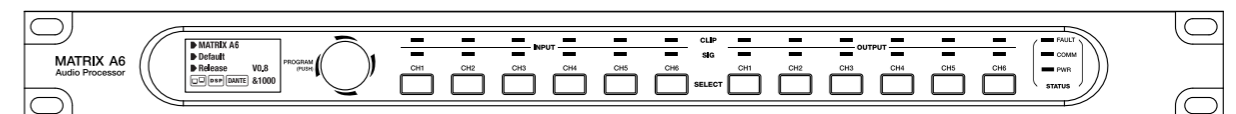# User's Manual

DIGITAL AUDIO MATRIX PROCESSOR

MATRIX A6

Important Safety Instructions

This symbol, wherever used, alerts you to the presence of un-insulated and dangerous voltages within the product enclosure. These are voltages that may be sufficient to constitute the risk of electric shock or death.

This symbol, wherever used, alerts you to important operating and maintenance instructions.

Please read.

∼ Alternating currert/voltage (for adapter).

ON: Denotes the product is turned on.

OFF: Denotes the product is turned off.

WARNING
Describes precautions that should be observed to prevent the possibility of death or injury to the user.

CAUTION
Describes precautions that should be observed to prevent damage to the product.
Disposing of this product should not be placed in municipal waste but rather in a separate collection.

WARNING
Power Supply
Ensure that them a inssource voltage (AC outlet) matches the voltage rating of the product. Failure to do so could result in damage to the product and possibly the user. Unplug the product before electrical storms occur and when unused for long periods of time to reduce the risk of electric shock or fire.

External Connection
Always use proper ready-made insulated mains cabling (power cord). Failure to do so could result in shock/death or fire. If in doubt, seek advice from a registered electrician.

Do Not Remove Any Covers
Within the product are areas where high voltages may present. To reduce the risk of electric shock do not remove any covers unless the AC mains power cord is removed. Covers should be removed by qualified service personnel only.

No user serviceable parts inside.

Fuse (for adapter).
To prevent fire and damage to the product, use only the recommended fuse type as indicated in this manual. Do not short-circuit the fuse holder. Before replacing the fuse, make sure that the product is OFF and disconnected from the AC outlet.

Operating Conditions
Always install in accordance with the manufacturer's instructions.
To avoid the risk of electric shock and damage, do not subject this product to any liquid/rain or moisture.
Do not use this product when in close proximity to water.
Do not install this product near any direct heat source.
Do not block areas of ventilation. Failure to do so could result in fire.
Keep product away from naked flames.

IMPORTANT SAFETY INSTRUCTIONS
Read these instructions
Follow all instructions
Keep these instructions. Do not discard.
Heed all warnings.
Only use attachments / accessories specified by the manufacturer.

Cleaning
When required, either blow off dust from the product or use a dry cloth.
Do not use any solvents such as Benzol or Alcohol.
For safety, keep product clean and free from dust.

Servicing
Refer all servicing to qualified service personnel only.
Do not perform any servicing other than those instructions contained within the User's Manual.

PORTABLE CART WARNING
Carts and stands - The component should be used only with a cart or stand that is recommended by the manufacturer.
A component and cart combination should be moved with care. Quick stops, excessive force, and uneven surfaces may cause the component and cart combination to overturn.

Specifications

Analog I/O	6 Input / 6 Output
Connectors	Euro-block 3*6-Pin,5.00mm pitch for MIC input (balanced)
	Euro-block 3*6-Pin,5.00mm pitch for output (balanced)
Input Impedances	6.8Kohm
Phantom Power(+/-3V)	+48VDC
Frequency Response	20Hz~20KHz at 0dBu ±1.5dB A-weight
Distortion(THD&N)	<0.03% ,typ 20Hz-20KHz, 0dBu A-weight
Maximum Input Level	+20dB
Digital Gain range	0 ~ -48dB steps=12dB
Dynamic Range	108dB
Crosstalk	<-88dB, at 20Hz-20KHz, 0dB, CH to CH
output Impedances	240ohm
Frequency Response	20Hz~20KHz at 0dBu ±1.5dB
Maximum output Level	+20dB
S/N	-108dB A-weight
Crosstalk	<-88dB, at 20Hz-20KHz, 0dB, CH to CH
Indicators	Green(SIG)/Red(CLIP)
Select(Mute)	Red LED
Display	128*64 dot OLED
Control	PC softwave / Encoder with PUSH button
LAN Port	1*RJ-45
Remote Device Port	2*2 RJ-45
	supportRPM devices
	supportRVC devices
Option card (Digital Audio I/F)	Ulti-mod 8in/8out(Optional)
Reserve additional interface	1*2 RS232
	1*4 GPIO input
	1*2 RELAY output
DSP Processor	SHARC ADSP-21489, 450MHz
Word Length	32/64-bit Floating Point
CODEC	PCM1840 Quad 32-bit,48K/96K A/D
	PCM1690 Quad 32-bit,48K/96K D/A
S/W support	EXPANDER/GATE/RELAY/EQ/DELAY/COMPRESSOR
	SELECTION/GAIN/LEVEL SETTING
	DYNAMIC LEVEL CONTROL /MUTE
	ANC/AGC/FBC/Auto mixer/Matrix/Ducker
Power Supply	100-240VAC~ 50/60Hz Fuse T1.6AL
Power consumption	27W(Type)
Dimensions (L*H*D)	483*44*256mm

Appendix

RS232 Codes

NO.	Start Byte0 (1Byte)	Start Byte1 (1Byte)	Start Byte2 (1Byte)	Length (2 Byte)	Device (2 Byte)	ID Adress (High Byte)	ID Adress (Low Byte)	Type (2 Byte)	Command (2 Byte)	Channel — Local Channel : 0x 01 ~ 0x0C (n Byte)	Value (n Byte)	End Byte (1Byte)	function
1	0x01	0x20	0x03	0x00 0x11	0x00 0x39	0x01 (High Byte of ID address)	0x00 (Low Byte of ID address)	0xA5 0xE8	0x00 0x01	Channel 1-6 : 0x01 ~ 0x06 (1 Byte)	Fader Gain High Byte: 0x00 (1 Byte) Fader Gain Low Byte: 0x00 ~0xBE (1 Byte)	0x40	Input Gain
2	0x01	0x20	0x03	0x00 0x10	0x00 0x39	0x01 (High Byte of ID address)	0x00 (Low Byte of ID address)	0xA5 0xE8	0x00 0x02	Channel 1-6 : 0x01 ~ 0x06 (1 Byte)	Phase : 0x00 ~ Norma 1, 0x01 ~ Invert (1 Byte)	0x40	Input Phase
3	0x01	0x20	0x03	0x00 0x10	0x00 0x39	0x01 (High Byte of ID address)	0x00 (Low Byte of ID address)	0xA5 0xE8	0x00 0x03	Channel 1-6 : 0x01 ~ 0x06 (1 Byte)	Mute : 0x00 ~ On , 0x01 ~ Off (1 Byte)	0x40	Input Mute
4	0x01	0x20	0x03	0x00 0x10	0x00 0x39	0x01 (High Byte of ID address)	0x00 (Low Byte of ID address)	0xA5 0xE8	0x00 0x04	Channel 1-6 : 0x01 ~ 0x06 (1 Byte)	Invalid : 0x00 (1 Byte)	0x40	Get Input Status
5	0x01	0x20	0x03	0x00 0x13	0x00 0x39	0x01 (High Byte of ID address)	0x00 (Low Byte of ID address)	0xA5 0xE8	0x00 0x04	Channel 1-6 : 0x01 ~ 0x06 (1 Byte)	DC48V : 0x00 ~ Off , 0x01 ~ On (1 Byte) MIC GAIN : 0x00 ~ 0x04 (1 Byte) Digital Gain High Byte: 0x00 (1 Byte) Digital Gain Low Byte: 0x00 ~0xBE (1 Byte) Fader Gain High Byte: 0x00 (1 Byte) Fader Gain Low Byte: 0x00 ~0xBE (1 Byte) Mute : 0x00 ~ On , 0x01 ~ Off (1 Byte) Phase : 0x00 ~ Norma 1 , 0x01 ~ Invert (1 Byte)	0x40	Receive Input Status
6	0x01	0x20	0x03	0x00 0x11	0x00 0x39	0x01 (High Byte of ID address)	0x00 (Low Byte of ID address)	0xA5 0xE8	0x00 0x05	Channel 1-6 : 0x01 ~ 0x06 (1 Byte)	Fader Gain High Byte: 0x00 (1 Byte) Fader Gain Low Byte: 0x00 ~0xBE (1 Byte)	0x40	Output Gain
7	0x01	0x20	0x03	0x00 0x10	0x00 0x39	0x01 (High Byte of ID address)	0x00 (Low Byte of ID address)	0xA5 0xE8	0x00 0x06	Channel 1-6 : 0x01 ~ 0x06 (1 Byte)	Phase : 0x00 ~ Norma 1, 0x01 ~ Invert (1 Byte)	0x40	Output Phase
8	0x01	0x20	0x03	0x00 0x10	0x00 0x39	0x01 (High Byte of ID address)	0x00 (Low Byte of ID address)	0xA5 0xE8	0x00 0x07	Channel 1-6 : 0x01 ~ 0x06 (1 Byte)	Mute : 0x00 ~ On , 0x01 ~ Off (1 Byte)	0x40	Output Mute
9	0x01	0x20	0x03	0x00 0x10	0x00 0x39	0x01 (High Byte of ID address)	0x00 (Low Byte of ID address)	0xA5 0xE8	0x00 0x08	Channel 1-6 : 0x01 ~ 0x06 (1 Byte)	Invalid : 0x00 (1 Byte)	0x40	Get Output Status
10	0x01	0x20	0x03	0x00 0x13	0x00 0x39	0x01 (High Byte of ID address)	0x00 (Low Byte of ID address)	0xA5 0xE8	0x00 0x08	Channel 1-6 : 0x01 ~ 0x06 (1 Byte)	DC48V : 0x00 ~ Off , 0x01 ~ On (1 Byte) MIC GAIN : 0x00 ~ 0x04 (1 Byte) Digital Gain High Byte: 0x00 (1 Byte) Digital Gain Low Byte: 0x00 ~0xBE (1 Byte) Fader Gain High Byte: 0x00 (1 Byte) Fader Gain Low Byte: 0x00 ~0xBE (1 Byte) Mute : 0x00 ~ On , 0x01 ~ Off (1 Byte) Phase: 0x00 ~ Norma 1 , 0x01 ~ Invert (1 Byte)	0x40	Receive Output Status
11	0x01	0x20	0x03	0x00 0x11	0x00 0x39	0x01 (High Byte of ID address)	0x00 (Low Byte of ID address)	0xA5 0xE8	0x00 0x09	Matrix Output Channel : 0x01 ~ 0x10 (1 Byte) Matrix Input Channel : 0x01 ~ 0x14 (1 Byte)	Routing : 0x00 ~ Off, 0x01 ~ On (1 Byte)	0x40	Matrix Mixer
12	0x01	0x20	0x03	0x00 0x10	0x00 0x39	0x01 (High Byte of ID address)	0x00 (Low Byte of ID address)	0xA5 0xE8	0x00 0x0A	Matrix Output Channel : 0x01 ~ 0x10 (1 Byte)	Invalid : 0x00 (1 Byte)	0x40	Get Matrix Mixer Status
13	0x01	0x20	0x03	0x00 0x1D	0x00 0x39	0x01 (High Byte of ID address)	0x00 (Low Byte of ID address)	0xA5 0xE8	0x00 0x0A	Matrix Output Channel : 0x01 ~ 0x14 (1 Byte)	Matrix Local Input 01 : 0x00 ~ Off , 0x01 ~ On (1 Byte) Matrix Local Input 02 : 0x00 ~ Off , 0x01 ~ On (1 Byte) Matrix Local Input 03 : 0x00 ~ Off , 0x01 ~ On (1 Byte) Matrix Local Input 04 : 0x00 ~ Off , 0x01 ~ On (1 Byte) Matrix Local Input 05 : 0x00 ~ Off , 0x01 ~ On (1 Byte) Matrix Local Input 06 : 0x00 ~ Off , 0x01 ~ On (1 Byte) Matrix Network Input 01 : 0x00 ~ Off , 0x01 ~ On (1 Byte) Matrix Network Input 02 : 0x00 ~ Off , 0x01 ~ On (1 Byte) Matrix Network Input 03 : 0x00 ~ Off , 0x01 ~ On (1 Byte) Matrix Network Input 04 : 0x00 ~ Off , 0x01 ~ On (1 Byte) Matrix Network Input 05 : 0x00 ~ Off , 0x01 ~ On (1 Byte) Matrix Network Input 06 : 0x00 ~ Off , 0x01 ~ On (1 Byte) Matrix Network Input 07 : 0x00 ~ Off , 0x01 ~ On (1 Byte) Matrix Network Input 08 : 0x00 ~ Off , 0x01 ~ On (1 Byte)	0x40	Receive Matrix Mixer Status
14	0x01	0x20	0x03	0x00 0x10	0x00 0x39	0x01 (High Byte of ID address)	0x00 (Low Byte of ID address)	0xA5 0xE8	0x00 0x0B	Channel 1-12 : 0x01 ~ 0x0C (1 Byte)	Invalid : 0x00 (1 Byte)	0x40	Input Gain Up , Step=1dB
15	0x01	0x20	0x03	0x00 0x10	0x00 0x39	0x01 (High Byte of ID address)	0x00 (Low Byte of ID address)	0xA5 0xE8	0x00 0x0C	Channel 1-12 : 0x01 ~ 0x0C (1 Byte)	Invalid : 0x00 (1 Byte)	0x40	Input Gain Down , Step=1dB
16	0x01	0x20	0x03	0x00 0x10	0x00 0x39	0x01 (High Byte of ID address)	0x00 (Low Byte of ID address)	0xA5 0xE8	0x00 0x0D	Channel 1-12 : 0x01 ~ 0x0C (1 Byte)	Invalid : 0x00 (1 Byte)	0x40	Output Gain Up , Step=1dB
17	0x01	0x20	0x03	0x00 0x10	0x00 0x39	0x01 (High Byte of ID address)	0x00 (Low Byte of ID address)	0xA5 0xE8	0x00 0x0C	Channel 1-12 : 0x01 ~ 0x0C (1 Byte)	Invalid : 0x00 (1 Byte)	0x40	Output Gain Down , Step=1dB
18	0x01	0x20	0x03	0x00 0x10	0x00 0x39	0x01 (High Byte of ID address)	0x00 (Low Byte of ID address)	0xA5 0xE8	0x00 0x0F	Channel 1-12 : 0x01 ~ 0x08 (1 Byte)	DC48V : 0x00 ~ Off , 0x01 ~ On (1 Byte)	0x40	Input DC-48V
19	0x01	0x20	0x03	0x00 0x10	0x00 0x39	0x01 (High Byte of ID address)	0x00 (Low Byte of ID address)	0xA5 0xE8	0x00 0x10	Relay 1 / Relay 2 : 0x01 / 0x02 (1 Byte)	Relay : 0x00 ~ 0x07 (1 Byte)	0x40	Relay Control
20	0x01	0x20	0x03	0x00 0x10	0x00 0x39	0x01 (High Byte of ID address)	0x00 (Low Byte of ID address)	0xA5 0xE8	0x00 0x11	Invalid : 0x00 (1 Byte)	Invalid : 0x00 (1 Byte)	0x40	Get Relay Status
21	0x01	0x20	0x03	0x00 0x10	0x00 0x39	0x01 (High Byte of ID address)	0x00 (Low Byte of ID address)	0xA5 0xE8	0x00 0x11	Relay 01 : 0x00 ~ 0x07 (1 Byte)	Relay 02 : 0x00 ~ 0x07 (1 Byte)	0x40	Receive Relay Status
22	0x01	0x20	0x03	0x00 0x1F	0x00 0x39	0x01 (High Byte of ID address)	0x00 (Low Byte of ID address)	0xA5 0xE8	0x00 0x12	16 Chars Device Name ~ASCILL Code (16 Byte)	Invalid : 0x00 (1 Byte)	0x40	Modify Device Name
23	0x01	0x20	0x03	0x00 0x10	0x00 0x39	0x01 (High Byte of ID address)	0x00 (Low Byte of ID address)	0xA5 0xE8	0x00 0x13	Invalid : 0x00 (1 Byte)	Invalid : 0x00 (1 Byte)	0x40	Get Device information
24	0x01	0x20	0x03	0x00 0x1F	0x00 0x39	0x01 (High Byte of ID address)	0x00 (Low Byte of ID address)	0xA5 0xE8	0x00 0x13	16 Chars Device Name ~ASCILL Code (16 Byte)	Firmware Version : 0x10 ~ 0x99	0x40	Receive Device information
25	0x01	0x20	0x03	0x00 0x10	0x00 0x39	0x01 (High Byte of ID address)	0x00 (Low Byte of ID address)	0xA5 0xE8	0x00 0x14	Preset number : 0x01 ~ 0x18 (1 Byte)	Invalid : 0x00 (1 Byte)	0x40	Recall Preset

Noted: RS232 Buadrate==57600

ID address ,example: if ID==0x100 then High Byte of ID address=0x01 and Low Byte of ID address=0x00

Table of Contents

FCC Part 15 Statement

NOTE: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the Federal Communications Commission (FCC) rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:
• Reorient or relocate the receiving antenna.
• Increase the separation between the equipment and receiver.
• Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
• Consult the dealer or an experienced radio/TV technician for help.

Changes or modifications to this equipment not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

This device complies with Part 15 of the FCC rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation. Privacy of communications may not be ensured when using this device.

Preface

Thank you for purchasing the MATRIX A6. This device is dedicated music, paging, discussion and zone management solutions for Commercial Audio applications.
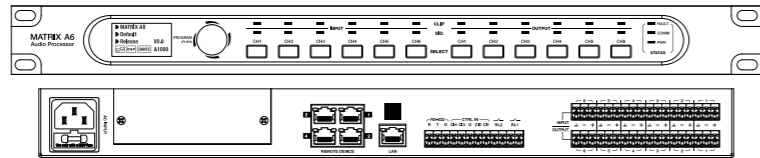
As an Audio Matrix Processor, MATRIX A6 is easy to be used and operated and can offer state-of-the-art signal processing in a cost effective package.
Also as digital audio platform for professional use, Matrix A6 can be used in following electromagnetic environment: residential, commercial and light industrial, urban outdoors. It is the apparatus intended for rack mounting.

Features

1. 14 x 14 Digital Matrix
Projects using DSP platforms usually require a minimum number of inputs and outputs. This determines the choice of dedicated matrix models. MATRIX A6 offers a large choice of I/O options in order to cover most of applications:
I/O:
• 6 analogue IN / 6 analogue OUT on rear panel ports
• 8 digital IN / 8 digital OUT via DANTE32S optional card
The basic system features 6 IN x 6 OUT. With the DANTE32S option, it offers 14 IN x 14 OUT.
I/O expansion is possible with 16 pcs devices linked together for a maximum of 96 x IN and 96 x OUT.

2. DSP functions
MATRIX A6 is intended for non-experts. The system uses fixed architecture for quick and easy operation. The intuitive GUI utilizes a familiar hardware-like layout to enable a short programming timeline and rapid hardware implementation.
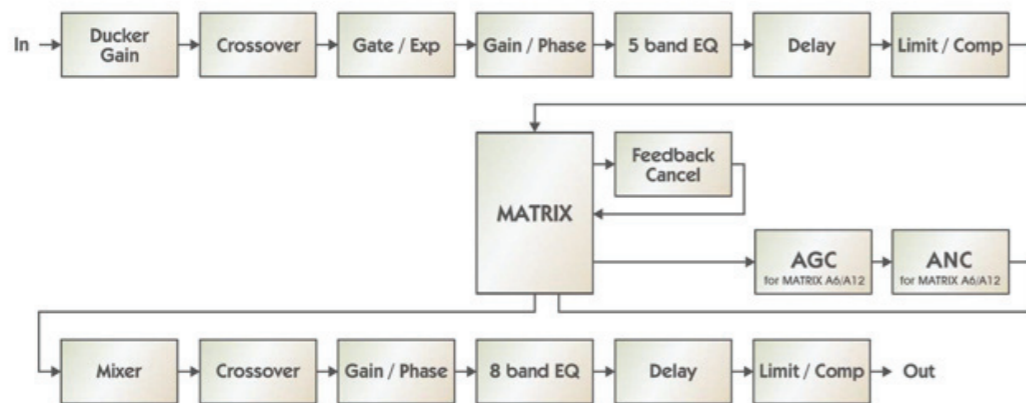
All functionalities can be configured with the PC Editor Software. Settings can be memorized for easy duplication or modification.

Remote Controller

RVC-2000 Remote Volume Controller
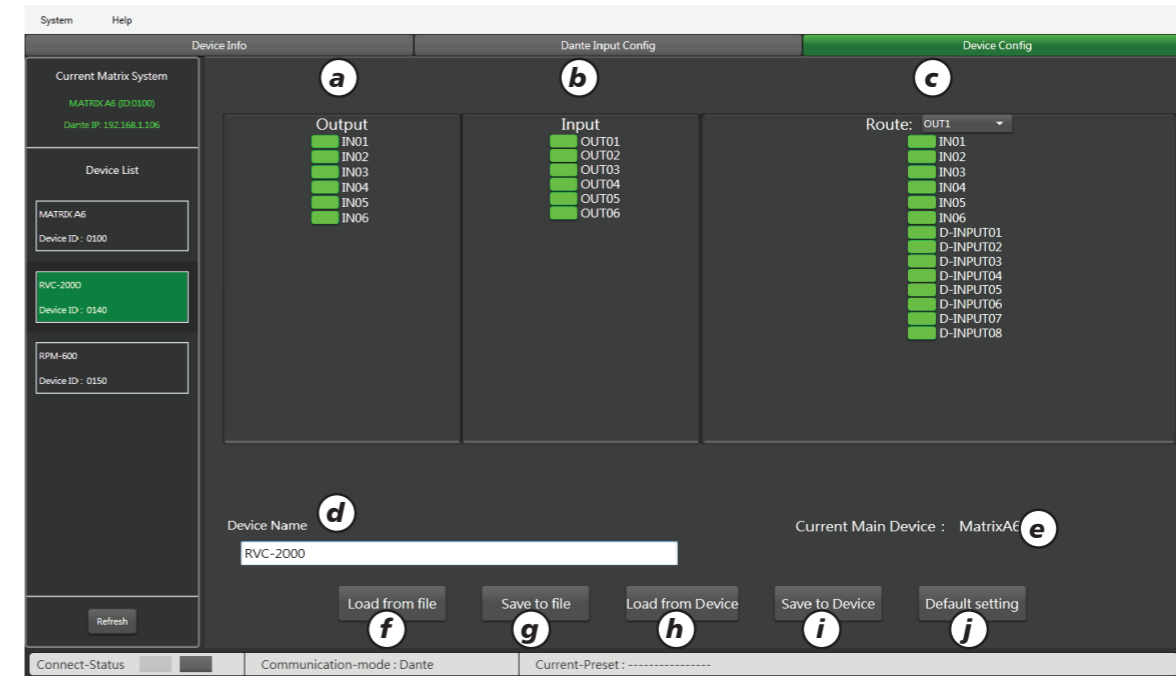
a). **Output:** Total 6 output channels from CH1 to CH6. Green box means available channel, And grey box mean disable channel.

b). **Input:** Total 6 input channels from CH1 to CH6. Green box means available channel, And grey box mean disable channel.

c). **Route:** There are total 20 input sources(IN1-6, D-INPUT01-08) as above images corresponding to each output (out1~6, D-OUTPUT01-08), User can select one or more input sources accroding to their needs. Green indicator means available channel, And the grey indicator means disable channel.

d). **Device Name:** It can be customized by user.

e). **Current Main Device:** It means the host which is connected to the current device.

f). **Load From File:** Click it to load previous preset files saved.

g). **Save To File:** Click it to save all preset parameters applied on the current interface for the next use.

h). **Load From Device:** Click it to load related configuration parameters from the device.

i). **Save To Device:** Click it to make all preset parameters effective by saving them into the device.

j). **Default Setting:** Click it to restore default settings.

Remote Controller

Volume Controller RVC-2000

It can be used to adjust the volume applied on any input/output ports of MATRIX A6 and route any inputs to any input ports. E.g: proceed the operation in the "matrix" menu of PC software applied on MATRIX A6.

1). LCD Display

Related device's information shows on the screen, such as firmware version, ID and function menu and so on.

2). Knob Potentiometer

Press it to enter the menu and then select the menu items by rotating it and finally access the selected function item by pressing down it.

It interface is the same as the controlling interface of PC software. Details as the descriptiong of controlling page of RVC-2000.

3). RD Port

INPUT: Used to connect with host or other devoces when only one or multiple RVC-2000 connected to the system separately.

LINK: Used to connect the next device in serial.

Remark: The maximum length of CAT 5e cable is 200 meters.

4). It is necessary to connect with 24V external power via this port when the length of cable is beyond than 200 meters.

Features

3. Networks

MATRIX A6 uses four types of network connections:

• CP/IP for LAN control

• RD Ports are dedicated to connect the Remote Control Device of Matrix system such as RVC-2000, RPM-600 and power these devices. There are total 4 ports like this built on the host (MATRIX A6) and used to connect with the remote devices. If much more remote devices need to be connected, It is necessary to expand these ports by multiple hosts (MATRIX A6) linked.

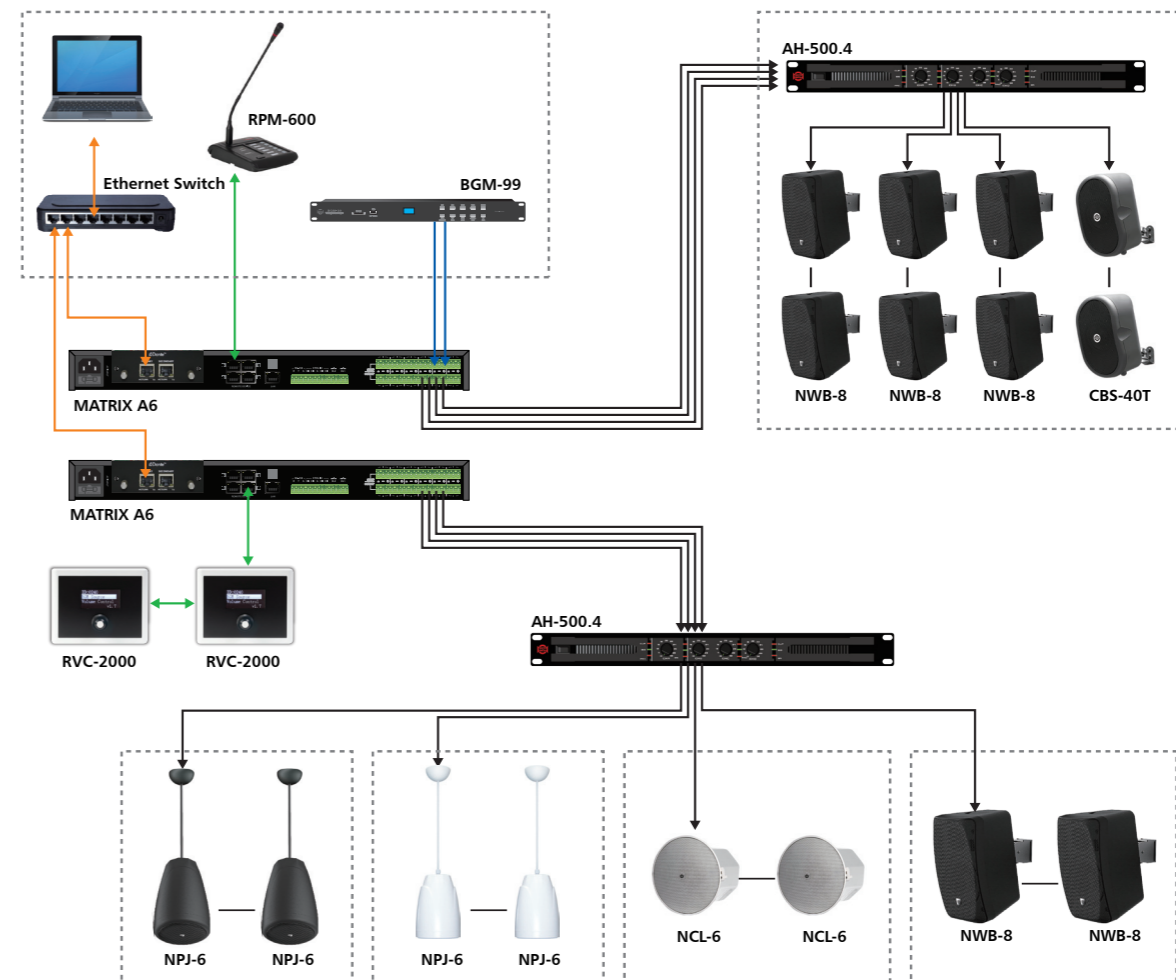• DANTE32S for multi-channel digital audio transport.

Cable connections for Remote Controllers (RD ports)

Use shielded CAT 5e (or better) cable to connect the remote controllers to the RD ports. The maximum transmission distance is 200 meters.
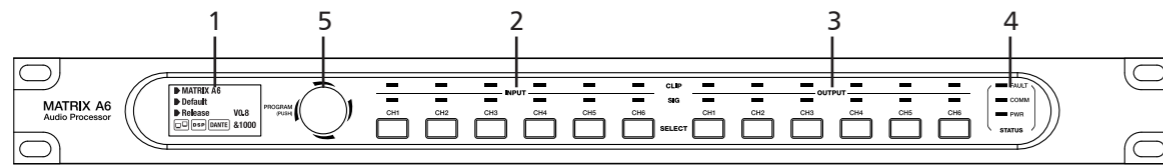
Attention:

Don't connect a RD Port to the router, or this can damage your devices.
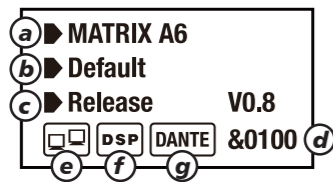
Hooking graphic illustrates:

Front Panel Description

Remote Controller

1. LCD Display
It displays device information, such as device name, firmware version, ID or communication states.

a). Device name
b). Current preset
c). Current firmware version released.
d). Current ID, The ID can be obtained automatically when the device is connected correctly.
e). The connection indicator between PC and device. When the connection is normal, both icons in the box will flash alternately.
f). DSP connection indicator. In case of problem inside unit, "DSP!" icon will appear.
g).Optional DANTE32S card indicator. The "DANTE32S" icon will apear once the card is available in the rear slot.
Remark: The full-lighting screen's brightness will go down by about 10% if none any button operation /Paging activation/GPIO activation/GPIO activition/PC software connection applied on the host or other linked devices during 30 seconds.

2. Analog
Analog input indicator. The green lighting indicates the presence of signal. When the input signal clips. The red will light.

3. Analog
Analog output indicator. The green lighting indicates the presence of signal. When the output signal clips. the red will light.

4. Status
• FAULT
The red LED indicates the presence of DSP fault, The "DSP !" icon will appear on the LCD display simultaneously.
• COMM
The green LED indicates the normal communication between PC and your device. The green will flash if the Data is being transmitted.
• PWR
The blue LED indicates th unit is powered.

5. Rotary potentiometer
Press it to access the menu, Then rotate it left or right to select the submenu, Finally press it to enter the related function option and set it.

a). Up to 96 zones can be setup and the maxium number of output ports can be controlled by each zone key is 300 PCS.

b). There are 300 output ports corresponding to each zone key. That if the indicator of corresponding output port lights green means it is selected as output port of this zone.

c). **Key function:** Zone selection and message broadcast.

d). **Message Selection:** It is necessary for the message broadcast as one of key function to be activated. The audio-file range of message selection is from 1 to 32.

e). **Filter function:** All and display the ones selected involved.

f). **Clear All:** To clear all preset or configuraiton applied on the current zones.

g). **Select All:** To select all 300 configuration outputs of the current zones.

h). Device's name can be customized by user.

i). **Priority:** The priority range of system can be customized from 1 to 128 .

j). The volume of voice can be adjusted from -10dB to 0dB.

k). The volume of MIC can be adjusted from -10dB to 0dB.

l). **MIC's key:** It is available to enter two modes (PPT and LOCK) by pressing the keys. Long-time press for PPT mode and short-time press for LOCK mode.

m). **Default setup:** Press it to set all presets as the default except device name, channel name and device's passwords.

n). **Save project preset:** Press it to save all curent preset parameters into device in order to be used conveniently next time.
Load project preset: Press it to save all current preset parameters into device to make them effective.

o). **Load to device:** Press it to import all presets saved on the previous time.
Load from device: To get all configuration status applied on the current device.

Remote Controller

Zone-selection Expander
The Zone-selection Expander works as a expansion unit for the RPM-600. Up to 8 expansion units can be added, expanding the available function keys to up to 96 per units.
Just suggest to add or remove some zone-selection expander under the power-off status in order to avoid any wrong operation.

1). Connection cable (on the bottom)
Port 1: Connected to remote paging microphone or previous zone-selection expander.

2). Connection cable (on the bottom)
Port 2: Connected to the next zone-selection expander.

3). Indication Lable Holder
It is used for marking purposes by writing down the name, purpose of the indicator,etc. or paste a label on the holder directly.

4). Broadcast Zone Indicator
The LED lights to indicate the corresponding broadcasting zone.

5). Zone Selection Indicator
The LED lights to indicate the corresponding selected zone.

6). Selection Key

The PC software Configuration Interface applied on RPM-600
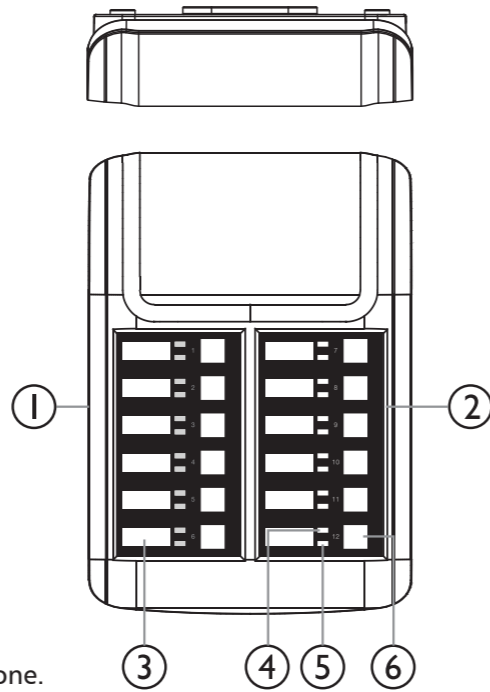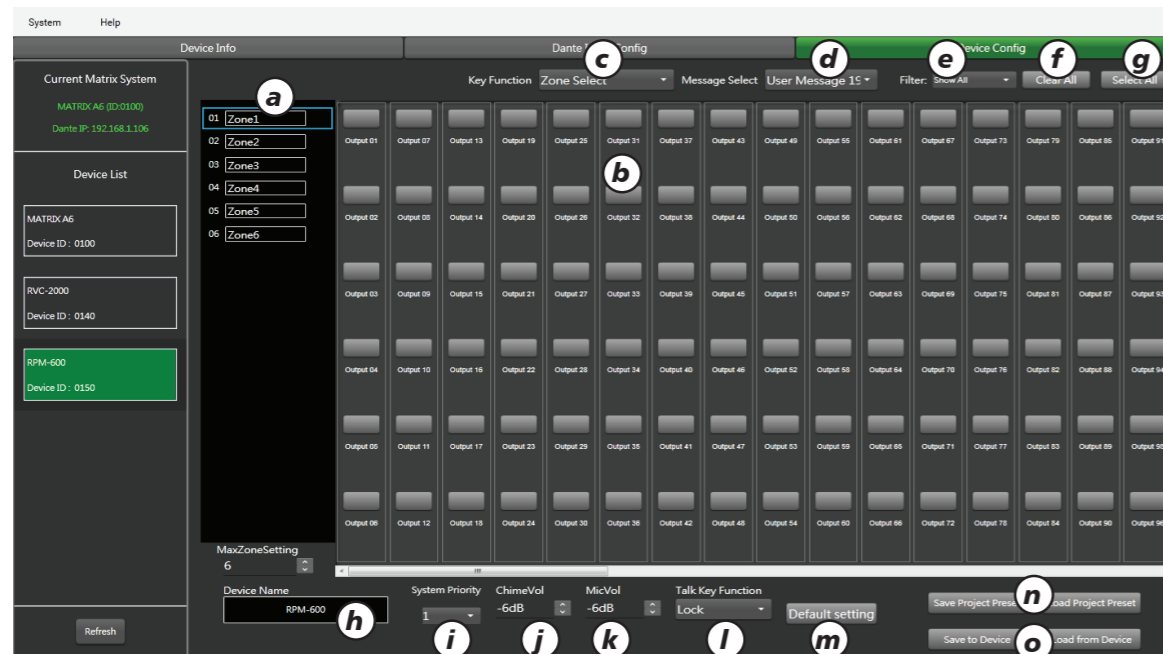
Rear Panel Description
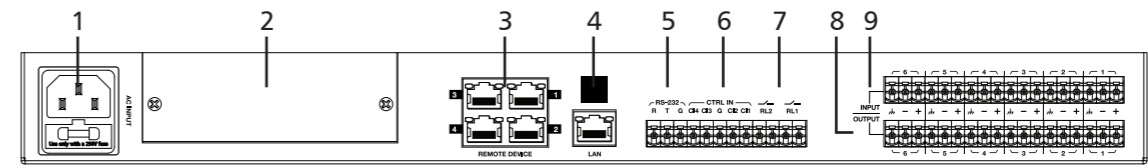
1. Power socket
The power socket must be used with a quality cord. In case of failure the cord must be replaced. Do not try to fix it. The supply voltage is between 100V and 240 VAC, 50-60 Hz, depending on different countrires or regions.
The socket includes the fuse compartment. When changing it. make sure to replace it with a model of the same characteristics.

2. Optional Module Compartment
This location is reserved for the optional DANTE32S card. However, It can be used by other expansion modules.

3. RD port
It can be used to connect with remote controller such as RPM-600, RVC-2000.

4. LAN network
The port is used for the Ethernet connection. One of two LED indicators included in the port will light once plugged, the green one indicating the good connection to the netwrok and the yellow one indicating the good data transmission.
• If the yellow lights off, there is a transmission problem; If on, with Green LED off, the device has detected the network,but none connection.
• That the Green lights on means the network connection is correct.

5. RS232
The port is used to control the parameters of MATRIX A6 remotely. For example to change preset value or gain value of one channel. Details as the list of control commands in appendix.

6. CTRL IN
According to different PC software, The one of 4 corresponding ports to "CTRL IN" will be grounded to trigger. (Details as system configuration interface)

7. Control output
Once one port is grounded to trigger, it will output signals. Usually we use it as the switch of third-party equipment.

8. Output
6 PCS of balanced analog outputs included in Euroblock connector.

9. Input
6 PCS of balanced analog inputs included in Euroblock connector.

Software Editor

Introduction:
Once the connection among devices completed, Enter the software controlling interface of Matrix A6. The initial interface will be shown as below:
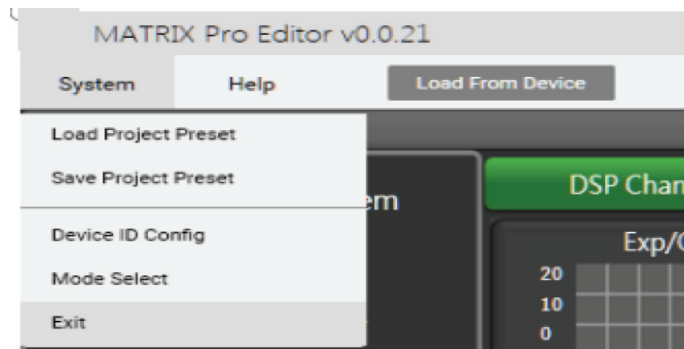

There are total 4 kinds of modes, User can select the mode according to different connection-way among devices. (following application based on standalone mode).
Firstly click "refresh"box to refresh current network.
Select one mode from 4 kinds of modes.
Click "Enter" box to access the software interface.

The software home page as below image:
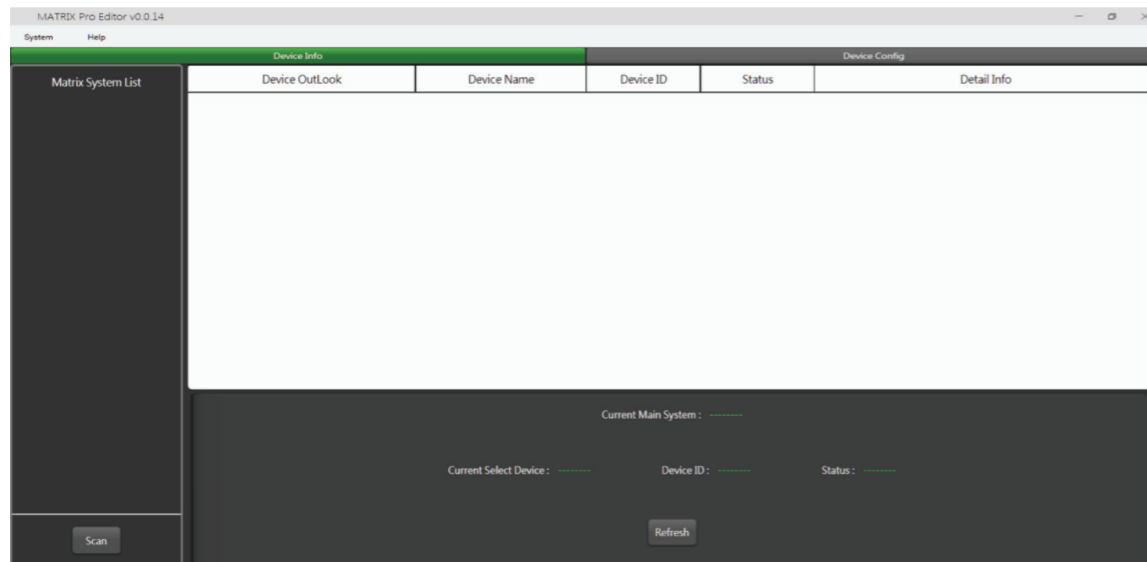
5.1. System introduction

Remote Controller

RPM-600
As one remote paging microphone which can control the zones' numbers up to 96 PCS. Up to 300 output ports can be expanded by each zone. The number of zones is decided by the Q'TY of the host MATRIX A6 linked. Up to 6 PCS of RPM-600 can be used with this system in order to provide the possibility to connect more message zones for convenience.

1). Indication Lable Holder
It is used for marking purposes by writing down the name, purpose of the indicator,etc. or paste a label on the holder directly.

2). Power Indicator
The green lights when the unit is powered normally.

3). Communication Failure Indicator
The yellow will flash when one failure is detected during communicating.

4). Area control indicator for Broadcasting /General message broadcast
The green lights once the selection of broadcasting area is completed.
The red lights when the message broadcast is triggered.
The function assigned to each key is determined by PC software settings.

5). Talk Key
This key is used for the general microphone broadcasting annoucement. Press the key after broadcasting area selected and then can broadcast to the selected area.

6). General Fault Indicator
The yellow blinking means the system failure happen.
The solid yellow indicates the failure mutes.

7). MIC Status Indicator
The green blinking means the broadcast is suspended.
The solid green lighting indicates it is broadcasting via microphone.

8). Emergency Indicator
The green will flash if the system falls into the emergency mode.

9). The expander port of zone selection (The bottom)
The port used to connect both expander and remote microphone.

10). Power Input Port
An external-input 15V DC adaptor needs to be added once the distance is more than 200 meters between the last remote paging microphone or emergency microphone and the amplifier host or zone-extending amplifier.
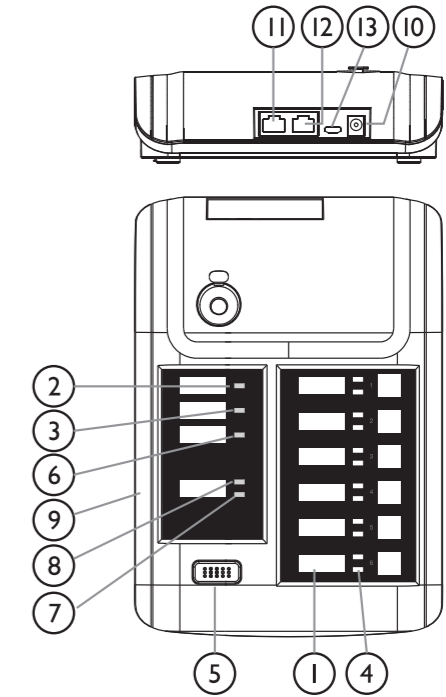
11). LINK Port
It is used to connect with the next equipment.

12) INPUT Port
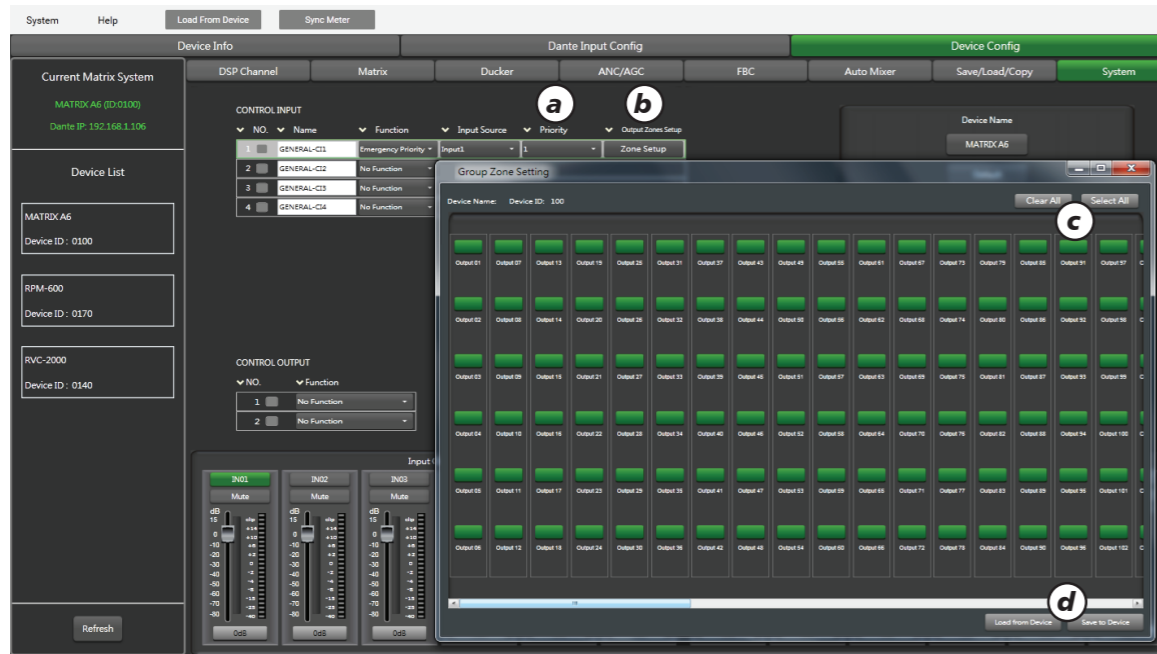The Port is used to connect with the host or the front equipment.

13). USB Port
User can update the voice message by the USB port.

Software Editor

1.4). After "Emergency Priority" selected, below interface will appear:

a). Priority: User can set the priority from 1 to 16 and the larger number selected means the higher priority set.

b). Output Zone Setup: User can select the output zones from 1~300 ports according to acutal situation. All selected by default, And the box corresponding to the output ports selected will light green.

c). Clear All: Click it to eliminate current output zone setup.

Select All: Click it to select all 300 ports as current output zones.

d). Load From Device: To get current device's configuration status.

Save To Device: Click it to save and make them effect after related settings applied on the output port of the current interface is set.

2). CONTROL OUTPUT: There are total 2 external output ports such as control output NO.1 and control output NO.2.

Once the output port is triggered sucessfully, the corresponding box will light green and one shorting singal will output from the port.

3). Device Name: The device name (MATRIX A6) can be customized by the user.

Default: Click it to restore factory device name.

4). Restore Default Setting: Except device name/channel name/device passwords, others can restore to the default settings.

Restore To Factory setting: Clear all current settings as well as default value involved.

5). Password setting: Click it to modify current passwords.

Lock system: Click it to lock the system (remark: super passwords: MA06).

6). Sampling ratio: 48K and 96K as optional items. The ANC/AGC won't be applied on the system once the 96K selected,

Software Editor

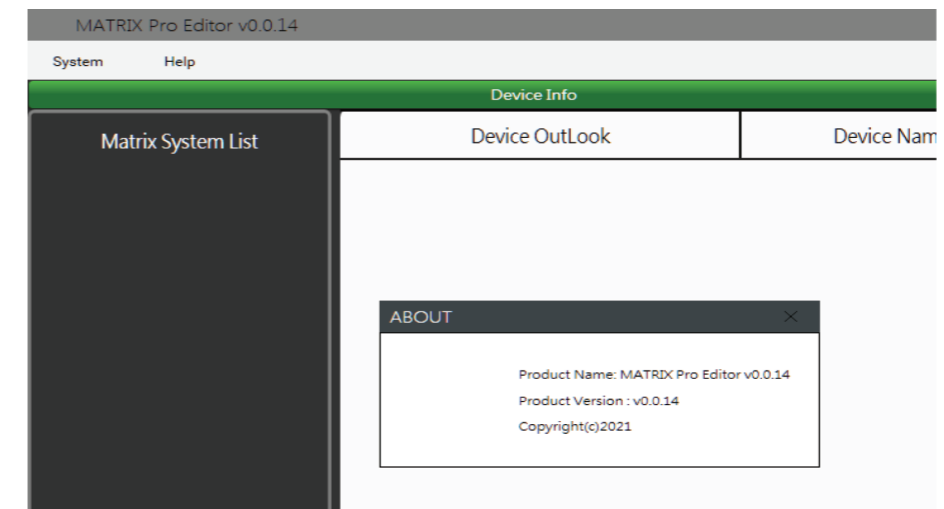**Load project preset:** Enter it to load local preset files.
Save project preset: Enter it to save current preset into software.
Device ID config: When multiple devices are used simultaneously, enter it to custom Device ID.
Mode Select: Enter it to switch current mode.
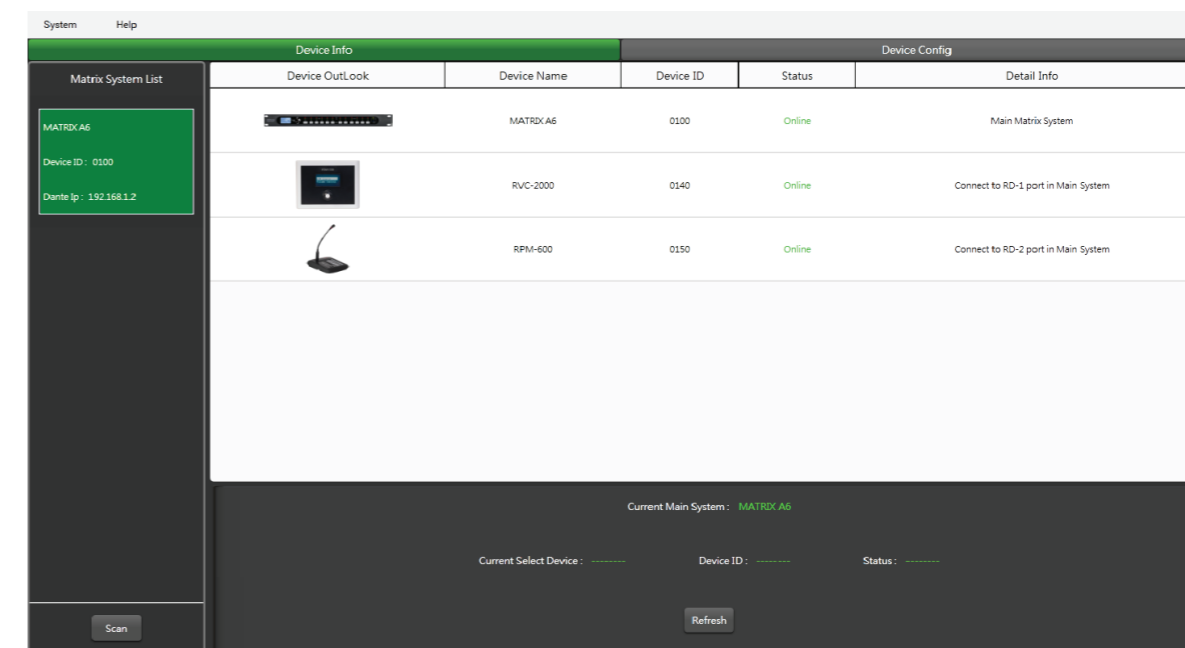**Exit:** Exit current software surface.

5.2. Help

Click "Help" menu to display the name/version/copyright of current software.

5.3. Scan connection

Click the "scan" box on the left bottom, All devices connected to current system will be listed on the screen, dual click to select the main system MATRIX A6 to enter configuration interface.

Software Editor

5.4. Configuration interface of DSP input channel
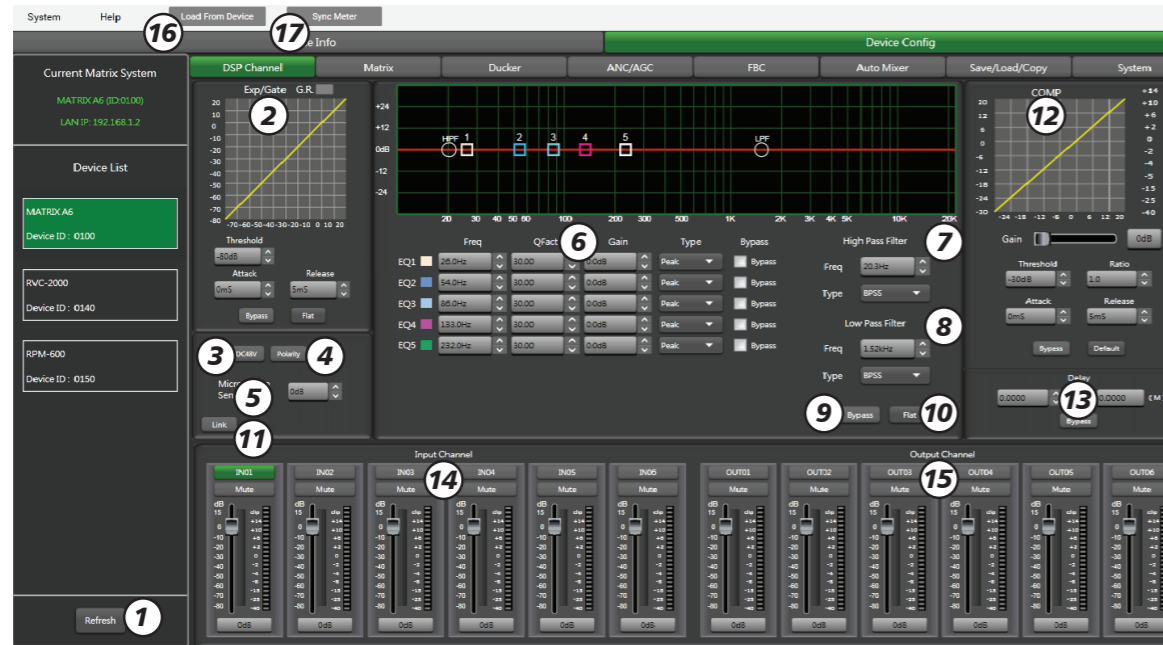
1). Refresh: Refresh the device list.

2). EXP/Gate: An Expander is used to add dynamic to a signal. When the signal is below a certain threshold the expander boosts the input signal with a determined ratio. When the signal is beyond the threshold, the output signal remains identical to the input signal. By adjusting the value of the ratio to its maximum, the Expander is transformed into a Noise Gate.
Threshold: -80dB to +20dB
Ratio: Gain ratio between the input signal and the amplified signal, from 1:1 to 10:1.
Attack: Reaction time when the signal is below the specified threshold, from 0 to 250ms
Release: Reaction time of the Expander when the signal passes beyond the specified threshold from 5ms to 2000ms.
Bypass: Press this button, the function of this area is invalid.
Default: Restore this area to default settings.

3). DC48V: 48V phantom power for electric microphone. Note that this button is only used for external condenser microphone, otherwise it may damage your device.

4). Polarity: inverts the phase of the signal by 180°.

5). Microphone Sensitivity: Input sensitivity for a microphone, from -48dB to 0dB.

Software Editor

5.12. System configuration interface

1). CONTROL INPUT: There are total 4 external trigger ports from controlinput1 to controlinput 4. Once trigger command received sucessfully, The corresponding box of NO.1~NO.4 will light, It means the preset functions take effects on the corresponding trigger port .
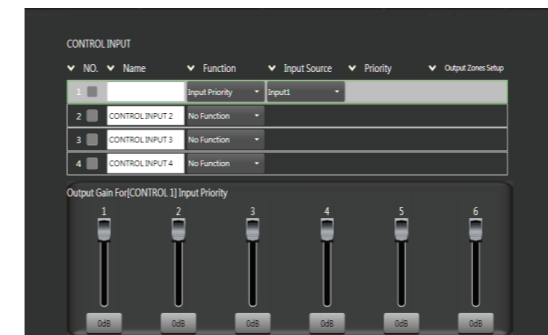• **Name:** the name of trigger port can be customized by user.
• **Function:** Click the drop-down arrow to have 4 optional function items as below details:
1.1). No Function
1.2). Mute All Outputs
1.3). Input Priority, Below interface will appear if it selected.

a) **Input Source:** Click the drop-down arrow to select input source from None, Input1-6, D-Input 1-8.
b) **Output Gain:** The output gain of CH1~6 corresponds to input priority of CONTROL 1~4. (i.e. the grounded device's port of the CTRL IN correspondes to trigger port 1~4).

Software Editor

5.11. Save/Load/Copy configuration interface
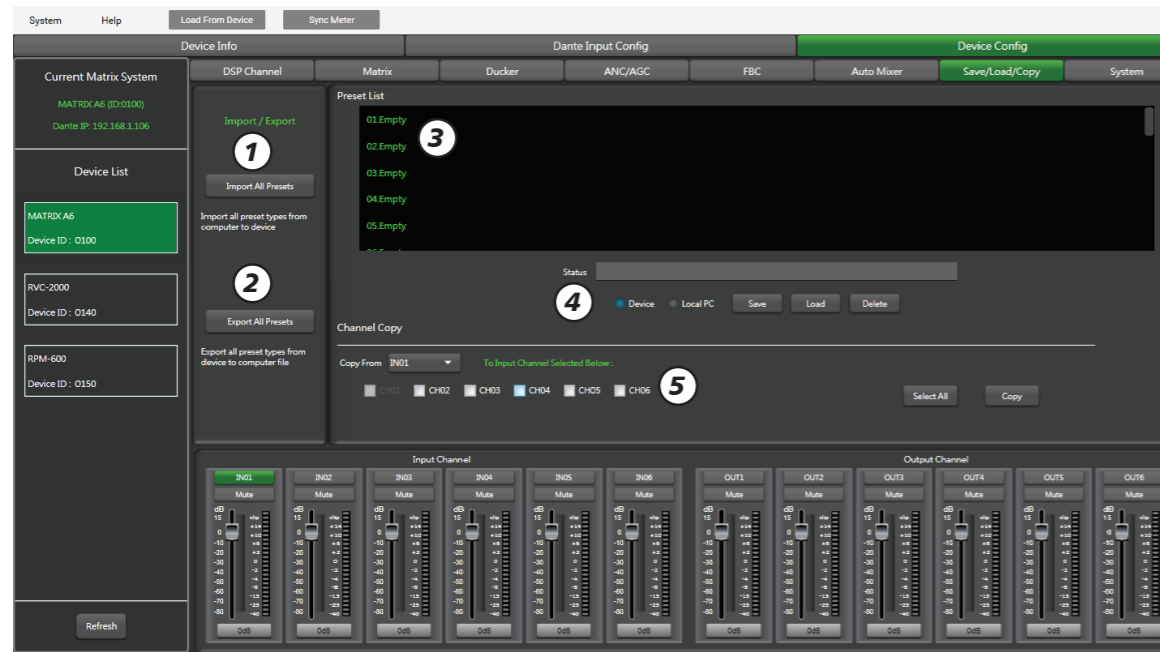
This menu is used to manage the backup parameters. These data can be stored directly in the internal memory of host as a preset. Its memory contains a total of 24 presets.

1). Import All Preset: Import all preset types from device to computer file.

2). Export All Preset: Export all preset types from computer to device.

3). Preset List: The preset list shows all saved presets(total 24 presets). The status below shows the current operating status.

4). Device/PC
• Save: Select the preset you want to save, choose to save to local or device, and then click "Save" box.
• Load: You can choose to load parameters from the machine / PC.
• Delete: Click this button to delete the selected parameter in the software list.

5). Channel Copy
• Input / output channels (CH01~CH06) can be selected and copied to any channel (1~6) in the check box. (DSP settings, Gain, Mute).
• **Select All:** Click this button, all CH01~CH06 will be selected.
• **Copy:** After selecting the input / output channel to any other channel, click Copy, and the parameter copy is successful.

Software Editor

6). Parametric EQ Setting
The equalizer is used to compensate or alter the spectral characteristics of the signal in order to obtain the flattest possible frequency response. The module here is a parametric 5 bands EQ.
Freq: central frequency of the filter between 20Hz and 20kHz.
Fact: selectivity of the filter(Q). Greater is the value, thinner is the processed part of the spectrum. Can be adjusted from 0.30 to 30.
Gain: Gain or attenuation of the center frequency, from-15dB to +15dB.
Type: Filter type, Peak/Low/High.
Bypass1~5: temporarily cancels the individual processing of filters 1~5 without having to use the general 'Bypass'.

7). EQ: High Pass Filter: Those filters are used to eliminate non necessary frequencies above and below the signal spectrum, in order to avoid any background noise generation due to multi-processing. For instance, a voice microphone will be set to 100HZ.
Freq: Cut-off frequency.
Type: Filter type (total optional 21 types).

8). EQ: Low Pass Filter: Those filters are used to eliminate non necessary frequencies above and below the signal spectrum, in order to avoid any background noise generation due to multi-processing. For instance, a voice microphone will be set to 4kHz for the low Pass.
Freq: Cut-off frequency.
Type: Filter type (total optional 21 types).

Note: The pass filter can be set manually by enter alpha or numeric values, or directly clicking on the frequency-response graph, keeping moving the mouse symbol while holding down the button to make it real.

9). Bypass: the signal is not processed and skips to the next processing module.

10). Flat: all parameters are reset to the factory settings.

11). LINK: After it enables, based on current channel to link with the other channel. Finally related functionalities of both channels will be linked together such as fader, phase,mute,delay and so on.

12). COMP: a compressor can limit the dynamics of a signal beyond a certain level. When the signal exceeds the Threshold it is compressed in a ratio greater than 1. Below the Threshold, input and output signals remain the same. By adjusting the ratio to its maximum value, the compressor is transformed into a limiter.
Threshold: threshold from which the signal is compressed, from -30dB to+20dB
Ratio: Compression ratio. For instance, a 4:1 ratio means that the input level is 4dB above the threshold, the output signal will be 1dB above this threshold. The ratio value can be set from10:1 to 1:1.
Attack: Reaction time of the compressor when the signal is beyond the specified threshold. From 10 to 250ms.
Release: reaction time of the Compressor when the signal is below the specified threshold, from 5ms to 2000ms.
Bypass: Press this button, this area function is invalid.
Default: Restore COMP parameters to default.

Software Editor

13). Delay: 1361.2916ms as the maximum delay time can be set to each channel. It can be used on the simultaneous application of audio/vedio or phase adjustment.
Bypass: The signal is not processed and skips to the next processing module.

14). Input channel 1-6 adjustment: To adjust the gain value, mute or custom channel name applied on corresponding channel.

15). Output channel 1-6 adjustment: To adjust the gain value, mute or custom channel name applied on corresponding channel.

16). Load from Device: Loading related information from device and to be used for sync device settings.

17). Sync meter: Click it to achieve synchronization under the DANTE32S mode.
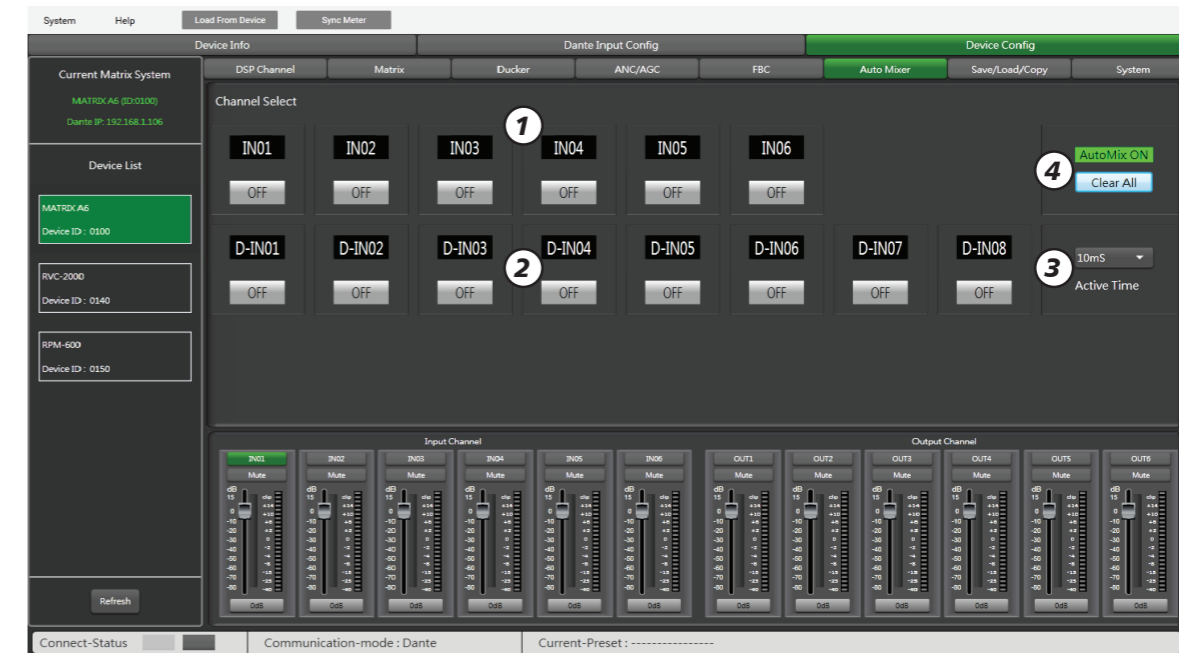
5.5. Configuration interface of DSP output channel

Note: Except "Expander/Gate" part, the same menu as DSP input channel's applied. The EQ parameters here is equipped with 8 bands, Details as introduction of DSP input channel.

5.10. Auto Mixer configuration interface

The Auto mixer automatically reduces the level of a microphone when it is not being used. Consequently it lowers the rumble, reverberation and other extraneous noise that occur when several microphones operate simultaneously.
It is typically used to mix panel discussions on television talk shows and at conferences and seminars.
It can also be used to mix actors wireless microphones in theater productions and musicals.
It is frequently employed in settings where it is expected that a live sound operator will be not present, such as courtrooms and city council chambers.
This function is often used in conjunction with the microphone priority of the Ducker.

1). Local Input: selection of input channels(1-6) to be processed.

2). Network Input: selection of the DANTE32S input channels(1-8) to be processed.

3). Active Time: Set the start mixing time(10ms-6000ms)of the signal of the selected input channel.

4). Auto Mixer OFF/ON: To enable /disable the auto mixing function.
   Clear All: Used to close all input channels.

Software Editor

5.9. FBC configuration interface
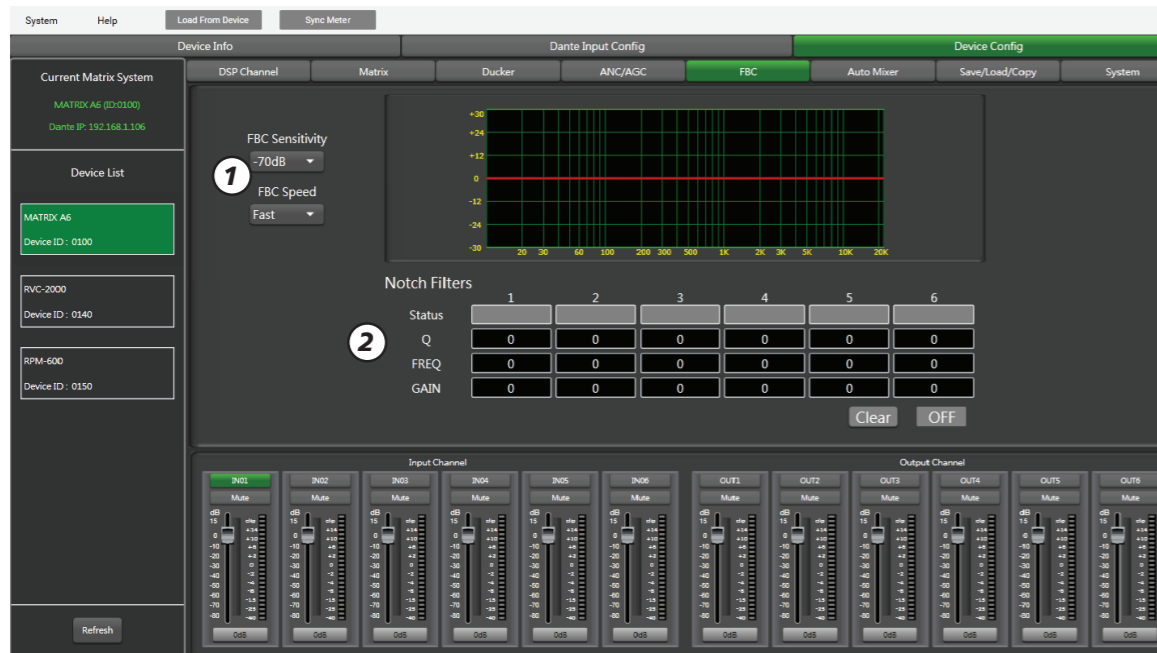
FBC(Feedback Canceller) is a function which eliminates feedback automatically.
Feedback occurs unexpectedly in a system where there are microphones and speakers nearby one of the other.
This loop effect is an electro-acoustic resonance which generates an unpleasant frequency noise.
The FBC automatically detects the frequencies involved and attenuates them almost instantly using a series of selective filters.

1). FBC Sensitivity: The sensitivity range adjusted from -50 dB to -70 dB; To select the slow release speed or fast under the FBC Speed.

2). Notch Filters: Use it to deal with the noise of 6 bands within 20Hz-20KHz frequency range and make recording of related datas and display more intuition and image in the form of graphics and curves.
Clear: Used to initialize all the dynamic and all static filters.
OFF/ON: Used to disable or enable FBC function.

Software Editor

### 5.6. Matrix configuration interface
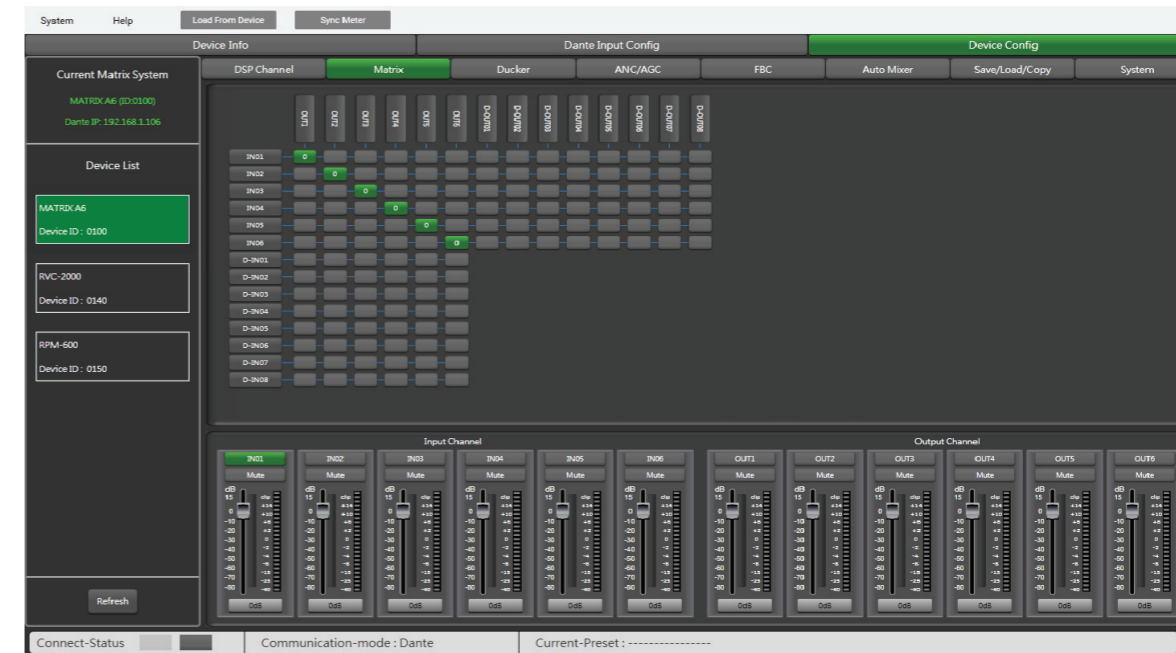
This part of the software is used to route inputs through a graphical representation as a matrix.
By clicking on the gray boxes several inputs can be assigned to several outputs. If the connection is active the box turns green, otherwise it remains gray.
The matrix can route 14 input signals to 14 separate outputs. One talks about a 14×14matrix.

IN(OUT)01 to IN(OUT)06 are analog I/O available on the rear panel.

D-01 to D-08 are DANTE32S digital I/O. They are selectable when using the optional DANTE32S card only.

Software Editor

5.7. Ducker configuration interface
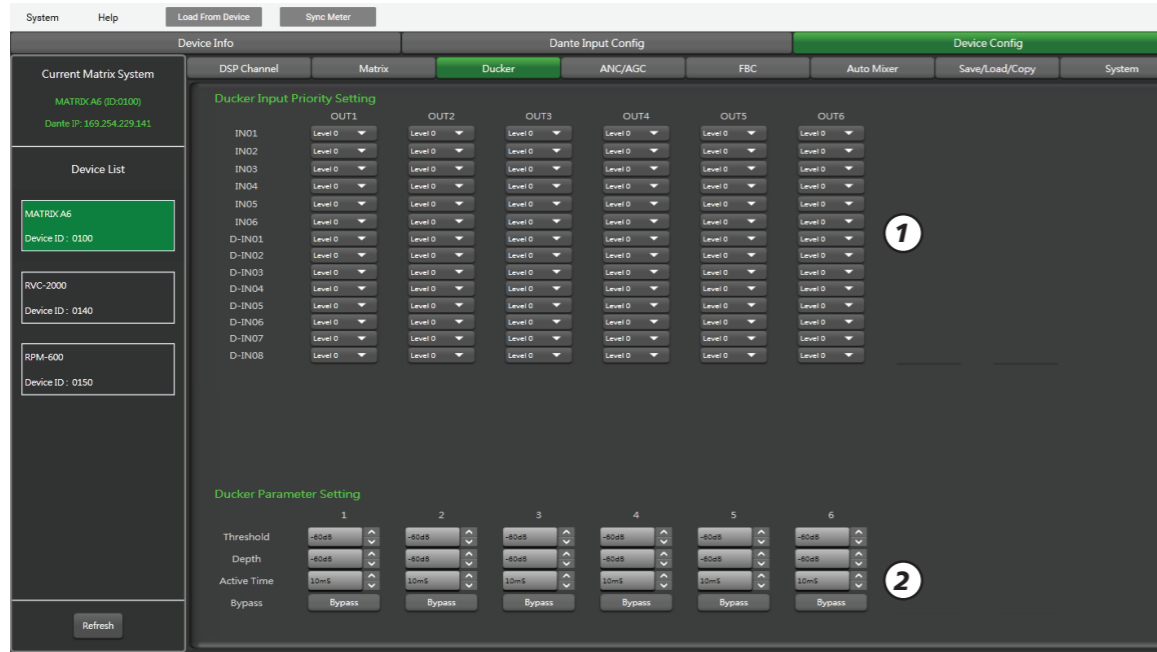
The principle of the Ducker is to attenuate one or several channels when priority signals are activated. The main applications are automatic speech for conference or priority messages.
E.g.Use the host microphone signal to control the background music volume. The host automatically reduces the background music volume when speaking. After the speech, the volume is automatically restored.

1). Ducker Input Priority Setting
Each input corresponds to each output. This area is used to set the priority of input audio 0-15.

2). Ducker Parameter Setting
Threshold: threshold of attenuation. From 0dB to-60dB.
Depth: depth of attenuation.
Active Time: Velocity of gain change to attenuate inputs.
Bypass: Transition time between the attenuated level and return to the normal level.

Software Editor

5.8. ANC/AGC configuration interface

ANC: Proceeding auto elemination of noise. It can be used to eleminate it once the background noise happen in use.
AGC: Proceeding auto control of gain. It can be used to control the gain based on the four point curve value as above images. Once the HF/LF frequency value isn't inconstant with the set value it will be increased or compressed into the limits automatically.

1). Input: Here 6 input channels can be selelcted (CH1~CH6), Grey box means closed channel and green box means the channel opened.

2) ANC OFF: The box lights green when it is enable to control the noise automatically.
 AGC OFF: The box lights green when it is enable to control the gain automatically.
 AGC Default: It will control the gain automatically based on the default preset parameters.

3). Output: Here 6 output channels can be selected (CH1~CH6), Grey box means closed channel and green box means the channel opened.

4). ANC+AGC Module A/B/C
Attack: Reaction time when the signal is below the specified threshold, from 0 to 250ms.
Release: Reaction time of the Expander when the signal passes beyond the specified threshold from 5ms to 2000ms.
X1/2/3/4: Used to proceed gain adjustment based on -85dB~20dB of gain range.
Y1/2/3/4: Used to proceed gain adjustment based on -100dB~20dB of gain range.
Remark: The filter can be set by key-in figures directly or adjusting the 4 frequences in graphics.