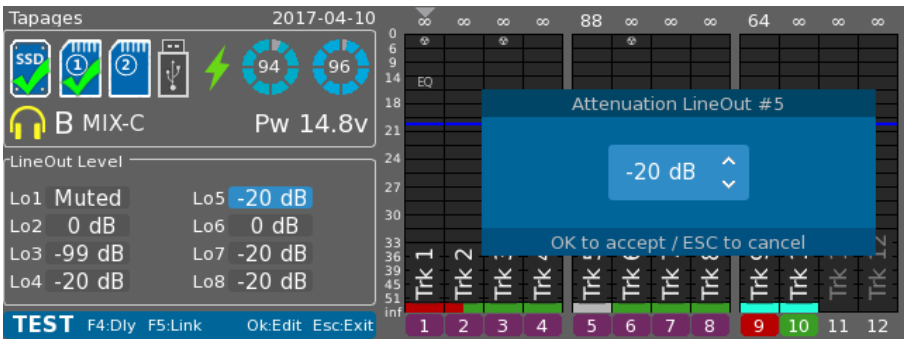
A window opens, which allows you to set the delay:

- In millisecondes
- in meter, with a sound speed considered to be 340m/s.

A third field indicates the corresponding value in samples but is not directly adjustable.
Select the desired parameter with the Up & Down keys, change its value with the Left & Right keys or the Jog, confirm with OK (see above Fig.). Note that when one of the parameters is modified, the other two will automatically change accordingly (for example, if we indicate a delay of 8.8ms, the window will automatically display "3.0 m" and "422 samples").

19. Line Output Levels

(See also "Line output levels" in Menu 6.OUTPUT ROUTING, p.74). Press F6 to open the Line Out Level Panel.
Use the Jog or the Left & Right keys to select an Output level, press OK to enter the parameter and open a setting window: use the Up & Down keys or the Jog to select the desired level and press OK to confirm
The available levels range from 0 dB (max) to -99 dB and then "Muted". This is therefore only an attenuation.



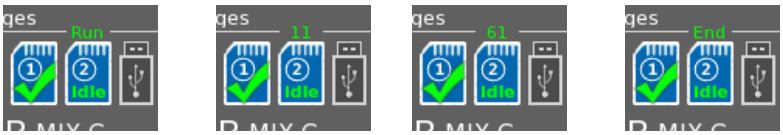
20. Idle Backup

The Idle Backup mode can be enabled at any time. However, it is recommended to enable it from the beginning of the day. This mode can be setup in menu 2.SESSION for each Recording Media.

After recording, when and if the Main Selector is returned to TEST mode, the Cantar will copy the files recorded on the Live Recording Media to all the Media configured in "Idle" in the SESSION menu (SSD disk, SD card and/or USB Media). This action will be performed on the files one after the other in the order in which they are recorded.

Note that when the Main Selector is switched to TEST mode after a recording, there is a 3 second delay before the Idle backup is launched. The progress of the Idle backup process, showing the word

"Run" and then a percentage, is displayed in green above the relevant Media icon. The word "End" is displayed when the process is complete (see below).



The Backup Idle process will be automatically interrupted if the TEST mode is exited. The interrupted file backup will be erased and will automatically resume without loss when returning to TEST mode.
If the metadata of an already backed up take is modified, the modification will be automatically transferred to the Backup Idle's Target Media if it has not been unplugged.
The Backup Idle does not automatically generate a sound report: before removing the Target Media, it is recommended to go to Menu 7.AUDIO FILE BROWSER to generate a Snap Report (with F6) to create a sound report associated with our files. If the Backup Idle's Target Media is full, insert another Media and the Backup Idle will resume from the exact point where it left off.
The Idle Backup function can be a way to use a Media whose data rate is too low to allow mirroring ("Live Rec"). It can also be used to generate interlaced polyphonic files, or a stereo mix down, from a Monophonic recording media.
Note: The Recording Media can be the SSD disc, an SD card or a USB key; similarly, the Target Media can be the SSD disc, an SD card or a USB key.

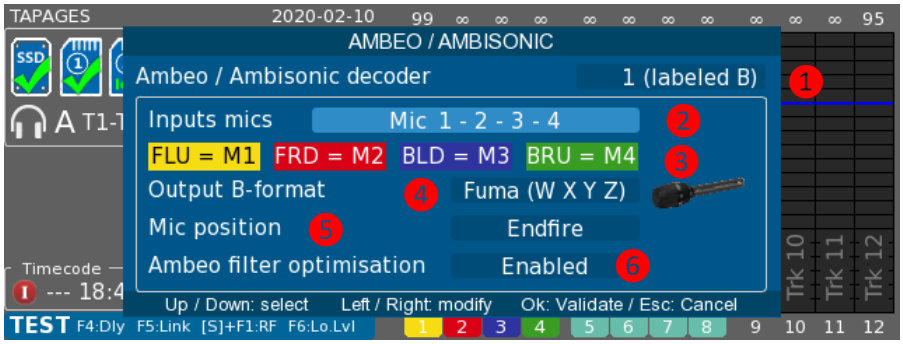
21. Ambeo ambisonics management

The Cantar-X3 allows B-format decoding suitable for Sennheiser's Ambeo VR microphone. Up to 2 Ambeo microphones can be configured and decoded.

- Enable the Ambeo menu in "MENU 4: AUDIO & TIMECODE PARAMETERS: Enable Ambeo".
- Connect the 4 channels from the microphone in order:
  - 1 = yellow = Front Left Up
  - 2 = red = Front Right Down
  - 3 = blue = Back Left Down
  - 4 = green = Back Right Up)

  ... with 4 successive microphone inputs (e.g. Mic 1 to 4 or Mic 5 to 8).
- Link the 4 microphone inputs
- Enable phantom power on these inputs
- Press Shift+OK: An AMBEO / AMBISONIC window opens (see Fig. 167 below).

Use the Up & Down keys to move between the different parameters and Left & Right to change their



The Ambeo management window

values

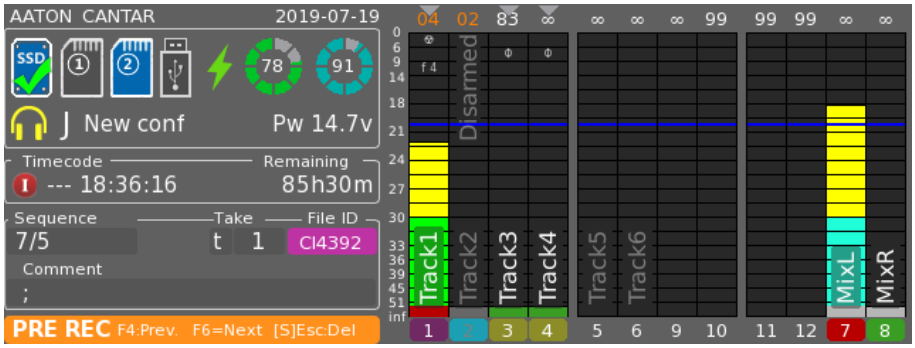
1. 2 ambisonic systems: "1 (labeled B)" and "2 (labeled C)", corresponding respectively to the B-format channels: Bw-Bx-By-Bz, and Cw-Cx-Cy-Cz.
2. Choice of the 4 microphone inputs on which our Ambeo microphone(s) is(are) connected: these inputs must follow each other, and have been previously linked.
3. Reminder of the correct connecting order of the 4 Ambeo microphone capsules.
4. Selection of B format mode. The Ambeo can operate in 2 B-format modes:
   Classic "FuMa" mode: the default mode, where the channels are encoded in the order W-X-Y-Z., "ambiX" mode: in this mode, the channels are encoded in the order W-Y-Z-X.
5. The position of the microphone is indicated so that the decoding performed is coherent. 3 microphone, on the right, changes according to the chosen parameter.
6. Ambeo filter optimisation: enables the "Ambisonic Correction Filter" that Sennheiser recommends to "optimise the capture of a 360° image".

When all ambisonic parameters are set, we can assign, in our input routing grid, all 4 signal encoded in B format Bw-Bx-By-Bz or Cw-Cx-Cy-Cz to any 4 tracks. We can thus record our 4 ambisonic channels in A format and/or B format.
In the MENU 6: OUTPUT ROUTING (HEADPHONE, LINE, AES) menu (OUTPUT ROUTING) you can listen to our 4 W-X-Y-Z channels, either by enabling listening to the corresponding recording tracks, or by listening directly to Bw to Bz or Cw to Cz (see p.70).

XV. MENU 11. : THE PRE RECORD MODE (PPR)

Position the Main Selector on Menu 11 (at 11 o'clock) to access the PRE RECORD (PPR) Mode.
This mode allows you to view and access and enter all useful recording information.
It also allows you to edit the metadata of the upcoming take, and to fill the Pre-record buffer.

All analog inputs can be enabled/disabled ("ON/OFF") from this menu; depending on the settings in menu 4.AUDIO & TIMECODE: "Disarmed Tracks", disabled ("OFF") inputs can be monitored when set to Solo.



The PRE REC mode window

Note: Analog inputs that are not in use (i.e. not required by any Headphone, Line, AES, Track input or output routing currently in use) are automatically disabled to save battery power. If a configuration is changed that requires one of the disabled inputs, it will be automatically enabled.

1. Displays and features common to TEST mode

Much of the information displayed on the screen in PRE RECORD mode is similar to that on the TEST mode screen:

- Information on the Media status
- Information on power sources
- Information on the headphone configuration used and on the headphone limiter
- Timecode information
- Information displayed on the VU meters.

In addition, some features are also common to both menus:

- Soloing of inputs/tracks/ AES-3 and line outputs
- Modifying of the mic/line /AES-3/AES-42 inputs parameters
- Modifying track parameters
- Double-solo setup of two inputs/tracks
- Phase measurement between two inputs/tracks
- Display of input/track levels
- Locking the control panels
- Generation of a 1kHz signal
- Enabling Talkback microphones
- Assigning rotary encoders, sliders of the Mixer of the Cantar, Cantarem, Cantarem2, Cantaress.

For details on the above displays and functions, please refer to the corresponding sections in the previous chapter on TEST mode
For details on how Timecode works, refer to the section "TO KNOW: TIMECODE MANAGEMENT BY CANTAR" at the end of the chapter on menu 4.AUDIO & TIMECODE PARAMETERS..

2. Metadata editing

One of the main functions available in the PRE REC mode is metadata editing.

a. Next take

- Quick Edit : Scene-Take-Note

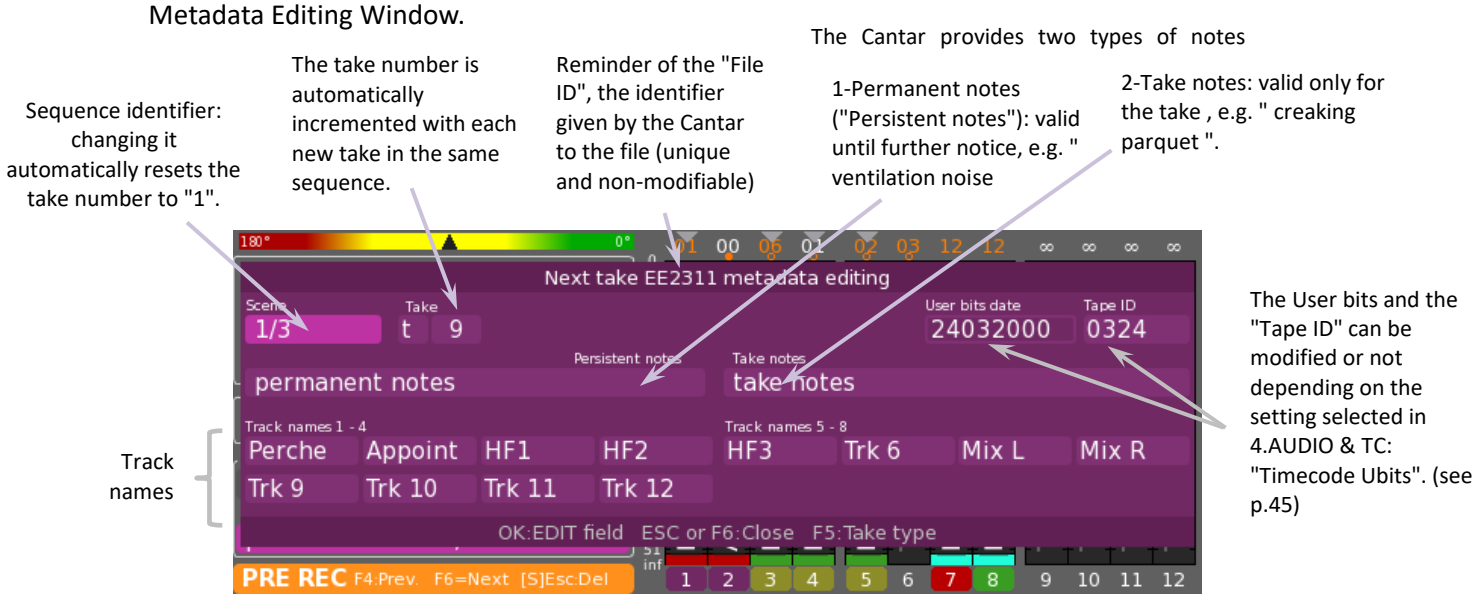
The main screen of the PRE RECORD mode allows the editing of the scene name and the upcoming take, the notes ("Comment") and the take type ("Take Type").
To do this, highlight the desired feild (if no field is highlighted, press OK) with the Left & Right keys or the Jog, and press OK. An edit bar will then appear, where you can enter the required information using the keyboard or alternatively, using the Up & Down (to change the value of a character) and Left & Right or Jog (to move to the previous/next character) keys.

The Take type can be changed directly by pressing the F5 button.

Reminder: The take type preffix, symbolised by a letter, gives the following information:
- «t» = time sync
- «p» = pick-up ;
- «w» = wild track;
- «a» = announce
- «n» = not good (not good; in this case the take number is not incremented, e.g. for an interrupted take)
- «r» = rehearsal
- «g» = sound guide

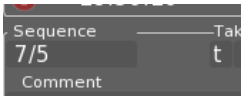
- Entire metadata editing

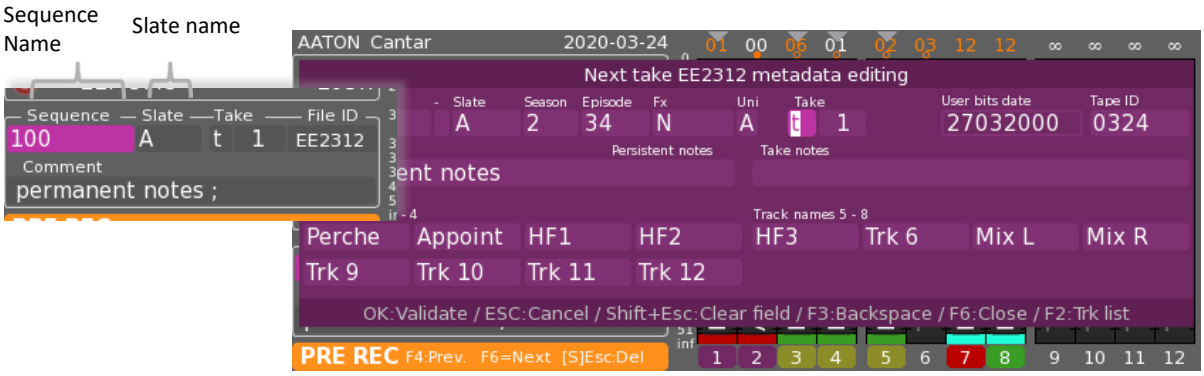
Highlight the "File ID" field (unique and unmodifiable) and press OK, or press F6, to open the entire Metadata Editing Window.



Notes on editing metadata :

- Permanent notes will be repeated from one take to the next until modified by the user.
- Shift+ESC allows to delete a field (the content of the text box)
- Shift+Left deletes the digit preceding the highlighted digit.
- When the insertion point is on the extreme left or right edge of a field, pressing Left or Right or the Jog key respectively moves to the previous/next field.
- If a file name structure without take type has been chosen (in the 3.TECHNICAL SETTINGS menu: "Scene & Take Template"), then the take type can still be changed in the metadata, but it will not appear in the file name or in the "Take" column in the Browser.
- New metadata fields (Season, Episode, Unit, Special effects...) can be added thanks to the advanced Templates in MENU 3: TECHNICAL SETTINGS: 1. "Scene & Take Template".(See also below Fig.)
- Shift + Up allows the manual incrementing of the sequence name, either by one letter or numerically, depending on the parameter chosen in MENU 3: TECHNICAL SETTINGS: -
- Scene increment. This shortcut "Schift" + "Up / Down", if enabled, works without opening the full editing window.
  In the case of a classic Scene & Take template (not advanced), this shortcut will increment the last character of the "Sequence" field (see opposite).)
  In the case of an advanced template with a different field for the name of the Sequence and Slate, this shortcut will increment the number or letter of the slat.

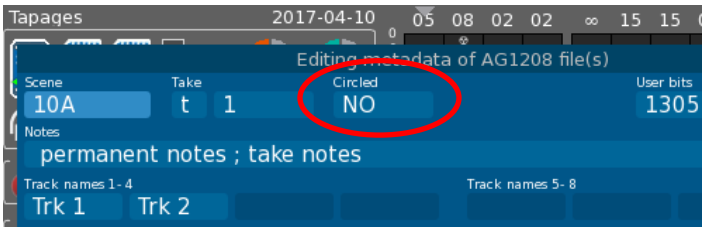




Metadata editing window in the case of an advanced template chosen in 3.TECHNICAL SETTINGS: "Scene/Take Template". Here you can name the Sequence, the Slate, the Season, the Episode, indicate effects (FX), and the Film Crew ("Uni").

c. Previous take

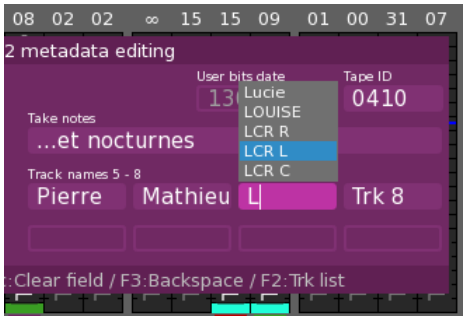
Press F4 to open the Edit Window for the previous take.
Select the desired frame with the arrow keys or the jog key and press OK. An edit bar will then appear, where the desired information can be entered using the keyboard or, alternatively, the Up & Down (to change the value of a character) and Left & Right (to move to the previous/next character) keys (for a reminder, the metadata of a previous take can also be changed in Menu 7.AUDIO FILE BROWSER)



Complete editing window for the metadata of the previous take. It includes an additional parameter aloowing you to label the take as circled

d. Completion

The Cantar X3 offers a completion system, a "library" that stores previously entered track names. As soon as you enter a character in the track name field, the Cantar will display all the names in the library starting with that character.
Navigate in the list with the Up & Down keys and validate with OK..

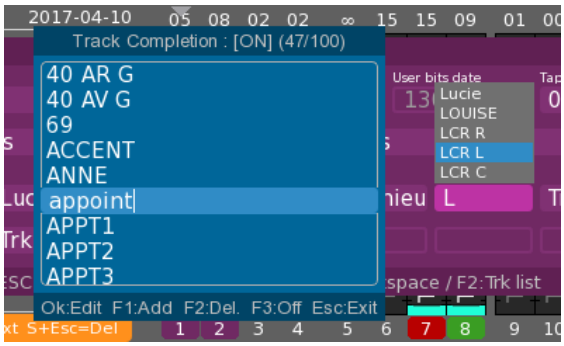


Press F2 to display the entire Completion Management Window.

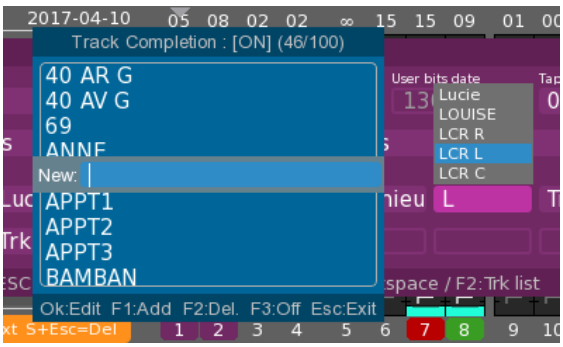
Completion window

Navigate through the library (sorted alphabetically) with the Up & Down keys or the Jog.

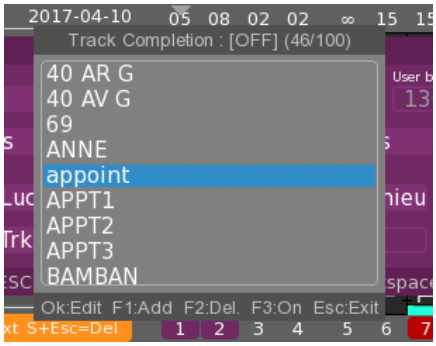
- Press OK to change the highlighted name (Fig. 174 below).
- Press F2 to delete the highlighted name.
- Press F1 to add a new name (Fig. 175 below).
- Press F3 to enable/disable the Completion function. If disabled, the window will turn gray and the completion list will no longer be displayed when a track name is entered (Fig. 176 below).



Modification of a name on the completion list (F2)



Entry of a new name on the completion list (F1)



Deactivating the completion list (F3)

3. Pre-Record Buffer

When the Main Selector is in PRE RECORD mode, the Cantar starts loading its Pre-record buffer. This stores the audio in a FIFO (Fist-In/First-Out) buffer and sends it to the recording media as soon as the Main Selector is switched to RECORD mode.
Once the buffer is full (up to 30 seconds at 48kHz), the "old" samples are gradually erased to make room for the new ones.
The duration of the Pre-record is defined in menu 4.AUDIO & TIMECODE: "Pre-record", from 0 to 30 sec at 48kHz (15 sec at 96kHz).

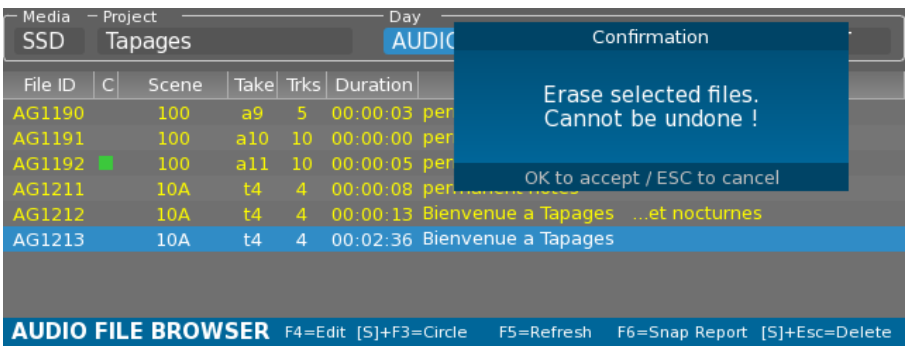
4. Previous take trash

- In PRE RECORD mode, it is possible to put the last take in a trash folder on the main recording media (SSD disc, SD card, USB media, depending on our configuration), The take will not be deleted, but will be moved from the Day folder to an "AUDIO_TRASH" folder. It will be deleted from the other medias.
- The next take will have the same take number as the trashed take.
- Press Shift + ESC to trash the last take. A confirmation window will open, press OK to confirm or ESC to cancel.

The confirmation window tells us that the last take will be trashed on the main Media, and erased from the other Media.

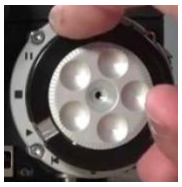
- The trash function is also available in the BROWSE menu (see Menu 7: AUDIO FILE BROWSER,).
- A trashed take can be restored to the appropriate Day folder from the BACKUP menu (see Menu 1: MANAGE BACKUP).

- A trashed take can be permanently deleted from the BROWSE menu by selecting it in the AUDIO_TRASH folder and pressing Shift + ESC



Permanent deletion of a file from the BROWSE mode

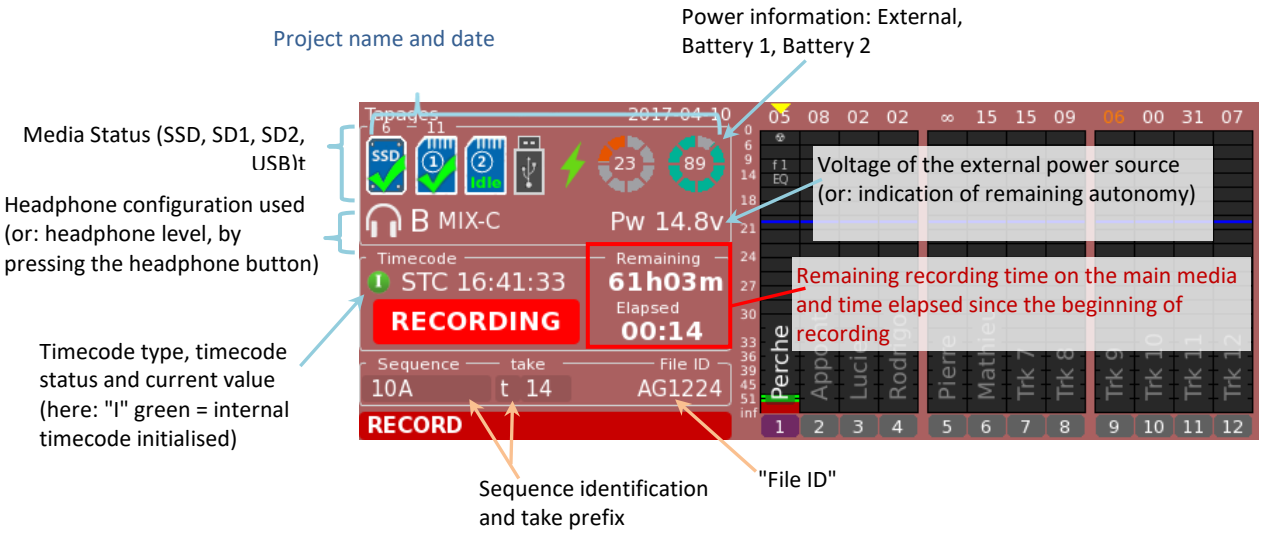
XVI. MENU 12. : RECORD MODE



Place the Main Selector on Menu 12 (at 12 o'clock) to enter the RECORD Mode and start recording an audio file.
Switching to Record Mode instantly starts the recording: the background of the screen turns red and the Headphone button LED flashes, indicating that the Cantar is writing on the recording media(s).
Leaving Record mode, to go to any other mode, stops the recording at once.

1. Overview and functions shared by the other modes

The Record mode screen provides various useful information. Most of this information is common to the TEST and PRE RECORD (PPR) mode screens
The information on the sequence and take name, and the Cantar identifier of the file being recorded, is common to the PRE RECORD screen only
The display of the elapsed time for the current take is specific to RECORD mode



Record mode features are common to both Test and Pre Record modes:

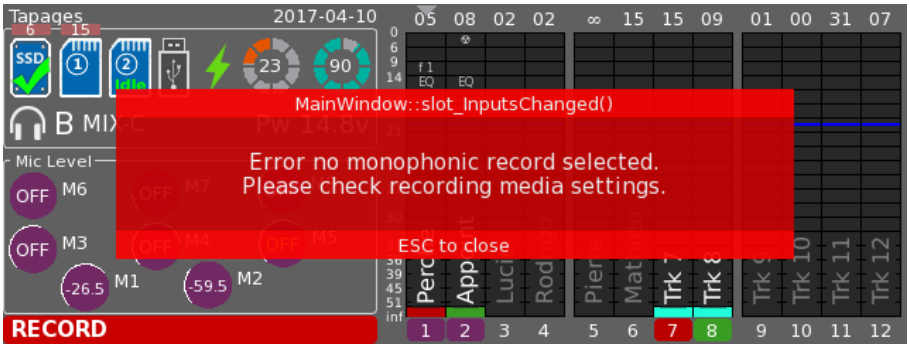
- Soloing of inputs/tracks/line outputs
- Changing the parameters of the mic/line inputs/AES-3/AES-42
- Changing track parameters
- Double-solo setup of two inputs/tracks
- Phase measurement between two inputs/tracks
- Display of input/track levels when modified
- Locking the control panels
- Generation of a 1kHz signal
- Enabling Talkback microphones
- Assigning encoders, sliders of the Mixer of the Cantar, the Cantarem, the Cantarem2,

For details on all the above displays and functions, please refer to the corresponding sections in the TEST mode chapter

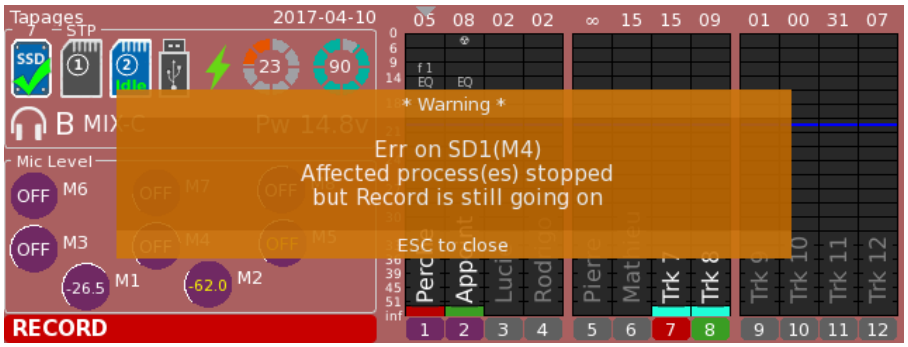
Note: Once the recording is stopped, when switching the Main Selector to TEST or PRE RECORD

mode, the screen background may remain red for a few moments, indicating that the Cantar is emptying its Internal Audio Buffer to the recording media.

Reminder: the Cantar can only record if at least one media is set to record Monophonic files (in menu 2. SESSION). If no Media has been set to record Monophonic and the Main Selector is switched to RECORD mode, the Cantar will refuse to start recording and will display an error message (see Fig. below).



However, if a Media has been set to record Monophonic files but is removed during recording (e.g. an SD card), the Cantar will display an error message but will continue to record Polyphonic on the other Media if necessary (see Fig. below).



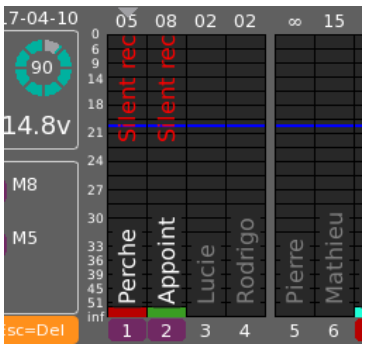
The SD1 card, the only media where monophonic files were recorded, was removed in the middle of recording.

2. Metadatas

In RECORD mode, only the Take Type (Take Type: t, p, w, a, n, r, g) can be edited by pressing F5.
The complete editing of the metadata is done in the PRE RECORD menu before or after recording (see previous chapter: MENU 11 : PRE RECORD MODE)

3. «Silent Rec» indication

If the Cantar does not detect any audio signal on one or more tracks during recording (because no microphone is connected to the corresponding input or the input gain is at -∞ for example), it will display a "Silent Rec" indication on the VU meter of the tracks concerned when the Main Selector is switched back to PRE RECORD mode (see Fig. opposite).
The tracks will still have been recorded, but the Cantar will draw your attention to a possible problem, or to the opportunity to disarm these tracks to save disk space.
The message will disappear as soon as you change the position of the Main Selector or press a Solo button.



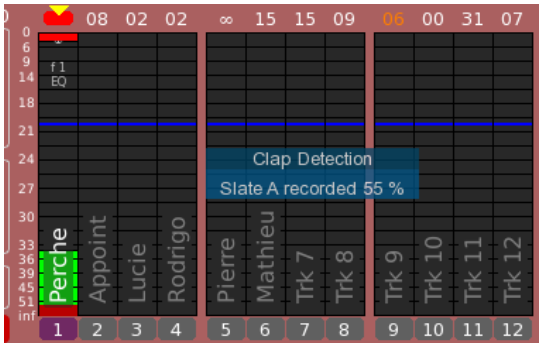
4. Sync Points

a. Clap detection

The Cantar has a clap detection functionality: it will attempt to detect an impact identified as clap and place a marker at this point to facilitate its retrieval during playback. The timecode of this indicator is also shown on the sound report as "Slate-TC". Note that it is necessary to enable the "Slate-TC" checkbox in the sound report configuration to see it appear. This is done in the menu 2.SESSION

In Menu 4.AUDIO & TIMECODE: "Clap Detector", select the source where the Cantar will try to identify the clap (a Mic, Line, or Track input).

During recording, press F4 within 6 seconds after the clap: the Cantar will then place a marker (Slate Mark) on the strongest impact detected over the last 6 seconds on the selected source. If several claps take place (e.g. in a multi-camera shoot), up to 10 claps can be located and identified, generating markers called SA, SB... SJ.
The quality of the detection is indicated in a window with a minimum of 25%. A clap detected at 75% has a very high reliability.



If the operator does not press the F4 key, an AutoSlate function will scan all tracks and automatically detect the strongest impact of the take, which will be detected as the clap. This feature is designed to have a 95% chance of correctly identifying a clap. In this case the contents of the "Slate-TC" box on the sound report appears in italics, to indicate that this value should be either confirmed or ignored.

b. Markers

Anytime during recording, press F6 to place a marker at this particular moment. The markers will be named UM1, UM2... UM10 (up to 10 markers are available) and can be used to report clicks, boom sounds, speech errors, etc.
In 8.PLAY mode, on the Timeline waveform, synchro points are indicated by vertical white dots while markers by black vertical dotted lines.
To move from one marker / sync point to another on the Timeline, use the Left & Right keys (pressing Left to the left of the first marker or sync point resets the playback point to the very beginning of the take). See also the chapter on 8.PLAY Mode

c. Pan during record

When soloing a track during record, the modification of its mixdown assignment is possible:
Hold Shit down and toggle F5 for quick L/R/C setup or long press Shit + F2 for a fine pan adjustment with the jog

XVII. REC AND PLAY MODE

The Playback & Record function allows the unit to play back a selected audio file while simultaneously recording a new file. This function can be enabled in two ways:

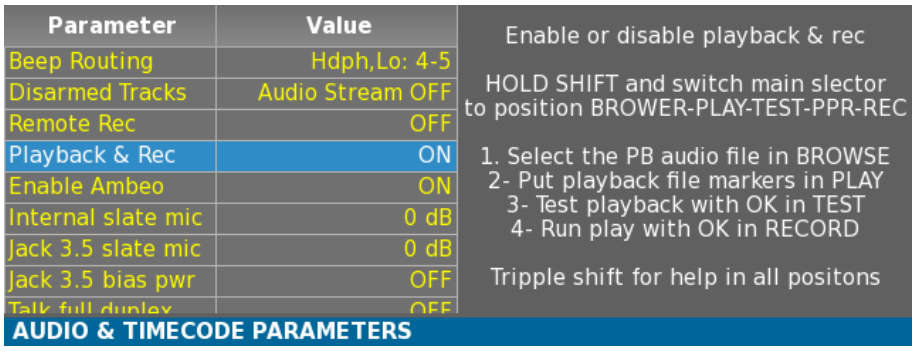
Clone Mode:
Allows you to clone all the ISOs of the last recorded take in order to play it and redo/record a Mix Down.

Live Mode :
Allows you to play (and/or re-record) one or more tracks from a previous file, while recording a new take.

Possible application for the Live Mode :
Dialogues that could not be correctly captured during the live performance can be re-recorded in sound alone, but by sending the original take to the actor's ear so that he/she finds the same rhythm of speech
Sounds necessary for the actors' performance quality (music or sound alone) can be played live during the take (or not) while a new incoming signal is recorded. For example, the pre-recorded lines of the person with whom the actor is supposed to call, or the music he is supposed to whistle to, can be sent from the Cantar into the actor's earpiece while recording his voice.

1. Enabling the Playback and Record mode

This special mode is protected by a general ON/OFF setting in the AUDIO & TIMECODE PARAMETERS Menu..



Once enabled, to access the new available menus (PLAYBACK AND RECORD: BROWSER, PLAY, TEST, PRE RECORD (PPR) and RECORD), hold the blue Shift button while turning the Main Selector to the desired position. The PLAYBACK AND RECORD menus have a dark green background instead of the usual grey background. To exit the PLAYBACK AND RECORD mode, simply turn the Main Selector to any position without holding the Shift knob and you will return to the default versions of these menus.

2. Live Mode : operation

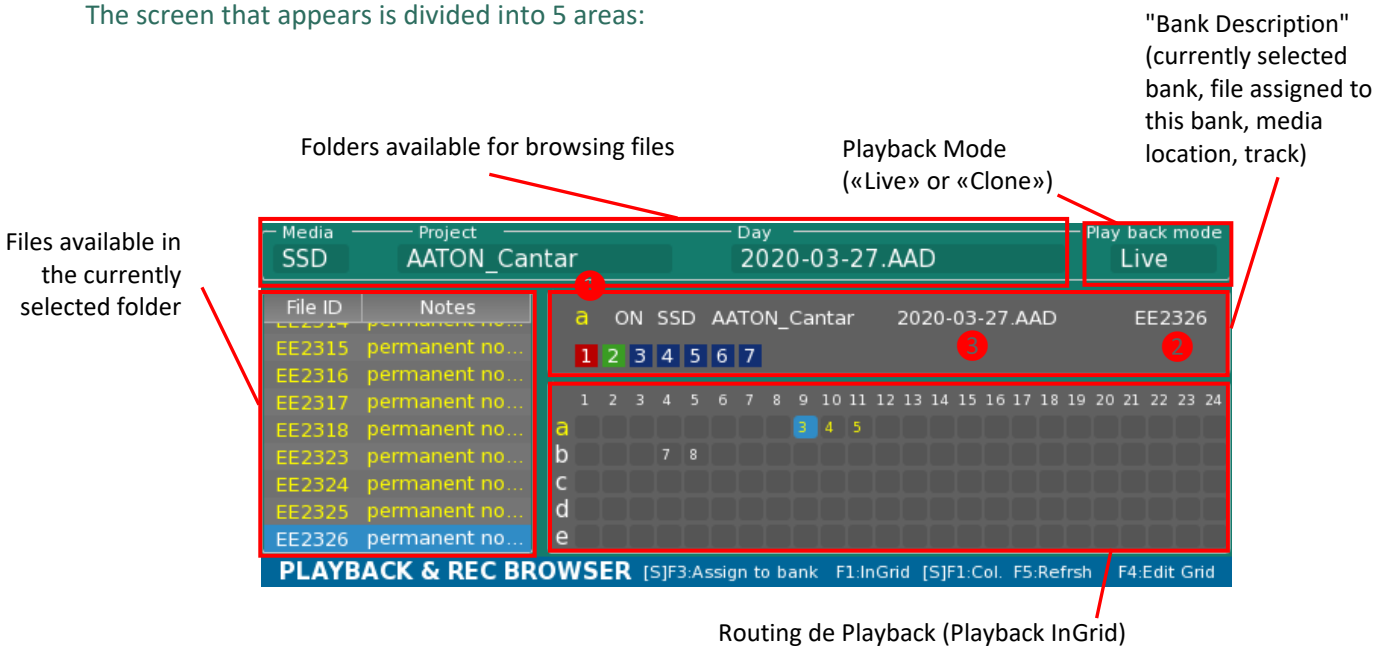
As a reminder, this mode allows you to load one or more tracks from a previous take for them to be re-played and/or re-recorded while recording a new take.

a. Selecting the files to be played back and assigning them in the Routing grid (Record InGrid, Playback & Rec Browser)

Up to 5 audio files can be pre-selected to be played during recording. These are the 5 Playback banks named a, b, c, d, e. It is possible to switch between these banks during recording.

Open the PLAYBACK AND RECORD BROWSER Menu by holding down Shift while placing the Main Selector in the BROWSER position (at 7 o'clock)..

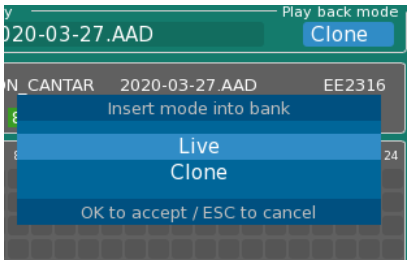
The screen that appears is divided into 5 areas:



In the example above (Fig. 148), the file **EE2326** (2) from the **2020-03-27.AAD** folder (3) on the **AATON_Cantar** project folder, located on the **SSD** was assigned to the Playback Bank "a (1)

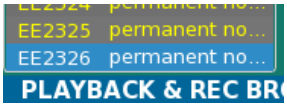
Note: The sampling frequency of the files played in this mode must be the same as the sampling frequency of the recorded files.

- Preparing the playback banks**:**



- Select the desired Playback mode (here: Live).
- Choose the bank to which you wish to assign a file (here: bank a) by turning the left Selector Crown.
- In the tree structure, select the file you wish to playback (use the Left & Right buttons to select the Media, Project folder, Day folder, and OK boxes to open the different possible choices; then move with Up and Down or the Jog and validate with OK).

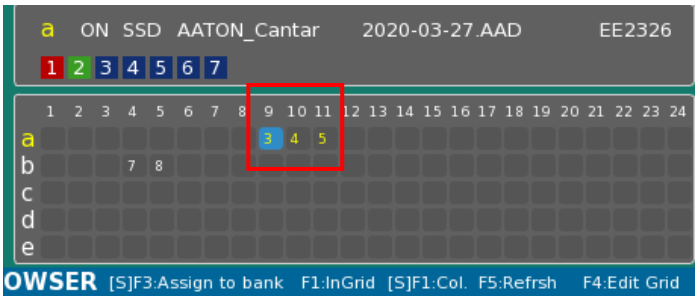
- Highlight the desired file with the Up & Down keys (here: the file EE2326 has been selected).



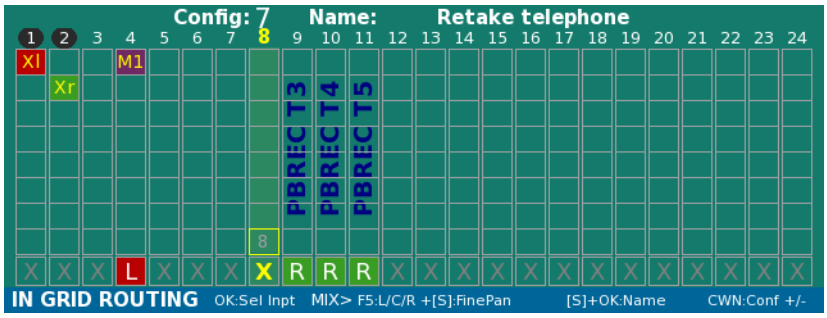
- Assign the highlighted file to the currently selected bank with **Shift + F3.**

- Edit the Playback Routing by pressing **F4**: our cursor is then transferred to the routing grid. Use the Left & Right keys to move the cursor among our recording tracks 1-24, and Up & Down or the Jog key to choose a source track to assign to each track of the new take..

Fig opposite shows that the tracks T3/T4/T5 have been assigned to the new recording tracks T9/T10/T11 in bank "a". This means that tracks 3, 4 recorded on the original EE2326 file, assigned to bank "a", can be played back and re-recorded on tracks 9, 10, 11 the next time we record.



- Press **F1** to get a view of the final routing: a combination of the Playback routing and the current Cantar routing
- Note that the playback tracks can be assigned to the Mix Down of the new file you are about to record.

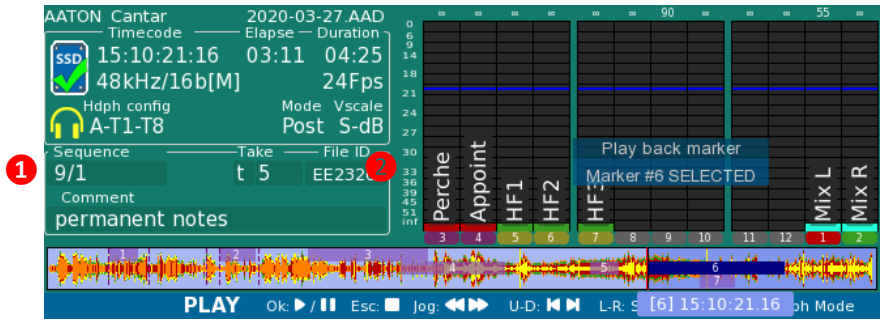


tracks 3, 4, 5 of the original file ("PBREC T3" to "T5") are assigned to recording tracks 9, 10, 11 of the next file. At the same time, Microphone input 1 is recorded on track n°4. The microphone is sent to the left, and the playback tracks to the right, in the Mix Down, which is recorded on

Example : a configuration such as the one seen in Fig. 150 makes it possible to play back 3 tracks sent to an actor's earpiece and containing lines that are supposed to be said over the phone; the actor thus benefits from the rhythm and playfulness of the original take, and by listening to them, is able to tell his own lines, which are recorded from Microphone input 1.

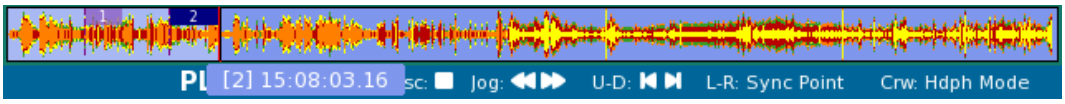
b. Creating the Play-card (Play & Rec: PLAY Mode)

This function allows you to insert start and end markers in the file to be playback, so that you can play back specific sections of the file rather than the entire take. It is therefore a matter of preparing the "Playback program" ("Play-card") that you wish to play at the next Record.



Open the PLAYBACK AND RECORD: PLAY screen, holding Shift while placing the Main Selector in the PLAY position (at 8 o'clock).
The loaded audio file is indicated by its name "Sequence + Take" 1 and its Cantar "File ID" 2 the name (letter) of the corresponding bank is not indicated (see above Fig.).

- Move the cursor over the waveform with the jog, to the place you wish to define as your In-point.
- **Create a new Play-card with Shift+F4**. The In- point is placed at the location of the cursor, the Out point is by default placed few second later. The playback area so created is symbolised by a blue rectangle above the waveform.



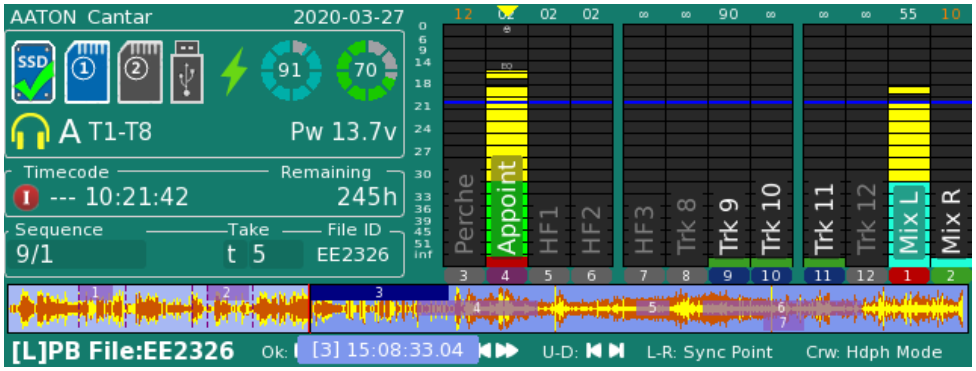
- **Move the In and Out Points** of the Play-card by moving the play cursor with the Jog, and then pressing F5 (to move the In Point to this position) or F6 (to move the Out Point).
- For files longer than 1min 30sec Press Shift + Left/right keys to open the waveform magnification window, keep the shift button down while toggling the left key or right key to move the cursor by one frame + or - . If desired, use F5 or F6 to respectively move the in or out Play-Card points
- Up to 21 Play-cards can be created in a single file by repeating this procedure. The play cards are numbered in timecode order.
- You can move from one Play-card to another with the Left & Right keys. The currently selected play card is shown in dark blue and the others in light pink (see below Fig. 153).

- **Delete** the currently selected Play-card with Shift + Esc.
- **Play** the currently selected Play-card by pressing OK (Play/Pause). Playback will start at the Play-card Entry Point (but will not stop at the end of the play-card).
- **Disable** all Play-cards with F4, especially if you want to play back the file outside the limits defined by the Play-cards. Press Left & Right to instantly return to the Play-cards selection.
- **Change the Playback bank** (a, b, c, d, e) with the Up & Down keys. As a reminder, the name of the loaded bank is not shown on this screen, only the name and identifier of the audio file is shown. Note that if no file has been assigned to a one of the five Playback bank, the bank can be loaded but a message "No audio file loaded" will be displayed

c. Checking the setup (Play & Rec : TEST Mode)

The PLAYBACK AND RECORD: TEST Menu allows you to check your setup before recording. This menu offers all the functionalities of the standard TEST mode (Solo setting of inputs, tracks... renaming or disarming tracks, etc.), but it also allows you to launch the playback of the Play-cards edited in the P&R : BROWSER menu. (The Play-cards themselves cannot be edited in this menu).

This menu is opened by holding down the Shift button while placing the Main Selector in the TEST position (at 10 o'clock).

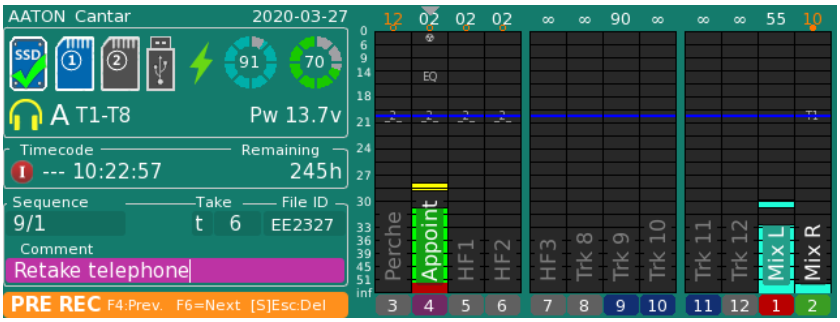


- Select the relevant Bank (a, b, c...) with the Up & Down keys. As in the Play menu, only the name of the file is shown, but not the bank to which it has been assigned.

Once a bank is loaded (which may take a few seconds, depending on the characteristics of the take being used), only the waveform of the tracks that have been assigned in the Playback Routing are displayed (in our example, these are the T3/T4/T5 tracks). The number of the new tracks to which these playback tracks have been assigned is colored blue (here: tracks 9, 10, 11).
Press OK to start Play/Pause. Note that if the cursor is in the middle of a Play-card, playback will start at our cursor and stop at the end of the Play-card. Use the Left & Right keys to move from one Play-card to another.
Playback will stop at the end of the selected Play-card and the cursor will automatically move to the Entry Point of the next Play-card but will not start playback until OK is pressed again..

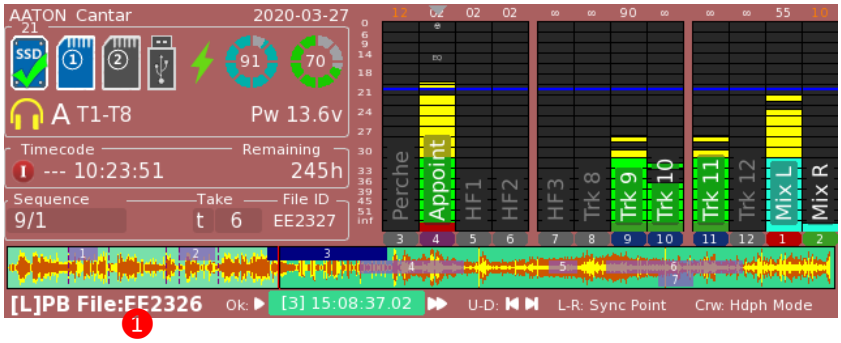
d. Play & Rec : Pre-Record (PPR)

The PLAYBACK AND RECORD: PRE RECORD (PPR) Menu is the equivalent of the ordinary PRE RECORD Menu but additionally loads the Playback Banks so that playback can be started at any time during the Record. (However, it is not possible to play our Play-cards in PPR mode).
This menu is accessed by holding Shift while placing the Main Selector in the PRE RECORD (PPR) position (at 11 o'clock).



e. Play & Rec : RECORD Mode

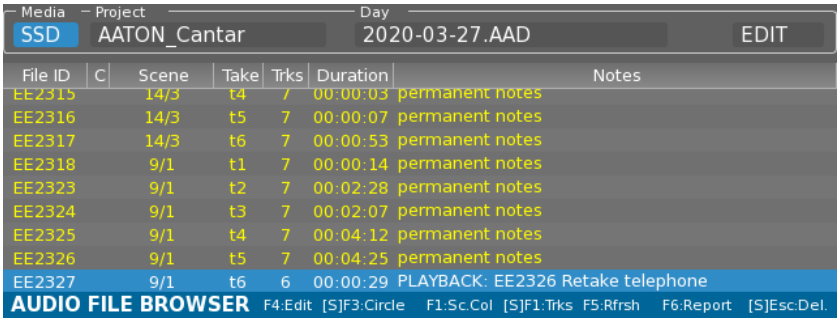
Recording can be started in PLAYBACK AND RECORD mode by holding the Shift button while moving the Main Selector to the RECORD position (at 12 o'clock).
Note: If you were already in Playback & Record: PRE-RECORD position, it is not necessary to hold Shift when turning the Main Selector, to switch to in Playback & Record: RECORD mode.



You can choose a bank of Playback with the Up & Down buttons. As in the Test and Play Menus, only the name of the relevant audio file is seen (under the waveform 1) not the bank to which it has been assigned)
Once a bank is loaded (which may take a few seconds depending on the file), only the waveforms of the tracks that have been assigned in the Playback Routing are displayed (T3/T4/T5 in the example above Fig. 156).

- Move from one Play-card to another with the Left & Right keys.
- Press OK to trigger Play/Pause: the sound of the played back takes is sent to our new recording tracks: it is therefore recorded and/or sent to our outputs.

Note: The comments (notes) field of the new file will start with a reference to the original file (e.g. PLAYBACK: EE2326) to keep track of the source file (see below Fig)

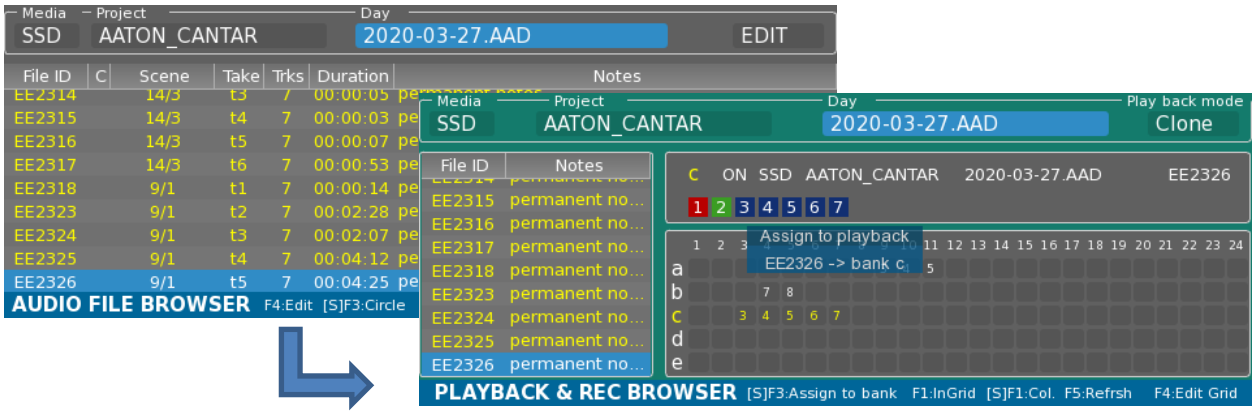


3. Clone mode

Clone mode allows you to make a copy of the original ISO tracks of a file while recording a new Mix Down. The new file will also include the original file's metadata information and Timecode.
The operation of PLAYBACK AND RECORD: BROWSER, PLAY, TEST & RECORD menus is modified.

a. Selecting the file to clone (Play & Rec : Browser)

- Access the PLAYBACK AND RECORD: BROWSER menu by maintaining Shift while placing the Main Selector in the BROWSER position (at 7 o'clock), choose Playback Mode: Clone.

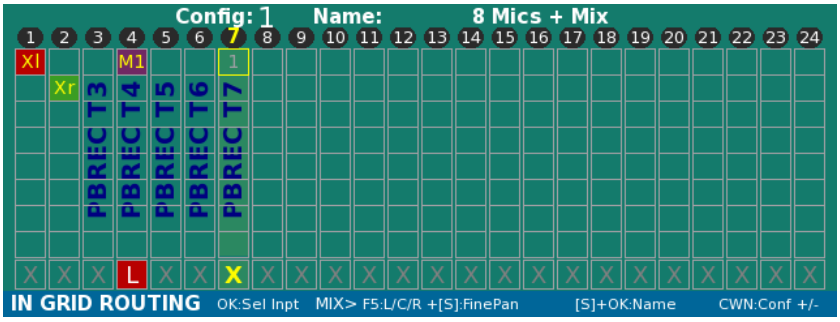


- With the left selector Crown, select the Playback Bank (here: c) to which you wish to assign the Playback file
- Select the file for which you wish to redo the Mix Down (use the Left & Right buttons to select the Media, Project, Day, press OK to open the different possible choices; then move with Up and Down or the Jog and confirm with OK).
- Highlight the desired file with the Up & Down keys.
- Assign the highlighted file to the currently selected bank with Shift + F3

Note : in Clone mode, as soon as a file is highlighted in the ordinary Browser (AUDIO FILE BROWSER), then its location (Media, Project, Day) will be automatically highlighted when switching to PLAYBACK AND RECORD: BROWSE. (You will only have to assign it to the bank with Shift+F3).

All ISO tracks are automatically duplicated in the Playback Routing. Mix Down tracks (Xl and Xr) are ignored. If necessary this routing grid can be edited.

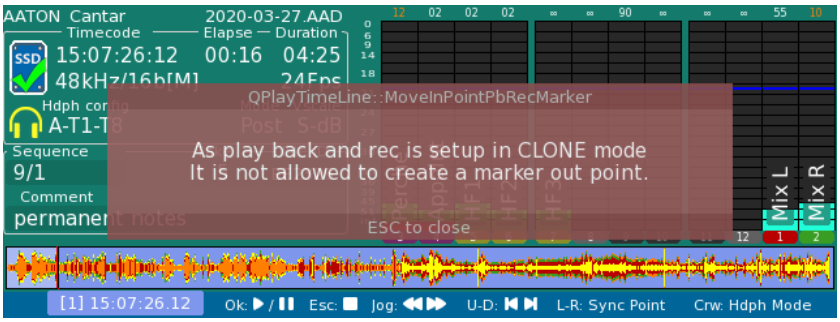
Press F1 to display the Final Routing, which is a combination of the Playback Routing with the current Cantar InGrid (see Fig. below).



Don't forget to mute the current input levels (or remove them from the Input Routing) if you don't want to mix them with the ISOs you are going to play back: otherwise, the next Mix Down will mix not only the ISOs of the remixed take, but also the audio of your incoming sources (in the example above, Fig., it will therefore be a matter of lowering the level of M1). Also don't forget also to assign the playback ISOs ("PBREC") to the Mix Down.

b. Play & Rec : Play

In Clone mode, Play-cards are not available, as the Cantar assumes that the entire file is intended to be replayed (see following Fig.).



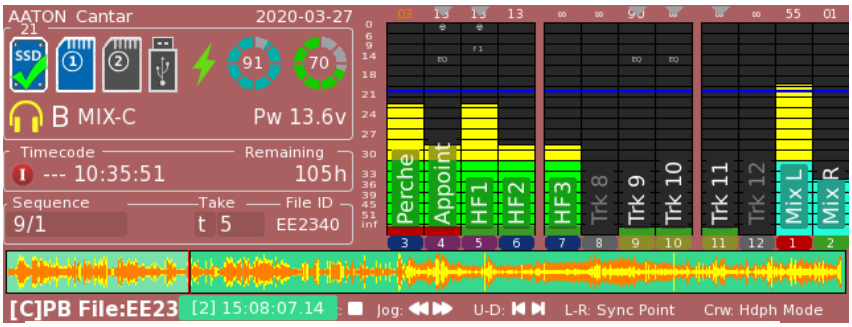
c. Play & Rec : Test et Pre Record (PPR)

Similar to Live mode, the PLAYBACK AND RECORD: TEST menu can be used to check our setup, and the P&R: PRE RECORD menu to pre-load the file to be played.

d. Play & Rec : Record

Recording can be started in PLAYBACK AND RECORD mode by holding the Shift button while moving the Main Selector to the RECORD position (at 12 o'clock).
Note: If you were already in Playback & Record: Pre-record position, it is not necessary to hold Shift when turning the Main Selector to P&R: Record mode.

- Start playing the file by pressing OK: you can redo your Mix Down. Please note that once playback is started with OK, it can no longer be paused: it continues to the end of the file.



PLAYBACK AND RECORD menu: REC, in Clone Mode

- All Metadata (track names, scene, take, notes) are duplicated on the clone file. The comments (notes) field will start with a reference to the original file (e.g. CLONE: EE2326) to keep track of the source file. The new file will, however, have a separate Cantar identifier (above: EE2340).
- During recording, the CantarX3 displays the current Timecode, but at the end of the recording, the original Timecode of the playback file will replace it on the clone file, with the start of playback of the file as the point of origin.

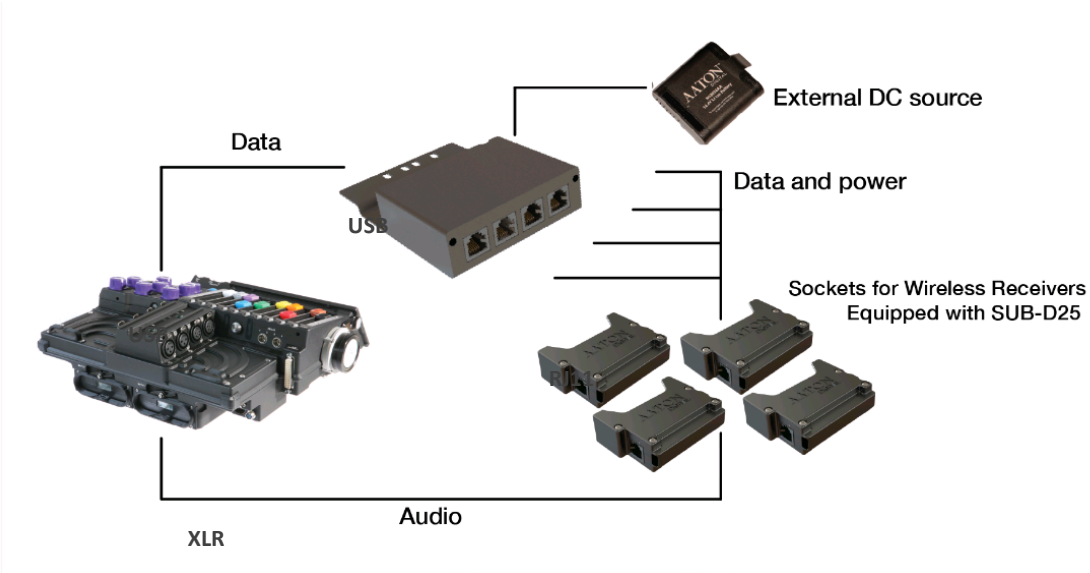
Example: The EE2326 file has been cloned for replay and re-recording with a new Mix Down. The original file starts at timecode 15:05:09:00. Recording is started at 18:30:00:00 and the file is played back one second later at 18:30:01:00 (when you press ok). Then once the recording is stopped, the new file will have :
- A new Cantar identifier
- The same metadata as the original file
- A note: "CLONE: EE2326".
- A start timecode at 15:05:08:00, so that the timecode 15:05:09:00 corresponds to the beginning of the playback of the original file audio. This new file can then be imported in a post-production software exactly in place of the old one.

XVIII. HYDRA: RF receivers management on CantarX3

With firmware version 2.72 and above, the CantarX3 and CantarMini recorder/mixer offer full integration of up to 8 wireless receivers, monitoring and setting 16 audio and data channels from the recorders interface
This functionality requires the use of additional hardware acting as a multi-coupling interface between the recorders and the wireless receivers.
The interface can be **Aaton Hydra hub and socket system** but also modified **Lectrosonics's Octopack** or **PSC 's RF Six Pack multi-couplers**

The Hydra interface can communicate with the following receivers:

- Audio Ltd A10-RX with 25-Pin D-Type Uni/Superslot adapter - Firmware revision 2.00.06 or higher
- Lectrosonics SRb with audio board update from Lectrosonics, Lectrosonics SRc and Lectrosonics SRc-941 with SRSUPER slot adapter – Firmware revision 1.20 or higher
- Sennheiser EK6042 with GA 6042-25 (506212) Adapter D-sub 25 pins - Firmware version 1.1.3-3 or higher
- Sony DWR-S03D with DWA-SLAU1 adapter
- Wisycom MCR42 with SLK42-IKSS rear panel adapter. Recommended versions: hardware: S2 (with limited functionality), S3 - Software : 3.21 or higher



1. Aaton's Hydra system

When using **Aaton Digital's HUB and sockets system,** four wireless receivers can be connected to individual Sub-D25 sockets , each one of them linked to a single HUB, connected to the recorder USB port . Powered by an external 12V DC source on Hirose 4 pin socket, the HUB carries power to the receivers and metadata from and to the receivers to the recorder. Receiver Sub-D25 Sockets

incorporate two audio output cables connecting to the recorder. Analog or Digital audio signals are available depending on the receivers setup.

Full monitoring of power sources for all connected receivers and transmitters is available from the recorder screen. Extended monitoring information is available when using Aaton Digital's Smart Battery 14.4V, 49Wh.

Two hubs can be linked together for controlling up to 8 receivers

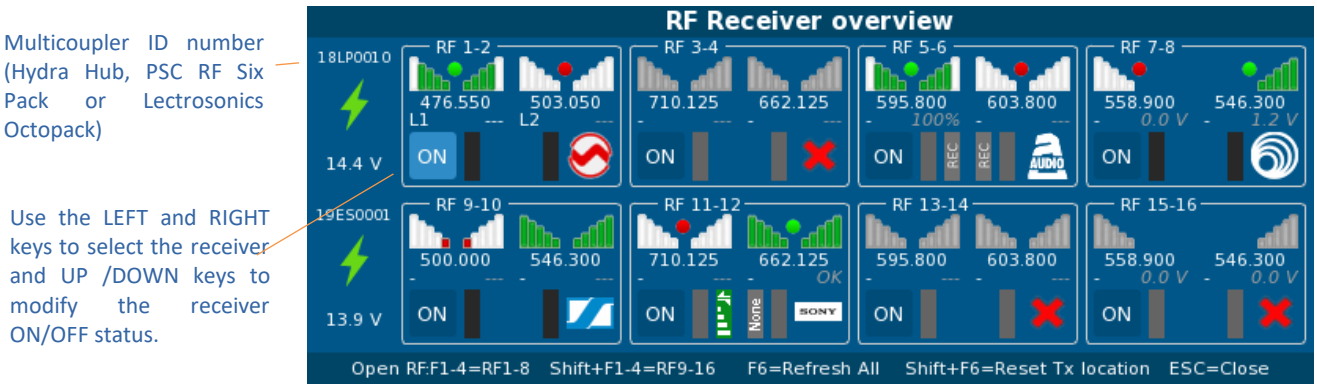
HUB 12 V DC input: Hirose 4 socket – HUB connection to the recorder: USB A/B cable – Socket connection to the HUB: RJ12 cable – Socket connection to the recorder: XLR3 or TA3 (on demand) equipped dual audio cable

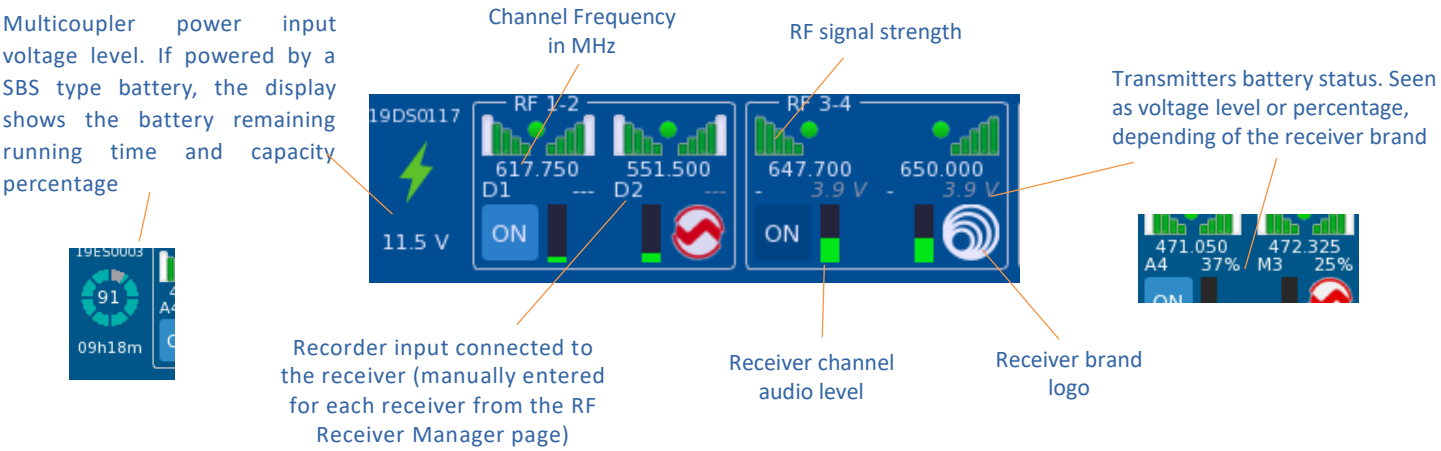
Lectrosonics's Octopack and PSC's RF Six Pack must undergo a hardware modification with the installation of an interface board designed by Aaton Digital, including the addition of a USB port for connectivity to the CantarX3 and CantarMini recorders. Please contact your Aaton Digital representative for further information

ctopack modifié Hydra

2. RF Receiver overview screen

Once the Hydra system, or equivalent system, is connected : **In the TEST, PPR and RECORD modes, Press Shift+F1 to open the RF receiver overview page, to access and monitor up to 16 reception channels**





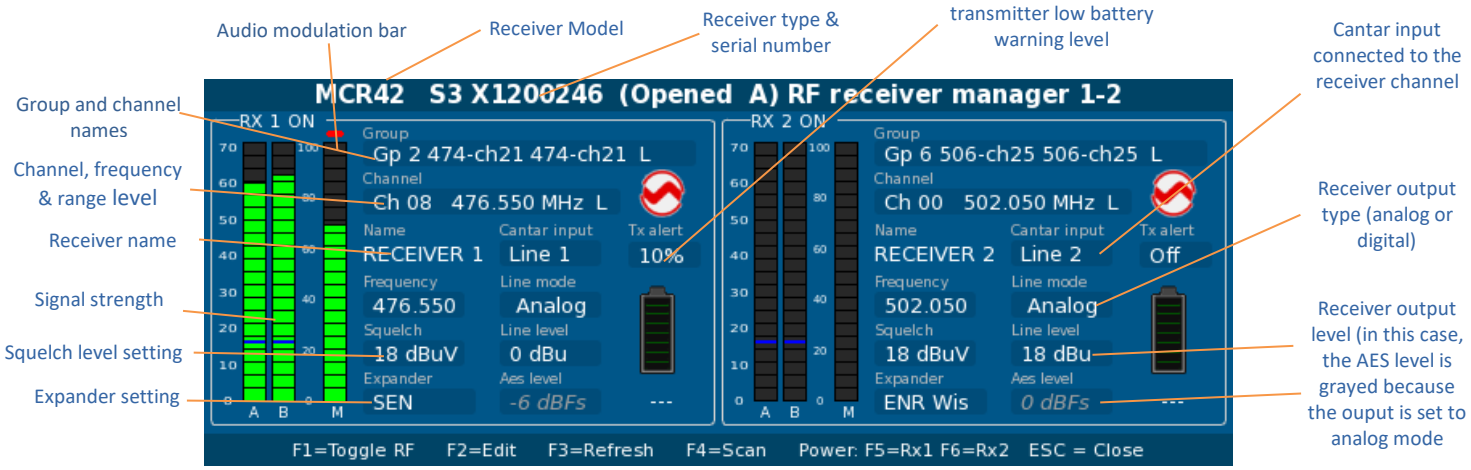
3. RF Receiver Manager screen

From the Receiver Overview page, press F1 to F4 to open channel 1-8 or Shift + F1 to Shift + F4 to open channel 9-16 and to access and modify the parameters of each receivers connected to the multi-coupler

Available settings depend on the receiver: from frequency, battery alert, audio output gain, peak meter and reception bar-graph for an SRC Lectrosonics, to squelch, compatibility, output level... for a Wisycom MCR42. Note that some settings cannot be modified I.e. the name of the receiver channel for this MCR42…

a. RF Receiver Manager page description: **Wisycom MCR42:**

For more information on the receiver : https://wisycom.com/app/uploads/sites/4/2017/11/MCR42-en-u14-A5.pdf

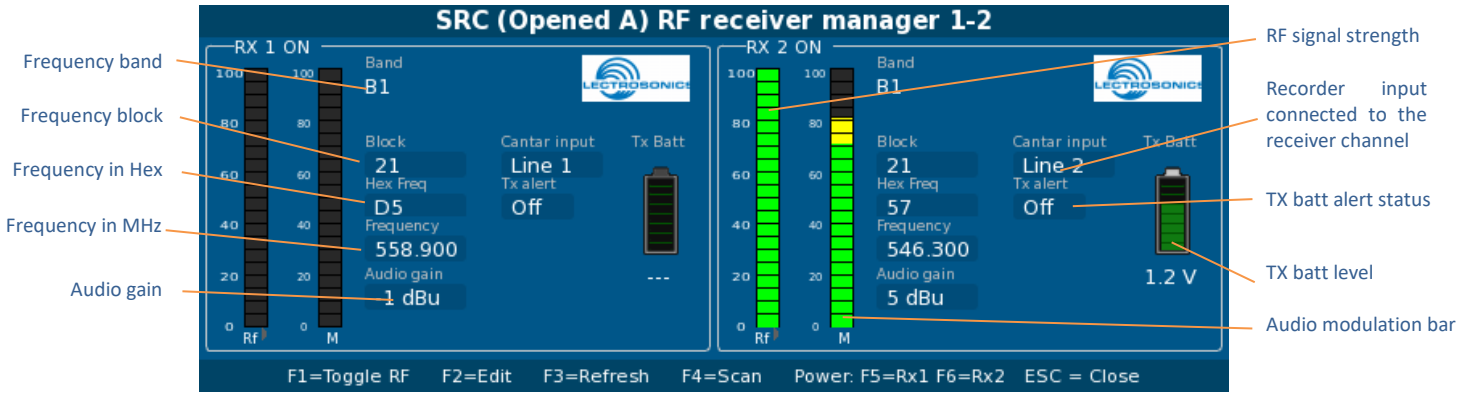


- F1: Toggle button to scroll though every receivers connected to the multi-coupler
- F2: to enter the receiver window (a parameter will be highlighted); scroll to the desired parameter with the Up & Down buttons, modify the selected parameter with the
- Left & Right buttons, confirm with OK or cancel with Esc.
- F3: to refresh this page
- F5 & F6: On/Off Toggle buttons, to turn off or turn on the receivers, respectively RX1 & RX2
- F4: to access the receiver scan page

Note: The "Cantar Input" parameter is manually entered by the operator to indicate to which of the recorder input she/he has assigned a channel. When filled, the receiver audio modulation bar is displayed on the input solo window

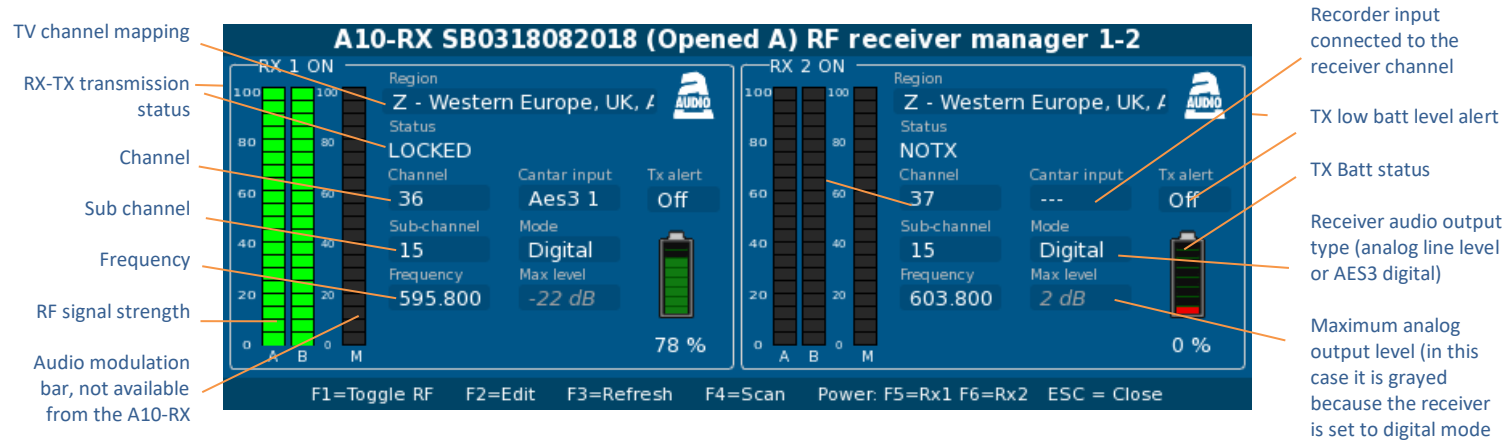
b. RF Receiver Manager page description: **Lectrosonics SRC**

For more information on the receiver:
https://www.lectrosonics.com/phocadownload/src5p_src_man.pdf



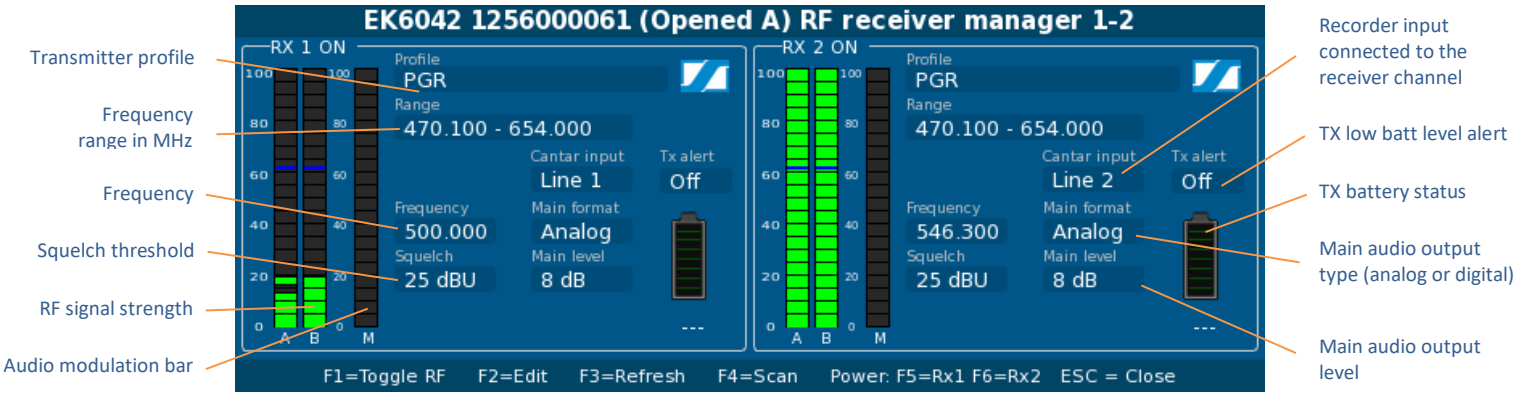
c. RF Receiver Manager page description: **Audio Limited A10**

For more information on the receiver : https://www.audioltd.com/wp-content/uploads/2017/12/A10-RX-UserGuide.pdf



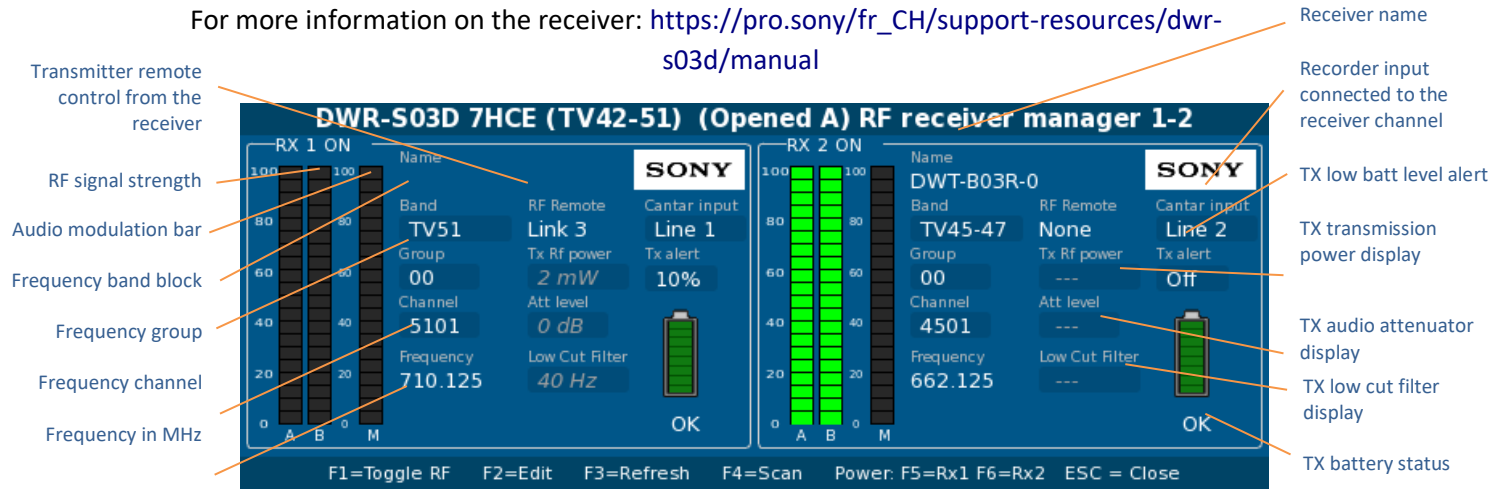
d. RF Receiver Manager page description: **Sennheiser EK6042**

For more information on the receiver:
https://assets.sennheiser.com/globaldownloads/file/12330/EK6042_Manual_06_2019_EN.pdf



e. RF Receiver Manager page description: **Sony DWR-S03D**

For more information on the receiver: https://pro.sony/fr_CH/support-resources/dwr-s03d/manual



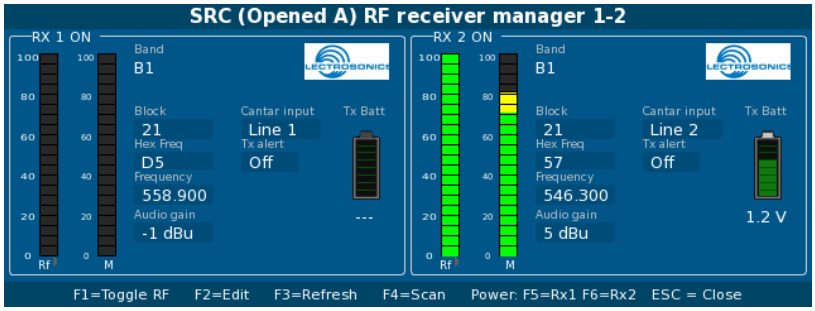
Sony DWR-S03D: The transmitter that you want to control using the wireless remote control function is linked to the receiver via a pairing operation.

a. Scan screen

The Scan option offered by the Hydra system represents a real gain of practicality compared to a scan performed directly on the receivers: not only is the display larger and more accurate, but the scan directly takes into account all of the receivers present in our Hydra system and allows for quick coordination of all of them

From the RF Receiver Manager page of any receiver, press **F4** to access the receiver scan page. From this screen, you can start a scan on any of the 2 channels of the receiver.
- **Left/Right buttons**: to select a parameter (RX, Curs Freq., Low Freq., High Freq., Step...)
- **Up/Down or Jog**: to modify a parameter, **OK** to confirm, **Esc** to cancel
- **F1**: Scan Start and stop toggle button. When started, the scan runs in a loop until you stop it. Use the selector jog to move the scan cursor on the scan waveform
- **F4**: to clear the scan waveform

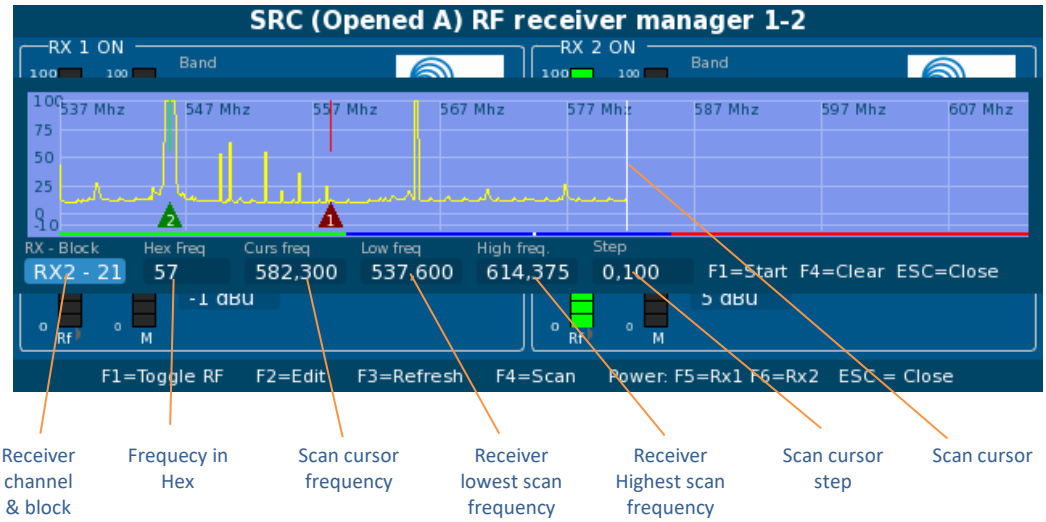
I. Scan Timeline description



Lectrosonics SRC receiver manager screen

RF Receiver Manager screen and corresponding Scan screen for a SRC Lectrosonics receiver. One transmitter on RX2 channel.. Scan screen for RX2 Channel

Lectrosonics SRC receiver scan screen



Receiver channel & block

Frequecy in Hex

Scan cursor frequency

Receiver lowest scan frequency

Receiver Highest scan frequency

Scan cursor step

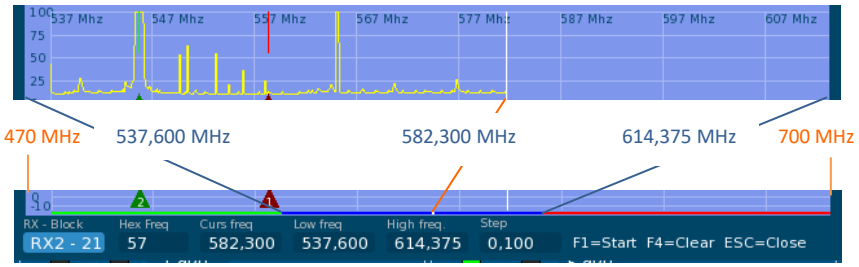
Scan cursor

Frequencies set on the receiver channels are displayed as color triangles on the scan timeline. On the above pictures (Fig.165 & Fig.166), Red #1 for the left channel (RX1 set at 558,900 MHz) Green #2 for the right channel (RX2 set at 546,300 MHz). Both channels are also represented by two vertical red and green lines.

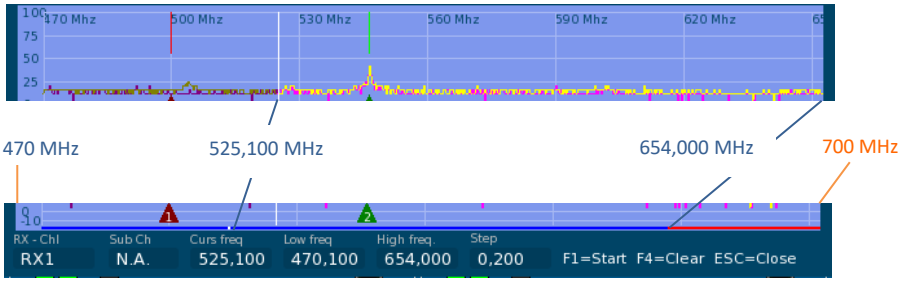
- The vertical white line on the scan timeline is the scan cursor. Moving from left to right, it can be stopped by F1 and move forward or backward with the recorder selector jog. Its frequency is displayed in the “Curs Freq.” item. Manually modifying its value will also move the scan cursor accordingly
- By default, the scan range represented by the scan timeline is the receiver maximum scanning range. For example, Band B1 of the Lectrosonics's SRc tunes across a range of over 76MHz, from 537,600 MHz to 614,375 MHz (as seen in the “Low Freq.” and “High Freq.” items). The scan range can also be set by the user (within the limit of the receiver tuning range) by modifying the “Low Freq.” and “High Freq.” parameters. It allows you to zoom into a specific area. Modify the “step” parameter to fine-tune the scan resolution.

- The thin 3 colors line below the frequency waveform represents Hydra maximum display frequency range of 470,000 MHz to 700,000 MHZ.

- The thin blue line length corresponds to the maximum scan range of the receiver in use It can also be set by the user (within the limit of the receiver scan range) by modifying the “Low Freq.” and “High Freq.” parameters. The small white dot represents the position of the scan cursor at the scale of the blue line.
- The green section of the line represents the frequencies between 470MHz and the lowest frequency of the receiver tuning range - The red section of the line represents the frequencies between the highest frequency of the receiver tuning range and 700 MHz

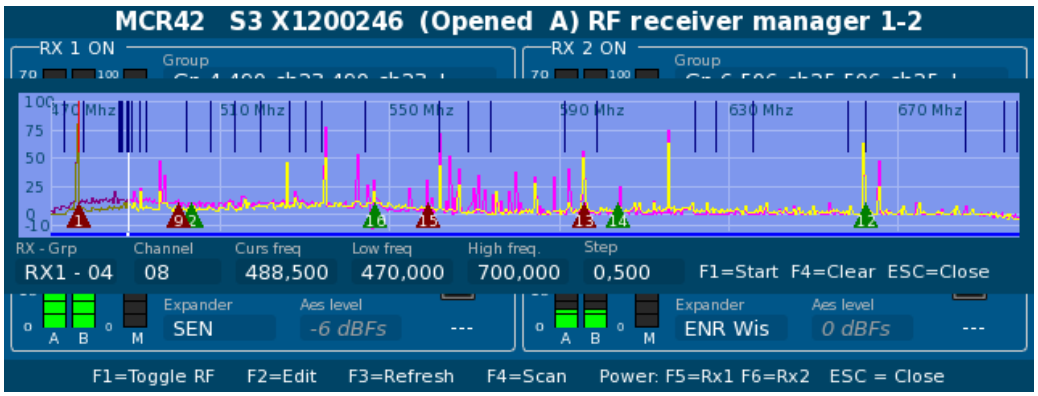


Lower Scan screen for a Lectrosonics SRc receiver, Band B1 (537,600 to 614,375 MHz)



Lower Scan screen for a Sennheiser EK6042 receiver, tuning frequency ranges 470 to 654 MHz

When multiple receivers are connected to the Hydra multi- coupler, each receiver frequencies are displayed on the waveform scan screen as colored triangles.



Scan screen for a Wisycom MCR42 receiver, tuning frequency ranges 470 to 700 MHz

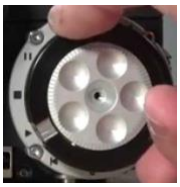
If one of these frequencies is outside of the selected receiver scan range (blue portion of the line), it will not show on the waveform (not the case with this MCR42 scan screen picture, the Wisycom MCR42 can and is set to scan the full 470 MHz – 700 MHz range)

The scan is running in a loop, the waveform color will change for each scanning loop.

The colored vertical line above the triangle n°1, identifies the current frequency of the channel concerned by the scan.

The "RX" field at the bottom left tells us that we are scanning for a frequency for channel 1, currently set to the frequency of group 4 – Ch 8 of this Wysicom MCR42. Note that the name and parameters of the fields depend on the type of receiver used. The many vertical lines located on top of the waveform banner represent the preset frequencies of Group 04 of this MRCR42 receiver.

XIX. SUPPLEMENTARY OPTIONS (DANTE +, SUBGROUP, AATONMIX)



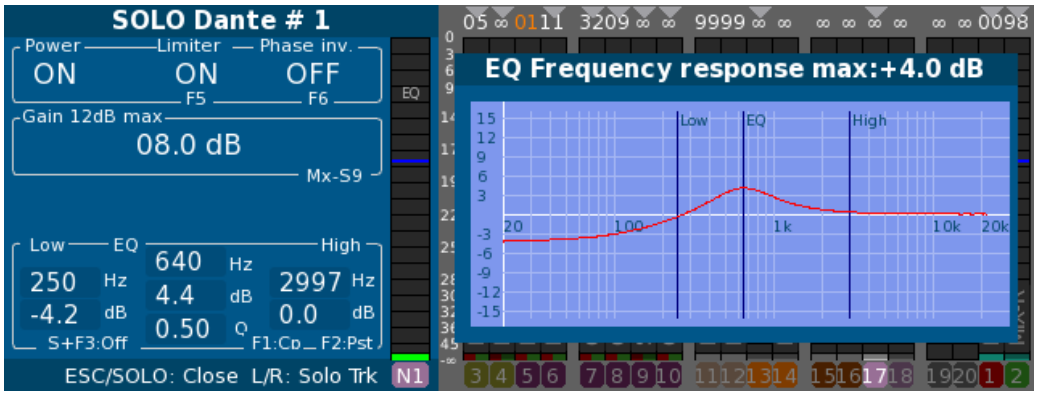
Starting with version 3.200.C6 available since March 11, 2020, it is possible to purchase optional features that are not available on the standard version of the Cantar X3 firmware
These optional features come in three categories: the Dante + option, the SubGroup option, and the AatonMix option.

1. THE DANTE + OPTION

This option provides more functionality on the CantarX3's 32 Dante input channels. When enabled, each Dante input has :
- A limiter (activated/deactivated with F5 on the Solo page of our Dante input)
- A phase inversion (activated/deactivated with F6)
- A digital gain whose maximum can be changed with Shift+F1, from 0 to +36dB in 6dB steps.
- A digital equalizer (activated/deactivated with Shift + F3, press F1 to copy EQ setting and F2 to paste copied EQ)

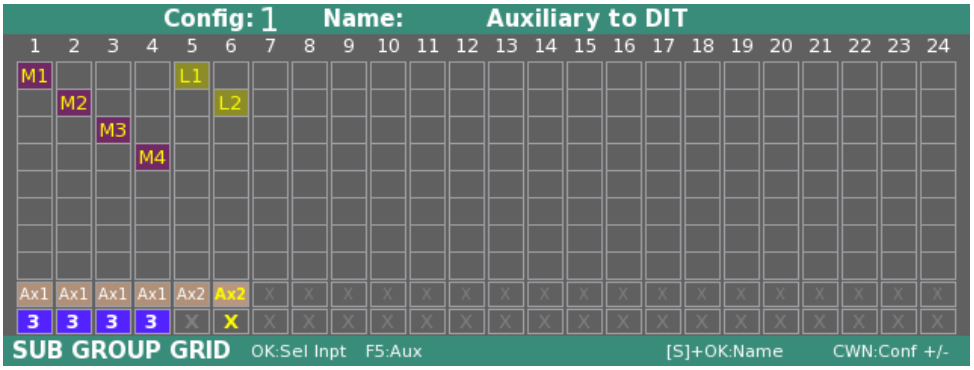
It also becomes possible to set the Dante inputs to Solo and assign them to encoders / sliders.

Three ways to access the solo windows of your Dante inputs
- 1) Assign actuators *(in TEST, PRE-REC menu, long press Shift and solo button)* to the Dante inputs then press the solo button of the actuators
- 2) If you do not wish to assign actuators to the inputs, press the solo button of any actuator of the CantarX3 and rotate the recorder left crown while holding the shit button pressed down. When reaching the first solo window of a Dante input, release the shift button then scroll though every Dante inputs with the left crown, use the jog to set the input gain
- 3) From solo windows of the ISO tracks or SubGroup channels (optional) onto which a Dante input is routed, press the L eft or Right buttons for a quick access of the input solo



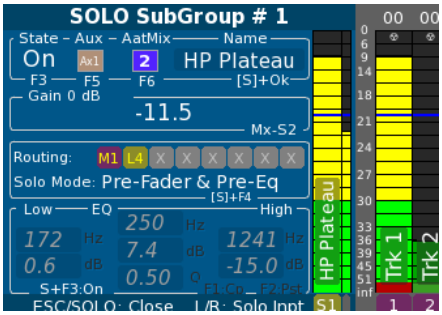
2. SUBGROUP OPTION

This option allows the use of 24 SubGroups channels ("SubGroups" 1 to 24) and 2 Auxiliary channels ("Aux" 1 and 2).
The 24 SubGroups can each be assigned up to 8 different sources of all types (Analogue Inputs, Digital Inputs, Post Fade Tracks, Mix Down Channels) and can be routed through our Headphone output configurations and our Analogue and Digital Outputs.

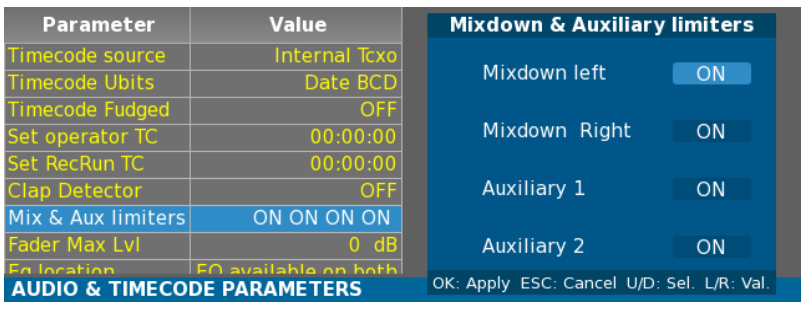


To assign sources to SubGroups: set the Main Selector to position 5: IN GRID ROUTING and press Shift+F1 to access the SUB GROUP GRID (see 5.IN GRID ROUTING: SubGroups on page 59).
To assign SubGroups and Auxes in the headphone and output configurations, set the Main Selector to position 6: HEADPHONE OUTMAPS (see 6.OUTPUT ROUTING: SubGroups on page 74).

Assigned to an encoder (CantarX3's rotary potentiometer or linear sliders, Cantarem's slider…) these SubGroups channels can be sent to any of the 2 Auxes.
SubGroup channels parameters can be modified from a dedicated solo window identical to the track solo window



The two Auxiliary channels can not only be sent to the headphone and analog or digital outputs but can also be assigned to recording tracks and sent to the Mix Down.
It is not possible to set to Solo, to assign to encoders/sliders, or to act on the level of these 2 Auxiliaries. Limiters can be applied on the Aux channels from the AUDIO & TIMECODE PARAMETERS menu



1. L'OPTION AATONMIX

This option provides an automatic AatonMix function, which detects audio channels receiving only a low signal and automatically lowers their level (Post-Fader).
The principle of this system is that an audio channel that only receives a low signal does not contain a useful signal and is potentially detrimental to our mix as it brings back de-timbering and background noise.
The AatonMix system will automatically identify these channels and lower their level.
As soon as a strong signal is detected on this channel, the attenuation is cancelled and the signal is recorded at the level of the encoder/slider assigned to it

- The AatonMix system can only achieve signal attenuation. It cannot amplify a signal. If it does not operate (because the channel is receiving a strong signal) the Post-Fade audio signal is normally recorded, at the level set by the user. The operator's manual mixing therefore continues to be effective!

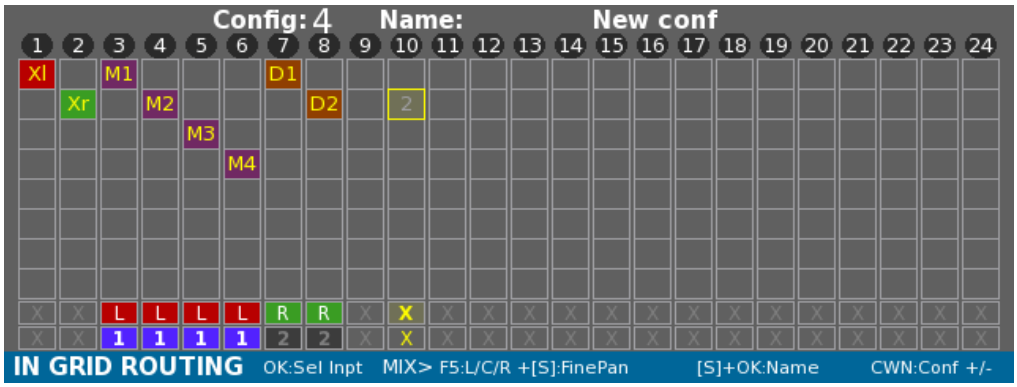
- For this system to work at its best, the user must therefore set his audio levels normally and leave the encoders/sliders of all channels open: he can of course decide to lower an encoder/slider to -∞, but in this case the corresponding channel will simply be muted and the AatonMix will not affect this channel.

- The AatonMix only works on the signal of Post-Fade Tracks: that is to say, it will not affect the iso tracks but only the Post-Fade recorded tracks and the Mix Down.

- The AatonMix only compares and mixes tracks assigned to the same AatonMix group: tracks that are not assigned to this group will not be affected.

The Cantar X3 with options has 4 groups of AatonMix: you can put any track that you want to automatically mix together in the same group.

To assign the Tracks to AatonMix groups: in the 5.IN GRID ROUTING menu, position the cursor on the column corresponding to a Track and press F6: on the bottom line, the identifiers of groups 1, 2, 3, 4 and X (no group) will scroll. Select the desired group.

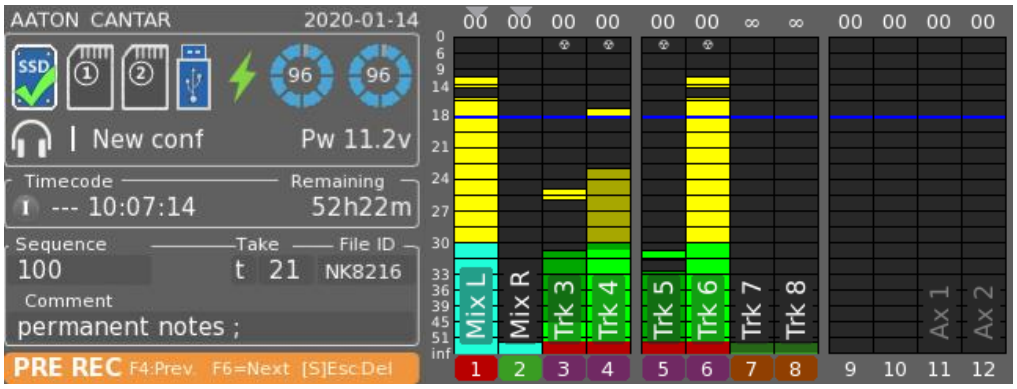


On the above screen, M1 M2 M3 M4 are part of AatonMix group 1, D1 & D3 (AES3 inputs) are part of AatonMix group 2 which has been disabled

a. Operation

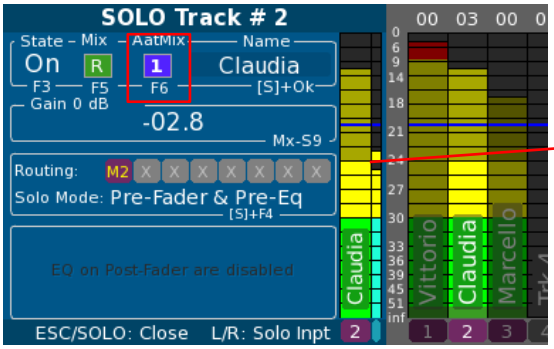
Rotate the CantarX3 Left crown to scroll through the IN GRID ROUTING configurations (up to 20 different user configurations)
Shift + OK: to name your IN GRID ROUTING configuration
L/R/U/D buttons + Jog: Select items, **OK**: Edit items
F5: Toggle button to select and send the Iso track to the Mix-down tracks Xl and/or Xr (stereo or mono mix)
Shift + F5: Fine pan of the stereo mix
F3: Open the solo window of the iso track (allows you to use the Jog to set the gain level of channels without assigned actuators
F6: Toggle button to include the track 1-24 to one of the four AatonMix groups (blue square 1-4 at the bottom of each channel)
Shift + F6: to enable or disable an AatonMix group, the blue square turns grey

Note 1: AatonMix settings do not follow the various track routing configurations. Modifying an AatonMix group track assignment in one configuration will affect all other configurations
Note 2: AatonMix groups 1-4 can be applied to Iso tracks but also to SubGroup mix channels (optional). The post fader audio levels of all channels (Iso tracks & Subgroup channels) contributing to the L/R mix, Ax1 and Ax2 mix buses and part of the same AatonMix group will be affected by the AatonMix algorithm.



In Cantar's main screens (TEST/PPR/RECORD) a gray area appears at the top of the vu-meters of the ISO tracks involved in the AatonMix . This gray area indicates the attenuation that is automatically applied to the channel before being sent to the mixdown L/R or recorded postfade (P1-P24)

When the Solo window of our tracks 1, 2, 3, we see an "AatMix" indicator (see Fig below), which tells us the AatonMix group to which this track is assigned (or X if it is not assigned to any group). From this window you can change the assignment group with F6 but it cannot be activated/deactivated

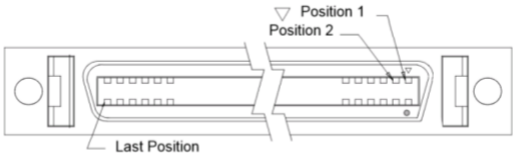


The shaded area of the vumeter represents the attenuation created by the AatonMix on the post-fade signal.

XX. ANNEXES :

1. CONNECTORS

a. Mini Delta Ribbon, MDR26

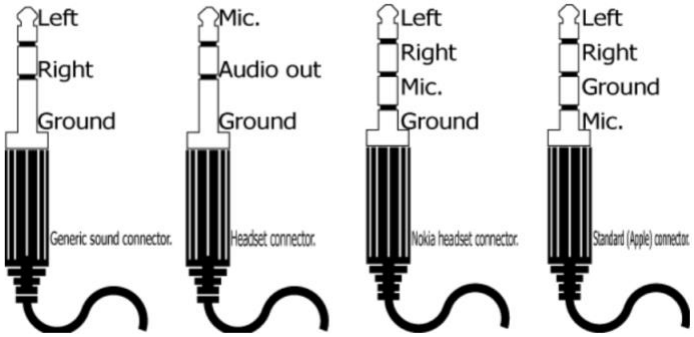


View from the outside (user's side).

Pinout description :
- 1, 2 : Ground
- 3 : LTC In
- 4 : Ascii
- 9 : Word Clock out
- 10 & 23 : Tally
- 11 : Cantarem
- 12 : AES-6 Out –
- 13 : AES-6 Out +
- 14 & 15 : V Batt
- 16 : LTC Out
- 21 : Word Clock In
- 22 : Masse
- 24 : Power On/Off
- 25 : AES-5 Out –
- 26 : AES-5 Out +

b. 6.35mm headset jack & 3.5mm Micro Slate Jack

a standard headphone connector for the 6.35mm headphone jack
a headset connector type Nokia, Minijack 3.5mm 4 points TRRS for the headset / microphone socket.



c. Cantarem cable: Lemo8 to Mini Delta Ribbon MDR26

Wiring of the Lemo 8 plug of the Cantarem :
- 1: Ground (to pin 1 of the MDR26)
- 2: Ltc Out (to pin 16 of the MDR26)
- 3: Cantarem (to pin 11 of the MDR26)
- 4: V Batt (to pin 14 of the MDR26)
- 7: Ltc In (to pin 3 of the MDR26)

d. Lemo 5 (F) Timecode

Wiring of the Lemo 5 F socket for Timecode :

- 1 : ground
- 2 : Ltc In
- 3 : Ascii
- 4 : Not connected
- 5 : LTC Out

e. XLR-4 M DC in

For external power supply: 13 to 18V - 4 Amps

- 1 : - Batt
- 2 : Not connected
- 3 : Not connected
- 4 : + Batt

f. XLR-3F Analog in

Balanced transformer (max. +24dBu)

- 1 : ground
- 2 : Hot
- 3 : Cold

g. XLR-5F Analog in

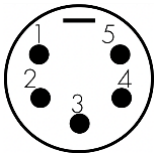
Balanced transformer (max. +24dBu)

- 1 : ground
- 2 : Hot
- 3 : Cold

Mic 3 / Mic 7

- 1 : ground
- 4 : Hot
- 5 : Cold

Mic 4 /Mic 8



h. XLR-5F Analog in (Line level only)

Balanced (max. +24dBu)

- 1 : Ground
- 2 : Hot
- 3 : Cold

Line 1 / Line 3

- 1 : Ground
- 4 : Hot
- 5 : Cold

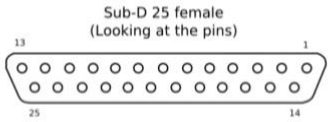
Line 2 / Line 4

i. TA-3F AES-42 (Digital in)

- 1 : Ground
- 2 : Hot
- 3 : Cold

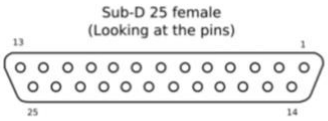
j. Sub-D25 AES-3 In/Out

Standard Tascam TD 88.



AES Inputs				AES Outputs			
Channel Pairl	Hot +	Cold -	Gnd	Channel Pairl	Hot +	Cold -	Gnd
1-2	24	12	25	1-2	18	6	19
3-4	10	23	11	3-4	4	17	5
5-6	21	9	22	5-6	15	3	16
7-8	7	20	8	7-8	1	14	2

k. Sub-D25 Analog Out



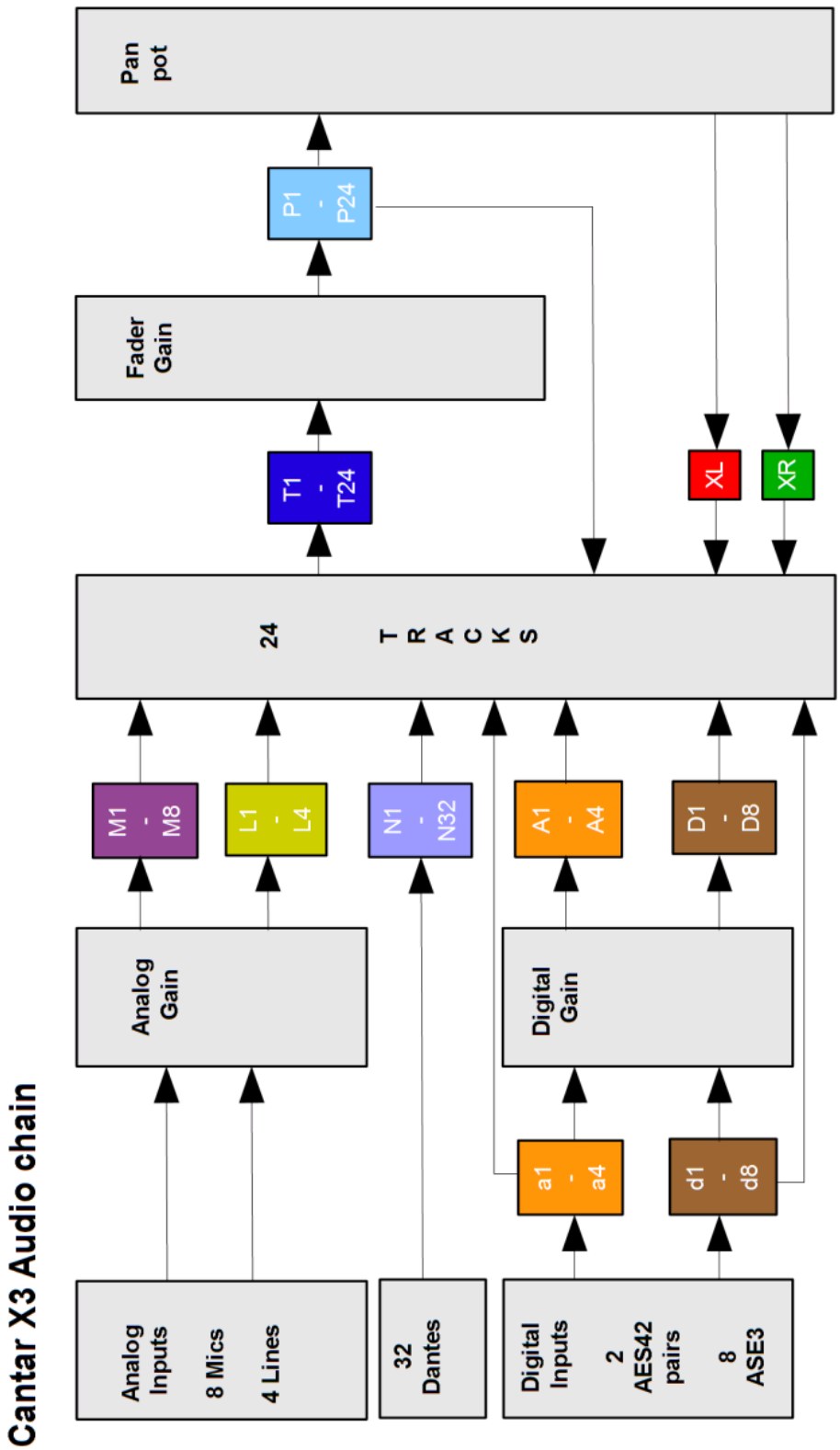
Output			
Channel	Hot +	Cold -	Gnd
1	24	12	25
2	10	23	11
3	21	9	22
4	7	20	8
5	18	6	19
6	4	17	5
7	15	3	16
8	1	14	2

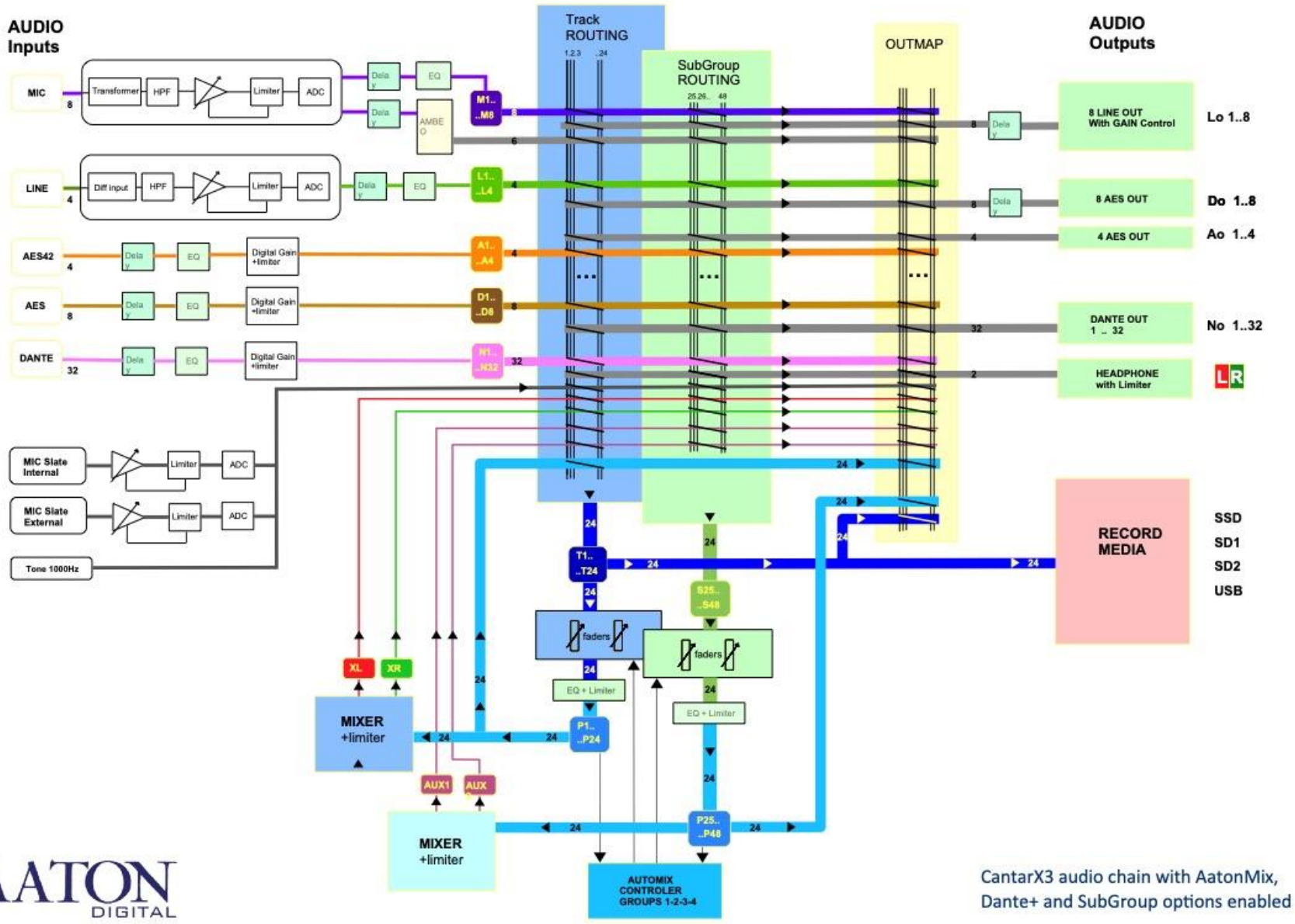
l. Hi-Rose 4 DC Out

Tension : V-batt

Current limitation: 500 mA, protected by a thermal fuse (thermo-fuse).

2. DIAGRAMS OF THE CANTARX3'S AUDIO CHAIN



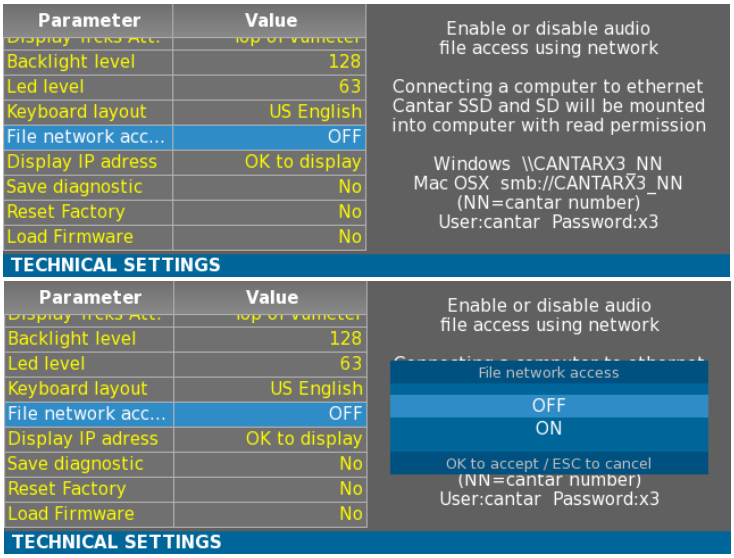


AATON DIGITAL

CantarX3 audio chain with AatonMix,
Dante+ and SubGroup options enabled

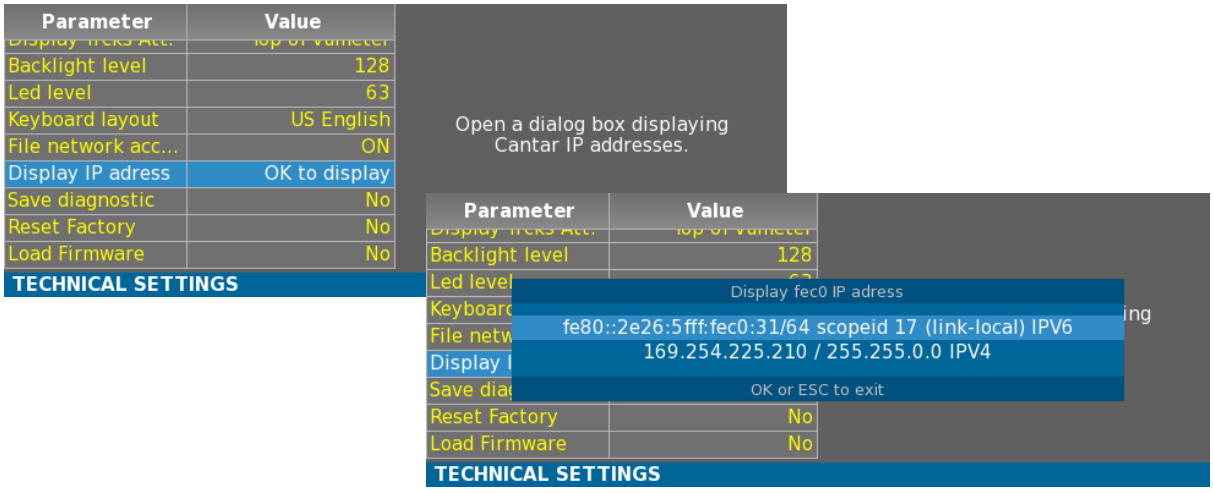
3. NETWORKING THE CANTAR WITH A COMPUTER :

Connect the Ethernet port of the Cantar X-3 to the Ethernet port of your computer.
Go to the **TECHNICAL SETTINGS** menu and select "File network access": press OK, select ON, press OK



On the right of the screen you can see :
-The name of the network (with NN being the Cantar serial number n° of the Cantar, without 0, for example : \\X3-39 for the Cantar n°039 [\CANTARX3_NNN on old versions of the software])

The sub-menu DISPLAY IP ADDRESS gives us the IP address of the Cantar and the sub-network key, which will allow us to create the network..



4. SHORTCUTS

In order to remind the user of every shortcuts available at any time, a quick help Menu is available by pressing three times the Shift button.
This help box is available in the Record, Pre-Record, Test, Play, Browse, Outmaps, and InGrid Menus.
Each item may be selected by pressing the Up and Down buttons and more details obtained by pressing the Ok button.

a. All Menus

SHORTCUTS	ACTION	NOTES
Pressing three times on Shift	Displays a reminder of the shortcuts	
Headset Button + Shift	Activating/deactivating the headset limiter	
On keyboard: Shift + F7	Screenshot saved on the 1st External Media used for copying (set in 1.BACKUP mode)	
On keyboard: Control + Esc	Activated once: switches to PPR pre-rec mode; then pressing Ctrl + Esc toggles between REC and PPR modes (thus enabling REC to be activated from a keyboard)	This and the following keyboard shortcuts work regardless of the position of the Main Selector
On keyboard: Control + F12	Displays 1.BACKUP mode	
On keyboard: Contrl + F11 / F10 / F9 / F8 / F7	respectively display the modes 2.SESSION / 3.TECH. SET / 4.AUD&TC PAR. / 5.IN GRID ROUTING / 6.OUTPUT ROUTING.	
On keyboard: Contrl + F6 / F5 / F4 / F3 / F2	respectively display modes 7.BROWSER / 8.PLAY / 9.STOP / 10.TEST / 11.PPR.	
On keyboard: Control + F1	Switches to REC mode	

b. Modes: OUTMAP, PLAY, STOP, TEST, PRE REC & REC

Headphone Button + Jog	Adjusting the Headphone level	
Headphone Button + Shift + Jog	Adjusting the headphone limiter threshold	

c. STOP Menu

Up/Down	Information on the remaining SSD disk space	
F1	Battery status information	
F2	Dante+, Subgroups, Aatonmix options availability check	
F3 long press	Checking the Cantar's main components status	
F6	New Day and Suffix folder	

d. Modes: PLAY, TEST, PRE REC & REC

F1	Displays the IN GRID	
F2	Displays the Headphone Outmap (+F3: Displays the Output Configurations)	

e. Modes: TEST, PRE REC & REC

F3 long press	Jam the LTC Timecode	
Shift + F3	Jam the System Time Code	
Shift + F5	Sending a 1kHZ signal to the tracks and outputs	
Shift + Solo d'entrée Micro	Input phase inversion	
Shift + Solo encoder appui long	Display the encoder assignment table	
Shift + Solo slider appui long	Displays the slider assignment table	
Left selector	Changing the headphone configuration	
When a Solo is activated: Shift + left Selector Crown	Scroll through all type solo window	
When a Solo is activated: Left Selector	To scroll through same type input solo window	
pressing 2 Solo buttons (associated with sources of the same type: Mic, Track, etc.).	To put the 2 audio inputs in Double-Solo	
Up	To display the phase-meter between the last 2 sources (inputs/tracks) set to Double-Solo	

f. Modes: TEST & PRE REC

Shift + Left during 3 sec	Locking/unlocking the Mixer	
Shift + Right during 3 sec	Locking/unlocking rotary encoders	
Shift + Solo Track	Arming/disarming the track	

g. TEST Only

F4	Delay panel display (+F4 to change page)	
F5	Link panel display	
F6	Display of the line output levels panel	
Shift + Up	Displaying the Back Up Idle status window	

h. Modes: PRE REC - REC

F5	Change take Type: t-n-p-w-a-r-g	"n" will not increment the take number.

i. PRE REC only

F4	Metadata: edit the previous take	
F6	Metadata: edit the next take	
F3 ou Shift + Left	Metadata window : Delete the previous character	
Shift + Right	Metadata window : Select this character and the following ones	
Up/Down	Metadata window : Modify the selected character	

Shift + ESC	Metadata window : Clear the selected field	
F3	Metadata window : On editing the metadata of the previous take (F4): encircle / uncircle the take	
F5	Metadata window : Changing the take type	
F2	Metadata window : Display the Completion Window	
F1	Completion Window : Add a name	
F2	Completion Window : Delete the selected name	
F3	Completion Window : Enable/Disable Completion	
Shift+F3	Completion Window : Display the items of the internal database	To delete unused names

j. REC

F4	Detecting the clap on the last 6 seconds of recording	
F6	Add a Marker at this location	

k. TECHNICAL SETTINGS

Shift + Up + Down	Display the extended menu	(Beware of handling errors in this menu ! It allows you to display the test screens or to calibrate the faders)

l. IN GRID

U/D/L/R ou Jog	Select an item	
Shift + Jog	Modify the level of the track on which our cursor is located	Also works in TEST, PPR, REC mode, on the page opened with F1.
Ok	Modify the selected item	
Shift + OK	To change the name of the current configuration	
Solo button of any input	Assignment of this input to the selected track	
Double press on Esc	If our cursor is positioned on a source: removes this source from the track.	
Shift + F1 (optional)	Display the SubGroup GRID window	If the CantarX3 has the option enabled
Shift + F2	To change the routing of the Micro Slate	
Shift + F3	Arm/disarm the selected track	
F4	Copy the current configuration	
Shift + F4	Paste the copied configuration to the current configuration.	
F5	Change the Pan Pot of the selected track	
F6 (optional)	Changing the track assignment to an AatonMix group	If the CantarX3 has the option enabled
Shift + F6 (optional)	Enable / disable the AatonMix group to	If the CantarX3 has the

	which the selected track is assigned.	option enabled
Shift + F5	Pan Pot fin	
Left crown	To scroll through the In-Grid configuration	
Shift + ESC	Delete the routing of the current configuration	

m. OUTMAPS only

F3	Display the Line output configurations then AES, then AES Mini Delta Ribbon then Dante (if Dante Power is ON).	
	Headphone output display	
U/D/L/R ou Jog	Select an item	
OK/F5	To activate the monitoring feed: left, center or right...	
F4	Assigns the source to the left ear	
F6	Assigns the source to the right ear	
Shift + F5	To activate the tracks in Post Fader in the monitoring: left, center, right	
Shift + F4	To copy the current configuration	
Shift + F6	To paste the copied configuration	
Shift + OK	To change the name of the configuration	
Left crown	To select a different configuration	
Shift + ESC	Delete the current configuration	
	Line and AES outputs	
F5	Display the output configuration window	
U/D/L/R ou Jog	Select an item	
OK	Edit the current item	
F4	Copy the item (delay, beep mute...)	
Shift + F4	Copy the current line output configuration	
Shift + F6	Paste the copied information	
Left crown	To select a different configuration	
Shift + ESC	Reset the selected item	
Shift + Jog	Direct modification of the selected item	

n. FILES BROWSER

F1	Toggle Scene View Mode	
Shift + F1	Displays tracks 4 by 4 instead of comments	
F2	Fix Files: repairing files	
Shift + F3	Circle / Un-circle the take	
F4	To edit the metadata of the highlighted take	
F5	Refresh browser information	
F5	Metadata window: Change the type of take	
Shift + F5	Open the "Recording Database" window	
F6	Snap Report	
Shift + F6	Snap Report of the entire project	
Shift + ESC	Trash the selected file	
Up / Down	Select previous/next take	
Shift + Up / Down	Select multiple files	
Left / Right	Select the header items (Media, Project...)	

o. PLAY

OK	Play / Pause	
Shift + OK	Enable continuous playback of successive takes	
Esc	Stop playback	
Shift + F2	Enable Pre / Post Fader mode	
F3	Choose whether to display the timecode or the duration of the take (or nothing).	
Shift + F3	Changing the waveform display mode	
F4	Metadata: editing the take	F5 changes the type of take and Shift+F3 to circle.
Up / Down	Previous / next file	
Left / Right	Go to previous/next sync point or marker	
Left crown	Changing the monitoring configuration	

5. Cantar X3 power – which draws what?

The information bellow as been compiled by Axel Traun from Austria, CantarX3 #16. Thank you Axel !

Test setup: Soft 2.12, AES power OFF, DANTE power OFF, 12 inputs routed to 16 tracks, no Phantom, display brightness 15, AES 42 power OFF)
test readout provided by Audioroot esmart BG-DU; test config draws about 0,5 W without X3 running; actual battery voltage has (little) effect on wattage: @ 16,4 V idle draw in STOP is around 18,65 W; @ 13, 4 V idle draw in STOP is around 18, 35 W (no power safe mode, all other parameters unchanged)

- Display brightness

min (8)	17,55W	(51)	18,05W	(190)	20,60W
(15)	17,55W	(100)	18,94W	max (255)	20,65W
(29)	17,77W	(157)	20,11W		

- LED level

OFF (0)	17,12	mid (30)	17,37W	max (62)	17,62W

- Phantom (MKH 8060, mic input 1, idle TEST)

OFF 19,10W
ON 19,32W

- AES power (4 o'clock tech menu idle)

OFF 17,38W
ON 17,90W

- DANTE power (4 o'clock tech menu idle, AES power ON)

OFF 17,90W
ON 19,39W

- STOP

No power saving mode: (AES off, DANTE off) 17,24W
No power saving mode: (AES on, DANTE on) 19,25W
Power saving mode display OFF: (AES off, DANTE off) 11,70W
Power saving mode display OFF (AES on, DANTE on) 11,70W

- TEST:

idle, 16 tracks, DANTE off, AES off, AES42 off	18,00W - 18,30W
idle, 16 tracks, DANTE on, AES on, AES42 off)	20,80W – 21,40W
same as above, but 10 tracks	19,83W – 20,53W
same as above, but 1 mic / 1 track only	18,25W - 18,78W

- PRE REC (idle, above 16 track setup) 20,21W – 21,70W
- REC (above 16 track setup, in the middle of longer take) 22,70W – 23,50W

6. Versions history

The list of firmware versions below shows the extent of the functionalities and improvements made by Aaton Digital's technical teams since the CantarX3 was designed in 2015.
For more detailed information, please visit the Aaton Digital website at https://www.aaton.com/software-updates
Firmware

FW 3.211.C7 - November 23, 2020
- New features
- DANTE slave mode is available.
- A VNC server is now available inside the Cantar.
- When the suffix of the day is used, a dialog box prompts the user to apply it to the type ID...
- Battery status are available for all compatible batteries
- The full duplex mode (talk back) now affects the outputs too.
- Bug fixes

FW 3.205.C7 - August 17, 2020
- **Bug fixes**

FW 3.203.C7- July 09, 2020
- New features
- Compatibility with the Cantaress firmware labeled C7
- TRACK PAN: Possibility of modifying the track pan setup durring record
- The fine pan display has been improved.
- PLAYBACK menu: Shift+Left/Right arrow keys allow to move the waveform cursor by one frame step.
- WAVEFORM TIMELINE: For take longer than 1min 30sec , a magnification window is automatically displayed to provide a better resolution of the timeline.
- In PLAYBACK & REC, mode LIVE, play-card boundaries can be adjusted +/- 1 frame.
- Bug fixes

FW 3.201.C6 - June 25, 2020
- Bug fixes

FW 3.200.C6 - March 11, 2020
- New features
- Introduction of 3 extended optional features
- Dante +: This option offers a complete set of settings for the 32 DANTE inputs of the CantarX3. It is composed of a limiter, phase inversion functionality and a digital gain whose maximum is set per input (between +0dB max up to +36 dB max pressing Shift+F1) and an equalization module.

SubGroup: A new Sub Group routing grid allows you to create up to 24 mix buses which can be applied to two independent auxiliary channels (Ax1, Ax2).
- AatonMix: The principle of the AatonMix is to automatically attenuate channels, sent to the mixdown, which have a low signal level at the input.

- Bug fixes

FW 3.101.C6 - February 13, 2020

- New features
  - Compatibility with the Cantaress versions labeled C6
- Bug fixes

FW 3.100.C5 - February 11, 2020

- New features
- On all digital inputs (8 AES3, 4 AES42)the gain range is individually selectable (Max = 0,6,12,18,24,30,36 dB are available)
- A digital limiter is available. The setup is made in the corresponding AES solo dialog box
- A digital limiter is available for the Mixdown
- EQ location Pre/post or both is available in the AUDIO SETTING parameters
- MS on all inputs (Mic, Line , Aes, Aes42, Dante)
- Link available for Digital Inputs & Tracks
- Two AMBEO ambisonics decoders are available
- Hydra's integration of the Lectrosonic 941 RFreceiver
- The Wisycom S1/S2 communication is now enabled
- Bug fixes

FW 2.97.C5 - February 11, 2020

- New features
- Compatibility downgrade from version 3.XX
- The digital gain on AES42 up to +36dB is back, it can be adjusted in AUDIO PARAMETERS menu.
- Specific limitations has been added for the upgraded Lectrosonics SRb models
- Bug fixes

FW 2.96.C5 - November 19, 2019

- New features
- Compatibility with the new Cantaress version labelled C5
- The digital gain on AES42 up to +36dB is back
- Bug fixes

FW 2.93.C4 - October 22, 2019

- New features
- After opening any actuator assignment dialog box, an overview is available pressing F1 key. All control surfaces assignation will be displayed.
- Bug fixes

FW 2.92.C4 - September 30, 2019

- New features
- The Souriquette remote is now supported
- Advanced Sc & Take : Added With or Without Reset for Alphabetical Slate Increment
- When Alphabetical is chosen the reset is blank and not 'A'
- File Network Access is no longer reset during startup.
- Bug fixes

FW 2.88.C4 - July 23, 2019

- Bug Fixes

FW 2.87.C4 - July 19, 2019

- New feature

- A brand new scene and take template is available (the old templates are still available). The web-app have been improved
- Two different setups are available for the LTC Cantar output.
- The AES42 maximum gain is set up using AES42 max gain in the AUDIO & TIMECODE PARAMETERS screen, the maximum is now +24dB.
- In the playback & rec mode, when switching to record, the play cursor is automatically located at the first section.
- The PDF paper landscape is now available in A3 format. This allows to manage up to 28 columns on a single line.

- Bug fixes

FW 2.78.C4 - May 16, 2019

- Bug fixes

FW 2.77.C4 - May 15, 2019

- new features:

- WebApp: Unused track (no input declared on ingrid) columns are hidden
- Dedicated configurations (Headphone L/R/L+R) are available to duplicate the headphone on Cantar outputs (line or digital).
- Aes Power Menu : AUTO option for Aes Outputs was added (when selected each Digital output is automatically activated/deactivated according to its current routing)

- Bug fixes

FW 2.72.C4 - March 27, 2019

- new features:

- 192KHz recording
- HYDRA™ , remote control of RF receivers
- Fader mixing automation data embedded in audio files
- EQ improvement

- Bug fixes

FW 2.50.C1 - September 26, 2018

- new features:

- First version compatible with the C1 version of the Cantaress
- The battery status available for Aaton genuine battery
- Talk to Headphones
- Reset Factory : A dialog asks if the user wants to save a backup of the settings before resetting
- Beep Routing : Beeps (Start & Stop) can now be deactivated in the Headphones (error & alert beeps remain active)
- '_' character is available for scene filed
- The jog is speed up in the edit field
- iXML modification to improve compatibility with On-Set Dailies software

- Bug fixes

FW 2.37 - December 19, 2017

- new features:
- The 2 Aes outputs pairs available on the MiniDeltaRibon can now be configured.
- Dante outputs can be configured by the user.
- During an external timecode JAM (Long press on F3), a confirmation is now needed.
- An ID number is added into the playback cards in the playback and record mode
- A progress status is added during the "save diagnostic" process.
- The direct access to phase inversion (Shift+solo) is available for the line, digital and AES42 inputs.
- Bug fixes

FW 2.31 - November 09, 2017

- new features:
- Wordclock input is now activated.
- The system time Jam is now performed again even if the timecode was already initialized using the system time and if the time difference is higher than 10 seconds.
- In the AES42 Solo panel, the general AES power status is displayed.
- When Cantar is in playback and rec in PPR position, there is no need to hold shift to switch in playback and rec in RECORD position.
- The navigation between overlapped sections was improved.
- F3 toggles display time/duration/no display.
- Bug fixes

FW 2.24 - July 28, 2017

- Bug fixes

FW 2.23 - July 03, 2017

- Bug fixes

FW 2.21 - June 28, 2017

- New features:
- The playback and record allow Cantar to play a pre-selected file and to record new files simultaneously
- Take Indicator is now removable
- When Next Scene is changed while take type is 'p', take type is automatically reset to 't'
- In play position, when play is muted for the outputs (Empty Triangle), inputs (Mic,Lines ...) remain active on outputs.
- The record starts even if a media has not enough available free space, as long as a mono version is still recorded on another media.
- WebApp: Graphical improvement on disarmed tracks infos more discrete (ms / mx)
- Bug fixes

FW V2.12 - March 23, 2017

- New features
- A metadata WebbApp is available through Ethernet or wifi connection.
- Solo interface improvements
- Talk To Tracks menu modification
- Generates the audio files timecode during playback on LTC output
- Using Cantarem / Cantarem 2 keys, Shift can now be pressed on Cantar side
- Snap Report: Multi reports according to take types (same as in backup)
- Using file network acces, the write premission is enabled on both SD cards

- Wifi status added in the stop position
- Bug fixes

FW V1.119 - February 09, 2017
- New features
- The Mic level can be modified using the jog when it is not driven by an actuator.
- Bug fixes

FW V1.118 - October 27, 2016
WARNING, Before loading 1.118 release, update first Cantar Operating system to the last version if needed (see. OS release)
- New features
- The audio stream of disarmed track can be turned ON or OFF
- Using idle backup, status in test position is now persistent.
- If the idle job is not completed. a warning notification is displayed prior to Cantar power down
- The linked mics and line status are displayed in the vumeter background information
- In PLAY position, several waveform vertical scales are available, press Shift+F3 to toggle
- A day suffix (up to 8 characters) can be added to the traditional day folder
- A compact polyphonic mode can be selected in Audio & TC settings
- The timecode user bit parameter modifies the content of the user bit metadata field in PRE REC and also affects the content of the LTC output.
- A "silent rec" message is displayed on track vumeters at the end of the record when audio recorded on the track stays always below -98dB.
- Wifi communication can be activated.
- Track Completion List can have up to 100 elements
- Edit Outmap config (F5 key) is now available from PRE REC and TEST menus
- Bug fixes

FW V1.116 - August 10, 2016
- New features
- An automatic screen back light level adjustment is now available.
- Inputs Linking : all mics can now be mastered (Firstly choose Master then Slaves)
- New preamp mic input level pre-set between HIGH LEVEL and MIC LEVEL.
- Shift + Solo to add a Solo to the Currently opened Solo for Double Mic and Track Solo
- The track name length is now 12 characters
- The notes length is now 160 characters
- The metadata can be edited during record
- An alternative vumeter scale is available, it includes an upper scale zoom
- Mixdown pan pot indicator is now available at the bottom of vumeters.
- In SESSION menu, clean SSD feature allows you to erase the full project or selected day in the project.
- The Cantar settings can be saved on Internal SSD
- External power lower limit can be set down to 10.5V
- Reassign the same Input on an actuator clears the previous assignment of the same input
- Bug fixes

FW V1.113 - June 23, 2016
- New features
- Track name auto completion,
- Into edit fields, the cursor goes to the next/previous field with Left and Right key.
- All Cantar settings can be saved and restored

- Low power is available in stop position.
- Cantarem II Function Button assignment
- In PPR position, on "delete last take", a confirmation is now requested before moving the last take to the trash.
- In BROWSER position on delete a take, you can clean a the others media at the same time.
- During restore from audio trash, the files are moved when the target drive matches with the audio trash drive
- The files are copied when the target drive differs from the audio trash drive.
- A management of USB port overcurrent is now available from the recorder interface (overcurrent notification and reset).
- Bug fixes

FW V1.103 - May 02, 2016

- New features
- The compatibility with the 12 faders Cantarem 2 is supported.
- A track phase correlator is available during playback
- A continuous file to file playback is available
- The internal mixdown (Xl Xr) can be combined with an external input.
- InGrid and Headphone Outmaps modifications are enabled from PPR,TEST screens
- Arming or Disarming a track is available from from the INGRID menu
- Modification of the track Level of a non-assigned tracks (no fader to trim) is available from INGRID menu
- In solo, with gangabled mics or lines, master level and lock links are displayed.
- The circle takes are labeled in pdf (like on Majax).
- The circle takes column is added in CSV file.
- Bug fixes

FW V1.101 - April 21, 2016

- New features
- Double solo is available for mic inputs and tracks
- A phase correlation indicator is added in double solo mode
- The last phase correlator can be shown or hidden by pressing the up key in TEST/PPR/RECORD screens
- If installed on the recorder, the Dante option card is symbolized by an icon on the STOP screen
- In play position, output configurations using Mix Left and Mix right stay valid.
- Bug fixes

FW V1.94 - March 23, 2016

- New features
- User assignation is now available for rotating potentiometers.
- Pre fade or Post fade monitoring is available in play
- A full duplex mode was added for talk back
- An external low voltage alarm can be setup into TECHNICAL SETTINGS (11V - 15V)
- CSV file format added to audio reports (PDF and ALE).
- Enhanced audio report tools
- In copy/backup menu, reports can be managed like audio takes
- MS and mixdown tracks are automatically labelled into the PDF report track name field
- Multiple edit is available to modify the scene number (like notes, track names ...)
- Mixdowm tracks vumeters can be shifted to the right of the screen
- Delay and Phantom power indicator added to the vumeter background
- Multiple sources indicator added to the vumeter background

- Disarmed track label color over vumeter changed to grey
- The external Jam OK message is hidden in record position
- User bits are grabbed automatically from incoming LTC
- When the last take is deleted, its monophonic files are moved to the audio trash and permanently deleted from the USB,SD1,SD2 media.
- Arm/Disarm track from IN GRID screen
- Erase in grid configuration (no more M1 M2 by default into the grid)
- Monophonic audio file recorded on Cantar X1/X2 can be merged into Cantar X3 day folder
- In record position : direct access to Clap detection [F4] and Marker [F6]
- Erase project funtion on SSD added in SESSION page.
- Contextual help [triple shift] added in PLAY/TEST/STOP/AUDIO BROWSER/IN GRID...
- Bug fixes

FW V1.90 - January 05, 2016

- New features
- Analog input status (phase inversion , analog filters, and EQ) added at the top of vumeters (for Mics, lines, Aes and Aes42).
- Improved line out and digital out management
- Adjustable headphone safety clamping,
- Phase inversion added on AES and AES42 inputs
- EQ capability added on AES and AES42 inputs
- Very low backlight level for night environment
- Contextual help is available in solo dialogs (Line, Mic, AES and AES42)
- Bug fixes

FW V1.86 - November 25, 2015

- New features
- Idle backup mode available
- For external slate mic, bias power ON/OFF is now available
- Delay on inputs are displayed at the top of solo dialog box
- IN PLAY position F3 switch between timecode and elapse under the wave form
- By default, all new takes are not circled
- Phantom power on Mic inputs stay ON when switching between Mic level and high level
- EQ gain (low, mid and High) are quickly adjusted (+1dB step) with (SHIT + Jog)
- In playback mode track names are displayed over the waveform during solo
- Bug fixes

FW V1.84 - November 03, 2015

- New features
- Free media size is displayed in stop position pressing Up or down arrow key
- remaining time on each media according to the current configuration.
- Bug fixes

FW V1.83 - October 22, 2015

- New features
- Circle takes management
- New file naming template only with underscore as separator (see:TECHNICAL SETTINGS)
- ";" separator character has been removed from the final comment embedded into audio file
- Lock panel and Disarmed tracks are kept in case of Cantar Power down
- Detection of the SD card Lock switch.

- If target free size is lower than the size of selected takes, user is still allowed to perform the backup.
- Improperly closed audio files (power failure, media error, system error) may be fixed in the AUDIO BROWSER position by pressing F2 key.
- Direct access to IP address without confirmation.
- Headphone stay active in all positions of the main selector (except in stop and in Grid)
- New shut-down screen
- Bug fixes

FW V1.80 - September 29, 2015

- New features
- AES42 control (KM D) of internal digital mic parameters
- Digital gain on AES42 inputs -inf +36dB
- Digital gain on AES3 inputs -inf +12dB
- Drive (Internal SSD and SD card) access from computers through Ethernet socket
- EQ display frequency response
- EQ log frequency adjustment and field navigation improved
- EQ maximum frequency set to 16 kHZ
- Meta data edit field behaves like full fields edit
- New units for input delay setup (ms / meters / samples).
- Factory test procedure added in a hidden technical menu
- Ready for the new 12 sliders USB Cantarem.
- Quick routing mode from the IN-GRID screen (Does not cover all combinations). Pressing SOLO T 1 then solo MIC 3, the result is : Mic 3 is added to be recorded on track 1
- Bug fixes

FW V1.71 - August 28, 2015

- New features
- Digital filters/EQ on analog inputs
- Delay on inputs
- Into ingrid, routing of mono post fade (P1..P24)
- Into outmaps, highlight a T1..T24 position, press shift+F5 to map post fade (P1..P24)
- Backup of a full project
- MS decoded or balanced in mixdown
- Accurate timecode is maintained for 20 minutes in case of Cantar power down
- Tripple shift provide of contextual help (available only in PPR & solo mic for now)
- Extended PRE REC buffer duration (up to 30s at 48kHz)
- Remote rec through MDR connector/tally

fields editing :

- Up and down key are available for meta data field navigation
- Right key at end of field select next field
- Left key at start of field select previous filed
- Into edit fields (OK -> validate and select next field)
- F4/F6 validate and close the corresponding dialog box
- F5 shortcut for take type indicator is available
- Shift+ok switch insert/overwrite mode
- Update play screen metadata field after edition from play screen using F4
- Bug fixes

FW V1.62 - July 22, 2015

- New features
- Media formatting improved for better record performance specially with monophonic files (80% faster).
- Audio file larger than 2 GB are now supported (in all cases audio files stay smaller than 4GB).
- Beep Routing to all selected outputs (Menu Audio / Beep routing)
- Track Solo button + Left Crown accessible while assignation in Play
- Reset parameters to factory settings (Menu Technical / Reset Factory)
- Attribute reset more verbose

FW V1.61 - June 15, 2015

- New features
- Audio stream control has been improved and new warning messages have been added

FW V1.53 - June 12, 2015

- New features
- New control added on audio stream integrity.
- Bug fixes

- **FW V1.52 - June 10, 2015**

- New features
- Mic inputs have now 3 predefined inputs level Mic level / High level(-26dB) / line level(-38dB).
- +6dB gain booster with phantom mics available
- Fader scale modification
- +12dB mixdown capability
- Inputs (mics, lines ...) directly routed on line out are active in all position except in STOP.
- Switching to REC position, RECORD will start even if a media is missing.*Note: A monophonic audio file record is mandatory on one of the remaining media.*
- In browser position a snap report (F6) have been added
- Avid compatibility on track name into bext for numbers over 9
- At start up, with new day accepted, Tape id is automatically setup as MMDD (month-day)
- In edit fields, SHIFT+Left arrow erase filed content without confirmation

FW V1.44 - May 25, 2015

- New features
- Monophonic file naming change to _NN (NN start at 01 for first track to _24 for last track) for avid monophonic import compatibility.
- User warning added in case of trouble with the recorder
- Reverse phase identifier (bar at the bottom of the vu-meter)
- Digital out in headphone during setup
- Pdf track name repeated on sequence change
- Bug fixes

FW V1.43 - May 01, 2015

- New features
- Slate mic level adjustment.
- In solo, unused vumeter are darker.
- Bug fixes