WORK PRO®

Digiline
series

User manual

Digiline MX

Digiline 8

INDEX

SAFETY INSTRUCTIONS

⚡	**CAUTION**	⚠
	RISKOFELECTRICSHOCK DONOTOPEN	

CAUTION: To reduce the risk of electric shock, do not remove cover of the device. There is not serviciable elements inside it. For service purpose, refer to qualified personnel.

WARNING: To reduce the risk of fire or electric shock, do not expose the unit to rain or moisture.

⚡ This sign, when displayed, warms of the presence of a dangerous voltage without isolating inside the unit and that may be sufficient to constitute a risk of electric shock.

⚠ This sign, when displayed, warms of the presence of an important statement for the operation and maintenance of the unit.

Detailed Safety Instructions

Read the Instructions: Read all safety and operating instructions before starting the device by first time. Keep the user manual for future reference beside the unit. Follow all instructions and warnings inside the user manual and the own device.

Main Supply: Use the main supply cable closed to the unit in a grounded socket If the socket has not ground terminal, consult with an electrician to amend it. The device must be connected to earth by security and optimum performance. DO NOT remove the ground pin in the socket. Connect the unit with the voltage and power recommended in this manual.

Ventilation: Do not cover the air opens in order to achieve a perfect ventilation of the unit.

Moisture: In order to avoid the risk of electric shock or fire, do not expose the unit to rain or moisture, using it in dry environments. Also, avoid spill liquids inside the unit.

Hot: The device must be placed far from hot sources like radiators, temperature registers, heating conductions or anything heat source.

Operating: To avoid damages in the unit, be carefully during the transport, using its original package and avoiding to place heavy objects over it. During its installation avoid to hit or scratch it. Also, avoid to expose the device to great vibration environments.

Service: Switch off the unit and disconnect the main supply after using it, specially, during an electric storm. If liquids have been spilled, metallic objects have entered inside the unit or the device generates smoke or strange smell and looks like malfunction, switch it off immediately and contact with your distributor.

Additional notes about Security and Maintenance

- Before connecting the supply, check if the local voltage is matched as value marked in the rear side of the unit.

- Protect the cable to be pinched or stepped, particularly in connector, socket or where the cable out of the unit.

- Contact with your dealer in case of table replacement.

- If the fuse blows, replace it by another fuse with the same dimensions and rate. If it blows again, do not replace it and contact with your dealer in order to check the unit.

- To disconnect the unit catch from the socket, never pull the cable, it can cause its breakage and produce electric shocks.

For the servicing or maintenance of the unit, contact with your dealer. This process must be done by qualified personnel.

THE UNIT MUST BE EARTHED

By security reasons and in order to avoid electric shocks, the main supply cable has a ground terminal. This pin **MUST NOT BE REMOVED.**
If the connections socket has not the adequate pin, contact with an electrician in order to change the obsolete socket.

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1. DIGILINE DEVICES

1.1. Introduction

DIGILINE series is composed of two digital mixers with signal processing, specially designed for small/medium size installations that require a powerful solution fro audio processing. Their intuitive use make them very convenient for speeding up installations.
DIGILINE series brings the power of digital mixing to small multizone installations, integrating independent DSP processing for each output. Thanks to the WorkCAD Designer software, it is possible to control any DIGILINE device included in an Ethernet network form an unique computer.
Their GPI (Genersl Purpose Input) interface allows to trigger any function (configured through the software) from a simple wall-mount panel. DIGILINE MX incorporates 12 GPIs and DIGILINE 8 incorporates 4 GPIs. Also, both device include LMI input for talkover purpose.
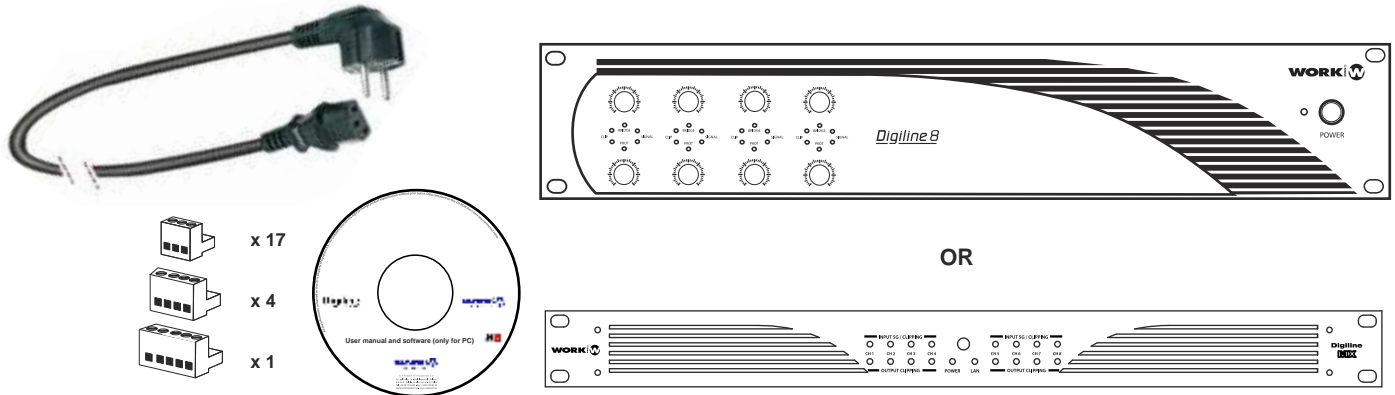
In addition to processing feature, **DIGILINE 8** includes a powerful class D amplifier with 8 different channels of 150W each. To maximizeS/N ratio in audio signal, it features a double switching mode power supply: one for amplificatrion and another for DSP.
DIGILINE MX by itself is exclusively dedicated to processing uses. It incorporate a RS 232 port for external OSC commands
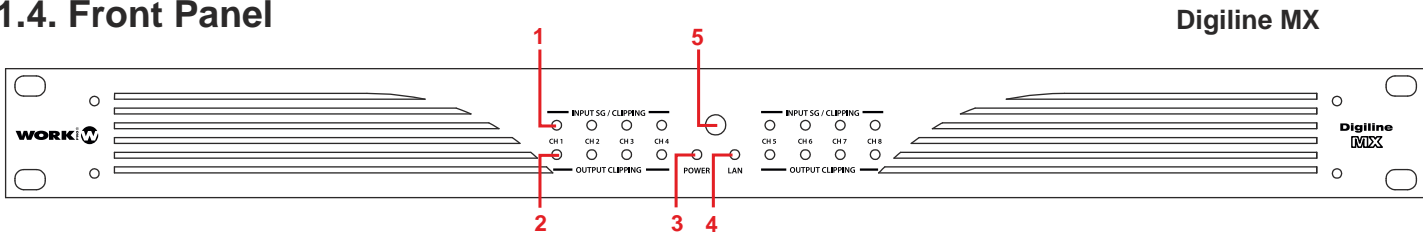
1.2. Specifications

Technical data	Digiline 8	Digiline MX
Inputs:	8 double MIC inputs (with phantom) + LINE balanced and one additional MIC input. All of them have Euroblock connector.	
Outputs:	8 outputs with Euroblock connector.	
Control interface:	TCP/IP and GPI.	TCP/IP, RS232 and GPI.
Control connections:	RJ45 (Ethernet TCP/IP) and Euroblock (GPI).	RJ45 (Ethernet TCP/IP) , DB9 (RS232) and Euroblock (GPI).
Control software:	WorkCAD Designer (included).	
Control indicators:	Frontal LED for signal presence.	Frontal LEDs for signal presence, input & output clip.
Frontal controls:	Gain control.	------------
GPI inputs:	4 GPI (normally opened TTL inputs) for direct control.	12 GPI (TTL inputs software selectable).
Input sensitivity:	0 dBu	0 dBu (20 dB PAD).
Phantom supply:	24 V MIC inputs.	24 V MIC inputs (selectable).
THD+N:	< 0.1 %.	< 0.1 %.
DSP features		
Matrix mixer:	8 mixers of 8 channels with reverse signal and mute for any channel.	
Crossover:	Butterworth type fi lters, Linkwitz-Riley and Bessel up to 4° order with up to 7 filters per output.	
Equalizer:	Equalizations with peak type curves, low pass, high pass, notch, low shelving, high shelving and band pass with up to 7 filter per output maximum.	
Dynamic control:	Common Limiter compressor for f irst 7 channels and an independent one for the last one.	
Output channel volume control:	Selectable by software and frontal potentiometer (36 dB to -109 dB range). 48 bit processing architecture with 76 bits of precision for most audio processing features.	
Presets memory:	10 program memories available.	
DSP Architecture:	32 bit processing with 40 bits of precision.	
Oversampling:	8 x Oversampling with fi fth order noise shaping @ 32-48 kHz; 4 x Oversampling @ 88.2 and 96 kHz; 2 x Oversampling @ 176.2 kHz and 192 kHz.	
Digital De-emphasis:	For 32,44.1 and 48 kHz.	
Physical Features		
Power requirement:	1300 W.	50 W.
Main supply:	AC 120 or 230 V (internally selectable).	AC 90-264 V (automatic).
Dimensions (WxHxD):	483 x 88 x 449 mm.	483 x 44 x 229 mm.

1.3. Contents

x 17

x 4

x 1

User manual and software (only for PC)

Digiline 8

POWER

OR

Digiline MX

1.4. Front Panel

Digiline MX
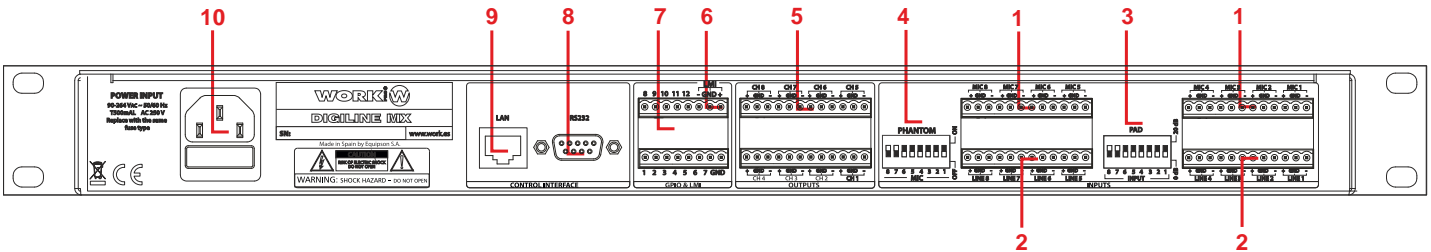
1. **INPUT SG/CLIPPING LED:** It lits in green colour with audio signal on corresponding input. In clip state the colour change to orange.

2. **OUTPUT CLIPPING:** It lits when output clip level is detected in the corresponding output.

3. **POWER LED**

4. **LAN LED:** It lits with LAN network presence

5. **SWITCH ON/OFF**

1.5. Rear Panel

1. **MIC Inputs 1-8:** Balanced MIC level inputs.

2. **LINE Inputs 1-8:** Balanced LINE level inputs.

3. **PAD Selection:** Select the attenuation level for each input using this dip-switch block (0 dB or 20 dB)

4. **PHANTOM Power:** Select the MIC channel to apply 24V Phantom power usi

5. **Outputs 1-8:** Balanced outputs to c onnect them to an external amplified system.

6. **LMI Balanced level Input**

7. **GPIO Inputs (1-12)**

8. **RS 232 port:** It allows to receive OSC sentences for external device

9. **LAN network connection:** Connect the unit to a LAN using an UTP CAT5 cable.

10. **AC MAINS SOCKET**

Digiline 8

POWER

DETAIL

DIGILINE 8 / DIGILINE MX
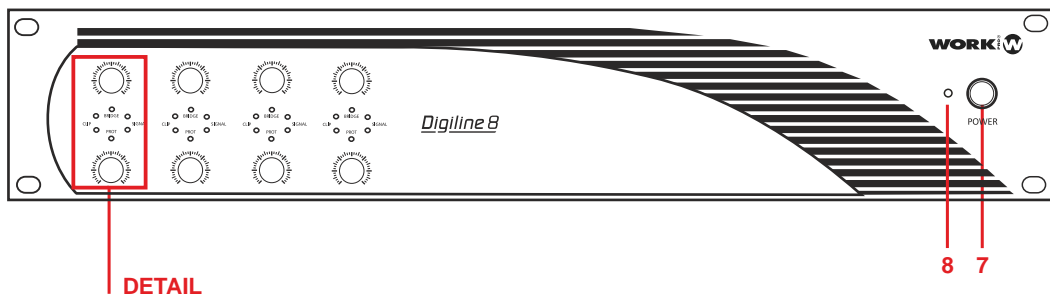
1. SIGNAL LED: This green color LED lits to indicate the pesence of the corresponding output signal.

2. LED CLIP: This red color LED lits when the units detects high peaks on input signal that can produce distortion and reduce the unit performance. The optimal operation should work with signal levels that create an occasional LED blink, without to fix liting.

3. BRIDGE LED: This yellow color LED will lit when the Bridge mode between two consecutive outputs will be activated.

4. PROT LED: This red color LED lits when the amplifier internal protections are activated in order to protect the unit. In that case, turn off the unit and check the installation in search of short circuits.

5. Volume Control: These potentiometers allow to control the gain on their respective outputs. Upper potentiometers control odd channels and lower potentiometers control even channels.

6. ETHERNET LED: This LED lits when it detects the LAN network connection in the unit.

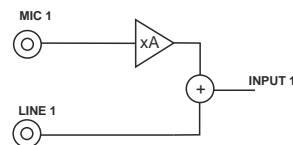**7. POWER**: This switch allows to power on/off the unit.
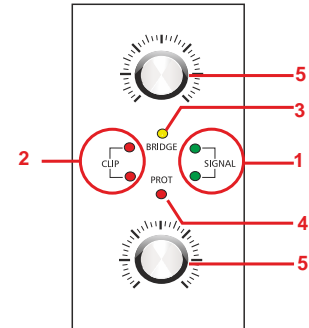
Digiline 8
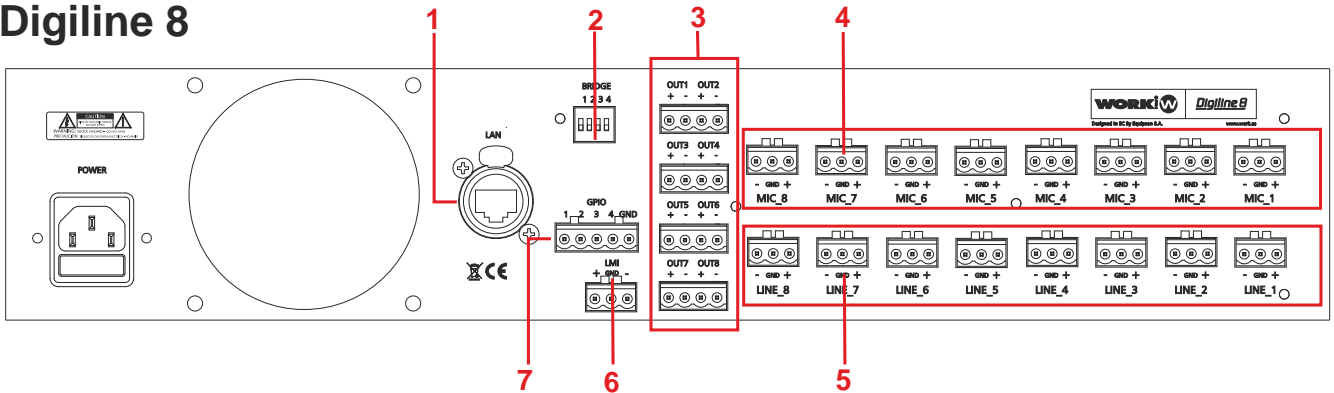
1. LAN: Allows the unit to an Ethernet TCP/IP network connection and the integration of up to 255 units on the same network. The necessary cable for this connection is UTP CAT5.

2. BRIDGE Selector: This dip-switch block activates bridge mode in the outputs. Dip 1 connects the outputs 1 and 2, dip 2 the outputs 3 and 4, dip 3 outputs 5 and 6, and finally, dip 4 the outputs 7 and 8. Activating this mode, the BRIDGE LED on the front panel will lit. **(Digiline 8 only)**.

3. 1-8 OUTPUTS: This terminal blocks series allow to obtain 150 W @ 4Ω in each one. Therefore, it is possible a direct connection to an adecuate loudspeaker system. **(Digiline 8 only)**

4. MIC 1-8 Inputs: Microphone level inputs which incorporate phantom power (+20V DC) for condenser microphones.

5. LINE 1-8 Inputs: Line level inputs with high signal gain for a direct connection from a mixing systems or LINE devices.

⚠ **IMPORTANT**: Both input types are balanced. Each group of LINE & MIC inputs joined internally,which allows in practice, a 16 virtual inputs (Stacked inputs).
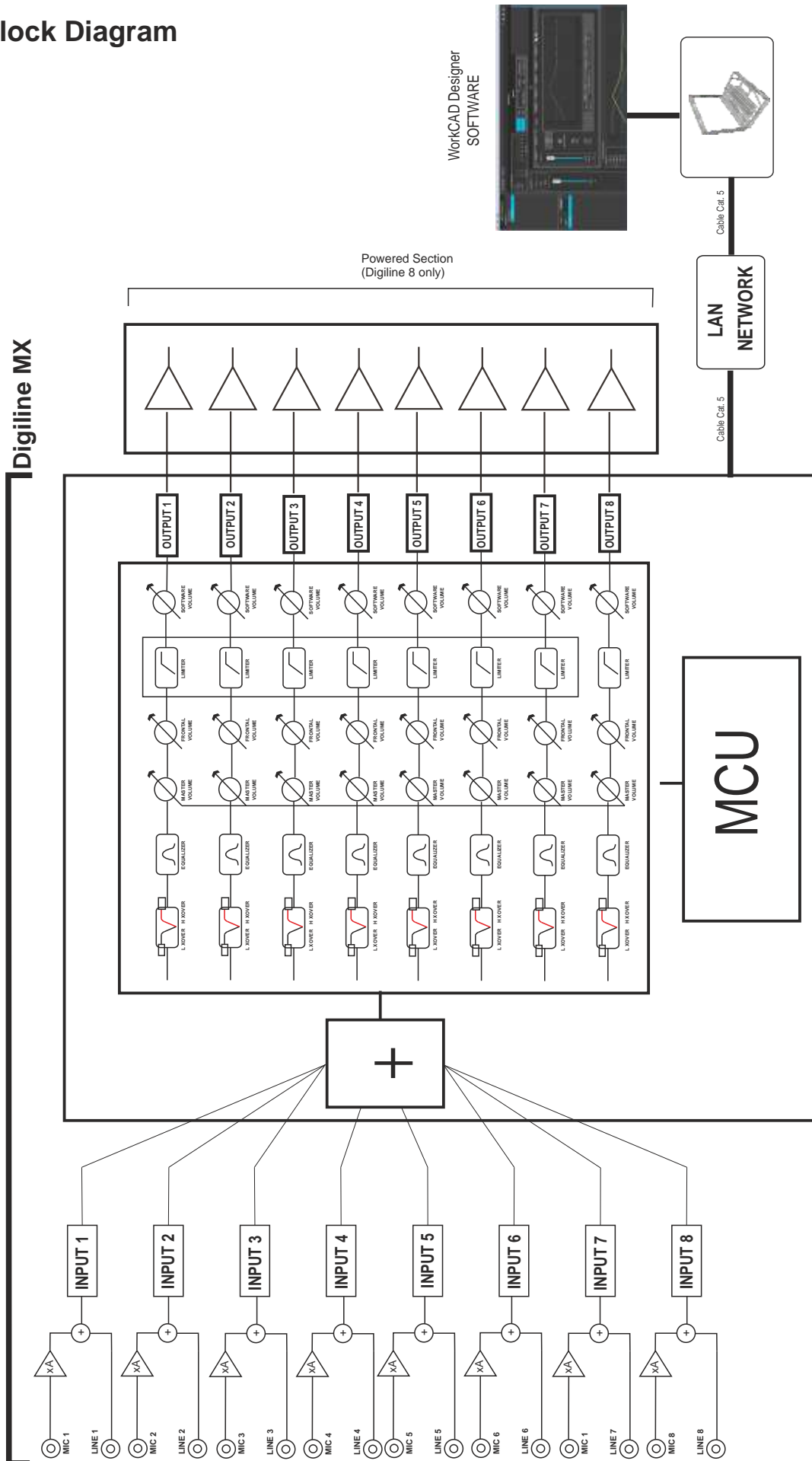
Each input disposes of an internal LINE/MIC adder. Incorporating a multiplier factor in order to match the signals and make a better sum of magnitudes.

6. LMI Input: This level MIC input detects the acoustic level in the installation in order to adjust automatically the processed signal.

7.GPIO Inputs: The device incorporates 4 GPIO inputs (General Purpose Input/Output) with TTL level (0-5 V DC) for presets triggering from a wallmount controller.

8. SRL Input: RS 232 interface for external preset control and interfaces with control devices. **(Digiline MX only)**

9. OUTPUTS 1-8: Balanced outputs of LINE level for connecting to external amplified systems. **(Digiline MX only)**

MIC 1

LINE 1

xA

INPUT 1

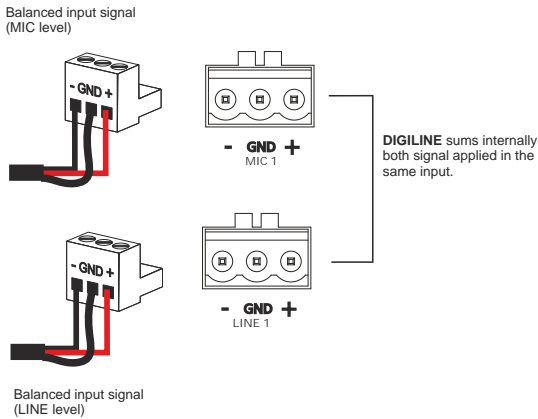# 1.6. Block Diagram

WorkCAD Designer SOFTWARE

Digiline 8

Digiline MX

Powered Section
(Digiline 8 only)

LAN NETWORK

Cable Cat. 5

Cable Cat. 5

OUTPUT 1
OUTPUT 2
OUTPUT 3
OUTPUT 4
OUTPUT 5
OUTPUT 6
OUTPUT 7
OUTPUT 8

SOFTWARE VOLUME

LIMITER

FRONTAL VOLUME

MASTER VOLUME

EQUALIZER

L XOVER   H XOVER

MCU

+

INPUT 1
INPUT 2
INPUT 3
INPUT 4
INPUT 5
INPUT 6
INPUT 7
INPUT 8

xA

MIC 1   LINE 1
MIC 2   LINE 2
MIC 3   LINE 3
MIC 4   LINE 4
MIC 5   LINE 5
MIC 6   LINE 6
MIC 1   LINE 7
MIC 8   LINE 8

DIGILINE 8 / DIGILINE MX

1.7. Device Connection

1.7.1. Audio Signal Connection

Balanced input signal
(MIC level)

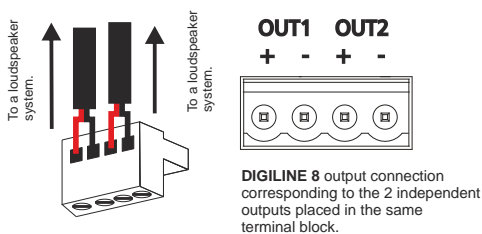**DIGILINE** sums internally both signal applied in the same input.

Balanced input signal
(LINE level)

DIGILINE series devices incorporate an array of 16 external sources of input audio (8x2). Therefore,each of the 8 inputs allows the connection as much MIC level device as LINE level device. These 2 input sources are summed internally, forming the processing signal of each input.

Input Connection. The insertion of signal in **DIGILINE** is made through a 3-pin terminal blocks (as much MIC inputs as LINE inputs), corresponding to a balanced audio signal (+, GND, -). To do this, a 2 conductors shielded cable should be used

Digiline 8

To a loudspeaker system.

To a loudspeaker system.

OUT1 **OUT2**
+ - + -

DIGILINE 8 output connection corresponding to the 2 independent outputs placed in the same terminal block.

DIGILINE 8 incorporates powered outputs, thus it disposes of different terminal block ti direct connection to loudspeaker system

1.7.2. LAN Connections

⚠ **IMPORTANT** ⚠
For a complete DIGILINE configuration, the user requires basic knowledge management networks and/or the connecting server administrator permissions.

Digiline devices must be connected to an ethernet LAN using a Cat 5 cable with RJ 45. In this case is advisable that the network has DHCP, which will provide a valid IP address to the device.

In the same network must be connected a computer with installed WorkCAD control software.

The device integrating is achieved by connecting it to a node in an Ethernet switch, which allows all devices on the LAN network interconnection.

IP address assignations is automatic thanks to the **DIGILINE** device control software through MAC address of the own device.

NOTE: If your network has no DHCP connection, the device will usea local-link IP within 169.254.XX range, being XX a direction supplied by the device upon its connection to not interfere with other devices in the same network. WorkCAD software will detect the device for configuration.

NOTE: Each DIGILINE include a stick with MAC information and IP static inside 10.XXX.XX.XX You can connect it to a computer with the same Subnet using a crossover cable between them.

2. WORKCAD DESIGNER

WorkCAD Designer is the new software of WORK® for device control through Ethernet. Its intuitive interface allows managing any device parameters configurable.
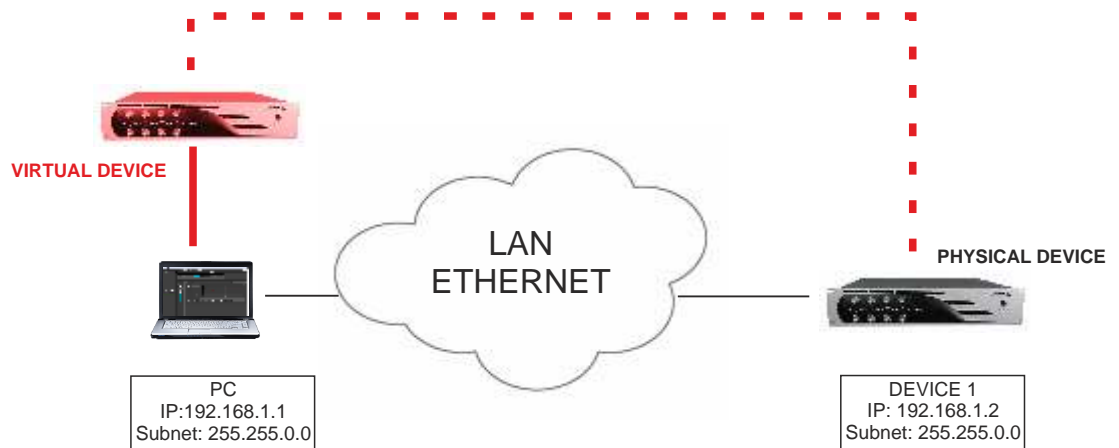
The exclusive design of WorkCAD Designer provides great benefits for users. Units connected through Ethernet are visualized in a unique computer: WorkCAD Designer can group devices in projects (each one with different zones) and name inputs and outputs, taking advantage of a intuitive management and visualization of the overall installation. It is also possible to select a device and edit its parameters (e.g. IP address, name, preset, filters, etc.).

Programming operations can be done online and offline modes. Changes are instantaneously saved when WorkCAD Designer is connected. On the contrary user can use the offline mode to prepare and save a show without affecting current process.

Day after day, engineers of WORK® R&D department design new products and improve existing ones. For this reason, WorkCAD software makes possible the integration in the same interface of all the devices of the brand, even those that will come to the market in the future. And because WorkCAD Designer is a free software, anyone can get and use the latest versions.

Improvements not only concern the software but rather any devices. Indeed, WorkCAD Designer is able to find firmware updates online and so to upgrade the device firmware. It ensures maximum reliability and compatibility of WORK® devices with next systems coming out.

WorkCAD concept is clear with this scheme. The software allows to edit or configure a compatible device DIRECTLY (connected in the same LAN), or to create a virtual device, configure it and dump the information in a physical device a posteriori.

VIRTUAL DEVICE

LAN ETHERNET

PHYSICAL DEVICE

| PC |
| IP:192.168.1.1 |
| Subnet: 255.255.0.0 |

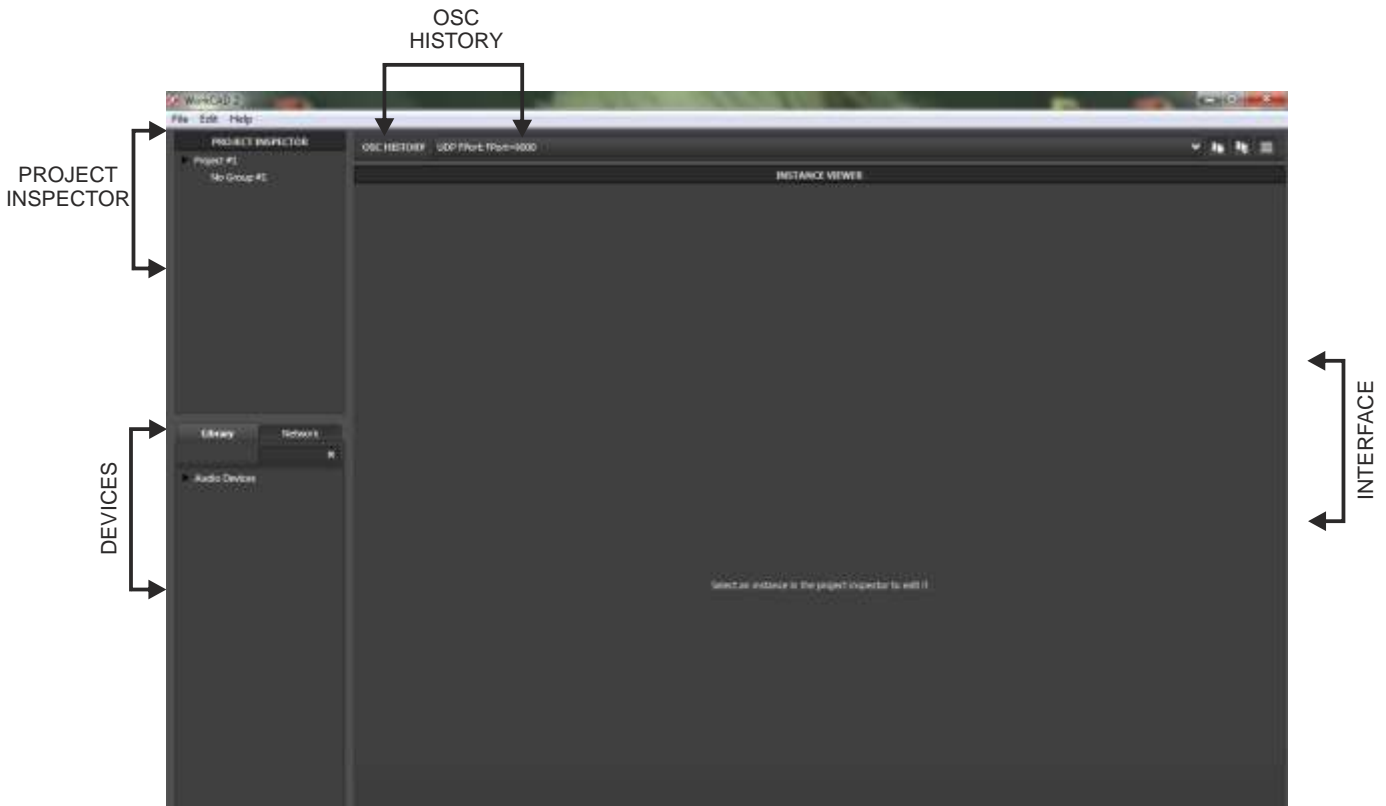| DEVICE 1 |
| IP: 192.168.1.2 |
| Subnet: 255.255.0.0 |

2.1. Installing WorkCAD software

1. Insert CD that comes with the unit
2. A window opens to inform the start of software installation process. Click Next and follow the steps for the installation process.

NOTE: After the installation, a window informs you that a new extension (* WPJ) is associated to WorkCAD. This extension is used by projects created.

2.2. WorkCAD (Common Interface)

WorkCAD Designer is the new software of WORK® for device control through Ethernet. Its intuitive interface allows managing any device parameters configurable (general visualization of the installation).

WorkCAD incorporates common sections available for all compatible devices. In the next pages, we go to explain these common sections:


2.2.1. DEVICES

WorkCAD works with the virtual and physical device concept. in the first case involves using a device from the library elements and configure OFFLINE its settings for a later dump to a physical device connected to the network.

Within the **DEVICES** window there are two tabs:
The **Library** tab includes a drop-down with all devices compatible with WorkCAD software.
The **Network** tab lets you locate a physical device connected to the network.

2.2.1.1. Library
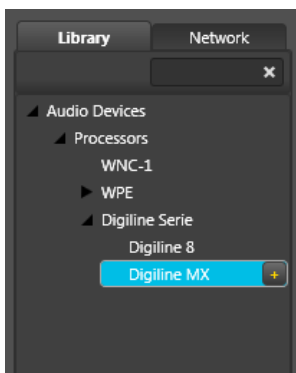
Accessing to the Library tab, it displays a menu with the WorkCAD software compatible devices.

After selecting the device , double click the "+" sign next to the name to display its control interface on the right side of the screen.
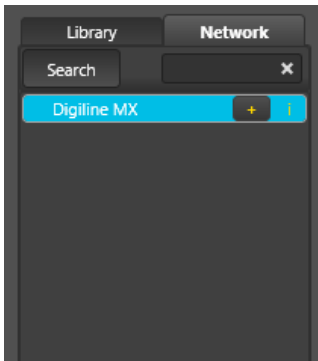
Furthermore, the device will appear in the **Project Inspector** tab to associate it with a group of devices.

NOTE: As we are working OFFLINE, the LED next to name in Project Inspector window is off.

You can create presets but, in order to use them, you need to download them into a physical device. Consult (3.2. PRESETS) section for further information.

2.2.1.2. Network

Accessing to the **Network** tab, the software search devices compatible with WorkCAD in the network.
After to search a connected device , you can see two symbols en the same device line:

"+" symbol allows to integrate it in a group inside **PROJECT INSPECTOR** and, later, to aaccess to its control interface on the right side of the screen.
Double click over it. A bar will be appears during the process, it means that the software is retriving the loaded presets in the physical device in to show them in the interface and work with them, (editing, copying, etc).
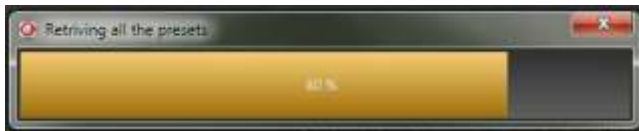
Furthermore, the device will appear in the **Project Inspector** tab to associate it with a group of devices.

NOTE: As we are working ONLINE, the LED next to name in Project Inspector window is on in green color.

If you mouse over **"i"** symbol, a window will be showed with all device information like Name, Type, MAC address, IP and Subnet and, finally the firmware version.

NOTE: Check this last line, if it appears "Not Updated" close to the version, the device will need an update in order to work with it. Consult the (4. Updating firmware) section for further information.
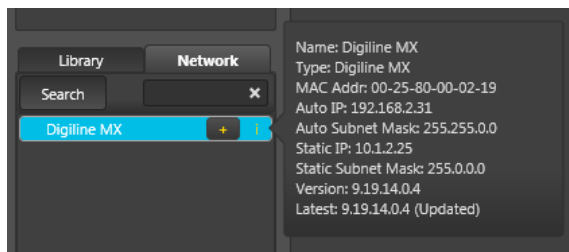
2.2.1.3. Connecting virtual & physical devices between them

Depending on the installation, in some occasions could be that we need to prepare the presets and device setup without the physical device presence (the device is in another place, the device is turned off, or we want test any previous configuration). Therefore, we can load the device form the library and work on this virtual device and later, dump the information into the physical device. There are two possibilities:

1st Possibility: We are working in a computer in the same LAN where the device will be connected.
In that case, search the device from Network and follow the steps to add it in Project Inspector tab. Now there 2 devices in Project Inspector: one with green circle (physical device) and another without circle (virtual device). The next step is to dump the whole information from the virtual to physical device, therefore, select the virtual one and press Setup in General tab. Now select the icon Copy Device in Connection settings. Press the physical device in Project inspector and thePaste Device in the same section. The software will transfer the information between both units.
You still have 2 devices in Project Inspector and you can eliminate the virtual in case yo do not need it or you can preserve it in order to make test configuration and repeat this process in the future.

2nd Possibility: We are working in a different place where the DIGILINE is connected.
We could set the device from our office and, later go to the installations and dump the configuration. In that case, after to finish the setting, press File tab in the upper left corner and select Save As in order to save all setting as project. After, in the installation, load the project generated file (from File tab). the Project will be loaded and now you can repeat the same process described in the previous point: Load the physical device from Network and Copy/paste the information.

1st Possibility

A. Create a virtual device and configure it   **B. Load a device from Network**

Two devices in project Inspector: Physical (green circle),
Virtual (no circle)

**C. Select virtual Device
and press Copy
Device.**

**D. Select Physical
Device and press
Paste Device.**
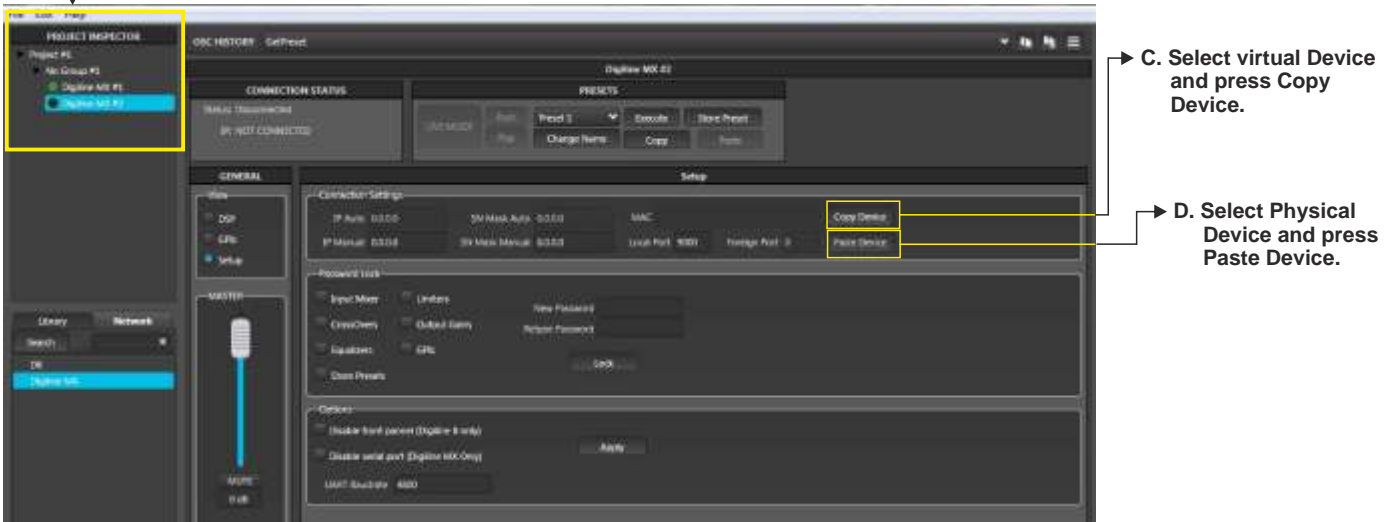
2nd Possibility

A. Create a virtual device and configure it. When finish, store all information in a project file (*.wpj) using File Tab. In the installation.
Load the project using the same File tab. Now follow the previous B, C, D points.
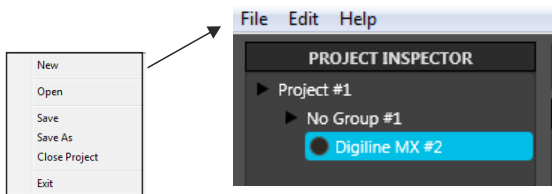
2.2.2. PROJECT INSPECTOR

The **PROJECT INSPECTOR** window allows you to create projects with any WorkCAD compatible device associating
it with a virtual device from the library or working "in situ" with the physical device connected to the network.
The creating project involves ALL devices grouped under the project. Click the **File** tab to managing projects, creating a
new one, opening an existing or saving a new project.

Press Edit to change featuras like:

- Interface language (English/Spanish)
- Enable/Disable the search of updates
- Enable/Disable the hardware acceleration
  **(This features must be disable if the software
  shows problems loading the device)**

When you select one device (using Library or Network tabs), the device will be assigned to a group on this menu.
Depending on the color of the circle closed the name, a different state will be present:
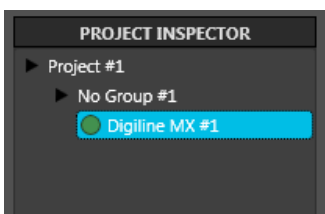
**Digiline MX in
CONNECTED state**

**Digiline MX in
DISCONNECTED state
and Digiline 8,(created
from the library), and
not associated with
any physical device**

● Black: The device has been loaded from the library and it has not been associated to a physical device.

● Green: The device has been loaded from the network. It is a physical device and it is connected with the software.

● Grey: The software has found a device in the network and, later, the device has been turned off

● Blue: The presets loaded in the physical device are different as presets created in the software. It is necessary a sync. **See (2.2.1.3 Connecting virtual & physical devices between them) section for further information**

.

NOTE: When a device is selected from network and the software is loading the presets, this color appears during the process. When the load finish, the color change to green.

2.2.3. OSC HISTORY

Each modification on any parameter: level variation, creating filter, limiter adjustment, etc., makes an OSC command that is shown in **OSC HISTORY** tab. Thus it is possible to copy this command to generate a command list for any interface that will allow OSC commands to execute such orders.
The sentence showed on this tab is informative, checking easily the action and the created value. The software will convert this sentence in an OSC compatible command.
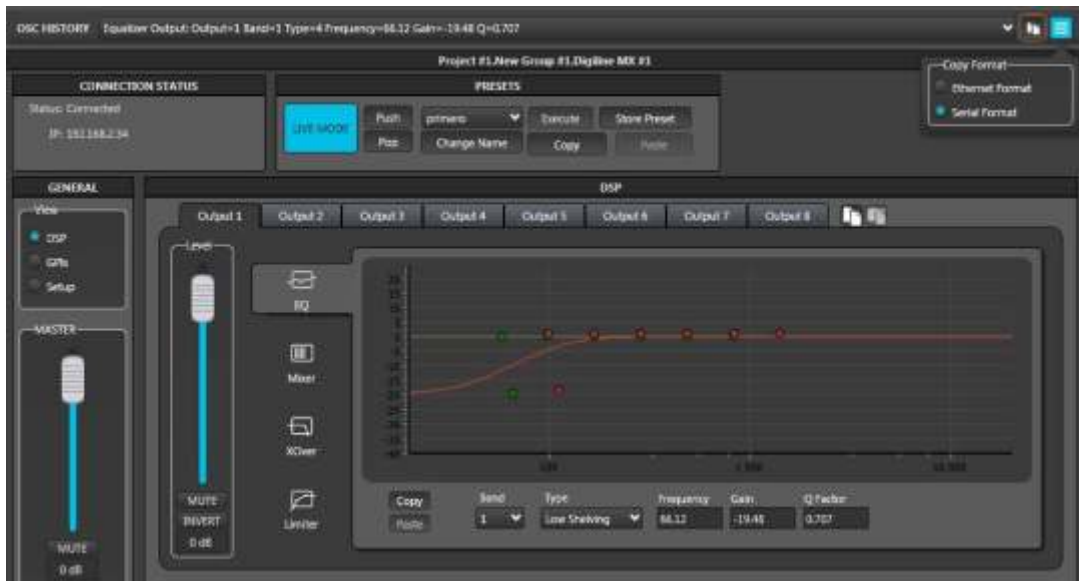
In this example we have created an equalization filter with the values shown below. automatically appears the command line in OSC HISTORY tab.

OSC HISTORY | Equalizer Output: Output=1 Band=1 Type=4 Frequency=66.12 Gain=-19.48 Q=0.707
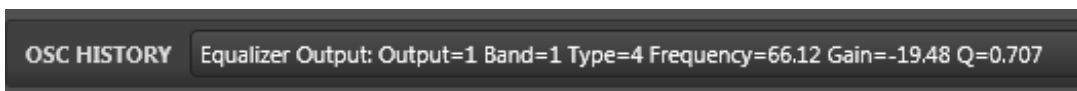
Then you can copy the command line to the clipboard in order to copy it to our external commands control software. For this we use the icon on the left, but we must first click on the icon right to select the type of format you want to become the line:

Copy Format
○ Ethernet Format
● Serial Format
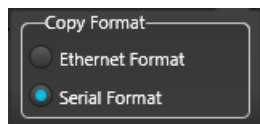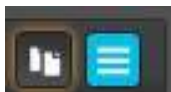
Ethernet or Serial depending on where you connected the control. (Ethernet Port or RS 232 Port respectively)

In the first case, the line is as follows: **//out1/eq/1;ifff;4;66.12;-19.48;0.707;**
In the second case, the line is as follows: **#//out1/eq/1;ifff;4;66.12;-19.48;0.707;**

3. DIGILINE INTERFACE

Once explained the common functions in all WorkCAD compatible devices. We pass to explain the specific DIGILINE interface.

Once selected a device (from the Library or the Network) and checked that the device appears in PROJECT INSPECTOR tab, it is time to open the configuration interface.

**NOTE: Each device will show a different configuration interface depending on the features to configure. In the case of DIGILINE family, the interface is the same for both, MX and 8.**
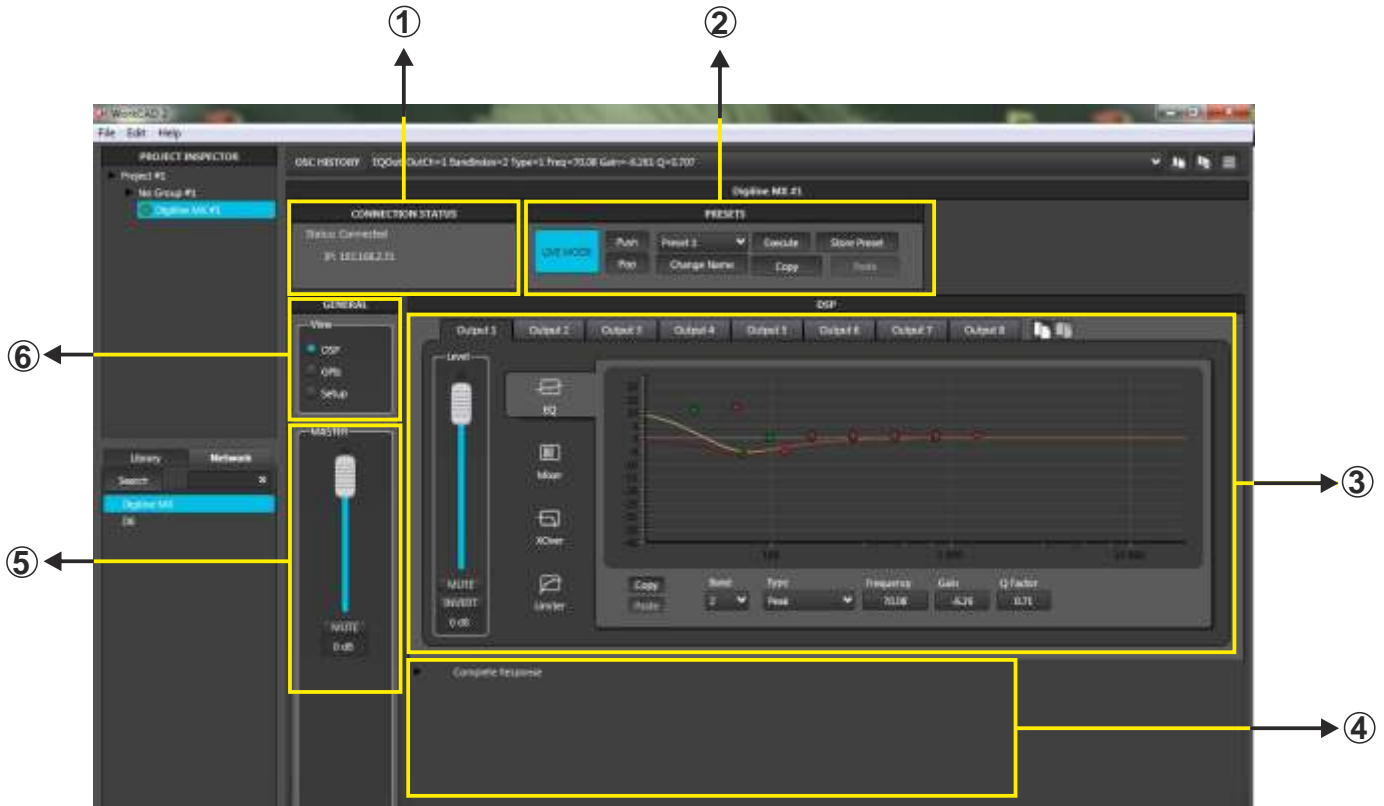
1. CONNECTION STATUS: This tab shows the status of the selected device:
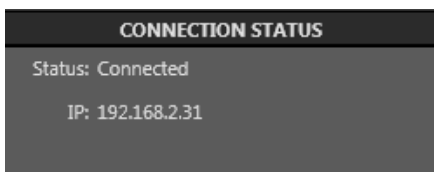
The unit has been selected from network (We are working over a physical device).
In that case, the device IP address is showed in the second line
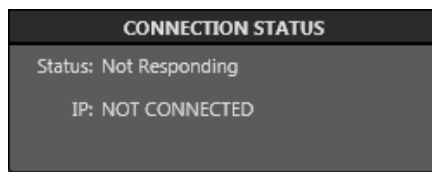
The device was in the previous state but it has lost connection. Probably it is turned off or LAN problem.
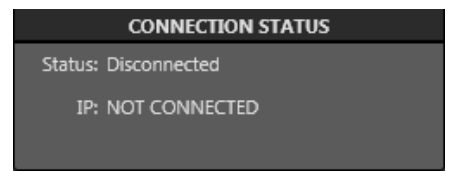
The device has been selected from Library and it has not associated to any physical device.

2. PRESETS: DIGILINE devices allows to create and manage up to 9 presets to store different configurations. Using this tab, you can select, Change their names, copy/paste and store them. Also, you can establish a backup point and access to it (Push/Pop). Finally, you can work in LIVE or EDIT mode.


**NOTE: See the (3.2. PRESET) section for further information**

3. CONFIGURATION SETUP: This interface allows to access to the control features on each output. Basically, it consists in a central graphic window that shows the final result of feature application or change, 8 tabs in the upper side corresponding to each output and 4 tabs in the left side corresponding to the feature that you can control on each output (**EQ, Mixer, XOver and Limiter**).

The slide fader shows the output gain of the selected output.
The icons placed in the right side ![icons] allows to copy the whole output to another output

NOTE: Check each feature section on the next pages.
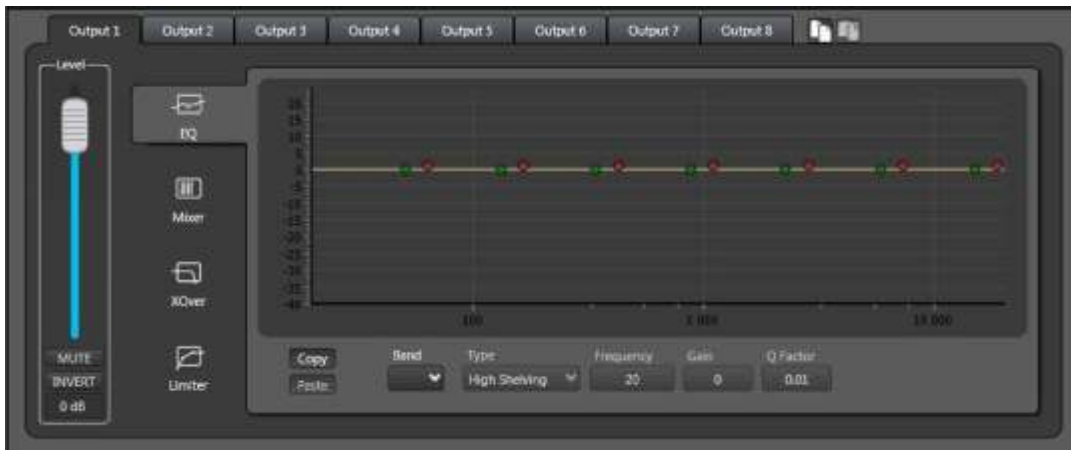
4. COMPLETE RESPONSE: Click over the triangle closed "Complete Response". A graphic window will show the complete curve response of each output with the applied EQ filters, Gain, Xovers, etc.
Push the tick close to the name to show a hide the corresponding output.
The current output is highlighted
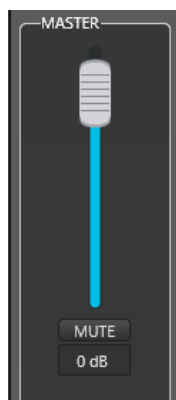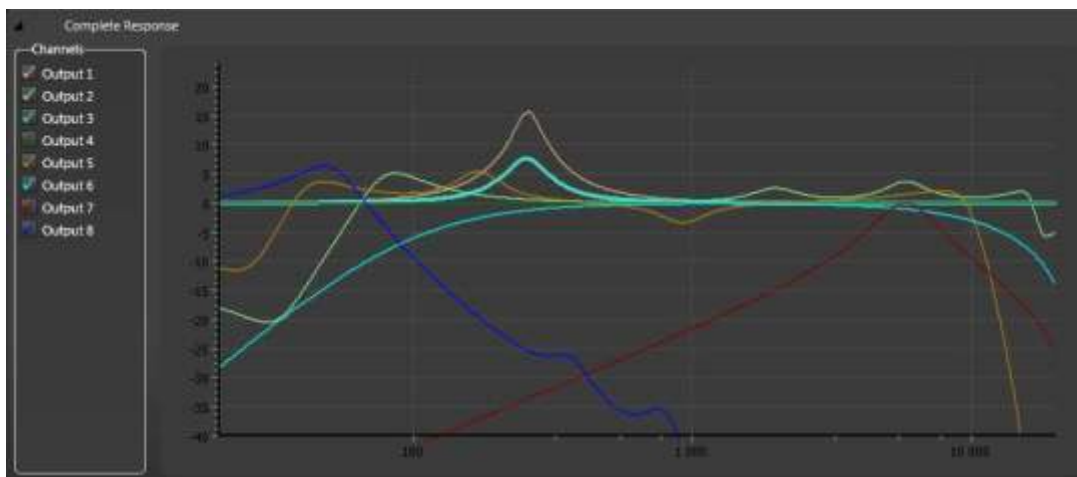
5. MASTER CONTROL: This fader controsl the master level of the device. It appears at all times, allowing to change the whole gain using the fader or changing the numeric value.
The button over the value allows to change the state: Push it to MUTE the whole outputs

The button over the value allows to change the state:
Push it to MUTE all outputs. The icon change to red colour.

6. GENERAL: This section allows to select the three great blocks of the DIGILINE interface.
By default, the software shows DSP when it is initialized.

- **DSP** shows the control interface from each output ③ and Complete Response ④

- **GPIs** shows the GPI management. DIGILINE devices have a certain number of GPI (General Purpose Input) that consist in contacts. Therefore, it is possible to assign a command, or a list of commands that will be executed when the GPI state change.
See (3.3. GPI) section for further information

- SETUP: You can access to advanced device configuration with the next paragraphs:
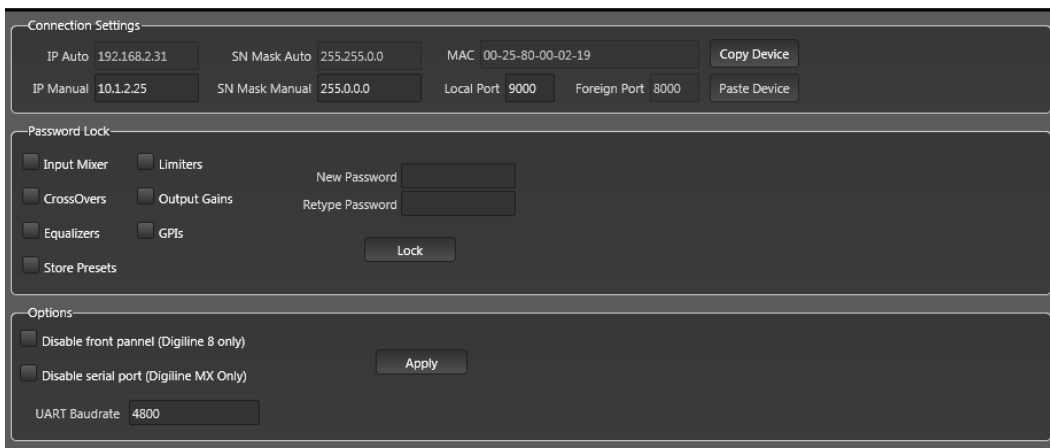
Connection Setting: Show all device connection information (IP adresses, Subnet, MAC). The two Copy/Paste buttons allows to associate a virtual device (loaded from library) with a physical device (loaded from network)
See (2.2.1.3. Connecting virtual & physical devices bewtween them) section for further information

Password Lock: Allows to lock any device section against unwanted manipulations. Simply pick the section, enter a Password and press Lock button.

Options: Allows to disable the frontal control against unwanted manipulations. The potentiometers values are then stored and reloaded when the device restarts.
press Apply. It is possible to change Baudrate speed of the serial port of the MX device. It can also be disabled.

3.1. DSP

Each output has its own configuration window in order to modify the following parameters

EQ, MIXER, CROSSOVER, LIMITER
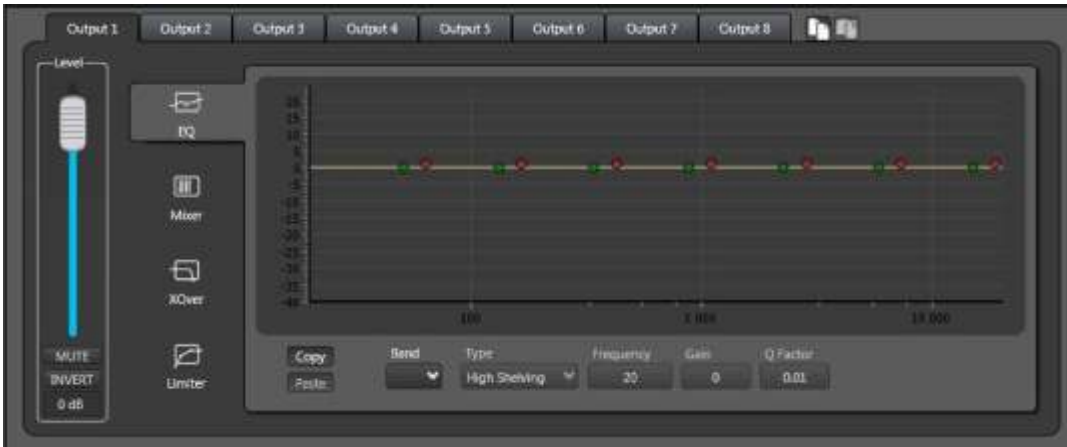
Selecting the adequate Output in the upper tabs you can configurate these parameters on the output and, using the icons placed in the right side, copy the whole configuration from one output to another output.
The fader marked as Level, allows to control the gain of the selected output, moving the fader or changing the numeric value. The buttons over the numeric value allows to select the state. MUTE allows to cut off the output (it change to red colour) and INVERT will invert the output phase (it change to yellow colour).
You can navigate through the output parameters selecting the left side icons (EQ, Mixer, XOver and Limiter).

3.1.1. EQ
DIGILINE devices allows to create up to 7 equalizer filters, editing their features easily.
Band: This dropdown menu allows to select the filter (between 1 to 7) in order to edit its features.
Type: This dopdown menu allows to select the filter type between **Bypass, Peak, Low Pass, High Pass, Low Shelving, High Shelving, Band Pass, Notch and All Pass**.
Frequency: Changes the central frequency point of the filter (in Hz). Type the chosen value.
Gain: Changes the filter gain (in dB). Type the chosen value.
Qfactor: Changes the Qfactor of the filter. Type the chosen value.

The graphic window will show the curve response after apply the changes. Each filter has two points. The green point marks the Frequency and Gain, therefore, it is possible to move this point using the mouse and the numeric values will change, and viceversa, changing the numeric values, the point will be move to the corresponding graphic position.
The red point has the same behaviour but using the Qfactor value.

The Copy/Paste icon allow to copy the EQ tab between outputs
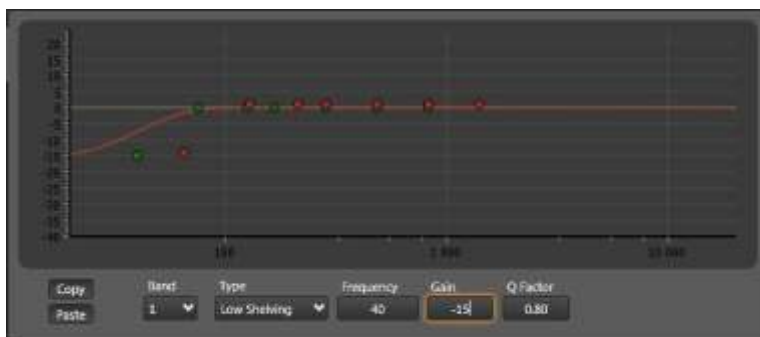
On this example, we have created a Low Shelving filter at 40 Hz, with a Gain of -15 dB and 0.8 as Q factor. The response curve appears in the graphic windows. In that case, the most lower green and red points correspond to this filter.


Also, in OSC HISTORY has been created an OSC command corresponding to this filter creation.

3.1.2. MIXER

This tab allows to configure which inputs (from the 8 inputs included in the DIGILINE) and which value and state will be present in the selected output. Therefore, we can create a 8 input/8 output matrix setting their levels.
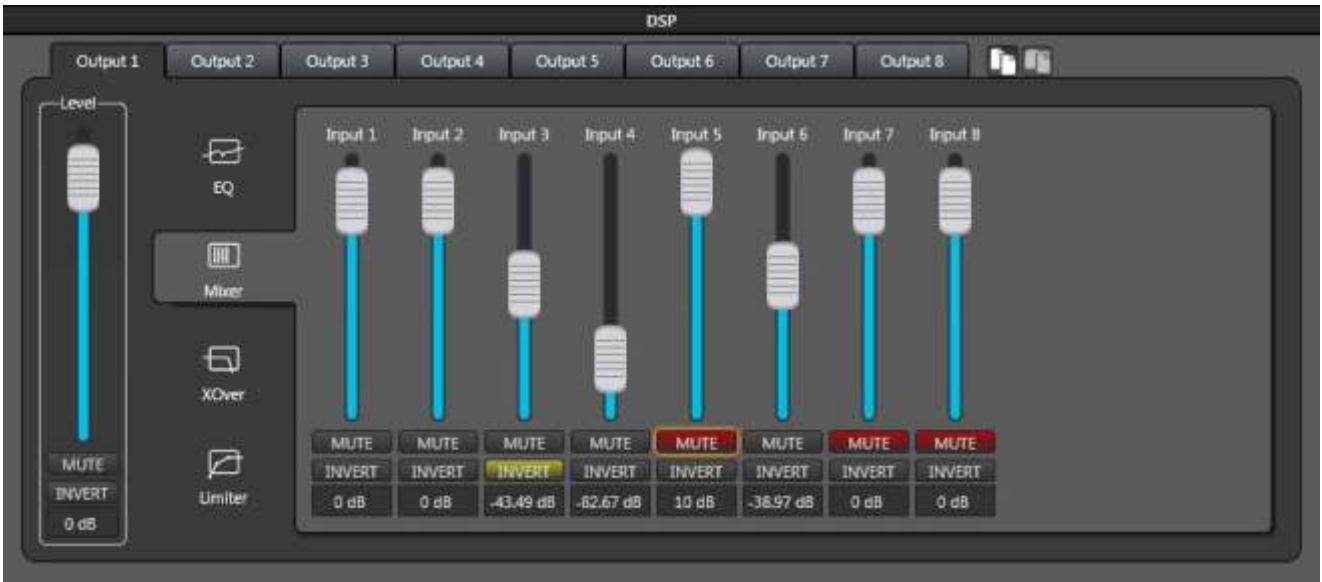
As much as Master fader or Level fader, the gain level can be set moving the fader or typing the value in the cell. Also, it is posible to change the state of each input (MUTE (in red colour), INVERT (yellow color) or active (both icon not highlighted)
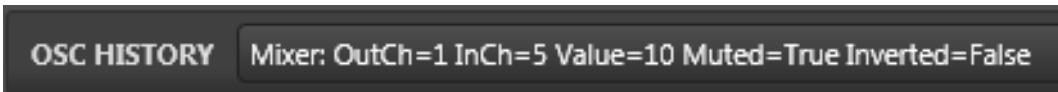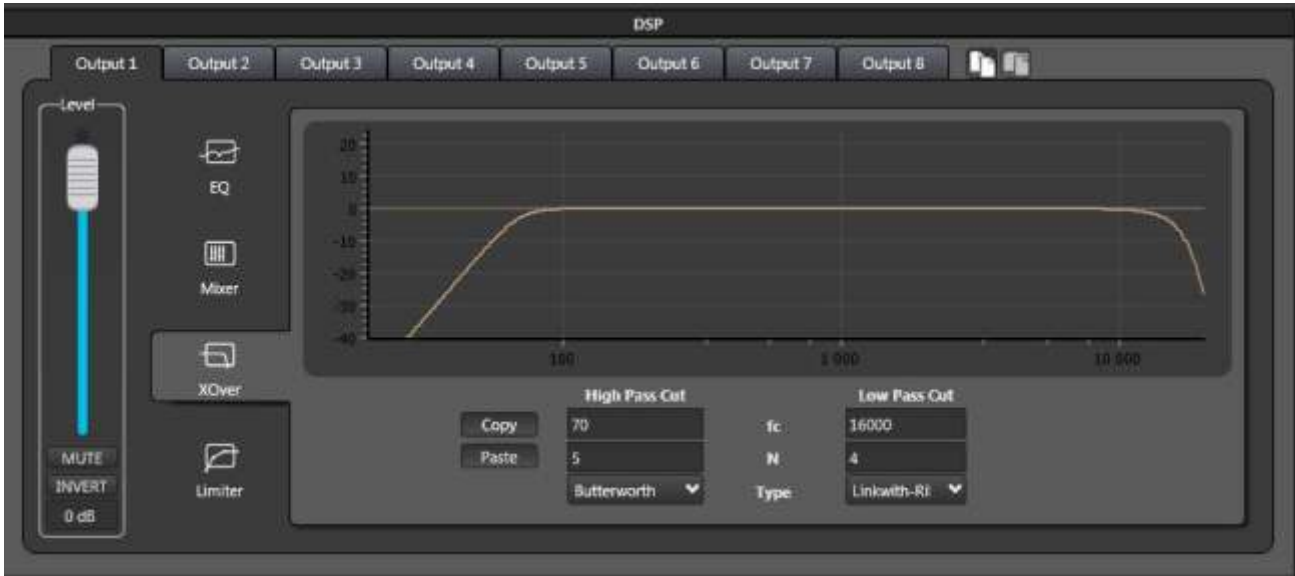

Like each DSP section, a command sentence will appears in **OSC HISTORY** each time that we change any value. In that case, the last action has been to change de Gain value of the Input 5 applied to Output 1 and changing the state to MUTE.

3.1.3. XOVER

This tab allows to create two crossover filters: **High Pass Cut** and **Low Pass Cut**.
For both filters we can configure the frequency (**fc**), the type of filter to select between three types (Butterworth, Linkwitz-Riley or Bessel) (**Type**), and the magnitude order of that filter (Up to 8 orders) (**N**).
The obtained response curve applying both filters is displayed on the screen. The horizontal axis shows the frequency in Hz and vertical the gain in dB.
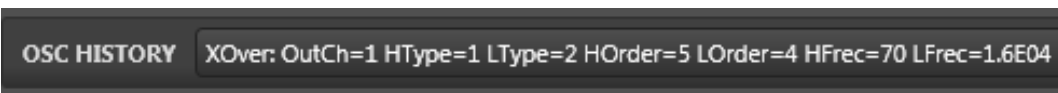
In this example, we have configured a 5th order Butterworth High Pass filter at 70 Hz and a 4th order Linkwith-Riley Low Pass filter at 16 kHz.
The curve response is showed in the graphic window.
Using the Copy/Paste icon, it is possible to copy this filter to another output

Like each DSP section, a command sentence will appear in **OSC HISTORY** each time that we change any value.
In that case, the last action has been to create the Low Pass filter to Output 1 with the example values.
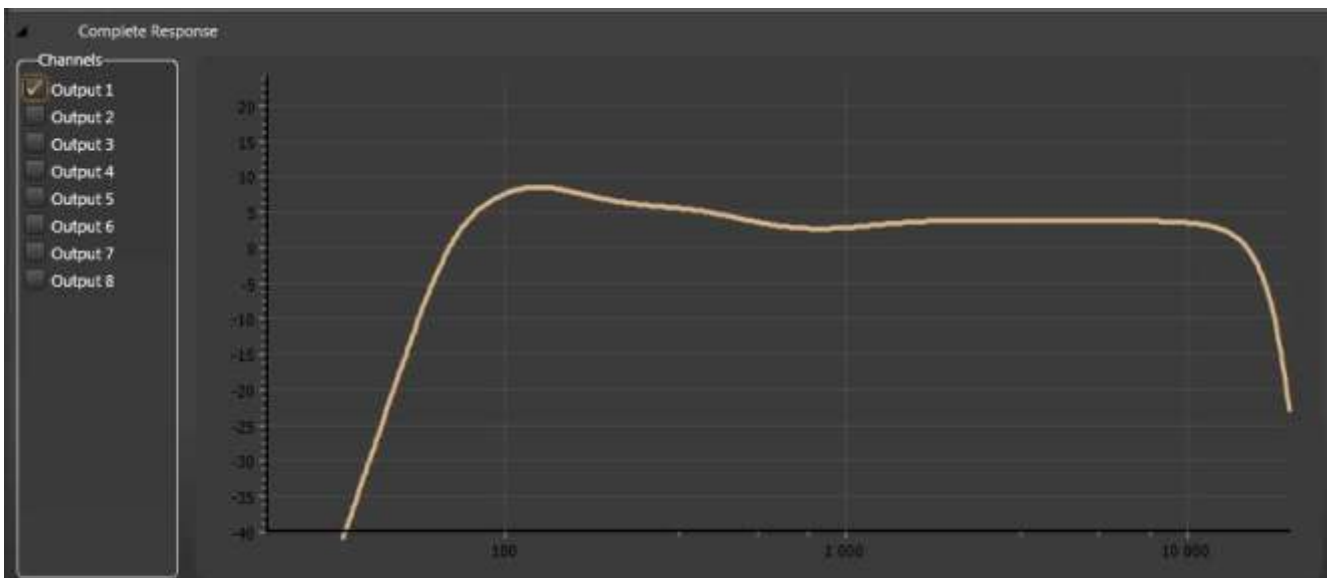
At this moment, the **Complete Response** and if it is shown only Output 1, you can see the complete response after applying the Xover and EQ filter explained in this example.

3.1.4. LIMITER

In this tab you can enable and adjust the different sections of the limiter by clicking on its respective tab inside the window.
In the graph you can see the curve obtained after the application of each element (highlighted line). The dashed line will show the bypass condition (in order to compare both cruves).

⚠ IMPORTANT ⚠

Take into account that outputs 1 to 7 has the same Limiter and the Output 8 has its own Limiter configuration.
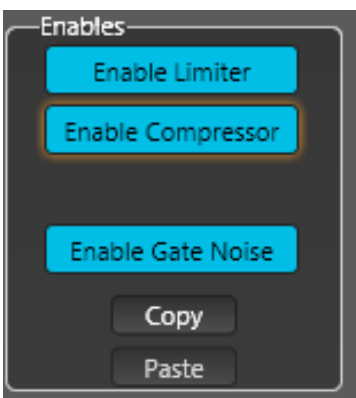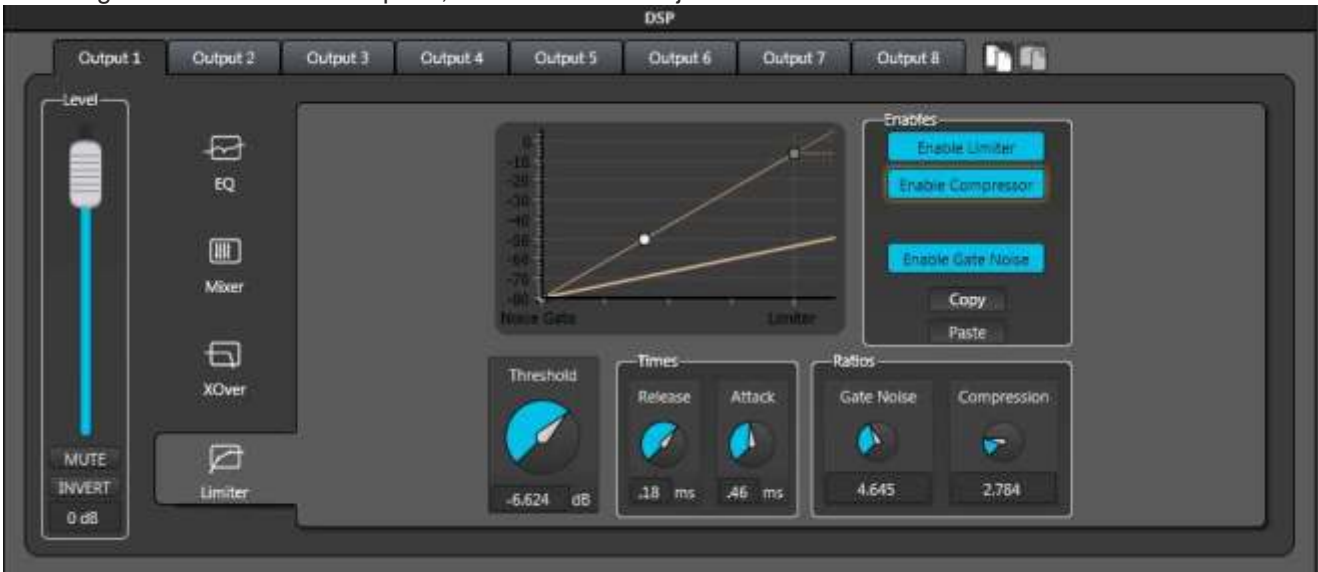

Limiter
It set with the top point of the graph with the Threshold knob. When enable, it pass to gray color and can be moved and set its level.

Compressor
Compression is set to the next point, also changing to gray to allow movement. with the Compression knob you can adjust the ratio.
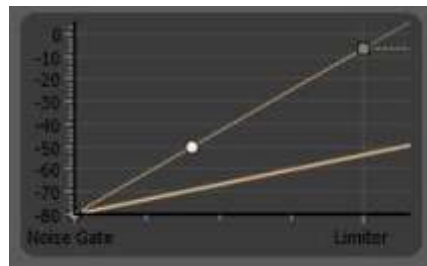
Noise Gate
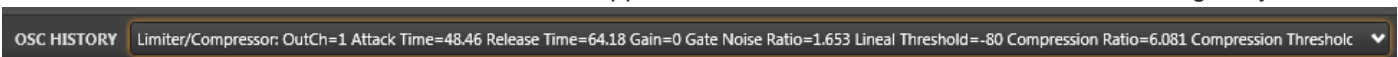A noise gate is set to the lowest point, the ratio can be adjusted with the related knob.

NOTE: Each Limiter section can be enabled or not. Simply push the chosen selection.

Use the Copy/Paste icon to copy the Limiter setting. In that case from Limiter 1-7 to Limiter 8 or viceversa.

NOTE: The highlighted line represent the response curve after apply the Limiter elements. The other curve show the response in Bypass state.

Like each DSP section, a command sentence will appears in OSC HISTORY each time that we change any value.

OSC HISTORY   Limiter/Compressor: OutCh=1 Attack Time=48.46 Release Time=64.18 Gain=0 Gate Noise Ratio=1.653 Lineal Threshold=-80 Compression Ratio=6.081 Compression Thresholc ⌄

3.2. PRESETS

DIGILINE devices incoporates 9 Presets in order to save different configurations, allowing to load one of them directly on the device or to edit its properties.
The PRESET tabs has the next functions:

LIVE MODE/EDIT MODE: The device starts by default in LIVE MODE. On this condition, the changes will be applied inmediately. If you press this button, the device pass to EDIT MODE. On this condition, the device will modify its presets, but NOT the executing process. Later, the new preset can be executed.

PUSH/POP: These buttons allow to create a backup point of the executing audio path. Therefore, if you start from a specific configuration and w**ant to set temporaly another parameters, you can press the PUSH** button, so the current execution is stored and , then, make all the needed changes. After that, when the user wants to go back to the initial state, then just push the **POP** button to restore the previous state.

NOTE: This function only works in LIVE mode.

PRESET Selection: This drop-down menu allows to select one of the 9 presets included in DIGILINE.

CHANGE NAME: The preset can be renamed selecting the preset and pressing this button.

STORE PRESET: It allows to save the whole configuration in the selected preset.

EXECUTE: It allows to execute a preset previously stored. In EDIT mode, select a preset and press EXECUTE, WorkCAD retrieves the preset, activate LIVE mode and execute the selected preset.

> **NOTE: This preset will act immediately due to the unit is in LIVE mode, therefore, we can made any change but it only will be effect "in situ", the preset will no change unless you press STORE PRESET and save the new changes over the previous preset.**

> **NOTE: EXECUTE function only works on EDIT mode**

COPY/PASTE: These buttons allows to made a preset copy and paste in another preset.

NOTE: After to paste the preset, press STORE PRESET in order to finish this process.

A situation can occur is that you are not connected with the physical unit and you have stored any presets. Under this condition, the presets ONLY exist in the software. If you try to connect to physical device. The software will alert that both devices (virtual device present in the software and physical device have not the same stored presets, they are desynchronized.

You can see that the unit in the **PROJECT INSPECTOR** has a blue colour circle close to the name, it means that both units are desynchronized.

Press on "**ReSynch**" button. It will appears to options: Device and Local, asking you which device is the correct one, **Device** for physical device or **Local** for information present in the software.
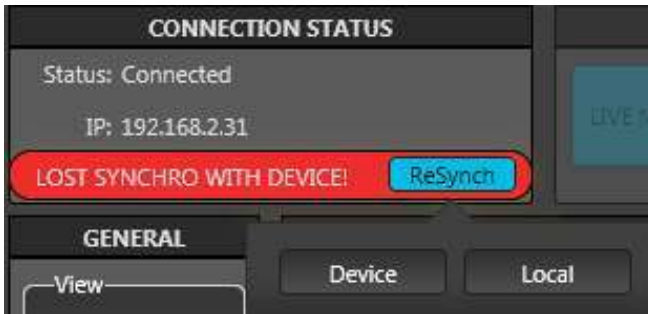

Choose the desired option, the sotware will synchonize both device, loading the preset from our choice.
After this action, the point together the device in PROJECT INSPECTOR will change to green colour.

NOTE: This circumstance also occurs in the case of load a device from the library and setting it, creating and saving presets. After, when you want to connect and load this information on a physical DIGILINE, both devices will be different, therefore they need to be synchronized. In that case, the correct choice will be Local.

3.3. GPI

DIGILINE devices incorporate GPIs (General Purpose Input), 4 GPI for DIGILINE 8 and 12 GPI for DIGILINE MX
Also, both devices incorporate LMI input. These inputs are contacts. We can assign to them commands to be executed in both states: When the GPI is activated or deactivated.The LMI is a microphone analog input that, from the selected threshold, allows to execute the assigned commands. LMI is very adequate as talkover.
GPI interface is accessible through **GENERAL** tab.
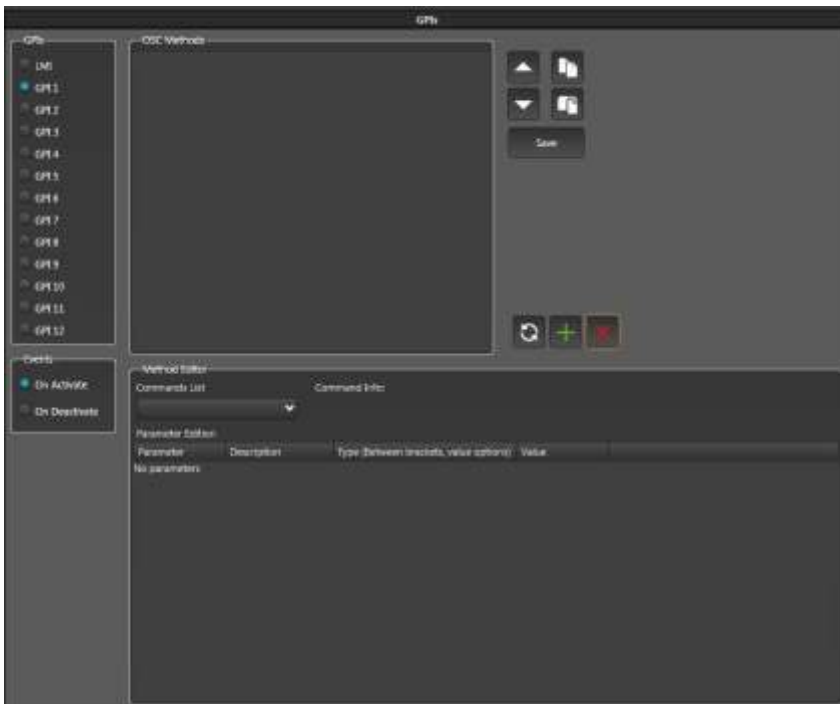

LMI setup
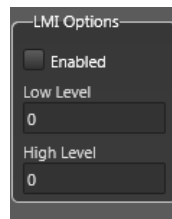
The Low and High level must be set bettween 0 to 4000, When "0" means 0V and "4000" means 3V.

Hysteresis cycle
When the input is greater than High Level, the state pass to ON ACTIVATE.

When the input is less than Low Level, the state pass to ON DEACTIVATE.

This interface lists the GPI (1 to 12) and the LMI. A blue circle next to the number of GPI displayed the selected GPI to be programmed. ①
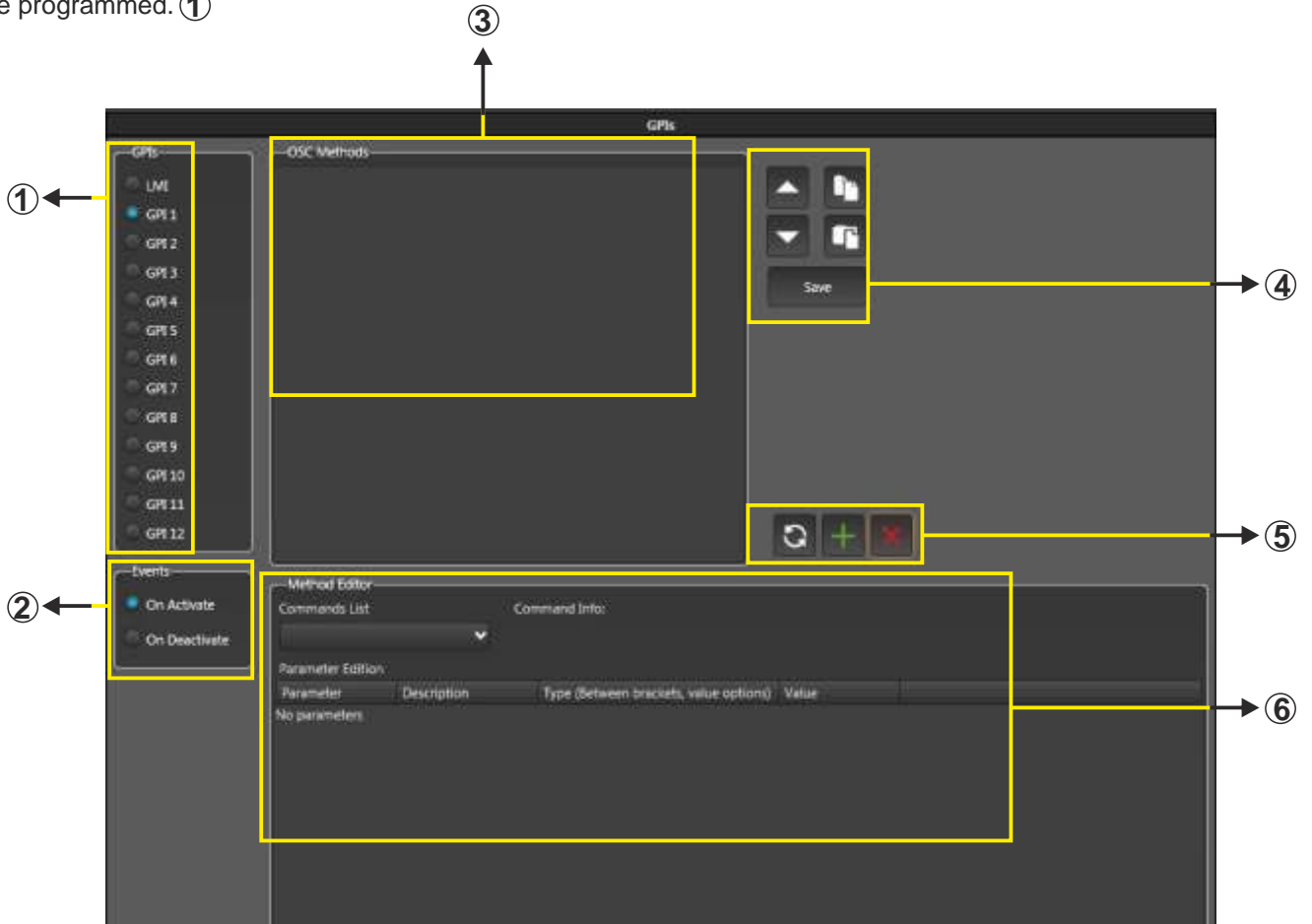
The **Events** tab ② lets you select what state they must find the GPI to execute commands. In **On Activate** position, the software will send commands when the GPI is actived (that is, when the contacts are closed). In contrast, selecting the **On Deactivate** mode, the command is executed when the contacts are released.
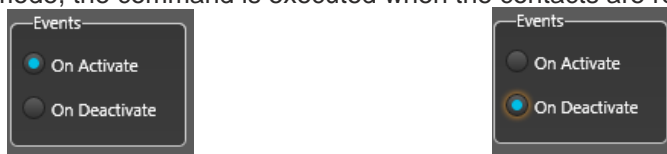
The **OSC Method** window ③ displays the various commands generated with their values which will execute by acting on the previously selected GPI and in the state selected in the Events tab. ②

The icons of section ④ allow, given a series of commands, change the order in which they will run, passing, for example, the third command to the first. This uses the icons for scrolling.

The icons allow to copy all the commands contained in another GPI to another GPI (Copy / Paste).

The icon Save will save the entire list of commands in the GPI and state previously selected.

The icons on section ⑤ allow to:

➕ After creating a command in section ⑥ , pressing this icon, the command will appear in the **OSC Method** window ③

✖ You can select a command in the OSC Method and delete it using this icon.

🔄 After creating a command in section ⑥ , pressing this icon, and having selected a command in **OSC Method** window, ③ this new command will replace the selected.

3.3.1. Commands

Method Editor tab ⑥ allows the creation of commands with a simple and intuitive edition of its values and states.
WorkCAD recognize the device and **Commands List** window displays a popup menu with commands susceptible editing along with a brief description of their duties.


Each selected command has a set of values to edit, depending on the purpose of that command.
In this example we have selected the **Output Gain** command to edit the output value and their status.
- On the first line enter the value of the output channel to modify.
- In the second line the dB value you want for the selected output
- The third line allows you to select the Mute status. In this case the options are T (true) if you want the output is in Mute, or F (false) if we do not want to mute the output.
- The fourth line to select the state Invert. In this case the selection is performed in the same manner as in Mute previous value.
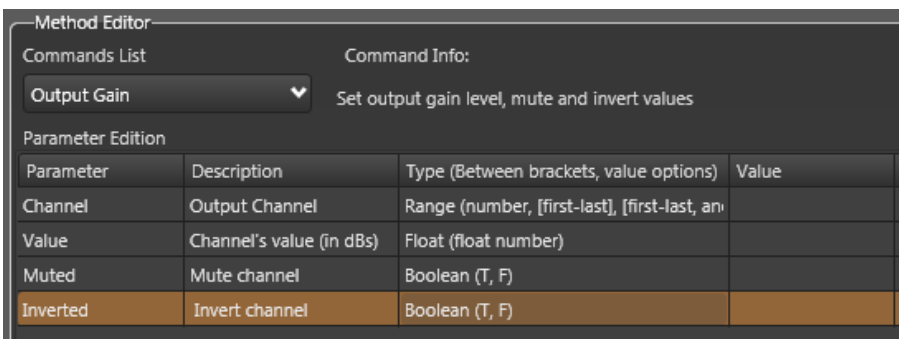
In this example we have edied this command with the following values: At output 1 we have given a value of 4 dB, leaving the output without applying a Mute or invert its phase
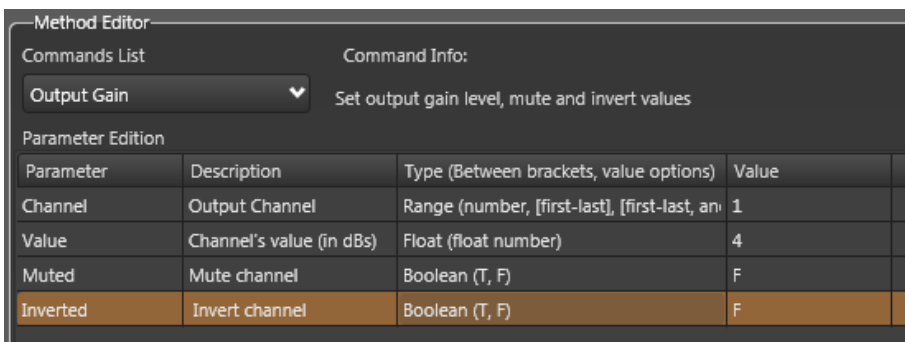
Once written the values, click the icon ➕ and the command will appear in the OSC Methods
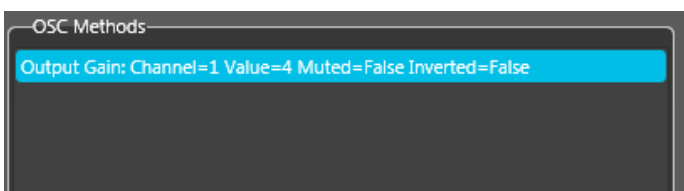
If you press the icon ✖ will delete the selected command line.

From here the process is identical, in the list of commands (Commands List) select the wished command to edit.

The values introduction allows certain rules:

a. Parameter Range type that incorporate the following text:
Range (number, [first-last], [firs-last,another])
In this case the value can be numerical referred to a single channel:
1 for channel 1.
We can set a range of channels in brackets (**[ ]**) and separated with a hyphen (**-**):
[1-4], in this case we have selected the first 4 channels.
We may also collect both previous methods separating with commas (**,**):
[1-4], 6. In this case we have selected the channels 1-4 and 6.
We can also select alternate channels:
[1,3,6] allows us to select channels 1, 3 and 6 only.
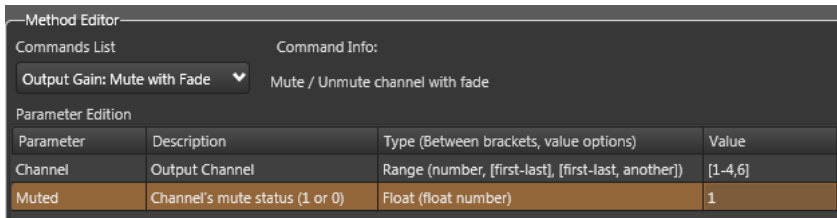As a last resort selection, we can make the following value:

*. In this way you select **ALL CHANNELS**.
The use of these symbols allows us to reduce the number of commands.

b. Float type parameters that include the following text:
Float (float number) and in description **(1 or 0)**
Here are parameters of two states: **0** if not want to activate this parameter or **1** to activate

In this example we used the command **Output Gain: Mute with Fade**, you can select an output and take it out of the state or a certain level Mute fade.
We applied that command on channels 1 to 4 and 6 **[1-4,6]** and activated the Mute status (**1**) in the second line parameters.

## c. Float type parameters that include the following text:
Float (float number) and in description **(in dBs)**
In this case these parameters allow edit the value in dBs.

d. Float type parameters that include the following text:
Float (float number) and in description **(negative for decrecement)**
In this case these parameters allow edit the value in dBs. If the value is negative (**placing a dash (-) before the value**), this value reduces the value previously established in the amount of dBs marked, and a positive value (**no hyphen in front**) increases it.
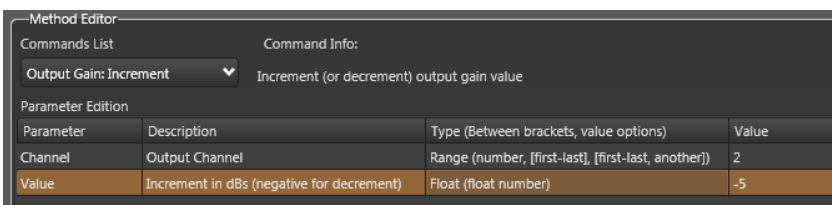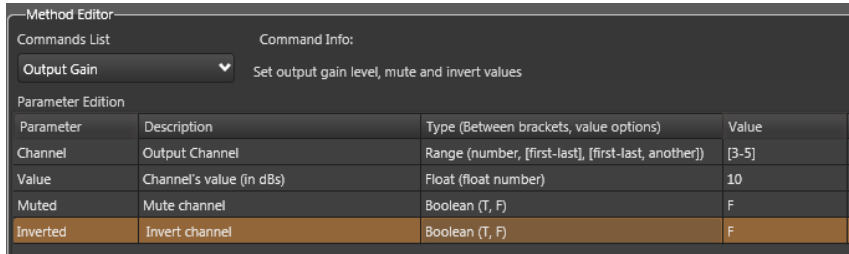

In this example we used the command **Output Gain: Increment**, which lets you select an output and increase or decrease the gain value using the second line.
We applied that command on channel 2 by typing **2** in the first parameter and writing **-5** in the second, of This way, we will reduce the value 5dB previously had output number 2.

d. Boolean parameters that include the following:
Boolean (T, F)

In this case input parameters for a true value (T = TRUE) or False (F = FALSE), referred to the parameter application or not.

Parameter	Description	Type (Between brackets, value options)	Value
Channel	Output Channel	Range (number, [first-last], [first-last, another])	[3-5]
Value	Channel's value (in dBs)	Float (float number)	10
Muted	Mute channel	Boolean (T, F)	F
Inverted	Invert channel	Boolean (T, F)	F

Method Editor — Commands List: Output Gain — Command Info: Set output gain level, mute and invert values — Parameter Edition

In this example we used the command **Output Gain**: you can select an output, giving a gain value and modify their state MUTE and INVERT.

We applied that command on channels 3-5 writing **[3-5]** in the first parameter, giving 10 dB Gain of these channels (**10**). and leaving channels without mute and phase reverse writing **F as False**.
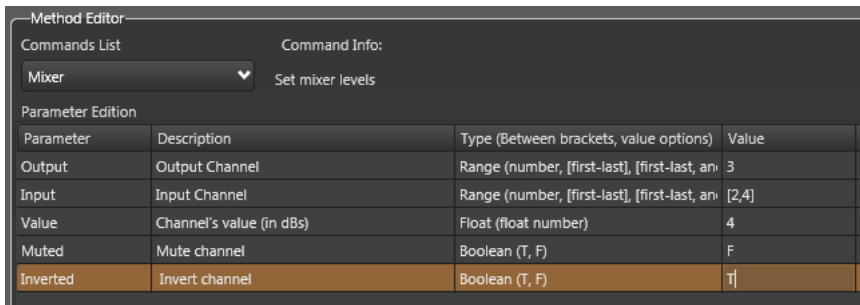
3.3.2. Other Commands

The commands previously shown refer to actions performed with the outputs. They all appear in the dropdown menu as **Output Gain: .....**

1. Mixer: .....
In this series of commands, you can assign a certain number of inputs to a particular output and modify its gain and MUTE or INVERT status.

IMPORTANT: **MUTE and INVERT refer to INPUT CHANNELS**

Parameter	Description	Type (Between brackets, value options)	Value
Output	Output Channel	Range (number, [first-last], [first-last, an(	3
Input	Input Channel	Range (number, [first-last], [first-last, an(	[2,4]
Value	Channel's value (in dBs)	Float (float number)	4
Muted	Mute channel	Boolean (T, F)	F
Inverted	Invert channel	Boolean (T, F)	T

Method Editor — Commands List: Mixer — Command Info: Set mixer levels — Parameter Edition

In this example we have assigned to output 3, inputs 2 and 4 with a value of 4 dB. These two inputs are are inverted but not muted.

2. Equalizer Output, CrossOver, Limiter/Compressor

These three commands allow you to create EQ and crossover filters and adjust the limiter / compressor.

IMPORTANT: **These commands are more sensitive to create, especially the limiter / compressor so need some knowledge of the values that are being edited and the impact they can create the modified output**.

Equalizer Output
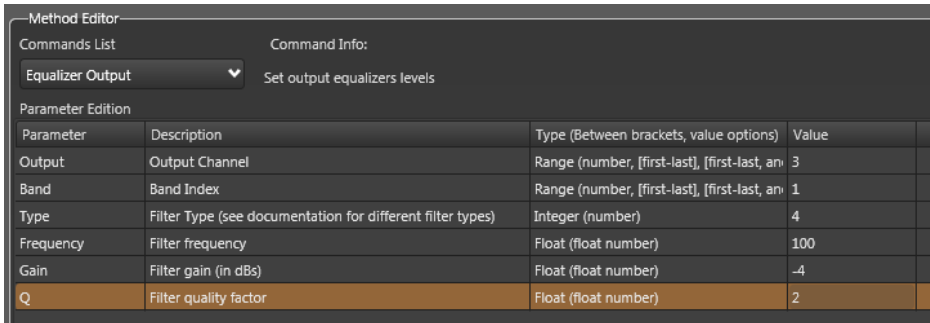
In this example we have created an equalization filter at Output 3 (**Output Channel = 3**)
We employed the 1st band (**Band Index = 1**), so we started on the left side of response curve (**See 3.1.1 EQ on page 17 for additional information**).
We selected Low Shelving filter type (**Type = 4**). This number is determined by the order occupies within the filter type drop-down. **CONSIDERING THAT THE FIRST FILTER (BYPASS) HAS VALUE 0.**

Bypass = 0, Peak = 1, Low Pass = 2, HighPass = 3, Low Shelving = 4

High Shelving = 5, Band Pass = 6, Notch = 7, All Pass = 8

Parameters **Frequency (in Hz)**, **Gain (in dB)** and **Q**, allow to adjust the values of the filter created

CrossOver
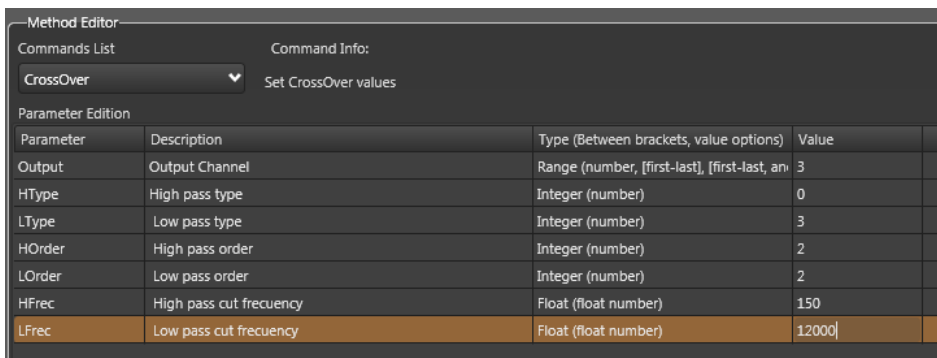
In this case we have created two crossover filters at Output 3 (**Output Channel = 3**)
We have created a tButterworth type high-pass filter (**high pass type = 0**) and another Linkwith-Riley as low pass filter (**Low pass type = 3**). The nomenclature of these filters is due to the following table:

HIGH PASS TYPE		LOW PASS TYPE	
TYPE	VALUE	TYPE	VALUE
Butterworth	0	Butterworth	1
Linkwith-Riley	2	Linkwith-Riley	3
Bessel	4	Bessel	5
NOT USED	6	NOT USED	7
ByPass	8	ByPass	8

High / Low pass order parameters are the order of the filter. (**In this case 3rd and 2nd respectively**)
High / Low pass frequency values are the frequency in the filter in Hz (**150 Hz and 12,000 Hz in this case**).
(**See 3.1.3 XOVER on page 18 for additional information**).

Limiter/Compressor
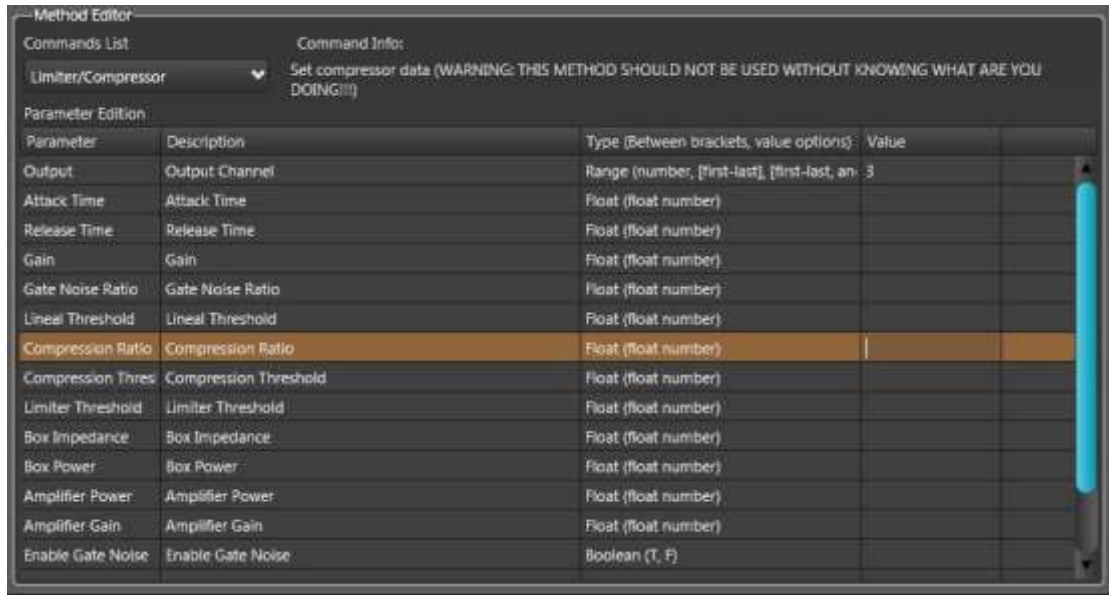
Since this command can set the filter and compressor in the required channel.

IMPORTANT

**Again, remember to be aware of the values that are entered in the various parameters.
These values can affect not only the performance of the facility, but to the connected devices.**

3. Presets: ....

With these commands you can set the preset parameters, either to rename, save,execute or set a backup point.
(**See Section 3.2. PRESETS for additional information**)

The commands are:

- **SetName**: To rename the selected preset.
- **Set Editing State**: Change Live mode / Edit on the device.
- **Execute**: Executes the selected preset
- **Live Copy to Preset**: Copy the preset in Live mode to a selected preset
- **Live Push**: Stores the preset as a backup to restore it after
- **Live Pop**: Restores the previously saved preset with Push, discarding any changes made meanwhile.

**IMPORTANT: In the list of commands in this section shows a number of them starting with Preset: Get ....
and that they have associated parameters. In this case the scope of use is more focused to Ethernet
controlled by commands being sent back by the UDP port the requested information.**

4. Channels: ....

With these commands you can rename both the inputs and outputs:

- **Set Input Name**: Change the name of the selected input
- **Set Output Name**: Change the name of the selected output

IMPORTANT: As in the previous section, the commands which incorporate "GET" behave similarly

5. UDP Port:

This command changes the UDP port value. Originally the value of this port is 9000
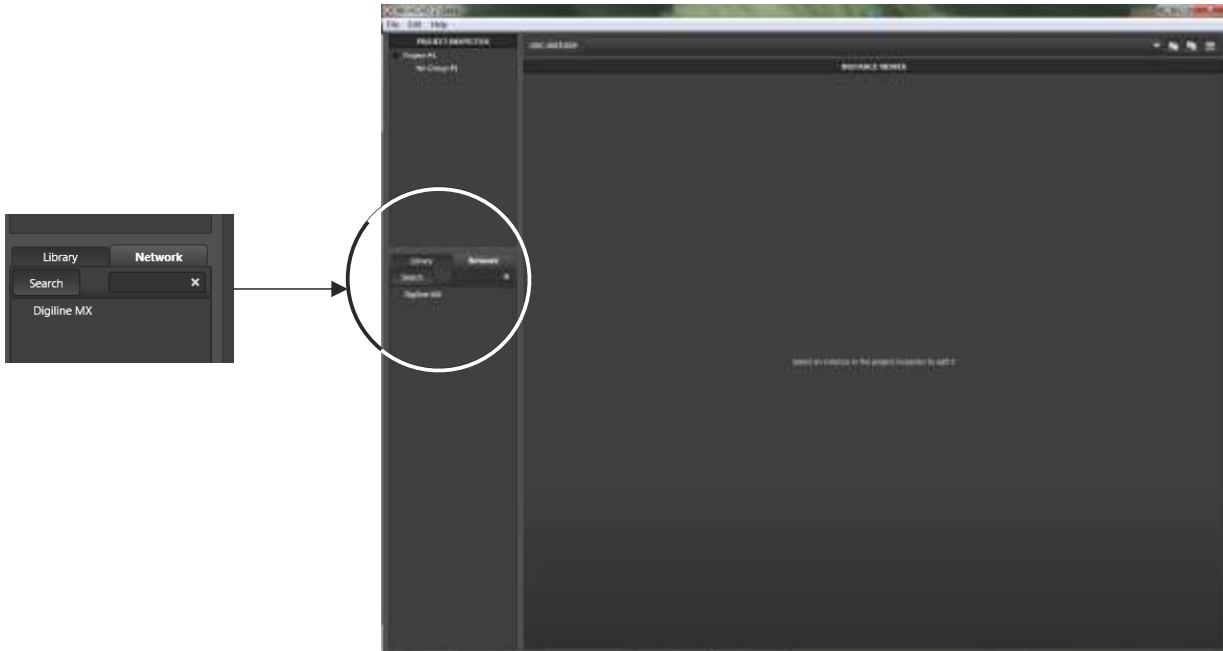
4. Updating Firmware

Depending on the Digiline devices firmware, could be necessary to update it.

PROCESS
The first step is to check the firmware version of the device:
1. Select the Network tab, the software will show the devices found in the LAN (in this example, Digiline MX)

2. Push the **"i"** symbol closed the device name to show its information (MAC, IP address, and firmware version). Check the last line which shows the firmware version and , closed to it the word "**(Not Updated)**". On this conditions, it is necessary to update the device firmware.


The device needs to be updated
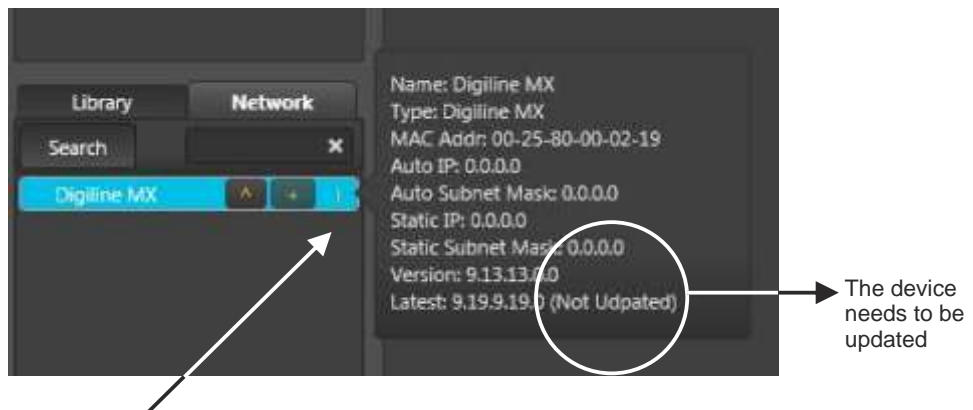
3. Push the symbol **"^"** in the same line to start the updating process. A windows requesting confirmation, will appears. **This symbol only appears when the device is not updated**
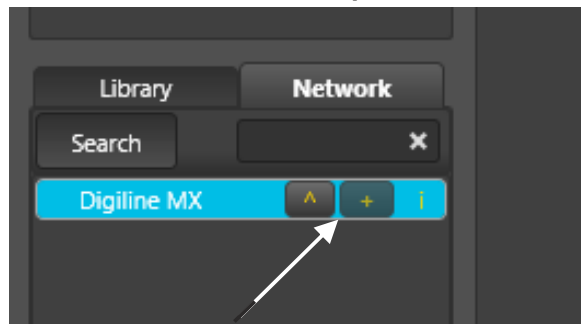
4. The updating process starts. It will take some minutes. When it finish, a windows will be showed indicating the device is updating successfully.

5. If you push the "**i**" symbol again, check the last line with the installed version and the word "updated" together.
   Also, the symbol **"^"** in the device line has dissapeared.

The device has being updated
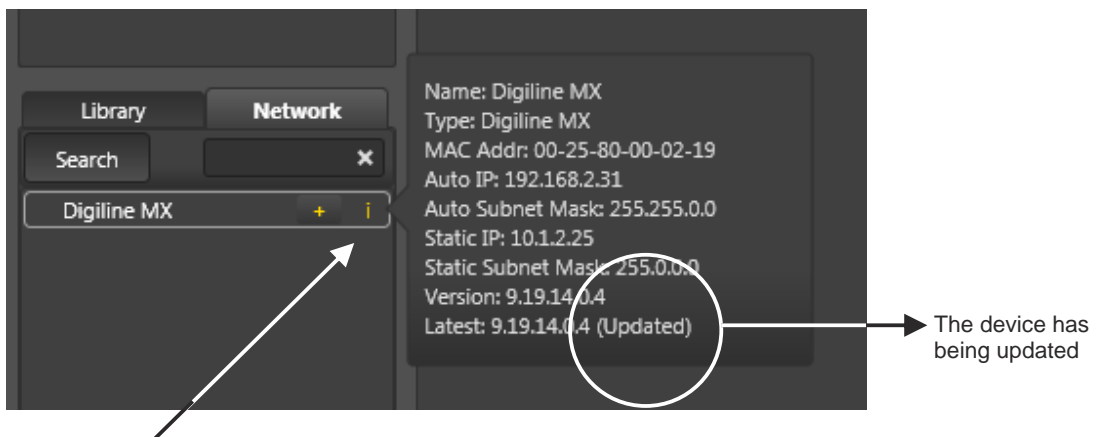
6. Now the Digiline device is updated and ready to use the new WorkCAD software.

⚠ **IMPORTANT** ⚠

If you have used and setup a Digiline with a previous software version, take into account these points before updating the device:

A. The GPIs previously stored in the DIGILINE device WILL BE DELETED AFTER UPDATING PROCESS and must be to created again.

B. Check your current firmware version, if this version is 9.13.14.0.0 or later, the presets previously stored in the DIGILINE ARE FULLY COMPATIBLE WITH THIS VERSION, Therefore, these presets DO NOT BE DELETED AFTER UPDATING PROCESS

5. OSC - ASCII converter

We have developed this application to convert OSC commands of **WORK®** devices into ASCII strings, in order to program devices compatibles.

This application shows **WORK®** devices able to interpret OSC commands and display the parameters associated to each command. You can edit its value and generate the ASCII string.
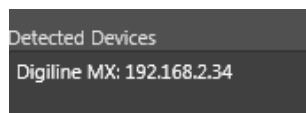
1. Press **Edit** tab and select **OSC To ASCII Utility**
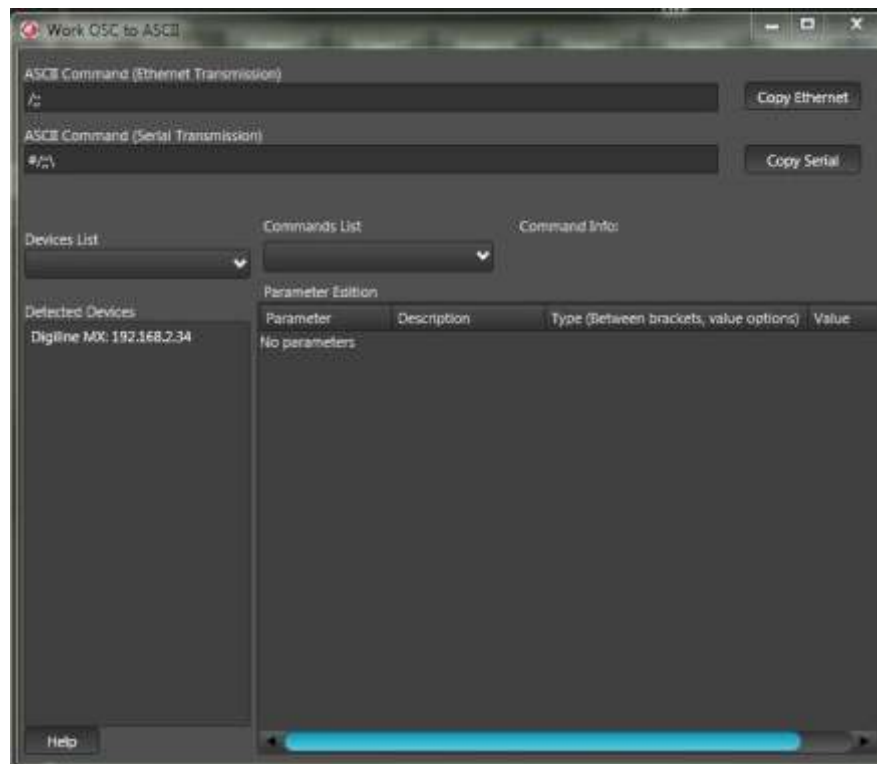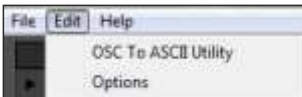
2. Select the device from the Device List drop-down menu. It Includes all WorkCAD compatible devices (Digiline 8 MX, etc).
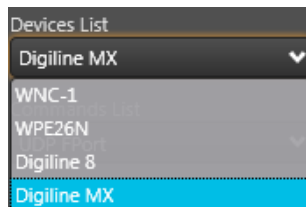

Also Detected Devices tab will display the compatible devices connected to the same network with the IP address.

In that case, a Digiline MX has been detected in the same network

3. Depending on the selected device, has been associated commands to generate the ASCII string. Each command has its own set of parameters to edit. You can see then in the main window, its description, value and type of input variable (string, float or boolean).
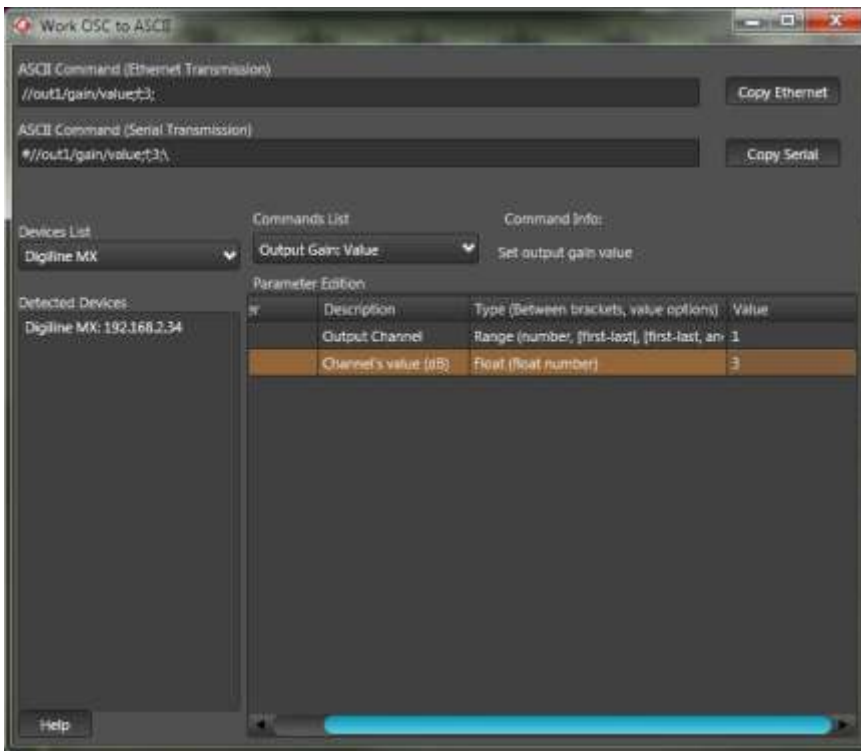
In this example we have selected command Output : Gain Value and established a value of 3 dB in the output 1

3. Once the parameter has been edited, the application generates the ASCII string in the upper window.

4. This line is generated in two formats at once, depending on what you go for. either by Ethernet port or by RS232 serial port. (**See Section 2.2.3. OSC HISTORY for additional information**).

5. Press **Copy Ethernet** or **Copy Serial** , according to the control mode to use, and the command line will be copied to the clipboard for later use.

NOTE: Click the Help icon in the lower left corner for additional information on this application.

NOTE: For an explanation of the commands that incorporate Digiline series devices, see section 3.3. GPI for additional information.

Notes