



AMIX

AUDIO VIDEO PROFESSIONNEL

SNA 50-2 Rack Version 5.5

Acoustic Pressure Level Regulator



SNA 50-2 R : SNA50-2 Rack 3 U / CAP40 / RJV30 / AFFseries-2 + Power supply

User's Manual



AMIX



AUDIO VIDEO PROFESSIONNEL

- This equipment is made by:

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- Equipment : SNA 50-2 Rack

Serial number:

Software version:

Validation date: / / 20.....

- Conformity statement

Us,

RAmi
7, RUE RAOUL FOLLEREAU
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declare under our liability that the equipment :

Name : **AMIX SNA 50-2 Rack**
Description : **AUDIO LEVEL REGULATOR**

Aimed by the present statement is in keeping with the following specifications :

DECREE 98.1143 FOR A REGULATION IN GLOBAL LEVEL dBA
NORME NFS 31-122 (for Norma pack)

Bussy Saint Georges,
06 / 06 / 2011

SUMMARY

INSTALLATION AND SAFETY	P4
FRONT PANEL DESCRIPTION	P6
SNA 70 RACK	
Connectors description	P8
Wiring	P9
USER INTERFACE DESCRIPTION	P12
SETTING MODE MENU	P13
SYNOPTIC	P14
FUNCTIONING MODE	P15
STARTING THE EQUIPMENT	
Common Procedure	P17
S Procedure (as Sensor)	P20
L Procedure (as Line)	P23
ERROR MESSAGE RECAP	P26
SPECIFICATIONS	P27
SNA REGARDING DECREE 98-1143	P28
SPECTRAL ANALYSIS CURVE SELECTION	P29

INSTALLATION AND SAFETY

SNA 50-2 R fully complies the decree 98-1143 issued 15 December 1998 regarding maximum audio levels.

1°) Fix SNA 50-2R in a 19 inches cabinet (3U)

2°) AERATION

- ⇒ Install in a well ventilated place, and out of liquids streams
- ⇒ Never expose SNA50-2 R to rain snow or moisture.
- ⇒ Avoid high temperature exposure
- ⇒ Do not lock the vents.
- ⇒ Do not put things on the equipment.
- ⇒ **ATTENTION : Absolutely leave a 1 U free space over the equipment**
- ⇒ As far as possible leave also the same space under the equipment.

3°) MAINS SUPPLY

Always unplug mains before opening the equipment . A power switch is provided.

4°) EARTHING

SNA 50-2R features a terminal to be wired to the building electrical earth.

Never use the equipment without earthing, and check the earth quality before starting.

5°) BATTERY REPLACEMENT

SNA 50-2R mother card uses a Lithium battery to save the clock for several years.

The user is not entitled to change this battery.

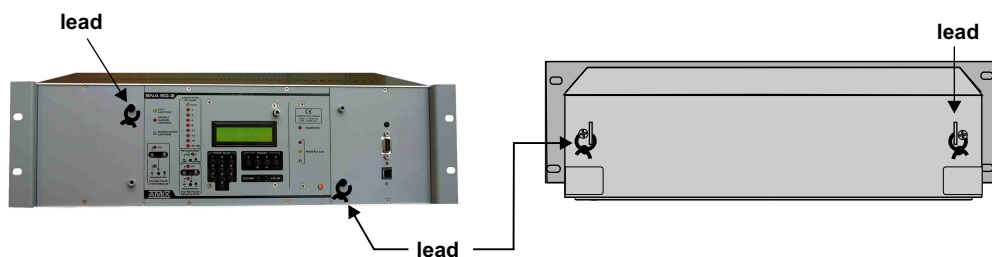
ATTENTION : Risk of explosion if the battery is not properly fitted.

The battery replacement should be made by an approved fitter, and the battery should be the same or exact equivalent.

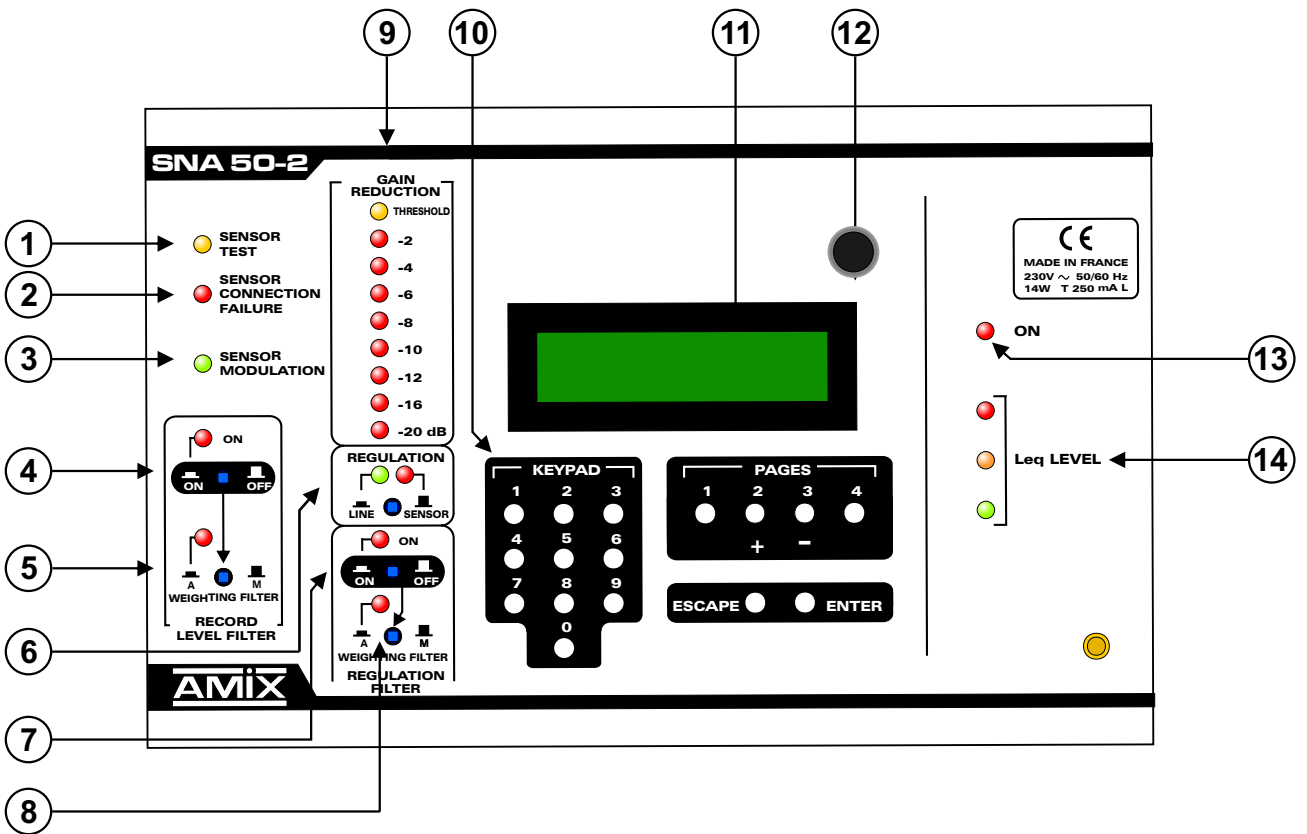
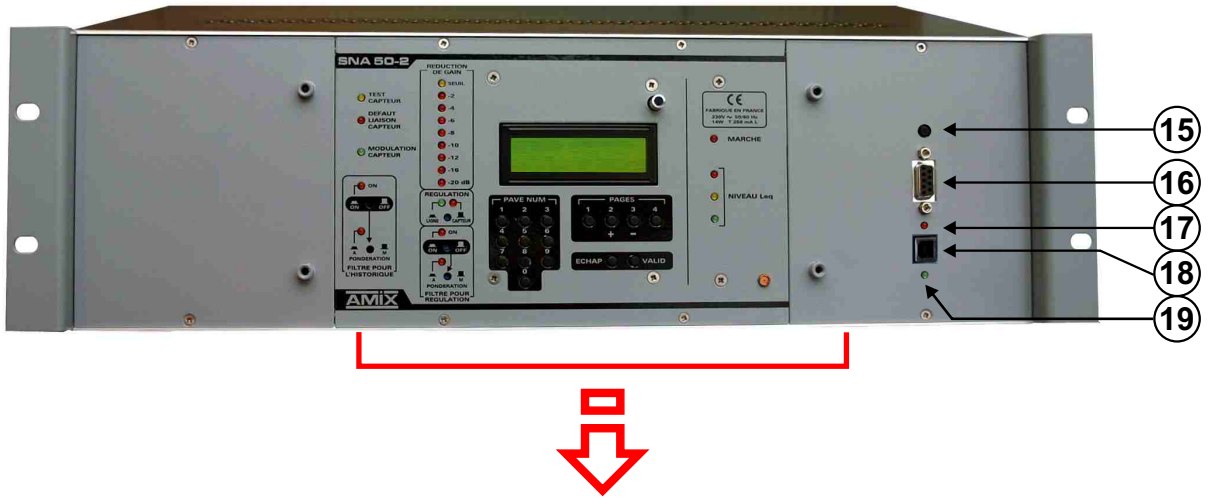
Concerning environmental protection, do not throw the old battery, but leave it in an appropriate place of collection.

6°) EQUIPMENT LEAD SEAL.

After SNA 50-2R setting, it is possible to fix a lead seal.






FRONT PANEL



FRONT PANEL DESCRIPTION

- 1- Channel measurement test light indicator.
- 2- Sensor connection default light indicator.
- 3- Audio presence light indicator.
- 4- Key associated to a light indicator. Allows to choose the analysis curve, used for historic.
 - Pressed, light on: weighted curve (Choose weighting by 5).
 - Released, light off: linear analysis.
- 5- Key associated to a light indicator. Allows to choose the weighting, used for historic.
 - Pressed, light on: enable A weighted filter.
 - Released, light off: enable intermediate filter M.
- 6- Key associated to a light indicator. Allows to set the reference for regulation.
 - Pressed, green light on : the SNA 50-2 refers to the stereo line input
 - Released, red light on : the SNA 50-2 refers to the the acoustic sensor.
- 7- Key associated to a light indicator. Allows to choose the analysis curve used for regulation.
 - Pressed, light on: weighted analysis (Choose weighting by 8)
 - Released, light off: linear analysis or filter card.
- 8- Key associated to a light indicator. Allows to choose the weighting used for regulation.
 - Pressed, light on: enable A weighting filter.
 - Released, light off : enabled intermediate filter M.
- 9- SNA50-2 level reduction display.
- 10- Keyboard used to modify parameters.
- 11- LCD display.
- 12- Top cover (plexiglas) opening detector.
- 13- Power on indicator.
- 14- Set of three indicators showing acoustic pressure variation.
 - Fixed Green: Computed short Leq 1s is 3dB below instruction threshold.
Computed short Leq 1s < Instruction threshold - 3 dB
 - Fixed Yellow : Computed short Leq 1s is +/-3dB around instruction threshold
Instruction threshold - 3 dB ≤ Computed short Leq 1s ≤ Instruction threshold + 3dB
 - Fixed Red : Computed short Leq 1s is 3dB over instruction threshold.
Computed short Leq 1s > Instruction threshold + 3dB

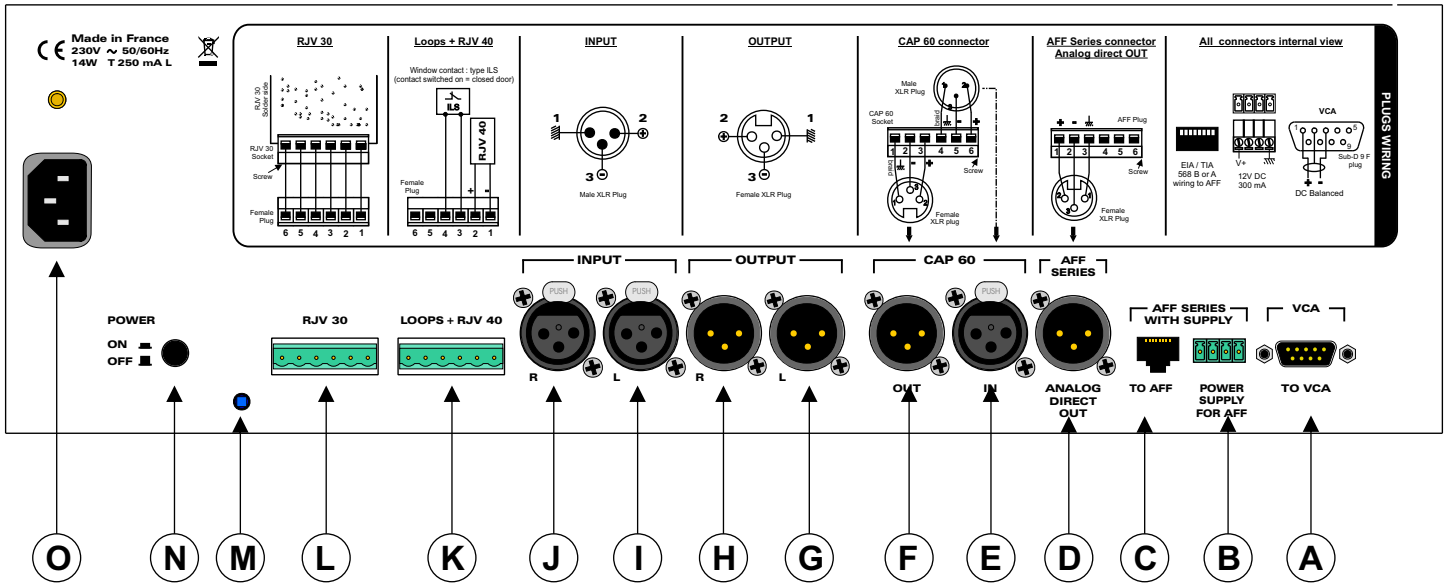
The supplied RJV 30, remotely displays this information. It should be placed well in sight.

R		Computed short Leq 1s > Instruction threshold + 3dB
J		Instruction threshold - 3 dB ≤ Computed short Leq 1s ≤ Instruction threshold + 3dB
V		Computed short Leq 1s < Instruction threshold - 3 dB

The maximum user allowance instruction threshold is Leq 5 minutes.

- 15- Key used to display the serial number and to test the VCA fade.
- 16- RS232 serial 9 pins Sub-D.
- 17- Red light USB RX.
- 18- USB socket to read data.
- 19- Green light USB TX.

SNA50-2 RACK CONNECTORS



SNA50-2 RACK CONNECTORS DESCRIPTION

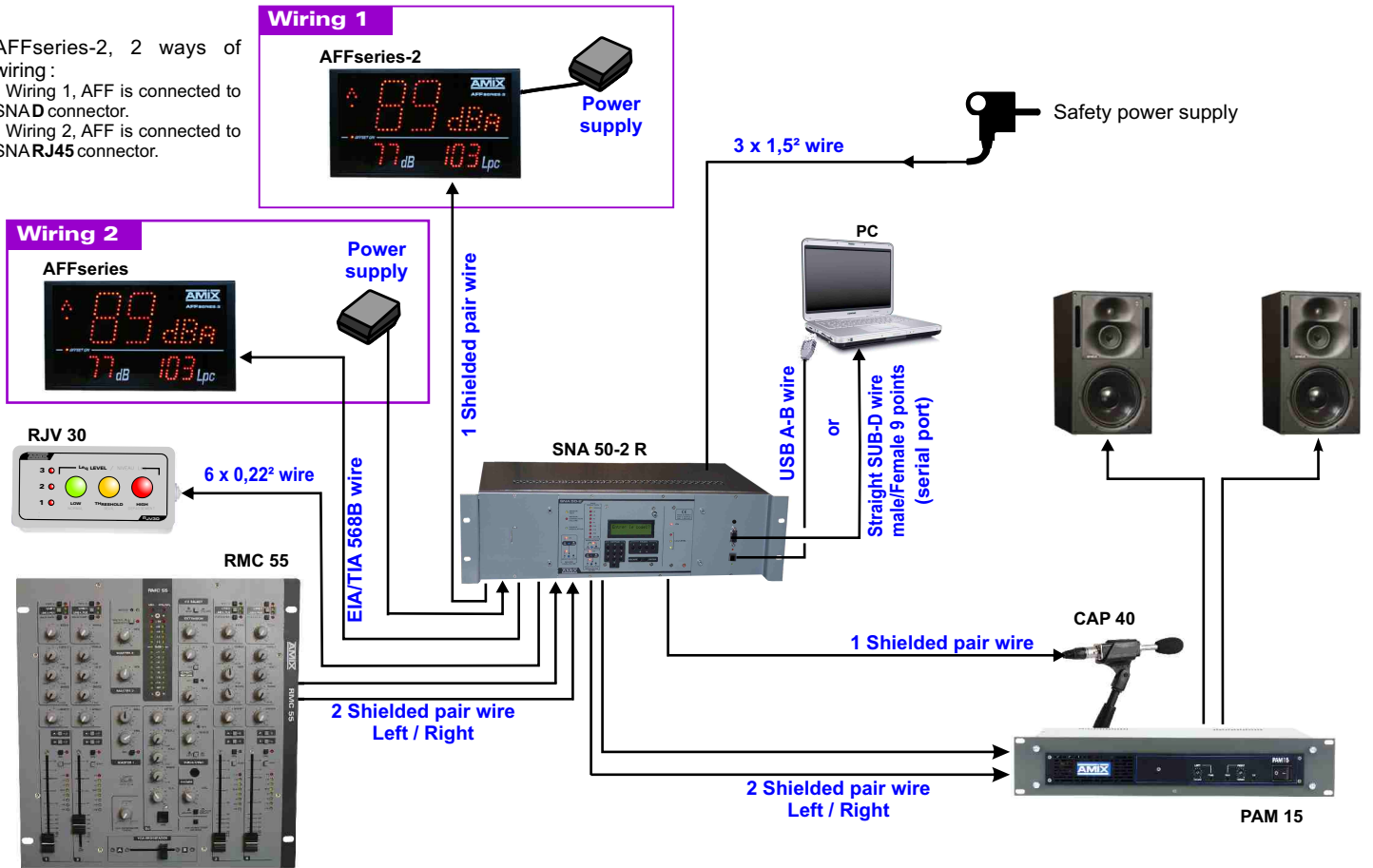
- A -** 9 pins female sub-D socket to connect VCA200 (2 analogue channels) or VCA500 (1 AES/EBU channel).
- B -** AFFseries-2 supply input connector.
- C -** RJ45 socket to AFFseries-2. This wiring supports power supply and measuring audio. Use **EIA/TIA 568B** wire.
- D -** Male 3 pins XLR socket to connect AFFseries-2 display.
- E - F** XLR socket to connect **CAP 60 or CAP40** audio sensor.
E : Female XLR socket sensor input.
F : Male XLR socket to test the sensor (Available only on French version)..
- G - H** Male XLR sockets : stereo balanced SNA 50-2 outputs. Send signal to power amplifier.
- I - J** Female XLR sockets : stereo balanced SNA 50-2 inputs. From mixing desk.
- K -** Male 6 pins socket for **RJV40** (option) and door / window opening sensor.
- L -** Male 6 pins socket to connect **RJV30** display.
- M -** Switch to detect the cabinet closure.
- N -** Power supply switch
- O -** Mains socket. The earth must be connected.

⇒ **Serial RS232 and USB sockets are available on SNA 50-2R front panel** (see page 6)



SNA50-2 RACK WIRING

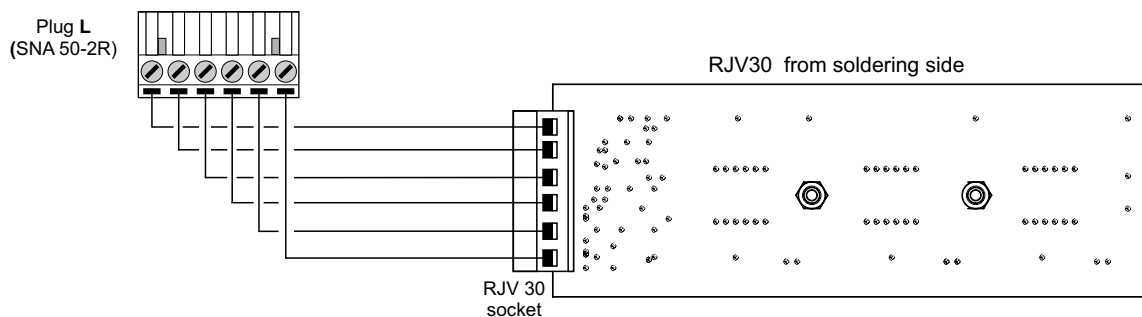
AFFseries-2, 2 ways of wiring:
 * Wiring 1, AFF is connected to SNAD connector.
 * Wiring 2, AFF is connected to SNARJ45 connector.



❑ WIRING.

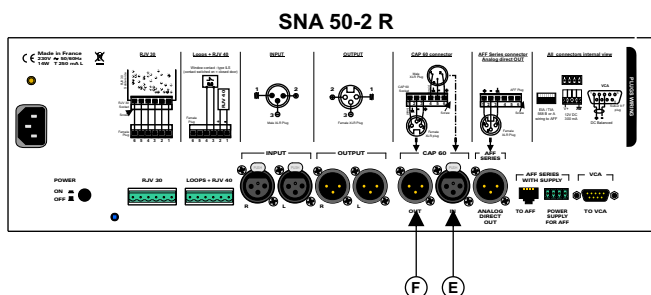
- 1°) To access connectors remove the hood from the rear panel
- 2°) Connect SNA 50-2 to mains (230V 50Hz) using socket O.
- 3°) Connect RJV 30 to socket L, using a 6 leads wire.

Connector wiring :



- 4°) Connect the sensor CAP40 to the XLR E using a microphone shielded pair.

Note : Thanks to the internal balanced output amplifier CAP40 allows use of long wires, without interference often found in such a lay out.

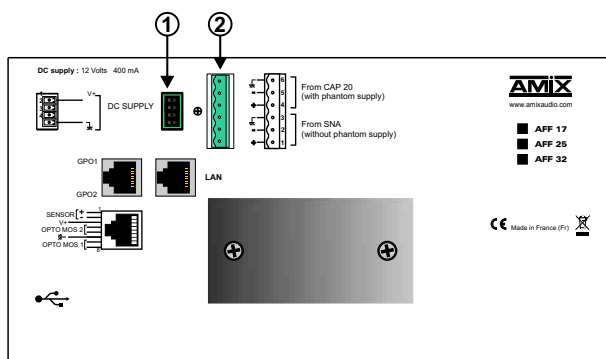


Output F is intend to connect CAP60. This option is for French market only (Standard NFS3122).

SNA50-2 RACK WIRING (next)

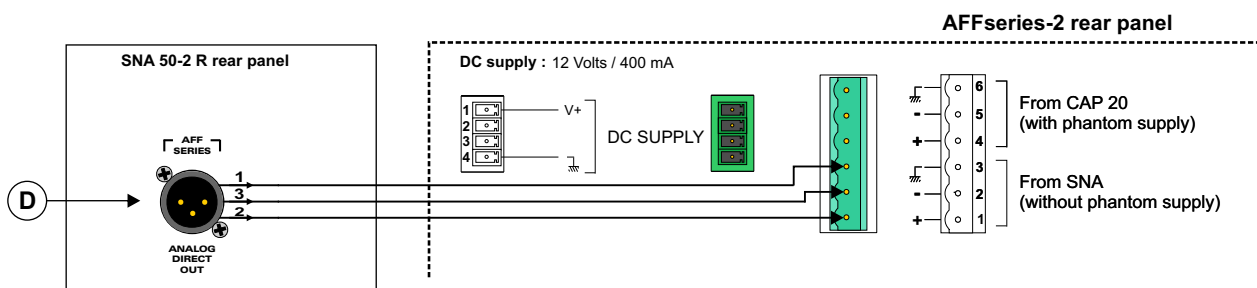
5°) AFF series-2. Two ways of wiring :

A/Wiring n°1

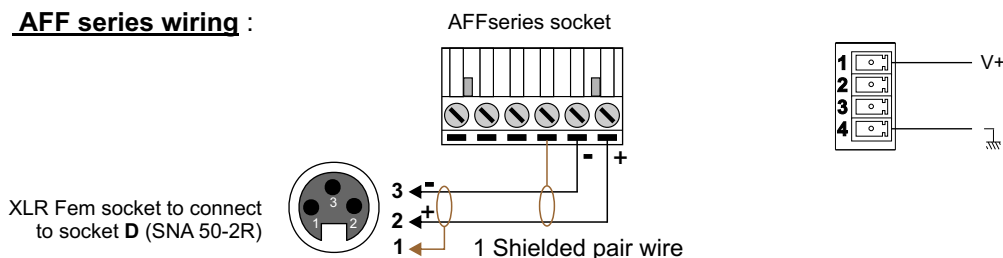


AFFseries-2 rear panel

AFFseries-2 displays the acoustic pressure level from CAP 40 sensor (phantom supply comes from SAN 50-2R)



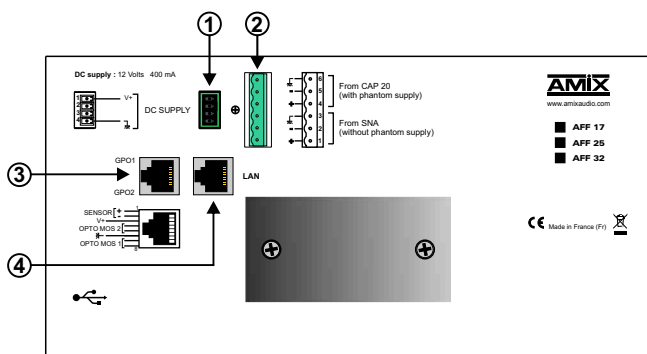
AFF series wiring :



Remark : Plan a power supply extension lead for AFF. The complete AFF manual is on the supplied CD.

B/Wiring n°2 using RJ45.

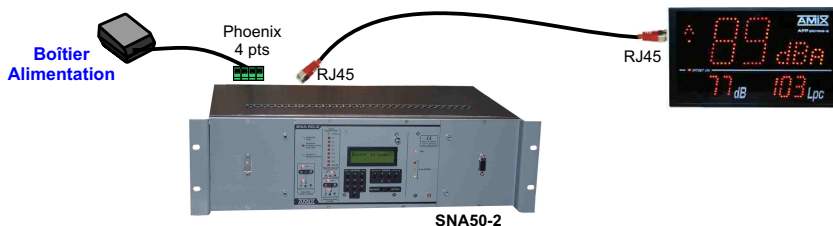
Connect a EIA/TIA 568B between AFFseries-2 socket (3), and socket C on SNA50-2. This wiring handles power supply and measuring audio, and switches AFF series-2 to SNA mode.



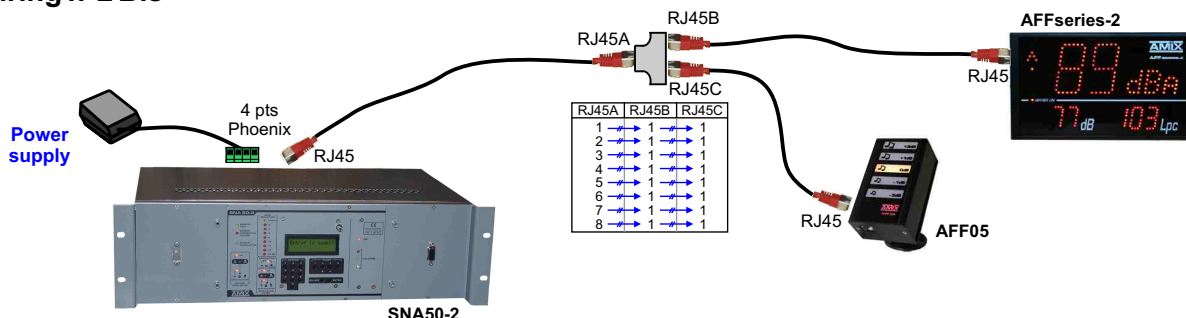
Connect 12V supply to SNA 50-2 socket B.

SNA50-2 RACK WIRING (next)

Wiring n°2



C / Wiring n°2 Bis

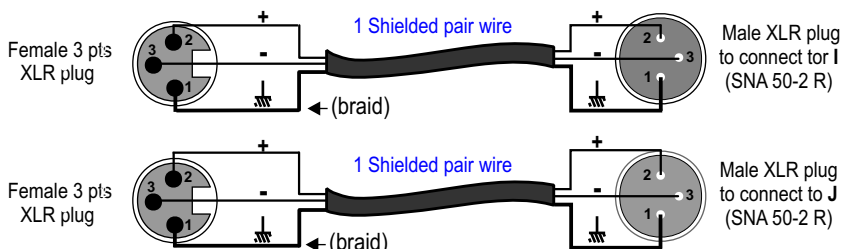


This wiring allows to supply AFFseries-2 and AFF05 at the same time. A RJ45 coupler is required (straight wiring). AFF series-2 send commands on the wire to drive AFF05. AFF05 setting uses the AFFseries-2 web server.

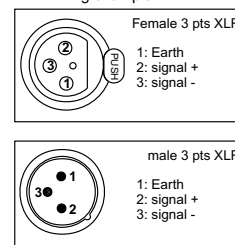
6°) Socket H secondary functions.

ATTENTION : If the open door detector is not used, 3 and 4 must be strapped.
This is only possible for sensor modes.

7°) Connect mixing desk to female XLR balanced inputs I and J. Take care of + and – signals.

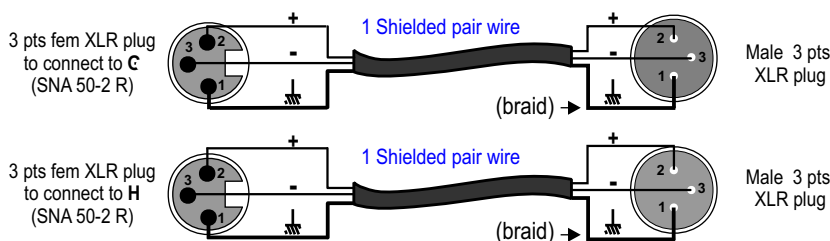


XLR wiring example

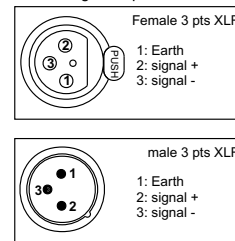


To connect an unbalanced mixing desk use a balancing transformer close to the desk.
 If you have no transformer, connect cold pin (-) to the SNA ground (⏏)

8°) Connect audio power amplifier input to the male balanced XLR G and H. Take care of + and – signals.



XLR wiring example

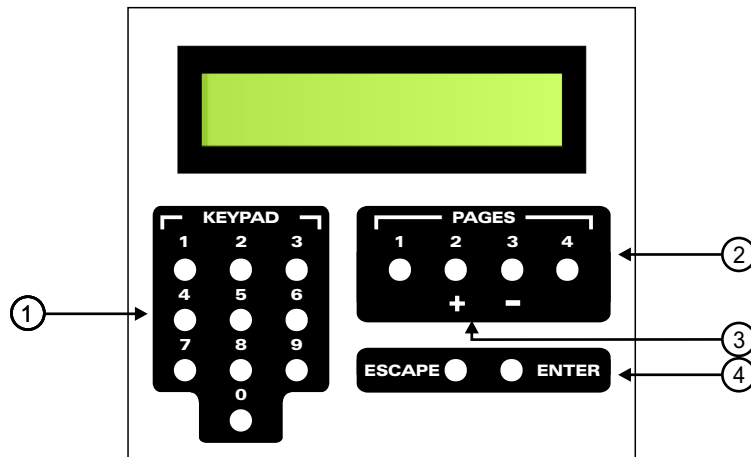


To connect an unbalanced amplifier use a de-balancing transformer close to it.
 If you have no transformer, connect cold pin (-) to the SNA ground (⏏)

9°) Taking care of the wires close, the hood on the rear panel.

ATTENTION, if the hood is not properly closed, the test procedure wont work correctly.

USER INTERFACE DESCRIPTION



1 - **Numerical keyboard**: used to select and modify a parameter.

2 - **Page selection key**: used to select the parameter page for edition. One page hold up to 10 different parameters.

3 - **In(de)crementation keys**:  et 

Used to set the analogue parameters for regulation.

Remark: these keys are disabled when editing other page than 1.

4 - **Keys to validate or cancel**: used to validate the new parameter or to cancel the current action.

▶ **Validation key**: Used to validate a new entry (using the keyboard) or to carry on the selected function. If this key is not pressed the value is not modified.

▶ **Cancel key**: This key "ESCAPE" cancels the current action, and comes back one step in the setting menu.



Ex1: if "ESCAPE" key is pressed when entering a new parameter, this new value is not saved. The menu tree comes to **Level 2**. It is possible to modify an other parameter.



Ex2: If in **level 2** ("selected page") ESCAPE raises the menu. It is the possible to select an other page.


The SNA 50-2 setting menu is organised in pages according to their destination. Each page contains up to 10 values or functions as follow:

- ▶ **Page 1**: analog setting
- ▶ **Page 2**: audio analysis setting.
- ▶ **Page 3**: time setting.
- ▶ **Page 4**: management utility.

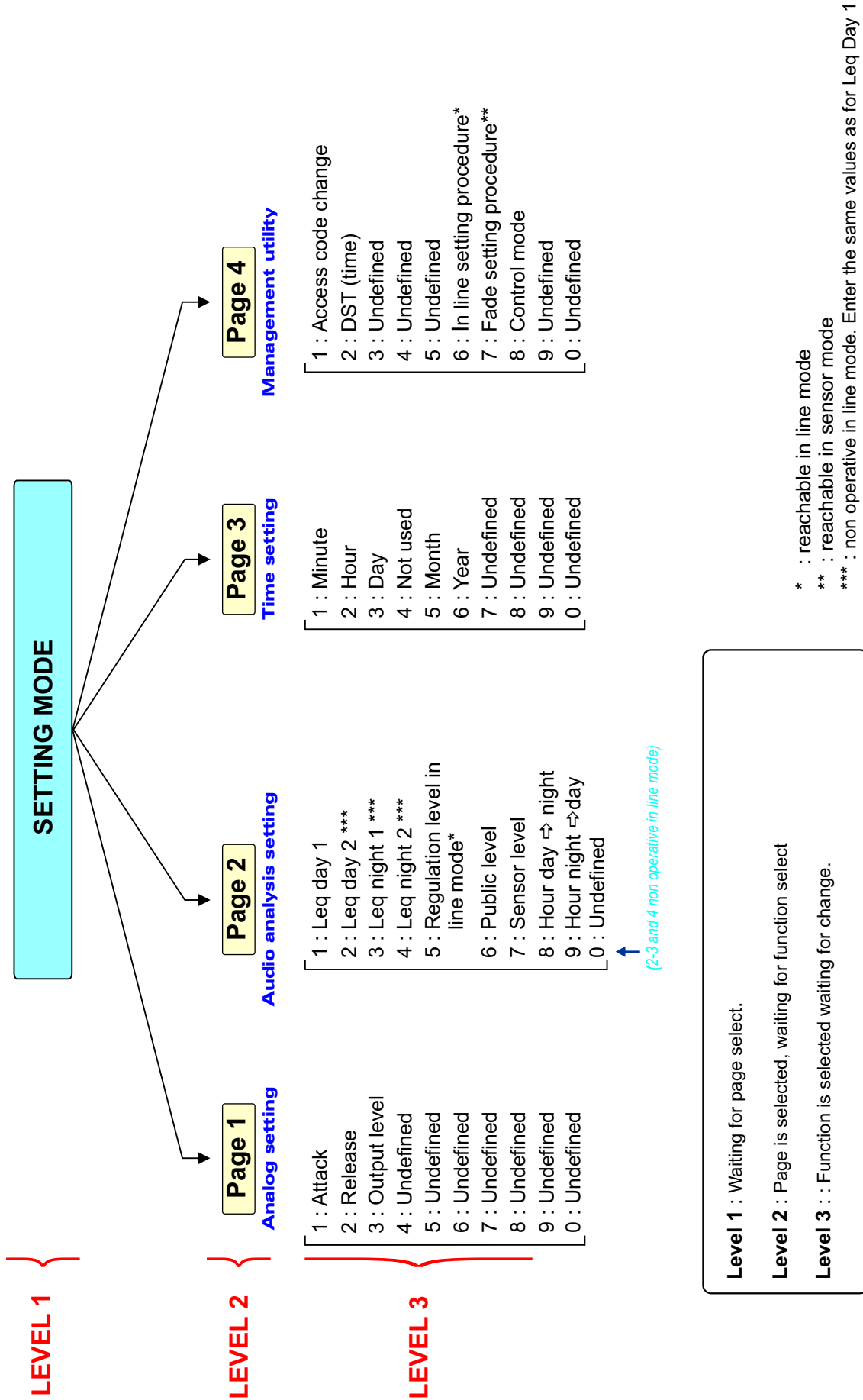
Setting menu follows a menu tree (see next page)

Using setting mode:

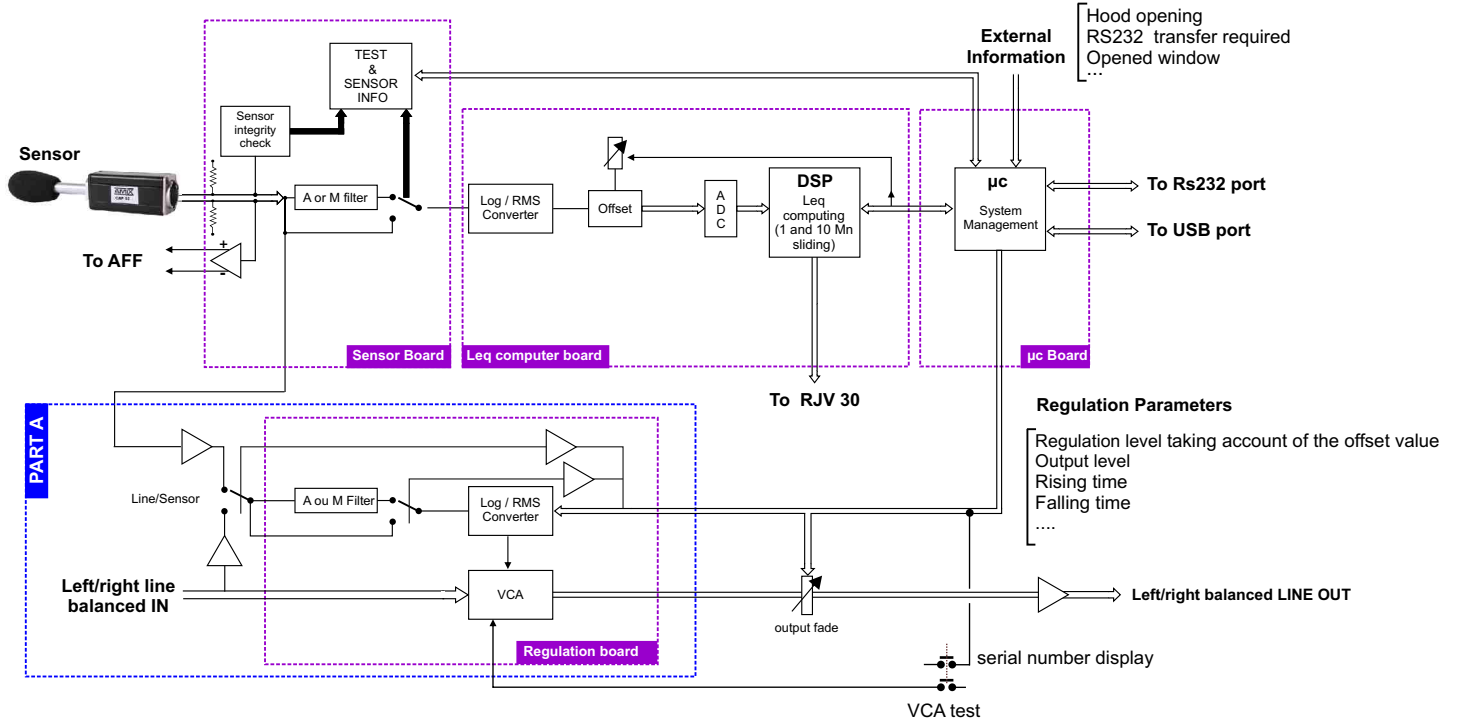
- 1 - Select the parameter page to edit, using the page selection key (2).
- 2 - Select the value to be modified, using they numerical keyboard, according to the supplied list (see setting procedure)
- 3 - Enter the new value, validate with the validation key (4).

Remark: to come back one step, use the key 

SETTING MODE MENU



SYNOPTIC



SNA 50-2 functioning and synoptic description

A / REGULATION

SNA 50-2 provides:

Regulation on the global level with weighting choice A, M or without. The involved technology, controls the acoustic pressure, without alteration of input signal spectral density. In that mode, SNA 50-2 does not modify the signal dynamics, but its average level. This is part A of the synoptic. Leq setting ranges from 64dB to 127dB.

SNA 50-2 features for instruction levels, for the global level, associated to 2 functioning types:

- External issues (doors/windows) closed / open.
- Day / night hours.

Combination of settings allows the regulator to work automatically according to the 4 following modes :

- During day hours, and all issues are closed , the instruction is “Leq day1 ”
- During day hours and one issue is opened, the instruction is “Leq day 2”
- During night hours and all issues are closed, the instruction is “Leq night 1”
- During night hours and all issues are closed, the instruction is “Leq night 2”

“Hour day ⇒ night” parameter : defines the night hours beginning time, and night regulation

“hour night ⇒ day” parameter : defines the night ending time, and day regulation.

This regulation can be driven by the acoustic level from the sensor (Mode S as Sensor) or electrical level from left + right SNA50 input signal (Mode L as Line). It is necessary to privilege Mode S. Under critical circumstances, when regulation level is low, and the audience noise is high, it is possible to use mode L which is allowed, because SNA 50-2 continuously records the acoustic level.

B / ACCOUSTIC LEVEL RECORDING

In both precedent regulations modes L and S, CAP 40 sensor permanently records the acoustic pressure in global level as follows :

- ⇒ Every five minutes and in in Leq 5 if the instruction level is not exceeded.
- ⇒ Every minutes and in Leq1 if the instruction level is reached or exceeded.

In case or recording each minute, the recorded level is Leq computed during 1 Mn, allowing a fine analysis of acoustic pressure during overshoot.

Save by PC link :

The RS232 serial link allows to connect SNA 50-2 to a PC. This allow to transfer all the system data, using the supplied software. This software allows data editing, printing and to know the system config...

Leq1 mn Level: Equivalent continuous acoustic pressure computed during 1 minute.

Leq5 mn Level: Equivalent continuous acoustic pressure computed during 5 minutes.

C / TRANSFER FUNCTION OF THE MEASUREMENT CHAIN

To avoid noise from the audience, very often the sensor is fixed near the loudspeakers. In that case the level at the sensor is more important than the required regulation level. SNA 50-2 handles this difference after installation training. The following terminology will be used.

Public level : Wanted acoustic pressure level (Leq) to the most exposed audience location.

Sensor level: Acoustic pressure (Leq) at the sensor.

D / AUDIO LEVEL IN USE OPTIMIZATION

According to the audio amplifier output power, SNA 50-2 can always control the level. To avoid this, it is possible to decrease the amplifier volume, but they can be, deliberately or not, modified afterwards. To solve this problem SNA50-2 provides an internal fader just before output. Thus SNA-50 is totally transparent, and regulate only on overshoots. This fader setting is described furthe.

E / PROTECTION AND ERRORS MANAGEMENT

- 1 A four digit password (user defined) protects the data.
- 2 Sensor link default. The sensor link is continuously monitored, and alerts in the following situation :
 - cut wire.
 - hot point short circuit (ground).
 - cold point short circuit (ground).
- 3 Rear hood opening and plexiglas removal can be lead sealed. All the defaults, modifications, or removal are recorder and time stamped into the memory.

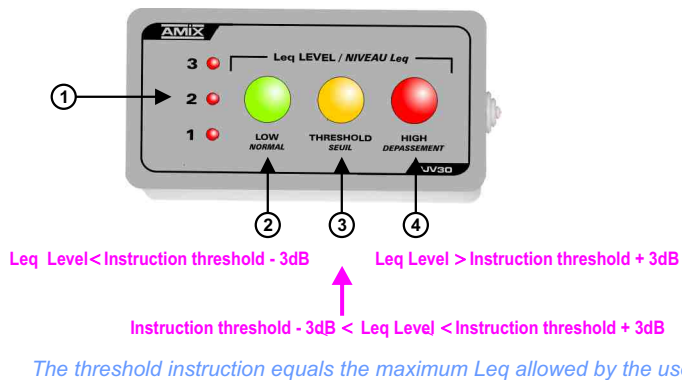
F / LCD DISPLAY:

- ⇒ In normal use , the display shows the short leq and Leq5 mn (or LAeq) level on the first line and the date and time on the second line.
- ⇒ In Alarm or Default it shows the Alarm : "Sensor connect failure !!"
- ⇒ During settings, displays "SNA 50-2 by AMIX setting mode"
- ⇒ During data transfer, "PC transmission in progress !!"

G) EXTERNAL DISPLAY (RJV 30) :

The unit can be linked to an external display device featuring two sets of three indicator lights.

- ⇒ The first set looks like a traffic light.
- ⇒ The second set consists of three yellow lights, showing the regulator state.



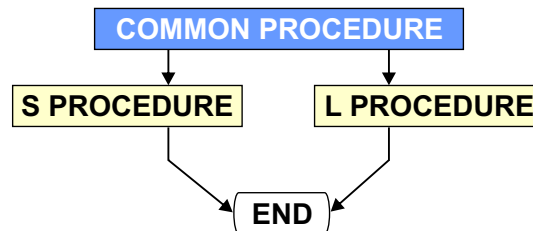
1 - Red lights 1,2 and 3 show the regulator state :

- Led 1 on : Regulation on.
 - Led 2 on : gain reduction ≥ 10 dB.
 - Led 3 on : gain reduction = 20 dB.
- 2- Green light: Computed short Leq1s is 3dB below instruction threshold.
 - 3- Yellow light: Computed short Leq1s is +/-3dB around instruction threshold
 - 4- Red light: Computed short Leq1s is 3dB over instruction threshold.

STARTING THE EQUIPMENT

- ⇒ Wire the system. Fix the rear hood and the front plexiglas.
- ⇒ Power on.
- ⇒ Run a musical program from the mixing desk.
- ⇒ Check for normal audio test VCA attenuation by pressing switch **15** on front panel
- ⇒ Remove the upper plexiglas hood.


Then you will have to proceed two steps/ the first one is the common procedure, then the S procedure. If you choose sensor regulation, or L procedure if you choose line signal regulation.




COMMON PROCEDURE

⇒ ENTER PASS WORD


1 - Using the keyboard enter pass word. **(From factory pass word is 1052)**

2 -  to validate pass word.


Remark: if the key  is pressed, it necessary to restart edition from **step 1**.



1°) Changing pass word: The factory pass word should be changed by the user.

3 - Select **page 4** using 

4 - Select 

5 - Enter new pass word then validate by pressing 

6 - Enter the new pass word again then validate using 

7 -  again and the pass word is changed, then  to leave page 4.


Or  to cancel change.

Attention :

- ⇒ If the two codes are different, there is no modification.
- ⇒ If the code is false, you can try again
- ⇒ At any time during pass word modification, ESCAPE restart the full procedure.

2°) Forgotten pass word:

When SNA 50-2 requires the pass word :






1 - Press the key 

2 - A masked pass word is displayed.

3 - Contact our technical department. From the masked pass word, we will be able, under certain conditions, to give you the associated pass word.

STARTING THE EQUIPMENT (next)






⇒ Time setting

- 1 - Select **page 3** using 
- 2 - Select the parameter to modify (see list).
- 3 - Using the keyboard enter the new value.
- 4 -  to save the new value then 
Or  to cancel
- 5 - Select an other parameter to modify or  to leave page 3.

1 ⇒ Minute (0 to 59)
2 ⇒ Hour (0 to 23)
3 ⇒ Day (0 to 31)
5 ⇒ Month (1 to 12)
6 ⇒ Year (00 to 99)

Modifying time, switches the equipment to manual time setting. If it was automatic (see below) it will comes to manual. Consequently, do not forget the following step after time modification.

⇒ Mode automatic “Summer time” (DST time) or normal selection (automatic by default) :

- 1 - Select **page 4** using 
- 2 - Select  (DST time function).
- 3 - Use  to switch to the display mode, or  to go out
- 4 -  to leave page 4.

Remark : If something is modified in page 3, the time changing mode comes back to manual

About Summer / Winter time (According to European decision) :







- ❖ Switching from Winter time to summer time, takes place during last march Saturday to Sunday night at 1 o'clock GMT
 $2 h \Rightarrow 3 h$
- ❖ Coming back to winter time takes place last October Saturday to Sunday night at 1 o'clock GMT
 $3 h \Rightarrow 2 h$

⇒ Day / Night time switching setting.

This value allows to use different regulation level according to the time. Day hours and night hours are in “hour day ⇒ night” and hour night ⇒ day”

Definitions :

- ✓ “hour day ⇒ night” parameter: this parameter defines the time the equipment start regulation with night regulation level
- ✓ “hour night ⇒ day” parameter: this parameter defines the time the equipment start regulation with day regulation level.









- 1 - Select **page 2** using 
- 2 - Select the parameter to modify  or .
- 3 - Using the key board enter the day/night changing time.
- 4 -  pour save then 
- 5 - Select the second value to be modified or  to leave page 2.

8 ⇒ Hour day ⇒ night
9 ⇒ Hour night ⇒ day

STARTING THE EQUIPMENT (next)

⇒ Setting the levels associated to the threshold for regulation in global level

This threshold is the maximum allowed level, at the location where the audience is the more exposed. Under certain circumstances, this place is the same as the one from the impact study. The level is found in the acoustician's report

- 1 - Select **page 2** using 
- 2 - Select  ("Leq day 1" function) .
- 3 - Set Leq day 1 to maximum allowed by the establishment
- 4 -  to save, and 
- 5 - Do the same for ,  and  . (Leq day 2, Leq night 1 and 2)
- 6 - Do  to leave page 2.

- 1 ⇒ Leq day 1 | (Day window closed)
- 2 ⇒ Leq day 2 (Day window open)
- 3 ⇒ Leq night 1 (Night window closed)
- 4 ⇒ Leq night 2 (Night window open)

Remark: The window mode associated to Leq day 2 and Leq night 2 takes in account the opening of issues (door windows...) If there is no needs for day/night and door/windows, set the same value in 1,2,3 and 4. These levels are used only when the regulation is from the sensor. In line mode they are not used.

⇒ Analysis and regulation weighting filters setting, and regulation source settings.

A/ Place switches "Record level filter" as follows :

- ON/OFF switch, **ON** ⇒ switch 4 pressed (see page 5).
- Weighting filter on **A** ⇒ switch 5 pressed (see page 5).

B/ Place switches "régulation filter" as follows :

- ON/OFF switch, **ON** ⇒ switch 7 pressed (see page 5).
- Regulation filter on **A** ⇒ switch 8 pressed (see page 5).

C/ Place global regulation on Sensor (⇒ switch 7 release see page 5)

⇒ Public level and sensor level setting

These independent settings , allow , according to the following procedure, to compute the difference in acoustic pressure, if for some reasons, the sensor is not installed where the audience is the more exposed (or at the location from the impact study)








How to find out the public and sensor levels:

A/ Using a pink noise generator, set the broadcasting equipment to have a sensor level 5dB under the instruction level, thus avoiding to be over the regulation threshold.

B/ Note the value. This is the sensor level.

C/ At the place where the audience is the more exposed (or the one from impact report), using a class 2 or 1 sono meter, with short Leq A weighted, note the acoustic pressure level. This the public level.

D/ Using the following procedure set the sensor and public levels.

- 1 - Select **page 2** using 
- 2 - Select the parameter to modify  or .
- 3 - Using the keyboard enter the audience or sensor level, without decimal .
- 4 -  to save the value then 
- Or  to cancel.
- 5 -  to leave page 2.

- 6 ⇒ Public level
- 7 ⇒ Sensor level

STARTING THE EQUIPMENT (next)

Once the two values are fixed, the equipment computes the offset, and resets for global level regulation.

For instance if sensor level is 100dB, and 94dB at the audience location (or from impact report), SNA 50-2 computes the offset or a transfer function of 6 dB. If the sensor instruction is 97dB SNA 50-2 start regulation when this level is reached at the audience location, i.e. at $97+6 = 103$ dB at the sensor. The displayed values, and saved in the historic, are the audience ones i.e. 97dB

The first step, common procedure is finished.

If you intend to use sensor regulation go to S procedure , if you use line regulation go to L procedure.

S PROCEDURE

SNA 50-2 works according to the sensor acoustic pressure level

⇒ Output level setting for regulation level optimization

This automatic procedure sets the SAN 50-2 internal output attenuator, allowing to found the maximum volume on the audio power amplifiers.

- 1 - Select **page 4** using 
- 2 - Select  ("fade setting procedure" function).

The display shows "Amps Max and then enter!!".

- 3 - Increase power amplifier volume to maximum.
Feed a pink noise to the mixing desk, then set the mixer attenuator to get 0dB on the mixer display.

- 4 - Using  start the procedure

Procedure is running. Wait for "Attn setting in progress" on the display.

Remark : : if the necessary conditions are not fulfilled, the procedure stops and displays :

"Attn. max > 32 dB !!"
DROP OUT SETTING !!

- 5 -  then  to leave page 4.

Trial on audio signal.

Play a musical program, and increase the mixer level until SNA50-2 starts regulation. This is shown on the reduction bar graph (9 page 5)

Check with a sono meter at the audience location that the acoustic level do not exceed the instruction threshold.

Measure under Leq gliding protocol, not instantaneous, because the regulations varies with the attack and release times as describe below.

Check for the three leds working, showing Leq short evolution on the front panel (14 page 5), and the mirror display on RJV 30 corresponding to details page 6.

STARTING THE EQUIPMENT (next)

⇒ Attack and release setting

To get the best performance it is necessary to set attack and release time, according to the musical program content. The most important factor is the signal dynamics. One can consider two types of music :

- Music with low dynamics generally recorded music
- Music with heavy dynamics associated to live music

According to these two main families, the attack and release times can be set as following :

1°) Low dynamics :

- Fast attack time.
- Release time longer than attack time to avoid pumping.

Example : Attack time = 1 seconde
Release time = 2 or 3 secondes

These musics having an important average density, the regulator must act rapidly, otherwise it will not regulate enough, and the average level could exceed the instruction level.

Remark : The attack time can be set to suit the events embedded in the music (i.e. Tempo)...

2°) Heavy dynamics:

In that case, the average density can be thought as relatively low, because the music mainly consist of low or middle level, with short high levels. To respect the dynamics, attack time will be long enough to preserve attacks. Release time can be faster, allowing the regulator to come back to initial state (0dB when the level decreases).

Example : Attack = 4 secondes
Release = 2 secondes

Attack and release times settings determine the regulator efficiency.

To change these values , use  and  on the keyboard .

There are 8 values for attack and release time (in s or ms for 10dB)
attack and release time act only on global limitation









Table :

**10dB attenuation
attack**

0	250 ms
1	500 ms
2	1 s
3	2 s
4	3 s
5	4 s
6	5 s
7	6 s

**10dB increase gain
attack**

0	250 ms
1	500 ms
2	750 ms
3	1 s
4	1,5 s
5	2 s
6	3 s
7	4 s

- 1 - Select **page 1** using 
- 2 - Select the parameters to adjust  or .
- 3 - Using the keys  and  set attack time
- 4 - Validate by pressing  then 
- 5 - Select the second value to be modified or do  to leave page 1.

1 ⇒ Attack
2 ⇒ Release






STARTING THE EQUIPMENT (next)

⇒ “Control mode” choice Version 4.0 or 5.x (version 4 by default) :

Version 4.0 by default

This version allows user to choose control mode.

- Using version 4, regulation is always enabled, avoiding level overshoots
- Using version 5.x (mainly for live SNA) the management decides to use regulation or not. If user is reasonable et respect the allowed levels, the equipment is completely inoperative.

- 1 - Select **page 4** using 
- 2 - Select  (“control mode”).
- 3 - If SNA50 is in version 4.0, you see “Control mode version 5.x?” on the display
- 4 -  to save this mode (5.x) and “Mode version 5.x activated !!” displays
or  to go out
- 5 -  to leave page 4.

⇒ Run a last trial using a musical program

⇒ Close the 2 hoods (front and rear).

The equipment is ready for use.

STARTING THE EQUIPMENT (next)

L PROCEDURE

The equipment takes in account the SNA 50-2 input electrical signal left + right

- Switch the global regulation key to line (6 pressed page 5)

↪ Live level / Acoustic pressure correlation setting:

In Line mode, to allow maximum efficiency, the correlation between line level and acoustic pressure should be find out. Indeed, in that case the signal acoustic pressure is achieved by the power amplifiers and associated loudspeakers. For the same signal level, the acoustic pressure varies according to the involved audio equipment. SNA 50-2 must be matched using 2 parameters : the Line level regulation and the Output level.

SNA 50-2 features a setting procedure to find out these parameters. This procedure allows a basic setting to be improved afterwards for better performance

1°) Set historic filter like the regulation filter (see page 6)

2°) Setting procedure

3°) Switch historic filter to A weighting

Attention: Under several circumstances, the Line procedure wont be able to achieve automatic setting.

a) The broadcasting system, allows a too high acoustic pressure. In that case the maximum output attenuation (32dB) is not enough to get the intend limitation. The procedure is left and the following message displayed :

“Attn. Max > 32 dB
DROP OUT SETTING !!

Too allow the setting , it is necessary to decrease the amplifiers output power. In that case the amplifier system should be lead sealed.


b) The procedure is normal, but the acoustic pressure level is very different of the expected one. In that case, the building behaviour, amplifies or decrease the pink noise to the sensor. The regulation level cannot be set automatically, and should be done manually.

Note : Sometimes, moving the sensor can solve the problem.

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or  to go out
- 5 -  to leave page 4.

⇒ Run a last trial using a musical program

⇒ Close the 2 hoods (front and rear).

The equipment is ready for use.

A) Software embedded events

- **System initialization** ▶▶ event occurring during power on
- **Equipment power supply cut** ▶▶ event occurring during power cut
- **Hood opening** ▶▶ event occurring when opening one of the two hoods.
- **Hood Closing** ▶▶ event occurring when closing one of the two hoods
- **Sensor link problem** ▶▶ event occurring when a default is detected on the sensor link (broken wire, disconnected plug...)
- **End of sensor link problem** ▶▶ event when the sensor is coming back to normal
- **Sensor level problem** ▶▶ event occurring when the sensor test level is different of the calibration one (sensor masked ...)
- **20 dB regulation overrun** ▶▶ occurs when regulation overrun 20dB.
- **End of 20dB overrun** ▶▶ occurs when overrun returns under 20dB.
- **CAP60 standardization** ▶▶ occurs when the standardisation is run (To be done at least once a year). Only in french version.
- **Windows opening** ▶▶ occurs when a door or window is open.
- **Window closing** ▶▶ occurs when a door or window is closed.
- **Settings Modification** ▶▶ occurs when an internal parameter is modified.
- **Configuration Modification** ▶▶ occurs when an historic or analysis filter is modified.
- **Automatic time change** ▶▶ occurs after an automatic time change of the equipment.

B) Events displayed on SNA 50-2 screen :

- **Sensor link default** ▶▶ occurs on a sensor link default (broken wire, disconnected ...)
- **Data transmission to PC** ▶▶ occurs when data are send to PC

SPECIFICATIONS

Input	Connector	Type	Impedance	Nominal Level	Clipping
Balanced line Level	3 points XLR	Balanced stereo	15 Kohms	+ 6 dBu	+ 26 dBu

Output	Connector	Type	Impedance	Nominal Level	Max Level
Balanced line Level	3 points XLR	Stéréo Symétrique compensée	50 Ohms	+ 6 dBu	+ 26 dBu

Distorsion : < 0.014 % / + 6 dBu at 1 Khz on the main output.

S / N ratio : 115 dB A weighted at clipping.

Bande passante : 10 Hz to 100 kHz / 0,5 dB.

*Diaphony : 77 dB at 1 Khz
74 dB at 10 Khz*

SNA50-2 REGARDING DECREE 98-1143

Come back to decree 98-1143 about sound limitation and allowed measured levels.

It is clearly written that 105dB (A) is an average level computed by integration during **10 to 15 Mn**. The (A) refers to the analysis bandwidth, called weighting. A weighting is close to the human ear.

The average level measurement with a sono meter is a Laeq measure : "L" for level, "A" for A weighting, "eq" for equivalent. This is similar to the mean level of a varying signal, that will have the same energy than a fix signal at this level.

If you use a usual sound processor, like in FM broadcasting, on one side you will suddenly plane the level over 105dB loosing dynamics, and on the other side you will get a very loud sound without clarity.

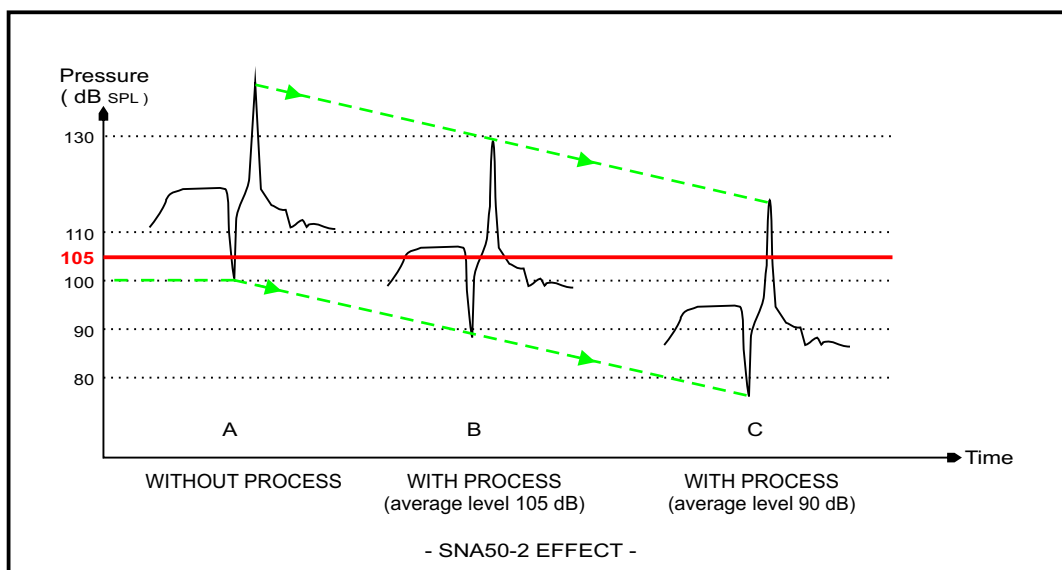
SNA50-2 design is intend to respect the decree, without disturbing the audio signal.

SNA50-2 features a level regulator, integrating smoothly the peak levels, according a soft curve, with settable rising and falling times, to get an average level within 105 dB

Proper installation, to get maximum efficiency, absolutely requires a sono emter with LAeq during 10 to 15mn. Once again it is possible to visualize instantaneous level over 105 dB.

The following figure shows the acoustic pressure evolution with and without SNA 50-2.

- A** Without process the average level is around 115dB with peaks at 130 dB.
- B** With process SNA50-2 move everything with a 105dB average level, without change on the curve shape. Dynamics is not corrupted
- C** In case of noise harm, this curve demonstrate that SNA 50-2 according to its settings, is able to keep the level under 105 dB.



SPECTRAL ANALYSIS CURVE SELECTION

Thoughts about weighting curve selection, from intermediate or linear curve, used for spectral analysis by the measurement chain

SNA50-2 measurement chain is in 1.1 diagram.

98-114 decree advise to measure under A weighting.

Fig 1.2 shows A weighting template. It is equivalent to human ear for low acoustic pressure. At this level human ear is more sensitive between 400 Hz to 4KHz, comparatively to higher or lower frequencies.

At level around 100dB, this is not the same : for instance at low pressure the difference is 35dB between medium and 40Hz , but à 100dB it drops to 14dB.

M filter shows the human ear sensitivity around 100dB, and takes more in account the low frequencies for analysis and regulation purpose.

On the other side, if A curve is used for analysis, the low frequencies wont be much processed, and the equipment will not perform in case of noise harm to external environment. Indeed this is most of the time, the low frequency that makes more problems outside, because the acoustic insulation is less effective at low frequencies. So M filter could more suitable.

According to the desired result, you can choose A, M filter or linear. In every situation the law will be fulfilled because wit M filter or linear , a wider frequency range is taken in account than with A filter.

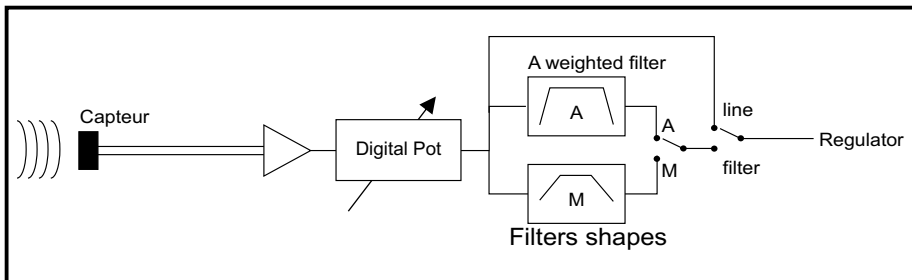


fig 1.1 - Sound level measurement channel diagram -

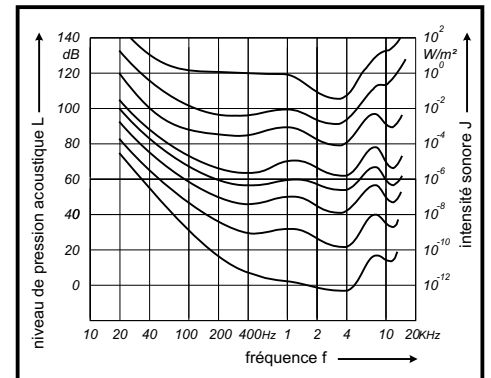


fig 1.3 - Human ear bandwidth -

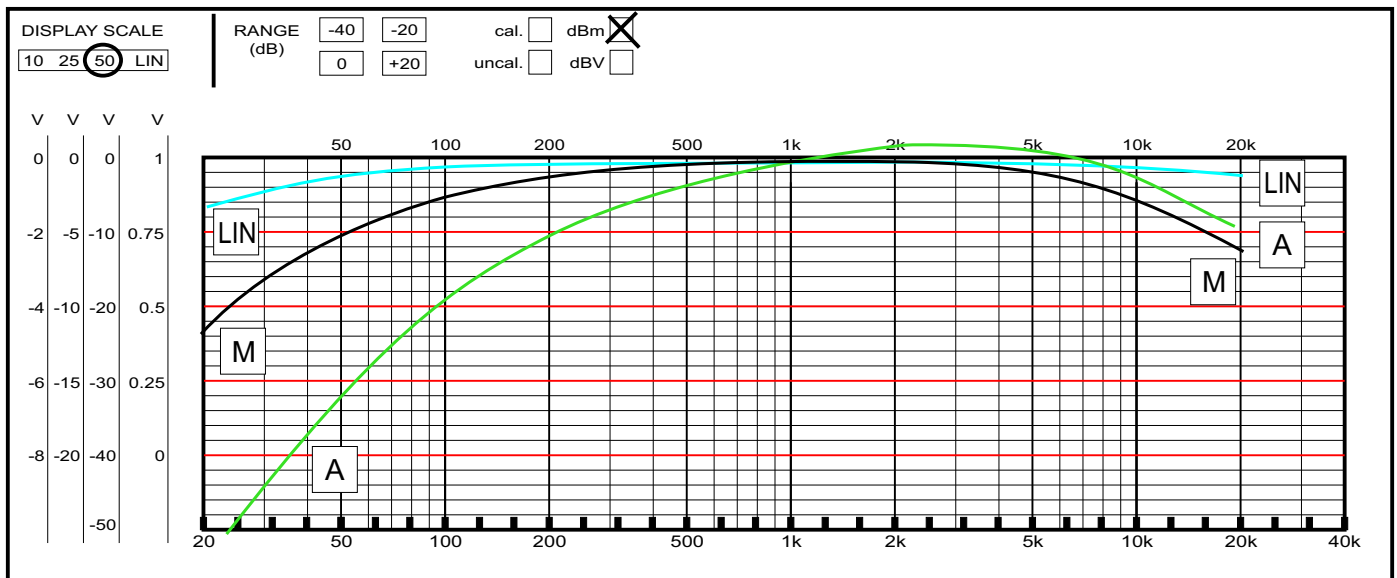


fig 1.2 - Filter curves -