NAGRA ARES-BB MANUAL

Version: Jun. 2004

WARNING: The ARES-BB has a built-in charger (charge current = 300mA).
NiCd or Ni-Metal-Hydride cells can be used.

WHEN USING THE EXTERNAL POWER SUPPLY, CHECK THAT THE CHARGER SWITCH INSIDE THE BATTERY COMPARTMENT IS "OFF" BEFORE INSTALLING DRY CELLS.

PN 2019 615 150

CONTENTS   **Page**

1DELIVERED WITH.

1 Jack 6.3 mm (90 degrees) connector, 1 user manual, 1 USB cable, 1 CDR with Ares Import and Digigram Import software.

2 INSTALLING THE BATTERIES.

On the rear side of the machine, loose the 2 "thumb" screws until the battery box can be removed. To open the battery compartment, slide the inner cover until it is fully open. If dry cells are used verify that the battery compartment switch is in the OFF position. Install the 6 "AA" cells observing the polarity and replace the inner cover. Lock the battery compartment back to the machine.

Important note:

When using the external power supply, check that the switch on the battery compartment is set to "OFF" before installing dry cells.

In the OFF position, the charger circuitry is not activated and if an external power supply is connected, the machine will run from external supply and not from the batteries.

When an external power supply is connected to the Ares-BB, the green led turns on. During charge, the yellow led turns on. The Ares-BB charges with approx. 300 mA. Charging stops automatically (yellow led starts blinking slowly and finally turns off). If the charger switch is turned on and no batteries are installed while the machine receives external power, the yellow led starts blinking fast.

3 INSTALLING THE FLASHCARD.

Insert the flashcard on the right side of the machine and push it fully home (eject button fully out). Compact flash cards must be installed using an adapter.
NOTE: The software version, for the Ares-BB V2.00 and higher allows using linear and Strata flash cards, ATA cards, compact flash cards and Micro-drive cards.

Important note:

When running the machine in the FAT 16 mode, only ATA, Compact flash cards and Micro-drive cards can be used.

4 POWER ON, POWER OFF.

Press the "**POWER ON**" button (1) for 1 second and the machine switches on. To switch "**OFF**" the machine push the same button again for 1 second.
Attention: the machine cannot be switched OFF during RECORD.

5 CONTRAST.

If the display contrast is not set properly at power on, switch off the machine, keep the "**RIGHT**" arrow key (12) pressed while turning on the machine. This brings the machine directly to the contrast menu. Adjust step-by-step with the "**UP**" (9) or "**DOWN**" (11) arrow keys to increase or decrease accordingly. Once the correct contrast is found, press the "**CENTER**" key (13) to store the new setting in the machine. Press the "LEFT" arrow key (10) to quit the menus. The factory setting has the value "32".

6 BUTTONS.

1	Power ON / OFF	9	Up arrow key or increase output level key
2	Record, Marker key	10	Left arrow key
3	Rewind, skip backwards key	11	Down arrow key or reduce output level key
4	Stop key		
5	Play key	12	Right arrow key
6	Forward, skip forwards key	13	Other menu or execute key
7	Reduce input sensitivity or playback level key	14	Marker
		15	Keypad lock
8	Increase input sensitivity or playback level key		

7 ARES-P II or ARES-BB DIFFERENCES.

ARES-P II & ARES-BB: Is equipped with a USB 1.1 connector. In the "FAT 16" mode only, the machine is recognized as an external removable hard drive. It also has a built-in speaker, Phantom power, Vortex filter and accepts compact micro-drives up to 2 GB.

The ARES-BB is functionally identical to the ARES-P II. It offers the USER XLR input & output connectors and an ergonomic table-top operation. It gives a 20% increase in autonomy thanks to the additional batteries and can offer a Lithium-Ion pack as an alternative. The ARES-BB cannot use the NP-MICE/NP-MICES Electret microphone capsules.

Without any software options installed, the card is formatted "FAT 16" and is directly compatible with Windows or Mac O/S. The recorded files are Broadcast Wave Format (xxx.wav). Only PCM can be recorded (not compressed).

If equipped with the software option I, the machine emulates also an ARES-P. In the "NFS" (Nagra File System) mode, compressed MPEG files can be recorded. In the "FAT 16" mode, the maximum bit rate becomes 384kb/s 48kHz stereo.
Only ATA, Compact flash or Micro-drive cards can be used in the "FAT 16" mode.

If equipped with software option I & II, the machine also emulates an RCX220. This means that in the "NFS" mode, via USB, Windows recognizes the machine as an external soundcard and in the "FAT 16" mode as an external removable hard drive.

Important note: When making linear recordings (WAV) the range of media that can be used is restricted. The card must be capable of writing data at high speed. A stereo recording at 48kHz requires a data rate of 2 x 16 bits x 48000 sampling frequency divided by 8 bits per Byte gives a data rate of 192 kBytes per second.

8 FIRST TIME SWITCH ON.

Verify first that the keypad lock switch (15) is in the left position. Once the batteries have been installed and turning on, the machine will sw itch on in the FAT 16 mode. The display will show a picture of a cylinder with the word "FAT" for several seconds.

To change the mode to "NFS" mode (if the software #1 package is included) jump to page 15 Paragraph 14.3.4 PROGRAM SELECT before continuing.

9 MAIN DISPLAY DESCRIPTION.

Attention: At power on, the display below is shown, but without the level bargraph indicator on the right-hand side. This bargraph appears when the "**+**" or "**-**" button (8 or 7) is pressed. It disappears after a few seconds to improve the clarity of the display.

Status of the ARES-BB
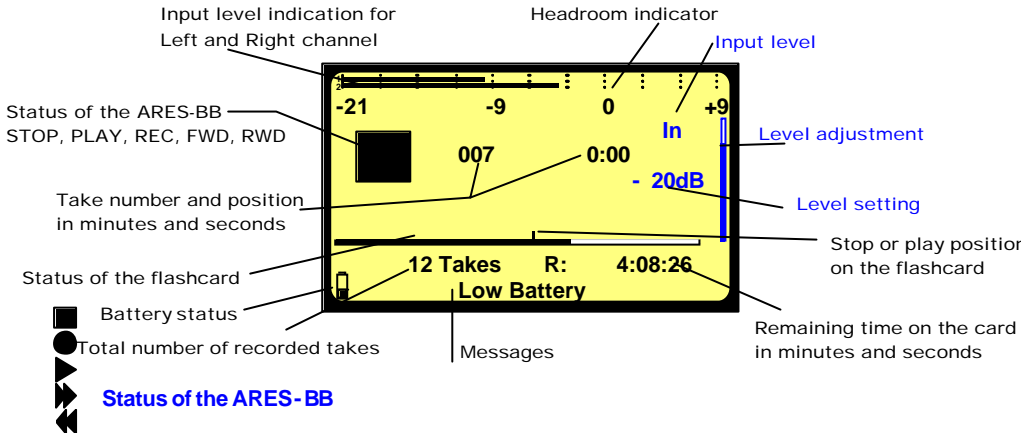
"**STOP**"	ARES-BB is in STAND BY mode
"**RECORD**"	ARES-BB is in RECORD mode
"**PLAY**"	ARES-BB is in PLAY mode
"**SEARCH FORWARD**"	ARES-BB is playing fast forwards
"**SEARCH BACKWARD**"	ARES-BB is playing fast backwards

Take number and position in minutes and seconds
This is the physical playback position. The example shows that playback will start at the beginning of take 7 (0 minutes, 0 seconds).

Stop or play position on the flashcard
The marker shows the exact playback position, take 7 at 0 minutes, 0 seconds.

Status of the flashcard
The full length of the bargraph corresponds to the total memory of the inserted flashcard. The black area shows how much memory was already used for recording. The clear area shows the remaining memory.

Total number of recorded takes
This area shows the total number of takes already recorded on the flashcard.

Remaining time on the card in minutes and seconds

This indicates how much recording time is left on the card. In this example, it shows 8 minutes, 8 seconds. If the bit-rate is changed, it will automatically be updated. Example 8:08 if 128kb/s was set, it will become 16:16 if the bit-rate was changed to 64kb/s.

Input level indication for Left and Right channel
In the stereo mode, bargraph 1 corresponds to the left channel and 2 to the right channel. In mono mode, both bargraphs indicate the input level. From 0dB, the bargraph shows the headroom up to +9dB. +9dB corresponds to "FF" for the AD converter.

Messages
This is the area for messages, such as "**LOW BATTERY**", **CARD FULL**, **NO CARD**, etc.
A beep in the headphones corresponds to an arrival of a message on the display.

Battery status
When the battery icon shows full, it indicates the batteries are fully charged. Full corresponds to a voltage measurement of 7.54V or higher. When the voltage drops below 6V, a warning beep is heard in the headphones and the message **LOW BATTERY**" appears in the display. When the voltage drops below 5.1V the machine automatically switches off.
When the battery icon disappears during a USB connection in the "FAT 16" mode, it means that the machine is powered by the PC and not anymore by the internal batteries or external power supply.

Level Adjustment
This bargraph only appears on the screen during the adjustment of the input sensitivity, the output level or the ALC threshold adjustment. If no adjustment is made it will disappear after a few seconds. Simultaneously, the level setting in dB's as well as the kind of adjustment "**IN**", "**OUT**" or "**THR**" will appear on the display.

10 RECORD (2), REWIND (3), STOP (4), PLAY (5), FORWARD (6), MARKER (14) KEYS

10.1 RECORD KEY (2)

For "NFS" mode.
A valid formatted card must be fitted and the machine switched ON. To start recording, the "**RECORD**" key (2) can be pressed, even if the machine was in "**PLAY**" mode or is in one of the sub-menus. The "**RECORD**" key will not work if the machine is deleting a take or formatting the card.
If during record the "**RECORD**" key is pressed again, a new take is automatically created. This function is used for "**MARKING**" the audio during record.

For "FAT 16" mode.
During record or play, the "MARKER" key (14) can be pressed on the fly. This will add a marker inside a single file.

During record, the front red LED turns ON.

During record, the "**POWER**" key is disabled.

10.2 REWIND KEY (3) AND FORWARD KEY (6)
These keys have two functions called "**SKIP**" backwards or forwards and "**REWIND**" or "**FORWARD**".

SKIP.
For "NFS" mode.
In "**STOP**" mode: To jump take-by-take, pressing briefly on the "**<<**" or "**>>**" keys will decrement or increment the take position.
In "**PLAY**" mode: To jump to other takes on the card, press twice in quick succession the "**<<**" or "**>>**" to decrement or increment the take number.

IMPORTANT: Only takes with the same compression as the current settings of the machine can be played back using the SKIP buttons. All other takes with a different compression cannot be selected.

For "FAT 16" mode.
If the recording contains "markers" then these keys will jump to the next (or previous) marker position.

FORWARD SEARCH & BACKWARD SEARCH.
This function can be executed in "**STOP**" or "**PLAY**" mode. Once the "**>>**" or "**<<**"key is pressed for more than 0.5 seconds, the machine starts '**FORWARD or BACKWARDS SEARCH**' at 4 times nominal speed. The longer the button is pressed, the search speed increments up to 128 times nominal speed. When the button is released, the search stops and it returns to its previous function (STOP or PLAY).

10.3 STOP KEY (4)
When this key is pressed during record or playback, the machine stops recording or playing and returns to the "**EE**" mode.
The "**EE**" mode means that the input signal is fed to the output. This button can also be used as the "**PAUSE**" key during playback.

10.4 PLAY KEY (5)
After a record session pressing the "**PLAY**" key, immediately plays back the last recorded take. After power on pressing "**PLAY**" will resume playback from its last position before power down, as long as the batteries are installed.

11 LEVEL ADJUSTMENT

11.1 OUTPUT LEVEL ADJUSTMENT
During the "**STOP**" or "**RECORD**" mode, the output level can be adjusted by the "**UP ARROW**" key (9) to increase or the "**DOWN ARROW**" key (11) to decrease. Once one of these keys is pressed, an additional bargraph on the right side of the display appears, indicating "**OUT**", showing the current position of the adjustment. "**0dB**" corresponds to maximum output level, "**-59dB**" corresponds to minimum output level and "**OFF**" corresponds to mute of the output signal.
The setting of the output level can also be stored in the machine in such a way that every time the machine is switched ON, it will take the same "**DEFAULT LEVEL**" output adjustment (See "**SETTINGS MENU, OUTPUT LEVEL**"). During the "**PLAY**" mode, the output level can be adjusted either by the "**UP & DOWN ARROW**" keys (9 & 11) or the "**+**" and "**-**"keys (8 & 7).

11.2 INPUT LEVEL ADJUSTMENT
During "**STOP**" or "**RECORD**", the input level can be adjusted by pressing the "**+**" (8) or "**-**" (7) keys to increase or decrease the input sensitivity. Once one of these keys is pressed, an additional bargraph on the right side of the display appears, indicating "**IN**", corresponding to the current setting. "**74dB**" corresponds to maximum input gain, "**133dB**" corresponds to minimum input gain and "**OFF**" corresponds to muting of the input signal. If the input sensitivity is adjusted for "**74dB**", it means that if the input signal at 74dB SPL will be recorded at a 0dB level.

Level Adjustment in the stereo mode (FAT 16 only)

When in the sub menus the "**MIKE**" is set to "**STEREO**", the left and right channel can be adjusted separately. Holding the left arrow key (10) and adjusting the input sensitivity will only adjust the left channel. Holding the right arrow key (12) and adjusting the input sensitivity will only adjust the right channel. When the input sensitivity between the 2 channels is not identical, the display will automatically show both input sensitivity levels.
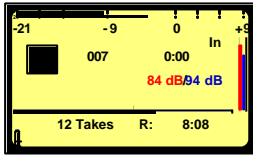
As shown on the picture, the red indications correspond to the left channel, the blue indications correspond to the right channel. If no left or right arrow is pressed during the input sensitivity adjustment, both channels will be adjusted simultaneously and keep the same delta until one of the channels is reaching max. or min. level.

11.3 THRESHOLD ADJUSTMENT

The "**THRESHOLD**" adjustment permits selection of the size of the compression zone. It is the lower limit setting of the zone that will be automatically amplified during a silent period. The "ALC" works in a range of 42dB (from 74dB to 116dB). If the "**THRESHOLD**" is set to 104dB, signals of 104dB and higher (max. 116dB) will be recorded at 0dB level (between –2dB and –6dB for a stable signal). A signal of 90dB will be recorded at –14dB (104dB – 90dB). If "**ALC**" (Automatic Level Control) is "**ON**" and the "**ALC THRESHOLD**" is set to "**USING +/- KEYS**" (see SETTINGS MENU, ALC THRESHOLD), the threshold during "**RECORD**" or "**STOP**" can be adjusted by pressing the "**+**" or "**-**" keys (8 or 7). Once one of these keys is pressed, an additional bargraph on the right side of the display, indicating "**THR**" appears, showing the current position of the adjustment. "**74dB**" corresponds to maximum threshold level, "**104dB**" corresponds to minimum threshold level.

12 CENTER & ARROW KEYS

By pushing the '**CENTER**" key (13), the machine gives access to the "**DIRECTORY**", "**TOOLS**" and "**SETTINGS**" sub-menus. Using the "**ARROW**" keys (9 to 12), you navigate between those sub-menus. To move back to the initial display, press the "**LEFT ARROW**" key (10) (except in the "**DIRECTORY**" where "**CENTER**" key (13) needs to be pressed first to return to the sub-menus).

13 LED MODULOMETER

The LED modulometer shows the sum of both channels when the machine is set to Stereo operation. The three leds give a quick visual indication in three colors, green, yellow and red. They light at levels of – 21, -9 and 0 dB respectively. Normal operation is with the green and yellow led on and the red led flashing occasionally on signal peaks.

14 MAIN MENU.

By pressing the "**CENTER**" key (13), the main menu appears on the display.
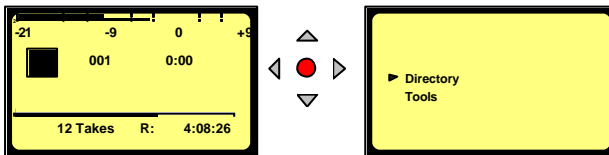
The "**DIRECTORY**" gives access to all the information of the recorded files on the flashcard.

If "**TOOLS**" is selected, other sub menus can be selected: "**DATE & TIME**", "**CARD FORMATTING**", "**FORMAT REPAIRING**", "**PROGRAM SELECT**" and "**VERSION**".

If "**SETTINGS**" is selected, several other sub-menus can be selected such as: "**OUTPUT LEVEL**", "**INPUT FILTER**", "**BEEP**" and "**COMPRESSION**" etc.

Scrolling through the different sub-menus is done by pressing the '**DOWN ARROW**" (11) or '**UP ARROW**" (9) keys.
Escaping from the sub-menu's is done by pushing the "**LEFT" ARROW**" key (10).
Entering a sub-menu is done by pushing the "**RIGHT ARROW**" key (12).
Inside a sub-menu, execute the selected setting by pressing the "**CENTER**" key (13).

14.1 DIRECTORY MENU.
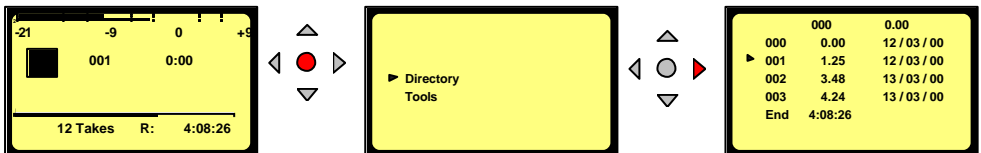
By using the "**UP**", "**DOWN**", "**LEFT**", "**RIGHT ARROW**" keys (9, 11, 10, 12), once "**DIRECTORY**" has been selected, it becomes possible to scroll vertically and horizontaly to view all the recorded files and their specifications.

If the marker has a "▶" shape, it means that the take compression is the same as the current settings of the machine.

If the marker has a "**>**" shape, it means that the take compression is different from the current settings of the machine.

In the latter case, if the "**PLAY**" button" (5) is pressed, the corresponding compression will be automatically loaded in the DSP, and play starts.

If the marker is in front of one of the audio takes, the "**PLAY**", "**STOP**", "**FWD**" and "**RWD**" function keys (3,4,5 &6) become active.

If the "**RECORD**" button (2 or 2bis) is pressed, the display returns to the main screen and the recording starts.

14.1.1 HORIZONTAL SCROLLING.

Use the **"LEFT"** (10) and **"RIGHT"** (12) **"ARROW"** keys.

NOTE Titles can only be added in the "NFS" mode and are not existing in the "FAT 16" mode

Selected file No

Current position inside the selected file

File No 001, length 1minute 25 seconds, recorded March 12, 2000

	002	**1.30**
000	**0.00**	**12 / 03 / 00**
001	**1.25**	**12 / 03 / 00**
▶ **002**	**3.48**	**13 / 03 / 00**
003	**4.24**	**13 / 03 / 00**
End	**4:08:26**	

Format file, created March 12, 2000

Remaining time on the card at the selected compression

End of list
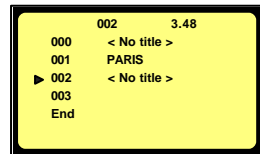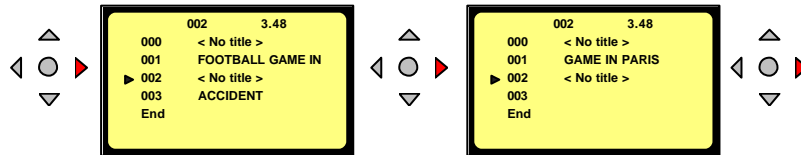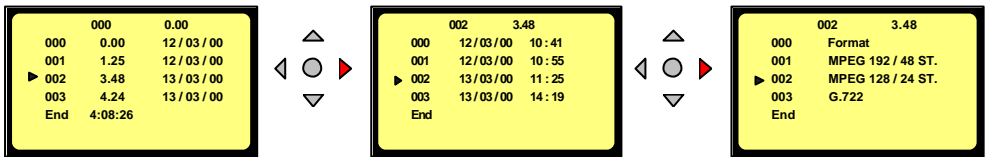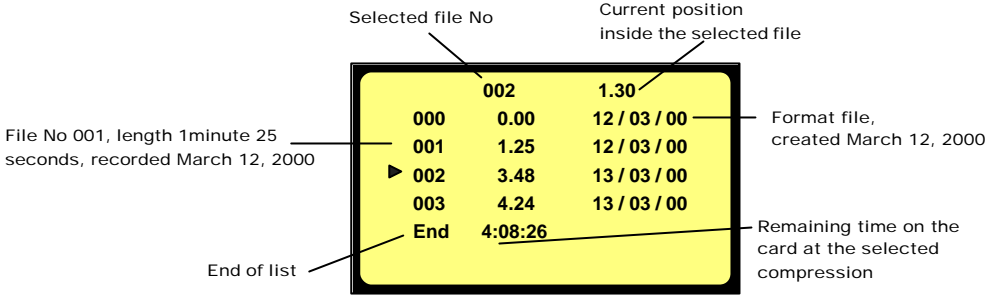
The display shows the length, the date of recording, the time at the record start, the type of compression and the title of each take. The title can be maximum 31 characters long and scrolls over the display in 3 stages.

14.1.2 VERTICAL SCROLLING.
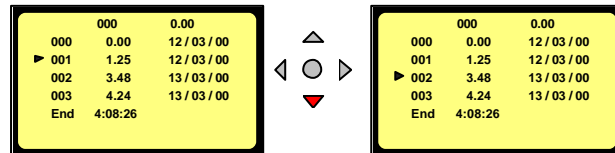
Pushing the "**UP**" (9) or **"DOWN"** (11) **"ARROW"** keys makes the vertical scrolling.

The take number 000 is the format take. It shows the time and date when the card was last formatted.

In the "FAT 16" mode, take 000 does not exist.
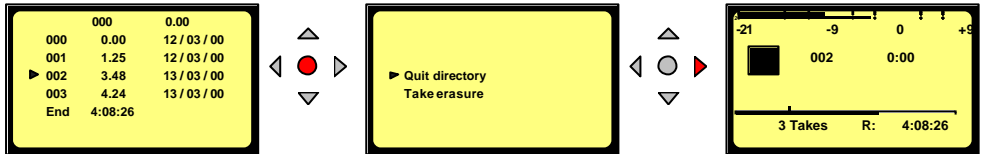
14.1.3 QUIT DIRECTORY.
To escape from the "**DIRECTORY**", press the "**CENTER**" button (13) once followed by the "**RIGHT**" arrow key (12). The display returns to "**STATUS**" display.

14.1.4 TITLING, "NFS" MODE ONLY.
Titles can be added to the format file (000) and each sound file for identification purposes.
In the "**DIRECTORY**", select the take for a new title.
Press the "**CENTER**" key once and the following display appears:

Select "**TAKE TITLING**".
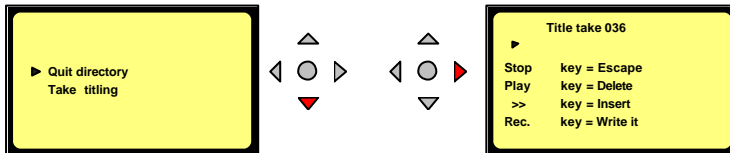
Pressing the "**STOP**" key returns the display to the "**DIRECTORY**".
Characters can be selected with the "**UP**" and "**DOWN**" keys. To enter the selected character, press the "**CENTER**" key.
To delete a character, highlight the corresponding character with the "**LEFT ARROW**" or "**RIGHT ARROW**" keys and press the "**PLAY**" key.
To insert a character, highlight the corresponding character for the insertion area and press the "**>>**" key. All characters from the highlight position will be shifted one space.
To record the title on the flashcard, press the "**RECORD**" key once.

ATTENTION:
Once a title is added to a recording, it cannot be altered in any way on a linear flash card. Titles on ATA cards can be modified. If during titling, the "**RECORD**" key is pressed twice, the title will be recorded and the machine starts a new audio record.
If during "**TITLING**" the "**RECORD**" button on the side of the machine is pressed, audio record starts immediately and the title is not recorded.

14.1.5 ERASING TAKE(S), "NFS" MODE ONLY.
Example: take 2 and higher take numbers
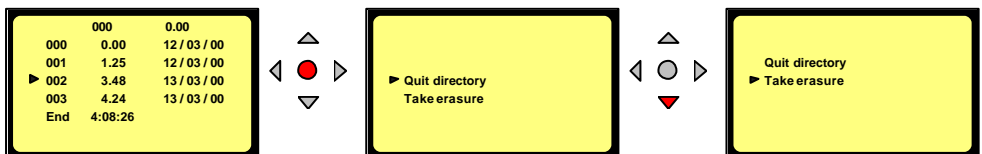
To delete one or more takes, select in the directory the lowest take number that needs to be deleted, press the "**CENTER**" button (13) and select the "**TAKE ERASURE**" menu. Once the selection confirmed by pressing the "**CENTER**" button (13), the erasing starts.
To escape from the sub-menu, press the "**LEFT**" (10) or "**RIGHT**" (12) key once.

NOTE: Erasing individual takes in the middle of the "DIRECTORY" is not possible. The erase feature will always erase from the selected take to the end of the card.

14.1.6 DELETE, "FAT 16" MODE ONLY.
Any take from the directory can be deleted without influencing other takes.

14.1.7 DELETE TO END, "FAT 16" MODE ONLY.
Erase the selected take and all takes after until the end of the card.

14.1.8 RENUMBER, "FAT 16" MODE ONLY.
Permits after deleting file(s) to renumber the files from the selected file until the end of the card.

14.1.9 RENUMBER ALL, "FAT 16" MODE ONLY.
Permits after deleting file(s) to renumber all the files from file 1 until the end of the card.

14.2 LOUDSPEAKER.
This switches "ON" or "OFF" the internal loudspeaker.
NOTE: The internal loudspeaker can only be used in the playback mode.

```
        Loudspeaker

   Off
 ▶ On


       On
```

14.3 TOOLS.

```
        Tools

   Date & Time
 ▶ Card formatting
   Format repairing
```

```
        Tools

   Format repairing
 ▶ Program select
   Version
```
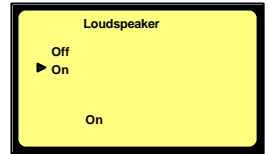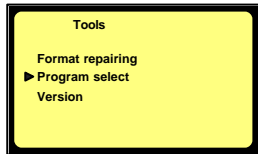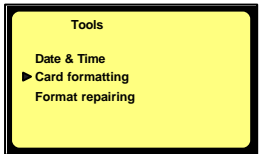
"**Program select**" and "**Format repairing**" does not appear if the machine is not equipped with software option I.

several sub-menus are available.

14.3.1 DATE AND TIME.
Selecting "**DATE & TIME**" gives access to change the time and date of the real time clock. Once the "**CENTER**" button (13) is pressed, the first digit starts blinking. The number can be modified by pushing the "**UP**" or "**DOWN**" (9 or 11) keys. Pressing the "**RIGHT**" arrow key (12) jumps to the next digit. Once the last number is introduced, the clock starts running. (Hours, Hours, Minutes, Minutes, Seconds, Seconds)
Introducing the date uses the same procedure.
Once the last number is introduced, the date is memorized.
To escape from the sub-menu, press the "**LEFT**" (10) or "**RIGHT**" (12) key once.

14.3.2 CARD FORMATTING, "NFS" MODE ONLY.
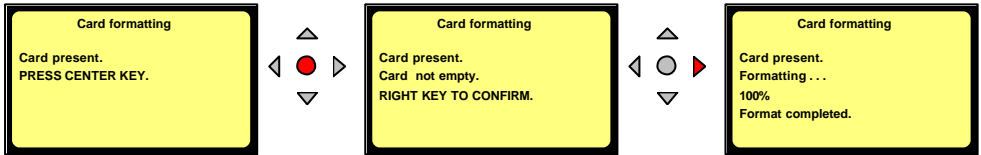
```
   Card formatting              Card formatting              Card formatting

Card present.                Card present.                Card present.
PRESS CENTER KEY.            Card  not empty.             Formatting . . .
                            RIGHT KEY TO CONFIRM.         100%
                                                         Format completed.
```

Execute by pressing the "**RIGHT**" arrow key (12) and the card formatting will begin.
Once the formatting is finished, the display returns to the previous menu.
To escape from the sub-menu, press the "**LEFT**" (10) or "**RIGHT**" (12) key once.
When the format command is executed, "**CARD NOT EMPTY**" appears if one or more takes are on the card (including format take 000).

14.3.3 CARD FORMATTING, "FAT 16" MODE ONLY.
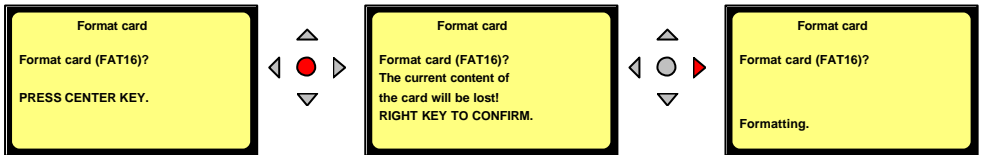
```
      Format card                  Format card                  Format card

Format card (FAT16)?         Format card (FAT16)?         Format card (FAT16)?
                            The current content of
PRESS CENTER KEY.           the card will be lost!
                            RIGHT KEY TO CONFIRM.         Formatting.
```

Execute by pressing the "**RIGHT**" arrow key (12) and the card formatting will begin.
Once the formatting is finished, the display shows "**Done**".
To escape from the sub-menu, press the "**LEFT**" (10) or "**RIGHT**" (12) key once.

14.3.4 FORMAT REPAIRING, "NFS" MODE ONLY.

If during record, the card was removed (or batteries removed), an "**UNCLOSED FILE**" will be left on the card. This utility allows the user to close this file correctly.
"**FORMAT CORRUPTED**" will be shown.

```
-21          -9       0      +9

  ■        003     0:00

FORMAT CORRUPTED
```

```
   FORMAT REPAIRING            FORMAT REPAIRING            FORMAT REPAIRING

UNCLOSED FILE.              UNCLOSED FILE.              NO FORMAT PROBLEMS.
RECOVER ?                   RECOVER ?

PRESS CENTER KEY.           RECOVER COMPLETE.
```
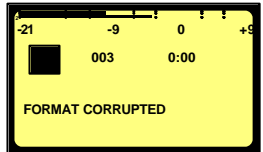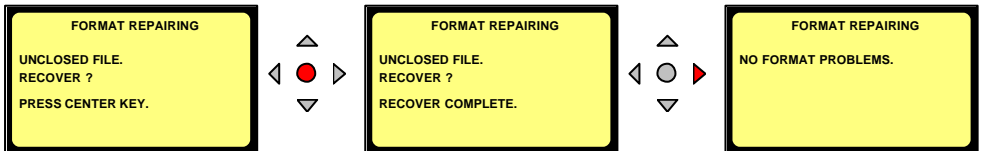
Follow the instructions on the display to recover the take. The last recorded file will be closed at the end of the memory of the card. The remaining time becomes 0 min. 0 sec.
To escape from the sub-menu, press the "**LEFT**" (10) or "**RIGHT**" (12) key once.

14.3.5 PROGRAM SELECT.

```
    PROGRAM SELECT

  FAT 16 FILE SYST.
► NAGRA FILE SYST.


    NAGRA FILE SYST.
```
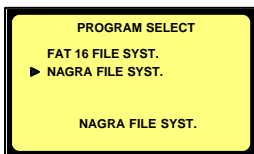
The program select permits to swap between the 2 recording modes "FAT 16" mode or "NAGRA" mode ("NFS") compressed files.
This sub menu does not appear if software option I is not installed.
To escape from the sub-menu, press the "**LEFT**" key (10) once.

14.3.6 CONTRAST.

```
        Contrast
      TEST 34  ▭▬▭

 Current contrast = 32

 Default contrast = 33
```
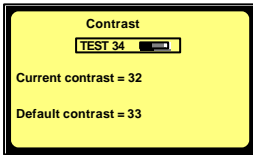
This menu permits to adjust the contrast of the display. Pressing the "**UP**" (9) or "**DOWN**' (11) key changes the current contrast. Pressing the "**CENTER**" key (13) stores the contrast settings as a default value at power on.

To escape from the sub-menu, press the "**LEFT**" key (10) once.

14.3.7 VERSION.

```
          ARES-BB
       S/N :  123456789

 Soft (FAT): Vx.xx
 Audio board: 2
 Software options:
 #1   #2
```
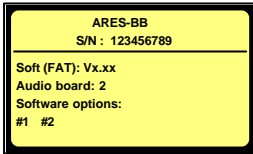
Selecting the "**VERSION**" sub-menu shows the serial number of the recorder as well as current version of the software installed. The version shown in this picture corresponds to the version for the "**FAT 16**" mode. Turning on the machine in the "NFS" mode will show the "**NFS**" version.

To escape from the sub-menu, press the "**LEFT**" key (10) once.

14.4 TEMPLATES, "FAT 16" MODE ONLY.

```
         Templates
      Recall 4
    ► Store  1
      Store  2
```

The Ares-BB can store and recall 4 different templates.
To have an overview of the different sub-menu settings that can be stored, refer to the menu tree at the end of this manual. Only menu settings with a red square against it can be stored.

```
 xxx                    ▌
```
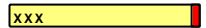
To use a template, setup the machine as required, then go to "**TEMPLATES**", select "**STORE 1**" and press the execute key (13). The message "**DONE**' will appear. If now any changes were made in the setup, you can go to "**RECALL 1**" and press the execute key once again. This returns the machine to the settings stored in template 1.

14.5 SETTINGS MENU.
The settings menu gives access to several sub-menus.

```
        Settings
   Input filter
 ▶ ALC
   ALC threshold

        On
```

```
        Settings
   ALC
 ▶ ALC threshold
   ALC speed

   Using +/- keys
```

```
        Settings
   ALC threshold
 ▶ ALC speed
   Beep

       Normal
```

```
        Settings
   ALC speed
 ▶ Beep
   Compression

        On
```

```
        Settings
   Beep
 ▶ Compression
   Backlight

    MPEG 128/48
```

```
        Settings
   Compression
 ▶ Backlight
   Output level

     Automatic
```
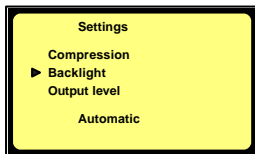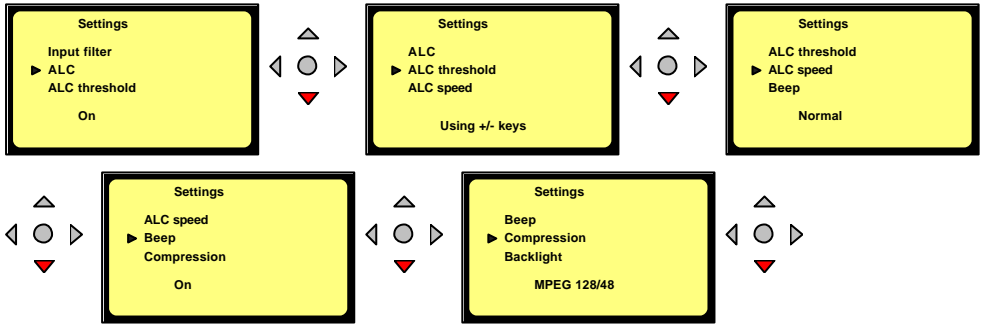
The current setting of each is always shown at the bottom of the display. In "**NFS**" mode, "**COMPRESSION**" is shown, in the "**FAT 16**" mode, the name compression is replaced by "**FILE FORMAT**".

14.5.1 INPUT FILTER.

```
        Input filter

 ▶ Flat
   Low cut

        Flat
```
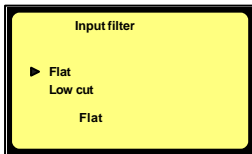
Two possibilities are available: "**FLAT**" or "**LOW CUT**".

14.5.2 ALC.

```
          ALC

 ▶ On
   Off

        On
```
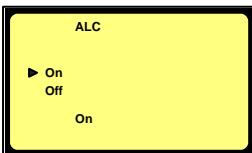
From this sub-menu, the "**ALC**" can be switched "**ON**" or "**OFF**". It is highly recommended to switch on the "**LOW CUT**" filter if "**ALC**" is turned ON.

14.5.3 ALC THRESHOLD.

```
       ALC threshold

   -74 dB
 ▶ Using +/- keys

     Using +/- keys
```
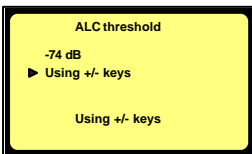
The "**THRESHOLD**" can be adjusted from −104 dB to −74 dB. In this case the "**+**"key (8) and the "**-**"key (7) are disabled. If "USING +/- KEYS" is selected, the "**+**"key (8) and "**-**"key (7) are enabled during "**STOP**" and "**RECORD**" mode, which allows the "**THRESHOLD**" level to be adjusted without returning in the "**SETTINGS**" menu.

14.5.4 ALC REACTION SPEED.

```
        ALC speed
   Fast
 ▶ Normal
   Slow

        Normal
```
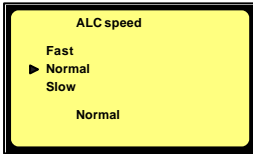
The "**ALC SPEED**" can be set to a "**FAST**", "**NORMAL**" or "**SLOW**" reaction time.

14.5.5 BEEP.

```
          Beep
   Off
 ▶ On


          On
```
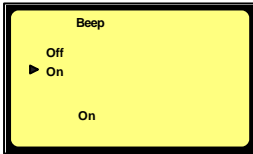
The beep signal is only available at the output and is not recorded. It can be switched "**ON**" or "**OFF**".

14.5.6 COMPRESSION, "NFS" MODE ONLY.

```
       Compression
   MPEG 64/16
 ▶ MPEG 128/48
   MPEG 128/24

     MPEG 64/48
```
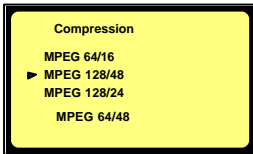
17 different types of compression can be selected.
Use the "**UP**" (9) or "**DOWN**" (11) arrow keys to select the type of compression to be used and press the "**CENTER**" key (13) to select one.
The display returns to the previous menu.

Example : MPEG 64/48 stands for: MPEG 1Layer II MONO compression at a total bit-rate of 64kb/s using a sampling frequency of 48kHz.
MPEG 192/48 ST stands for: MPEG 1 Layer II STEREO compression at a total bit-rate of 192kb/s (96kb/s per channel) using a sample rate of 48kHz.

14.5.7 FILE FORMAT, "FAT 16" MODE ONLY.

```
        File format
   PCM 48K
 ▶ PCM 44K1
   PCM 32K

       MPEG 256/48 St.
```
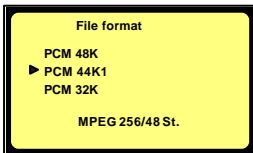
The Ares-BB without any soft option can only record in a linear mode (not compressed). If the soft option I is installed it includes also the selection of MPEG compression and this time up to 384kb/s.

14.5.8 BACKLIGHT.
The backlight can be set to always "**OFF**", always "**ON**" or "**AUTOMATIC**".
In the "**AUTOMATIC**" mode, the backlight turns on for 15 seconds, each time a key is pressed.

```
        Backlight
   Off
 ▶ On
   Automatic

          On
```

14.5.9 OUTPUT MODE.

```
        Output mode

  ▶ Always on
    Only in playback

       Always on
```
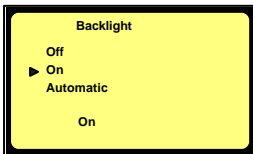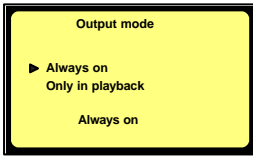
This sub-menu permits to turn on or off the sound to the output connector in the case that a little speaker is used instead of a headphone. "**ALWAYS**" means that the output sound is always present. "**ONLY IN PLAYBACK**" means that the output sound is present only during playback but not present in the record mode or EE mode.

14.5.10 OUTPUT LEVEL.

```
         Output level

  Current level =        - 6 DB
  Default level  =        - 9 DB
```
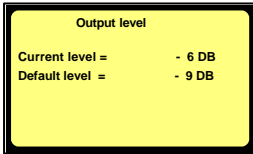
The "**CURRENT LEVEL**" corresponds to the setting before entering the sub-menu. To modify this level, press the "**UP**" or "**DOWN**" keys (9 or 11).
The "**DEFAULT LEVEL**" is the level that has been saved in the memory. To modify the "**DEFAULT LEVEL**" to the value of the "**CURRENT LEVEL**", press the "**CENTER**" Key (13). The default value will be remembered even if the unit loses power.

14.6 AUTO RECORD, "FAT 16" MODE ONLY.

```
        Auto record                          Auto record
    Mode                                 Trigger level
  ▶ Trigger level                      ▶ Trigger delay
    Trigger delay                        Stop delay

       50 dB SPL                            0.0 sec.
```
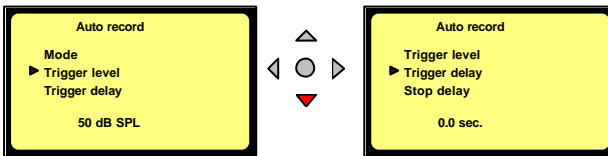
The "**AUTO RECORD**" menu permits to turn on or off the auto record mode. This mode of recording permits to start a recording automatically depending on the settings of the different parameters described below. Once the parameters set, put the machine in the record mode. The recording will start once the requested level and length of any incoming sound is obtained.

The "**TRIGGER LEVEL**" sub-menu permits to adjust the level detection to start the recording and can be set in steps of 10 dB from 50 dB SPL to 120 dB SPL.

The " **TRIGGER DELAY**" menu permits to adjust the continuous duration or length of the sound level before the recording starts. It can be set from 0.0 seconds to 1 second. Example: if you clap your hands a single time and the start delay is set to 0.1 second, the recording will not start, as the handclap was shorter than 0.1 seconds.

The "**STOP DELAY**" permits to adjust the duration of recording once the sound level drops below the threshold level and can be set from 5 seconds up to 15 minutes or nonstop. Once the delay is passed, the machine will return to the waiting position ready for the next recording

```
  -21       -9        0        +9
            59 dB
   ▪        007      0:00
  Auto

       12 Takes    R:    8:08:50
```
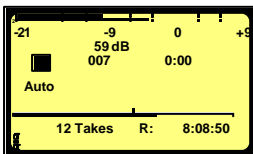
The left picture shows the machine ready to record automatically. The right picture shows the machine in the record mode. The Ares-BB can also be stopped manually by pressing the Stop button (4).

```
  -21       -9        0        +9
            59 dB
   ●        008      0:06
  Auto

       13 Takes    R:    8:08:48
```

14.7 MIKE

```
        Mike

▶ Mike type
  48V, Mike power
```
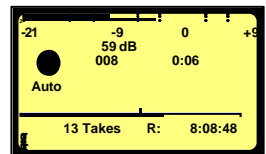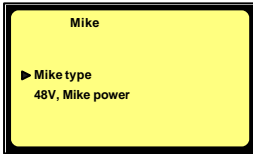
This menu gives access to the selection of the microphone type (routing, Mono or Stereo) as well as the 48V power supply.

14.7.1 48V PHANTOM MIKE POWER.

```
     48V. Mike power

  Off
▶ On


     On
```
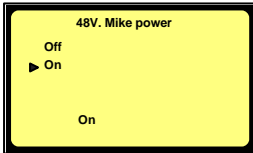
If Phantom microphones are used the 48V must be turned on. This selection needs to be confirmed by pressing the right arrow key. On the main display, the text 48 will appear next to the battery status.

14.7.2 MIKE TYPE, "FAT 16" MODE ONLY.

```
     Mike type

▶ Mono
  Stereo

     Mono
```
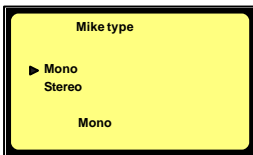
If "**MONO**" is selected and a stereo pair of microphones is connected and the "**FILE FORMAT**" is set to a mono recording, both channels will be mixed and reduced by 3 dB before they are recorded as a mono channel.

If "**STEREO**" is selected and a mono microphone is connected and the "**FILE FORMAT**" is set to a stereo recording, only the left channel will be recorded.

If "**MONO**" is selected and a mono microphone is connected and the "**FILE FORMAT**" is set to a stereo recording, both channels will have the same signal.

15 LOCKING THE SETTINGS.

By pressing a certain combination of keys when turning on the machine, the settings can then be locked step-by-step. This to prevent, the user changing the settings inadverently or otherwise. To obtain the combination code, contact your local **NAGRA** dealer.

```
        Settings
 Beep
 Compression
   Backlight

        MPEG 128/48
```
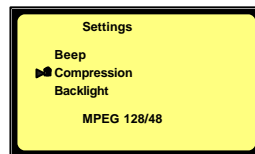
Any sub-menu can be locked by pressing the "**STOP**" button or unlocked by pressing the "**PLAY**" button. When the sub-menu has been locked, a closed padlock appears in front of the selected sub-menu. When the sub-menu has been unlocked, the closed padlock dissapears. To remove the password, switch off and on again the machine.

16 LOCKING THE KEYPAD.

During record or playback the keyboard can be locked by setting the keypad switch (15) to ON. To unlock the keyboard, set the same switch back to OFF. When the keypad is locked, the message "Keypad lock" appears on the display

17 AUTO POWER OFF

When the machine is left in the "**STOP**" mode for 10 minutes, it will automatically switch off. During the last 14 seconds of that period, the beep sounds every second. When any key is pressed, the power counter will be reset.
To disable the auto power off, **from the power off status** , press and hold the center key while pressing the power key.
In the case that the machine is turned on with the auto power disabled, the message "NO AUTO POWER OFF" appears during a few seconds.

18 MESSAGES

18.1 IN "NFS" MODE

"**LOW BATTERY**"	The battery voltage has dropped too low
"**NO CARD**"	No card is inserted
"**FORMAT CORRUPTED**"	Occurs if the card was removed during record or power lost abruptly
"**CARD FULL**"	No more record memory is available
"**INVALID CARD**"	The card is not recognized by the machine
"**UNFORMATTED CARD**"	The card is recognized but not formatted
"**CARD WRITE PROTECTED**"	Write protection switch on the card is ON
"**OPEN WRITE ERROR**"	Defective card or card error
"**WRITE ERROR**"	Defective card or card error
"**CARD NEARLY FULL**"	60 seconds recording time left on the card
"**ERASE COMPLETED**"	At the end of erasure of one or several takes
"**FORMAT COMPLETED**"	At the end of a card formatting
"**CARD READ ERROR**"	Impossible to read the directory due to a defective card or a read error
"**READ ERROR**"	Read error during playback
"**UNKNOWN FORMAT**"	The card is recognized but not the type of format
"**CARD TOO SLOW**"	Depending from the selected file format, some cards do not accept a high recording bit rate
"**BUFFER OVERFLOW**"	Record buffer is full due to a slow card
"**AUTO POWER OFF**"	The machine will switch of in the next 15 seconds
"**NO AUTO POWER OFF**"	Auto power off has been disabled

18.2 IN "FAT 16" MODE

"**WRONG USB VERSION**"	DSP and USB software versions are incompatible
"**CARD FULL**"	No more memory available on the card
"**OPEN WRITE ERROR**"	Defective card or card error
"**WRITE ERROR**"	Defective card or card error
"**READ ERROR**"	Defective card or card error
"**CARD TOO SLOW**"	Depending from the selected file format, some cards do not accept a high recording bit rate
"**DIRECTORY FULL**"	999 takes (files) already recorded
"**CARD NEARLY FULL**"	60 seconds recording time left on the card
"**KEYPAD LOCKED**"	The full keypad is locked
"**AUTO POWER OFF**"	The machine will switch of in the next 15 seconds
"**LOW BATTERY**"	The battery voltage has dropped too low
"**NO AUTO POWER OFF**"	Auto power off has been disabled
"**INVALID CARD**"	The card is not recognized by the machine
"**NO CARD**"	No card inserted in the slot
"**UNKNOWN FORMAT**"	The card is recognized but not the type of format
"**DIR UNUSABLE**"	The "ARESP" folder cannot be created. Example: an ARESP file name was already present
"**CARD READING...**"	Appears during the directory reading
"**CARD BUSY...**"	Appears when the card is busy. Example: delete to end or renumbering
"**USB MODE**"	The card is accessed via USB

19 SOFTWARE UPDATE

A small black 6 pin connector is located just under the flashcard. This connector is a RS232 connector. A special adapter "**NP-PCA**" is needed to connect the RS232 from the machine to a PC or laptop.
When new software from NAGRA becomes available, it can be delivered by Email or it can be downloaded from the NAGRA web site. By using the PC software called "**PuserLoader**" the machine can be updated with the new software version. This takes about 2 to 3 minutes.

20 MENU TREE ARES-BB, "NFS" MODE

Directory

```
      000      0.00
>000      0.00  10/03/03
 001      2.34  12/03/03
 END     48.40
```

Quit directory

Take titling

Take erasure

Title take 001

Stop key = Escape
Play key = Delete
....ETC.

Loudspeaker

Off

On

Tools

Date & Time

Date & Time

HH:MM.SS

DD.MM.YY

Card formatting

Card formatting

Card present
PRESS CENTER KEY.

Format repairing

Format repairing

No format problems.

Program select

Program select
FAT16 file syst.
▶ NAGRA file syst.

NAGRA file syst.

Contrast

Contrast
TEST 34
Current contrast = 32

Default contrast = 32

Version

ARES-P II
S/N: 123456789
Soft (NFS): Vx.xx
Audio board: 2
Software options:
#1 #2

Settings

Input filter

Flat

Low cut

ALC

Off

On

ALC threshold

104 dB SPL

98 dB SPL

92 dB SPL

86 dB SPL

80 dB SPL

74 dB SPL

Using +/- keys

ALC speed		Fast
		Normal
		Slow
Beep		Off
		On
Compression		G722
		MPEG 64/48
		MPEG 64/24
		MPEG 64/32
		MPEG 64/16
		MPEG 128/48
		MPEG 128/24
		MPEG 128/32
		MPEG 128/16
		MPEG 128/48 st.
		MPEG 128/24 st.
		MPEG 128/32 st.
		MPEG 128/16 st.
		MPEG 192/48
		MPEG 192/32
		MPEG 192/48 st.
		MPEG 192/32 st.
Backlight		Off
		On
		Automatic
Output mode		Always on
		Only in playback
Output level		**Output level**
		Current level = -1 dB
		Default level = 0 dB
Mike	48V Mike power	Off
		On

21 MENU TREE ARES-BB, "FAT 16" MODE

TREE CONFIGURATION ARES-BB IN THE CASE OF FAT 16 MODE INCLUDING SOFTWARE OPTION #I

Directory		

001   0.00
>001   0.14 10/03/03
001   2.34 12/03/03
End   48.40

Quit directory

Delete

Delete to end

Loudspeaker

Off

Renumber

On

Renumber all

Tools

Date & Time

Date & Time
HH:MM.SS
DD.MM.YY

Card formatting

Format card
Format card (FAT16)?
PRESS CENTER KEY.

Program select

Program select
▶ FAT16 file syst.
NAGRA file syst.
FAT16 file syst.

Contrast

Contrast
TEST 34
Current contrast = 36
Default contrast = 33

Version

ARES-BB
S/N: 123456789
Soft (FAT): Vx.xx
Audio board: 2
Software options:
#1   #2

Templates

Recall 1

Recall 2

Recall 3

Recall 4

Store 1

Store 2

Store 3

Store 4

A

A

| Settings |

| Input filter | → | Flat |
| | | Low cut |

| ALC | → | Off |
| | | On |

ALC threshold	→	104 dB SPL
		98 dB SPL
		92 dB SPL
		86 dB SPL
		80 dB SPL
		74 dB SPL
		Using +/- keys

ALC speed	→	Fast
		Normal
		Slow

| Beep | → | Off |
| | | On |

File format	→	PCM 48k
		PCM 44k1
		PCM 32k
		PCM 24k
		PCM 16k
		PCM 48k st.
		PCM 44k1 st.
		PCM 32k st.
		PCM 24k st.
		PCM 22k05 st.
		PCM 16k st.

A   **B**   **C**

A   B   C

MPEG 64/48	OPTION #I
MPEG 64/32	
MPEG 64/24	
MPEG 64/16	
MPEG 128/48	
MPEG 128/32	
MPEG 128/24	
MPEG 128/16	
MPEG 128/48 st.	
MPEG 128/32 st.	
MPEG 128/24 st.	
MPEG 128/16 st.	
MPEG 192/48	
MPEG 192/32	
MPEG 192/48 st.	
MPEG 192/32 st.	
MPEG 256/48 st.	
MPEG 256/32 st.	
MPEG 384/48 st.	
MPEG 384/32 st.	

Backlight —— Off

On

Automatic

Output mode —— Always on

Only in playback

Output level ——
Output level
Current level = -1 DB
Default level = 0 DB

A

```
Auto record ──┬── Mode ──────┬── Off
              │              └── On
              │
              ├── Trigger level ──┬── 50dB SPL
              │                   ├── 60dB SPL
              │                   ├── 70dB SPL
              │                   ├── 80dB SPL
              │                   ├── 90dB SPL
              │                   ├── 100dB SPL
              │                   ├── 110dB SPL
              │                   └── 120dB SPL
              │
              ├── Trigger delay ──┬── 0.0 sec.
              │                   ├── 0.1 sec.
              │                   ├── 0.3 sec.
              │                   └── 1.0 sec.
              │
              └── Stop delay ──┬── 5 sec.
                               ├── 15 sec.
                               ├── 30 sec.
                               ├── 1 min.
                               ├── 2 min.
                               ├── 5 min.
                               ├── 15 min.
                               └── Nonstop

Mike ──┬── Mike type ──┬── Mono
       │               └── Stereo
       │
       └── 48V mike type power ──┬── Off
                                 └── On
```

22 INPUTS, OUTPUTS & SPECIFICATIONS

22.1 LEFT SIDE

Mic. / Line Inputs	2 XLR connectors
Microphone Powering	48 V Phantom via menus
Microphone Sensitivity	10 mV, 2mV Pa switchable
Sensitivity	From 2 mV to 10 mV for 0 dB recording
Line Input	Symmetrical transformerless
Line Input Sensitivity	0.44 V to 1.4 V for 0 dB recording
External power	XLR connector 4 pole or DC connector
Green led	External power presence indicator
Yellow led	Charge indicator
USB connector	USB 1.1

22.2 OUTPUT SIDE

Headphone	Jack 6.3 mm stereo connector
Potentiometer	Adjust the headphone output level
Line Output	2 XLR connectors, symmetrical transformerless
Start/Stop remote	Mini jack mono 3.5 mm
Software update	Small 6 pin connector for NP-PCA adapter
THD at 1 kHz	0.1 %
Frequency response	30 Hz – 20 kHz (-3 dB in EE mode)
Total dynamic range	80 dB

For monitoring mono on the headphone input, press the headphone potentiometer.

22.3 SPECIFICATIONS
GENERAL
Data Storage medium	PCMCIA ATA cards, Compact flash cards, Micro drives
Recording Method	Digital (PCM) or Digital compression (optional)
Compression type	ISO MPEG Layer II (optional)
A/D & D/A conversion	20 Bit Sigma-Delta
Sampling Rate	16, 22.05*, 24, 32, 44.1*, 48 kHz
Bit-Rates	64, 128, 192, 256*, 384* kb/s
Mono/Stereo	Switchable and input routing
Recording Capacity	21* minutes on a 256 MB card Stereo 48 kHz, PCM
Max. RecordingCapacity	132* minutes on a 256 MB card Stereo 48 kHz, 256 kb/s
PCMCIA Slot	Single type I & II
Dynamic Range Adjust	50 dB for 0 dB record (manual), 40 dB for 0 dB record (ALC)
Filters	"Flat", "LFA"
File Format	Broadcast Wave Format (.wav)

POWER SUPPLY
Battery pack	6 x "AA" cells or Lithium Ion pack
Consumption	240 mA during record (no display light)

PHYSICAL
Dimensions	160 x 168 x 56 mm (6¼ x 6¾ x 2 inch)
Weight	900 g, (2 lb)

"*"   Only possible if software option #1 is present

23 ARES-BB "NFS" MODE, PC SOFTWARE & INSTALLATION

These programs add several features when the ARES-BB is connected to the USB port of a PC or if the flashcard from the ARES-BB is inserted in a PC PCMCIA slot:
Display the directory of the flash card
Playback of the recorded files
Import recorded files into the computer's hard disk
Edit the recorded files.

Insert the CD in your PC or laptop and follow the instructions.

Name	Size	Type	Modified
DigigramVersionAugust2002		File Folder	09.09.2002 06:20
NetiaVersionDecember2001		File Folder	09.09.2002 06:20
pocket2.ico	1 KB	ACDSee ICO Image	04.09.2002 10:24
AUTORUN.INF	1 KB	Setup Information	04.09.2002 10:25
Select.txt	4 KB	Text Document	09.09.2002 06:06

020909_0720 (E:)
Select an item to view its description.

23.1 ARES-BB SOFTWARE, "NFS" MODE, USING A PC PCMCIA SLOT

Carefully read the text file in the root directory before any installation.
From explorer, double click the NetiaVersion folder followed by the AresImport folder.

Name	Size	Type	Modified
AresImport		File Folder	09.09.2002 06:20
Elan drivers		File Folder	09.09.2002 06:20
DebugEnglish.txt	7 KB	Text Document	13.12.2001 16:09
DebugFrench.txt	7 KB	Text Document	13.12.2001 16:09
Readme1.txt	2 KB	Text Document	12.12.2001 11:15

NetiaVersionDecembe
Select an item to view its description.
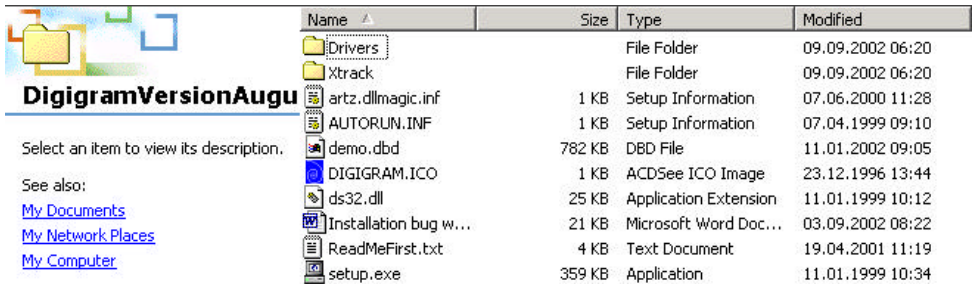
Double click "SETUP.EXE" file to start the installation.
If the PCMCIA slot is based on an ISA or PCI bus or buit-in to a laptop, the Elan drivers need also to be installed. If the PCMCIA slot is connected via SCSI, the Elan drivers may not be installed.

23.2 ARES-BB SOFTWARE, "NFS" MODE, USING A PC USB PORT

This only works if both software options I & II are installed on the Ares-BB
Carefully read the text file in the root directory before any installation.
From explorer, double click the DigigramVersion folder followed by setup.exe.

Name	Size	Type	Modified
Drivers		File Folder	09.09.2002 06:20
Xtrack		File Folder	09.09.2002 06:20
artz.dllmagic.inf	1 KB	Setup Information	07.06.2000 11:28
AUTORUN.INF	1 KB	Setup Information	07.04.1999 09:10
demo.dbd	782 KB	DBD File	11.01.2002 09:05
DIGIGRAM.ICO	1 KB	ACDSee ICO Image	23.12.1996 13:44
ds32.dll	25 KB	Application Extension	11.01.1999 10:12
Installation bug w...	21 KB	Microsoft Word Doc...	03.09.2002 08:22
ReadMeFirst.txt	4 KB	Text Document	19.04.2001 11:19
setup.exe	359 KB	Application	11.01.1999 10:34

DigigramVersionAugu
Select an item to view its description.

See also:
My Documents
My Network Places
My Computer

AresImport:
AresImport permits to read the directory from the flash card as well as playback and or import and conversion.

RCXLoad:
Display the files located on the memory card with their characteristics (date, duration, encoding format) in an MS explorer fashion.
Playing back a selected file, using the ARES-BB audio output or the local PC sound card.
Using Drag and Drop, import one or several files with format conversion to MPEG Layer 2 or PCM format.

XtrackLE (a Limited Edition of Xtrack):
Uses the physical I/O of the RCX220 as well as any other standard device.
Offers two fully independent mono or stereo tracks where records can be uploaded via RCXload.
Provides you with of a complete set of tools to cut, copy, paste, trim any portion of a track, as well as level editing functions such as fade in and fade out.
Once the edit finished, it can be processed into a single sound file (**MPEG** or **PCM**) with automatic sampling frequency and bit rate conversion.

To obtain full multi-track editing capabilities including mp3 export, the full version of Xtrack software can be purchased from Digigram.

24 ARES-BB "FAT 16" MODE, PC DRIVERS & INSTALLATION

Turn on the Ares-BB and connect it via the USB cable to the PC or Mac. After a moment, the new divice will be detected as an external remouvable hard drive.
IMPORTANT: for Windows 98 SE users; connect the Ares-BB (FAT mode) to the PC. Once Windows asks for the USB drivers to be installed, specify the way to the CDR "Win98SeUsbDrivers" folder.

The following pictures are an example on PC were the Ares-BB is recognized as disk (F).
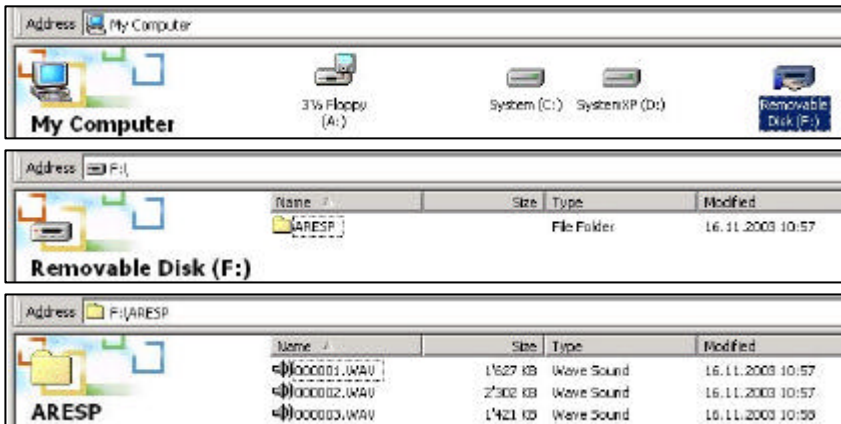
On PC, to remove the Ares-BB from the USB connection, double click first the "Unplug or Eject Hardware" icon and stop the corresponding drive letter before removing the USB cable.

DECLARATION DE CONFORMITE
DECLARATION OF CONFORMITY

FABRICANT: NAGRAVISION S.A. KUDELSKI GROUP, 1033 CHESEAUX SUISSE
MANUFACTURER: *NAGRAVISION S.A.KUDELSKI GROUP 1033 CHESEAUX, SWITZERLAND*

APPAREIL :   NAGRA-BB & alimentation secteur NB-PSU
MODEL: *NAGAR-BB & mains power adapter NB-PSU*

NORMES APPLICABLES :
APPLICABLE NORMS:

Champ électromagnétique rayonné	EN 55022 Cl. B
Radiated electromagnetic field	*EN 55022 Cl. B*
Perturbations conduites sur secteur	EN 55022 Cl. B
Disturbance voltage on mains terminal	*EN 55022 Cl. B*
Immunité aux champs électromagnétiques	EN 61000-4-3
Immunity to electromagnetic fields	*EN 61000-4-3*
Immunité aux décharges électrostatiques	EN 61000-4-2
Immunity to electrostatic discharges	*EN 61000-4-2*
Immunité aux transitoires électriques rapides en salves sur câble d'alimentation	EN 61000-4-4 level 2 (1000V)
Immunity to burst on mains line	*EN 61000-4-4 level 2 (1000V)*
Immunité aux transitoires électriques rapides en salves sur câbles d'entrées/sorties signaux	EN 61000-4-4 level 1 (500V)
Immunity to burst on input/output line	*EN 61000-4-4 level 1 (500V)*
Immunité aux ondes de choc	EN 61000-4-5 level 2 (1000V)
Immunity to surge	*EN 61000-4-5 level 2 (1000V)*

Cheseaux 1er trimestre 2004
Cheseaux 1st quarter 2004

NAGRAVISION SA KUDELSKI GROUP
Route de Genève 22
CH-1033 Cheseaux
Switzerland

Phone +41 (0)21 732-0101
Fax +41 (0)21 732-0100
E-mail info@nagra.com