

AudionET

DNA

Digital Network Amplifier

User's Manual

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1 Preface

The Audionet Team congratulates you on your purchase of this unit.

Audionet components are no marketing products, they are authentic. Conceived and developed with scientific inspiration, professional engineering expertise and a passion for achieving the perfect sound. They are unique creations designed to inspire musical enjoyment and have an excellent reputation amongst all connoisseurs throughout the world. Each and every one of our precision-manufactured devices is individually crafted at our Bochum works by our experienced and passionate workforce.

But before you start listening to your new Audionet DNA, please read this manual carefully so you are able to use and enjoy all functions of this unit without drawback on music quality.

1.1 *Included*

Included you will find the following items:

- The stereo network amplifier DNA
- The user's manual
- one standard mains cord
- F-adaptor for FM connection
- WLAN antenna
- Audionet System Remote Control *Harmony One*

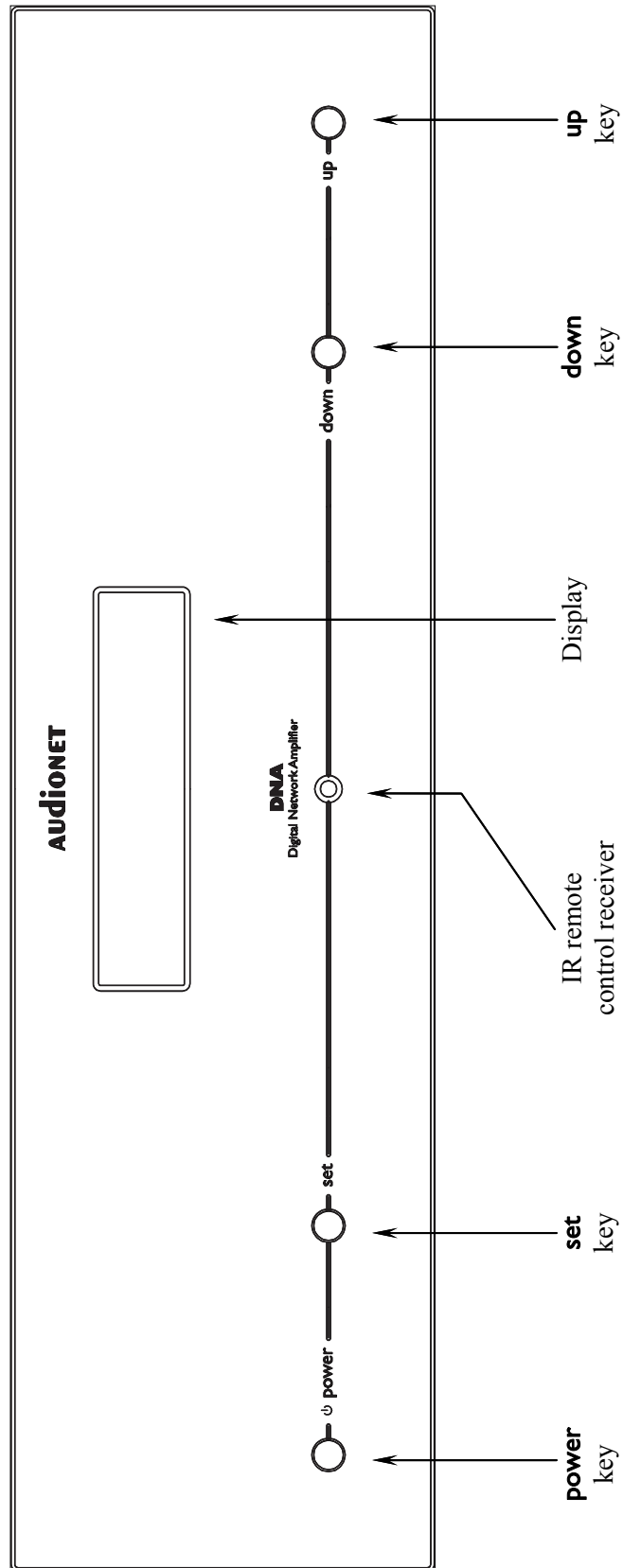
1.2 *Transport*



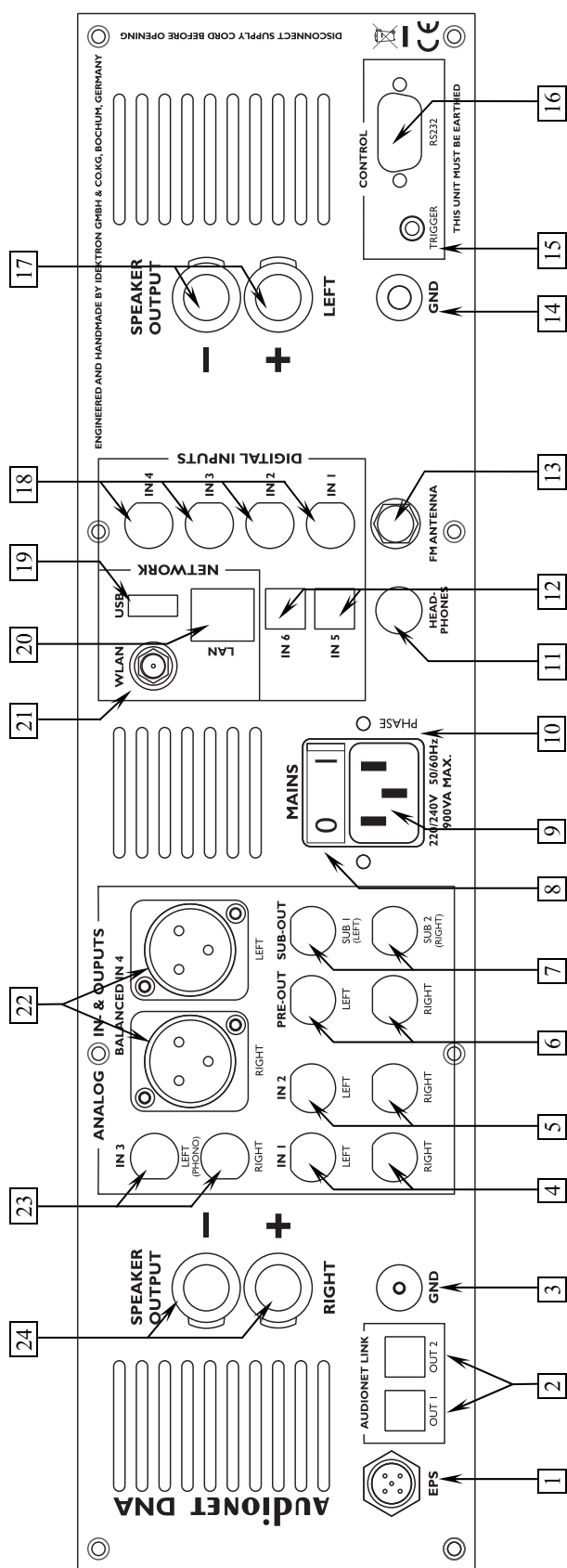
Important

- Please transport the DNA only in the included package.
- Always use the provided cloth bag to prevent scratches on the casing
- Please allow the DNA to adapt to the climatic conditions in your listening room before you switch on the unit for the first time after transport.

2 Overview front panel



3 Overview back panel



- | | | | | | |
|---|---|----|-------------------------------------|----|---|
| 1 | 5-pin connector for external power supply EPS | 9 | Mains input | 18 | Digital-input no. 1, no. 2 no.3 and no. 4, electrical |
| 2 | Audionet Link output OUT 1, OUT 2 | 10 | Marking mains phase | 19 | USB input |
| 3 | Earth connector for turn table (phono) | 11 | Headphones output | 20 | Ethernet connector LAN |
| 4 | Cinch input no. 1, left/right | 12 | Digital-input no. 5, no. 6, optical | 21 | Connector WLAN-antenna |
| 5 | Cinch input no. 2, left/right | 13 | FM antenna input | 22 | Balanced input (XLR) no.4, left/right |
| 6 | Preamplifier output PRE-OUT, left/right | 14 | Additional earth connector | 23 | Cinch input no. 3, left/right (optional phono) |
| 7 | Subwoofer cinch output SUB-OUT, SUB1/SUB2 or multiroom out left/right | 15 | Trigger output (5 or 12 Volt) | 24 | Speaker output right |
| 8 | Mains switch | 16 | Serial control port RS232 | | |

4 Installation and power supply



Important

- During connecting and removing of sources or amplifiers to the DNA all units of your audio system have to be switched off to prevent damage of the DNA or any of the other connected units.
- Please make sure that all cables are in absolute best conditions! Broken shields or short-cut cables could damage the DNA and/or any other connected unit.

4.1 Placement



Important

- It is recommended to place the DNA into a high quality rack or onto a stable table.
- Do not expose the unit to direct sunlight.
- Do not cover the ventilation slots.
- Do not place the DNA in close range to heat sources like radiators.
- Do not place the DNA on top of other units, especially not on top of power amplifiers, pre amplifiers or similar that produce heat. Both units could suffer damage from thermal overload.
- Do not place other units on top of the DNA. Both units could suffer damage from thermal overload.
- Do not use the unit in places where it is exposed to vibrations.
- Do not place the unit close to loudspeakers or into the corner of a room where it is exposed to high levels of sonic energy, which might reduce the sound quality of the unit.

4.2 Mains connection

The mains input 9^{*} is on the back panel of the DNA. To connect the device to mains use the included mains cord. If you prefer to use a different power cord make sure that it meets the specifications for your home country.



Important

- The electrical specifications of your home country must meet the electrical specifications printed onto the back panel.

^{*}see numbers in section "3 - Overview back panel" on page 10.

- The DNA is a Class I unit and must be earthed. Please ensure a stable earth connection. Phase (hot pin) is marked on the back panel **phase** [10].
- If you connect the mains cord please make sure that mains switch [8] at the back panel is switched off.
- Never pull the mains plug while the DNA is switched on! Before you pull the mains cord off its socket [9] at the back panel, power down the unit to stand-by mode and switch off the unit using mains switch [8].

Only in cases of extended absence – like vacations – or if massive trouble on the mains power grid is to be expected you should switch off the DNA from the mains using mains switch [8]. To disconnect the unit completely from mains pull the mains plug.

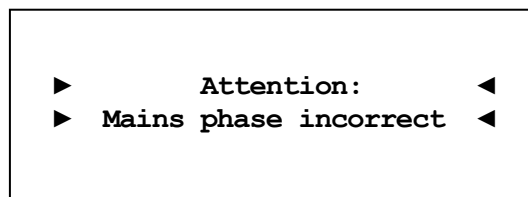


Tip

- The use of high quality mains cords could improve sound quality. Ask your local dealer for more information.

4.3 Orientation of mains plug

The correct polarization of mains is important for reasons of audio clarity and stability. Please connect the mains cord so that the hot pin of the wall outlet is connected to the pin of the mains input [22] marked **phase** [21]. Your Audionet DNA is able to detect a wrong polarization of the mains plug during start-up. If the message



appears in the display, switch off the unit and flip the mains plug in the wall outlet (see section "*6.1.3 - Mains phase detection*" on page 20).

5 Inputs and outputs



Important

- During connecting and removing of sources or amplifiers to the DNA all units of your audio system have to be switched off to prevent damage of the DNA or any of the other connected units.
- Please make sure that all cables are in absolute best conditions! Broken shields or short-cut cables could damage the DNA and/or any other connected unit.

5.1 Audio inputs

5.1.1 Analog inputs

The DNA is equipped with three unbalanced cinch inputs **IN 1** [4]*, **IN 2** [5], **IN 3** [23] and with a balanced input **IN 4** [22] for connecting signal sources at line level.

Please connect the left and right input of the same number printed on the back panel of the DNA to the corresponding output of the source you would like to connect to the DNA.

5.1.1.1 Optional phono input

The DNA can be upgraded with a phono preamplifier. Use input **IN 3** [23] to connect the turntable. Please connect the ground wire of the turntable to the terminal GND [3].



Important

- If the DNA is equipped with the optional phono module, input **IN 3** [23] must only be used to connect a turn table.
- Never use **IN 3** [23] as input for By-Pass mode, if the optional phono module is installed.

*see number in section "3 - Overview back panel" on page 10.

5.1.2 Digital input

Connect your digital sources to the electrical (coaxial) digital input **IN 1** to **IN 4** 18* or to the optical (TosLink) digital input **IN 5** and **IN 6** 12.

5.1.2.1 Audionet HighBit input

In order to send audio data across the Audionet HighBit interface to your DNA, connect your source device (e.g. ART G3 or VIP G3) with **two** digital cords to the digital inputs **IN 1** and **IN 2**.

The following table shows you how to connect Audionet HighBit-capable devices to the DNA:

Devices	Output	DNA Input
VIP G3	Digital OUT 1 -->	Digital IN1
	Digital OUT 2 -->	Digital IN2
ART G3	Digital OUT 1 -->	Digital IN1
	Digital OUT 2 -->	Digital IN2



Important

- Only if **both** connections are established and Audionet HighBit mode is activated on your source device, you can transmit audio data with all sampling rates and full resolution.



Note

- Check the section in user's manual for Audionet ART or VIP. User's manuals are available for download on our website www.audionet.de.

*see number in section "3 - Overview back panel" on page 10.

5.2 Audio output

5.2.1 Speaker terminals

Connect your speakers to the gold plated terminals **Speaker Output Left** [17] and **Speaker Output Right** [24] on the back panel of the DNA. You can use banana plugs or spades as well as simple cable ends. Look out for the correct connection of your speaker cables. Usually, the terminals of your speakers are marked + and -. The DNA uses the same marks.



Note

- Wrong speaker polarization will result in severe loss of sound quality.
- In case you would like to bi-wire your speakers please insert the cable to the tweeters from the rear using banana plugs and mount the cables to the bass speakers from the side. In doubt please ask your dealer for assistance.



Important

- Although the DNA has an effective protection system to prevent damage to the circuits, switch off the unit while working on the speakers and/or audio cables.
- The nominal loudspeaker impedance should be at least 4 Ohms or higher.
- Never use force or tools tightening the terminal screws.

5.2.2 Preamplifier output

The DNA is equipped with two pair of RCA preamplifier outputs, **PRE-OUT** [6] and **SUB-OUT** [7], to connect e.g. an additional amplifier and one or two subwoofer. The **SUB-OUT** [7] preamplifier output can be switched to multiroom output with separate volume control.

Use the RCA connection **PRE-OUT** [6] with high quality cable (e.g. Audionet C100) for bi-amping. The **PRE-OUT** [6] can also be switched to fixed volume for recording purpose.



Note

- Please refer to section "**8.2.4 - Pre-amplifier output**" on page 43 for detailed information on preamplifier output modes.

5.2.3 Headphones Socket

A 6.3 mm headphones socket is located at the rear of your DNA **HEAD-PHONES** [11]. The signal at this socket can be switched on and off to allow the headphones to be plugged in permanently. Switching is easily done in the system menu, please refer to "**8.2.1 - Headphones**" on page 40

5.3 Other connections

5.3.1 Network, USB, WLAN

The Ethernet port **20*** is a standard RJ45 socket for network cables (Cat-cable, 10/100 Mbit BASE-T).

The WLAN port **21** uses a SMA connection to attach the provided WLAN antenna. With the articulated joint the antenna can be turned into two directions.

The USB port is a TYPE-A socket (USB 2.0)



Note

- We recommend a wired network connection for best data transfer rate and to provide high stability in control with our software.

5.3.2 FM Antenna Connection

Your device has an F-series connector for antenna connection. An adaptor to coaxial socket is delivered separately. This port is specified for 75 Ohm FM antenna or analog cable TV connection.

5.3.3 Audionet Link

For your convenience, the DNA can switch on/off all other Audionet units (e.g. power amplifiers) connected via Audionet Link by a simple touch on the remote control or the **power** key on the front panel.

You only need a simple optical TosLink cable. Connect the Audionet Link output **Link OUT 2** of your DNA to the Audionet Link input of unit to be controlled.

The DNA is equipped with two Audionet Link outputs **Link OUT 2**. **Link OUT 1** is always on while the DNA is switched on. However, Audionet Link output **Link OUT 2** is controlled depending on the settings for the headphones output. Please refer to section "**8.2.1 - Headphones**" on page 40.

Therefore, use Audionet Link output **Link OUT 2** in order to connect power amplifiers to the DNA via Audionet Link. Connect units you would like to control independently from the headphones settings (e.g. tuner, CD player, etc) to Audionet Link output **Link OUT 1**.



Tip

- Audionet source units and power amplifiers are usually equipped not only with an Audionet Link input, but additionally with an Audionet Link output to connect further Audionet devices to be controlled via Audionet Link in a daisy chain. Connect this Audionet Link output to the Audionet Link input of the next Audionet unit using a simple optical TosLink cable allowing you to switch on/off your complete Audionet system by your Audionet amplifier DNA.

*see number in section "**3 - Overview back panel**" on page 10.

5.3.4 External power supply EPS

In order to use the optional external power supply Audionet EPS (External Power Supply) connect it with delivered cable to equal socket **EPS** [1] on the back panel of your DNA. Connect **both** (!! **units** (DNA and EPS) to mains. First, switch on the EPS on its back panel. Then switch on the DNA with the mains switch [8]. Now the DNA is ready to use. Switch on with the **power** key on the front panel or keys **Power Off** or **Power Toggle** of the Audionet System Remote Control *Harmony One* (see section "7.6 - Screen 5" on page 37).

To disconnect the DNA and EPS from mains, switch the DNA into stand-by mode. Use the **power** key on the front panel or the keys **Power Off** or **Power Toggle** on the system remote control. First, switch off the DNA with the mains switch [8] on the back panel, and then switch off the EPS. Now you can disconnect des mains and EPS connection cables.



Important

- **Never switch on or off the EPS on its back panel while the DNA is operating.**
- For further information referring to the external power supply EPS please consult its user's manual.

5.3.5 Additional earth connection

An optional green-yellow cord for the additional earth connection is available from Audionet. Attach this cord to the earth connector [14] on the back panel of the DNA and put the plug into the mains socket right beside the mains cord of your DNA. This ensures an additional and stable earth connection resulting in a better sound.

On the second ground connection **GND** [3] you can connect the ground wire from a turn table (phono).

5.3.6 Control connections

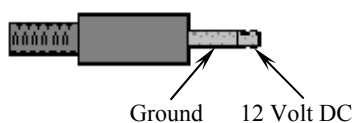
Use trigger output **TRIGGER** [15] to control (e.g. switch on/off) non Audionet devices. If you switch on the DNA from stand-by mode, the trigger output [15] provides a signal of 12 Volts DC (see section "8.3.4 - Trigger out" on page 51).

The serial connection **RS232** [16] is an additional control port to your DNA e.g. for house automation systems (Crestron,...).



Tip

- Use a 3.5 mm telephone mono plug to connect a device to the trigger output [15] of your DNA. The pinning is as follows:




6 Usage



All functions of the DNA are microprocessor controlled. This guarantees highest precision, exclusive functions, easy handling and protection against operating errors.

6.1 Basic operations

6.1.1 Powering up

First of all, please make sure your DNA is connected correctly to your signal sources, power amplifier(s) and mains (see section *"4 - Installation and power supply"* on page 11 and *"5 - Inputs and outputs"* on page 13).

The DNA is a stand-by unit. Please operate the mains switch  on the back panel. The display shows a welcome message for a brief moment. After that the DNA is in stand-by mode.

Only in cases of extended absence (like vacations) or if massive trouble on the mains power is to be expected (e.g. thunder storms) it is recommended to disconnect the DNA from the mains. While the DNA is in stand-by mode, operate mains switch  on the back panel. The display will go dark. To disconnect the DNA from mains completely, you have to pull the mains cord off the mains jack .

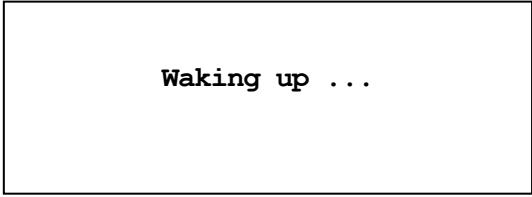


Important

- **Before you switch off the DNA from mains, power down and discharge completely all units connected to the outputs of the DNA.**

6.1.2 Switching on and off

To power up the DNA from stand-by mode, press the **power** key on the front panel. The DNA issues the message:



Waking up ...

In case the mains plug has the incorrect polarization a warning will appear in the display (see section "**4.3 Orientation of mains plug**" on page 12). After that the unit is in normal operating mode and ready to use.

If you would like to switch off the unit, please press the **power** key on the front panel. The display shows the message



Going to sleep ...

and the unit enters stand-by mode.

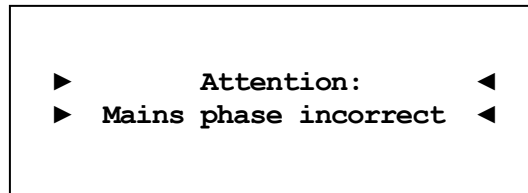


Note

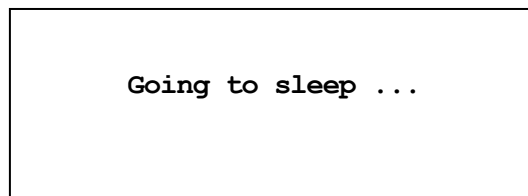
- Of course, you may switch on/off the DNA with the Audionet System Remote Control *Harmony One*. For detailed information please refer to section "**7.6 - Screen 5**" on page 37.

6.1.3 Mains phase detection

The correct polarization of mains is important for reasons of audio clarity and stability. Please connect the mains cord that the hot pin of the wall outlet is connected to the pin marked **phase** [10] of the mains input [9] on the back panel. The DNA recognizes the incorrect polarization of the mains plug automatically. Right after switching on the unit from stand-by mode by pressing the **power** key on the front panel the following message will appear in the display in case the mains polarization is incorrect:



If you read the above message, switch off the unit by pressing the **power** key. Please wait until the display no longer reads.



Disconnect the DNA from mains by operating the mains switch [8]. Now pull the mains plug and re-insert it into the mains socket rotated by 180°.

If you switch on the unit again, the warning should not appear now.



Important

- If the DNA issues the mains polarization warning or no warning at all for both positions of the mains plug, check the connection to earth of your mains socket and mains cord. **You have to ensure a stable connection to earth for the mains phase detection of the DNA to work correctly!**

6.1.4 Using Audionet Link

Your DNA is equipped with two Audionet Link outputs **Link OUT 1** 12 and **Link OUT 2** 12 allowing you to switch on/off further Audionet units (e.g. power amplifiers, CD player or tuner) connected via Audionet Link (also see section "**5.3.3 - Audionet Link**" on page 16).

If the rest of your Audionet system is connected to your DNA via Audionet Link, all linked units will be automatically switched on/off as soon as you switch on/off your DNA using the **power** key on the front panel or the Audionet System Remote Control *Harmony One*.



Note

- The switch on/off signal of the Audionet Link output **Link OUT 2** 19 is issued depending on the headphones settings (see section "**8.2.1 - Headphones**" on page 40).
- Please read section "**5.3.3 - Audionet Link**" on page 16. Also, consult the user's manual of your Audionet components connected via Audionet Link for further information.
- If you use Audionet Link to switch off other devices, please wait until everything is in stand-by mode before you switch on again.

6.1.5 Control elements on the front panel

The front panel has four keys to control the DNA (see section "**2 - Overview front panel**" on page 9). With these keys you can control all functions as well as all setup options to adjust the unit to your preferences (see section "**8 - Device setup**" on page 38).

power	Use key to switch on/off the unit (see section " 6.1.2 - Switching on and off " on page 19).
set	Push key shortly to change input channel (see section " 6.2.4 - Input selection " on page 26). Push the key for longer than two seconds to get into system menu (see section " 8 - Device setup " on page 38).
down	Push key to reduce volume, select previous input channel (see section " 6.2.4 - Input selection " on page 26) or change an option of the setup menu (see section " 8 - Device setup " on page 38).
up	Push key to increase volume, select next input channel (see section " 6.2.4 - Input selection " on page 26) or change an option of the setup menu (see section " 8 - Device setup " on page 38).

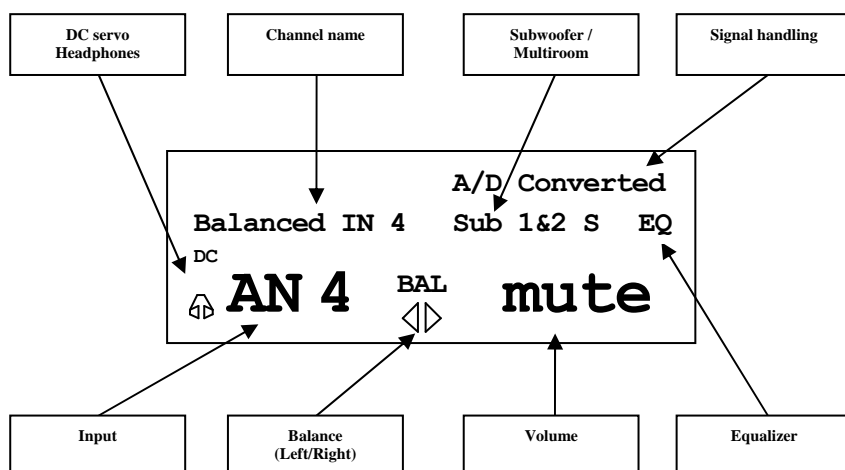
6.2 Detail operations

6.2.1 Display

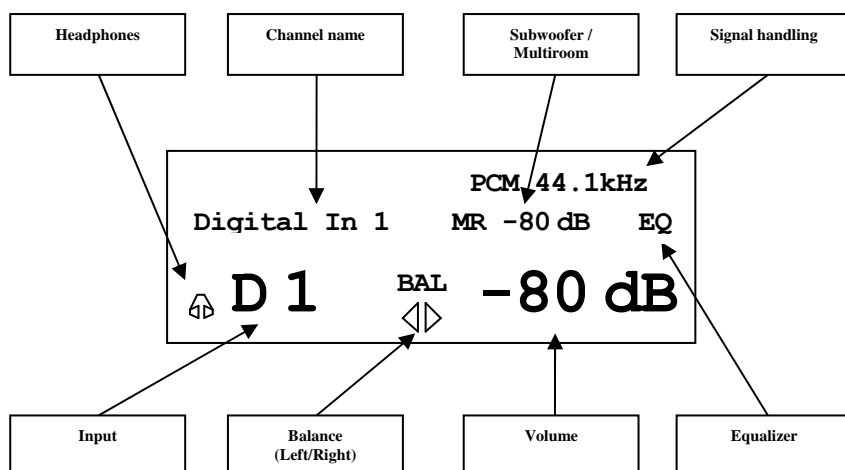
The display provides the following information in the normal operating mode.

Depending on which channel you chose, you get different information. If there are more information to show you can switch display pages with the **Info** key on system remote control *Harmony One* (see section "7.1 - Key assignment DNA" on page 32). You will need it especially for the NET input channel (see section "6.2.1.4 - NET input" on page 23). The following illustrations will show you the differences between the input channels. Your display could be different, because of your selected system adjustments.

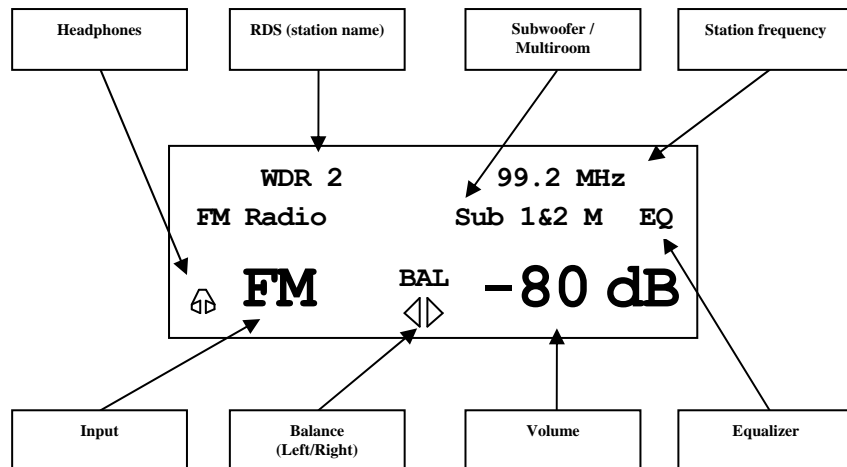
6.2.1.1 Analog input channel



6.2.1.2 Digital input channel

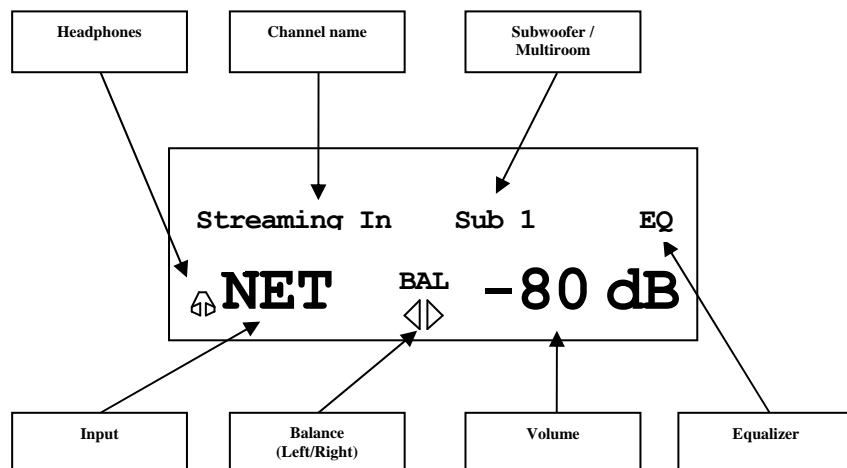


6.2.1.3 FM tuner

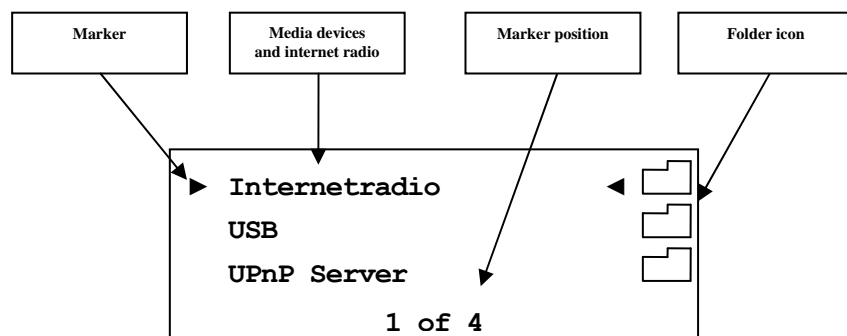


6.2.1.4 NET input

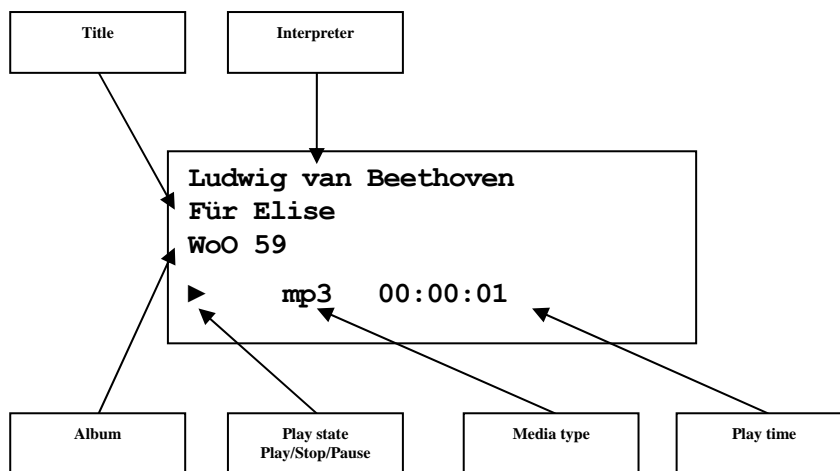
- View 1:



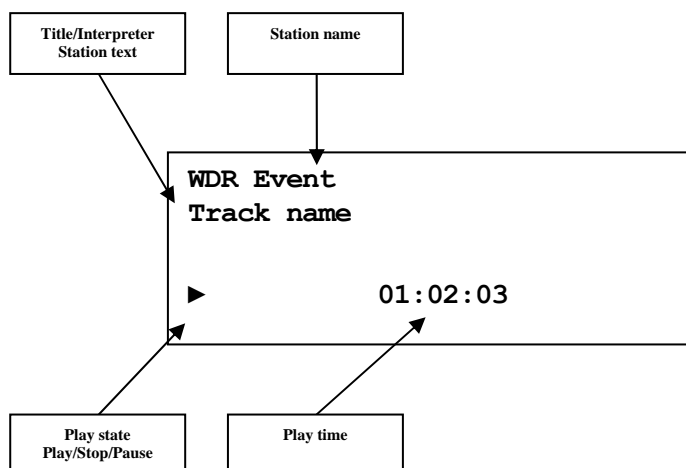
- View 2:



- View 3a (Play from UPnP or USB):



- View 3b (Play from internet radio station):



6.2.2 Volume control


When the DNA is in normal operating mode, than use the keys **up** and **down** on the front panel to adjust the volume. **up** to increases, **down** to decreases the volume. The volume control of the DNA runs in a range from **-80dB** (quite) to **+10dB** (very loud) in real 1 dB steps relatively to the level of the input signal. You can also control the volume with your System Remote Control *Harmony One* or the software Audionet RCP. Multiroom volume could only be regulated with your system remote control *Harmony One* or the software Audionet RCP (see section "7.5 - Screen 4" on page 36 and "8.4.1 - Loudspeaker" on page 54).

6.2.3 Muting




Note

- The muting function is available through the Audionet System Remote Control *Harmony* (see section "7.1 - Key assignment DNA" on page 32).
- You can also use software Audionet RCP


Press key  of the Audionet System Remote Control *Harmony One* to mute or un-mute your DNA.

Just as well as the input selection, the DNA uses soft muting, i.e. volume is stepped down gently to -80 dB, and then the outputs are switched off. The display informs the user of a muted unit with the text **MUTE**. Even if the dim level is set **Off**, the text is displayed.

To un-mute the DNA press key  again. Here as well, the volume is stepped up gently to its original level after switching on the outputs.



Note

- While the unit is muted, you may of course select a different input channel. But the DNA will stay muted until you press the key  again to un-mute and restore the original volume level.
- If you turn up the volume by using the **up** key or **Vol+**, while the DNA is muted, the muting function will be deactivated and the new volume level set.

6.2.4 Input selection

Push the **set** key on the front panel once for less than two seconds, to join the input selection menu. Then select the desired input channel with the keys **up** and **down**. In the display you see the adjusted input channel, channel number and your chosen channel name. Press **set** to apply the channel switching. Overview of DNA input channels:

No.	Inputs	Signal	see (3 - Overview back panel on page 10)
1	D1	Digital (electrical)	Digital Inputs IN 1 [18]
2	D2	Digital (electrical)	Digital Inputs IN 2 [18]
3	D3	Digital (electrical)	Digital Inputs IN 3 [18]
4	D4	Digital (electrical)	Digital Inputs IN 4 [18]
5	D5	Digital (optical)	Digital Inputs IN 5 [12]
6	D6	Digital (optical)	Digital Inputs IN 6 [12]
7	NET	Stream, USB, Internet radio	Network [19] [20] [21]
8	FM	FM Tuner	FM Antenna [13]
9	AN1	Unbalanced Line	Analog Inputs IN 1 [4]
10	AN2	Unbalanced Line	Analog Inputs IN 2 [5]
11	AN3	Unbalanced Line	Analog Inputs IN 3 [23]
12	AN4	Balanced Line	Analog Inputs IN 4 [22]

The DNA features a soft input selection. During the switching of inputs, first the volume is stepped down to –80 dB, followed by switching off the outputs. Now the input section switches to the new input channel. Afterwards the outputs are switched on again, and finally the volume is stepped up to its original level.



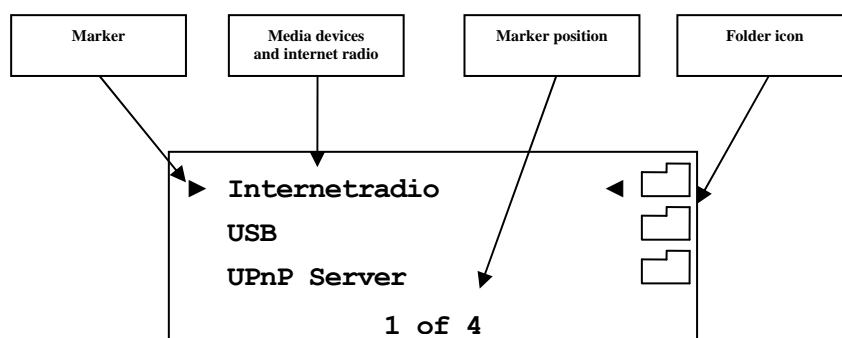
Note

- Leave the input selection function by holding down the **set** key longer than 2 seconds or wait a few seconds.
- Using the Audionet System Remote Control *Harmony One*, select an input channel by simply pressing the corresponding key (see section "7.2 - Screen 1" on page 33), or use the keys **Ch+** and **Ch-** to switch to the next or previous input channel without using the **Select Input** function.

6.2.5 FM tuner

For setting and saving radio stations to your DNA, please use the software Audionet RCP (see chapter *"7 - FM-Tuner" on page 23* in RCP user's manual). You could also setup your radio station frequency manually with your remote control. Use the left/right keys of the directional pad (see section *"7.1 - Key assignment DNA" on page 32*). Push shortly to change the frequency stepwise. If you hold a key pushed you activate the forward/backward seek to next station.

6.2.6 NET input



6.2.6.1 Internet radio

Navigate thru the menu with the directional pad on your remote control (see section *"7.1 - Key assignment DNA" on page 32*), to find internet radio station, by category you chose. The table below is a help to get along the huge offer of internet radio stations. If you want to get back to the top level menu of NET input push **Exit**, else use the key **9*** to go only one level backwards.

Internet radio menu structure		
Favorites	...	
Added Stations	...	
Location (10)	Africa	Station sorted by location 1. layer: continent 2. layer: country 3. layer: show all station, or show highlighted station or show stations with same genre
	Asia	
	Caribbean	
	Central America	
	Europe	
	Internet only	
	Middle East	
	North America	
	Oceania	
	South America	

* see numbers in section: *"7.1 - Key assignment DNA" on page 32*

Genre (56)	Alternative	Station sorted by genre 1. layer: genre 2. layer: show all station, or show highlighted station or sort by country
	Ambient	
	Big Band	
	Blue Grass	
	Blues	
	Business News	
	Celtic	
	Christian Contemp.	
	...	
Podcasts by Location (9)	Africa	Podcast sorted by country 1. layer: continent 2. layer: country 3. layer: show all podcasts, or sort podcasts by genre
	Asia	
	Caribbean	
	Central America	
	Europe	
	Middle East	
	North America	
	Oceania	
	South America	
Podcasts by Genre (118)	Afro-pop	Podcast sorted by genre 1. layer: genre 2. layer: show all podcasts
	Alternative	
	Ambient	
	Americana	
	Animals	
	Arts-Culture	
	Arts-Interview	
	Avant Garde	
	Big Band	
	...	
New Station	...	
Most Popular Station	...	
ID#	...	

How to find a special station (e.g. Deutschlandfunk):

Switch your DNA to NET input. Move to internet radio using directional pad on your remote control (see section **"7.1 - Key assignment DNA" on page 32**). Apply with **[OK]** key and mark location. Apply again. Go on and select Europe and then Germany. Switch to all stations. You will get an alphabetical list of all German stations. With the up/down key **[6]** you can step three stations forward or backward. To get faster thru large lists. Push the down key till the station Deutschlandfunk appears on our display. Mark the station and apply with **[OK]** key. The station starts to play. To stop use the player keys on system remote control *Harmony One* (see section **"7.1 - Key assignment DNA" on page 32**).

6.2.6.2 USB

Connect your USB devices to the DNA and wait until it appears in the display. Supported are all FAT and FAT32 formatted devices. Your USB device is shown in top level of NET input. You can navigate thru your folder structure with directional pad on your system remote control *Harmony One* (see section "*7.1 - Key assignment DNA*" on page 32).

6.2.6.3 iPod

An **iPod** or **iPad** is shown in the top level of NET input. You can navigate the same way, as thru a USB device.

6.2.6.4 UPnP server

The easiest way to play music from an UPnP server is to use the software Audionet RCP.



Note

- Look out for separately available user's manual to our software Audionet RCP. You can find it on our homepage www.audionet.de

If you want to use your System Remote Control *Harmony One*, it is the same way to navigate thru as shown above in section internet radio and USB.

7 Audionet system remote control

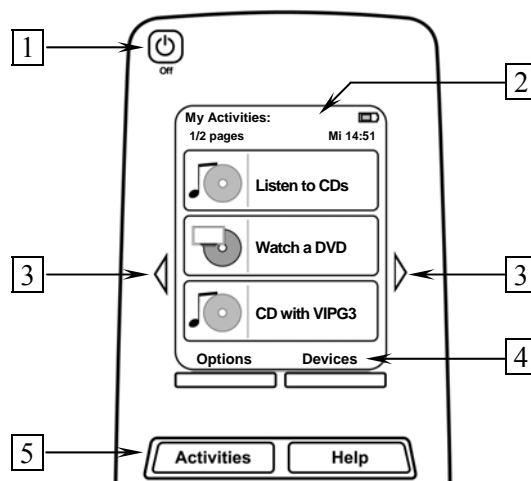
Every function of the DNA is accessible via the Audionet system remote control *Harmony One*. Additionally, up to 14 other devices can be controlled by the *Harmony One*.

Press **Devices** key to enter **Device Mode**. The display now lists all devices included in the current configuration of the *Harmony One*. Select **DNA** from the list to set the *Harmony One* to controlling the DNA. The **Device Mode** gives you access to all the possible commands to control your DNA. The following explains all these commands in detail.



Important

- During everyday use, you should never need to use the Device Mode of your Harmony One, but control the DNA (and other devices of your audio setup) by customizing your Activities. For detailed information on how to customize and use Activities on your Harmony One please consult the separate user's manual for Harmony One. It is available for download on our homepage www.audionet.de.




- Power** key for use with Activities, turns all devices off that are included into the current Activity. See separate user's manual for *Harmony One*.
- Depending on the operational mode, the touch screen of the *Harmony One* shows a list of Activities or Devices, help or infrared commands and any available listings.
- If a menu or listing stretches over more than one screen page, use the corresponding arrow buttons to go to the next or previous page of the menu or listing (see also separate user's manual for *Harmony One*).
- Devices** key, lists all the devices on the display, and allows you to select and directly control any device included in the configuration of the remote control (see separate user's manual for *Harmony One*). Select **DNA** to enter **Device Mode** for controlling the DNA.

5. **Activities** key: Press this key to view a list of Activities you have added. Press the button next to the Activity you want to select, and the *Harmony One* will control your entertainment system (see separate user's manual of *Harmony One*).



Important

- The Power key  is only available for Activities. In Device Mode the Power key has no function.
- Even without using an Activity, the user is able to control all functions of the DNA using the *Harmony One* in Device Mode.
- The keys described below to control the DNA refer to the factory default programming of the Audionet System Remote Control *Harmony One*. Understandably, any changes done to this setup by the user cannot be discussed here.



Tip

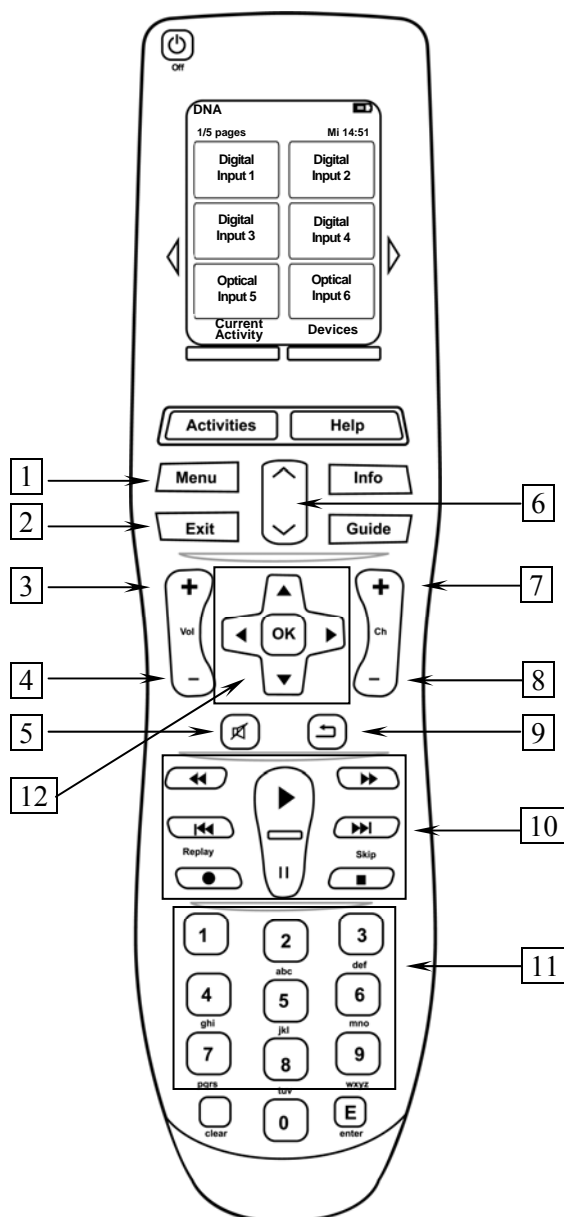
- In order to switch the DNA on/off, without using an Activity, please use the keys Power On, Power Off or Power Toggle on screen 5 (see section "**7.6 - Screen 5**" on page 37). Of course, it is possible to control the DNA without any Activity, but to tap the full potential of the *Harmony One* you need to configure Activities customized to your needs (please refer to separate manual of the remote control *Harmony One*).




Note

- Please read the separate user's manual to your Audionet System Remote Control *Harmony One*. Activities, Devices and Device Mode as well as customizing the remote control are discussed there.

7.1 Key assignment DNA



- 1 Use **Menu** key to navigate through the setup menus. This key has the same function as **set** key on the front panel (see section "8.2 - Global setup" on page 40).
- 2 **Exit**, leaves every menu and shows main screen. If you are in a submenu of the NET input you will get to top level.
- 3 **Vol+**, increases the volume of the DNA.
- 4 **Vol-**, decreases the volume of the DNA.
- 5 , mutes the DNA (see section "6.2.3 - Muting " on page 25).
- 6 **Page up/down**. With this key you can switch three files or folders forward/backward. The key is activated only if you select NET input (Internet radio, UPnP play, USB and IPod).

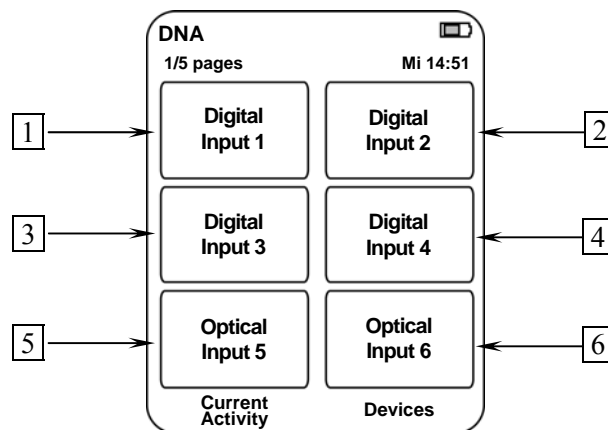
- 7 **Ch+**, switches to the next input channel (see section "6.2.4 - Input selection " on page 26).
- 8 **Ch-**, switches to the previous input channel (see section "6.2.4 - Input selection " on page 26).
- 9 **Cancel / Return** back step in menu, without saving any changes
- 10 **Player keys** for controlling media content if you chose NET input.
- 11 **Numeric keys** are used for input of numbers or letters (SMS principle) if the menu item supports direct letter input.
- 12 **Directional pad** with **OK** key in the middle. These are the major control keys for your DNA.



Note

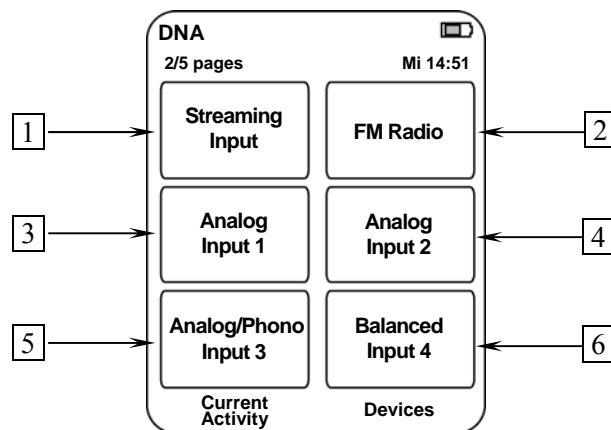
- To navigate backwards in menu use **Exit** **2** key, or **Return** **9** key.

7.2 Screen 1



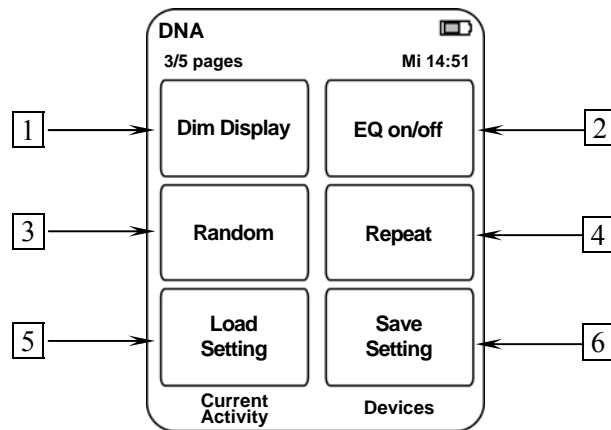
- 1 Directly selects input channel **D1** (coaxial).
- 2 Directly selects input channel **D2** (coaxial).
- 3 Directly selects input channel **D3** (coaxial).
- 4 Directly selects input channel **D4** (coaxial).
- 5 Directly selects input channel **D5** (optical).
- 6 Directly selects input channel **D6** (optical).




7.3 Screen 2



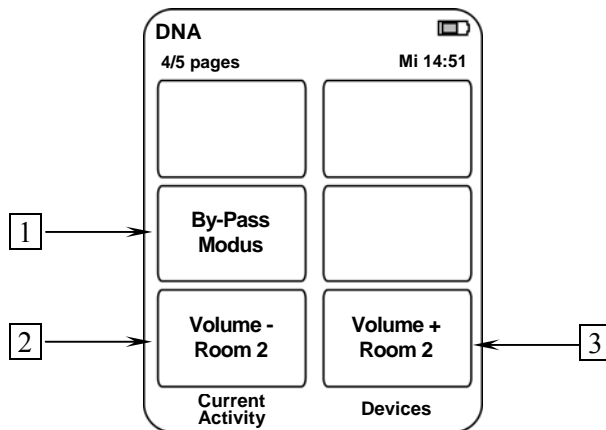
- 1 Directly selects input channel NET (streaming input). This input channel allows you to access internet radio stations, USB devices, iPod and UPnP server (if they are connected).
- 2 Directly selects input channel FM radio.
- 3 Directly selects input channel AN1 (unbalanced).
- 4 Directly selects input channel AN2 (unbalanced).
- 5 Directly selects input channel AN3 (unbalanced). If a phono card is installed, this is the input channel for turn table.
- 6 Directly selects input channel AN4 (balanced).

7.4 Screen 3



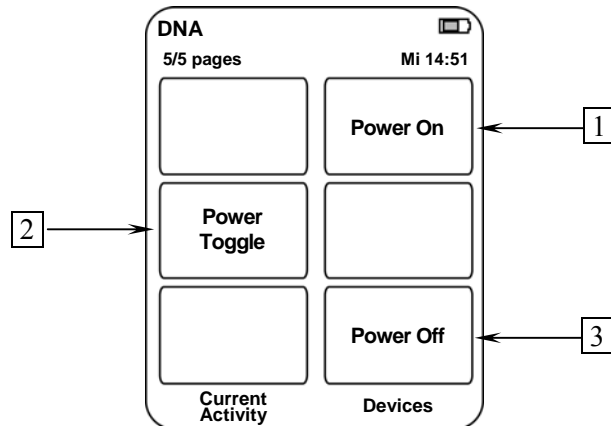
- 1 **Dim Display** jumps directly to the setup menu item **Display** (see section "8.2.2 - Display" on page 41).
- 2 **EQ on/off** switches on/off the equalizer for the selected channel.
- 3 **Random**  activates random play from selected folder (activated only with NET input).
- 4 **Repeat** activates repeat for titles of a folder **ALL**  or for the playing title **ONE**  (activated only with NET input).
- 5 **Load Setting** jumps directly to the setup menu item **Load Setting**. There you can load user settings. You navigate with the directional pad on your remote control. Confirm your selection with **OK** key.
- 6 **Save Setting** jumps directly to the setup menu item **Save Setting**. There you can save user settings. You navigate with the directional pad on your remote control. Confirm your selection with **OK** key.

7.5 Screen 4



- 1 **By-Pass Modus** switches on/off the By-Pass Mode of the DNA. Please read section *"8.2.6 - By-Pass channel" on page 45* first, before you use the special function By-Pass Mode.
- 2 **Volume – Room 2** decreases the volume of preamplifier output SUB-OUT **7** (see section: *"3 - Overview back panel" on page 10*), only if setup menu item **multiroom** is selected (see section: *"8.4.1 - Loudspeaker" on page 54*).
- 3 **Volume + Room 2** increases the volume of preamplifier output SUB-OUT **7** (see section: *"3 - Overview back panel" on page 10*), only if setup menu item **multiroom** is selected (see section: *"8.4.1 - Loudspeaker" on page 54*).

7.6 Screen 5



- 1 If the DNA is in stand-by mode, press key **Power On** to switch the unit on.
- 2 Use **Power Toggle** to switch on/off the DNA. This key has the same function as the **power** key on the front panel. If the DNA is in stand-by mode, **Power Toggle** switches on the unit. If the DNA is already switched on, **Power Toggle** switches off the unit to stand-by mode.
- 3 If the DNA is switched on, use key **Power Off** to switch the unit off to stand-by mode.

8 Device setup

To adjust the DNA to your preferences, please use the setup menu. You can control the menu with the keys on front panel of your DNA or your remote control. For more comfortable adjust use our software Audionet RCP. You only need to integrate your DNA to your network (see section: *"8.6.9 - Sample for Network setup" on page 69*).

To control your DNA with front panel keys, use **set**, **up** and **down**.

set hold key for more than 2 seconds opens the system menu. If you hold again you leave the menu without saving, you cancel. Short push saves/applies a menu item or you switch into marked menu item.

up, down are used to select setup menu items and change.

For easier control you can use the directional pad on your System Remote Control *Harmony One* (see section *"7 - Audionet system remote control" on page 30*).

To setup your DNA very comfortable, please use our software Audionet RCP. You can control everything with mouse and keyboard. You can see everything on your computer display. Especially with equalizer setup it is very useful, because you have a good overview (see also Audionet RCP user's manual).



Note

Changes will only take effect, while you push **OK** on your remote control or short push of **set** key on DNA front panel.

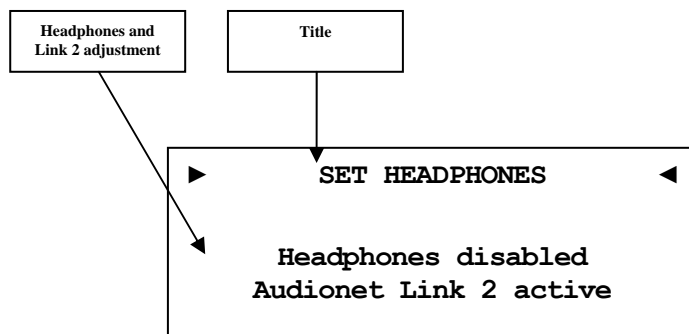
8.1 Overview device menu

Global Setup	Function
Headphones	Headphone mode
Display	Setup display brightness
Balance (Left/Right)	Setup volume balance left/right
Pre Out	Setup preamplifier mode
Auto start	Setup auto start mode
By-Pass Channel	Setup channel for By-Pass mode
Phono Card	Setup your phono card according to your turn table
Power-Off Mode	Setup stand-by mode
Channel Setup	Setup every channel separately
Channel Name	Name the input channel (12-digits)
Volume Offset	Setup volume to offset differences between input channels
Digital EQ Setup	Setup the parametric 5 band equalizers (separately for each channel)
Trigger Out	Setup Trigger Out for control of non Audionet devices (e.g. active subwoofer)
ADC Attenuation	Setup attenuation, to prevent overload of the A/D converter
DC Servo	Switch on/off the DC servo
Bass Manager	
Loudspeaker	Main speaker setup
X-Over	Cross over frequency for high pass filter of main speakers and low pass filter for subwoofer
Sub Volume Offset	Setup subwoofer volume to offset differences
Sub Phase	Setup the subwoofer phase 0° or 180°
Delay Manager	
Speaker Distance	Setup distance between speakers and hearing position
Virtual Sub Offset	Virtual setup of subwoofer position
Network Setup	
Network Profile	Save and load network profile
DHCP	Switch on/off DHCP
IP Address	Setup IP address for your DNA
IP Mask	Setup subnet mask
Gateway	Setup gateway IP address
DNS	Setup DNS IP address
RCP Port	Setup network port for software Audionet RCP
Wireless Setup	Setup Wi-Fi (SSID, crypt,...)

8.2 Global setup

8.2.1 Headphones

Select the desired setting.



Headphones disabled
Audionet Link 2 ac-
tive

Headphones output **HEADPHONES** [11] is disabled. The Audionet Link output **Link OUT 2** [2] is switched on while the DNA is switched on.

Headphones active
Audionet Link 2 ac-
tive

Headphones output **HEADPHONES** [11] is active. The Audionet Link output **Link OUT 2** [2] is also active as long the unit is switched on. Use this option if you connect devices to the Audionet Link output **Link OUT 2** [2] that are supposed to be controlled via Audionet Link independently from the headphones setting.

Headphones active
Audionet Link 2 dis-
abled

Headphones output **HEADPHONES** [11] is active, but the Audionet Link output **Link OUT 2** [2] is **always** switched off. Use this option if you would like to switch off amplifiers, that are connected to the Audionet Link output **Link OUT 2** [2], automatically while you are using the headphones output.

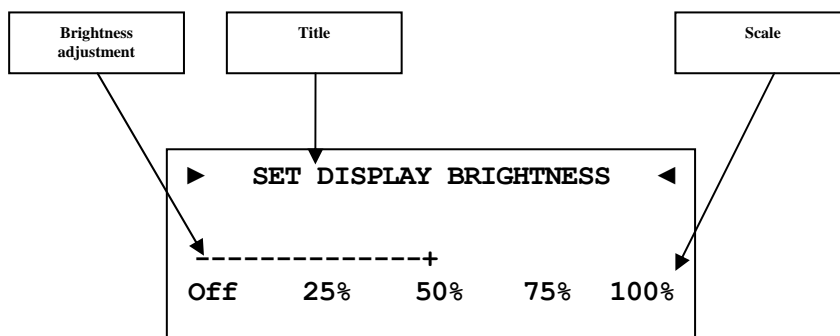


Tip

- If you connect your power amplifier to the Audionet Link output **LINK OUT 2** [19] of the DNA, it will be switched off automatically as soon as you select the headphones option **Headphones active, Audionet Link 2 disabled**. Thus, you are able to enjoy music with your headphones and need not to worry about the amplifier. In case you deactivate the headphones output by selecting the option **Headphones disabled, Audionet Link 2 active**, the power amplifier is switched on automatically via Audionet Link, so you playback music through your speakers again.

8.2.2 Display

Adjust the display brightness with the front panel keys or your system remote control *Harmony One*.



Note

- Get to this option at anytime using the key **Dim. Display** on screen page 3 of the Audionet System Remote Control *Harmony One* (see section: "**7.4 - Screen 3**" on page 35). Use directional pad to select desired brightness.
- Is the brightness set **Off** the display is only on during setup or volume adjustments. It switches off automatically several seconds after the last user entry.
- The DNA activates the display saver automatically without any user entry after 12 minutes.
- During active display saver, the display shows only the number of the selected input channel and current volume level in the form of **An4 -47dB**. The display brightness is always reduced to 25%, and the location of the information text will change randomly every 12 seconds to prevent any burn-in effect of the display.
- The display saver is deactivated and the display returns to its normal mode as soon as any user entry is detected
- The user cannot switch off the automatic display saver function!

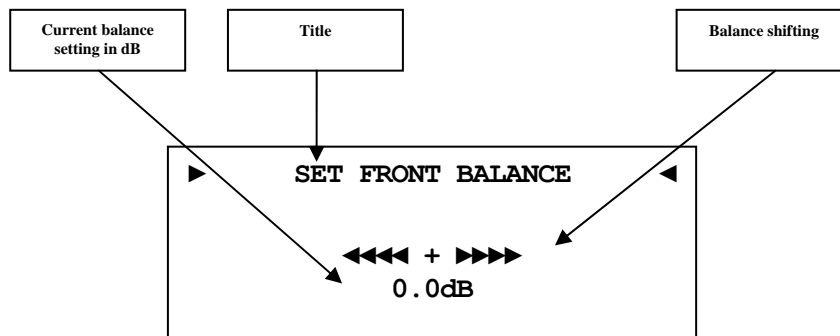


Important

- **Long-term usage of the display set to maximum brightness (setting 100%) may cause extended signs of wear resulting in a decay of contrast or brightness of individual dots in the display. Do not use the display with a brightness set higher than the factory default of 50% for a longer period of time!**

8.2.3 Balance Left/Right

Adjust the volume balance between left and right channel.



- 9dB** maximum volume displacement to left side
- 0dB** no volume displacement
- +9dB** maximum volume displacement to right side

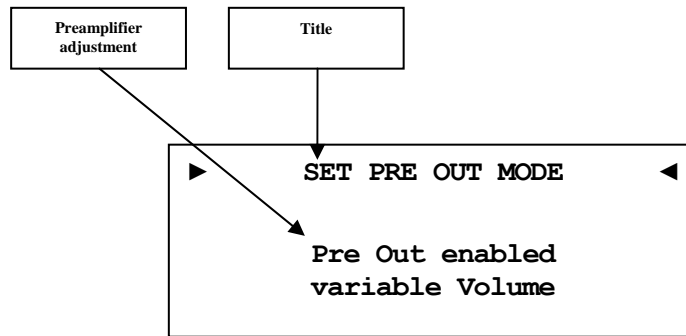


Note

- In normal operating mode the DNA indicates a balance shift by the corresponding icon in the lower middle of the display. Thus you are able to see whether the balance was shifted at any time (see section: *"6.2.1 - Display" on page 22*).
- A balance shift is carried out internally by attenuating the corresponding channel, i.e. if the balance is shifted to the right, the level of the left channel is attenuated and vice versa.

8.2.4 Pre-amplifier output

Adjust the pre amplifier output mode for your local conditions.



**Pre Out enabled
variable Volume**

Pre-amplifier output is connected to the volume control. Use this mode, if you want to connect a power amplifier

**Pre Out enabled
fixed Volume**

Pre-amplifier output is set to line level (record output). Use this mode to connect a recording device such as Tape e.g.

Pre Out disabled

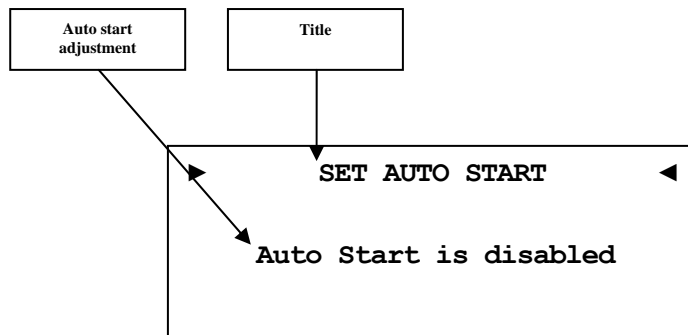
Pre-amplifier output is switched off.



Important

- If you use **PRE OUT** [6] as record output. You have to connect the line output of your recording device (e.g. DAT, Tape,...) on analog **IN 2** [5]. This input is not sent out to **PRE OUT** [6], to prevent internal feedback.

8.2.5 Auto start

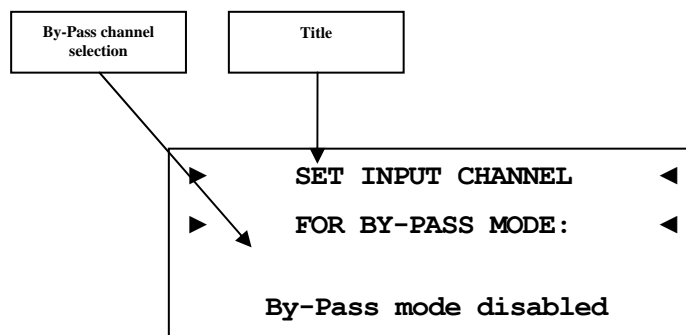


- disabled** The auto start function is disabled. After switching on the mains switch **8** on the back panel, the DNA enters the stand-by mode. You have to use the **power** key on the front panel or **Power On** or **Power Toggle** keys on the Audionet System Remote Control *Harmony One* to switch on the unit into normal operating mode*.
- active** The Auto start function is active. As soon as you connect the DNA to mains (i.e. use the mains switch **8** on the back panel) the unit starts up automatically to normal operating mode. Use this setting for timer controlled operations.

*or switched on/off by Activities on the Audionet System Remote Control; see separate user's manual *Harmony One*

8.2.6 By-Pass channel

Select the analog input channel you want to use for By-Pass mode.



The By-Pass Mode was primarily intended to integrate the overwhelming sound quality of the DNA into an existing home cinema setup or to expand an existing excellent stereophonic system based on the DNA to a complete home cinema setup without missing out on the qualities of the DNA. To realize this kind of setup, please proceed as follows:

Connect your home cinema pre-amplifier according to its user's manual.

1. Connect the output for the front channels Left and Right not to the power amplifier but to one of the free inputs of the DNA.
2. Use menu item By-Pass channel of the setup menu of the DNA to select the input channel for By-Pass Mode you connected the outputs Left and Right of the home cinema pre-amplifier to.
3. Connect now all high quality 2-channel sources to the remaining inputs of the DNA.
4. Connect your DVD player to your home cinema pre-amplifier as usual.

Use the DNA to listen to high quality 2-channel sources and streaming audio. If you would like to use your home cinema system activate the By-Pass Mode of the DNA and use your home cinema pre-amplifier as usual.



Important

- To activate the By-Pass Mode you need a Audionet System Remote Control Harmony One (see section "7.5 - Screen 4" on page 36)
- Please read the complete section about the special function By-Pass Mode first before you use this function in order to prevent incorrect usage and possible damage to your audio system and/or hearing.
- By factory default no input channel is selected for the By-Pass Mode. Use this menu option to select desired input channel for the By-Pass Mode. If no input channel is selected and you try to invoke the By-Pass Mode the DNA issues the warning: **No input for By-Pass selected.**

When the By-Pass Mode is active the volume control of the DNA is bypassed. The DNA passes through the input signal to the outputs and amplifiers with its **full** level.

Please use this setup option to select which of the four analog input channels of the DNA is fed through to the outputs if By-Pass Mode is active.



Important

- **First, select the input channel used for By-Pass Mode, before you activate the By-Pass Mode for the first time.**

Activate the special function By-Pass Mode of your DNA by pressing the **By-Pass Mode** key on the Audionet System Remote Control. The signal at the input channel selected for By-Pass Mode operations is passed through the DNA at a level of 0 dB (i.e. no change in volume level) to the outputs and amplifiers.



Important

- **Please check the correct connection and setup before you use the By-Pass Mode for the first time. The input signal will be passed through to the outputs at full level!**

As soon as the By-Pass Mode is activated, the DNA will ignore all control commands coming from the keys on the front panel or remote control (exceptions see below)!



Important

There are only two possibilities to disable the By-Pass Mode:

1. Press **By-Pass Mode** key on the Audionet System Remote Control. The DNA switches back to the input channel selected before resetting the volume to its prior level.
2. Push the **power** key on the front panel or the buttons **Pow-er Toggle** or **Power Off** on the Audionet System Remote Control. The DNA switches off to stand-by mode.

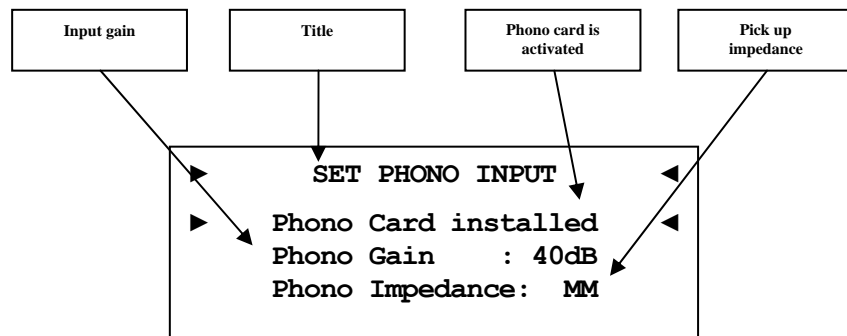


Note

- If you leave the By-Pass Mode by pushing the **power** key on the front panel, this mode will **not** be saved, i.e. if you switch on the DNA again, the unit will switch to the last saved input channel selection and not to the By-Pass Mode. If you would like to use the By-Pass Mode again, press **By-Pass Mode** key on the Audionet System Remote Control *Harmony One*.

8.2.7 Phono Card

Adjust your phono card.



Phono Card missing

Chose this adjustment, if **no** phono card is attached to your DNA

Phono Card installed
Phono Gain : 40-70dB
Phono Impedance: MM/MC

Chose this adjustment, if a phono card is build-in to your DNA and further setup the other menu items

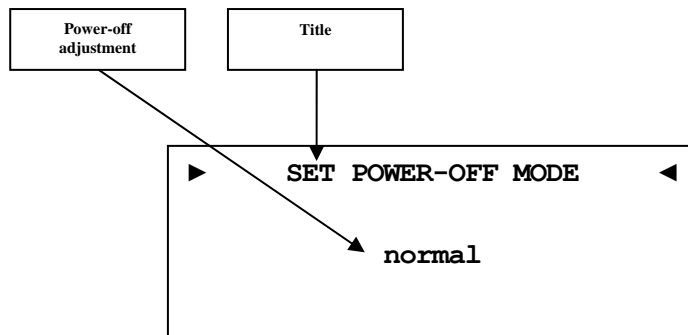
Setup input gain and impedance corresponding to your turn table pick up.



Note

- Check out technical information about your turn table and pick up system. Else ask your local dealer for support.

8.2.8 Power-off mode

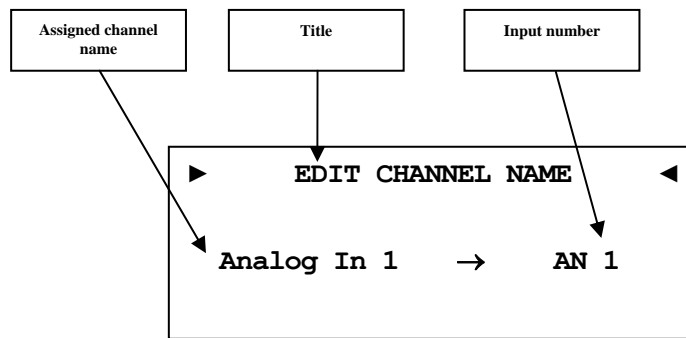


We differentiate two Power-off modes. Firstly the **normal** power-off mode and secondly the **Quick Start** mode. The factory default setup is the **normal** mode, because of low power consumption in stand-by (less than 1W). If you use this power mode, you cannot switch on with the software Audionet RCP. While the **Quick Start** mode is activated, the network interface stays on and the DNA start up process is accelerated, because the network interface must not boot up. Furthermore you can use software Audionet RCP to start up. If you select **Quick Start** mode the power consumption is increased. Check out "*10.7 - Specifications*" on *page 84*.

8.3 Channel setup

All settings in menu item **Channel Setup** apply to the currently selected input channel.

8.3.1 Channel name



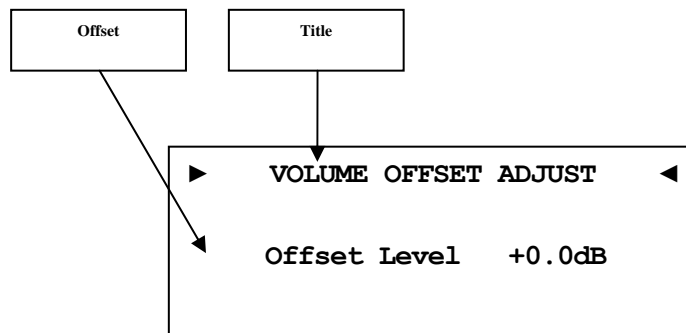
You can assign a fully user-definable name up to 12 characters in length to each of the twelve input channels. The display shows the number of the currently selected input channel and the assigned channel name. The cursor marks the character you now may alter.



Note

- For easier adjustment of the channel name use the software Audionet RCP (see user's manual RCP).

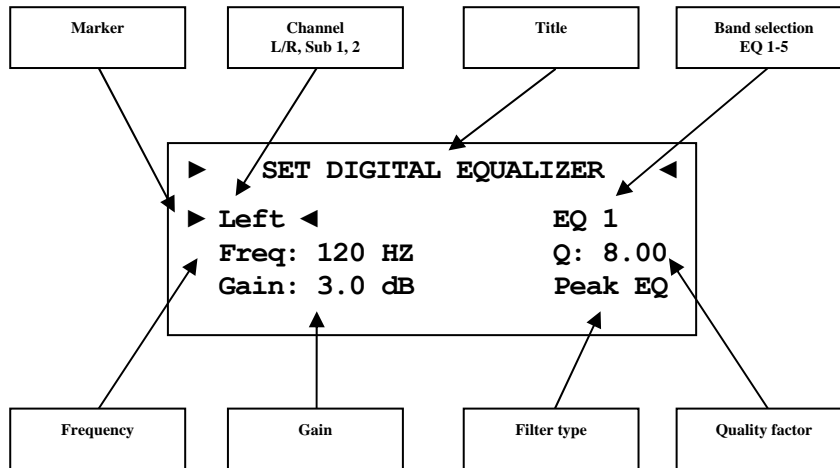
8.3.2 Volume offset



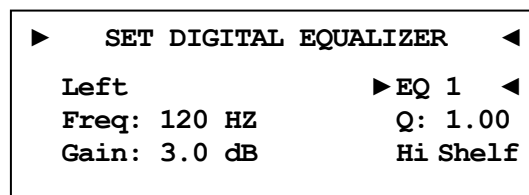
To offset differences between input devices, you can adjust the volume level for each channel in range from -9dB to +9dB.

8.3.3 Digital equalizer setup

The digital EQ is a parametric 5 band equalizer with separated adjustment for left and right channel, as well as subwoofer 1 and 2.



You can navigate through the menu of digital EQ with the directional pad on your system remote control. With up/down keys you choose the parameter for adjustment, left/right changes the selected parameter. If you enter the digital equalizer menu item, the first selected parameter is **Left**. Here you select the speaker channel you want to adjust. [**Left**, **Right**, **Subwoofer 1**, **Subwoofer 2**] Selection of subwoofer corresponds to the adjustment in menu item **Bass Manager** (see section: "8.4.1 - Loudspeaker" on page 54).



Secondly you select the band [**EQ 1** - **EQ 5**]. For each band you can adjust the following parameter:

Freq	center- respectively cutoff frequency (depends on filter)
Q	Filter quality (Q)
Gain	Gain from -12 dB to +6 dB)
Filter type	you can choose between seven different filter types

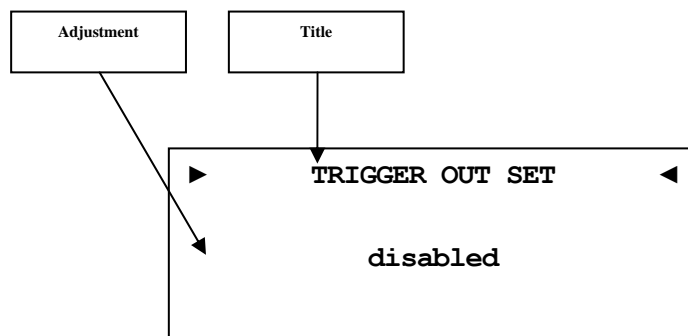
Filter type	Short description
Peak EQ	band-pass filter
Hi Shelf	treble control
Lo Shelf	bass control
LP 2nd	low pass filter 2nd order
HP 2nd	high pass filter 2nd order
LP 1st	low pass filter 1st order
HP 1st	high pass filter 1st order



Note

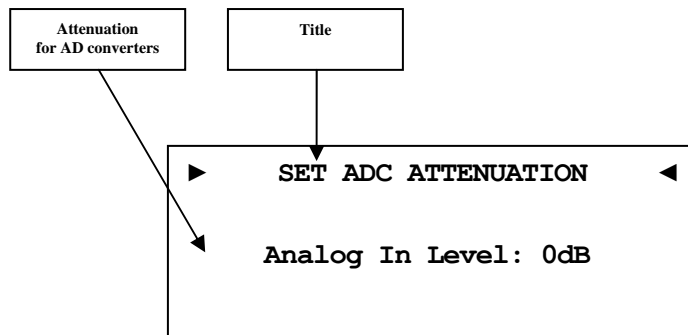
- For easier adjustment of equalizer parameters use the software Audionet RCP (see user's manual RCP).

8.3.4 Trigger out



The trigger out connection could be used to remotely switch on/off non Audionet devices. Factory default adjusted voltage is 12V DC. If it is necessary the output voltage could be decreased to 5V DC. Changing the voltage should be done by authorized personal only. Ask your local dealer for support.

8.3.5 ADC attenuation



0 dB the analog audio signal is directly sampled

-6 dB Should the analog audio level be too high and distortions are the reason. You can switch 6dB attenuation previous the analog/digital converter.



Note

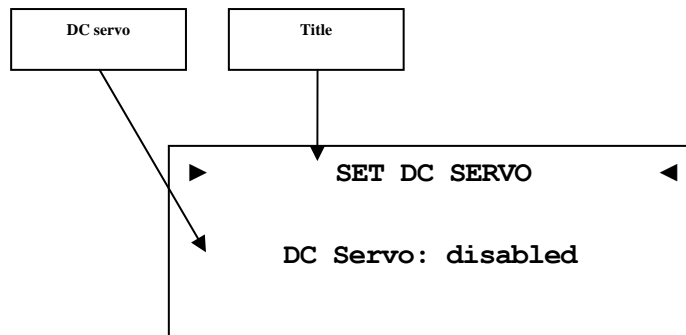
- This adjustment is without any effect, if the analog input is in "*Pure Analog*" mode.

Pure Analog or **A/D Converted** is displayed in the upper right corner on the front panel display.

Pure Analog stands for direct signal path through the DNA. The only manipulation to the signal is the volume control.

A/D Converted is displayed, if the analog audio signal is sampled for digital manipulation. All equalizer adjustments are done digitally.

8.3.6 DC-Servo



disabled The DC Servo is disabled for the currently selected input channel.

active The DC Servo is activated for the currently selected input channel.

Activate the DC Servo if the source connected to the DNA holds a high DC component in its output signal. The DC Servo eliminates the DC component. The currently selected input channel is now AC-coupled. Usually the DC Servo may be disabled. This adjustment is only available with analog input channel.



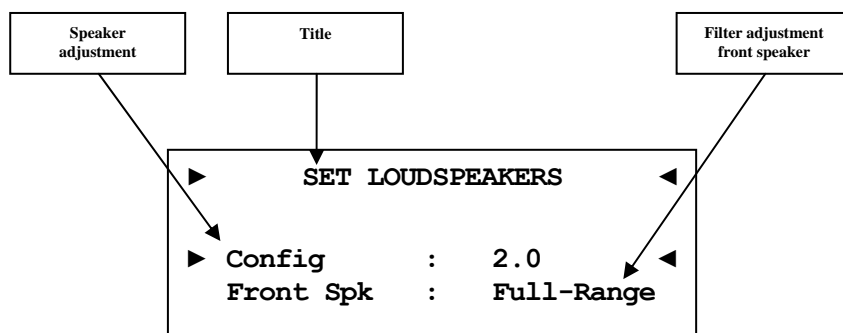
Note

- An activated DC-servo is display by a small **DC** icon next to the input channel (see "*6.2.1.1 - Analog input channel*" on page 22).

8.4 *Bass manager*

8.4.1 Loudspeaker

Choose your system configuration, according to your setup.



Config: Setup your speaker adjustment.

2.0 no Sub Subwoofer output is disabled.

2.1 Subwoofer output is activated and ready to support one mono subwoofer.

2.2 mono Subwoofer output is activated and ready to support two mono subwoofer.

2.2 stereo Subwoofer output is activated and ready to support stereo subwoofer (L/R).

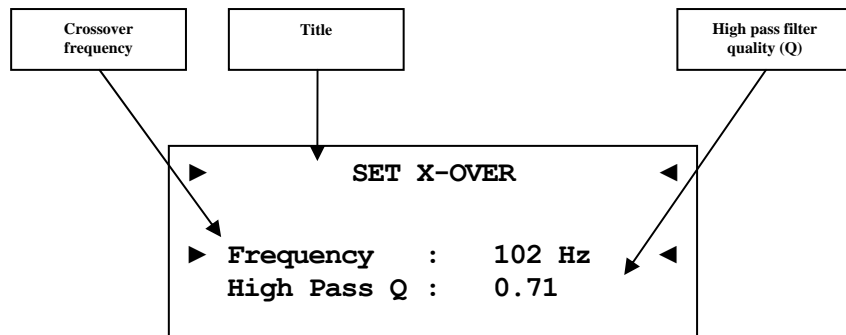
Multiroom The subwoofer output is switched to multiroom mode and a separate volume control is activated too (see section "7.5 - Screen 4" on page 36).

Front Spk: Adjust your speaker configuration

Full-Range: the speakers reproduce the full frequency range. Select this option, if your speakers are able to reproduce bass below the crossover frequency. If you use this setup with a subwoofer, your system could create a stronger bass foundation (see section: "8.4.2 - X-Over" on page 55).

HP-Filtered: Bass below the cross over frequency is redirected to subwoofer output channel. Please use this option for small speakers, which are not capable of reproducing frequencies below the cross over frequency.

8.4.2 X-Over



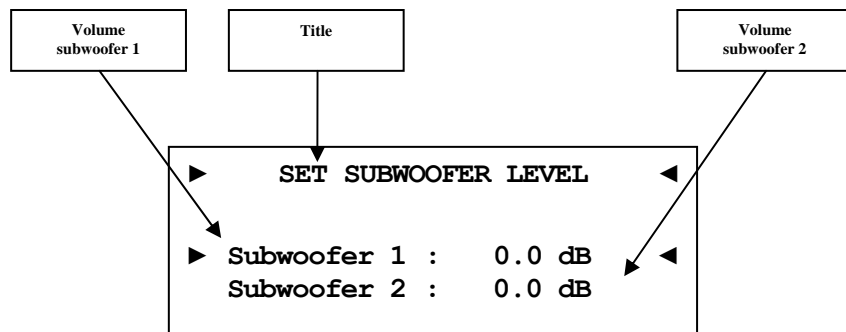
Now you have to adjust the cross over frequency for the speakers. The frequency defines the point of operation for the corresponding filters of your loudspeaker setup. Adjust the Q factor of the current high pass filter. The default setting is 0.71 and should only be altered by experts.



Note

- You will see an extra EQ-curve in the equalizer window for front speakers and subwoofer in your Audionet RCP software.

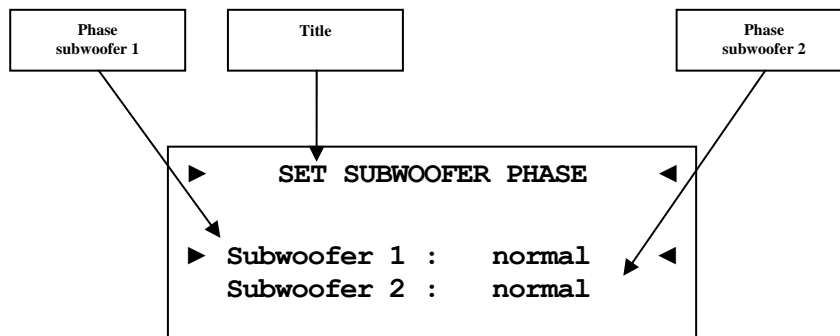
8.4.3 Subwoofer volume offset



Use this adjustment to offset volume differences between subwoofer and main speakers. The subwoofer channels could be adjusted separately.

8.4.4 Subwoofer phase

You can select the phase of your subwoofer.



- normal** 0° phase shift. The subwoofer is positioned in same direction as the main speaker. Sound propagation is the same with each speaker.
- inverted** 180° phase shift. The subwoofer is positioned behind the listening position and the chassis membrane is orientated inverse to the main speaker.

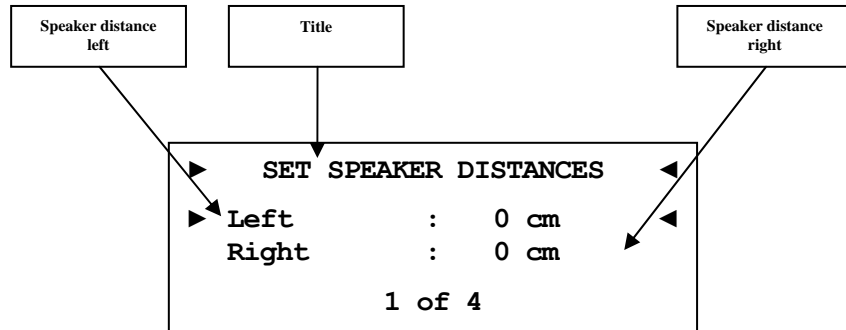


Note:

- To make a precision subwoofer setup you can use the virtual offset (see section: *"8.5.2 - Virtual subwoofer offset" on page 57*).

8.5 Delay manager

8.5.1 Speaker distance



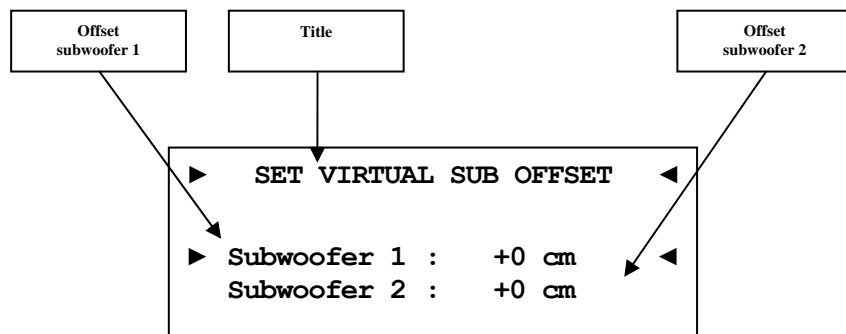
Use this menu to enter the distances from your speakers to your listening position. The distance ranges from 0 to 700 cm in steps of 5cm. According to the entered distances, the DNA calculates the necessary delays of each channel to ensure, that all signals from all speakers arrive at the same time at the listening position.



Note

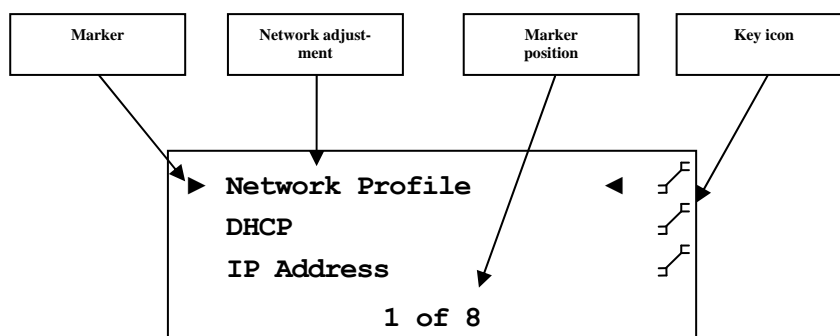
- You can setup the subwoofer distance as well.

8.5.2 Virtual subwoofer offset



This option virtually moves the subwoofer relative to the listening position (= adjusting the phase of the subwoofer). Use **positive** values, if you want to **delay** the signal from the subwoofer relative to all other channels. Use **negative** values, if the signal from the subwoofer should arrive **earlier** than the signals from all other speakers.

8.6 Network setup



Your DNA is set to receive DHCP* information from your network. If you connect your device to a wired network, it should be ready to use. For use of fixed IP address you may contact your network administrator to get the information you need to adjust. Use your system remote control *Harmony One* to adjust your IP and Wi-Fi information. An adjustment thru the front panel is not possible. To set numbers for an IP address you can use the numeric key pad. For letters you can use the numeric key pad as well (SMS principle) or you navigate with the directional key pad. With up/down you change the letter and with left/right you move the cursor. Confirm your input with **OK** key. A example for network configuration you can be found at the end of the section (see section: "8.6.9 - Sample for Network setup" on page 69). Most network terms are defined in glossary (see section: "10.1 - Glossary" on page 76).

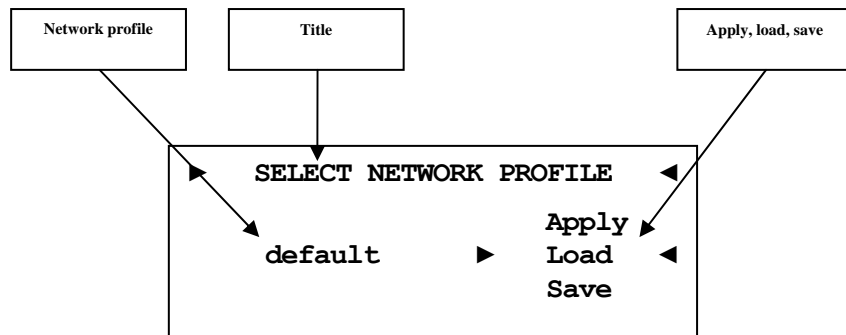


Note

- Wireless setup could also be done with the software Audionet RCP. For the time of configuration you need to connect your DNA to the wired network. Later you have to disconnect the cable for using a Wi-Fi connection.

*see section: "10.1 - Glossary" on page 76

8.6.1 Network profile



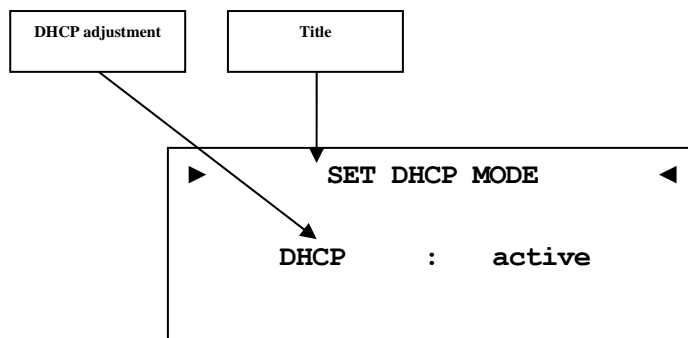
Four network profiles are stored inside the DNA. Three are free to save; one is "default" and could not be changed. The default profile is already setup. In this profile the DHCP function is enabled. If your network does not support DHCP information the following data is set:

IP-Address : 192.168.178.222
IP-Mask : 255.255.255.0
Gateway : 192.168.178.1
DNS : 192.168.178.1

8.6.1.1 Make a network-profile

To setup a network profile in menu item **Network Profile** you have to load a profile (1 to 3). Select a profile (1 to 3) with the directional pads left/right on your system remote control Harmony One, with the up/down keys you have to mark **Load**. Confirm your selection with **OK** key. Now setup your network configuration inclusive Wi-Fi adjustment. Everything you adjust in menu item **Network Setup** is stored in the memory cell for network profile. After you setup everything chose menu item **Network Profile** again. Select a **Profile** (1 to 3) you want to save in. Navigate again with the directional key pad, left/right for Profile selection and with up/down to item **Save**. Confirm your selection with **OK** key. At least you have to activate your profile. Chose the profile you stored in and select item **Apply**. Confirm again with **OK** key. Now the network interface is rebooted, it will take about 20-30 seconds.

8.6.2 DHCP



disabled DHCP client mode is disabled

active Your DNA will try to get information via DHCP.

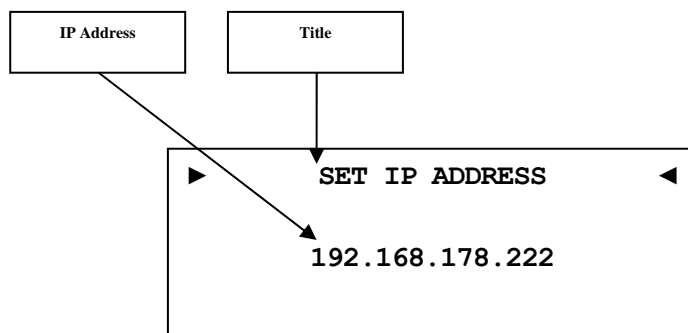
If the IP address is received from DHCP server, the following menu items must not be setup. Menu item IP address, IP mask, gateway and DNS are without effect and they are over written by DHCP information.



Tip

- Use directional pad on your System Remote Control *Harmony One*. Confirm everything with **OK** key.

8.6.3 IP Address



Setup your chosen IP address.

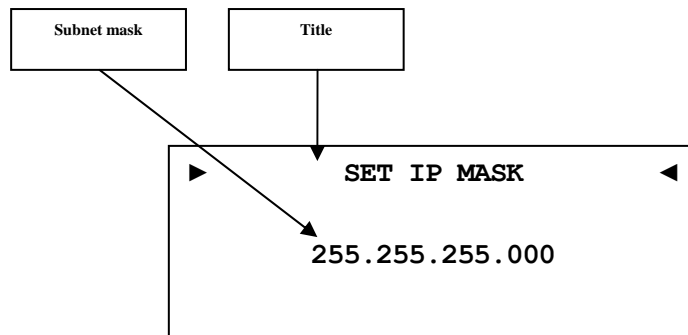
The used address type is IPv4 (e.g. 192.168.178.222).



Tip

- Use numeric key pad on your System Remote Control *Harmony One*. Confirm everything with **OK** key.

8.6.4 IP Mask



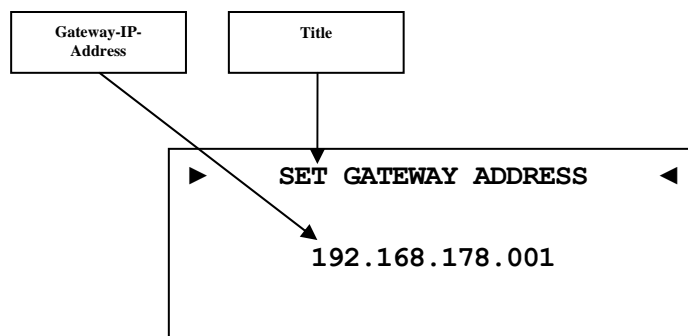
Setup your used subnet mask (e.g. 255.255.255.0).



Tip

- Use numeric key pad on your System Remote Control *Harmony One*. Confirm everything with **OK** key.

8.6.5 Gateway



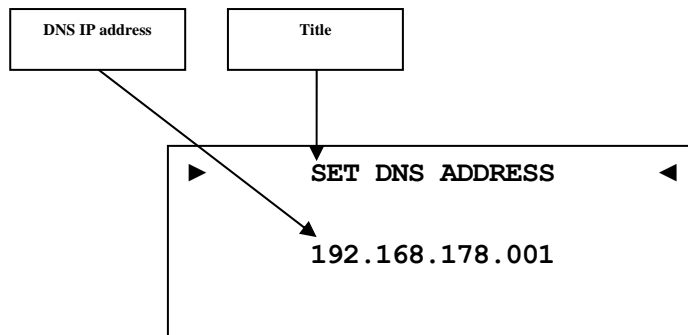
Setup your gateway IP address (e.g. 192.168.178.1).



Tip

- Use numeric key pad on your System Remote Control *Harmony One*. Confirm everything with **OK** key.
- The gateway address is mostly the same as the router IP address.

8.6.6 DNS



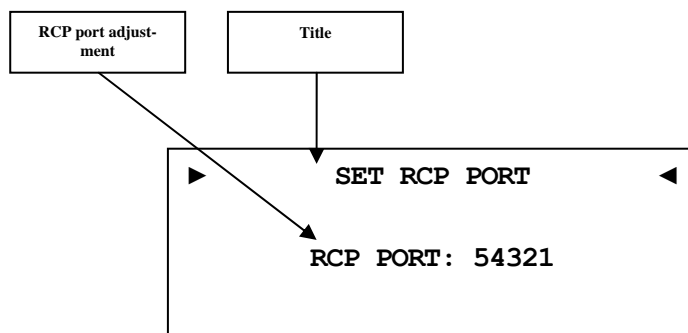
Setup your DNS IP address (e.g. 192.168.178.1).



Tip

- Use numeric key pad on your System Remote Control *Harmony One*. Confirm everything with **OK** key.
- The DNS IP address is mostly the same as the router IP address.

8.6.7 RCP port



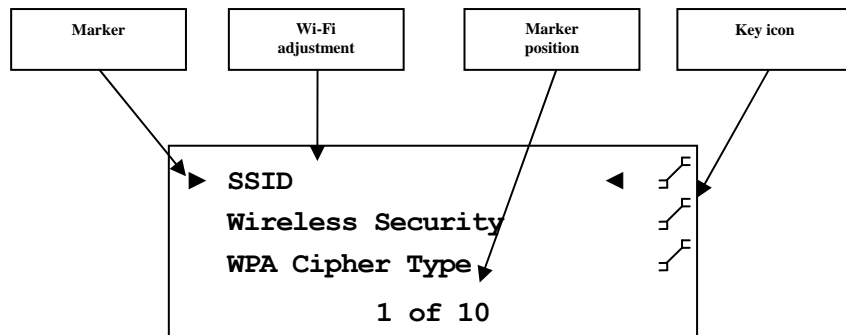
Here you setup the communication port for software Audionet RCP. This adjustment should only be done by professional users. Setup a value between 50000 to 59999. The default value has to be changed only, if you have network communication problems. Ask your network administrator for support.



Tip

- Use directional pad left/right on your System Remote Control *Harmony One*. Confirm everything with **OK** key.

8.6.8 Wireless setup



All Wi-Fi adjustment has to be done manually.

You can find all your Wi-Fi adjustments in your router or access point. If have no access to this information ask your network administrator.

Depending on which crypt type you select, some menu items are without function. If you chose WPA or WPA2 you have to setup [8.6.8.3](#) and [8.6.8.4](#). For the old WEP standard you have to setup [8.6.8.5](#) to [8.6.8.7](#).

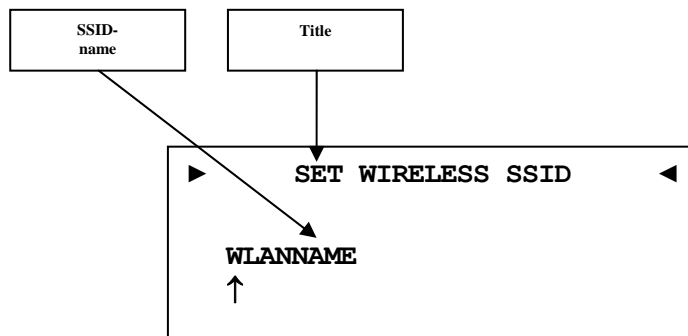


Note

- You can use software Audionet RCP to adjust Wi-Fi settings. A wired network connection is necessary. This connection could be removed after setup (see user's manual Audionet RCP).

8.6.8.1 SSID

Enter your Wi-Fi name. Attention on case sensitive input.

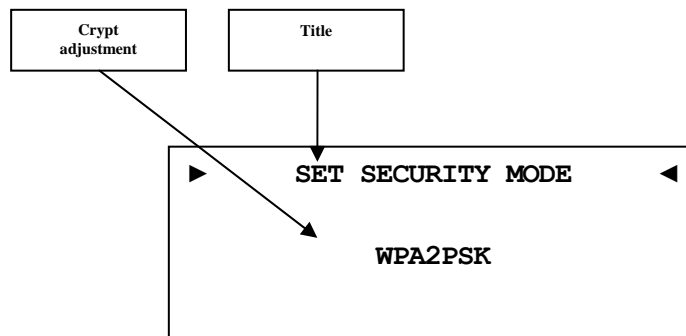


Note

- Space is not defined for Wi-Fi names. You could not enter it. If necessary change your Wi-Fi name (SSID).
- Use numeric key pad on your System Remote Control *Harmony One* for letter input (SMS principle). You have to switch the cursor position forward manual. Use the left/right keys on directional key pad. Confirm the adjustment with the **OK** key.

8.6.8.2 Wireless security

Select your Wi-Fi crypt type. Take this information from your router.



None	no crypt type selected.
WEP	Wired Equivalent Privacy, old and unsecure security standard.
WPAPSK	Wi-Fi Protected Access Pre-shared key was an inter standard to displace WEP until the new WPA2 was defined.
WPA2PSK	Wi-Fi Protected Access 2 Pre-shared key is the regular standard for Wi-Fi security.

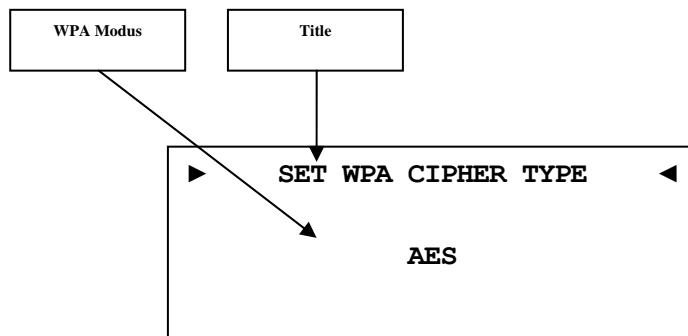


Note

- Use directional pad left/right on your System Remote Control *Harmony One*. Confirm everything with **OK** key.
- Wikipedia links to all security terms can be found in section "**10.2.1 - Wireless security**" on page 78.

8.6.8.3 WPA cipher type

Select WPA cipher type according to your connection.



TKIP Temporal Key Integrity Protocol is only used with WPAPSK

AES Advanced Encryption Standard is used with WPAPSK, as well as WPA2PSK too. Mostly used setup is WPA2PSK with AES.

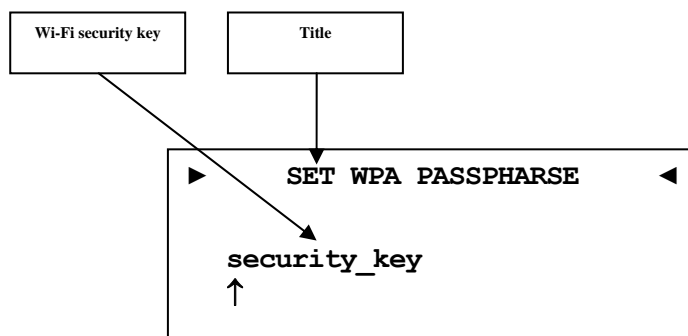


Note

- Chose WPA cipher mode with the directional pad key. Left for **TKIP** and right for **AES**. Confirm the input with **OK** key.

8.6.8.4 WPA pass phrase

Enter your WPA network key. Attention on case sensitive input. This phrase is only active with **WPAPSK** or **WPA2PSK**.

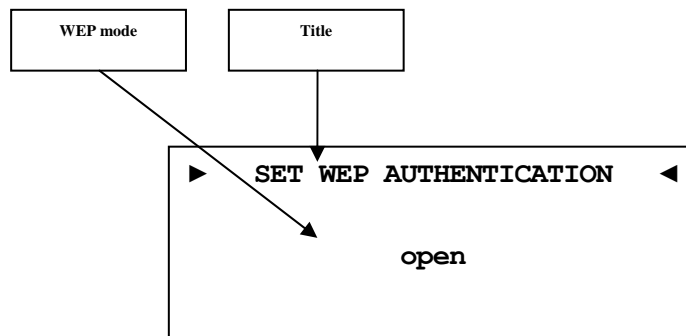


Note

- Use numeric key pad on your System Remote Control *Harmony One* for letter input (SMS principle). You have to switch the cursor position forward manual. Use left/right keys on directional key pad. Confirm the adjustment with the **OK** key.

8.6.8.5 WEP authentication

Select the WEP setup to your network.



open Open Authentication

shared Shared-Key-Authentication

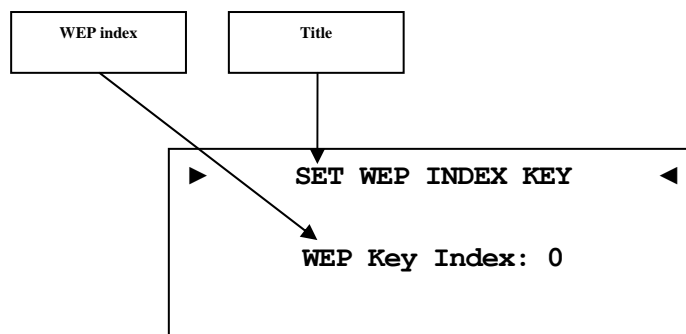


Note

- Chose auth mode with directional pad. Left for **open** and right for **shared**. Confirm the adjustment with the **OK** key.
- We prefer WPA2PSK standard to secure your Wi-Fi connection. WEP is not secure.

8.6.8.6 WEP key index

Select the Index Key 0-3

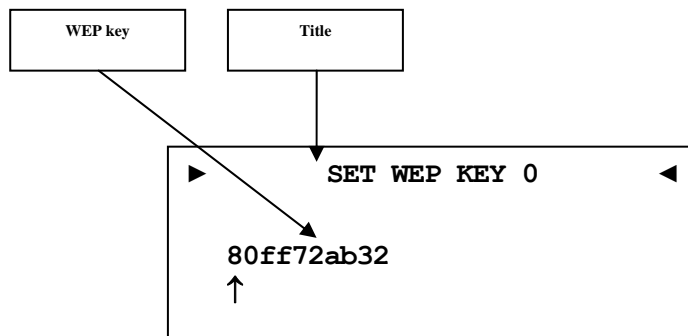


Note

- Select the security adjustment with your directional pad left/right. Confirm the adjustment with the **OK** key.

8.6.8.7 WEP key 0-3

Insert the security key to the selected position.



Note

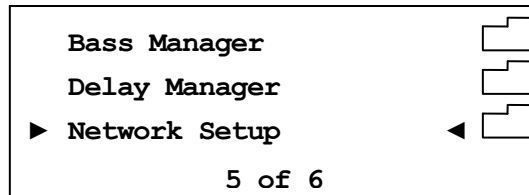
- Use numeric key pad on your system remote control *Harmony One* for letter input (SMS principle). You have to switch the cursor position forward manual. Use left/right on directional key pad. Confirm the adjustment with **OK** key.
- A WEP key contains only numbers 0-9 and letters a-f.
- A WEP key contains 10 or 26 digits.

8.6.9 Sample for Network setup

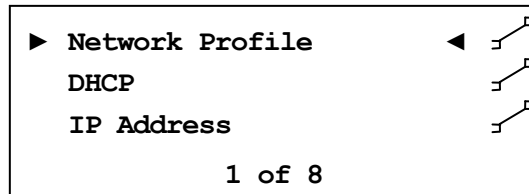
In this sample all adjustments are made with the System Remote Control *Harmony One*. Compare the keys in this section "**7.1 - Key assignment DNA**" on page 31.

Chose the Device **DNA** (see section: "**7 - Audionet system remote control**" on page 30).

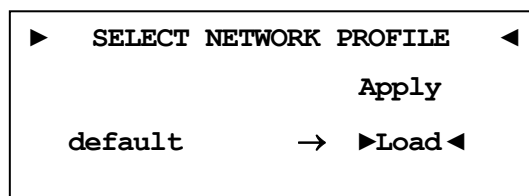
Open the system menu with the **Menu** key and mark with the directional pad keys up/down the menu item **Network Setup** (5 of 6). Confirm with **OK** key.



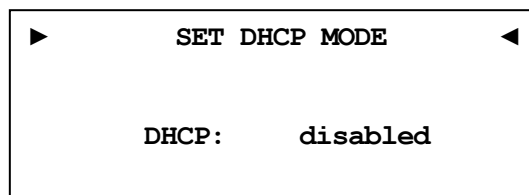
Switch to menu item "**Network Profile**".



To load the default settings, select it with the directional pad and confirm with **OK**. The profile is loaded and the device switches a menu level backwards.



In this sample we expect that you are not use DHCP in your network. Therefore we disable the DHCP function and set a fixed IP address. Open the menu item **DHCP**, press the left directional pad to select **disabled** and confirm with **OK** key. The DNA saves the adjustment and switches a level backwards.



Now you need the IP address, you select for your DNA. (e.g. 192.168.178.222 or 192.168.0.222 or 192.168.1.222).

►

SET IP ADDRESS

◀

000.000.000.000

↑

Insert the IP address direct to the numeric key pad in the lower section on your System Remote Control. Confirm with **OK** key. The DNA applies the adjustment and switches a level backwards.

►

SET IP ADDRESS

◀

192.168.178.222

↑

Select the menu item **IP Mask** (4 of 8) and compare the adjustment with your data. The default value 255.255.255.0 should be the same with your network and could be confirmed with **OK**. Otherwise, enter your settings via numeric keypad.

►

SET IP MASK

◀

255.255.255.000

↑

The gateway in your network is probably the router, so you have to set the routers IP address as gateway address. Enter the address which is correct within your network and confirm.

►

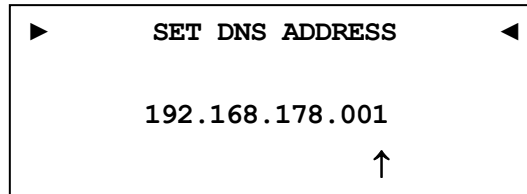
SET GATEYWAY ADDRESS

◀

192.168.178.001

↑

Mostly the DNS address is the same like the routers IP address. If you use another DNS, enter the DNS IP address which is correct within your network configuration. You can find a DNS address thru the internet. Use a search engine to find DNS server addresses for your location.



```

  ►   SET DNS ADDRESS   ◀

192.168.178.001
          ↑

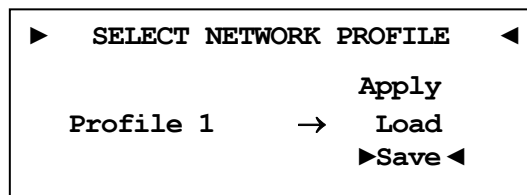
```

With this menu item the section fixed IP address is completed.

When you use your DNA in a wired network, the network setup is completed. You can store your data to a memory cell. If you want to use a Wi-Fi connection skip the profile saving description and go on.

Save network profile

Select within the menu item **Network Profile** the **Profile 1** and mark with the up/down keys **Save**. Confirm with **OK**. Now select the new saved **Profile 1**, mark **Load** and confirm with **OK** and last select **Profile 1** again, mark **Apply** and confirm. Now you have activated the **Profile 1** and your network interface reboots. This may take about 20-30 seconds.



```

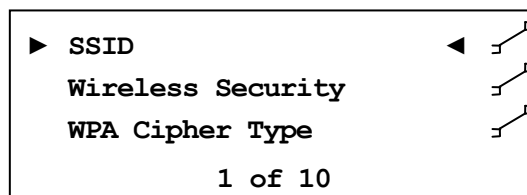
  ►   SELECT NETWORK PROFILE   ◀

Profile 1      →   Apply
                  Load
                  ►Save◀

```

Wi-Fi adjustment

Select **Wireless Setup** (8 of 8). Now you need the network name and network security key. Maybe you have to ask your network administrator or check out your router configuration.

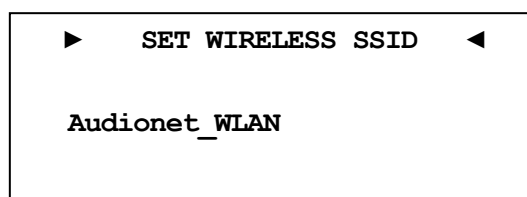


```

  ►   SSID   ◀
  Wireless Security
  WPA Cipher Type
          1 of 10

```

Select **SSID** (1 of 10) and set the network name.



```

  ►   SET WIRELESS SSID   ◀

Audionet_WLAN

```

You have to be attentive on case sensitive input. Use the numeric key pad (SMS principle) for numbers and letters. With the left/right keys of the directional pad you switch to the next input position. The cursor does not step forward automatically. Confirm your input with **OK**.

Now select your security mode (2 of 10).

▶ **SET SECURITY MODE** ◀

WPA2PSK

You can choose between **WEP**, **WPAPSK** and **WPA2PSK**. All settings have to be confirmed with **OK** key. Because the WEP mode is not secure, we only describe the setup of WPA security mode. In menu item **WPA Cipher Type** (3 of 10) select **TKIP** or **AES**. Mostly TKIP is used with WPAPSK and AES is used with WPA2PSK.

▶ **SET WPA CIPHER TYPE** ◀

AES

At least insert your Wi-Fi security key into menu item **WPA Pass Phrase** (4 of 10). Sample: **1x2y3z4a5b**

▶ **SET WPA PASSPHRASE** ◀

1x2y3z4a5b

Confirm your input with **OK**.

All your network adjustment should be correct and could now be saved.

Save network profile

Select within the menu item **Network Profile** the **Profile 1** and mark with the up/down keys **Save**. Confirm with **OK**. Now select the new saved **Profile 1**, mark **Load** and confirm with **OK** and last select **Profile 1** again, mark **Apply** and confirm. Now you have activated the **Profile 1** and your network interface reboots. This may take about 20-30 seconds.

▶ **SELECT NETWORK PROFILE** ◀

Profile 1 → **Load**

Apply

▶ **Save** ◀

8.7 Device info

```
►          Device Info          ◀  
  
Device: DNA  
MAC: 00:00:00:00:00:00  
FW: 00.0006    BL: 00.0000
```

Here you will find information about your hardware and software.

- MAC address
- Firmware version
- Boot loader version



Note

- Also look to the software Audionet RCP user's manual.

8.8 User settings

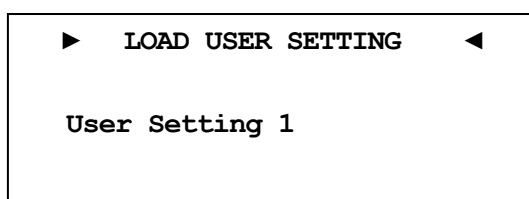
You can store 20 several user settings to your DNA.

This function can be selected with the System Remote Control *Harmony One*; furthermore you can use the software Audionet RCP (see Audionet RCP user's manual).

A user setting contains all information which is currently set, i.e. all EQ adjustment for all channel, also speaker setup (e.g. subwoofer active).

Example for usage: Store a user setting with less bass; you may call it night mode.

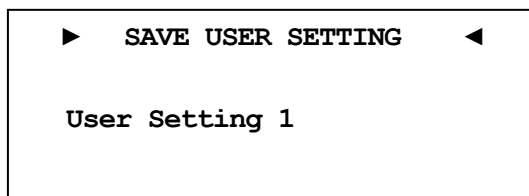
8.8.1 Load user setting



Select the setting (memory cell) you want to load from. Use the directional pad on system remote control.

Confirm your input with **OK** key.

8.8.2 Save user setting



Select the setting (memory cell) you want to save in. Use the directional pad on system remote control.

Confirm your input with **OK** key.



Note

- If you save to a user setting all existing data will be over written.
- If you do not want to set all adjustments again, you can copy the desired user setting. For that purpose load the user setting and store it to another memory cell.

9 Security system

Your Audionet DNA device and loudspeakers are protected by a complex protection circuitry. In case of a malfunction the display informs the user about the nature of the detected error in plain text:

Error message	Possible cause
Overload	short circuit or defective speaker
Overheating	ventilation slots covered
High Frequency	defective pre-amplifier-stage
DC Voltage	exceeding DC level at the output: defective pre-amplifier-stage or source unit
Power Failure	(temporary) breakdown of mains

Even after powering down the DNAs audio section, the error message still will be shown in the display. Press the **power** key on the front panel to get into the stand-by mode.



Important

- Remove cause of error prior to switching on the DNA again!

10 Additional information

10.1 Glossary

- **Switch:**

A switch is the central connection unit in a computer network. Every device is directly or indirectly connected to the switch.

- **Router:**

A router is sharing out data thru the network. Mostly the router device takes over other several features, such as Gateway-Server, DHCP-Server, DNS-Server, Switch, WLAN-Access Point, Modem, UPNP-AV and NAS via USB.

- **Gateway:**

A gateway connects computer or router to other networks (internet) and this connections are controlled as well.

- **Modem:**

A modem establishes a connection between LAN and WAN.

In the meantime all devices mentioned above are built in one device, which is call **router**.

- **IP-Address:**

The IP-Address identifies a device in the network. It is comparable to a postal address. An IP address could only be used once within a network!
IPv4 (192.168.0.1) common standard
IPv6 (2001:db8::1428:57ab) future standard

- **DNS-Server:**

A DNS-Server translates textual request to IP addresses and provides simple communication to the internet.
(e.g. www.audionet.de is translated to "194.0.201.201")

- **Proxy:**

Proxy-Server is mostly used in lager network facilities to guarantee more control and security to the network. Data transfer could be more efficient and speeded up. Home networks do not need a proxy.

- **LAN (Local Area Network):**

Localized network (home or company network)

- **Ethernet (cable):**

Ethernet is a technology that specifies hardware and software for wired data networks. An Ethernet connection offers a very good transmission rate and should be preferred.

- **Power LAN (mains supply):**

With power LAN technology you can connect Ethernet device thru your mains supply. Transfer rate could be faster and more stable as a Wi-Fi connection. A disadvantage could be the harmonics, which are produce by such devices and which polluted your mains supply.

- **WLAN (Wi-Fi):**

A Wi-Fi connection could be established very quickly, because you need no wire. The mayor disadvantages is the lower data transfer rate and the technical reliability. Physical structures or a large distance to the access point could harm the signal. We recommend wired connection.

- **WAN (Wide Area Network):**

Wide area network connections are used to connect to the internet.

- **Client:**

A client is that devices which has no administrative or special jobs in a network (e.g. PC, Notebook, DNA, IPad, etc.).

- **Server:**

Servers provide services to clients or other servers. A server could have multiple services running on it.

- **NAS (Network Attached Storage):**

A NAS is a network storage device, which should make data (e.g. music, pictures, video and documents) easily accessible to all network devices.

- **UPnP-MS (Universal Plug and Play – Media Server):**

UPnP is a defined network standard to connect clients and servers. It is very easy to use, because you have not to setup a lot. Only connect and play. UPnP media servers are the most common way to provide data thru a home network. A media server could also be part of a NAS or router or it could run as program on a Computer.

10.2 *Link collection*



Note

- We are not responsible for Wikipedia links. If you are looking for scientifically proven information, have look at referenced science books in wiki article.

10.2.1 Wireless security

WPA: http://en.wikipedia.org/wiki/Wi-Fi_Protected_Access

WPA2: http://en.wikipedia.org/wiki/Wi-Fi_Protected_Access#WPA2

TKIP: http://en.wikipedia.org/wiki/Temporal_Key_Integrity_Protocol

AES: http://en.wikipedia.org/wiki/Advanced_Encryption_Standard

PSK: http://en.wikipedia.org/wiki/Pre-shared_key

EAP (Radius): <http://en.wikipedia.org/wiki/RADIUS>
http://en.wikipedia.org/wiki/Extensible_Authentication_Protocol

WEP: http://en.wikipedia.org/wiki/Wired_Equivalent_Privacy

10.3 *Equalizer filter type*

Below are the different equalizer filters shown. Listed are all adjustments for each filter, and the Wikipedia link for detailed information.



Note

- We are not responsible for Wikipedia links. If you are looking for scientifically proven information, have look at referenced science books in wiki article.

10.3.1 Peak-Filter

Gain range: -6 dB - +12 dB

Frequency range: 20 – 20000 Hz

Filter quality (Q): 0.3 – 8.0

Wikipedia: en.wikipedia.org/wiki/Band-pass_filter

10.3.2 High shelf filter

Gain range: -6 dB - +12 dB

Frequency range: 20 – 20000 Hz

Wikipedia: [en.wikipedia.org/wiki/Equalization_\(audio\)#Shelving_filter](http://en.wikipedia.org/wiki/Equalization_(audio)#Shelving_filter)

10.3.3 Low shelf filter

Gain range: -6 dB - +12 dB

Frequency range: 20 – 20000 Hz

Wikipedia: [en.wikipedia.org/wiki/Equalization_\(audio\)#Shelving_filter](https://en.wikipedia.org/wiki/Equalization_(audio)#Shelving_filter)

10.3.4 High-pass filter 2nd order

Attenuation at set Frequency: 3 dB

Filter quality (Q): 0.3 – 2.0

Attenuation below the set frequency is 40 dB per decade.

Wikipedia: en.wikipedia.org/wiki/High-pass_filter

10.3.5 Low-pass filter 2nd order

Attenuation at set Frequency: 3 dB

Filter quality (Q): 0.3 – 2.0

Attenuation above the set frequency is 40 dB per decade.

Wikipedia: en.wikipedia.org/wiki/High-pass_filter

10.3.6 High-pass filter 1st order

Attenuation at set Frequency: 3 dB

Attenuation below the set frequency is 20 dB per decade.

Wikipedia: en.wikipedia.org/wiki/High-pass_filter

10.3.7 Low-pass filter 1st order

Attenuation at set Frequency: 3 dB

Attenuation above the set frequency is 20 dB per decade.

Wikipedia: en.wikipedia.org/wiki/High-pass_filter

10.4 Error handling (FAQ)

Problem with internet radio streams:

A good, stable and fast connection to the internet, network is the most significant item. If your local conditions are fine, dropouts may be the problem of the radio stations broadcast. Switch to another station whether there is no problem it is perhaps a problem of the radio stations broadcast. May be it is overloaded.

Local problems could be an overload of your network, by downloads from the internet or data which is move thru your network as well as other streaming (e.g. video). Reduce or finish connections to receive internet radio without dropouts. A bad Wi-Fi connection could also cause dropouts.

No control:

Switch of your device thru the power button on the front panel. Then switch of the mains circuit breaker on the back panel. If there is no action while you press the power button on the front, directly take the mains circuit breaker on the back panel. Wait 20 to 30 seconds until you switch on again. If there is still a problem, contact your local dealer for support.

Which control has no function: If the remote control does not react try the front panel keys, maybe it is only a problem of the remote control.

Remote control has no function:

Is the rechargeable battery charged?

Is the control light shining?

No – the battery is not charged!

Have you plugged in the power supply? Is your wall socket switchable?

Yes – Maybe the rechargeable battery is defect!

Ask your local dealer for support.

The software Audionet RCP does not establish a connection to DNA:

Restart your software and research for DNA again.

If this is without success, switch of the DNA (first stand-by, then mains circuit breaker) and wait 30 seconds. Startup your DNA again and switch to NET input. Wait until **Booting** is no longer shown in the display. Now start your software Audionet RCP and search for DNA.

If there is still a problem, check out your network and network adjustment or ask your network administrator for support.

10.5 *Security advice*



Important

- Avoid packaging material, especially plastic bags, to come into children's hands.
- Store and operate the unit in a dry room at a reasonable room temperature
- Avoid moisture or any liquid to get into the unit
- Place the device with enough circulation of air
- **Do not cover**, e.g. with a blanket
- **Do not open** the case. Unauthorized opening will cause loss of guarantee.
- Prevent short circuit to the outputs
- Switch off all devices if you plug any cable
- Use a dry cloth for cleaning
- If massive trouble on the mains power grid is to be expected. Disconnect all devices from mains to prevent electrical overload. Disconnect antenna and network connections as well.

We would like to wish you many exciting listening experiences with your new Audionet product!

If you still have any questions, don't hesitate to ask your competent Audionet dealer.

10.6 Factory defaults

Option	Adjustment
Channel Setup	For each input channel (exception listed)
Volume Offset	+ 0 dB
Trigger Out	disabled
ADC Attenuation	0 dB disabled (adjustment only with analog input)
DC Servo	disabled (adjustment only with analog input)
Digital EQ	disabled
Channel Name	Digital In 1 .. 4 Optical In 1,2 Streaming In FM-Tuner Line In 1,2 Phono Balanced In
Global Setup	
Headphones	headphones disable, Audionet Link 2 active
Display	50%
Balance	+ 0 dB
Pre Out	disabled
Auto start	disabled
By-Pass Channel	not selected
Phono Card	missing Pickup type: MM Gain: 40 dB
Power-Off Mode	normal
Bass Manager	
Configuration	2.0
Front Speaker	Full Range
High-Pass Q	0.71
X-Over Freq.	102 Hz
Sub 1,2 Volume Offset	+ 0 dB
Sub 1,2 Phase	normal (0°)
Delay Manager	
Distance Left	0 cm
Distance Right	0 cm
Distance Sub 1	0 cm
Distance Sub 2	0 cm
Virtual Sub Offset 1	0 cm
Virtual Sub Offset 2	0 cm
Parametrical digital EQ	for all input channel
Gain	All channel, all MPES: + 0 dB
Q	All channel, all MPES: 1.00
Freq.	L, R: 50,207,725,3147 & 10413 Hz Sub1,2: 31,50,82,120 & 231 Hz

Network Setup	
Network Profile	default
DHCP	active
IP Address	192.168.178.222
IP Mask	255.255.255.000
Gateway	192.168.178.001
DNS	192.168.178.001
RCP Port	54321
Wireless Setup	
SSID	blank
Wireless Security	WPA2PSK
WPA Cipher Type	AES
WPA Pass Phrase	blank
WEP Authentication	shared
WEP Key Index	0
WEP Key 0	blank
WEP Key 1	blank
WEP Key 2	blank
WEP Key 3	blank

10.7 Specifications

Function	Streaming Client and analog/ digital Stereo-amplifier
Power output	2 x 165 Watt at 8 Ω 2 x 280 Watt at 4 Ω 2 x 440 Watt at 2 Ω
Frequency response	0 - 500.000 Hz (-3 dB)
attenuation coefficient	typ. 1000 at 100 Hz
THD	k2 typ. -101 dB, k3 typ. -107 dB, @1 kHz, 25 W/4 Ω
THD+N	< -90 dB @1 kHz, 25 W/4 Ω
SNR	> 103 dB (A-rated)
capacitance	> 180.000 μ F
Input analog	3 pair RCA jack, gold plated, Teflon isolated 1 pair XLR balanced, gold plated (Neutrik) 5-pin connector for EPS
Input digital	4 SPDIF RCA jack, gold plated, Teflon isolated 2 SPDIF TosLink 1 USB(A) 1 RJ45 Ethernet 10/100 BASE-T 1 SMA Connector WLAN
Input impedance	Line input 50 k Ω real XLR input 7 k Ω
Output	2 pair speaker connector 4 mm jack, gold plated (WBT nextgen) 1 pair (Pre/Rec Out) RCA jack, gold plated, Teflon isolated 1 pair (Sub/MR Out) RCA jack, gold plated, Teflon isolated 2 Audionet Link, optical 1 headphone output (TSR connector, 6,3 mm, stereo) 1 3,5mm TSR connector mono Trigger Out (50mA) 1 Serial interface RS232
Mains	220 V...240 V, 50...60 Hz
Power consumption	< 1 W Stand-by 12W Quick Start max. 1400 W

Dimensions	width 430 mm height 130 mm depth 390 mm depth over all 420 mm
Weight	26 kg
Design	Front: brushed aluminum, 10 mm, black anodized, white printing or aluminum natural, 10 mm, anodized, black printing Display: red or blue Cover plate: aluminum, 6mm, black anodized Side plate: aluminum, 8mm, black anodized Chassis: sheet steel, black varnished
Specials	<ul style="list-style-type: none"> - System remote control Harmony One - Remote control with software - automatic mains phase detection - separated power supply for digital and analog section - fully DC coupled, no condenser in signal path - By-Pass mode (e.g. for integration to a home cinema system) - Audionet Link output to remote control Audionet devices - Switchable headphone output
Options	<ul style="list-style-type: none"> - Phono card for MM- und MC-pick up

Errors and omissions excepted. Specifications and design are subject to changes without prior notice.

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