

DASnet *speaker management software*

Version 1.00



DASnet *hardware*

DASnet HARDWARE

DASnet software is based on an RS485 net. All devices on the net have to be connected in a daisy chain / star configuration. D.A.S. Audio devices equipped with DASnet: Road series, LX-218CANet, Convert 15A, aero 40A

Here are the basic elements needed (provided by D.A.S. Audio):

USB-RS485 converter



D.A.S. Audio code

USB-RS485

EtherCon cable (eC): Shielded STP Rj45 cable



eC_0.9 / eC_2 / eC_5 / eC_10
(number refers to cable length)

EtherCon cable + Powercable (eCP):



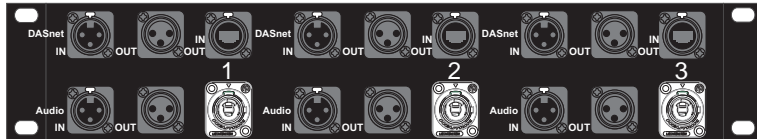
Shielded STP Rj45 cable
Power cable 2.5mm²

eCP_5 / eCP_10 / eCP_15 / eCP_20
(number refers to cable length)

DASnet patch panel:

DASnet patch

Audio / power and DASnet patch panel to connect all the devices on the net

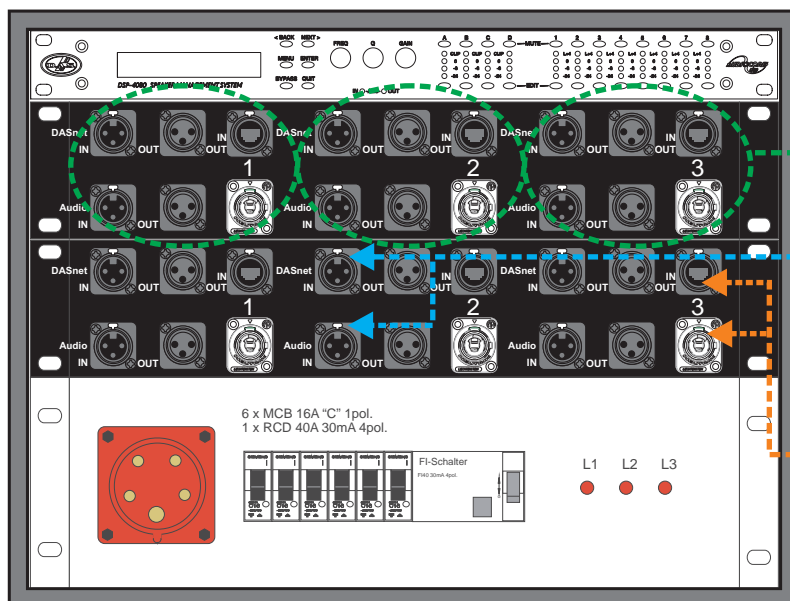


DASnet Rack:

DASnet Rack

Includes DASnet patch panel and power distro

32A (per phase) power distro can power up to 2 DASnet patch panels




The patch panel has different “zones” limited by the maximum current allowed by the powerCon connector (20A).

On each “zone” there is an audio input and a DASnet input. Also there are two outputs per zone, audio and DASnet data.

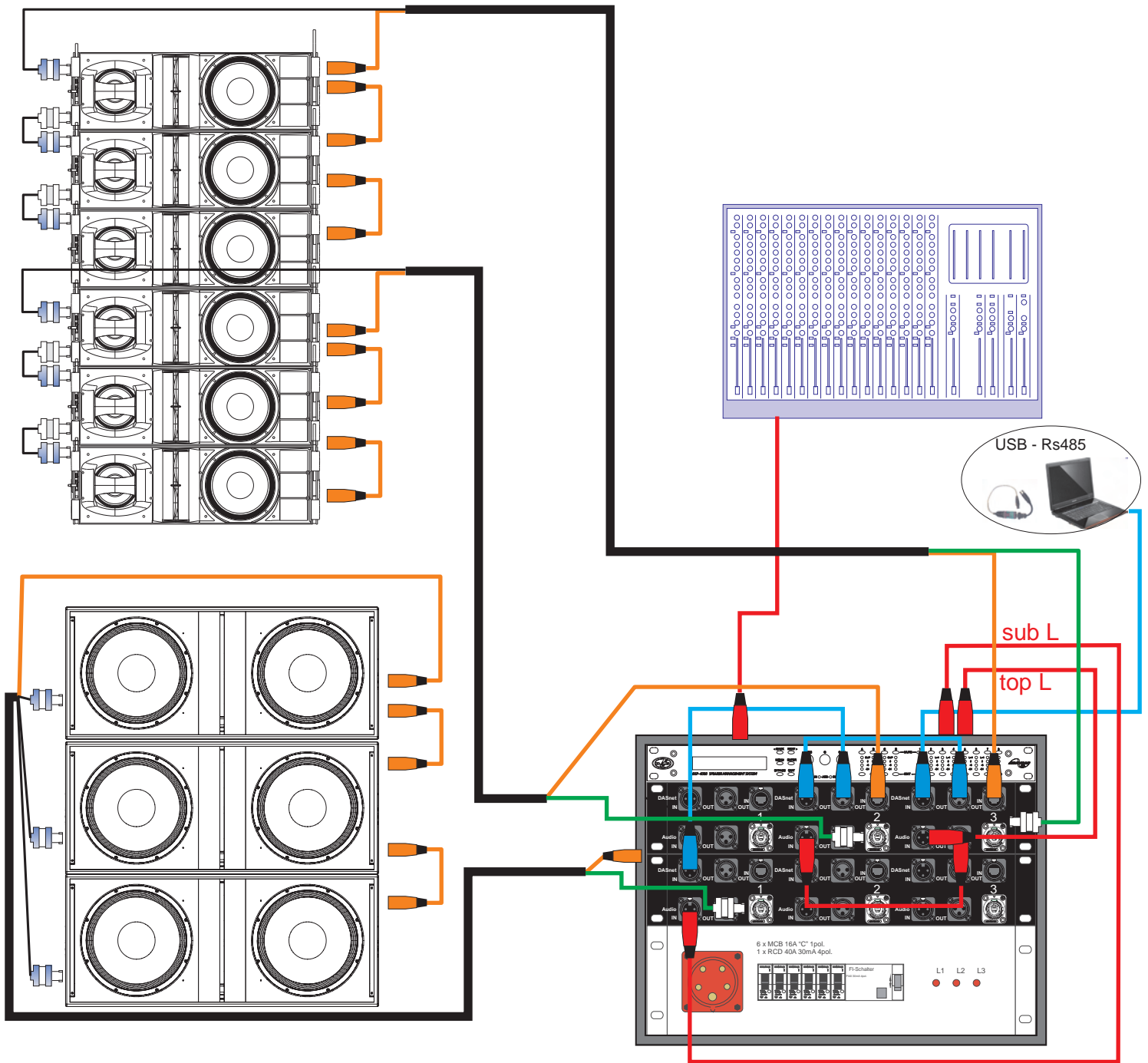
The main out to the cabinets is composed by a powercon and an Ethercon Out.

CONNECTIONS

 Power + DASnet data + analog audio

 DASnet RS485

 Analog audio



DASnet
software

INTRODUCTION

DASnet is the monitoring and control software for D.A.S. Audio powered sound systems and digital signal processors.

This manual covers the installation and use of D.A.S. Audio's proprietary software package known as DASnet. This software is a remote control application running under Microsoft Windows™, and is compatible with the following D.A.S. Audio products:

The DSP-2060A Speaker Management System
The DSP-4080 Speaker Management System
The Convert 15A Speaker System
The LX-218CA Speaker System
The aero 40A Line Array System

The software is designed to allow all these products to be connected to a computer through a variety of interfaces and will permit full remote control of any combination of up to 256 devices. The maximum distance covered is up to 1000meters.

The software can be downloaded from D.A.S. Audio website:

www.dasaudio.com/en/support/software-2/

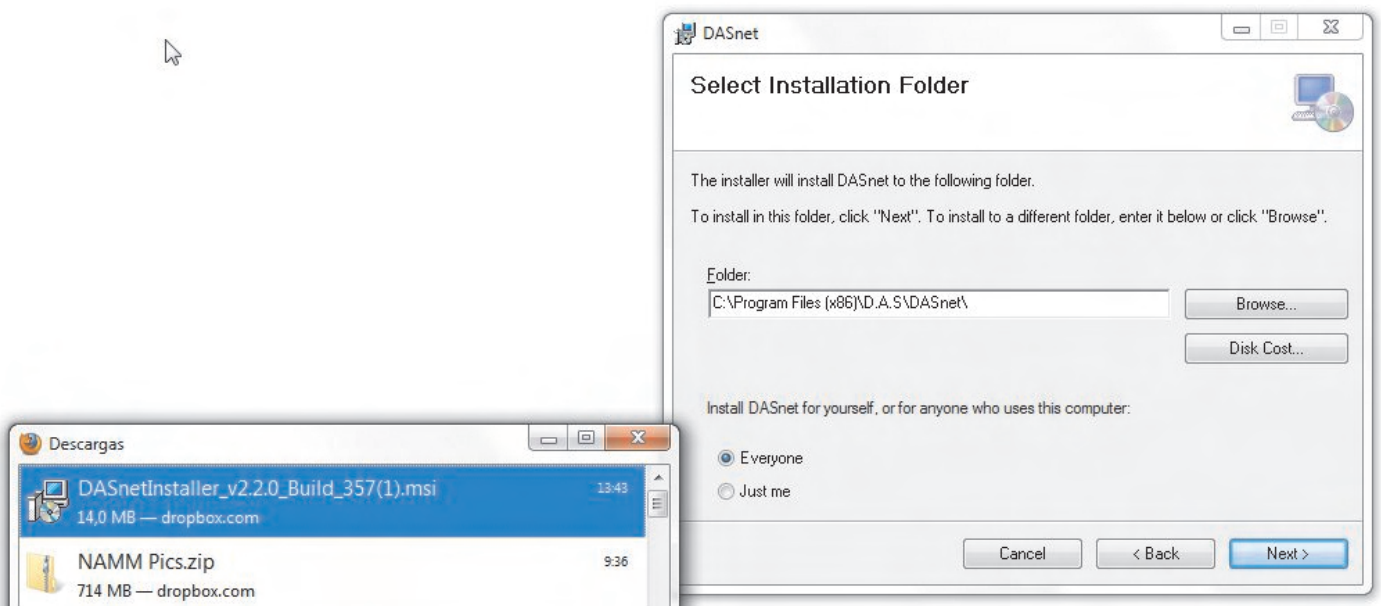
Always check the website for updates. There is a firmware updater software for the cabinets that can be also used to update the presets. The software can also be downloaded from the D.A.S. website:

INSTALLING THE SOFTWARE

Please note that this software will not run under Windows™ 3.1 or 3.11. It is designed for Windows™ 95/98/NT4 2000, ME and XP.

Follow these steps to install your copy of DASnet for Windows™

Once the installer has been downloaded from the website double click and install it. Select the installation folder and continue until the software has been successfully installed.

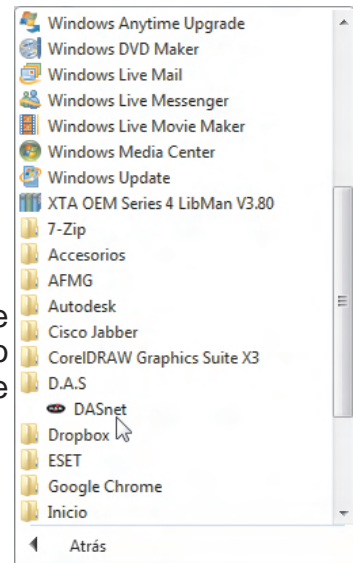


STARTING THE SOFTWARE

The installation procedure will have created an entry in the 'Programs' list off the 'Start' menu.

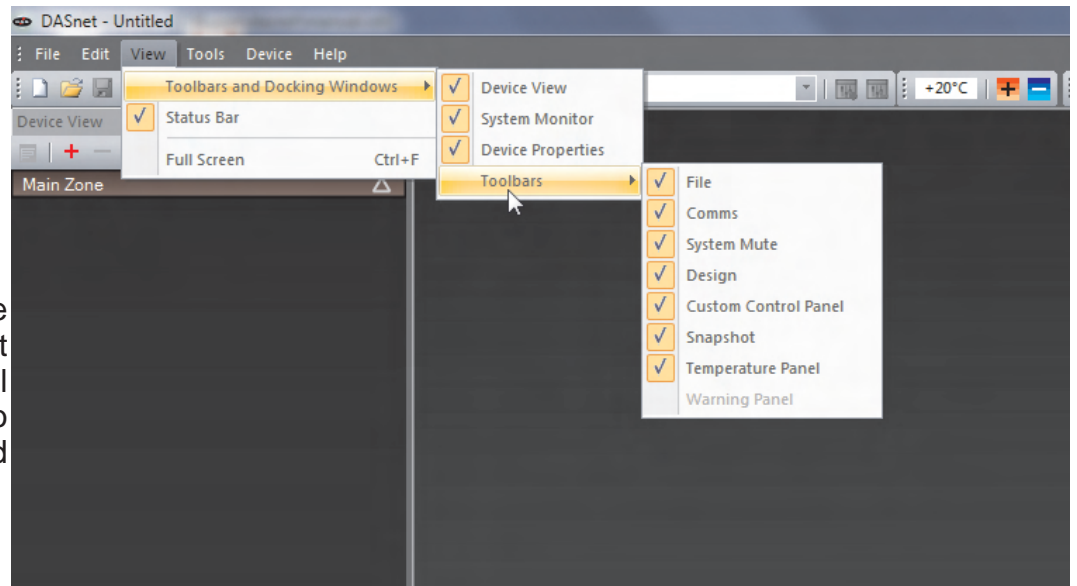
The software bases its communication system on the RS-485 format. It is necessary to convert that format at the access port of the control computer. The converter will create a virtual COM port on the computer that the software will detect automatically.

The basic connection uses an RS-485 to USB converter; the recommended device is the kksystems (www.kksystem.com) RS-485 to USB converter (refer to the installation and operation manual for more details).

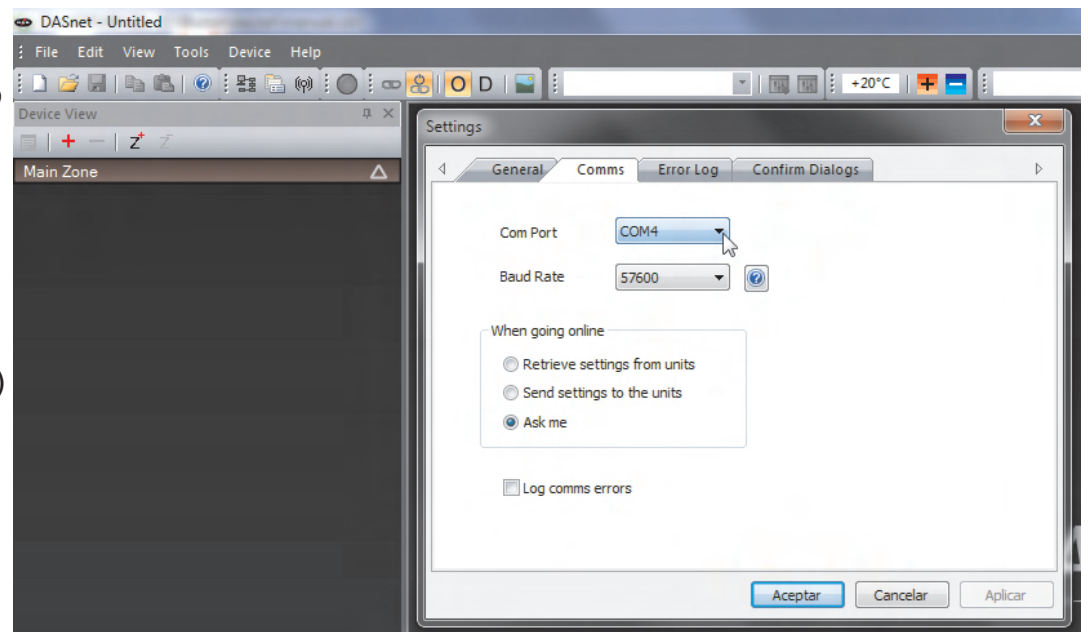


Easy to install the device works as a virtual COM port and allows daisy chaining multiple units. From the PC to the first unit, from this one to the second, etc.

When running the software for the first time, make sure that all windows are active. Go to the *view menu* and activate all of them.

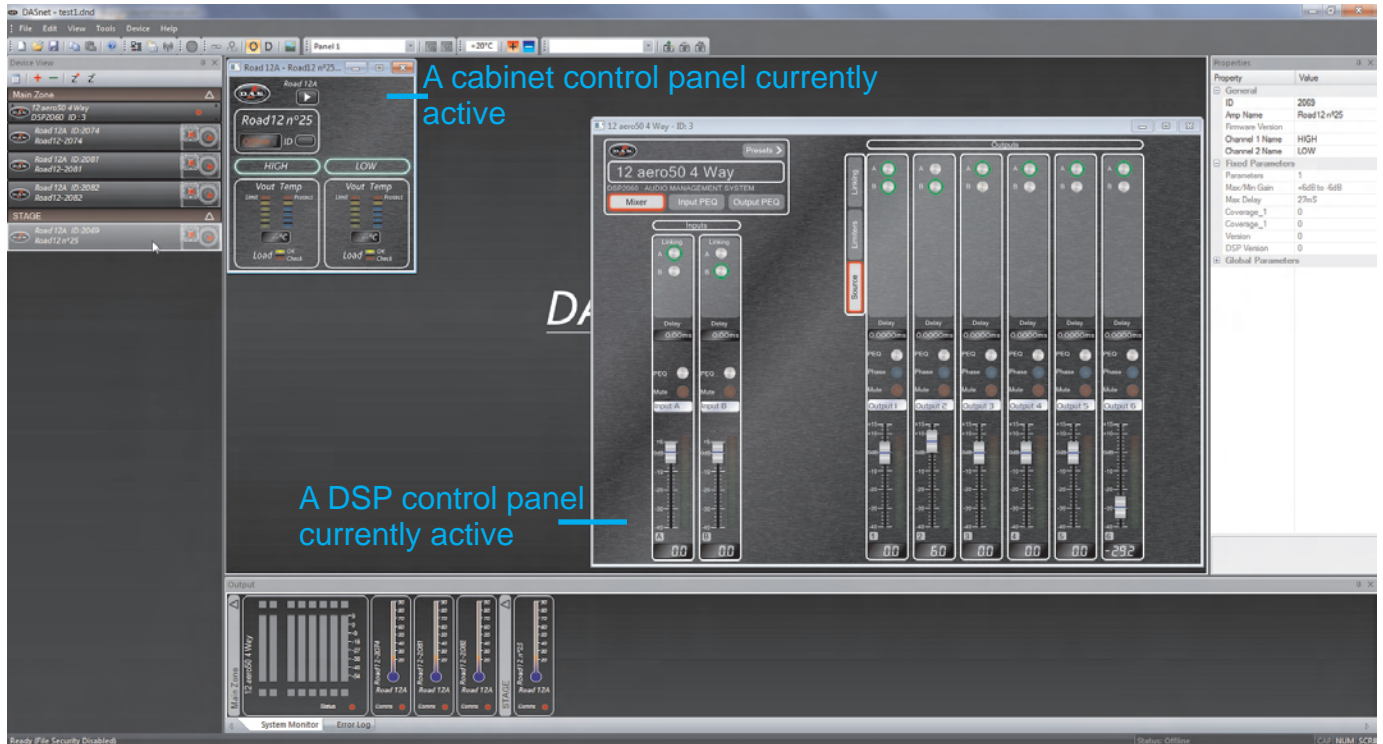


On the *tools menu* select the COM port to allow communication with the devices (cabinets). Baud rate must be 57600!! Besides this, the user can select getting the parameters from the units (retrieve settings) or send settings to the units from the computer:



LAYOUT OF THE MAIN WINDOW

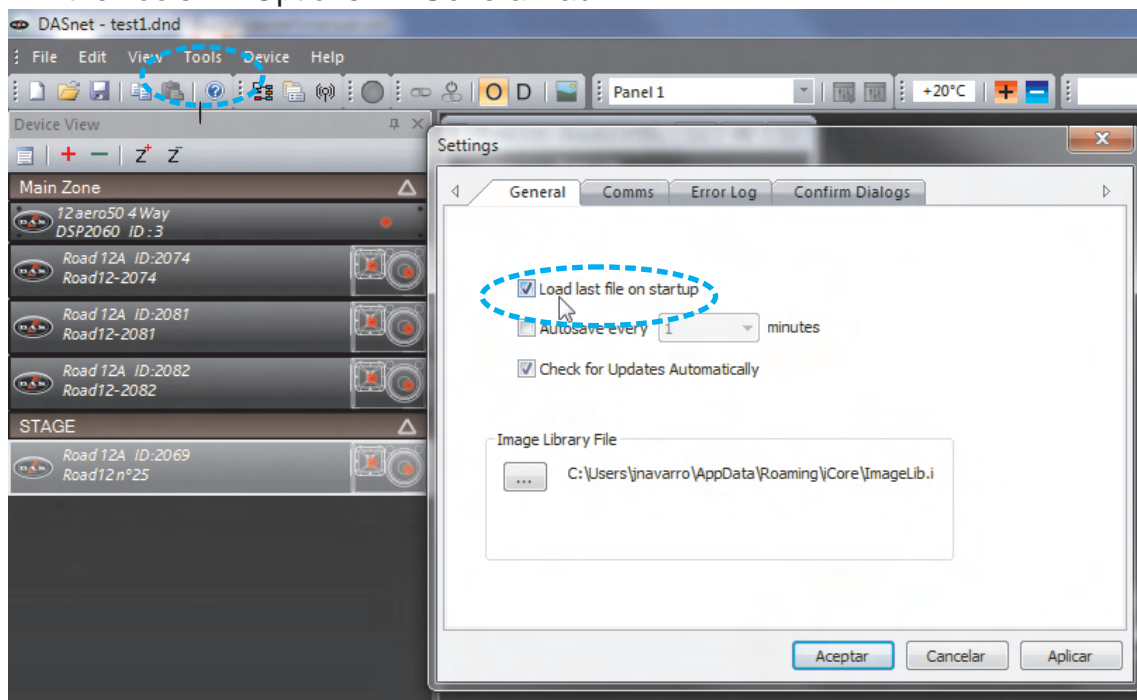
A double click on any *device* will display its “front view” for editing of audio properties. Non-audio properties are shown in the *Properties* pane on the right hand side of the main window.



In the above example all devices are off-line, as shown by the red indicator on each unit in the Device View and the System Monitor View. When connected and on-line, the indicators will be green. A yellow flashing indicator means there is a problem - check on the control panel of the device for more details.

Before looking at the details of a device’s controls and properties, here are a few general pointers about using the software:

- The last saved file can automatically be opened when the software is started by setting the option in the Tools --> Options --> General Tab:



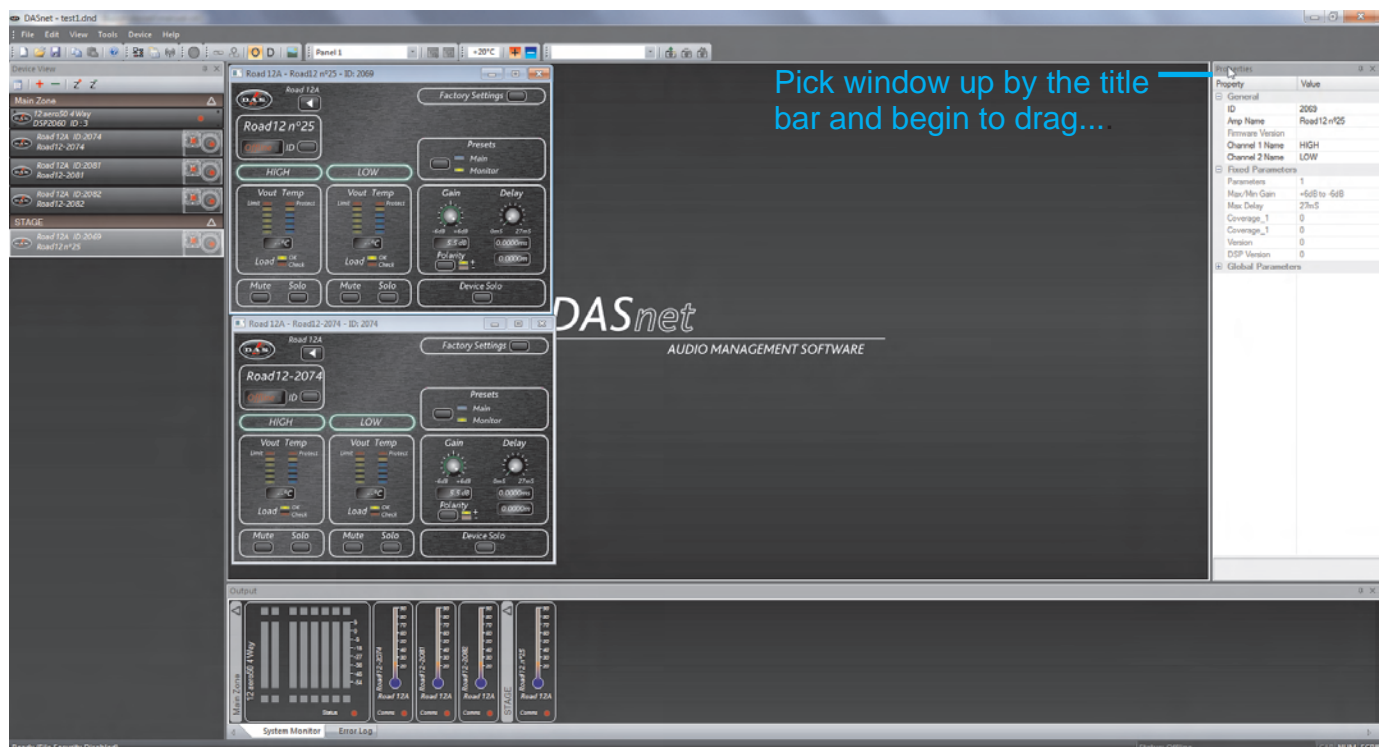
- Settings can be copied between units either using the buttons on the toolbar (which uses the currently selected cabinet) or by using the right-click context menu on the unit's "front view" or in the Device View:



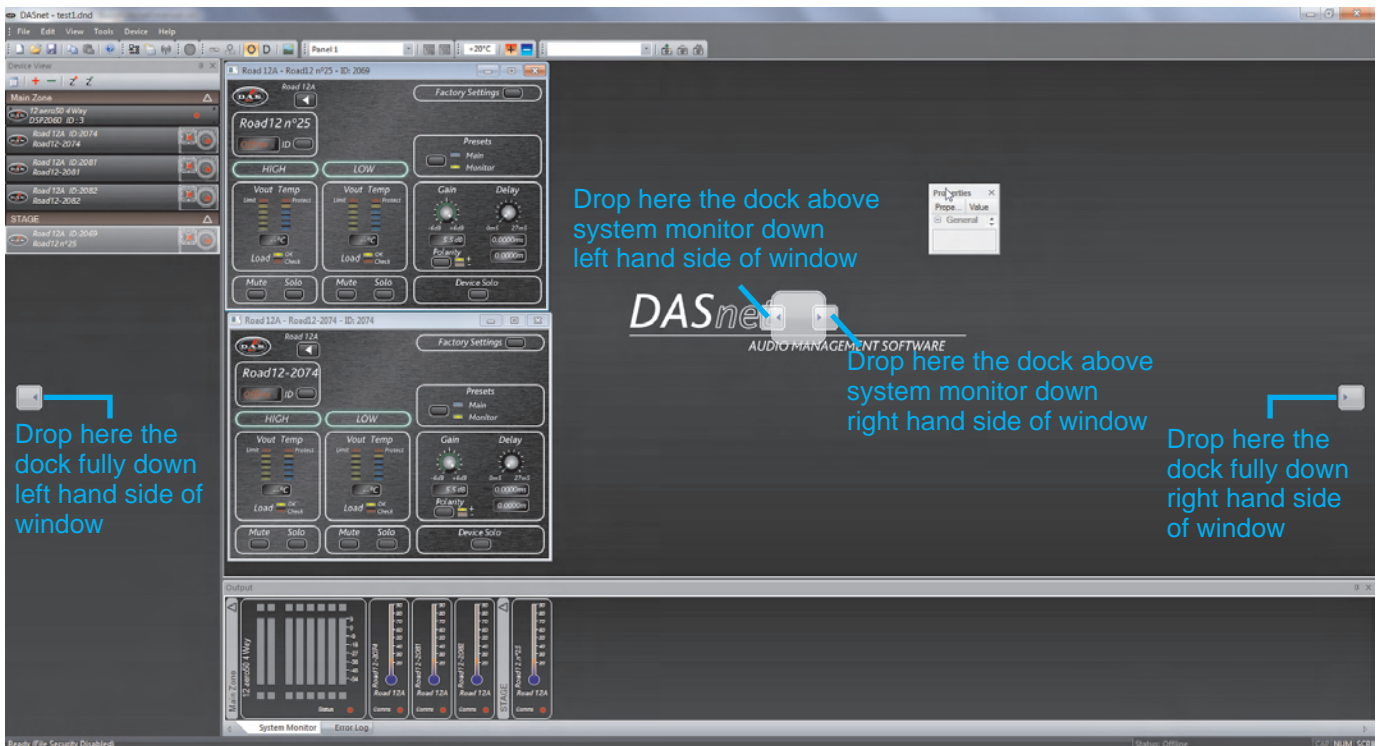
- The global Mute works from either the toolbar, menu, or by pressing 'Ctrl+M' on the keyboard.
- The error log is stored to a file called "Logfile.txt" which is stored in the same directory as the program executable file.

REORGANISING THE WINDOW

To move inner windows about, pick them up by their title bar:

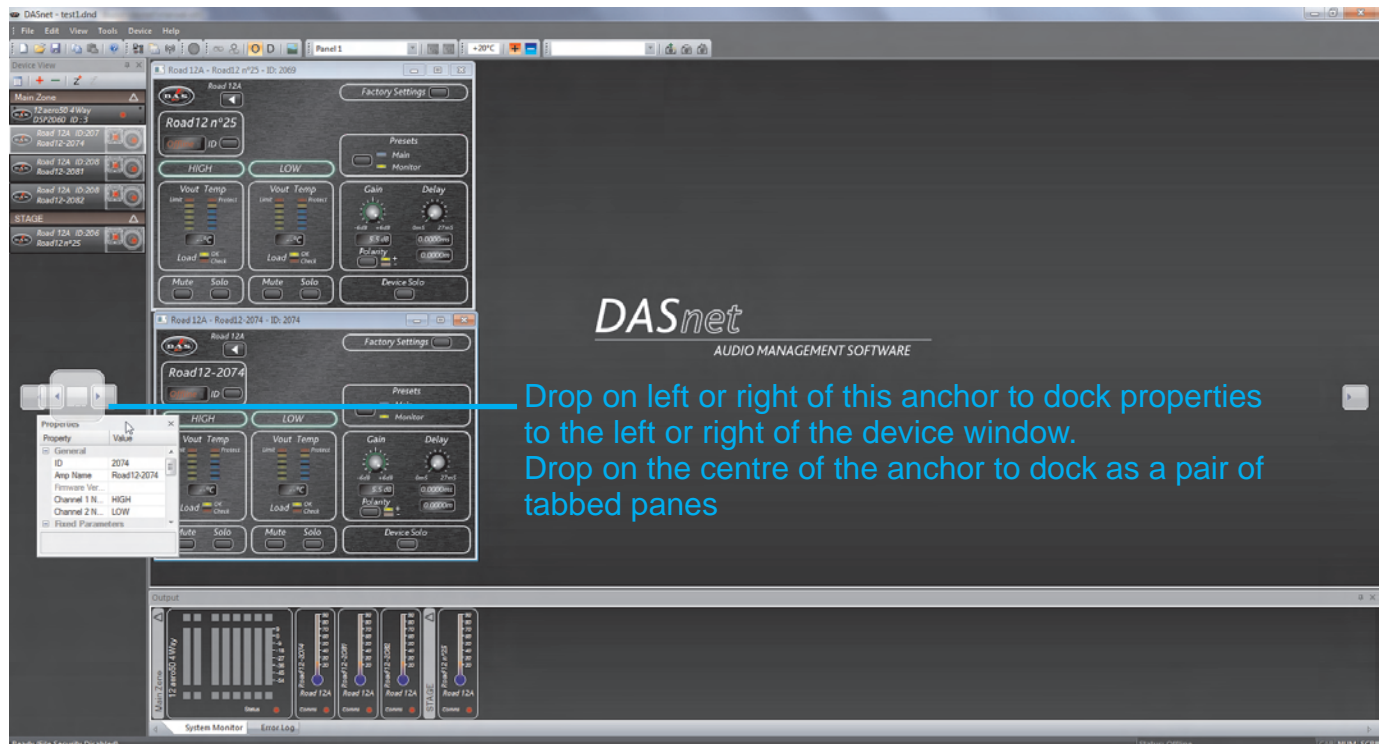


For example to move the properties window and re-dock it, pick up the properties window by its title bar and begin to drag it. This will make a number of docking options anchors appear - these look like this:

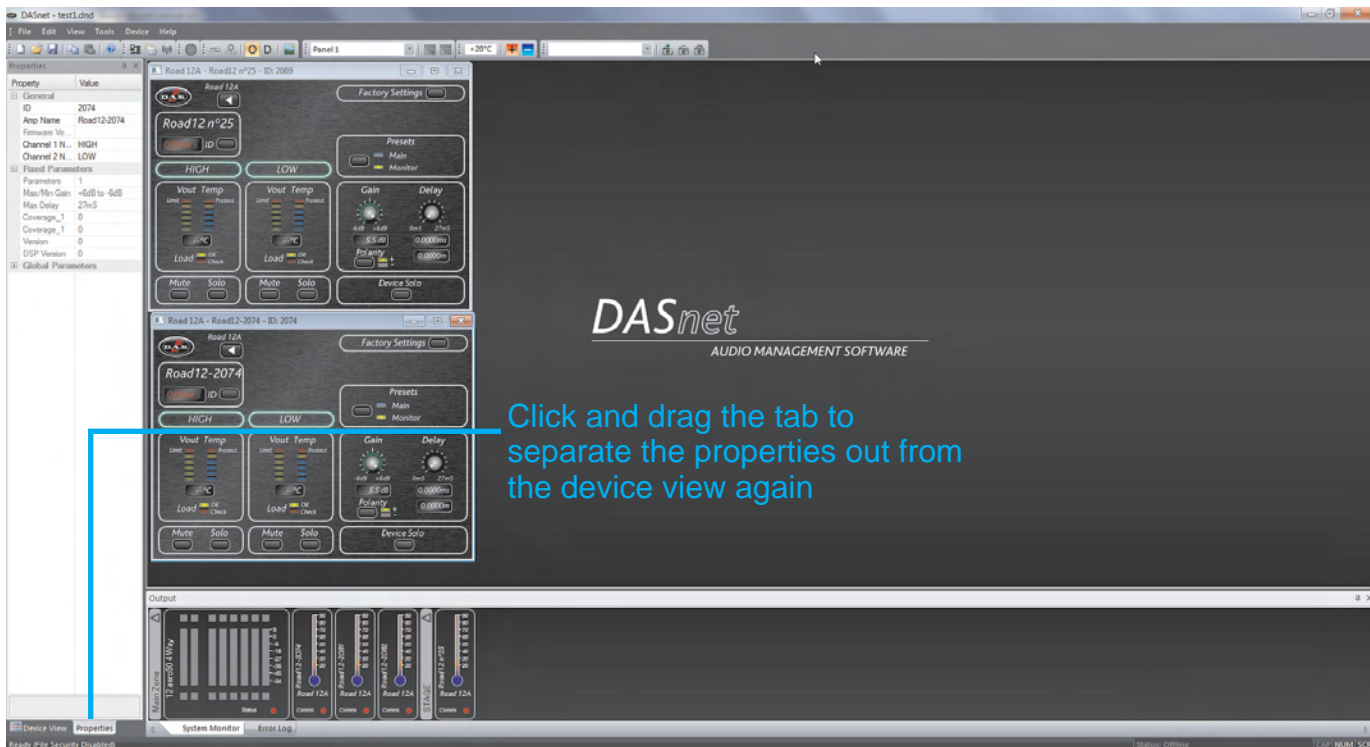


Drop the window on one of the anchors to dock it in the new position, as shown above. Similarly, the system monitor window can be docked either top or bottom of the main window, and either fully across this window, or bracketed by the device view and/or properties window.

The Device View and properties window can be combined into a single tabbed window by picking either up and dragging it directly onto the other window where a new anchor will appear.



To separate out the windows again, just click on the tab of the window and drag and drop it as required to select a new position.



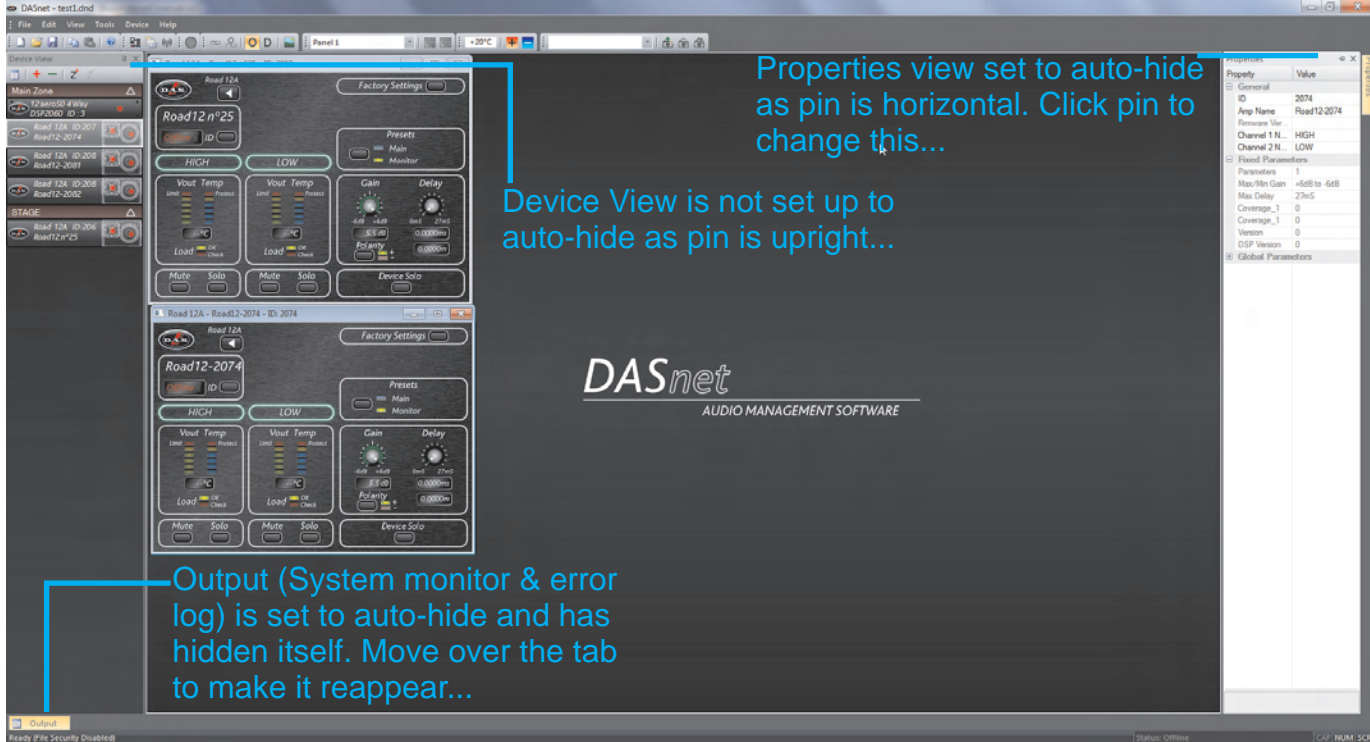
DASnet
AUDIO MANAGEMENT SOFTWARE

Click and drag the tab to separate the properties out from the device view again

Windows can also be left floating by dragging them from their current positions and just dropping them on the main background.

AUTO-HIDING WINDOWS

All inner windows can be set to “auto hide”, so they disappear into the edge of the main window when not required to maximise available screen area, but make them quickly available if necessary.



Properties view set to auto-hide as pin is horizontal. Click pin to change this...

Device View is not set up to auto-hide as pin is upright...

Output (System monitor & error log) is set to auto-hide and has hidden itself. Move over the tab to make it reappear...

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AUDIO MANAGEMENT SOFTWARE

Remember, if any windows have been closed they can be reinstated through the menu View --> toolbars and docking windows.


ZONING DEVICES

The Zones shown in the Device View and System Monitor windows allow groups of devices to be logically arranged to reflect their physical locations more accurately than just one large list of units.

The example below has different cabinets split into three zones, and units re-ordered to make it easier to locate them on the screen.

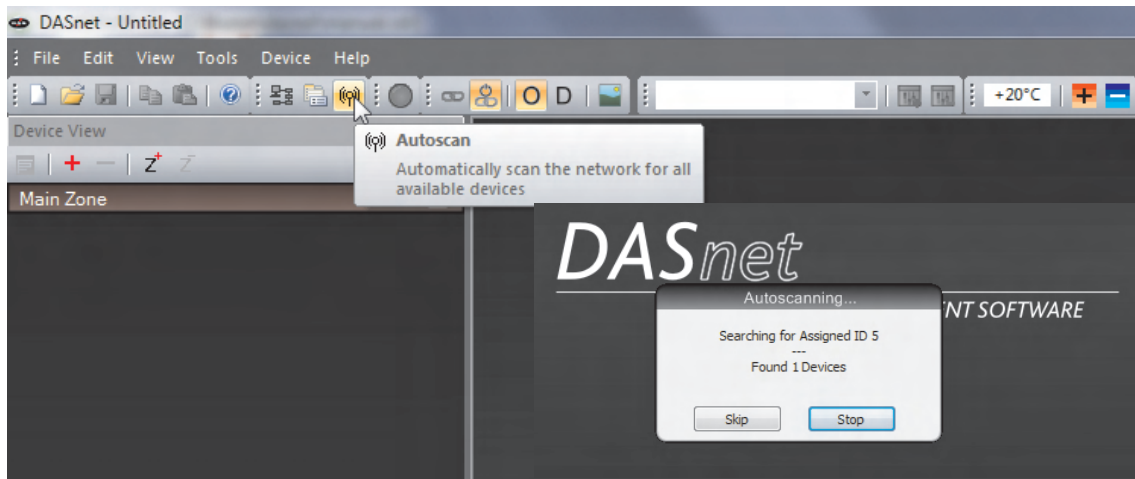


Things to know about the zones:

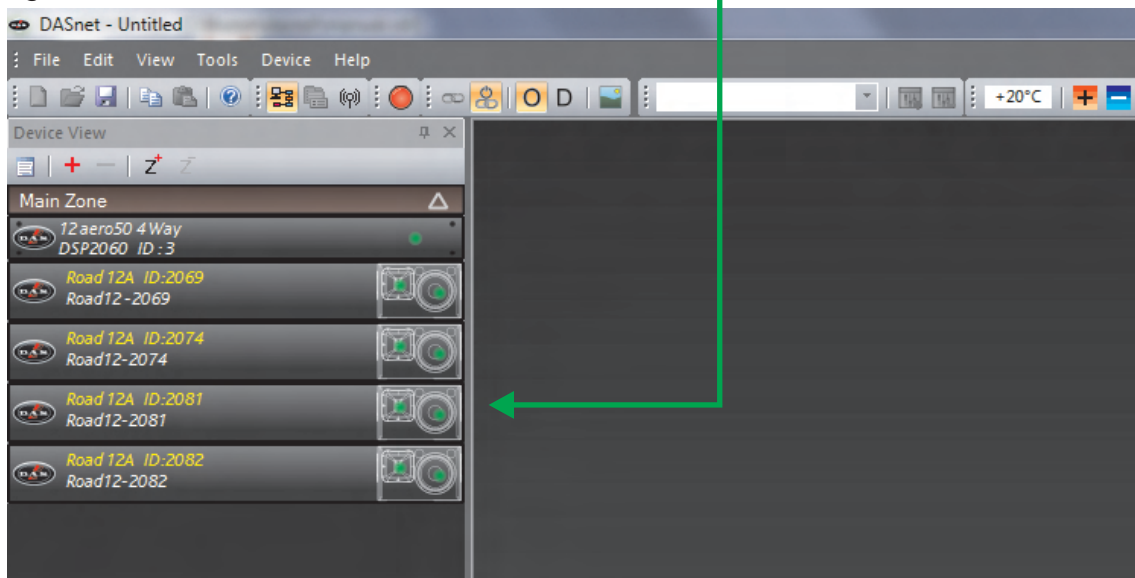
- There is always a master (main) zone, which you can rename (Left PA) but you can never get rid of.
- New zones can be added using the Z+ button at the top of the Device View.
- Devices can be moved into new zones just by clicking on them and dragging them to the required zone. They can also be re-ordered within a zone in the same way.
- Zones can be renamed by double click on their names.
- Zones can be expanded and collapsed using the  in the zone header.
- Files will remember the zone layouts including expand / collapse status when you save them.

COMMUNICATION WITH THE DEVICES

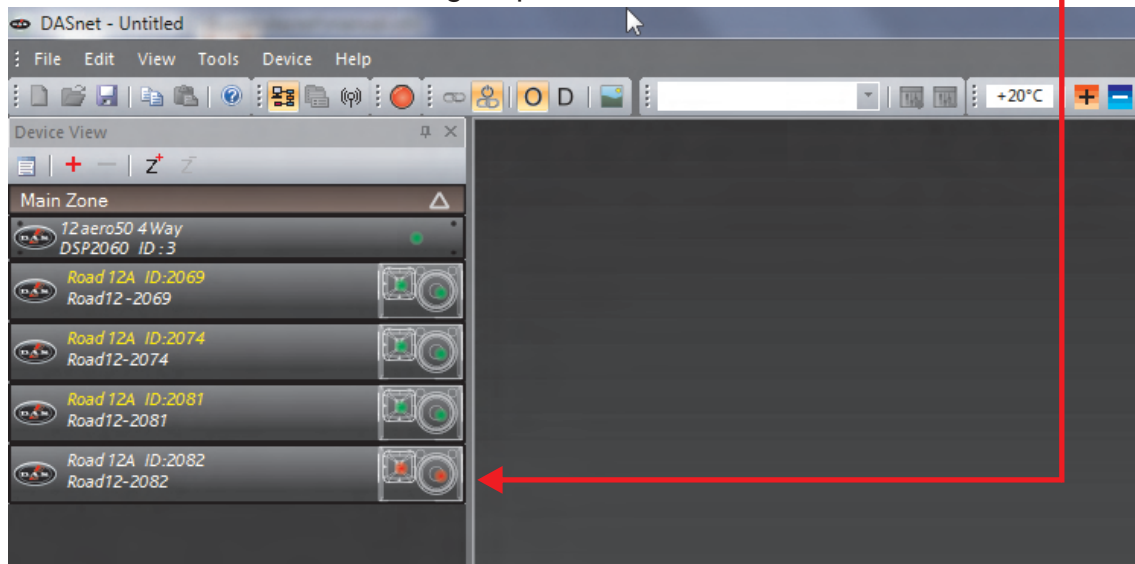
- A) The simplest way of adding units to the net is by using the *AutoScan* option (remember to specify the COM port on the *tools / options* menu). The entire process will take approximately 90 seconds.



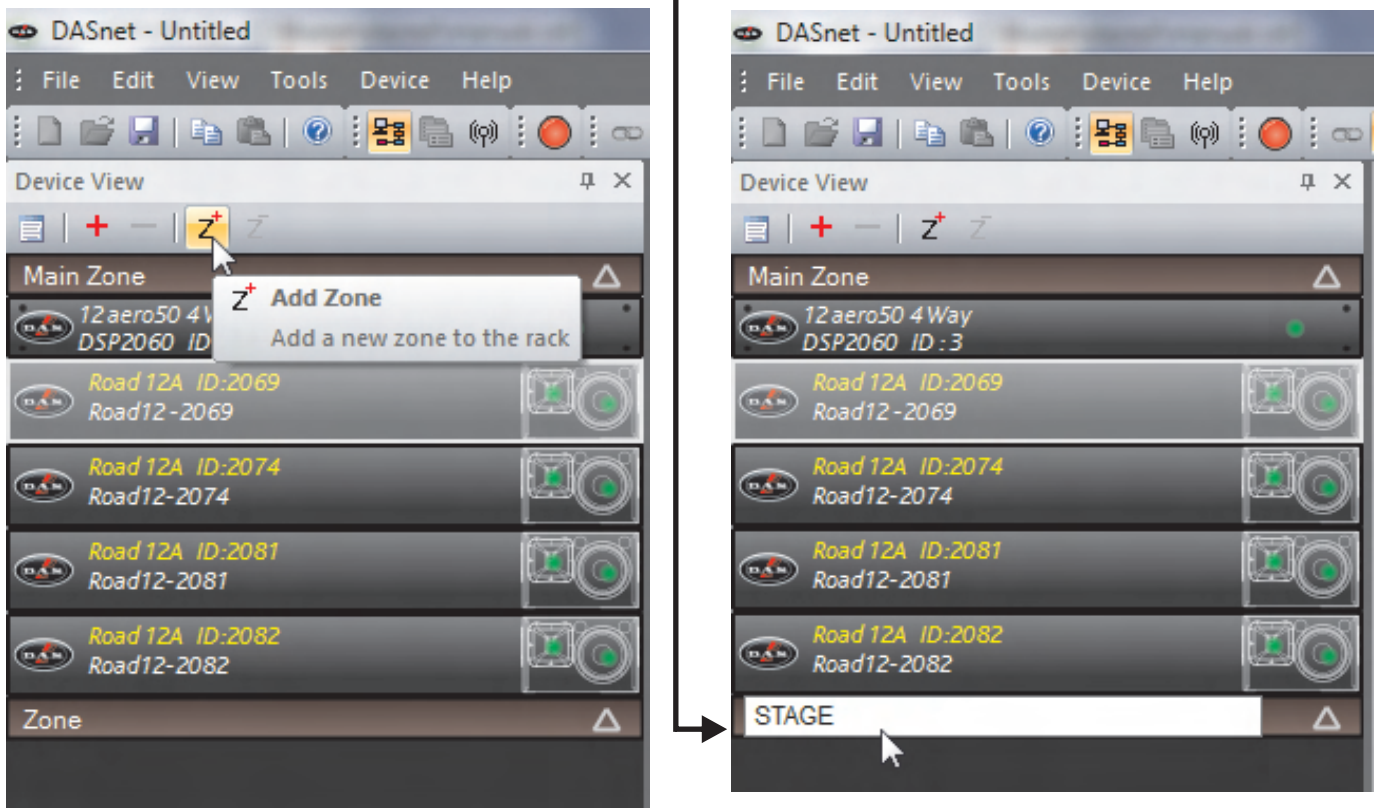
When the scanning process ends, all connected devices (on line) appear on the *device view window* in green.



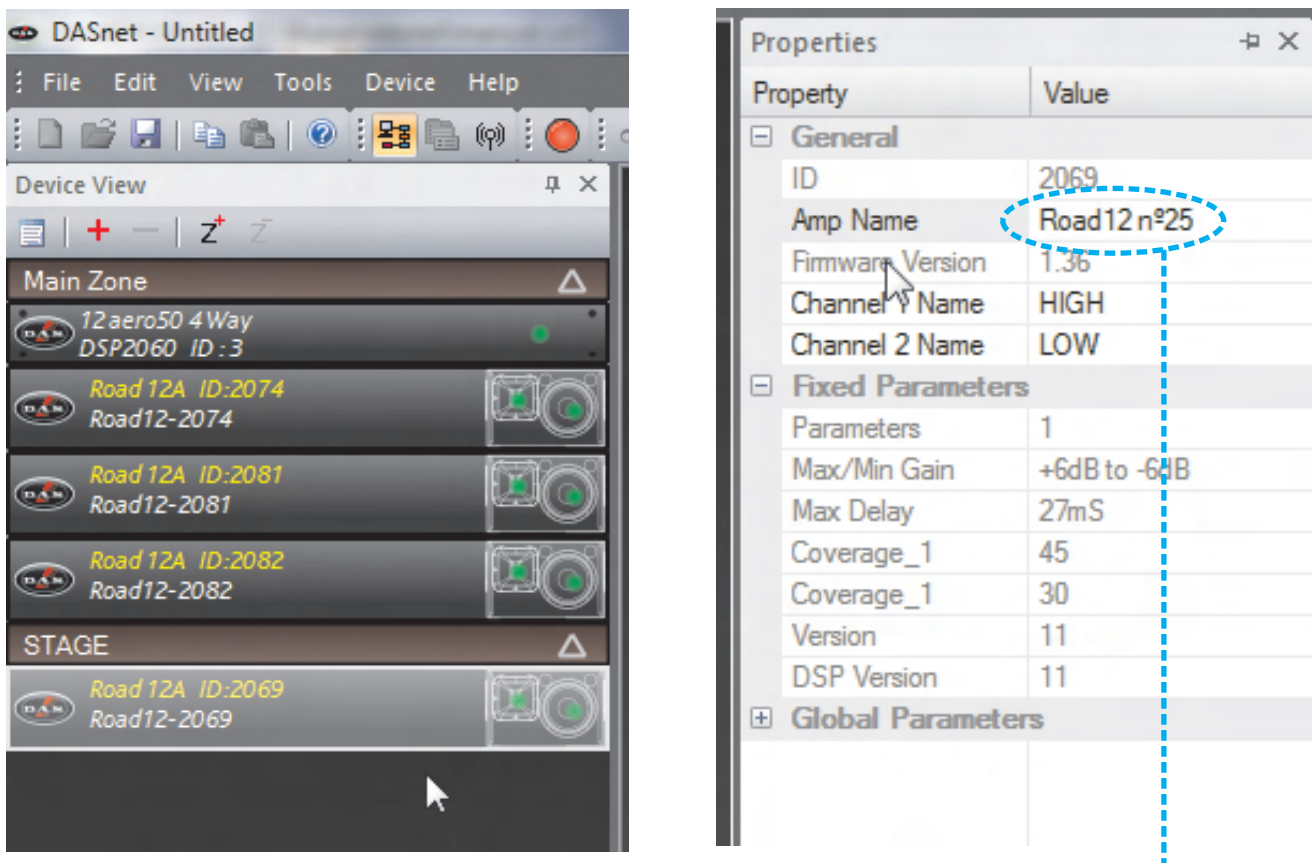
Important: only connected devices will appear on the main window. If the communication with any of the devices is lost after being detected, the unit will appear in red colour and physically in the cabinet the Comms / ID led will not light up:



On line devices can be assigned to different zones just by clicking and dragging them. First step is to add new zones and then, rename them. In this case the zone has been named *stage*.



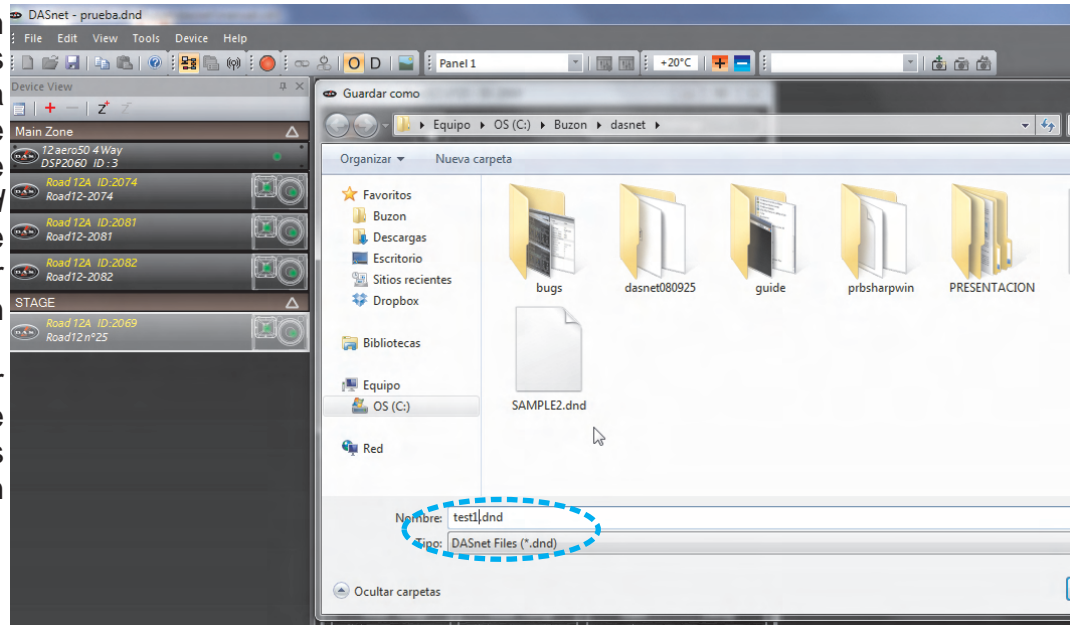
The unit Road 12A ID:2069 has been moved to the Zone named STAGE. Besides this, the unit could be renamed on the properties window (this name will remain in the memory of the device!):



The ID number on the cabinets is unique and will never change. The user can rename the cabinets by using an easier code, for instance numbers: Road 12 n°25 etc

➔ B) If the system configuration is always the same, because it is a fixed installation or the set up remains the same between shows, a *.dnd file can be saved on the computer and the user could work with it as an starting point.

Once you have your system ready while communication is running save the file, in this case *test1.dnd*



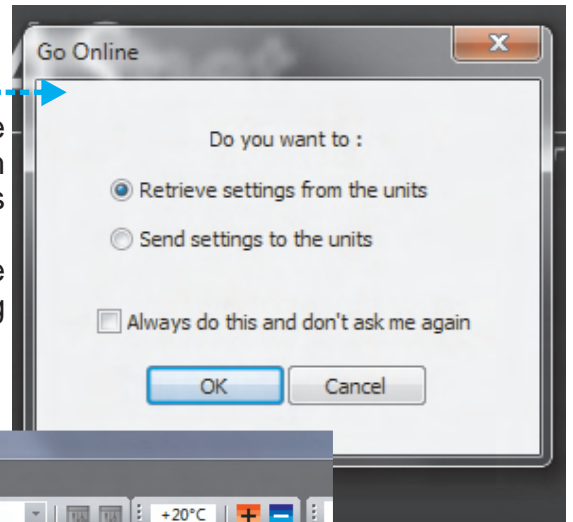
Once the file has been saved close the software and re open it again. Instead of going to the *autoScan* menu, open *test1.dnd* file first:



At this moment the saved configuration has been recalled but still there is NO communication between the computer and the devices. To do that go to ON Line Knob on the software:



When going on line the software will ask the user:



It is up to the user to decide if parameters on the software file have to be sent to the devices (Send) OR settings from the cabinets have to be imported to the software. In this case we will use the settings from the units (Retrieve). Immediately when pressing OK all the units on the *test1.dnd* file will be On Line (without doing the scanning process):



The name of the system can be changed by the user. Once the change is done, the name will remain the same even though a factory settings reset is done.

IMPORTANT: The first time the user connects the cabinets with the PC it is highly recommendable to name all your inventory devices with numbers for instance.

IMPORTANT: The baud rate must remain at 57600 to ensure compatibility with all connected devices.

IMPORTANT: The safest method of connection to avoid accidentally changing any device settings is to select "Retrieve Settings from units" as this will upload all devices properties and parameters to the computer.

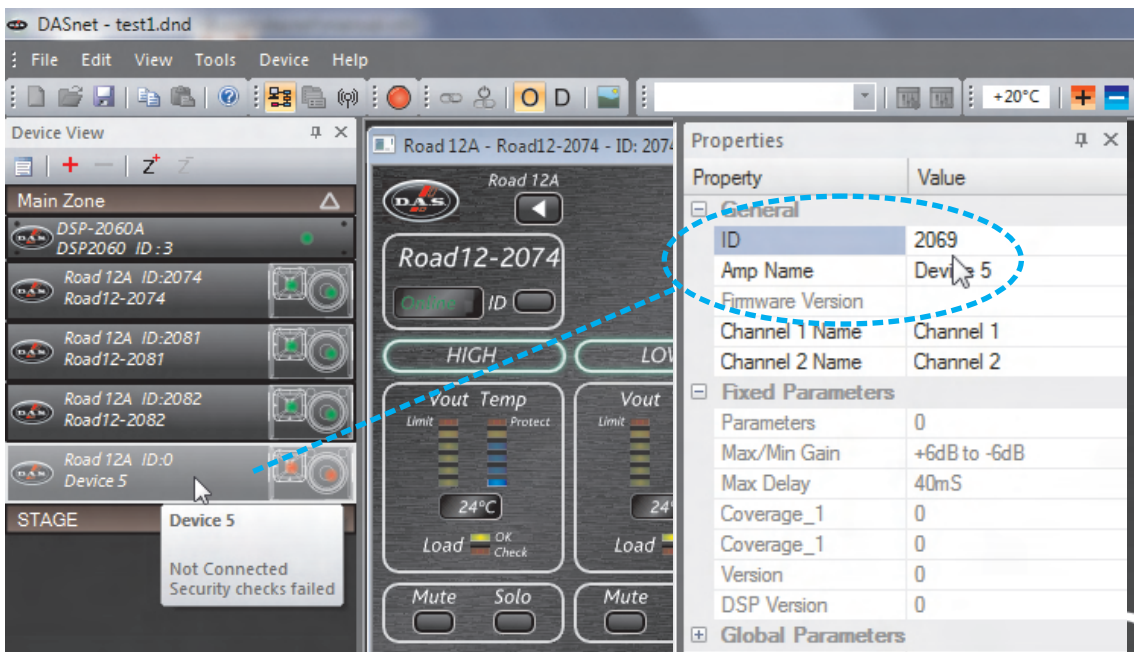
IMPORTANT: Remember to save your system before closing DASnet to avoid having to rescan the system every time you open the software. All window positions, zones, and screen layouts (so positions of the Device View, Properties and System Monitor) are also saved.

- ➔ c) There is another way of adding devices to the net. If the DASnet ID number of the cabinet is known (it is always on the cabinet's sticker) just adding a virtual device and setting the ID number on its properties menu the system will automatically connect.

On the graph is shown the net with 3 Road 12A on line:



When being on line a new device (Road 12A ID:0 Device 5) is added and the user writes the ID number on the properties menu:



After introducing the ID number and "enter" the cabinet will be on line.

DEVICE VIEW WINDOWS - cabinets

DASnet has been thought to monitor and control parameters on the connected devices. There are two types of devices, cabinets and processors.

Cabinets

Processors

Road 12A
Road 15A
LX-218CA
Convert 15A
aero 40A

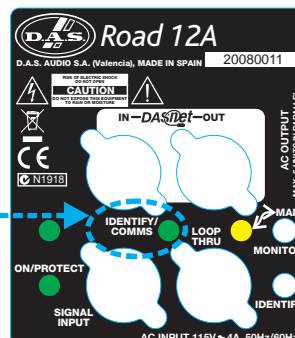
DSP-2060A
DSP-4080

Cabinets

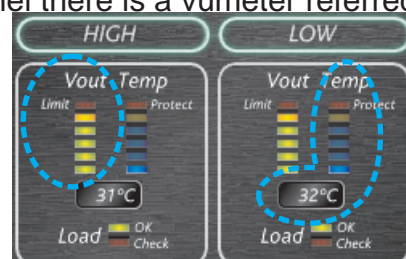
The basic window is activated just by a double click on the device. Device number 25, Road 12A ID 2069 has been maximized:



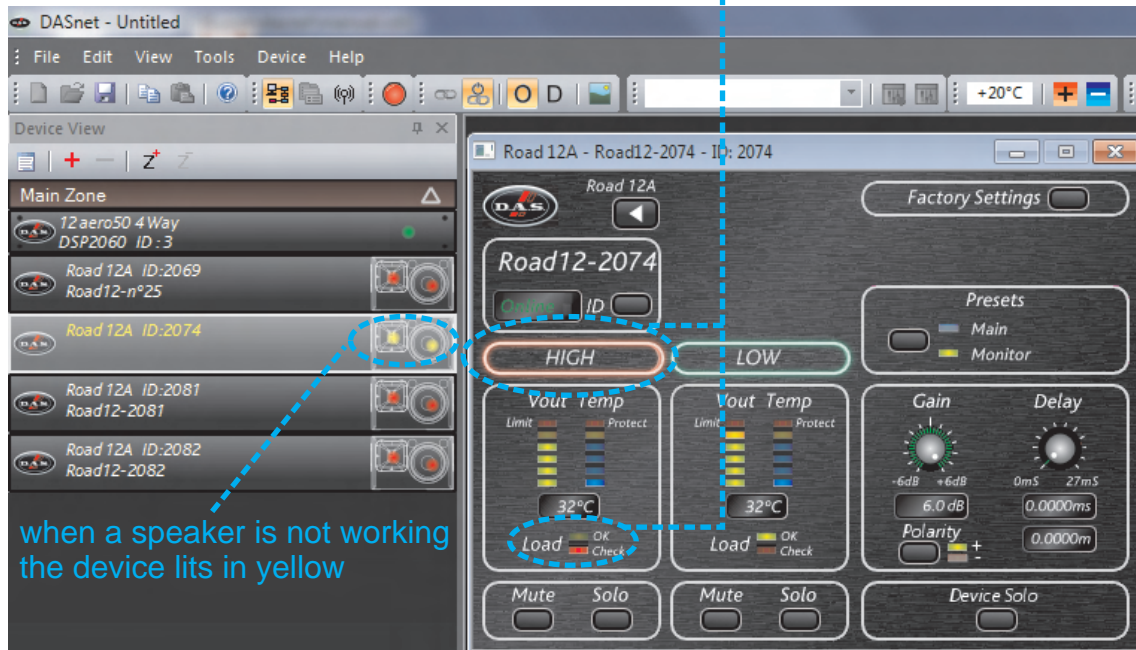
- System's name: defined by the user on the properties window.
- The ID knob allows the user to identify the cabinet physically. The ID LED on the amplifier will blink for a few seconds. If communication is working the comms LED will be lit permanently.



- Amplifier's channel: for each amplifier channel there is a vumeter referred to the limiter threshold. There is also a temperature vumeter that senses amplifiers temperature:



- Load monitoring: for each amplifier channel there is an impedance system control that indicates if the speakers are working (green) or not (red):



when a speaker is not working the device lits in yellow

On the “advanced view” parameters as gain/delay/preset/polarity/mute and solo are available:



advanced device view window

- Gain control: this control is for the complete cabinet (not per amplifier channel). From -6dB to +6dB. Value can be entered using the keyboard or the gain control of the software.
- Delay control: this control is for the complete cabinet (not per amplifier channel). From 0ms to 27ms in case of Road series and LX subwoofers. For Convert 15A and aero 40A from 0ms to 42ms.

- Presets: on the Road series two presets are available: *Main and Monitor*
 on the LX-218CA two prests are available: *Normal and Cardioid*
 on the Convert 15A a family of presets is available; *number of cabinets, HF gain, X-over*
 on the aero 40A a family of presets is available: *number of cabinets, Throw, X-over*



- Polarity: inverts the polarity of the complete cabinet.
- Mute/Solo: per amplifier channel or per cabinet. When SOLO is activated ALL the other devices on the net are muted.

Preset changes are bidirectional so if a preset is changed on the software it will be also changed on the cabinet. And vice versa, a change on the cabinet will be shown as well on the software.

IMPORTANT: all DASnet control parameters (gain, delay, presets, mute, solo...etc) are stored on the micro controller included in the amplifier. This means that after switching off the system all values of the parameters will remain the same in memory for the next time the system is switched on.

For instance: if a cabinet has these settings Gain +3dB, delay 5.033ms:



When it is switched off all values are saved in the internal micro controller memory, so next time the system is powered the parameters remain the same Gain +3dB, delay 5.033ms.

IMPORTANT: when the user is not sure about the internal settings in the micro controller (delay, gain etc) the best thing is to do a *factory settings* reset. Factory settings puts all the parameters at zero. Device name will remain the same (in this case Road 12 -n°25).

Factory settings reset can be done via software: (check that gain and delay are set up at zero)



But also physically by pressing the preset knob (holding during a few seconds) while powering the cabinet (on the Road 12A / 15A and LX-218CA).

DEVICE VIEW WINDOWS - processors

DASnet has been designed to monitor and control parameters on the connected devices. There are two types of devices, cabinets and processors.

Processors

DSP-2060A

DSP-4080

The DSP window on DASnet has three main options: *mixer*, *input EQ* and *output EQ*:

mixer

input EQ

output EQ

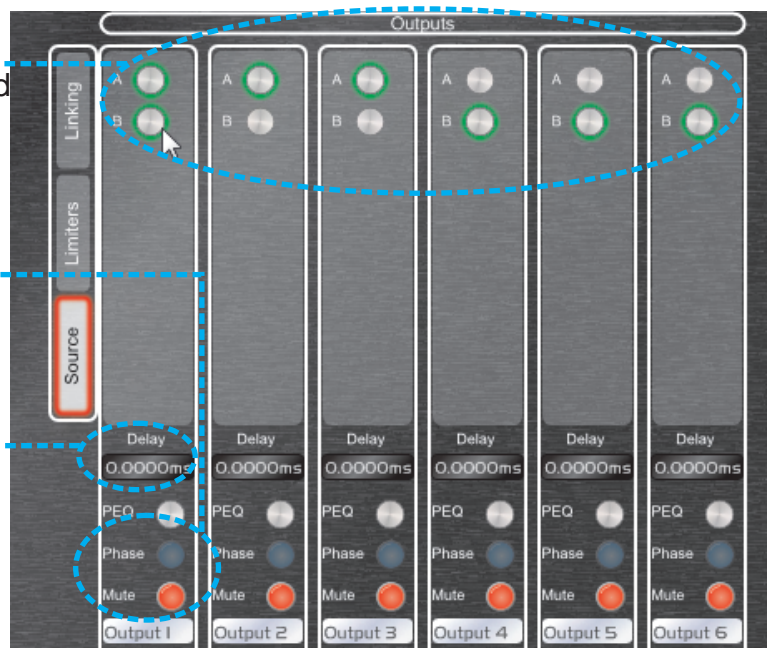


➔ On the *Mixer* menu three options are available: *Source*, *limiters* and *Linking*. *Source* is the input matrix and can be used for routing inputs and outputs.

In this case output 1 of the processor uses inputs A and B, outputs 2&3 use input A and outputs 4&5&6 use input B.

Besides the input / output routing on the *Source* menu the user can invert the polarity of the output channel (*phase*) *Mute / Gain* per output is available as well.

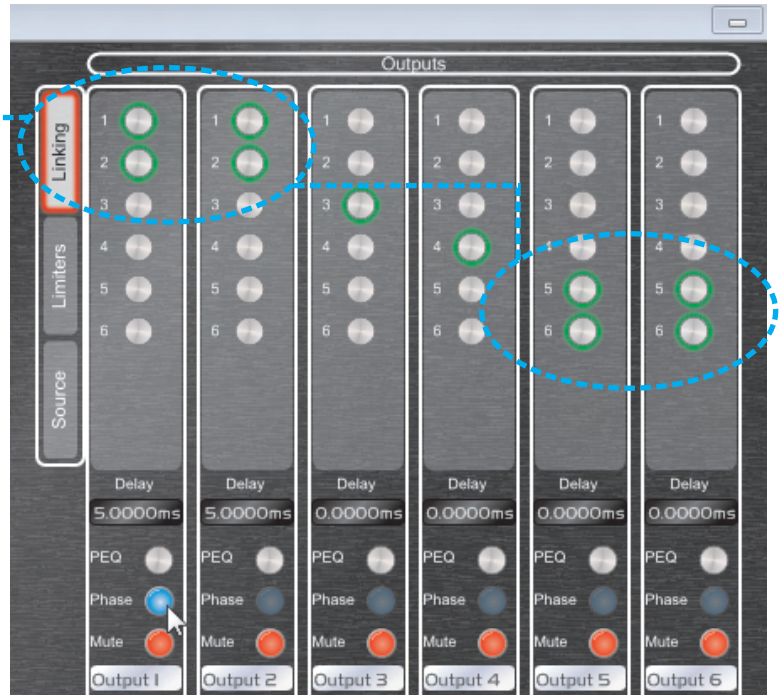
The *delay* per output is also accessible from the *Source* menu.



On the *Linking* menu the user can link channels. When two channels are linked all parameters are copied on both channels; gain, Eqs, delay, Xovers. Warning: polarity doesn't link between linked channels:

Output channels 1&2 are linked.
Output channels 5&6 are linked.

Check that delay on channels 1 and 2 is the same.
Phase is not the same on those two channels although they are linked.



On the *Limiters* menu the user can set up the limiter threshold, attack and release time per output. There are two ways of working with the limiters, *automatic (auto ON)* mode which uses the Xover frequencies on each output to calculate the time constants. The user only sets the threshold. Or *manual (auto OFF)* mode; in this case the user defines the attack and release times.

Auto limiter on / off

Threshold (level)

Peak limiter (clip)



Threshold level will set up the RMS limiter value and Clip Level Above will set up the Peak limiter.

RMS value can be calculated with the following formula: (in dB)

$$\text{limiter threshold} = 20 \times \log(V_d / 0.775) - \text{Amp GAIN (dB)}$$

where V_d is the desired voltage for the load.

$$\text{Power (Watts)} = V_d^2 / Z$$

limiter threshold = $20 \times \log(V_d / 0.775) - \text{Amp GAIN (dB)}$
 where V_d is the desired voltage for the load.

$$\text{Power (Watts)} = V_d^2 / Z$$

For example:

D.A.S. Audio LX-218C subwoofer. 2400W RMS, 4ohm cabinet (2x18")

D.A.S. Audio D-100 amplifier. Amp Gain 36dB.

Using the formulas $V_d = \sqrt{2400 \times 4} = 97.8 \text{ volts}$

Limiter threshold = $20 \log(97.8 / 0.775) - 36 = +6 \text{ dB}$

The time constants are set by the high pass filter frequency for that channel on automatic mode:

High Pass Filter	Auto Attack Time	Release Time
< 10Hz – 31Hz	45mS	x16 (720mS)
31Hz – 63Hz	16mS	x16 (256mS)
63Hz – 125Hz	8mS	x16 (128mS)
125Hz – 250Hz	4mS	x16 (64mS)
250Hz – 500Hz	2mS	x16 (32mS)
500Hz - 1kHz	1mS	x16 (16mS)
1kHz – 2kHz	0.5mS	x16 (8mS)
2kHz – 32kHz	0.3mS	x16 (4mS)

On the previous calculation for an LX-218C the limiter screen would be like this one (auto OFF):
 threshold + 6dB

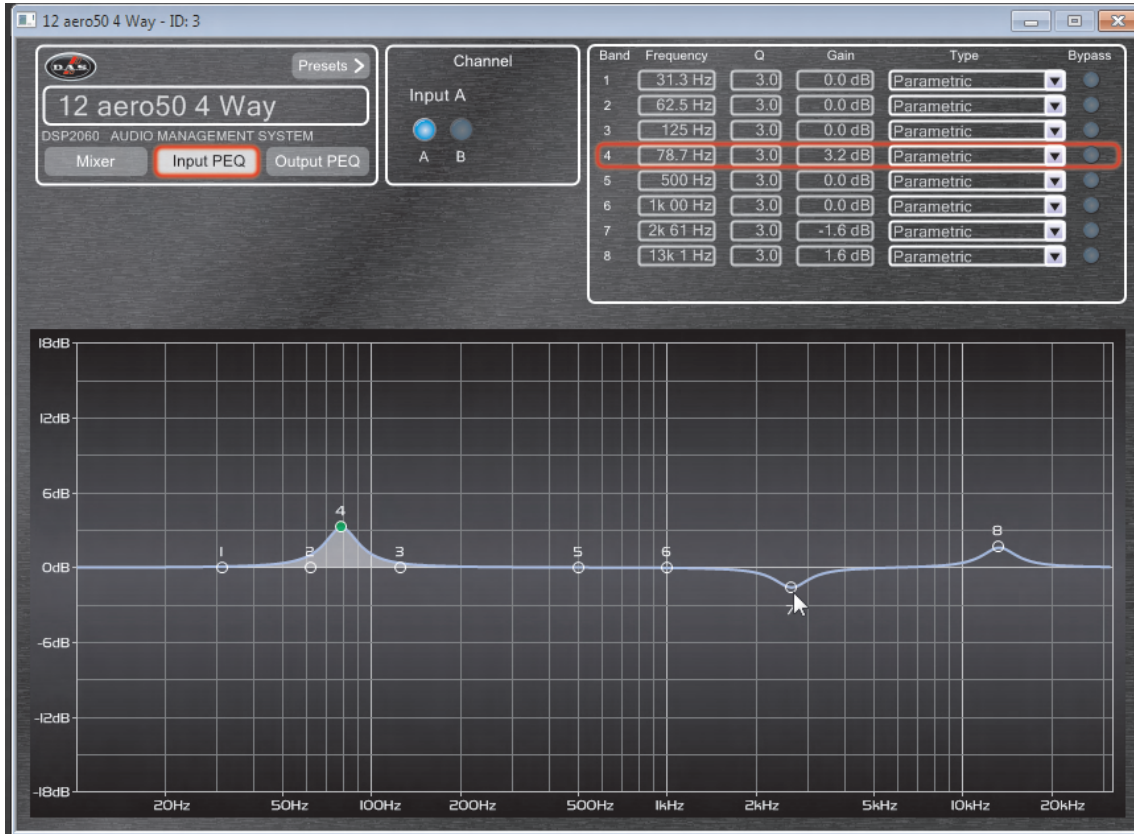
attack time 45ms (related to 33Hz Lr24 used to process the cabinet)

release time 45ms x 16

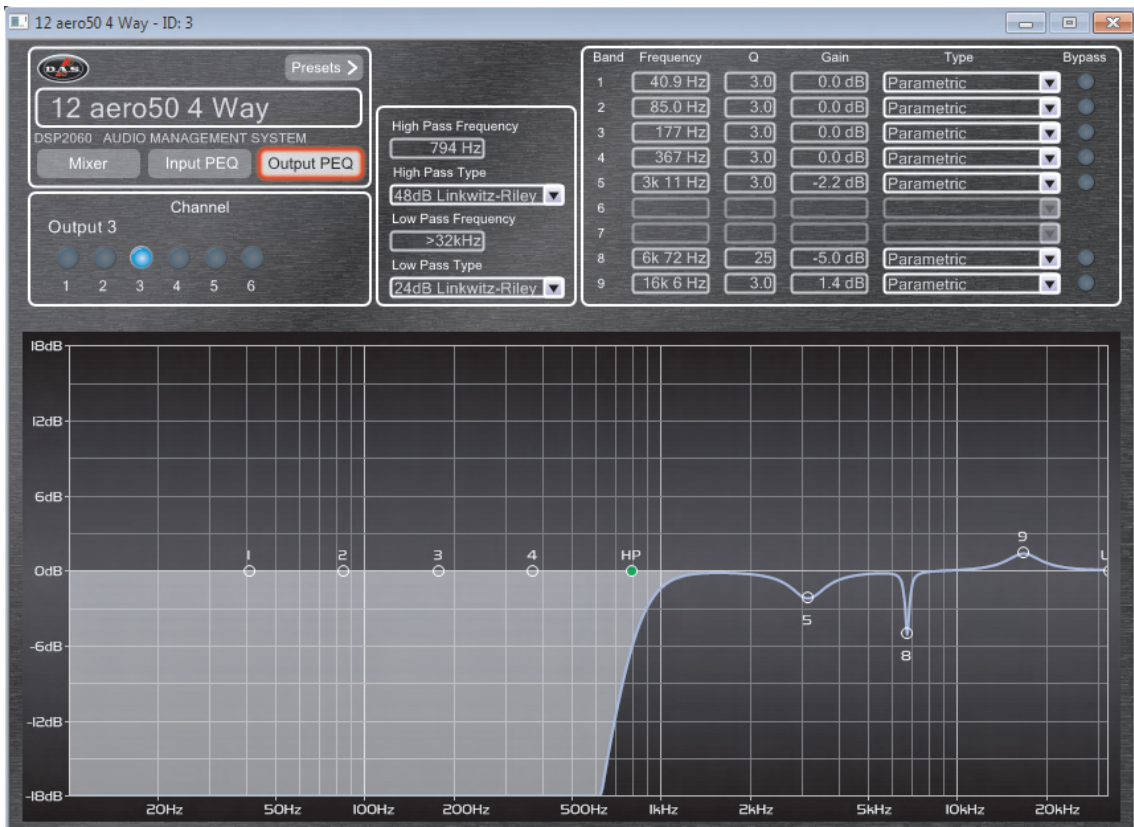
Peak limiter +3dB (referred to +6dB)



➔ On the *Input EQ* menu the user can select input A or B and set up up to 8 parametric EQs per input channel.



➔ On the *Output EQ* menu the user can select the output channel and set up up to 9 parametric EQs and Xovers per channel:

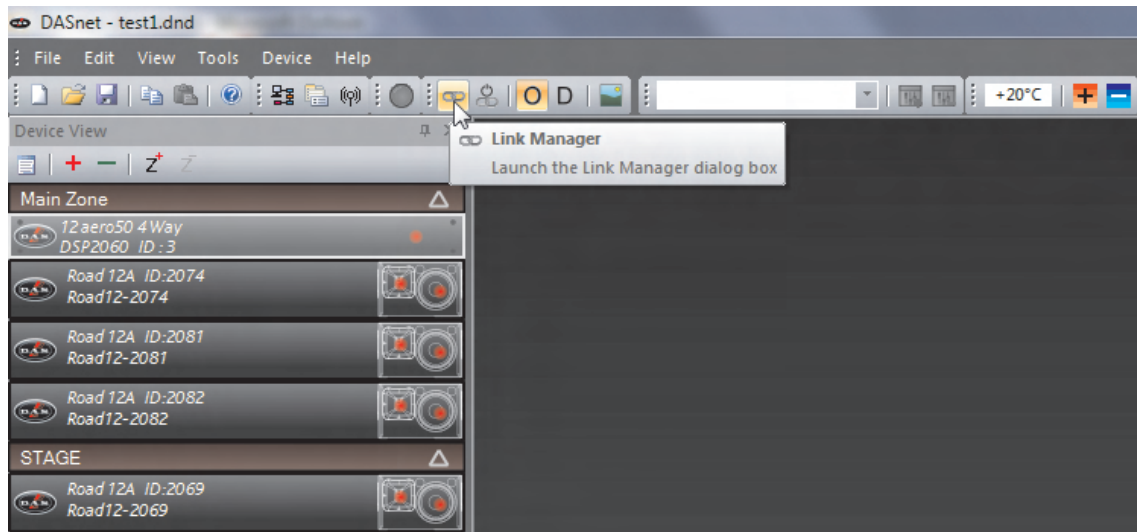


On the DSP window presets are available. New Store or recall can be done via DASnet:

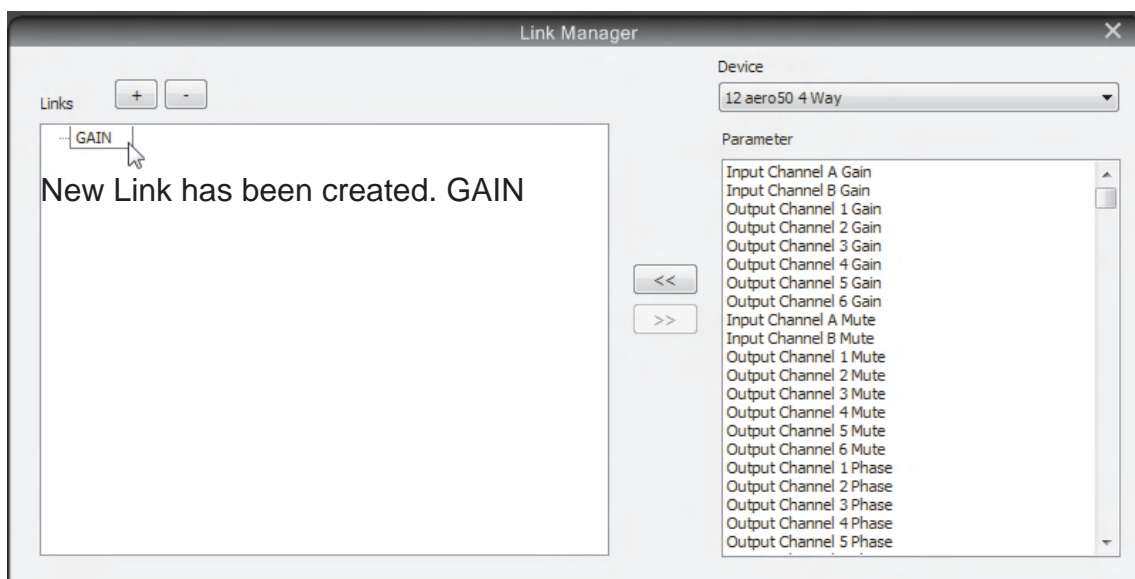
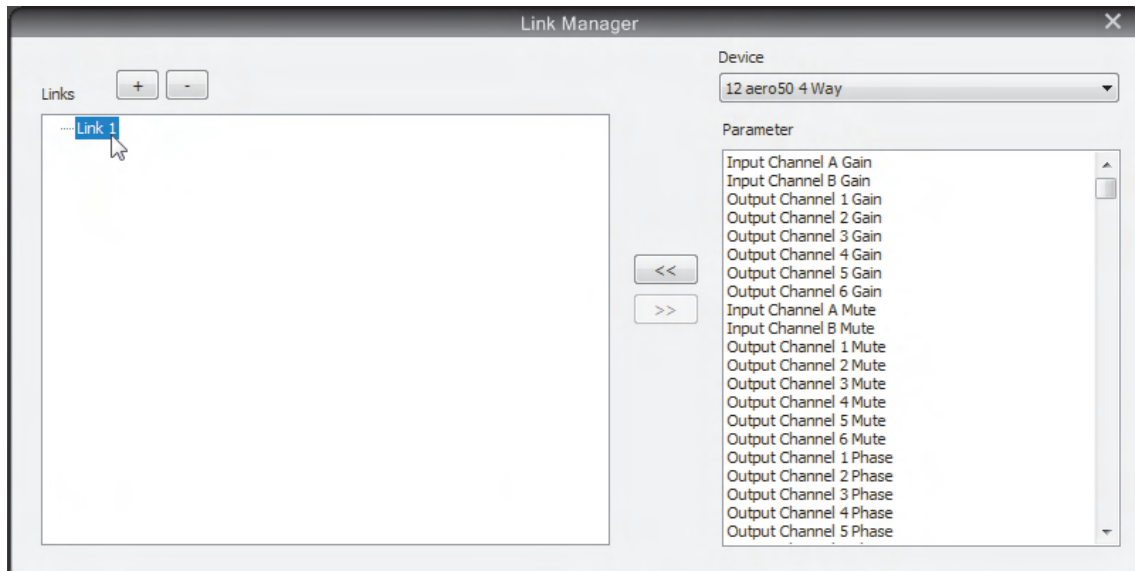


LINK MANAGER

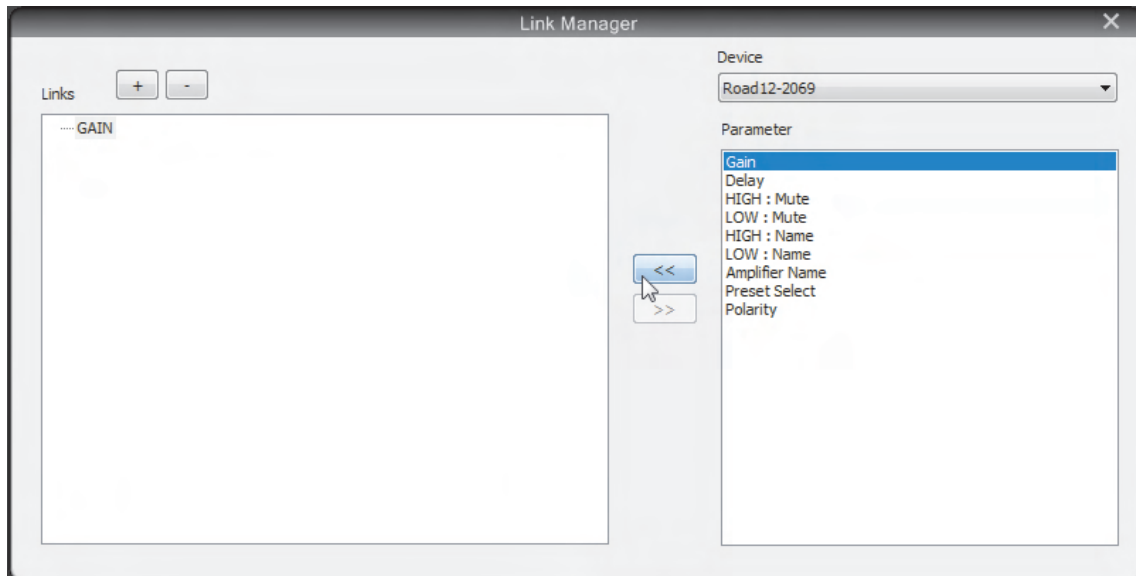
Using this functionality parameters on different systems can be linked. The user can create Link groups (or parameters) and when varying a parameter in one cabinet the others will be affected as well.



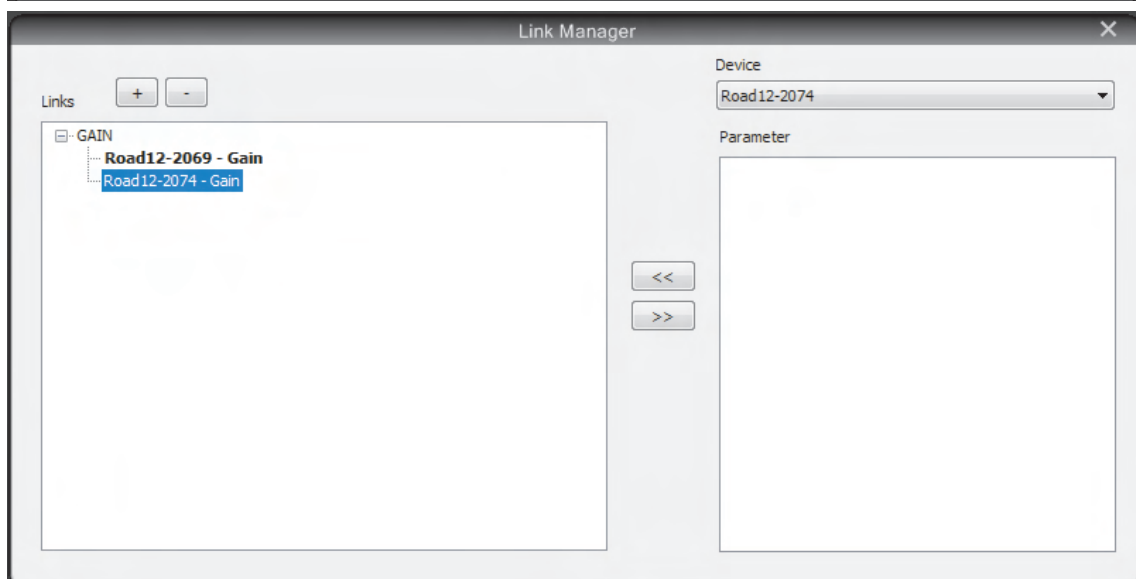
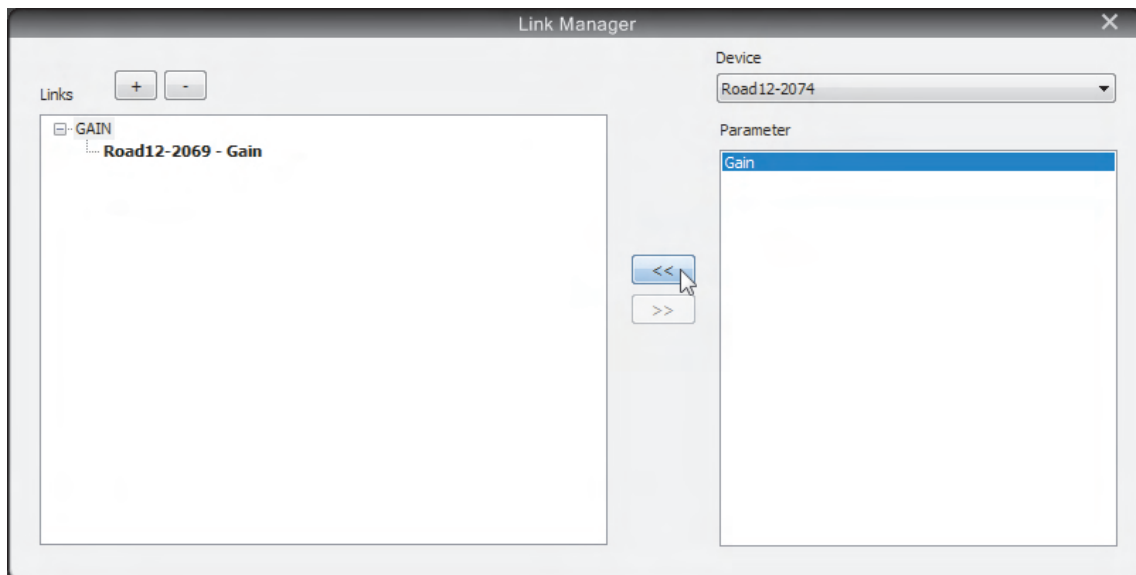
The link Manager opens a new screen where different links can be created.



The devices on the net appear on the right part of the screen. From any device a list of parameters can be selected. In this case we have selected the GAIN of the Road 12 -2069

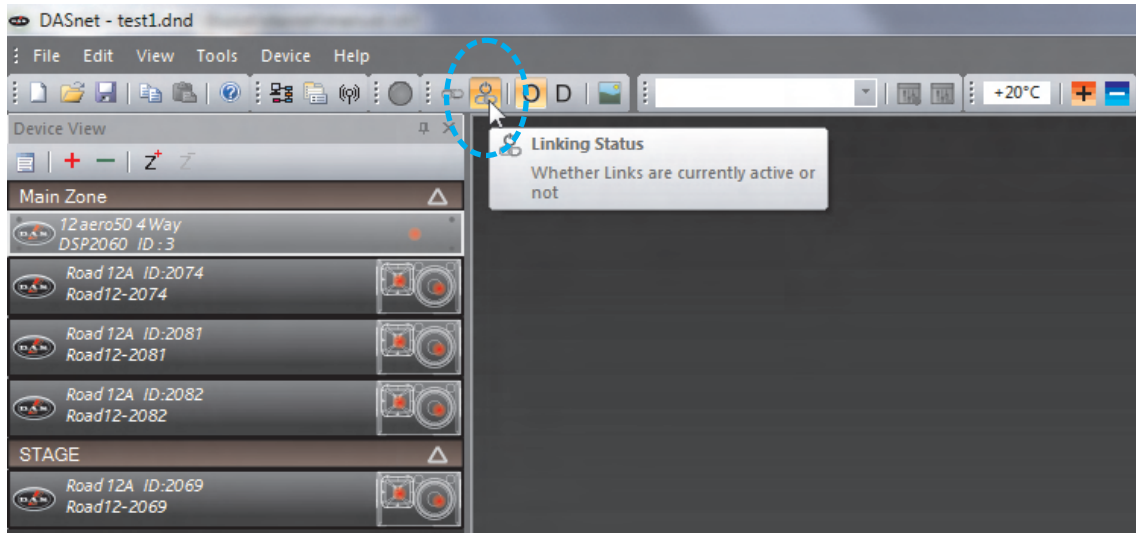


More cabinets (Road 12 - 2074) are selected:



For now we have linked the system's gain of two cabinets: ID 2069 and ID 2074

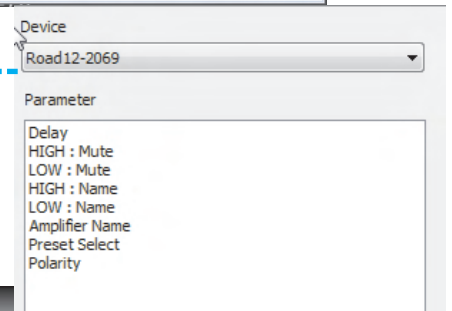
In order to work with the link manager the user has to activate it. Linking Status ON:



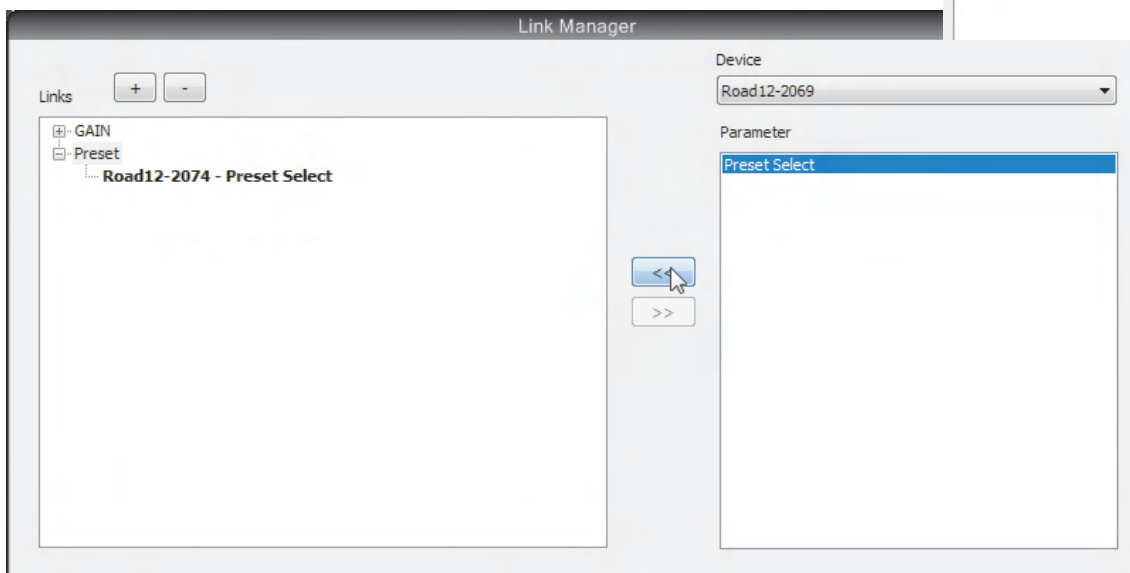
We have linked the gain of two of the stage monitors. If we vary the gain of one of them, the other's gain will automatically change:



With the link manager Gain/delay/mute/amplifier name/preset/polarity can be linked on the cabinets.



We are creating a new group for those 2 monitors. Preset:



Now besides the system's gain the preset is linked on both cabinets:



CUSTOM PANELS

With DASnet on *Designer Mode* the user can create *Custom Panels* which could contain *faders*, *knobs*, *buttons* to be associated to different system parameters. The utility of this tool is that if the *link manager* is activated, the user can modify parameters on more than one system at once with just a simple control. In this case Link Manager is activated and remember that all the cabinet gains are linked:



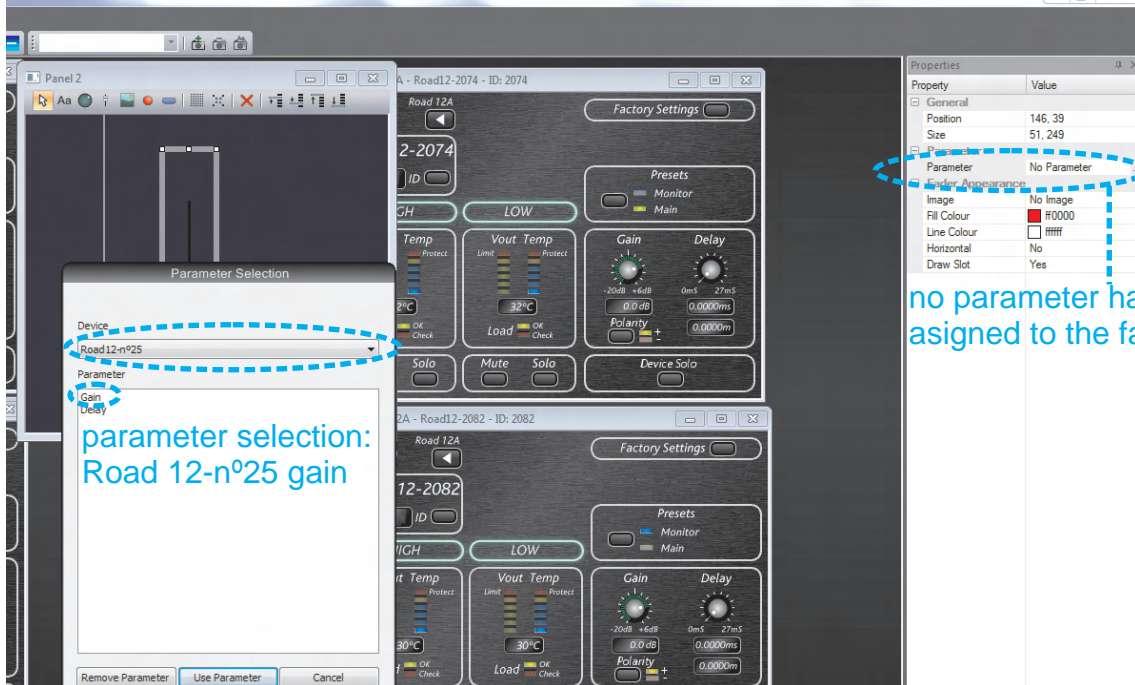
We are going to add a fader control:



Once the fader has been added on its properties window an image can be associated to it. Besides an image a parameter can be associated.



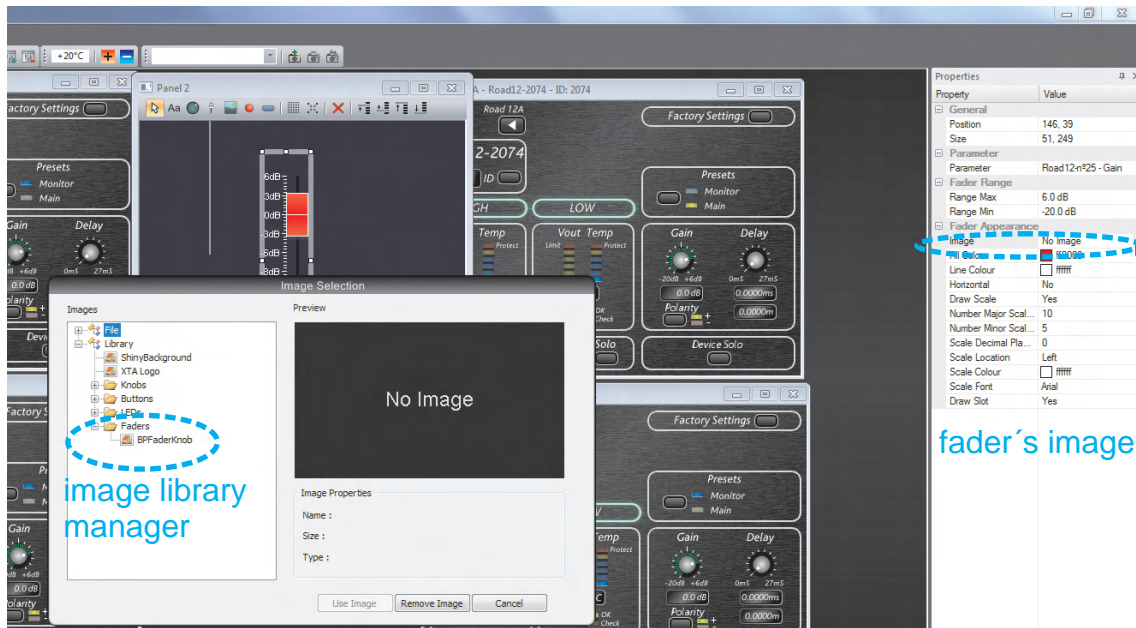
We are going to assign Road 12-nº25 gain to the fader's parameter. Remember that besides this, all cabinets' gain have been linked previously.



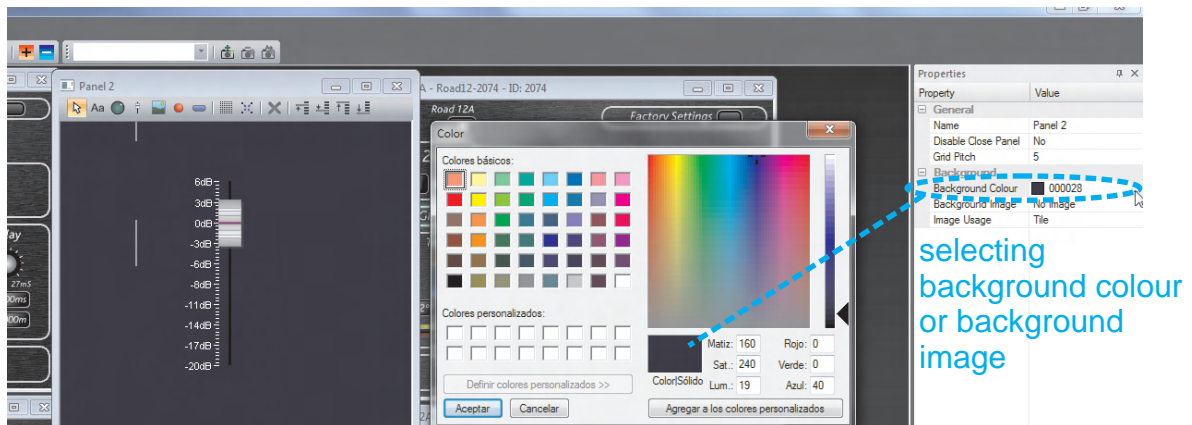
Now the fader is controlling the Road 12 -nº25 gain. As the gain of all devices has been linked using the link manager (pages 28-29-30), the fader acts as a general volume control of all of them. The scale of the fader can be drawn. User can change font and colour.



An image can be associated to the fader control (*fader appearance*):



There is an image library where *buttons / leds / knobs / faders* are stored. The user can also import new images to the library (see page 37). The custom panel background colour can also be changed. An image can be set up as background as well:



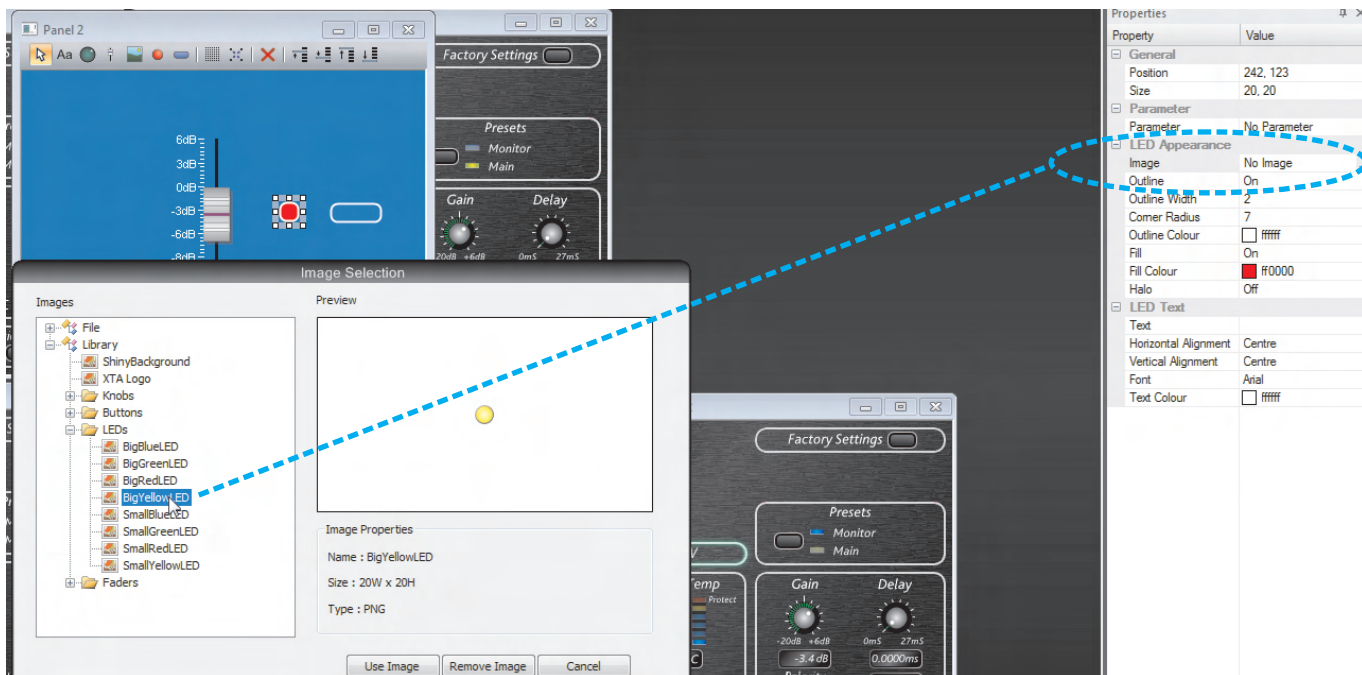
Remember that to create a custom panel the user must be on *Designer mode*. Once the Custom panel has been created it will be saved with the *.dnd file. To operate with it change to *Operator mode*.



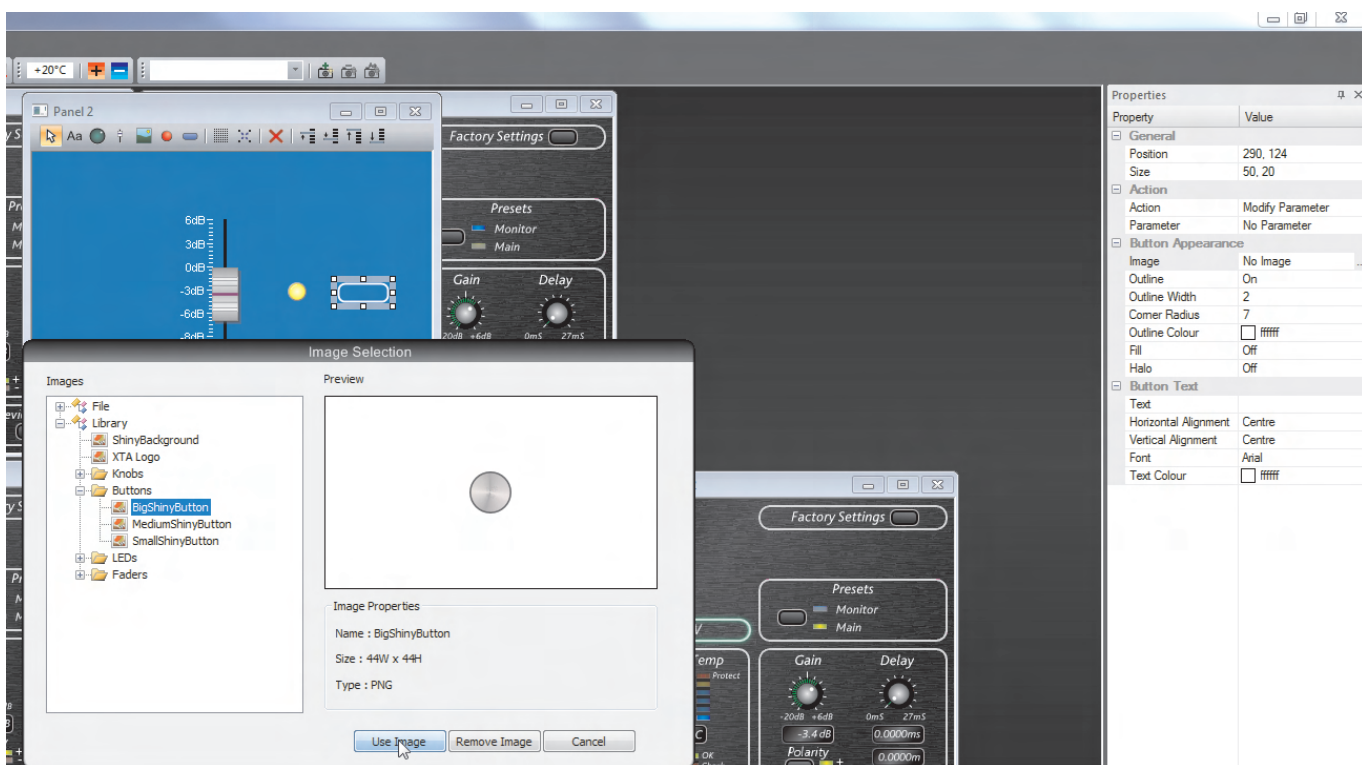
New background colour for the custom panel and operate mode. Check that fader control all cabinet's gain. (-3.4dB).
 On a Custom Panel a button and a led to control the mute operation . If the come back to the Designer we can add new controls to the panel: LED & BUTTON



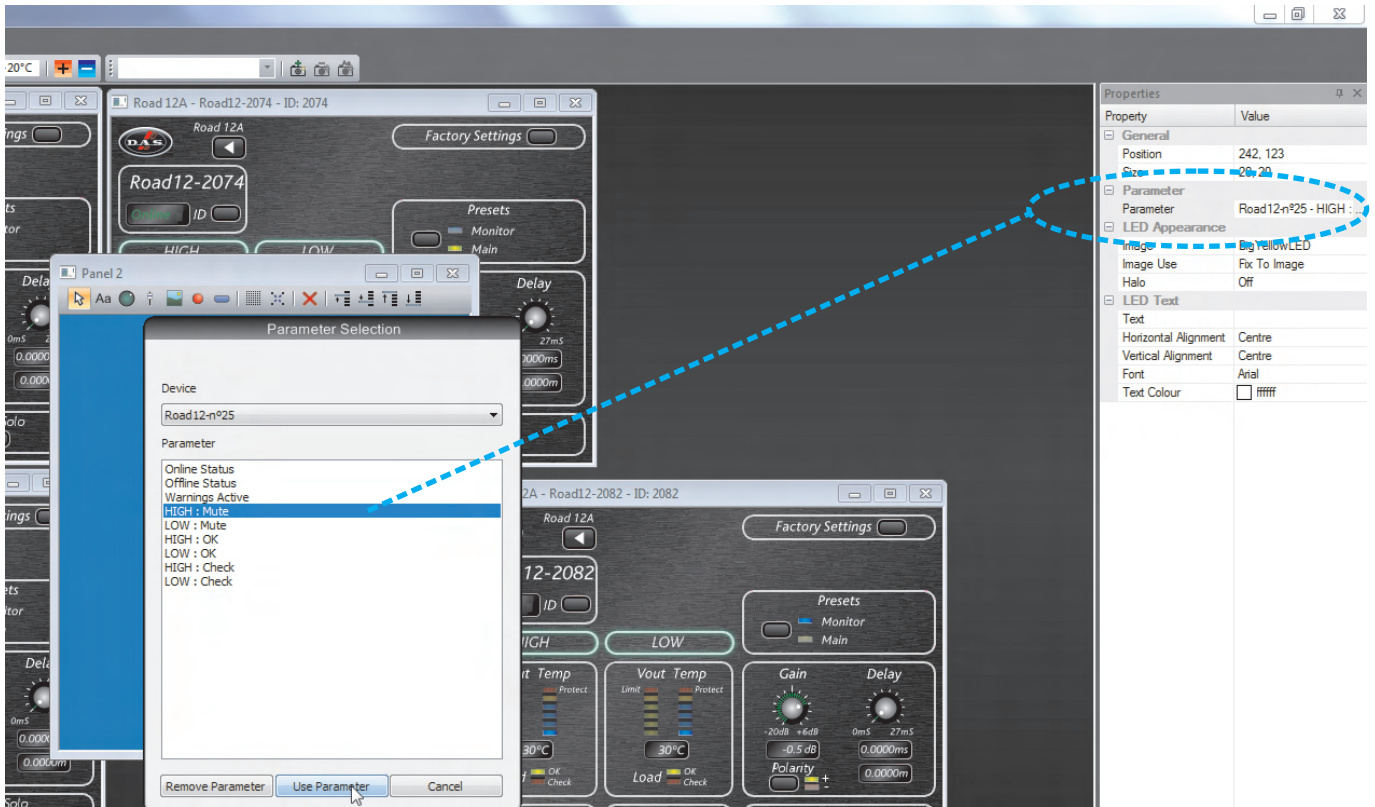
LED Appearance: BIGyellowLED selected as LED image:



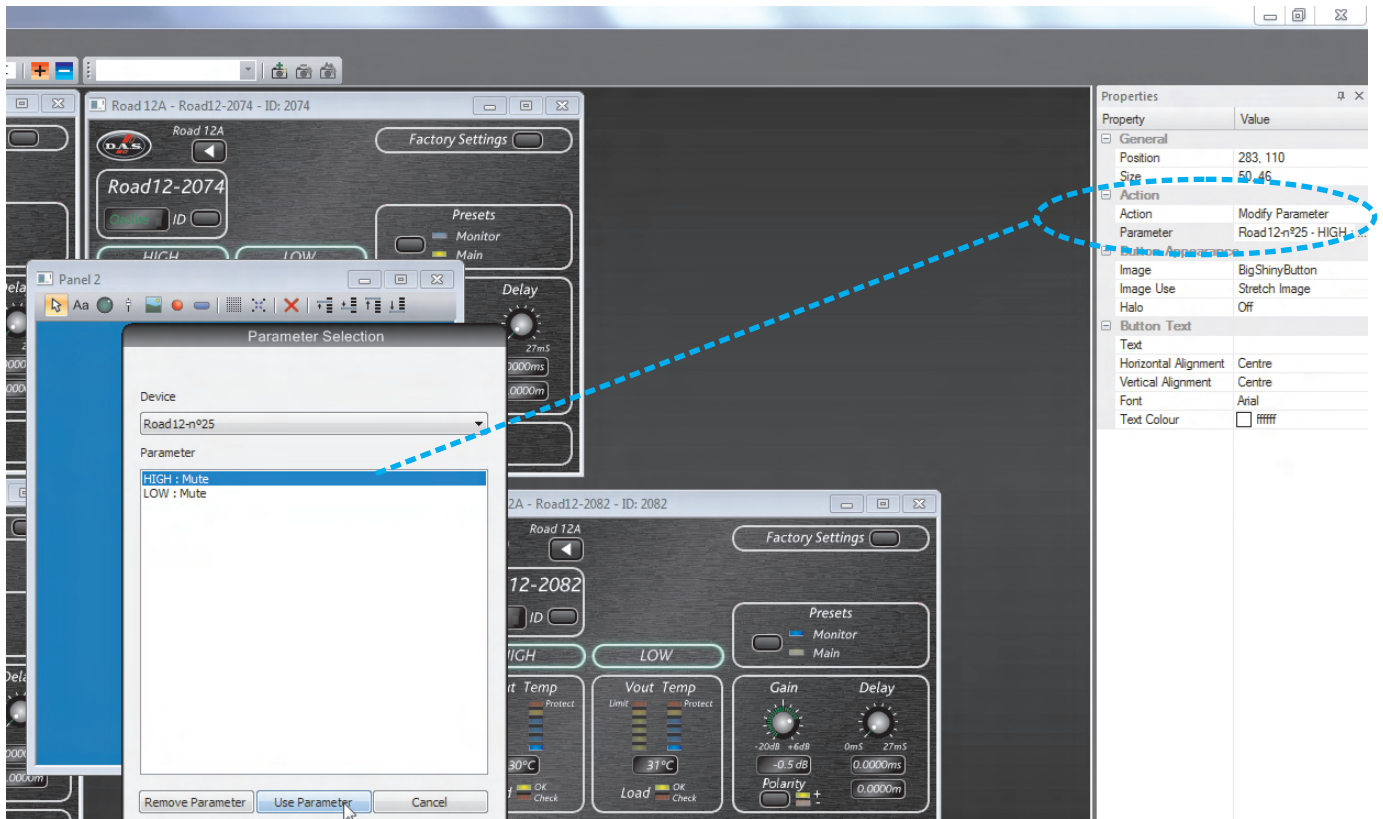
Button Appearance: BIGshinyButton selected as button image:



Road 12-nº25 HIGH Channel mute assigned to the LED as parameter:



Road 12-nº25 HIGH Channel mute assigned to the Button as parameter:



The Custom panel can include text and images from the image library manager. In this case the GAIN fader controls all the system and the mute buttons and leds both channels of the Road 12-n^o25: (shown mute active on high channel)



IMAGE LIBRARY MANAGER

DASnet includes an image library manager with predefined images. The user can create new folders and incorporate new images to the library.

