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AUDIOSYSTEM8.8
Configuration manual

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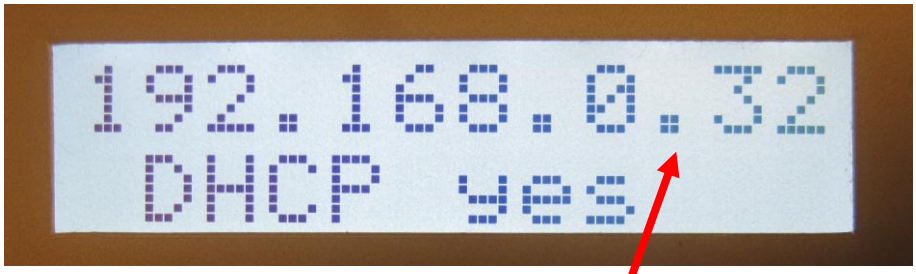
AUDIOSYSTEM8.8 configuration manual

Connect the AUDIOSYSTEM8.8 to the same DHCP enabled (private) network as your computer for configuring and/or operating the unit. Since AUDIOSYSTEM8.8 has a built in webserver, it can be operated from virtually any device in the network via a browser : Internet explorer from version 10, Mozilla Firefox from version 31, Google Chrome from version 36.xxx, Safari on IOS 7.

Getting started

By default, DHCP is enabled in the AUDIOSYSTEM8.8. Connect the AUDIOSYSTEM8.8 to your DHCP enabled network using a standard CAT5 cable. When you have connected one or more optional wall panels (DIWAC), we advise you to watch the text on the DIWAC unit during start-up. When the unit has received an IP address in your network, the IP address will be shown on the display of the DIWAC unit. "DHCP yes" in the display means that DHCP has been enabled in AUDIOSYSTEM8.8 (default setting). DIWAC wall panels are connected via a simple polarity independent 2 wire connection. DIWAC connector 1 is assigned to output 1, DIWAC connector 2 to output 2 and so on. If zone 1 is configured as a stereo zone (default), DIWAC number 1 and 2 are assigned to this stereo zone. Only one DIWAC wall controller is allowed per DIWAC connector.



In the browser's address bar, type this:

http://192.168.0.32/config

where **192.168.0.32** is the IP address as shown on the (optional) DIWAC display.

Firefox address bar

Alternatively, type the unit's default friendly name in the address bar like this***:

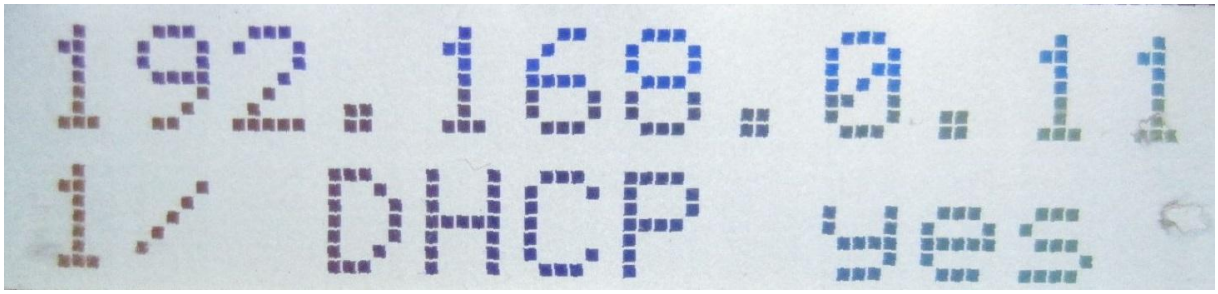
http://System88/config

Then press "enter".

****typing the default friendly name might not work when more than one unit using the same friendly name are present in the same network. In these cases, connect using the IP address and change the friendly name (if necessary) as shown on the next pages.*

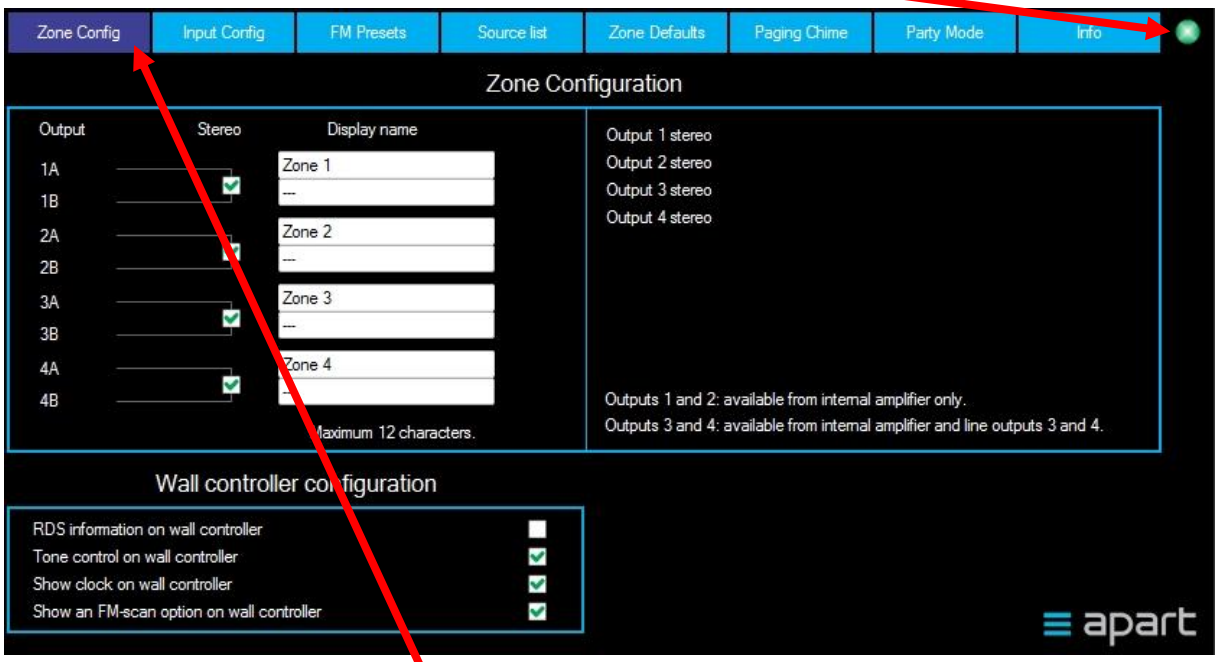
To show the IP address on the optional wall controller, press "select down" and "volume +" buttons simultaneously (= enter control mode on wall controller).

!!!!! The IP address can be displayed on 2 lines: 192.168.0.111 in this case !!!!!



The following page will load:

In the upper right corner, a green light is visible, showing that the unit is powered and that the network connection is active.

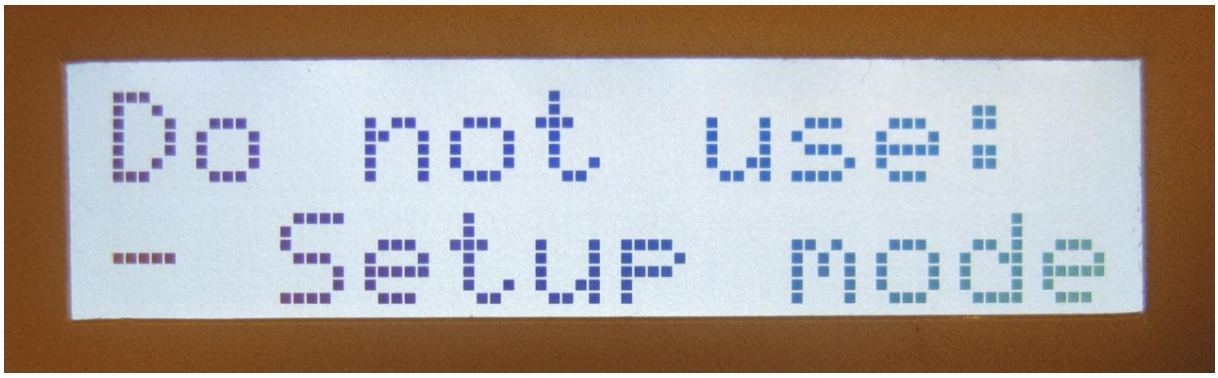


On top of the page, you will see 8 tabs. Clicking on each tab will load a new page. The selected tab will become dark blue. The selectable tabs are light blue.

On the "Zone Config" tab page, you can set the zone (output) parameters for each zone, rename the output zones and configure the settings of the optional wall controllers (DIWAC). The wall controllers' settings are valid for all wall panels connected to the AUDIOSYSTEM8.8.

Notes:

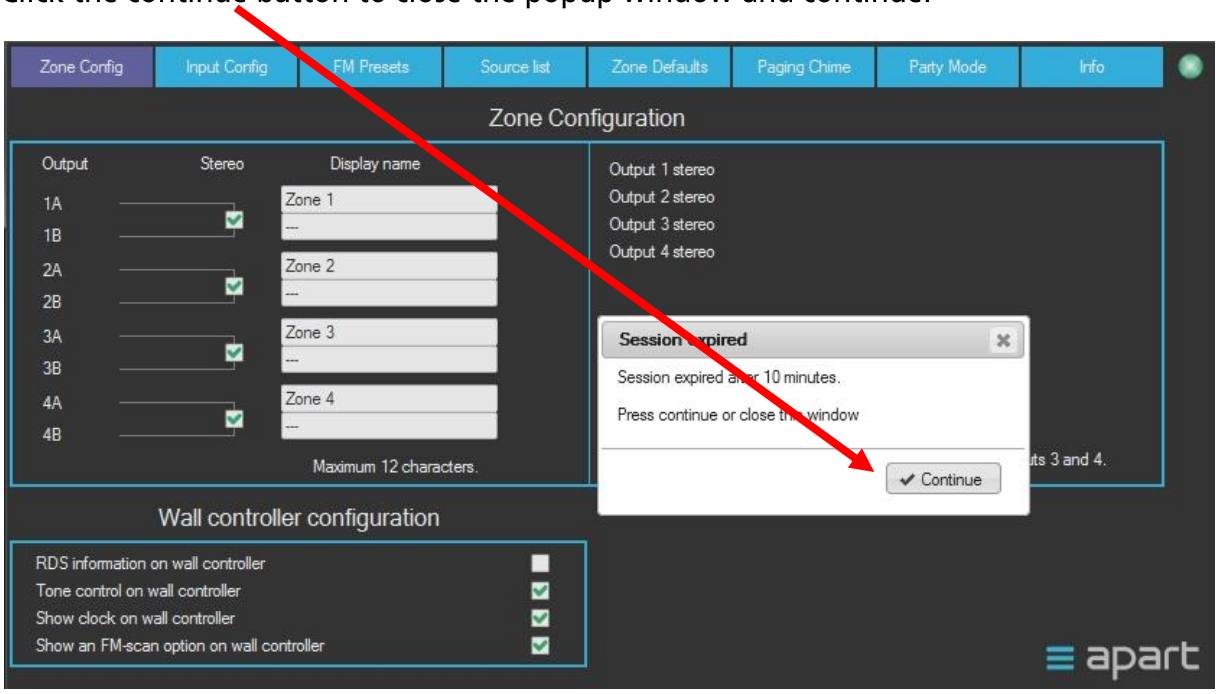
During setup (as long as the configuration page is loaded in your browser), the (optional) DIWAC wall panels will be locked and cannot be used. This will appear on the display of connected wall panels:



During setup (as long as the configuration page is loaded in your browser),the paging and mute all functions are disabled.

After about ten minutes of inactivity, a popup window will appear in your browser and the wall panels will be unlocked.

Click the continue button to close the popup window and continue.



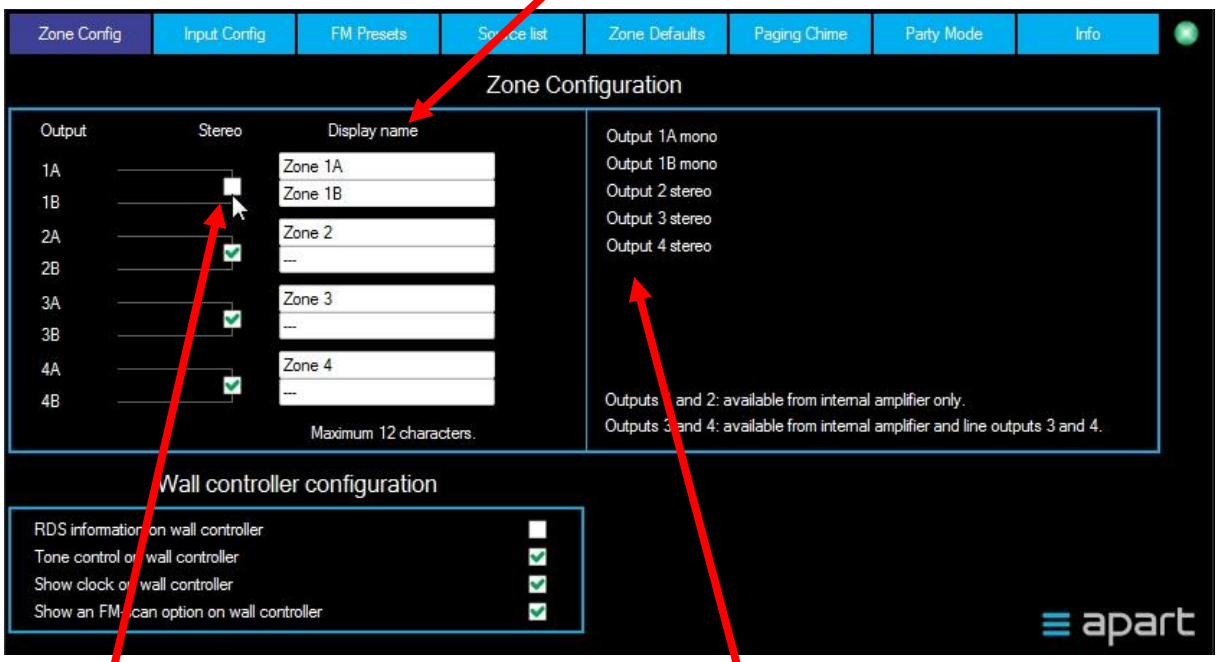
Note:

Any change made in the configuration will be automatically saved in the unit.

If the connection via "friendly name" fails after changing the friendly name on the "Info" tab page, we advise you to clear the cache memory of all routers/switches in the network because they usually link a friendly name to a unique IP address until the lease expires. In such cases, it is wise to type the unit's IP address in the browser's address bar directly.

Zone configuration (Zone Config)

In this example, we configure 2 mono and 3 stereo zones and we select outputs 1A and 1B as the mono zones. Rename the zones if necessary (12 characters max): type a name and press enter.



Untick the box to convert zone 1 in 2 mono zones.

The actual zone configuration is shown in the right section.

Notes:

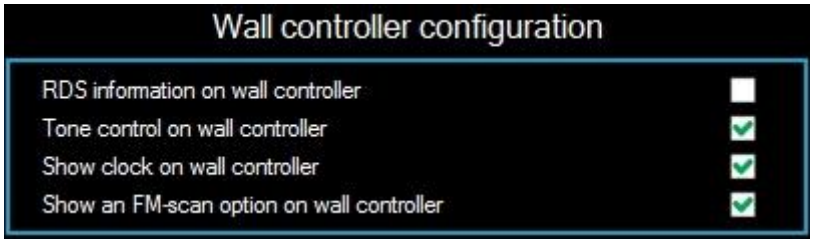
Depending on your specific needs, the line level outputs from outputs 3A, 3B, 4A and 4B are also available on cinch connectors at the rear of the unit.

The output names 1A, 1B, 2A… correspond to the names printed on the rear of the AUDIOSYSTEM8.8 unit. For stereo zones, the "A" corresponds to the left channel, "B" to the right channel.

The display name will also be shown on the (optional) wall controller. Only standard ASCII characters will be shown on the wall controller's display.

It is not possible to listen to a different radio station in 2 mono zones with the same output number, such as output 1A and 1B. If you change the radio station in zone 1A, it will also change in zone 1B and vice versa because the zone numbers are always hardwired to one of the 4 available tuners.

In the lower section of the page, you can configure the behavior of the (optional) DIWAC wall controllers:



- RDS information on wall controller: when selected, the unit will show the station name as transmitted by the radio station with RDS.
- Tone control on wall controller: when selected, you can adjust bass, mid and treble via the wall controllers by pushing "select down" and "volume up" simultaneously on the wall controller, then push "select up" twice for bass, three times for mid and four times for treble control. Adjust with the "volume up and down" buttons as required. Push the "select down" and "volume up" simultaneously on the wall controller once again to return to normal wall controller operation.
- Show clock on wall controller: when selected, the wall controller will show the clock: this will be the clock from RDS information or the clock from internet. You can set your time zone on the "Info" tab page.
- Show an FM-scan option on wall controller: when selected, you can scan the FM band via the wall controller. This comes in handy if you don't want to make a basic configuration without using the web browser: push "select down" and "volume up" simultaneously on the wall controller, then push "select up" until "Set FmScan…" appears on the wall controller. Push the "volume +" button to start scanning. When finished, the display shows "FM-scan DONE" on the bottom line. Push select up or down to confirm, then exit to normal operation by pushing "select down" and "volume up" simultaneously. The radio stations found during the scan are automatically saved and are available in all zones. You can always change/delete/add presets using the web based configuration.

Notes:

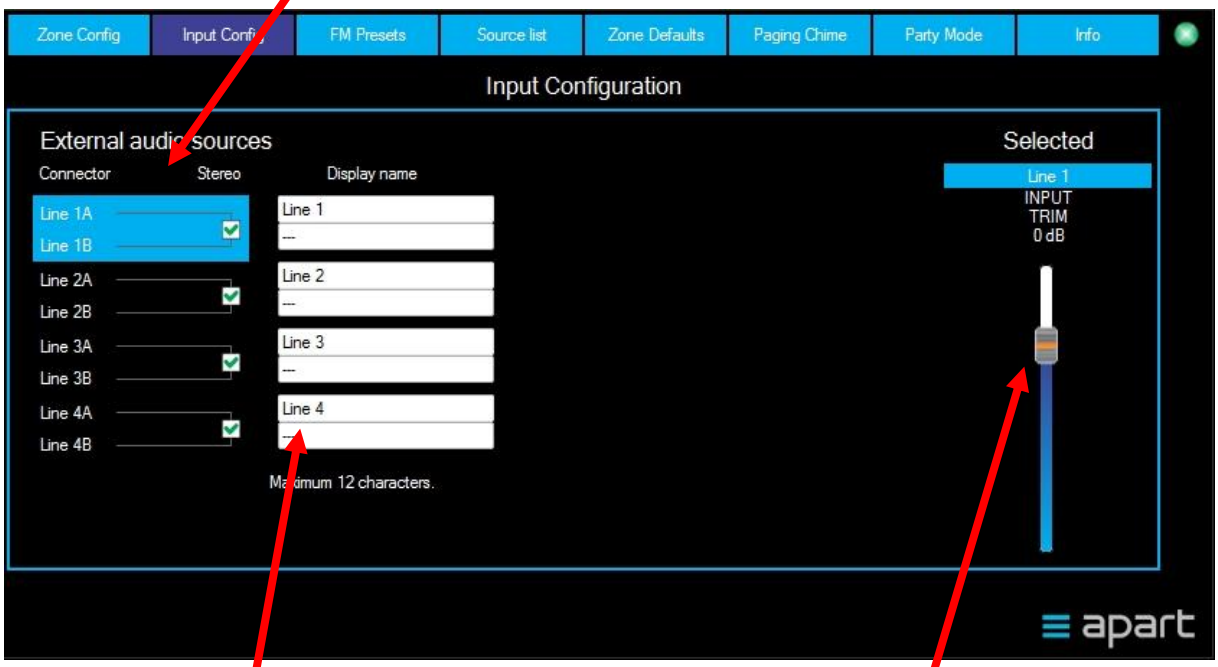
When RDS information on wall controller has been selected, and no RDS information is available, the wall controller will show the station name as defined in the "FM Presets" "Display name" field (-> page 9).

Changes made in the wall controller configuration are valid for all wall controllers connected to the unit.

To switch off (mute) a zone, push the "Volume + and –" buttons simultaneously on the wall controller. To mute all zones, push the "Volume + and –" buttons for a few seconds.

Input Configuration (Input Config)

The external audio inputs can be configured as stereo pairs (default) or as mono inputs. The connector numbers correspond to the numbers printed on the rear of the AUDIOSYSTEM8.8 unit.



The input's display name can be changed if necessary.
Maximum name length is 12 characters.
Only standard ASCII characters are accepted.

The gain of each input can be adjusted via the trim slider at the right: -32 to +12 dB. Use this function to match the level of all external sources with the fixed output level of the built in tuners. The selected input is shown, in this case "Line 1", which is a stereo input. To select another input, click the input on the left side of the page.

Notes:

The 4 built in tuners are stereo tuners. When you select such a stereo tuner in a mono zone, the signals from the left and right audio channel will be automatically mixed to mono.

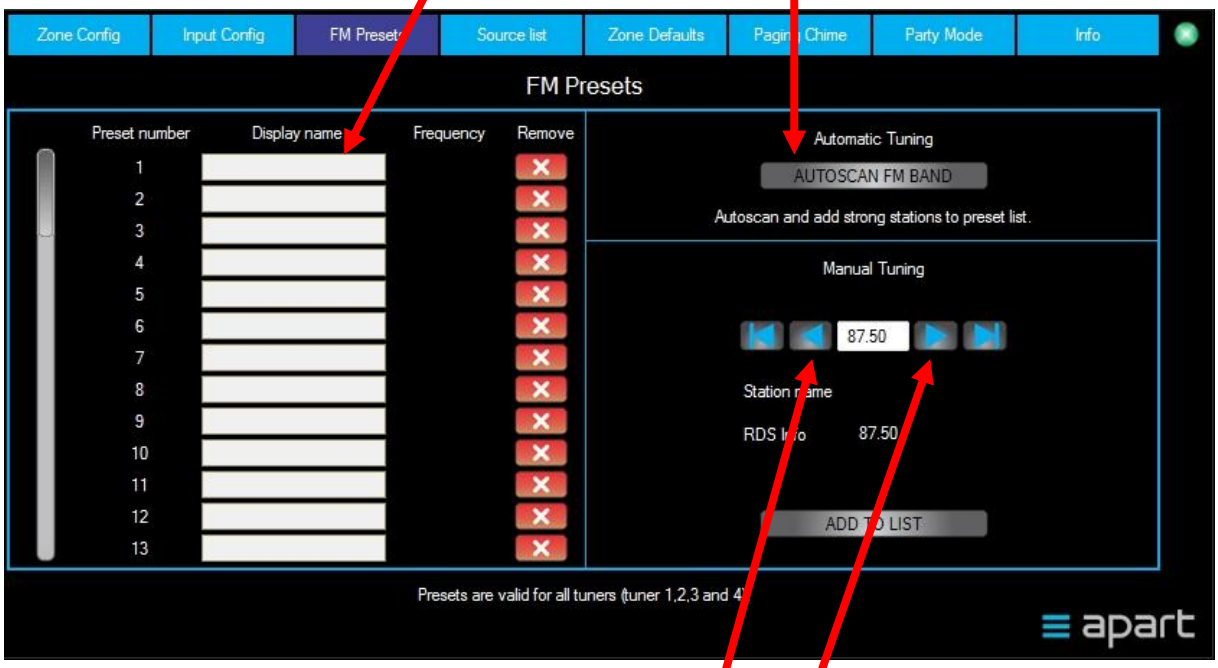
When a stereo source is selected in a mono zone, the left and right stereo signals will be automatically mixed to mono. When a mono source is selected in a stereo zone, the mono signal will be sent to the left and right channel automatically.

FM Presets

On this page, you can search for strong FM radio stations and store them as presets. These presets are valid for all built in tuners of the AUDIOSYSTEM8.8.

To perform an autoscan, simply press the "AUTOSCAN FM BAND" button. All stations found will automatically added to the list on the left side. Make sure the radio antenna is connected before starting the autoscan function.

The display name is what will be shown when selecting the station via the optional wall controllers.
Default = tuning frequency.



Manual tuning is possible with these buttons. The arrows left and right from the frequency number will increase the tuning frequency with an interval of 100 kHz.

The outermost arrows will tune up/down to the next/previous strong radio station. You can also manually enter a frequency between 87.5 and 108 MHz in the frequency number field.

When ready, press the "ADD TO LIST" button to add the station to the list on the left.

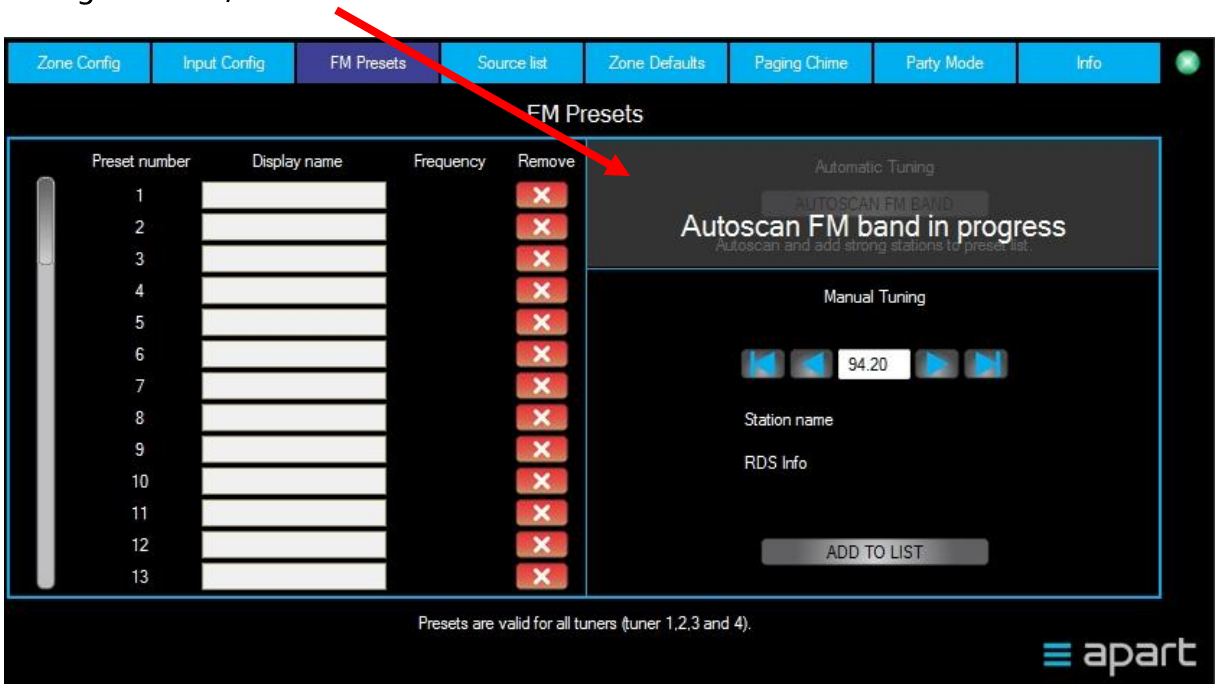
Note:

When "RDS information on wall controller" is selected on the Zone Config tab page, the text displayed on the wall controller will be the information from RDS.

Up to 50 presets can be stored.

The presets will appear as selectable sources in the source list on the "Source list" tab page.

During autoscan, the window looks like this:



Do not leave the webpage until the autoscan function has finished scanning the entire FM band. This usually takes a few seconds.

The stations found during autoscan will automatically be added to the list on the left :

To remove a preset from the list, press the “X” button next to the display name.

Source list

On this page, you can select which of the available inputs will be selectable in each output zone.

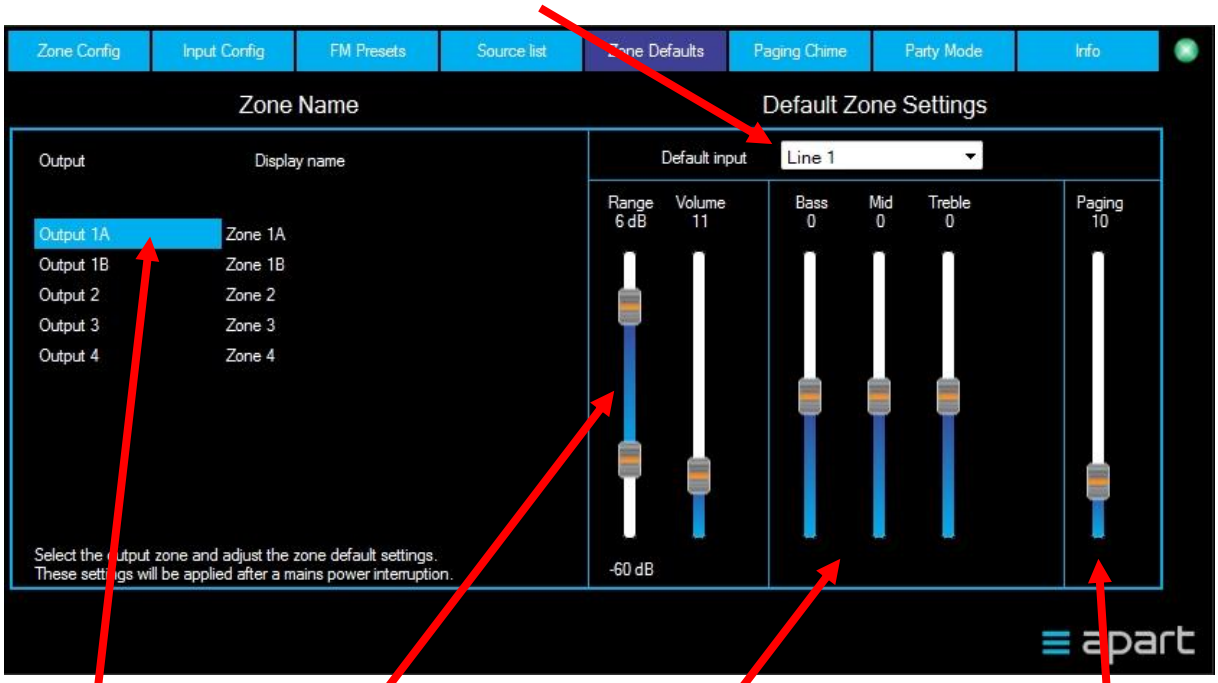
By default, all inputs and FM presets will be available in all zones.

Zone Defaults

On this page, you can select the default values for each zone: default input, volume range, default music and paging volume and equalizer settings. When a default volume is set to zero, the corresponding zone amplifiers will be switched off to save power.

These default values will be loaded after a power cycle or after a restart from the unit.

Select the default input from the drop down list



Select the zone.

Set the minimum and maximum volume range. Set the EQ and balance (stereo zones only). Set paging level.

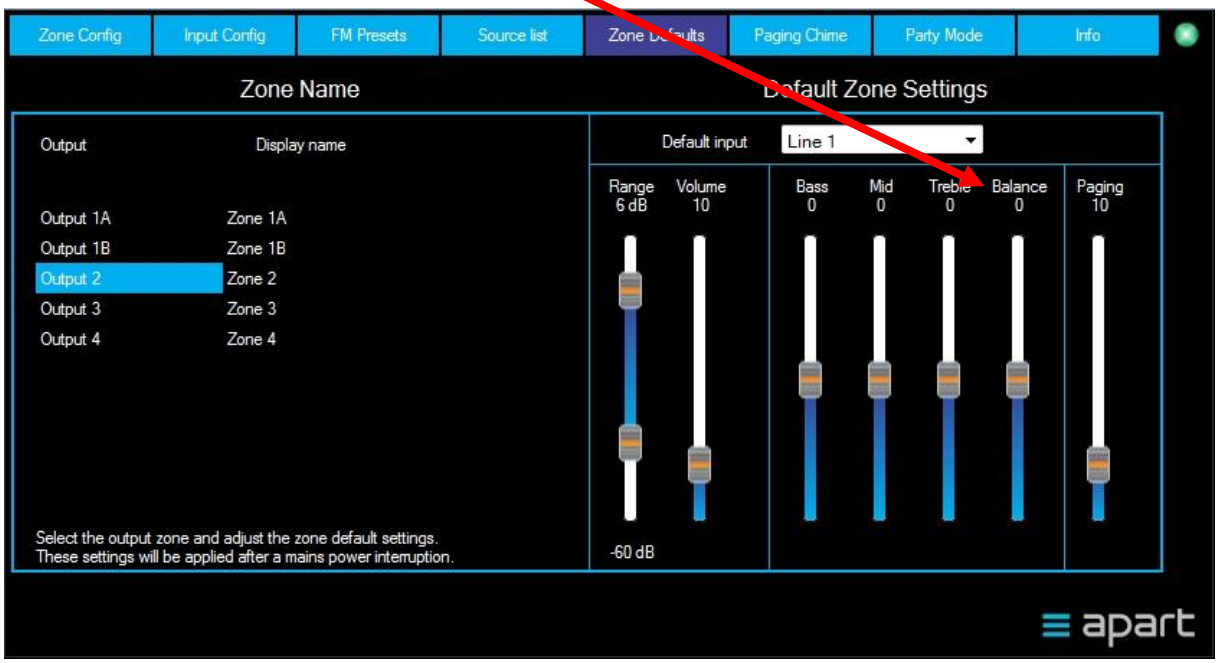
Notes:

The volume slider has 50 steps, from 1 to 50. When set to zero, the zone is muted.

When the volume range minimum and maximum level are changed, the volume steps will be recalculated. For example: if the minimum is -50 dB and the maximum is 0 dB, every step of the volume slider will correspond to a level change of 1 dB.

The paging volume slider sets the output level for the paging microphone and the chime (if selected) simultaneously.

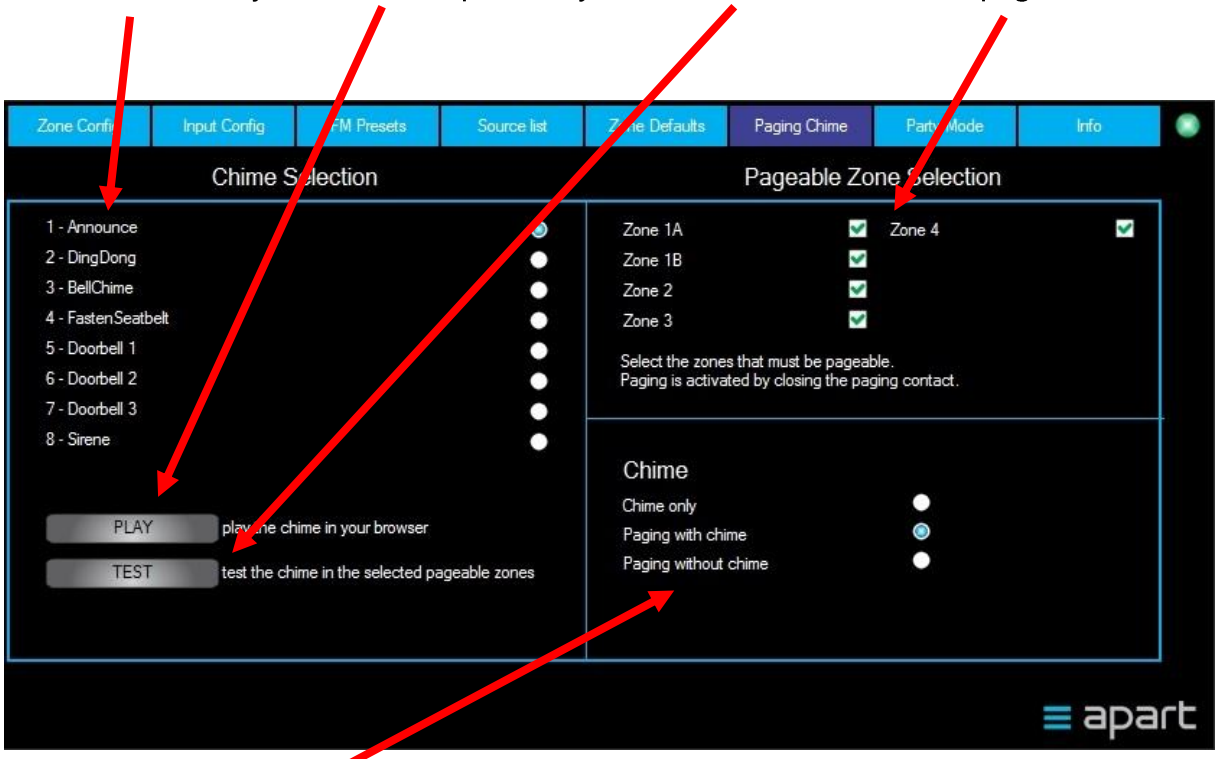
In a stereo zone, an additional balance slider is available



Paging Chime

On this tab page, you can select a chime and select the zones where the chime and/or paging microphone message will be heard.

Select a chime. Play it via the computer in your browser or test it in the pageable zones.



Select paging mode:

- Chime only: when the paging contact is closed, only the chime will be audible in selected zones.
- Paging with chime: when the paging contact is closed, chime and paging mic will be audible in selected zones.
- Paging without chime: when the paging contact is closed, only the paging mic will be audible in selected zones.

Paging contacts on the unit:

Note:

Only switches with potential free contacts can be used.

Party Mode

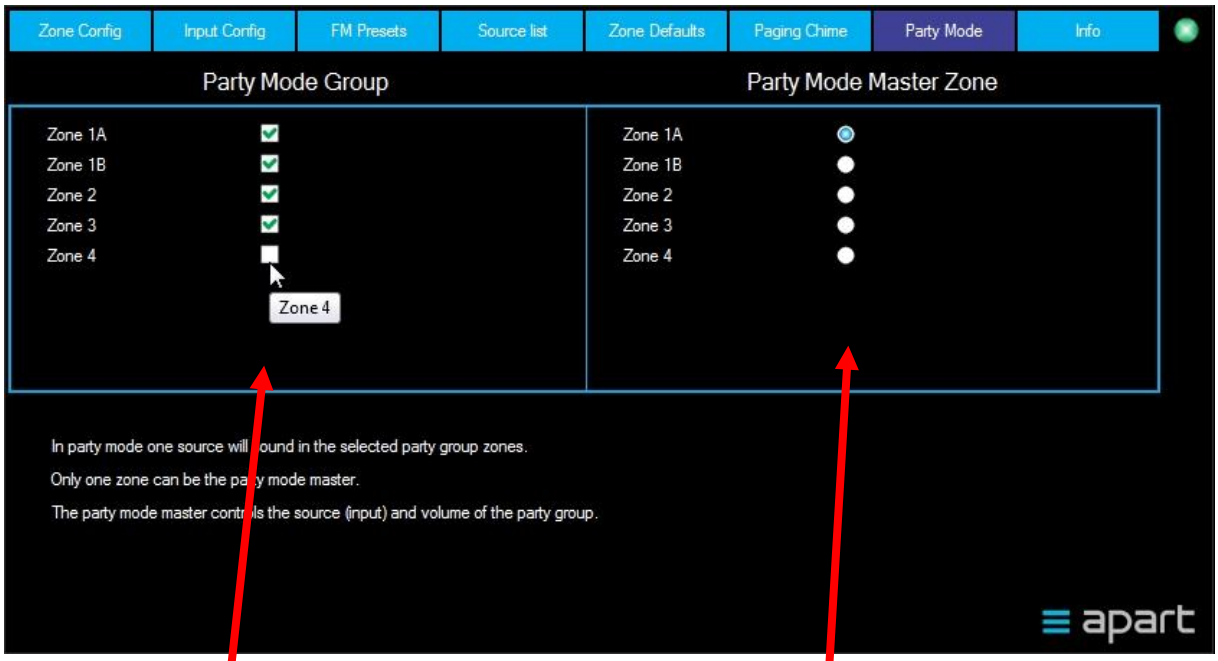
In party mode, you can combine selected zones into one combined zone. All selected zones will listen to the same source. Only 1 zone can be the master zone. The master zone will be able to select the source. When party mode is activated, all party mode slave zones will be set to the default volume of the master zone. When the volume in the master zone is changed, all slave zones will follow.

It is possible to adjust the volume and to create a volume offset in the slave zones, but this change will not influence any other zone. It is not possible to change the source in a slave zone.

For example: zone 1A is party master. All other zones are member of the party group.

When party mode is activated in the master zone (1A) by selecting PARTY MODE via the wall control "select" buttons, and by activating it by pressing the"volume +" button, all zones will be set to the master zone default volume setting. Now select a source in the master zone. All slave zones will listen to the same source as the master zone.

To exit party mode, select party mode via the "select" buttons and press "volume-" to exit party mode. All zones will now return to their default values as defined in the "Zone Defaults" page.



Party mode group members.

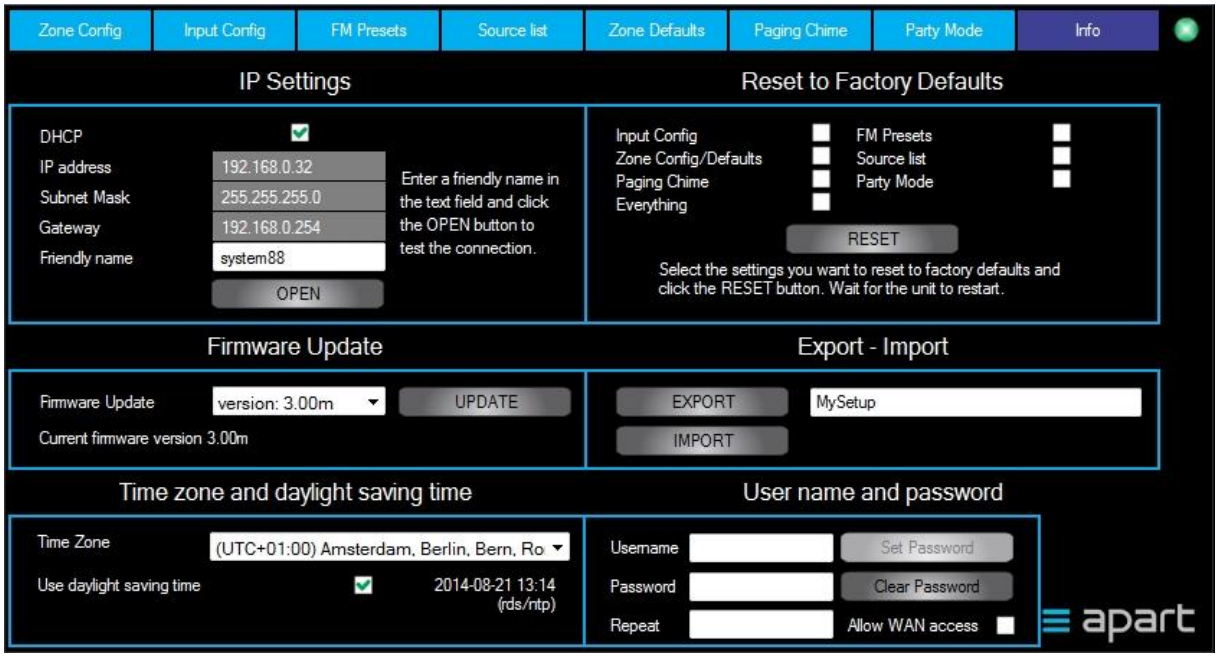
Party mode master zone.

Note:

When a slave zone is muted (off) and the master activates party mode, the muted slave zone will be switched on at the default volume setting of the master zone.

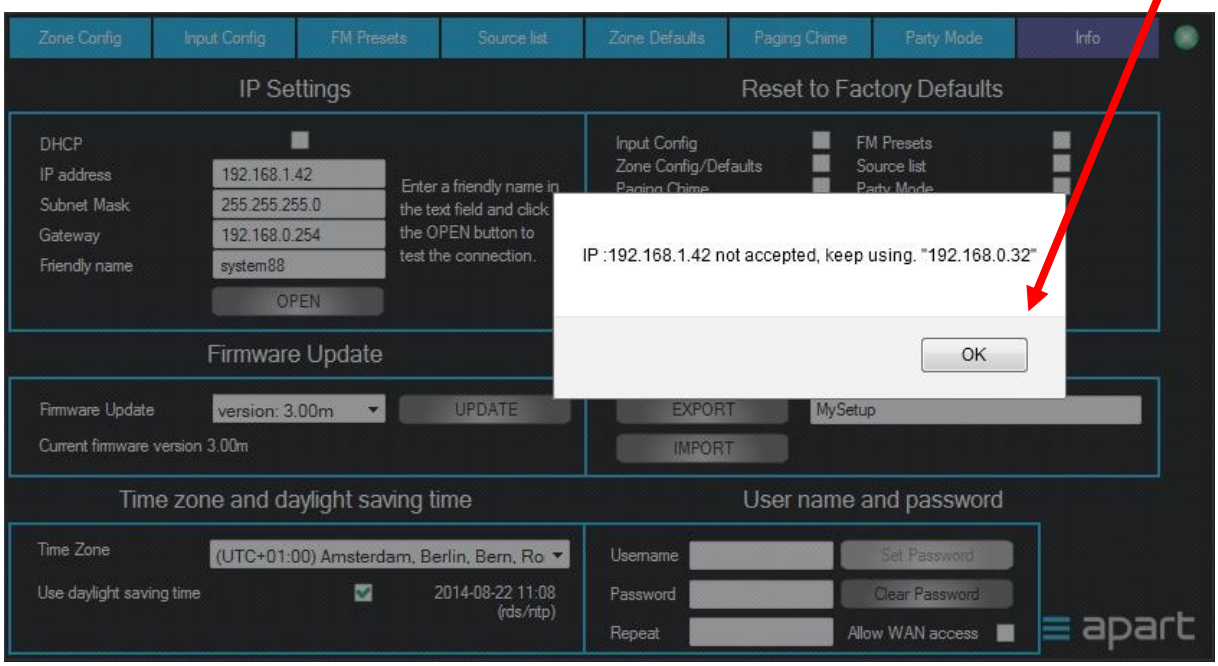
Info

On the info tab page, you can configure general settings, import/export configurations, perform a reset or update the firmware.

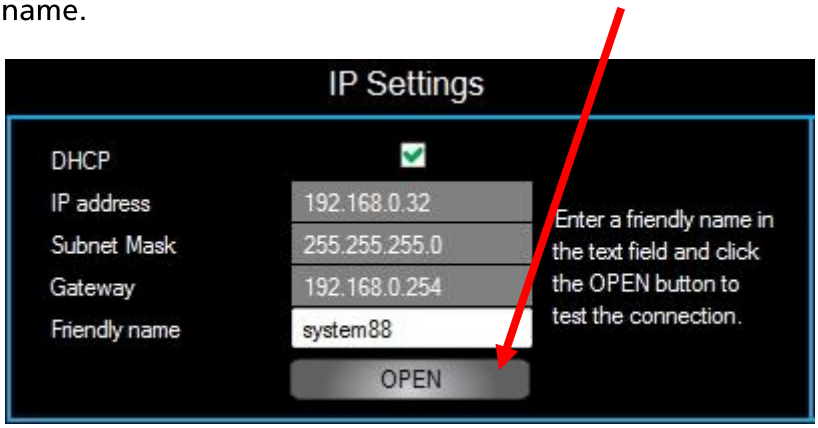


IP settings: enable or disable DHCP. Default = enabled. When you disable DHCP, you have to manually enter the IP address, Subnet Mask and Gateway.

When you disable DHCP and manually enter an invalid IP address, a popup window will appear. Click OK to keep using the current IP address.



The friendly name can always be changed. When more than one unit is present in the same network, we advise you to change the friendly name to avoid any connection or operation conflicts. Click the open button to test the connection with the new friendly name.



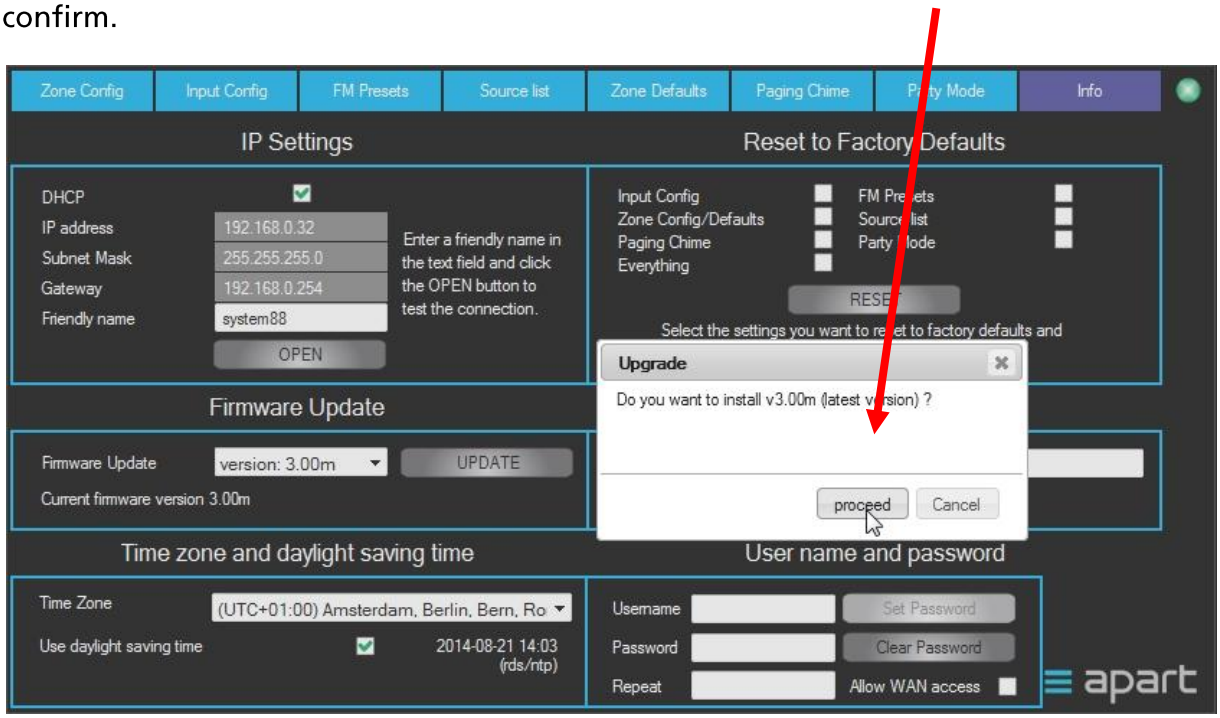
Note:

Depending on the settings of your network router/switch, it is possible that the connection using a new friendly name will not work immediately. This is caused by the DNS cache settings of your network router/switch. In such cases, reconnect by entering the IP address in the browser's address bar, in this case: http://192.168.0.32/config

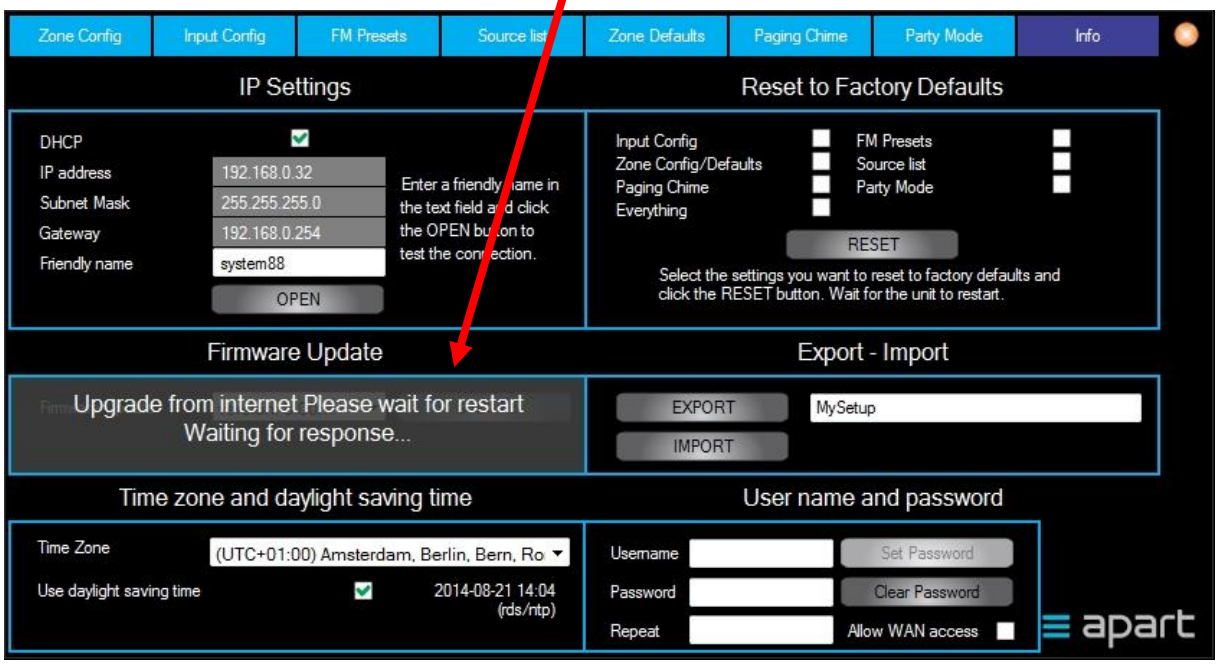
Firmware update: the current firmware version is shown. When an update version is available, the version number in the dropdown box will be different.

Click update to update the firmware. The unit must be connected to the network and must have internet access in order to download the latest version from the update server.

After clicking the "UPDATE" button, a popup window will appear. Click "proceed" to confirm.



The unit will start downloading the latest firmware version and will automatically start installing the latest version.



Note:

It will take a few minutes to complete the update procedure. During the update, the front leds on the unit will blink to indicate that the update is ongoing. Do not interrupt the mains power during the update procedure. When the update has finished, the unit will automatically restart and the browser page will be refreshed. A firmware update will not delete/overwrite the configuration settings.

On the Zone Config tab page, a text message will be shown when a new firmware version is available.

Time zone and daylight saving time: select your time zone from the dropdown list and enable/disable daylight saving time. This setting will influence the clock (if selected) on the optional DIWAC wall controller(s).

Note:

Time information is retrieved from the internet (ntp) and/or RDS. When no clock information can be retrieved, the clock will not be shown.

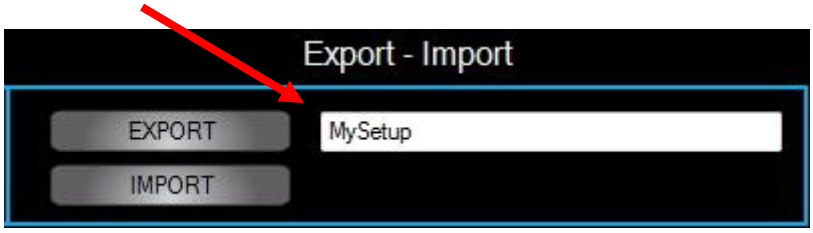
Reset to Factory Defaults:

Select the settings you want to reset and click the "RESET" button. The selected configuration settings will be erased and the factory defaults will be loaded.

Note:

The friendly name (-> page 16) cannot be erased and must be set manually.

Export – Import: you can export all configuration settings in a file and store it on your computer. Enter a name for the configuration and click "EXPORT".

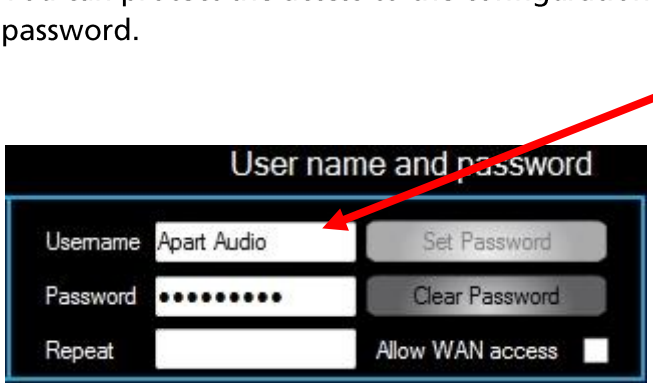


A dialog screen will appear. Follow the instructions to download and store the setup file.

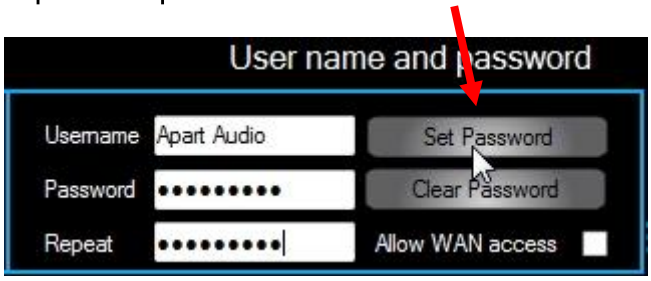
To import a configuration, click the "IMPORT" button. A dialog screen will appear. Find the location on your computer, select the file and click the "Open" button in the dialog window. All settings will be overwritten by the settings from the imported file.

User name and password:

You can protect the access to the configuration pages by entering a username and password.

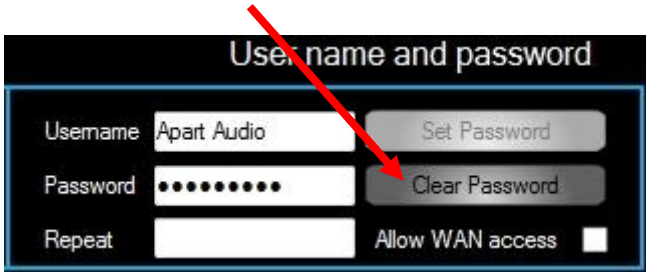


Repeat the password and click "Set Password"

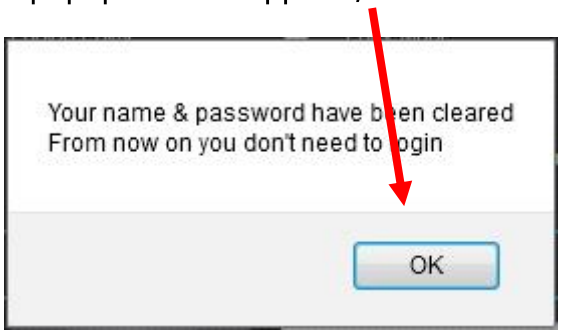


Once a password has been set, you will have to enter the user name and password in the dialog box.

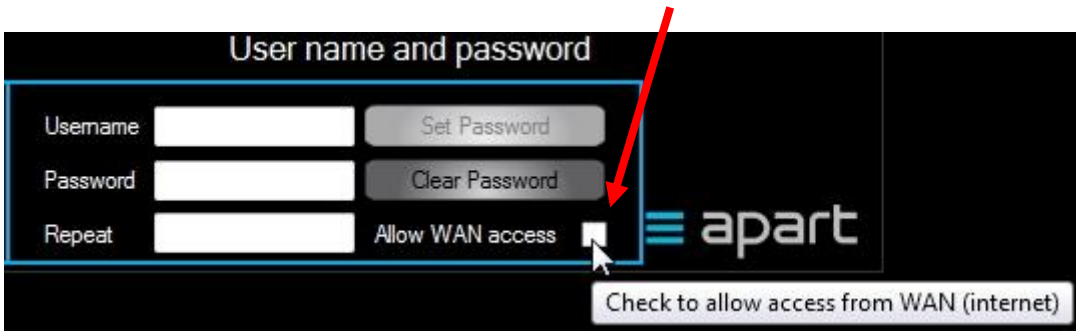
To reset the password, connect to the unit using the Username and Password and click "Clear Password".



A popup window appears, click ok.



To allow WAN access, check the "Allow WAN access" tick box.



The unit can now be accessed from the internet if the router allows it. Check your router's settings to allow access to the network from the internet. By default, built in firewalls will block all access to the network from the internet.

Consult the manual from the network router/internet modem or consult a qualified network administrator for further assistance.

The port used by the unit is port 80.

Calculating maximum cable length for DIWAC wall panels

AUDIOSYSTEM8.8 has a built-in power supply to feed the optional wall panels. Every wall panels requires its own dedicated cable (2 wires, polarity independent).

The maximum amount of wall panels powered by AUDIOSYSTEM8.8 is 8 pieces. However, in case you want to use long cables between the peripherals and the AUDIOSYSTEM8.8, the internal resistance of the cable will influence the supply voltage at the wall controller. This could have a negative impact on the reliability of the installation.

In the table below, we show you a few standard applications and the maximum cable length. The values are theoretical values. Additional factors such as connector resitance and interference have not been taken into account.

Unit	Number of units	Maximum cable length CAT5	Maximum cable length CAT6
DIWAC	1 (dedicated cable per DIWAC required !)	290 m	580 m

DIWAC wall panels can also be connected with normal (thick) electric wires. DIWAC has been successfully tested with cable lengths up to 1800 m.

In the table below, the minimum working voltage and power consumption of the peripheral devices is shown:

Unit	Minimum supply voltage	Nominal supply voltage	Maximum supply current
DIWAC	12V	24V	110mA

If you want to calculate your specific situation, please refer to the text below:

Standard CAT5 cable has a resistance of 18.8Ω/100 m per wire. Maximum current allowed through CAT5 cable is 577 mA.
Standard CAT6 cable has a resistance of 9.4Ω/100m per wire. Maximum current allowed through CAT6 cable is 1.5 A. Because the power supply flows through 2 wires (from positive to negative), we have to multiply these electrical resistance values by 2:

CAT5: 37.6Ω/100m

CAT6: 18.8Ω/100m

If you are planning to connect a DIWAC unit via 500 meters of CAT 5 cable, the current through the cable will cause a significant voltage drop. The cable resistance = 37.6Ω x 5 (5 x 100m) = 188Ω. The DIWAC unit has a max current consumption of 110mA. This current flows through the CAT5 cable and causes a voltage drop of: (using Ohm's law)
U (voltage) = R (resistance) x I (current)

voltage drop = 188Ω x 0.11A = 20.68V

The supply voltage from AUDIOSYSTEM8.8 is 24VDC, the minimum working voltage for a DIWAC unit is 12 volt. The unit will receive a supply voltage of 24V – 20.68V = 3.32V. This is below the minimum specified supply voltage (12VDC). In this simulation, we have not included the resistance of connectors and their negative impact on reliability. Therefore, using 500 m of CAT5 with a DIWAC is not possible.

Calculating the maximum theoretical cable lengthe for a DIWAC unit:

CAT 5 cable:

Maximum voltage drop on the connecting cable = 12V

R = U/I = 12V/0.11A = 109.09Ω

CAT5 cable = 37.6Ω per 100 meter

Cable length = 109.09/37.6 = 2.9 x 100 m = **290 m**.

CAT6 cable:

CAT6 cable length is theoretically double the length of CAT5 = 290 x 2 = **580 m**.

Common problems finding a unit using the friendly name

During power-on a request is sent to the DHCP server to use the friendly name for the unit but the AUDIOSYSTEM8.8 cannot force the DHCP server to actually use this name. Secondly, in most networks the friendly name has to pass through the DHCP server so units with a fixed IP address won't be accessible using the friendly name.

Another problem is the caching of names and IP addresses in the network. There are a lot of components in a network which employ caching to speed up the network. Examples are the DHCP and local DNS servers in the router, the operating system of your computer or the browser.

The caching problem becomes apparent especially when changing the friendly name and when multiple AUDIOSYSTEM8.8 units with initially the same name are in the network. Clearing caches can be a solution, for instance refreshing the browser page using <CTRL> F5 forces most browsers to bypass the internal browser cache and reload everything from the network.

Naming with fixed IP addressing: local DNS or 'hosts' file

There are two options to still have a friendly name for the AUDIOSYSTEM8.8 when configured with a fixed IP address:

1. Add the name for the unit to the local DNS table of the router, see the manual of the router for more information.

2. Add the name to the “hosts” file on your computer. Using this file the computer bypasses all DNS servers on the network and directly accesses the unit using the IP address. Add a line like

192.168.0.19 MyFriendlyName

to the end of the file, replacing the correct IP address and friendly name.

The 'hosts' file can be found in

'/etc/hosts' for Mac and Linux

'%systemroot%\system32\drivers\etc\' for Windows

For Mac/Linux root access is required to modify this file. On Windows operating systems, Administrator privileges are required. These are system folders and hidden by default.

WAN access

To access the AUDIOSYSTEM8.8 from the internet (Wide Area Network), the router of the local network must be configured properly.

Make sure the AUDIOSYSTEM8.8 is accessible on the local network before attempting to configure WAN access.

Because the AUDIOSYSTEM8.8 listens on port 80, the standard http port, requests from the external network must be routed to the unit(s). This must be configured in the router. The option is often called "*Virtual Server*" or "*NAT Table*" (Network Address Translation).

Because the router needs to know the IP address of the AUDIOSYSTEM8.8 it is best configured with a fixed address. Modern routers may be able to access the unit using it's friendly name, in this case the AUDIOSYSTEM8.8 can be configured using DHCP.

Many providers however don't allow access to port 80 for residential networks, or typically block all ports below 1024. A solution is to use a higher numbered port externally and reroute via a *Port Redirect* to the AUDIOSYSTEM8.8 port 80.

For instance: port 8080 -> 192.168.0.19:80. The URLs to access the AUDIOSYSTEM8.8 from the external network become

http://your.residential.network:8080

http://your.residential.network:8080/config

Several units can be easily accessed using *Port Redirect*, just configure for instance external ports 8001, 8002, 8003, ... to access a specific unit, each at a unique internal IP address.

It's strongly advised to protect the AUDIOSYSTEM8.8 with a (strong) password when external WAN access is allowed.

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