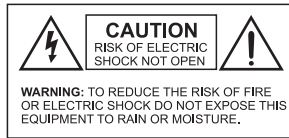


Safety Instructions

READ CAREFULLY THE FOLLOWING INSTRUCTIONS



This symbol indicates the presence of a dangerous voltage.



This made symbol refers to information in the instructions manual.

POWER SUPPLY

Connect the appliance only on a current corresponding to the characteristics listed in the back of the device. Failure to observe this precaution could result in fire or electric shock, or a failure not covered by the warranty.

POWER CORD

Before using the appliance for the first time, check that the supply voltage is consistent with that of the sector. Before connection to the mains check that the power cord is properly plugged. Route the power cord so that it cannot be squashed or bent and keep it away from moisture and significant heat sources. In case of deterioration or failure please contact dealer to replace it with an identical cord. A damaged cord may result in fire or electric shock.

PROTECTIVE GROUND

The appliance must be connected to the ground, don't remove the ground wiring of the power cord connector.

HUMIDITY

Do not expose the unit to rain or moisture and do not place container containing a liquid that might tip over. Do not handle any connector with wet hands. In case of thunderstorm, turn the unit off and disconnect it from any power outlet.

HEAT

Do not install the unit in a place subject to excessive heat or direct radiation from the Sun. Operating ambient temperature must not be below 5 °C (41 °F) or above 35 °C (95 °F).

DAMAGE

Unplug immediately in the event of introduction of liquids or objects in the device as well as in the event of damage to the power cable. Also unplug the unit if it emits smoke, an odor, or unusual noise.

DISPOSAL



This symbol indicates that the disposal of this product is submitted to local regulations. Please contact your local dealer.

RVC-1000 Remote Volume Control	
LCD Display	
• Adjustable volume range:	-∞ - +15dB
Ports	
• RD net to Matrix:	RJ45, 100 m CAT 5e cable (150 m with ground connection)
• RD net LINK:	RJ45, 100 m CAT 5e cable (150 m with ground connection)
Dimensions	
• L x H x D:	147 x 86 x 65 mm
• Net Weight:	0.27kg

RVC-100D Touch Screen Volume Controller	
4.3" LCD Touch Sensitive Display	
• Connection Status	
• ID Number	
• Volume	
• Model	
• Channel Selection	
Ports	
• RD net to Matrix:	RJ45, 100 m CAT 5e cable
• RD net LINK:	RJ45, 100 m CAT 5e cable
Dimensions	
• L x H x D:	150 x 115 x 28mm
• Net Weight:	0.29kg

RD-100EX Remote Ports Expander	
Ports	
• 1 x RD net to Matrix:	RJ45, 100 m CAT 5e cable
• 3 x RD net LINK to RVC-1000 & RVC-100D:	RJ45, 100 m CAT 5e cable
• 1 x RD net LINK to RVA-200, RPM-200 & RIO-200:	RJ45, 100 m CAT 5e cable
Power Supply	
• 24 V/DC	
Dimensions	
• L x H x D:	197 x 44.7 x 135mm
• Net Weight:	0.9kg

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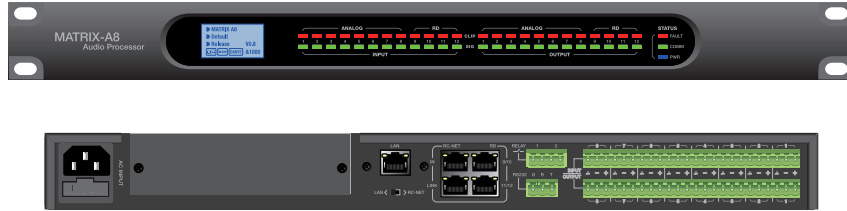
This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

FCC Statement:
 "This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the 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."

A Introduction

Thank you for purchasing the MATRIX-A8. This device is dedicated music, paging, discussion and zone management solutions for Commercial Audio applications.

Easy to use and to implement, MATRIX-8 offers state-of-the-art signal processing in a cost effective package.



MATRIX-A8 is a DIGITAL AUDIO PLATFORM for professional use. It can be used in following electromagnetic environment: residential, commercial and light industrial, urban outdoors. It is the apparatus intended for rack mounting.

“under the EM disturbance, the ratio of signal-noise may be changed above 3dB”

B Main Features

1- 20 x 20 Digital Matrix

Projects using DSP platforms usually require a minimum number of inputs and outputs. This determines the choice of dedicated matrix models. MATRIX-A8 offers a large choice of I/O options in order to cover most of applications:

I/O:

- 8 analogue IN / 8 analogue OUT on rear panel ports
- 4 digital IN / 4 digital OUT via remote panels analog I/O
- 8 digital IN / 8 digital OUT via DANTE optional card

The basic system features 12 IN x 12 OUT. With the DANTE option, it offers 20 IN x 20 OUT. I/O expansion is possible with 16 pcs devices linked together for a maximum of 192 x IN and 192 x OUT.

RVA-200 Remote Volume Control With Audio Out	
Analog Outputs x 2	
• Active Balanced	
• Connectors :	Euroblock 2 x 3-pin, 5 mm pitch
• Impedance:	240 Ohm
• Maximum Output:	+20.0 dBu
• Frequency Response:	20Hz~20KHz,0dB±1.5dB
• Dynamic Range:	-105dB max, A weighted
• Crosstalk:	-79dB max, A weighted
LCD Display	
• Volume range:	-∞ - +15dB
Ports	
• RD net to Matrix:	RJ45, 100 m CAT 5e cable (150 m with ground connection)
Dimensions	
• L x H x D:	147 x 86 x 65 mm
• Net Weight:	0.28kg

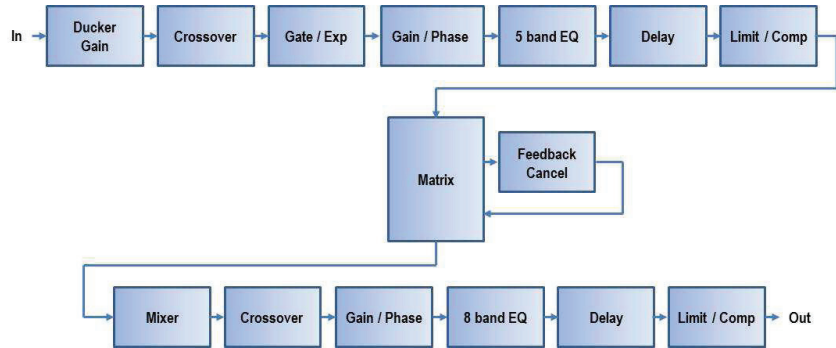
RIO-200 Remote Audio I/O	
Inputs	
• Active Balanced	
• Connectors :	3-pin female XLR, RCA
• Input Impedance :	5.1 kΩ
• THD+N:	< 0.03 % typ 20-20k Hz, 0dBu
• Maximum Input:	20.0 dBu
• Frequency Response:	20Hz~20KHz,0dB±1.5dB
• Dynamic Range:	-105dB max, A weighted
• Crosstalk:	-79dB max, A weighted
Outputs	
• Active Balanced	
• Connectors :	Euroblock 2 x 3-pin, 5 mm pitch
• Impedance:	240 Ohm
• Maximum Output:	+20.0 dBu
• Frequency Response:	20Hz~20KHz,0dB±1.5dB
• Dynamic Range:	-105dB max, A weighted
• Crosstalk:	-79dB max, A weighted
Indicators	
• Signal :	-30dBu Green LED, peak-reading
• Overload :	+17dBu Red LED, peak-reading
Ports	
• RD net to Matrix:	RJ45, 100 m CAT 5e cable (150 m with ground connection)
Dimensions	
• L x H x D:	147 x 86 x 52 mm
• Net Weight:	0.29kg

MATRIX-A8	
Analog I/O 8 x 8	
• Connectors :	Euroblock 4 x 6-pin, 5 mm pitch,
• CODEC :	CS5368-CQZ 24-bit,48K A/D CS4385-CQZ 24-bit,48K D/A
MIC Inputs	
• Active balanced	
• Gain Settings:	0dB to +50dB steps=12dB
• Input Impedance:	6.8K Ohm
• Phantom Power:	+48 VDC
• THD+N:	< 0.03 % ,typ 20-20k Hz, 0 dBu
• Maximum Input:	20dBu(7.746Vrms)
• Frequency Response:	20Hz~20KHz, 0dB±1.5dB
• Dynamic Range:	-126dBu
• Crosstalk:	-70dB max,A weighted 20Hz-20KHz,+20dB, ch to ch
Outputs	
• Active balanced	
• Impedance:	240 Ohm
• Maximum Output:	+20.0 dBu
• Frequency Response:	20Hz~20KHz,0dB±1.5dB
• Dynamic Range:	-105dBu max, A weighted
• Crosstalk:	-79dB max, A weighted
Indicators	
• Signal :	-30dBu Green LED, peak-reading
• Overload :	+17dBu Red LED, peak-reading
DSP	
• Processor :	SHARC ADSP-21489, 450 MHz
• Word Length:	32 / 64-bit Floating Point
Dimensions	
• L x H x D:	483 x 44 x 256 mm
• Net Weight:	4.2kg

RPM-200 Paging Station	
MIC Input	
• Active balanced	
• Connector:	3-pin female XLR, ,(1 Gnd,2 Signal, 3 LED Power)
• Phantom Power:	+12VDC
Indicators and switch	
• LCD Display:	Zone activation
• LEDs:	Signal Status
• Switch:	Push to Talk
Ports	
• RD net to Matrix:	RJ45, 100 m CAT 5e cable
• USB:	For Chimes Sound file (4 seconds)
Dimensions	
• L x H x D:	167 x 66 x 162 mm
• Net Weight:	0.82kg

2. DSP functions

MATRIX-A8 is intended for non-experts. The system used fix 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 functions can be configured with the PC Editor Software. Settings can be memorized for easy duplication or modification:

3. Networks

MATRIX-A8 uses four types of network connections:

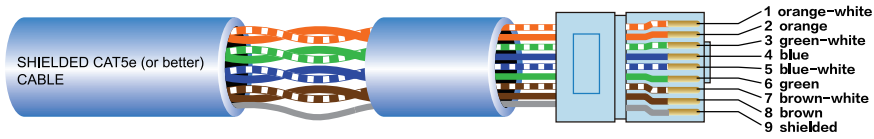
- **RCNET**, based on RS-485 for MATRIX-A8 daisy chain control.
- **RD**, based on RS-485 for panel control and AES3 for digital audio transport.
- **DANTE** for multi-channel digital audio transport.
- **TCP/IP** for LAN control.

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 **100 meters**. If in wall-mounted controllers can be connected to the ground (except the Paging Station), the distance can be increased up to 150 meters.

Never connect a RD port to the router; this can cause damage to the devices.

The port can transmit and receive AES3 plus control signal, the following graphic illustrates the termination and also shows function of each wire pair on the network:



The green pair is reserved for data communications between Matrix A8 and remote device. Data communication is needed to send configuration information, software update and status information from Matrix A8 to remote device.

Note: Configuration information of remote controllers (such LED illuminate status, microphone sensitivity, channel name, etc.) is stored in Matrix A8, not in the remote devices. This makes easy to swap for a new remote box without losing the configured information.

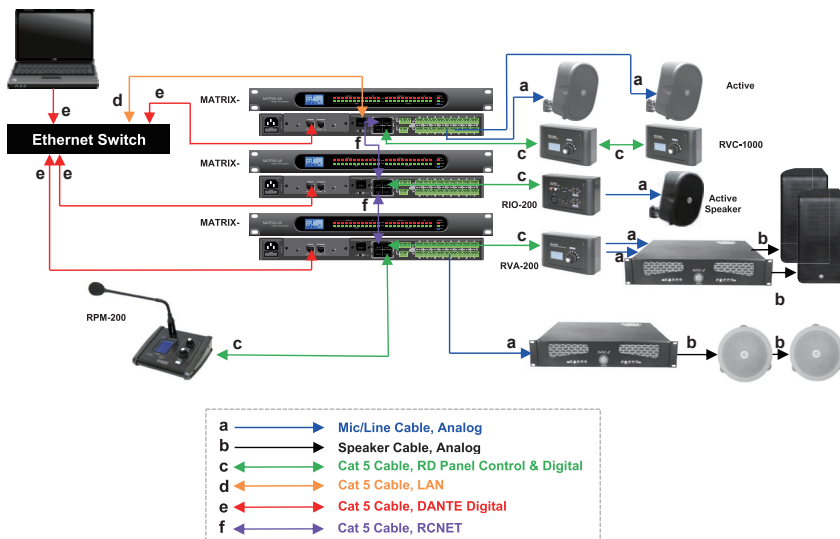
The orange and blue pairs carry two channels each of balanced differential AES3 digital audio. **TX** refers to audio that the remote device sends to Matrix A8, **RX** refers to audio that remote device receives from Matrix A8.

The brown pair provides 24VDC power and ground for the controllers.

Pins meaning of RD port :

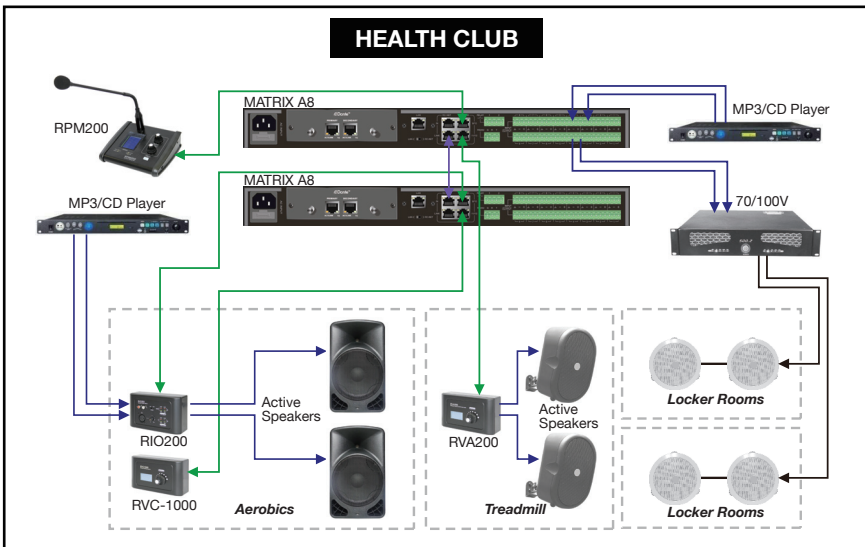
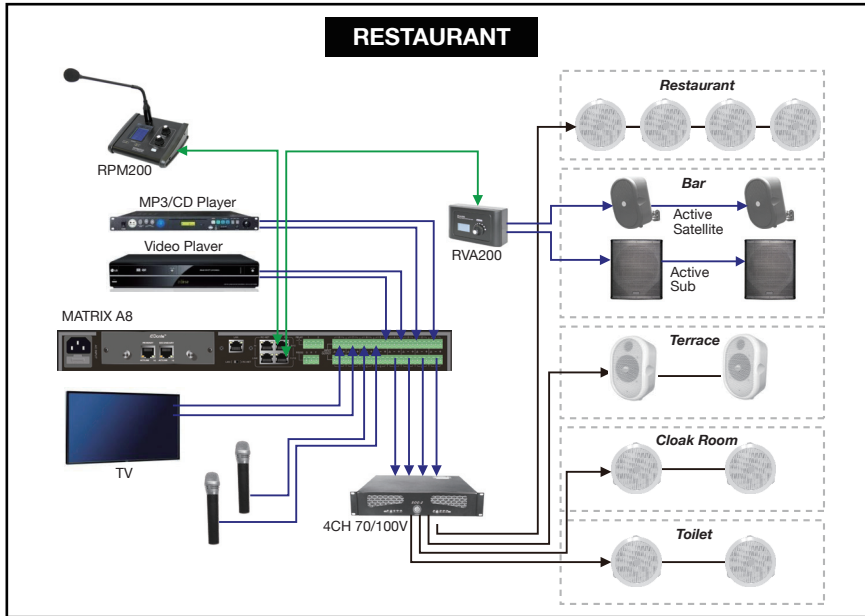
- 1 - AES TX+
- 2 - AES TX-
- 3 - AES RX+
- 4 - RS485 TX
- 5 - RS485 RX
- 6 - AES RX-
- 7 - DC24V
- 8 - GND

Example of connection:

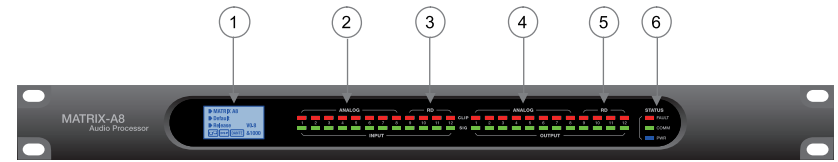


RS232 Codes

No	Start Byte (1 Byte)	Start Byte (1 Byte)	Start Byte (1 Byte)	Length (2 Byte)	Device (2 Byte)	Chan. (2 Byte)	Chan. (2 Byte)	Port (1 Byte)	Type (2 Byte)	Command (2 Byte)	Channel (n Byte)	Value (n Byte)	Std Byte (1 Byte)	Function
1	0x01	0x20	0x03	0x00	0x10	0x00	0x00	0x01 (E) / 100	0x00 LAN 0x70: RS232	0xA5 0xE8	0x00 0x01	Channel 1-12: 0x01-0x0C (1 Byte)	0x40	Input Gain
2	0x01	0x20	0x03	0x00	0x10	0x00	0x00	0x01 (E) / 100	0x00 LAN 0x70: RS232	0xA5 0xE8	0x00 0x02	Channel 1-12: 0x01-0x0C (1 Byte)	0x40	Input Phase
3	0x01	0x20	0x03	0x00	0x10	0x00	0x00	0x01 (E) / 100	0x00 LAN 0x70: RS232	0xA5 0xE8	0x00 0x03	Channel 1-12: 0x01-0x0C (1 Byte)	0x40	Input Mute
4	0x01	0x20	0x03	0x00	0x10	0x00	0x00	0x01 (E) / 100	0x00 LAN 0x70: RS232	0xA5 0xE8	0x00 0x04	Channel 1-12: 0x01-0x0C (1 Byte)	0x40	Get Input Status
5	0x01	0x20	0x03	0x00	0x13	0x00	0x00	0x01 (E) / 100	0x00 LAN 0x70: RS232	0xA5 0xE8	0x00 0x04	Channel 1-12: 0x01-0x0C (1 Byte)	0x40	Receive Input Status
6	0x01	0x20	0x03	0x00	0x10	0x00	0x00	0x01 (E) / 100	0x00 LAN 0x70: RS232	0xA5 0xE8	0x00 0x05	Channel 1-12: 0x01-0x0C (1 Byte)	0x40	Output Gain
7	0x01	0x20	0x03	0x00	0x10	0x00	0x00	0x01 (E) / 100	0x00 LAN 0x70: RS232	0xA5 0xE8	0x00 0x05	Channel 1-12: 0x01-0x0C (1 Byte)	0x40	Output Phase
8	0x01	0x20	0x03	0x00	0x10	0x00	0x00	0x01 (E) / 100	0x00 LAN 0x70: RS232	0xA5 0xE8	0x00 0x07	Channel 1-12: 0x01-0x0C (1 Byte)	0x40	Output Mute
9	0x01	0x20	0x03	0x00	0x10	0x00	0x00	0x01 (E) / 100	0x00 LAN 0x70: RS232	0xA5 0xE8	0x00 0x08	Channel 1-12: 0x01-0x0C (1 Byte)	0x40	Get Output Status
10	0x01	0x20	0x03	0x00	0x13	0x00	0x00	0x01 (E) / 100	0x00 LAN 0x70: RS232	0xA5 0xE8	0x00 0x08	Channel 1-12: 0x01-0x0C (1 Byte)	0x40	Receive Output Status
11	0x01	0x20	0x03	0x00	0x11	0x00	0x00	0x01 (E) / 100	0x00 LAN 0x70: RS232	0xA5 0xE8	0x00 0x09	Local Channel: 0x01-0x1C Novel Channel: 0x1B-0x14 Matrix Output Channel: 0x01-0x14 (1 Byte) Matrix Input Channel: 0x01-0x14 (1 Byte)	0x40	Matrix Mixer
12	0x01	0x20	0x03	0x00	0x10	0x00	0x00	0x01 (E) / 100	0x00 LAN 0x70: RS232	0xA5 0xE8	0x00 0x0A	Matrix Output Channel: 0x01-0x14 (1 Byte)	0x40	Get Matrix Mixer Status
13	0x01	0x20	0x03	0x00	0x23	0x00	0x00	0x01 (E) / 100	0x00 LAN 0x70: RS232	0xA5 0xE8	0x00 0x0A	Matrix Output Channel: 0x01-0x14 (1 Byte)	0x40	Receive Matrix Mixer Status
14	0x01	0x20	0x03	0x00	0x10	0x00	0x00	0x01 (E) / 100	0x00 LAN 0x70: RS232	0xA5 0xE8	0x00 0x0B	Channel 1-12: 0x01-0x0C (1 Byte)	0x40	Input Gain Up, Step1dB
15	0x01	0x20	0x03	0x00	0x10	0x00	0x00	0x01 (E) / 100	0x00 LAN 0x70: RS232	0xA5 0xE8	0x00 0x0C	Channel 1-12: 0x01-0x0C (1 Byte)	0x40	Input Gain Down, Step1dB
16	0x01	0x20	0x03	0x00	0x10	0x00	0x00	0x01 (E) / 100	0x00 LAN 0x70: RS232	0xA5 0xE8	0x00 0x0D	Channel 1-12: 0x01-0x0C (1 Byte)	0x40	Output Gain Up, Step1dB
17	0x01	0x20	0x03	0x00	0x10	0x00	0x00	0x01 (E) / 100	0x00 LAN 0x70: RS232	0xA5 0xE8	0x00 0x0E	Channel 1-12: 0x01-0x0C (1 Byte)	0x40	Output Gain Down, Step1dB
18	0x01	0x20	0x03	0x00	0x10	0x00	0x00	0x01 (E) / 100	0x00 LAN 0x70: RS232	0xA5 0xE8	0x00 0x0F	Channel 1-12: 0x01-0x0C (1 Byte)	0x40	Relay Control
19	0x01	0x20	0x03	0x00	0x10	0x00	0x00	0x01 (E) / 100	0x00 LAN 0x70: RS232	0xA5 0xE8	0x00 0x10	Channel 1-12: 0x01-0x0C (1 Byte)	0x40	Relay Status
20	0x01	0x20	0x03	0x00	0x10	0x00	0x00	0x01 (E) / 100	0x00 LAN 0x70: RS232	0xA5 0xE8	0x00 0x11	Channel 1-12: 0x01-0x0C (1 Byte)	0x40	Get Relay Status
21	0x01	0x20	0x03	0x00	0x10	0x00	0x00	0x01 (E) / 100	0x00 LAN 0x70: RS232	0xA5 0xE8	0x00 0x11	Relay 01: 0x00-0xFF, 0x01-0x1 (1 Byte)	0x40	Receive Relay Status
22	0x01	0x20	0x03	0x00	0x1F	0x00	0x00	0x01 (E) / 100	0x00 LAN 0x70: RS232	0xA5 0xE8	0x00 0x12	16 Chars Device Name - ASCII Code (16 Byte)	0x40	Modify Device Name
23	0x01	0x20	0x03	0x00	0x10	0x00	0x00	0x01 (E) / 100	0x00 LAN 0x70: RS232	0xA5 0xE8	0x00 0x13	Channel 1-12: 0x01-0x0C (1 Byte)	0x40	Get Device information
24	0x01	0x20	0x03	0x00	0x1F	0x00	0x00	0x01 (E) / 100	0x00 LAN 0x70: RS232	0xA5 0xE8	0x00 0x13	16 Chars Device Name - ASCII Code (16 Byte)	0x40	Receive Device information
25	0x01	0x20	0x03	0x00	0x10	0x00	0x00	0x01 (E) / 100	0x00 LAN 0x70: RS232	0xA5 0xE8	0x00 0x14	Channel 1-12: 0x01-0x0C (1 Byte)	0x40	Recall Preset

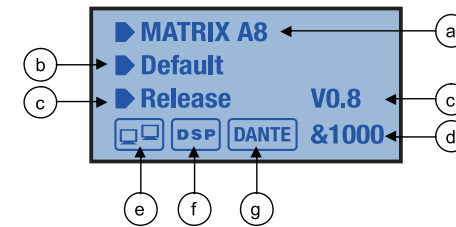


C Front Panel Description



1. LCD Display

It displays device information, such as name, firmware, ID and communication status.



- a. Device name.
- b. Current preset.
- c. Current release software version.
- d. Current ID. The ID is automatically obtained when the device is correctly connected.
- e. Connection indicator between the PC and the device. If the connection is okay, both icons in the box will flash alternately.
- f. DSP connection indicator. In case of problem " DSP ! " will be displayed.
- g. Optional DANTE card indicator. The icon appears when the card is available in the rear slot.

2. ANALOG

Analog input indicators. The Green LED indicates presence of signal, the Red LED indicates signal clipping of the corresponding input.

3. RD

RD digital input indicators. The Green LED indicates presence of signal, the Red LED indicates signal clipping of the corresponding input.

4. ANALOG

Analog output indicators. The Green LED indicates presence of signal, the Red LED indicates signal clipping of the corresponding output.

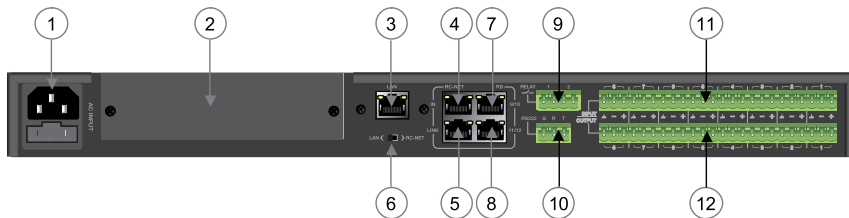
5. RD

RD digital output indicators. The Green LED indicates presence of signal, the Red LED indicates signal clipping of the corresponding output.

6. STATUS

- **FAULT**
Red LED indicating a malfunction of the DSP. The information is relayed on the LCD screen.
- **COMM**
Green LED indicating the communication status between the PC and the device. The LED blinks during data transfer.
- **PWR**
Blue LED indicating that the unit is powered.

D 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 100 V and 240 VAC, 50-60 Hz, depending on countries. 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 DANTE card. However, it can be used by other expansion modules.

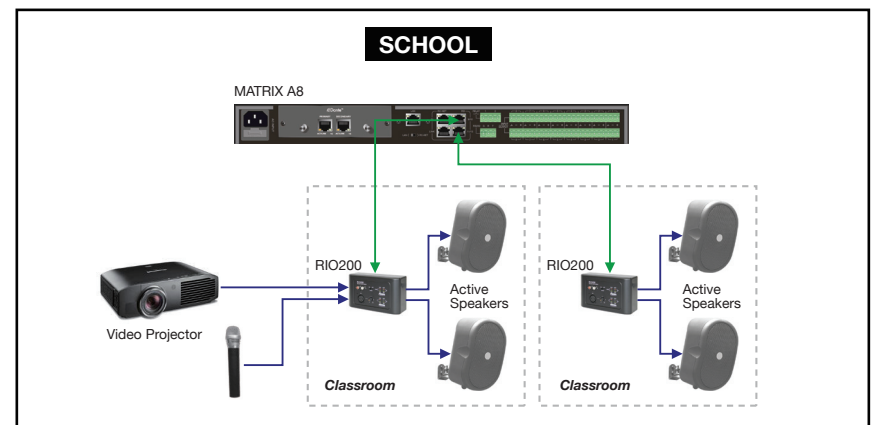
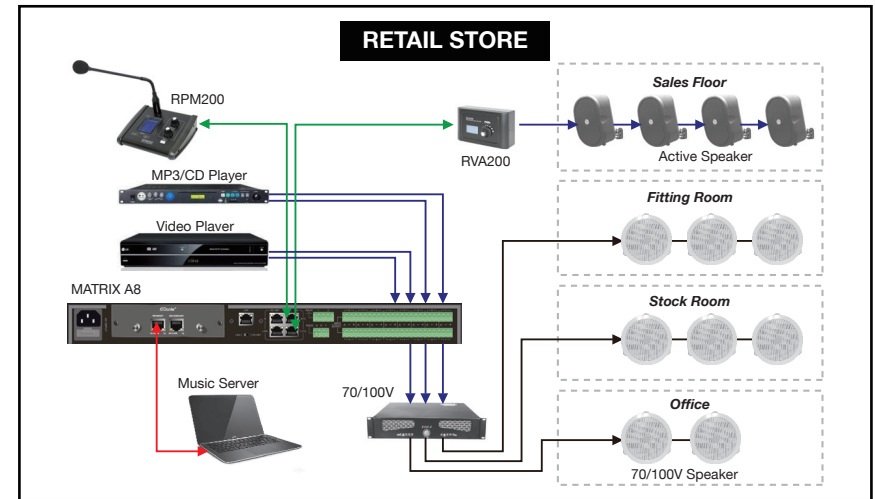
3. LAN

Port for the Ethernet connection. The plug includes two LEDs, a green one indicating the good connection to the network and a yellow one indicating the good data transmission.

- If the yellow LED turns Off, there is a transmission problem. If On, with Green LED Off, the device has detected the network, but there is no connection.
- If the Green LED is on, the network connection is correct.

4. RC-NET / IN

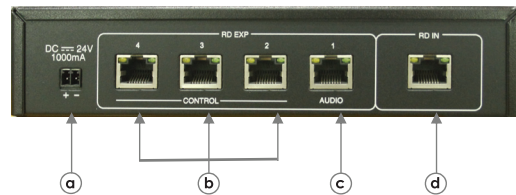
This port transports control and command data based on RS-485 format. It is used to link several MATRIX-A8.



6- RD-100EX Remote Port Expander



The **RD-100EX** is a port expander featuring a star connection of the controllers. This interface is particularly useful when daisy chain between devices is not possible or when the controllers are far away from the host.



- a. 24V DC power supply
- b. RD connections for **RV-1000** and **RV-100D** (control data remote devices only) Up to 8 controllers per ports can be daisy chained.
- c. RD connection for **RAV-200**, **RIO-200** and **RPM-200** (control and audio transport data remote devices).
- d. RD connection with **MATRIX-A8**

5. RC-NET / LINK

RC-NET output port to connect to RC-NET input port (4) of another MATRIX-A8.

6. LAN / RC-NET

Switch to assign either Ethernet or RC-NET format to the LAN port (3).

7. RD 9/10

RD Port to connect remote controllers such as **RIO-200**, **RVA-200**, **RPM-200**, **RVC-1000** and **RVC-100D** (refer to page 21).

This port transmits and receives AES3 digital audio plus control data (refer to pages 5 & 6). RIO-200 for instance, includes A/D and D/A converters for two I/O assigned to channels 9 and 10.

8. RD 11/12

Similar to port RD 9/10 (**7**) but assigned to channels 11 and 12.

9. RELAY

Dry contacts where ON/OFF status can be individually controlled in the **System** menu (Please refer to page 20).

They are generally used as switches for third party electrical equipment.

10. RS232

This interface is used to remotely control MATRIX-A8 parameters, such as a Preset change or a modification of the gain for one channel.

Please refer to Appendix page 33 to consult the code table.

11. INPUT

Euroblock connector including 8 balanced analog inputs.

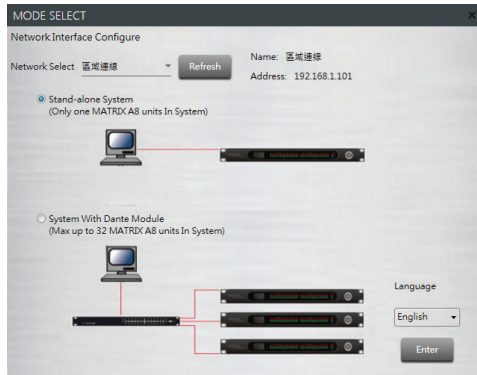
12. OUTPUT

Euroblock connector including 8 balanced analog outputs.

E MATRIX-A8 Connection

Software Function Introduction

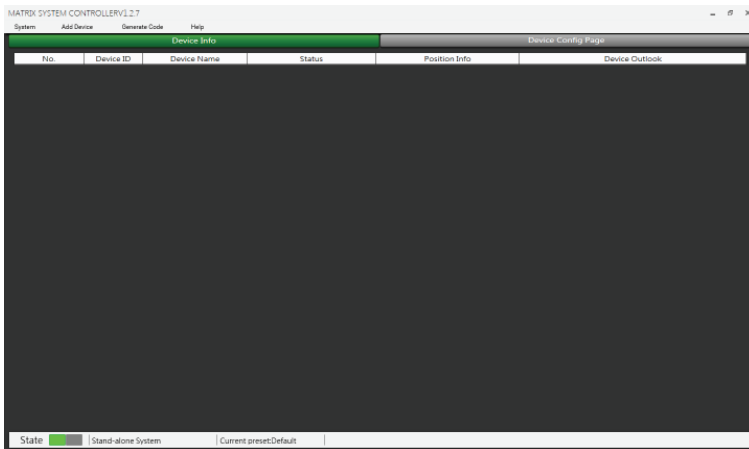
Once the completed the connection.Then you can open the Matrix System Controller . exe.The initial page shows as below:



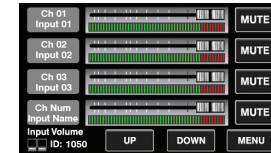
There are two modes here, please select the mode according to the connection of the machine (the example here are stand-alone mode)

- 1) Firstly, Clicking Refresh to refresh the network.
- 2) Selecting the mode
- 3) Choose whether to Load Preset, if you select Yes, it will automatically load last preset. Vice versa.
- 4) The default language is English.
- 5) Click Enter to enter the software.

The software home page is shown in the figure:



In the **Input** section , volume and mute can be adjusted and visually monitored.



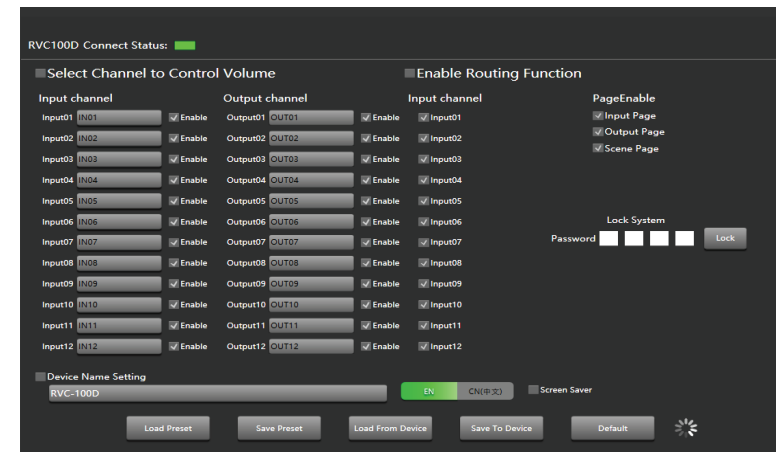
The **Scene** sub menu can call up setting presets memorized in the MATRIX-A8



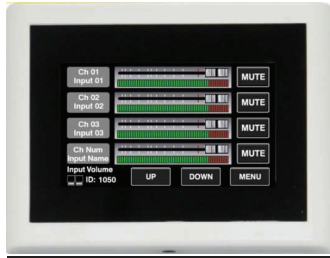
The **System** section displays the firmware version, address and device name. It also switches the language option.



RVC-100D Editor



5. RVC-100D Touch Screen Volume Controller



The **RVC-100D** is a wall mount 4.3" LCD touch screen volume controller. The volume control can be assigned to any output of the host. It can also route any input to any output like in Matrix menu of the Editor Software.

a. RD port IN

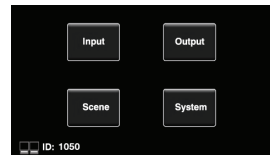
Connection to MATRIX-A8. The maximum CAT 5e cable length is **100 meters**.

b. RD port LINK

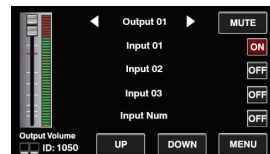
Daisy connection for additional remote controller (8 controllers max).



The device can set up four different sub menu pages, like **Input**, **Output**, **Scene** and **System**.



In the **Output** section, the routing function can assign any input to any output. Volume and mute can be adjusted and visually monitored.



1- System Introduction

MATRIX SYSTEM CONTROLLER V1.2.7

System	Add Device	Generate Code	Help
Open	Device Info		
Save	Device ID	Device Name	Status
Save As...	1000	Matrix A8	Comm
Config Device ID	1090	RPM-200	Comm
Mode / Language Select			Connect to the RD1(9/10) port of Matrix A8 1000
Exit	10F1	RD-100EX	Comm
			Connect to the RD1(9/10) port of Matrix A8 1000

Open: Used to turn on local preset files.

Save: Save the current preset to the software.

Save As: Save current preset to local.

Config Device ID: Used to customize device ID

Mode Select: Switch mode.

Exit: Quit the software.

2- Add Device Introduction

Click Add Device and select Add Online device. The system will automatically search for all online devices and appear in the list.

MATRIX SYSTEM CONTROLLER V1.2.7

System	Add Device	Generate Code	Help
Open	Device Info		
Save	Device ID	Device Name	Status
Save As...	1000	Matrix A8	Comm
Config Device ID	1090	RPM-200	Comm
Mode / Language Select			Connect to the RD1(9/10) port of Matrix A8 1000
Exit	10F1	RD-100EX	Comm
			Connect to the RD1(9/10) port of Matrix A8 1000

There are 6 kinds of machine in the Matrix system. You can select any machine to input ID to view this machine parameter (like Demo).

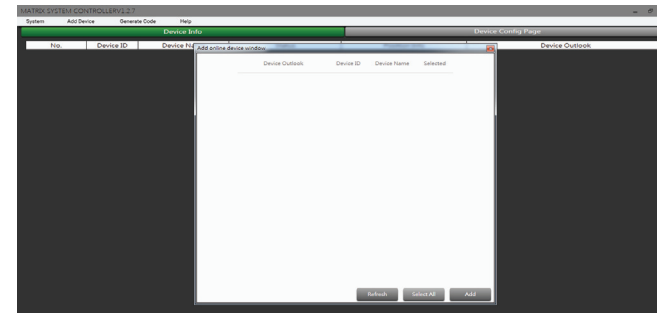
Attention:

Matrix A8: The device can only enter 4 digits (ID with last two digits 0 and less than 8100).

RPM200/RIO200/RVA200: The device can only enter 4 digits (The last two digits are 50, 60, 90, A0, B0, C0, D0, E0, and less than 81E0 ID).

RVC1000/RVC100D: The device can only enter 4 digits (Only the penultimate second digit is 5, 6, 9, A, B, C, D, E. The penultimate digit is less than 9 and less than 81E9 ID).

After adding to the device list, enter the following page:



Refresh: Refresh the current online status of the device.

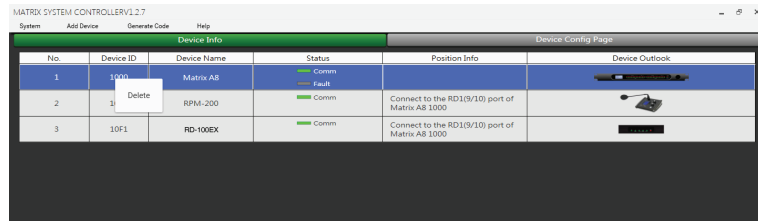
Select All: Select all current online devices

Add: Add the searched device to the device information list.

Selecting the device to add to the information list and enter the following page:

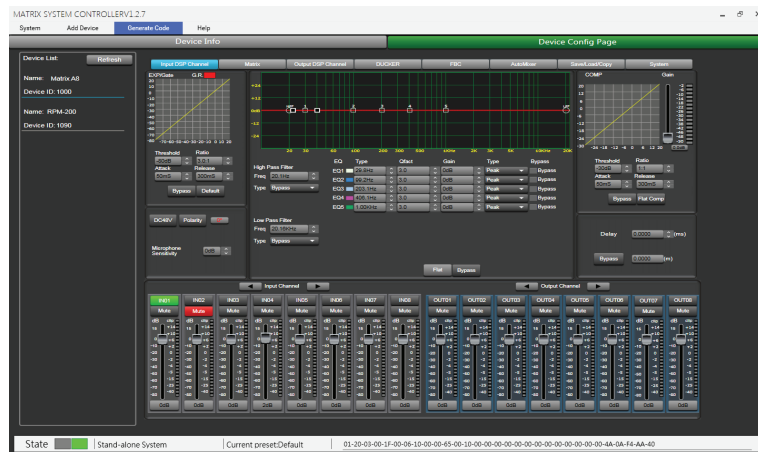
Device Info can clearly and intuitively see Device ID / Device Name / Status / Position Info / Device Outlook of all devices.

If you want to delete one of the devices. First select the left button, then click the right button, the word Delete will appear. Then left click on Delete to delete easily.

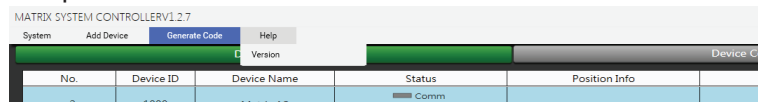


3. Generate Code

When performing any function operation, press this button and the corresponding command will be displayed below the software.



4- Help



Click the Help , a pop-up window will display the name of the current software. Device Config Page

4. RIO-200 I/O Remote



The **RIO-200** is a remote input and output module providing 2 x analog channels IN and 2 x analog channels OUT. The device includes built in A/D and D/A converters processing digital audio AES3 signals from and to the MATRIX-A8.

a. 2 Channel Inputs

A & B analog line Inputs assigned to channels 9/10 or 11/12 of MATRIX-A8.

b. Microphone Input

XLR connector for MIC. If connected, it replaces the A channel input.

c. Microphone volume

Button to adjust the MIC input level.

d. Phantom power

48V switchable phantom power for electret MIC.

e. Signal indicators for the Inputs

Channel A (MIC) and B input signal status indicators for signal presence and clip.

f. Signal indicators for the Outputs

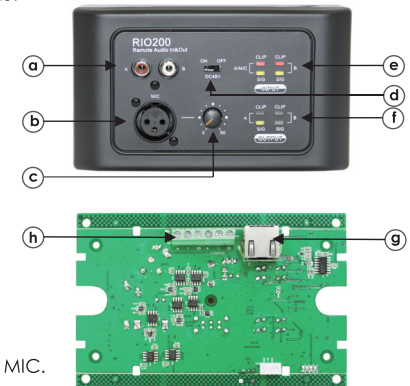
Channel A and B input signal status indicators.

g. RD Port

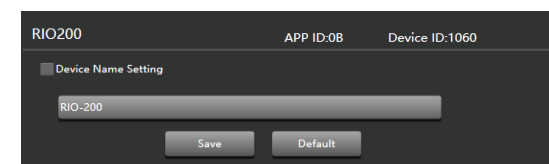
Connection to MATRIX-A8. The maximum CAT 5e cable length is **100 meters**.

h. 2 Channel Outputs

2 channel analog line Outputs assigned to RD port 9/10 or 11/12 of MATRIX-A8.



RIO-200 Editor



3. RVA-200 Volume Controller with Audio Out



The RVA-200 has the same functionality as the RVC-1000 volume control, but it includes 2 additional analog outputs. The device includes a built-in D/A converter processing digital audio AES3 signals from MATRIX-A8.

a. LCD screen

It displays the volume level and the signal level for a dedicated output.

b. Volume and routing control

Turn the button left or right to adjust the volume.

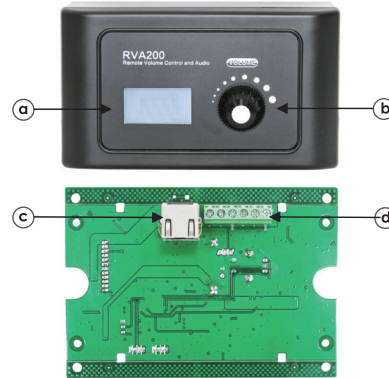
Push the button to access to the inputs and outputs routing function.

c. RD port

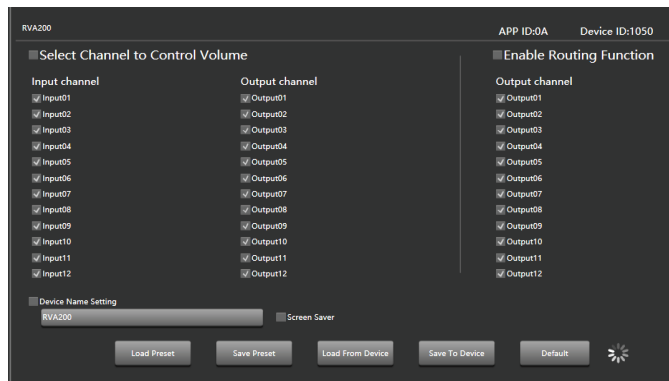
Connection to MATRIX-A8. The maximum CAT 5e cable length is 100 meters.

d. Analog OUT

2 channel analog line Outputs assigned to RD port 9/10 or 11/12 of MATRIX-A8.

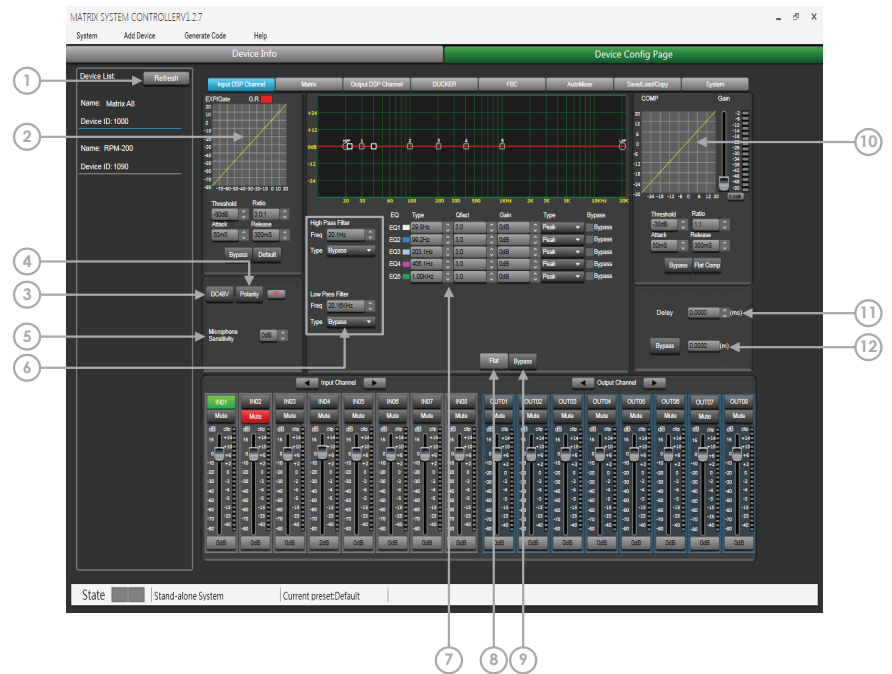


RVA-200 Editor



F Software Editor

1- Input DSP 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 10 to 150ms

Release: Reaction time of the Expander when the signal passes beyond the specified threshold from 10ms to 1s.

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.

6. EQ: High Pass Filter and 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 100Hz for the High Pass and 4kHz for the low Pass.

Freq: Cut-off frequency

Type: Filter type

7. Parametric EQ

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.

- a. **Freq:** central frequency of the filter between 19.7Hz and 20.16kHz.
- b. **Qfact:** selectivity of the filter(Q). Greater is the value, thinner is the processed part of the spectrum. Can be adjusted from 0.4 to 128.
- c. **Gain:** Gain or attenuation of the center frequency, from -18dB to +18dB.
- d. **Type:** Filter type, Peak/Low/High.
- e. **Bypass1~5:** temporarily cancels the individual processing of filters 1~5 without having to use the general 'Bypass'.

8. Flat: all parameters are reset to the factory settings.

9. Bypass: the signal is not processed and skips to the next processing module. Filters can be set manually by entering alphanumeric values, or graphically by clicking directly on the frequency response diagram and moving the mouse while holding the button pressed.

10. 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.

- a. **Threshold:** threshold from which the signal is compressed, from -30dB to +20dB
- b. **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 from 10:1 to 1:1.
- c. **Attack:** Reaction time of the compressor when the signal is beyond the specified threshold. From 10 to 150ms.
- d. **Release:** reaction time of the Compressor when the signal is below the specified threshold, from 10ms to 1 s.
- e. **Bypass:** Press this button, this area function is invalid.
- f. **Flat Com:** Restore comp parameters to default.

11. Delay: A delay can be set for each input up to 1361.2916ms. It can be used for sound/video synchro applications or phase adjustment.

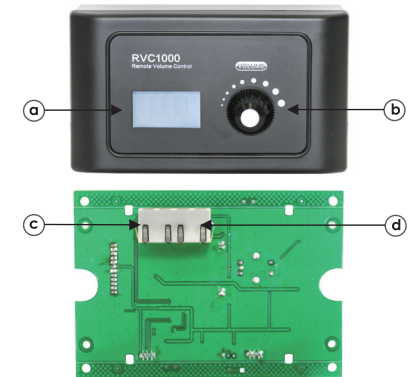
12. Bypass: The signal is not processed and skips to the next processing module.

2. RVC-1000 Volume Controller



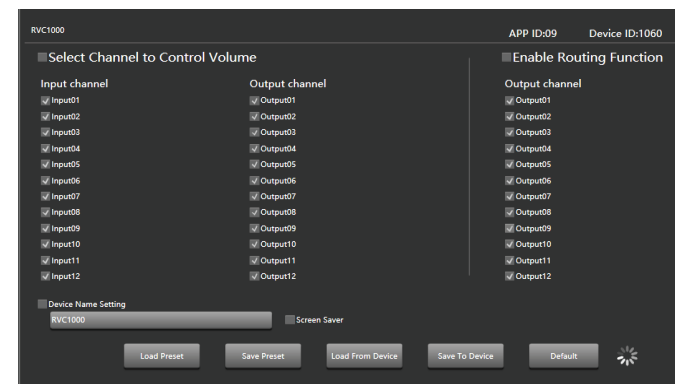
This volume controller can be assigned to any output of the MATRIX-A8. It can also route any input to any output like in the Matrix menu of the Editor Software.

- a. **LCD screen**
It displays the volume level and the signal level for a dedicated output.
- b. **Volume and routing control**
Turn the button left or right to adjust the volume.
Push the button to access to the inputs and outputs routing menu.



- c. **RD port IN**
Connection to MATRIX-A8. The maximum CAT 5e cable length is **100 meters**.
- d. **RD port LINK**
Daisy connection for additional remote controller (8 controllers max).

RVC-1000 Editor



g. XLR connector

Female 3 pin XLR connector for the gooseneck electret microphone. It uses a phantom power controlled by software.

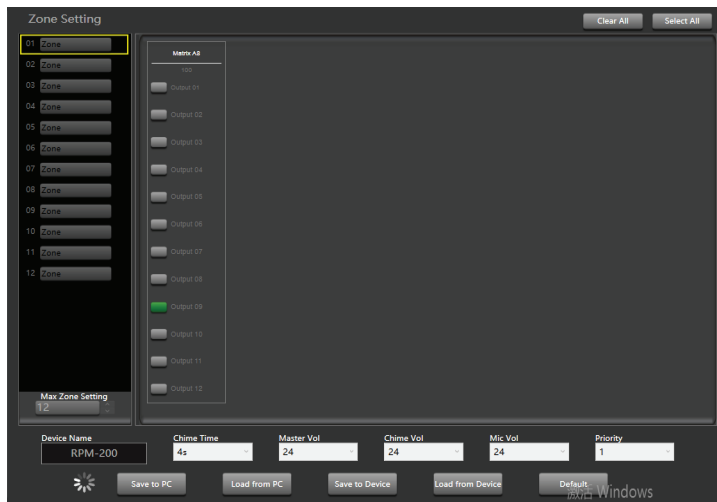
h. USB port

This port is used to load MP3 files for chimes sound. The maximum time for the chimes is 4 seconds.

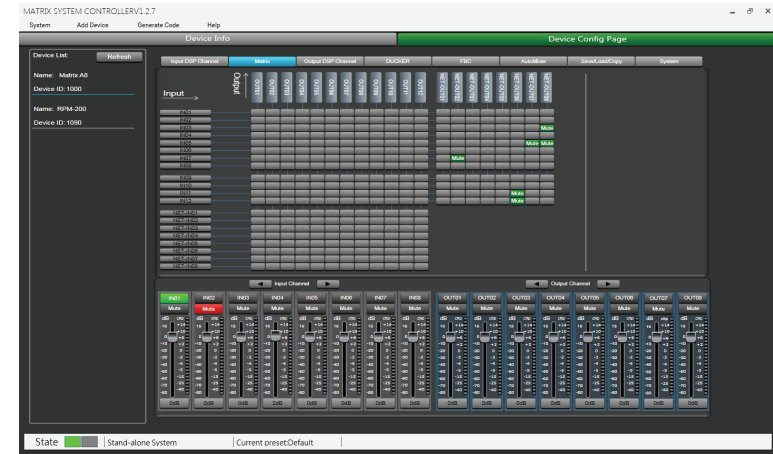
i. RD port

Connection to the MATRIX-A8. The maximum CAT 5e cable length is **100 meters**.

RPM-200 Editor



2- Matrix



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 20 input signals to 20 separate outputs. One talks about a 20x20 matrix.

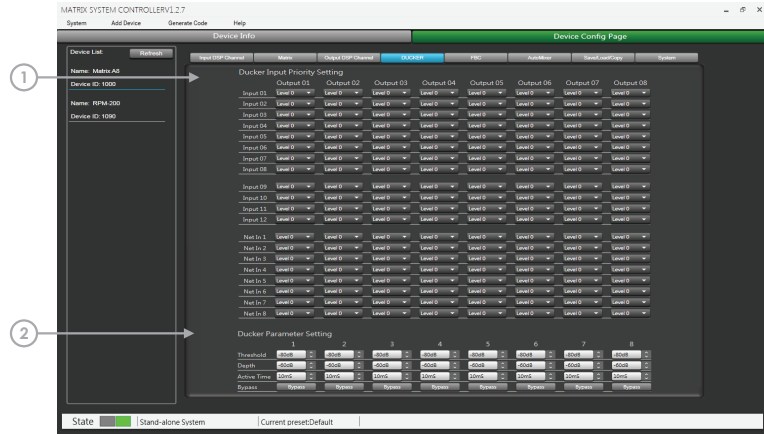
IN(OUT)01 to IN(OUT)08 are analog I/O available on the rear panel. In(OUT)09 to IN(OUT)12 are digital I/O (RD ports) and are converted to analog signals. Net 01 to Net08 are DANTE digital I/O. They are selectable when using the optional DANTE card only.

3- Output DSP Channel



Same menu as the Input DSP Channel ,without the Expander/Gate section. The parametric EQ features 8 bands here, instead of 5 bands for the inputs. Please refer to the introduction of Input DSP Channel.

4- Ducker



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

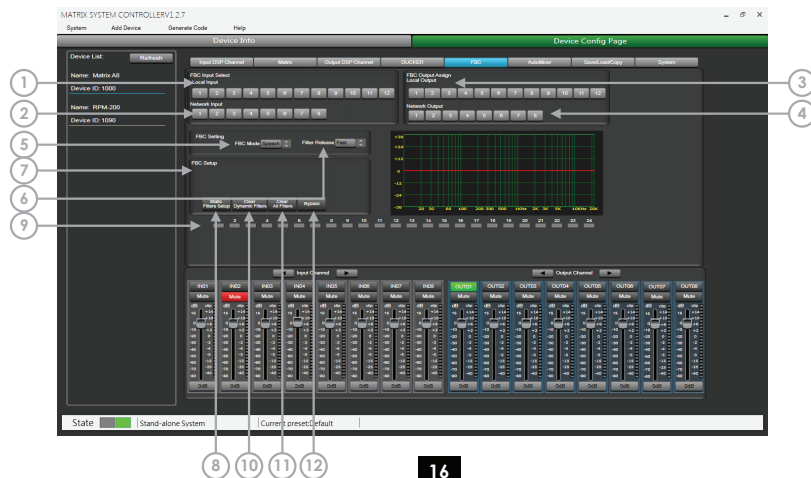
Threshold: threshold of attenuation. From 0dB to -80dB.

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.

5- FBC



G Remote Controllers

MATRIX-A8 offers a large choice of controllers for volume adjustment, paging management, routing and I/O remotes.

1. RPM-200 Paging Station



The RPM-200 can address 1 to 32 different zones (outputs). The number of zones depends on the number of MATRIX-A8 linked together. Moreover, a total of 32 x RPM-200 can be used in a system, which makes a lot of possibilities for message paging.

a. LCD screen

It displays the selected zones, the volume and ID number.

b. Signal status indicators

The green LED indicates the presence of signal when the microphone is ON. The red LED indicates the limit of clipping.

c. Communication status indicators

When the communication with the MATRIX-A8 is correct, the green LED blinks. In case of problem, the BUSY red LED lights up.

d. Volume control and all zone selector

It controls the volume of the microphone for each selected zones. By pushing on the button, it selects all zones.

e. Zone selector

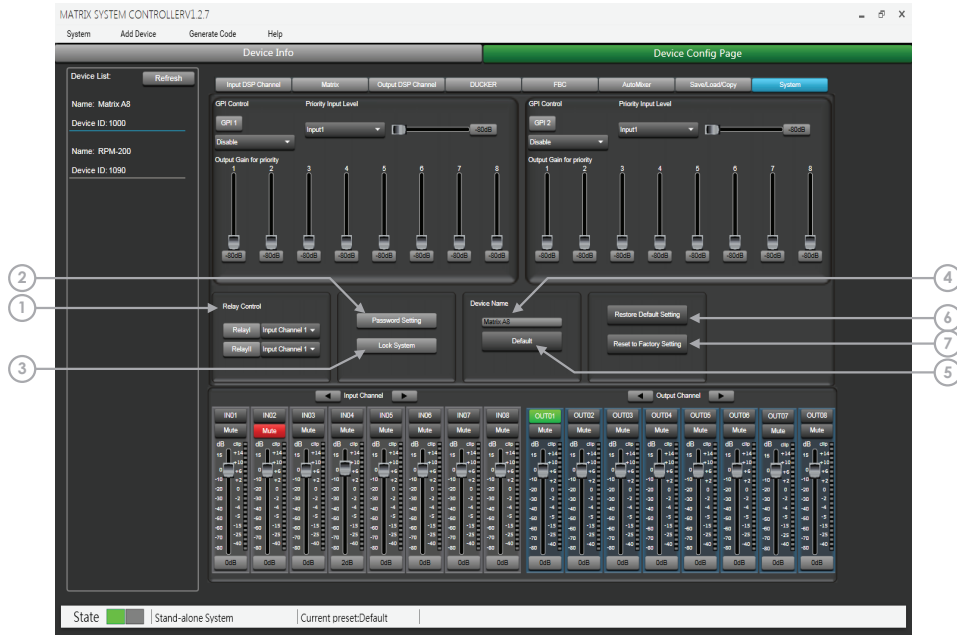
It selects one or several zones by turning the button left or right and pushing on it to validate.

f. Push-to-talk switch

When the button is pushed, the chimes sounds and the red ring on the microphone lights up indicating that one can talk.



8- System



Relay Control

1. **Relay-RelayII:** This interface is used to control external devices. Allow end users to control their actions.
2. **Password Setting:** Press this button to modify the password.
3. **Lock System:** Press this button to lock the system.
4. **Device Name:** You can customize the device name here.
5. **Default:** Save the changed device name.
6. **Restore Default Setting:** Restore all setting to default settings.
7. **Reset to Factory Setting:** Clear all settings, include default settings.

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.

FBC Input select

- 1). **Local Input:** selection of input channels(1-12) to be processed.
- 2). **Network Input:** selection of the DANTE input channels(1-8) to be processed.

FBC Output Assign

- 3). **Local Output:** Selection of output channels(1 to 12)where the FBC processed input is routed.
- 4). **Network Output:** Selection of the DANTE output channels(1-8)where the FBC processed input is routed.

FBC Setting

- 5). **FBC Mode:** application type, Speech or Music.
- 6). **Filter Release:** time release of the dynamic filters after processing, Fast Mid Slow.

FBC Setup

This function is used to setup the static filters:

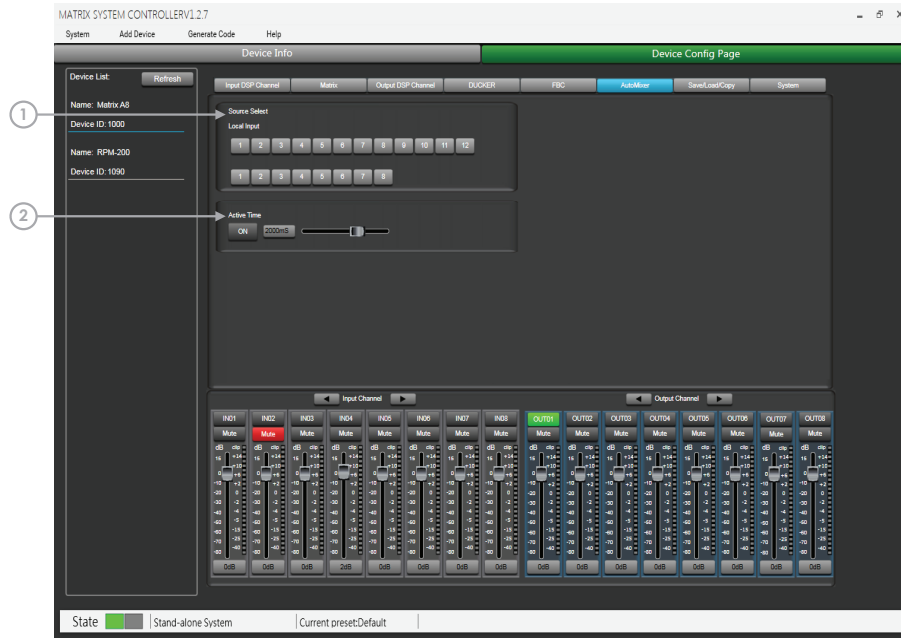
- a. Click Static Filter Setup(8)
- b. Adjust the level of dedicated channels at nominal value and open microphones.
- c. Increase the level of the FBC using the horizontal fader(7) until the feedback effect appears.

As soon as the system has detected the frequencies to process, the indicator boxes (9)1 to 24 turns red and the filtering effect is materialized on the diagram.

For dynamic filters the attenuation also appears on the diagram and indicator boxes light up in green.

- 10). **Clear Dynamic Filters:** used to initialize all the dynamic filters.
- 11). **Clear All Filters:** used to initialize all the dynamic and all static filters.
- 12). **Bypass:** the signal is not processed and goes directly to the next treatment module.

6- Auto Mixer



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.

Source Select

- 1. Local Input:** selection of input channels(1-12) to be processed.
- 2. Network Input:** selection of the DANTE input channels(1-8) to be processed.

Active Time

Set the start mixing time of the signal of the selected input channel.
Push ON to activate the time setting, and use the horizontal fader to set the time value.

7- Save/Load/Copy



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 16 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. 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.
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 (1~12) can be selected and copied to any channel (1~8) in the check box.
Select All: Click this button, all CH1~CH8 will be selected
Copy: After selecting the input / output channel to any other channel, click Copy, and the parameter copy is successful.