

Revision History

v1.02

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1 About This Manual

This manual is intended to provide with the necessary understanding of our system architecture as well as guide users through the configuration process. If you have any questions, feel free to <u>contact</u> <u>us</u>.

Firmware version:



1.1 Safety Instructions

- Do not expose the device to extreme temperatures, direct sunlight, humidity, or dust, which could cause fire or electrical shock hazard.
- Keep away water or other liquids from the device. Otherwise fire or electrical shock may result.
- Connect the power cord only to an AC outlet of the type stated in this Owner's Manual or as marked on the unit. Otherwise fire and electrical shock hazard results.
- When disconnecting the power cord from an AC outlet always grab the plug. Never pull the cord. A damaged power cord is a potential risk of fire and electrical shock hazard.
- Avoid touching power plugs with wet hands. Doing so is a potential electrical shock hazard.
- Take care for correct polarity when operating the device from a DC power source. Reversed polarity may cause damage to the unit or the batteries.
- Avoid placing heavy objects on power cords. A damaged power cord is a fire and electrical shock hazard.
- Do not cut, scratch, bend, twist, pull, or heat the power cord. A damaged power cord is a fire and electrical shock hazard. Ask your ATEÏS dealer for replacement.
- Turn off immediately the unit, remove the power cord from the AC outlet and consult your ATEÏS dealer in any of the following circumstances:
 - · Smoke, odor, or noise getting out of the unit.
 - Foreign objects or liquids get inside the device.
 - The unit has been dropped or the shell is damaged.
 - The power cord is damaged.

If you continue using the device, fire and electrical shock may result.

- Do not drop or insert metallic objects or flammable materials into the unit as this may result in fire and electrical shock.
- Do not remove the device's cover, as there are exposed parts inside carrying high voltages that may cause an electrical shock. Contact your ATEÏS dealer if internal inspection, maintenance, or repair is necessary.
- Do not try to make any modifications to the device. This is a potential fire and electrical shock hazard.
- Avoid the device's ventilation slots to be blocked. Blocking the ventilation slots is a potential fire hazard.
- To prevent the unit from falling down and causing personal injury and/or property damage, avoid installing or mounting the unit in unstable locations.
- Leave enough space above and below the unit to provide good ventilation of the device. If the airflow is not adequate, the device will heat up inside and may cause a fire.

- Operate the device in an environment with a free-air temperature of between 0 °C and 40 °C (32 °F and 104 °F).
- Turn off all audio equipment when making any connections to the device, and make sure to use adequate cables.
- Do not use benzene, thinner, or chemicals to clean the device. Use only a soft, dry cloth.
- If the device is moved from a cold place (e.g., overnight in a car) to a warmer environment, condensation may form inside the unit, which may affect performance. Allow the device to acclimatize for about one hour before use.

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2 System Overview



The Messenger Pro is equipped with two fully floating line inputs, speech and background music, and can be adapted for optimum performance separately. This results in better music and speech performance in situations where high quality music performance and superior speech intelligibility are demanded.

The BGM input has 4 filter presets to fulfill an easy, quick setting while keeping the high music quality. These filters enhances the low frequency performance of the Messenger Pro. For speech mode, there will be 3 standard filter available for quick set-up, supporting more demanding situations, and the intelligibility can be manually fine-tuned.

The ADI DSP chipset and a sample rate of 48 kHz ensure a wide frequency response, up to 22kHz for crystal-clear sound quality and an impressive low frequency response. This, paired together with the patented algorithm and side lobe free suppression for speech reinforcement makes the Messenger Pro a fully versatile steerable line array.

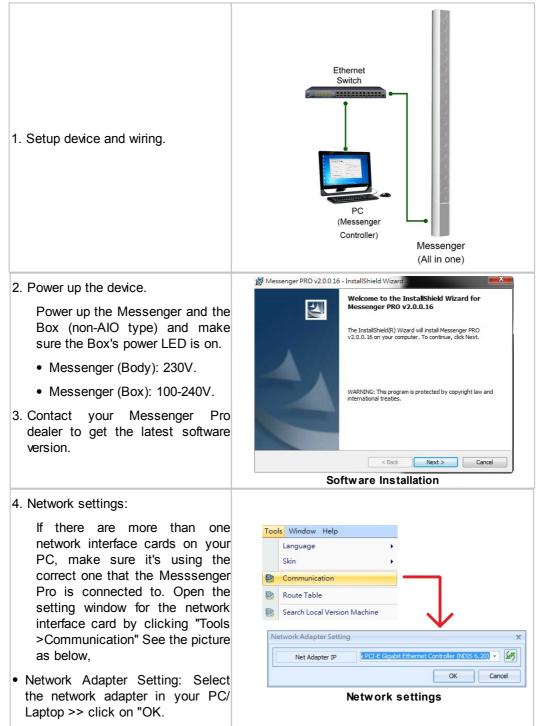
Additional input cards can be provided to have a digital link between Messenger units or to transmit audio and data via Ethernet. An optional Messenger rack-controller (MRC), half size 1U/19 inch rack frame, facilitates 2 fully controllable audio inputs and two slave outputs, TCP-IP connection and RS485 to interface with Messenger units.

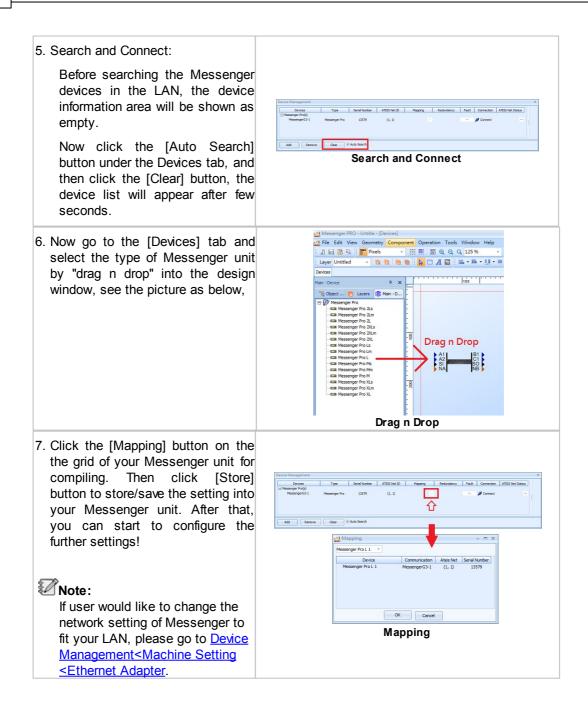
Features:

- Triple-lobe feature for the ultimate accuracy.
- 24 Class-D amplifier channels with 70 Watt.
- · Features the latest technology based on a patented algorithm.
- Specially designed for high quality speech and background music applications.
- Tightly controlled beam, up to 5 degrees, which can be shaped in 9 steps to meet each specific applications.
- Asymmetrical and Symmetrical arrangement by means of software control.
- Integrated DSP control with 8 bands EQ, Noise Gate, Delay, Limiter, Ethernet IGMP Audio Stream, VoIP Receive, Ducker, DNM.
- VOX-control on priority input and ambient noise sensing function.
- Adaptable acoustic center.
- Q factor up to 72(10V by H) or even higher with smaller vertical opening angles down to 5 degrees.
- Beam steering +/-45 degrees up to 3 lobes simultaneously.
- Lobe switching: provides quick coverage change by applying a contact, allowing to exclude a
 certain audience area by simply adding a second lobe.
- 24 VDC input for battery backup, 20 kHz input surveillance.
- Internal HF carrier loudspeaker surveillance. Ambient noise sensor. Temperature sensor with frost protection. Battery surveillance. Fault report contacts.
- Ethernet connectivity for full detailed status report and remote setup, controls up to 32 Messenger Pro units.
- EASE DLL-Files available for room acoustic simulations.
- SPL stays within +/-3 dB variation over a distance of at 100m.
- Consistently high sound quality across the coverage area.
- Entirely software controlled.

3 Quick Start

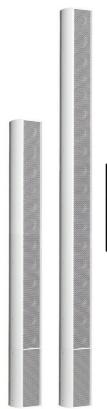
This chapter will lead you to connect the Messenger and change its IP address to fit your network setting.





4 Products

4.1 Messenger G2 (All in One Type)

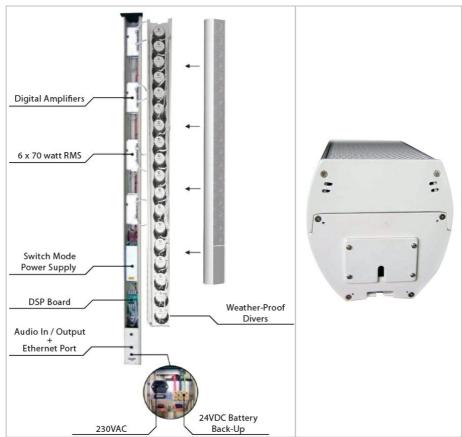


MESSENGER-M	12 Loudspeakers - 1701 mm. 94 dB to 25 m.
MESSENGER-L	18 Loudspeakers - 2400 mm. 94 dB to 30 m.
MESSENGER-XL	24 Loudspeakers - 3100 mm. 94 dB to 40 m.
MESSENGER-TWO-L	36 Loudspeakers - 4700 mm. 94 dB to 60 m.
MESSENGER-TWO-XL	48 Loudspeakers - 6200 mm. 94 dB to 70 m.

The Messenger Pro is designed to meet with the modern standards for Voice Evacuation. Each Messenger Pro array has a very tightly controlled beam, which can be shaped as required for specific applications or environments requiring symmetrical or asymmetrical, single, dual or triple lobe designs. The availability of high power audio DSP's such as the analog devices makes it possible to provide 24 channels of powerful processing that lead to precise beam control and even signal pattern that stays within 3 dB over a distance of 100 m.

The Messenger Pro has the unique quality that the acoustical center which can be moved over the array to match with required mounting heights. This can be achieved because each driver is separately powered and processed and therefore all variations between a symmetrical and an asymmetrical arrangement can be made by a simple push on a button. This separates the Messenger Pro from any other line-array speaker making it the most flexible and unique line array with software controlled directive pattern.

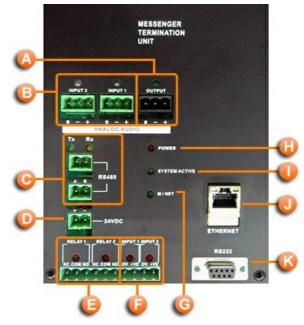
4.1.1 Appearance



Thanks to its embedded control panel, the All-In-One version is much easier to wire with. All cables can be wired from a hole at the bottom of the Messenger as shown in the picture below:

4.1.2 Control Panel

This control panel is assembled at the bottom of the Messenger all-in-one version, open the outer case to wire.



Balanced Audio Output connector:

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- S = Shield.
- + = Hot audio signal.
- - = Cold audio signal.

Balanced Audio Input connector:

The audio input 1 is for normal usage and the input 2 is for emergency usage which has the higher priority than IN1.

- S = Shield.
- + = Hot audio signal.
- - = Cold audio signal.

RS485 for connecting the next Messenger AIO units.

- 24 VDC back-up power input.
- Relay connectors.
- Control input connectors.
- G M/NET LED indicator.
- Power LED lights up when power is on.
- System Active LED.
- Ethernet RJ45 port for TCP/IP networking.
- One RS-232 port for connecting the PC when no TCP/IP networking available.

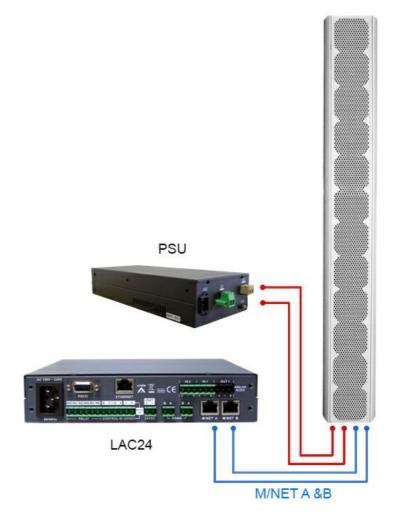
For the LED indicator, see next topic the LED Indicators.

4.1.2.1 LED Indicators

Item	Conditions	
CLIP1	Lights up with Prim. Input Clip LED in software.	
CLIP2	Lights up with Sec. Input Clip LED in software.	
LIMITER1	Lights up with Prim. Input Limiter.	
LIMITER2	Lights up with Sec. Input Limiter.	
SIGNAL1	Lights up with Prim. Input Signal.	
SIGNAL2	Lights up with Sec. Input Signal.	
AUDIO OUTPUT	When audio output.	
RELAY1	If any of the following occurs, the LED lights up: Input1 20k surveillance fails. Input2 20k surveillance fails. AMP net cable was broken between this AMP board and the previous AMP board. AMP net cable was broken between this AMP board and the next AMP board. AMP communication fails. Frame slip. LRCK error. SCLK error. PLL auto lock error. Over temperature.	
RELAY2	Over current. If any of the following occurs, the LED lights up.	

Item	Conditions	
	 Supply fault 24V (Backup). 	
	 Supply fault AC(for AIO). 	
Control IN1	Lights off when circuit Open; lights up when short circuit.	
Control IN2	Lights off when circuit Open; lights up when short circuit.	
RS232 TX	-	
RS232 RX	-	
RS485 TX	Lights up when transmitting.	
RS485 RX	Lights up when receiving.	
ETHERNET	Communication with Messenger Control.	
M/NET	Lights up when the Messenger units communicate correctly.	
SYS.ACT	Lights up if the DSP communicates correctly.	
POWER	Lights up when the power is on.	

4.2 Messenger SG2 (Separate Type)



The non-all-in-one version can be equipped with a dual mode redundant power supply and redundant link between the Messenger Pro and the optional external MSGPRO-CB control unit (LAC24). M-Net Messenger nodes can be placed up to 100 m away. For longer distances a fiber-optic converter is available. The MSGPSU-CB power box supplies the power for the Messenger unit and the MSGPRO-CB unit can be powered through the RJ45 (M-Net A&B) from the powered Messenger unit as well.

The Messenger G2 (Non-AIO) series contain the following products:

MSGPRO-M	12 Loudspeakers - 1361 mm. 94 dB to 25 m

MSGPRO-L	18 Loudspeakers - 2033 mm. 94 dB to 30 m
MSGPRO-XL	24 Loudspeakers - 2705 mm. 94 dB to 40 m
MSGPRO-2L	36 Loudspeakers - 4066 mm. 94 dB to 60 m
MSGPRO-2XL	48 Loudspeakers - 5410 mm. 94 dB to 70 m
MSGPRO-CB	External DSP Control Box
MSGPSU-CB	External Power Supply Box

The MSGPRO-CB (LAC) is made of:

- 2 x audio input.
- 1 x audio output.
- Relay and control inputs.
- 1 Ethernet for TCP/IP networking.
- 2 RS485 data links between each MSGPRO-CB unit (LAC).
- M-Net A & M-Net B ports for connecting the Messenger unit.
- One RS232 port for connecting the PC when no TCP/IP networking is available.
- 230VAC input.
- 24VDC backup power connector.
- 24VDC power supply for Messenger unit.

4.2.1 MSGPRO-CB - Control Unit

4.2.1.1 Front Panel

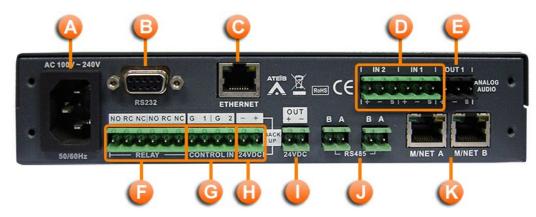


- Audio Input LED.
- Audio Output LED.
- Relay/Control connector LED.
- RS232/485 port LED.
- Ethernet LED.
- Power LED.
- G Messenger Net LED.
- System Active LED.

For the LED indicator, see this.

4.2.1.2 Rear Panel

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Power Section:

Power supply AC 100V~240V, 50/60Hz.

BRS232 port:

Port for connecting the PC when no TCP/IP networking available or the 3rd party control.

- Ethernet Port.
- Audio Input1/2:

The audio input 1 is for normal usage and the input 2 is for emergency usage which has the higher priority than IN1

- Audio Output connectors.
- Relay connectors.
- Control input.
- 24VDC backup power.
- 24VDC power output:

This connect can supply 20VDC to remote device if needed.

RS485 ports:

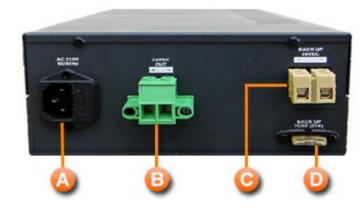
For connecting the next MSGPRO-CB control unit (LAC).

M/Net A & B ports:

Connects the M/Net A/B ports on the messenger unit, the wiring is A to A and B to B. LAC can be powered from the Messenger unit through these two ports.

4.2.2 MSGPSU-CB - Power Supply

PSU is the main power supply for Messenger unit.



Power Section:

Power input AC 230V, 50/60Hz.

24VDC Output:

Connect to Messenger's 24VDC Input connector (+/- to +/-).

Back-up 24VDC.

Back-up fuse (25A).

4.2.3 Characteristics

✤ Case:

- MSGPRO-CB control unit:
 - o 208mm(W) X 255.2mm(D) X 42.6mm(H)
 - Color = RAL7016
- Messenger:

Messenger-M(G2)	12 Loudspeakers - 1345 mm. 94 dB to 25 m
Messenger-L(G2)	18 Loudspeakers - 2017 mm. 94 dB to 30 m
Messenger-XL(G2)	24 Loudspeakers - 2689 mm. 94 dB to 40 m
Messenger-Two-L(G2)	36 Loudspeakers - 4034 mm. 94 dB to 60 m
Messenger-Two-XL(G2)	48 Loudspeakers - 5378 mm. 94 dB to 70 m

✤ Power:

Voltage	Condition
	Power source from the Messenger unit. The maximum length of cable is 100m.
100~240VAC	Frequency:47Hz~63Hz
	24VDC

MSGPSU-CB for Messenger unit:

ltem	Voltage	Condition
AC input	210~230VAC	Frequency:50Hz
Backup power source (24VDC)	16VDC~27VDC	-
Power Consumption (MSGPRO-CB + Messenger):		
Messenger-M(G2)		731W

Messenger-L(G2)	1091W
Messenger-XL(G2)	1451W
Messenger-Two-L(G2)	2182W
Messenger-Two-XL(G2)	2902W

Audio Specification:

• MSGPRO-CB:

Parameters	Sensitivity	Min	Тур	Max	Units	Condition
Sensitivity	-	-	0	-	dBu	-
Equivalent Input Noise	0dBu	-	-	-84	dBu	20~20kHz@150Ω
THD+N	0dBu	-	-	0.02	%	20~20kHz@+4dBu
CMRR	0dBu	-	-	-65	dBu	10kHz@0dBu
CIVIRR	Ойви	-	-	-70	иви	1kHz@0dBu
Frequency Response	0dBu	-1	0	+1	dBu	18~21kHz@0dBu, sample rate=48k
Crosstalk	-	-	-	-65	dBu	10kHz@150Ω
Maximum input	0dBu	-	-	+18	dBu	-
Maximum output	0dBu	-	-	+18	dBu	-
Input Impedance (Balanced)	-	9k	10k	13k	Ω	1kHz@sine wave
Output Impedance (Balanced)	-	90	90	10	Ω	1kHz@sine wave
Sample rate	-	-	48k	-	Hz	Only 1 selection

• Messenger:

Parameters	Sensitivity	Min	Тур	Max	Units	Condition
Freq. Response	-	150	-	15000	Hz	-
Max SPL	-	-	-	-	-	93dB pink-noise at 25m
S/N ratio	-	90	-	-	dBu	-
Horizontal Disp.	-	-	-	145	degrees	-
Sample rate	-	-	-	48k	Hz	-

Digital Specification:

ltem	Condition	Min	TY	Max.	Comment
Control Input	low	-	0Vdc	0.1Vdc	-
Control Input	high	-	4.2	5	-

✤ Working Temperature:

• Operating Environment: -10 to +55°C, 0-70% relative humidity, non-condensing.

✤ Working Temperature.

• 0°C ~ 40°C

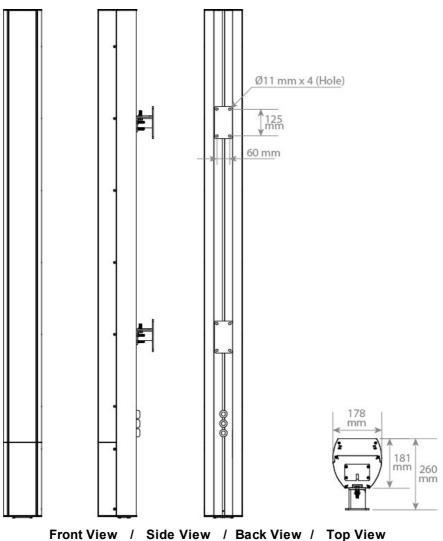
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5 Hardware Installation & Connection

5.1 Messenger G2 (All in One Type)

5.1.1 Product Housing

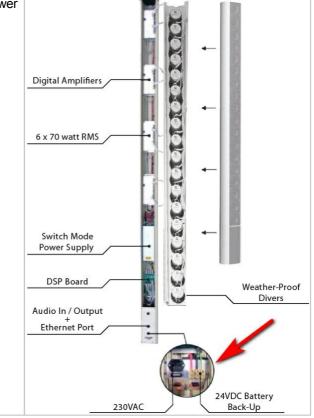
Messenger AIO Unit Housing



5.1.2 Power Supply

The Messenger G2 unit has two types of power supply input:

- AC mains power supply
- 24VDC for battery backup

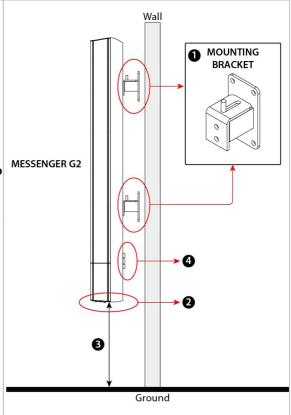


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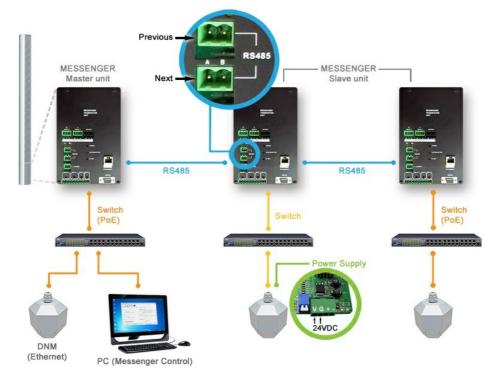
5.1.3 Mounting

- Mount the Messenger G2 with the supplied mounting bracket.
- 2. The direction of bottom cover requires to face toward the ground.
- 3. We recommend to mount the Messenger G2 unit 3M high from the ground (at least 2.5M high).
- 4. To connect the **AC power cord, analog audio IN/OUT cables** and **Ethernet cables**, firstly, open the bottom cover of Messenger G2 unit and wire these cables (Label 2), then users can use the 3 cable entries at the back of Messenger G2 unit (Label 4) and let these cables connect through from the back of Messenger G2 instead of from the bottom cover.



5.1.4 Connection Wiring

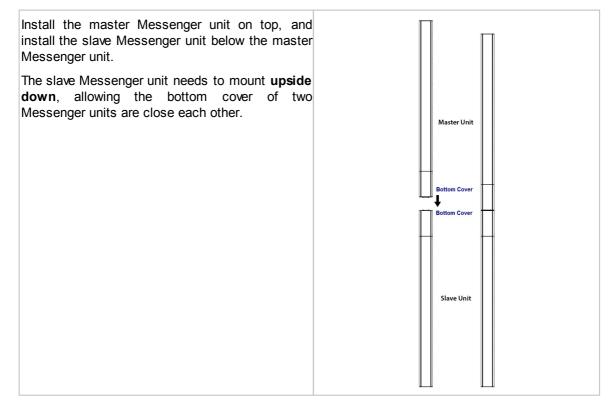
The Messenger G2 unit connects with each other using RS485 connectors as shown in the picture below:



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- 1. The Messenger master unit is connected to the Messenger slave unit via RS485 interface, see <u>RS485 & Analog In/Out Connection</u> for details.
- 2. To know the details of analog In/Out connection between Messenger units, see <u>RS485 & Analog</u> <u>In/Out Connection</u> for details.
- 3. Each Messenger G2 unit needs to be powered by its own AC power input. For PA/VA application using at airport, railway etc., we recommend to connect the 24VDC backup power supply, too.
- 4. One PC can search and control all the Messenger units in LAN. But for Messenger AlO unit, it is recommend that the Ethernet connection of each master/salve Messenger unit is connected in case of remote requirement or setting adjustment on Messenger Pro software in the future.

5.1.4.1 Combine 2 Messenger Units Together

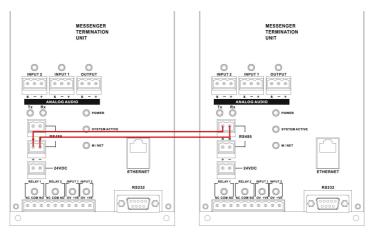


5.1.4.2 RS485 & Analog In/Out Connection

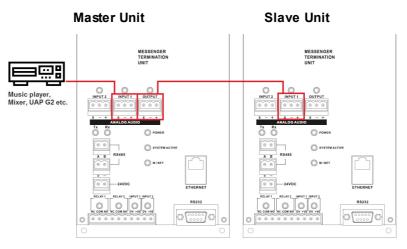
RS485 connection (Master & Slave Unit) Master Unit

Slave Unit

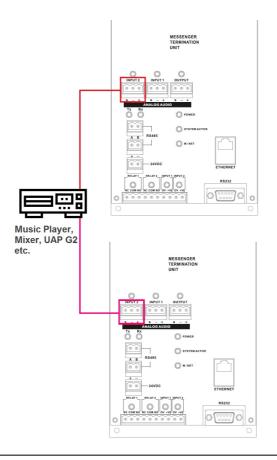
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✤Analog In/Out connection - 1



Analog In/Out connection - 2 (two Master Units)

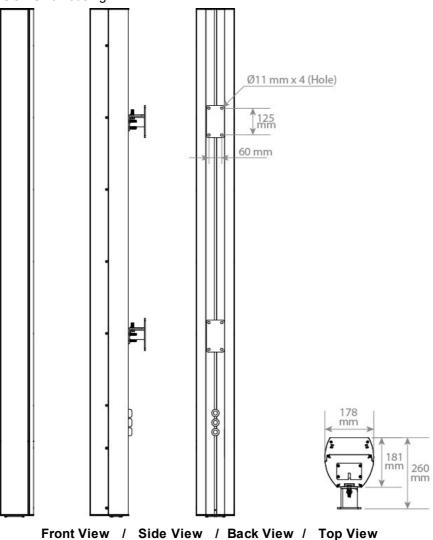


Check whether the firmware version of both master and slave Messenger units are the same.

5.2 Messenger SG2 (Seperate Type)

5.2.1 Product Housing

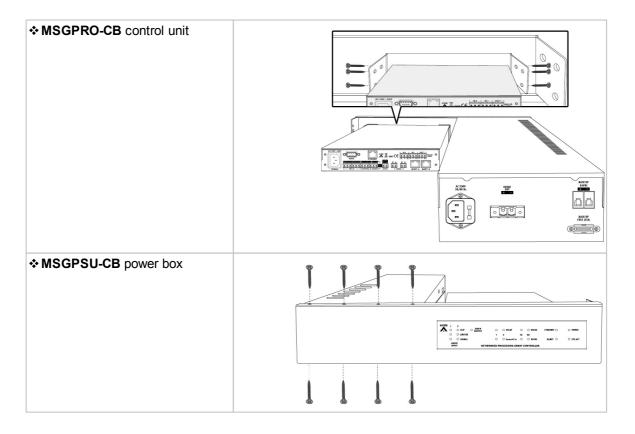
Messenger SG2 Unit Housing



5.2.2 Mounting

5.2.2.1 MSGPRO-CB/MSGPSU-CB Mounting

The **MSGPRO-CB** control unit / **MSGPSU-CB** power box is suitable for 2U rack-mounting installation, using the supplied mounting bracket and screws. See the pictures below.



Dimension

Mounting Bracket (W x H x D)	436 x 88 x 47.9mm
MSGPRO-CB (W x H x D)	208 x 42.6 x 254.9mm
MSGPSU-CB (W x H x D)	185 x 86.8 x 460.7mm

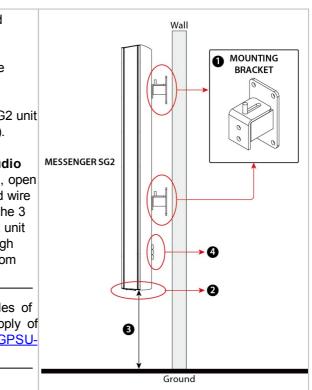
Consider leaving enough ventilation space above and below the unit. Do not mount the controller directly above the heat generating devices like power supplies or power amplifiers.

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5.2.2.2 Messenger SG2 Mounting

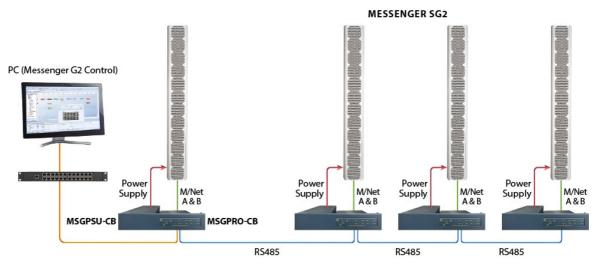
- Mount the Messenger SG2 with the supplied mounting bracket.
 The direction of bottom cover requires to face toward the ground.
- We recommend to mount the Messenger SG2 unit 3M high from the ground (at least 2.5M high).
- 4. To connect the **AC power cord, analog audio IN/OUT cables** and **Ethernet cables**, firstly, open the bottom cover of Messenger SG2 unit and wire these cables (Label 2), then users can use the 3 cable entries at the back of Messenger SG2 unit (Label 4) and let these cables connect through from the back of Messenger G2 instead of from the bottom cover.

See the wiring example of 2 Ethernet cables of MSGPRO-CB and the AC power main supply of MSGPSU-CB from <u>MSGPRO-CB & MSGPSU-CB</u> chapter.



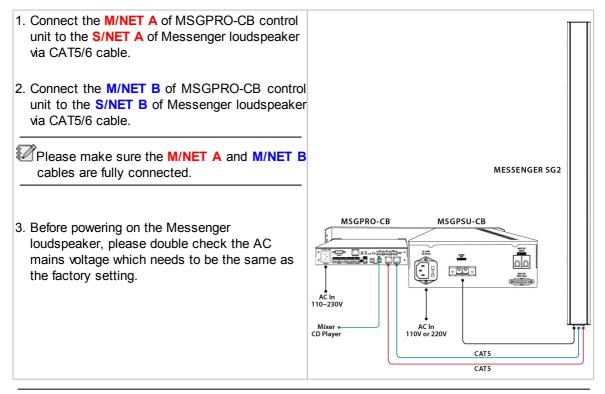
5.2.3 Connection Wiring

The MSGPRO-CB connects with each other via RS485 interface, see the picture as below.



- 1. The Messenger master unit is connected to the Messenger slave unit via RS485 interface, see <u>RS485 & Analog In/Out Connection</u> for details.
- 2. To know the details of analog In/Out connection between Messenger units, see <u>RS485 & Analog</u> <u>In/Out Connection</u> for details.
- 3. Each Messenger SG2 unit needs to be powered by its own MSGPSU-CB unit (power supply box). For PA/VA application using at airport, railway etc., we recommend to connect the 24VDC backup power supply, too. The MSGPRO-CB and the Messenger SG2 unit can be powered through the M/NET ports via the RJ45 connector supplies with 24VDC.
- 4. One PC can search and control all the Messenger SG2 units in LAN.

5.2.3.1 MSGPRO-CB & MSGPSU-CB

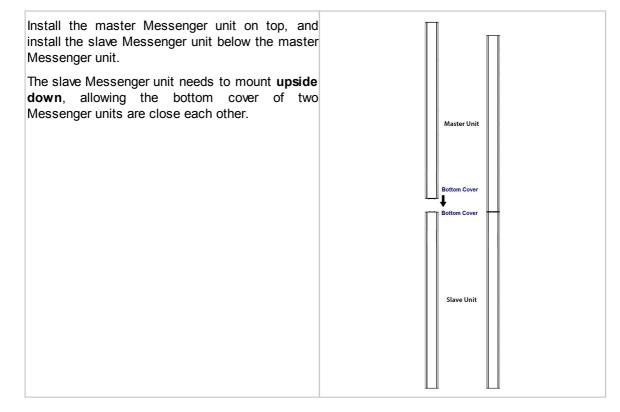


24VDC power of MSGPSU-CB power box:

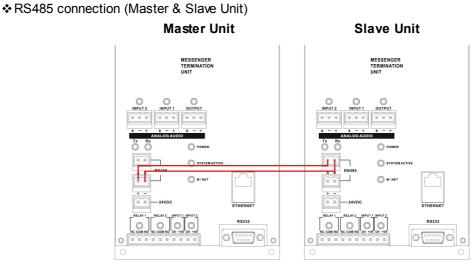
- 1) Please note the + pin and pin of cord bare copper wire requires at least 20 ampere, 20 mm2.
- 2) The reversed polarity may cause serious damage.

© 2020, MESSENGER PRO

5.2.3.2 Combine 2 Messenger Units Together



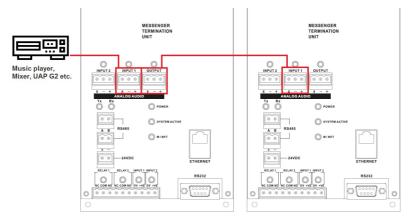
5.2.3.3 RS485 & Analog In/Out Connection



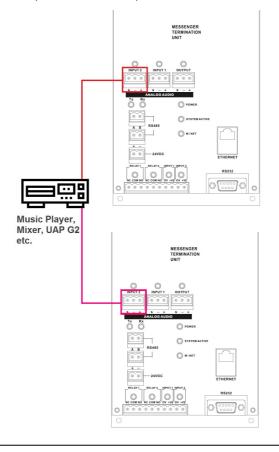
Analog In/Out connection - 1

Master Unit

Slave Unit



Analog In/Out connection - 2 (two Master Units)



Check whether the firmware version of both master and slave Messenger units are the same.

6 System Functionality

6.1 Messenger PRO Software



The Messenger Pro software contains the Lobe Assembler function, providing ease of use and operation, and other advanced features. All the design layers and sub-menus are displayed and can be opened by clicking the appropriated icon. The cursor movement, parameter settings can be established with the use of the mouse and keys.

The control and monitoring of Messenger Pro software is via TCP/IP networking, providing faster data transmission. It is important to note that you store changes into the Messenger unit before terminating the software program. After every power shutdown, or software reboot, the Messenger will startup in its last saved configuration.

The software allows the complete audio systems with a multitude of similar or different devices to be configured, supervised and controlled centrally. A library of control and monitoring elements, (GUI) graphical user interface, is provided and includes items such as volume control faders, various metering, 8 bands of EQ, Limiting, Mixing, quick-buttons, display elements etc.

6.1.1 System Requirement

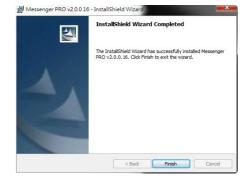
 PC-Pentium type with Windows® 7 or higer
 At least 2GB RAM
 Harddisk > 500GB
 Intel Dual Core CPU > 2GHZ
TCP/IP networking

6.1.2 Installation

1. Follow the Installwizard to install Messenger Pro software.



過 Messenger PRO v2.0.0.16	- InstallShield Wizard
	Welcome to the InstallShield Wizard for Messenger PRO v2.0.0.16
	The InstallShield(R) Wizard will install Messenger PRO v2.0.0.16 on your computer. To continue, dick Next.
2	WARNING: This program is protected by copyright law and international treaties.
	<back next=""> Cancel</back>



2. After the installation is finished, double click the icon to open the software.



6.1.3 Window Layout

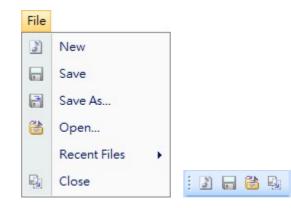
Set Messenger /HOV2/000 = Uniting 🖕 tessenger /Ho DSH Configurationer=Messenger /Ho DSH	- = x
sy File Edit View Generatry Component Operation Tools 2 low Help	- e ×
2 日 ② 税 Phels -	
Layer United · R R N N I I I I I I I I I I I I I I I I	×
	1300
	1300
IB Mar Do. C. Concett Image: Section of the sectio	* 1 <u>EBR Guturi</u> * 1 <u>EBR Guturi</u> * 1 <u>EBR Gut</u>
Device Hodule Messenger Pro	•••••••••••••••••••••••••••••••••••••••
	•
Note Management	0 x
📴 3rd Party Control Command 🔛 3rd Party Control List 📜 Device Management	
Devices Type SenaiNumber ATEISNetID Mapping Redundancy Fault Connection ATEISNetStatus	
Mesenger Pro() Mesenger Pro 119998 (1, 1) 6 Processer Connect	Deploy Health Source Machine File Syst Machine Log Machine Setting Read Version Remote Reset
	Remote Reset Remote Update Reset machine Reverse Update

The basic windows layout should look like the figure showed above, the position can be changed if you drag the dock panel(circle No.5 & 6 are examples of dock panel).

- 1. Title Bar: Display the path name of the current file.
- 2. Menu Bar: The main functionalities/tools of software.
- 3. Tools Bar: Quick access to main functionalities that are hidden in the menu bar.
- 4. Tab Bar: Display the window title of the control windows/component window for quick access.
- 5. Dock Panel-Component Template: A dock panel on the left side of software which contains all devices and DSP components, users can use it to create and design your system.
- 6. Dock Panel-Device Management: A dock panel on bottom side of software lists information about devices, allowing to connect to a device for maintenance.
- 7. Status Bar: Display the status of software including the modification indication of editing file, mouse cursor position etc..
- 8. Working Area-DSP Components Editor: A graphical interface allows to design the system, drag n drop the components which creates specific audio signal processing, audio path from input to output and wiring between components and components.

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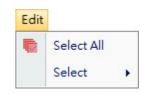
6.1.3.1 File



- New 📓: Open a new blank project.
- Save 🖃: Save the current file you are currently working with.
- Save As 🗟: Open the "Save as..." dialog box to save the current working project with a different name and/or path.
- Open ៉: Open the "Open..." dialog box which allows you to select a path and open a saved file.
- Recent Files: Quick access to the last opened file.
- Close 📲: Close the opened files.

6.1.3.2 Edit

• Select All 😨: Select all the components and wiring pins.

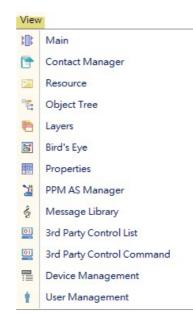


- Select All DSP Components Select all DSP components in the graphic editor.
- Select All Connectors Select all wiring pins in the graphic editor.

P	Select All			
	Select	•	8	Select All DSP Components
		*	-	Select All Connectors

6.1.3.3 View

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- Main 1: Contain various devices and DSP components for system designing.
- Resource 🖾: To manage resource files in the software. See Resource Manager chapter.
- Object Tree 🔩: To see the whole structure of configuration file. See Object Tree chapter.
- Layers 1. To manage the graphical layers for objects. See Layers chapter.
- Bird's Eye 🗟: To have an overview of graphical objects. See <u>Bird's Eye</u> chapter.
- Properties : Allow to inspect the various parameters of an object in graphic editor. See <u>Properties</u> chapter.
- PPM AS Manager 🕍: To have a overview of all PPM AS in the configuration file.
- Message Library 🐇: To manage the message files in the software. See Message Library chapter.
- 3rd Party Control List 🖳: To have an overview of elements that are 3rd party controllable.
- 3rd Party Control Command 🖳: Display the 3rd party control string of focused element.
- Device Management 🗮: Connect and search the devices over network and maintenance.
- User Management 1: Allow to edit the user level of configuration file.

6.1.3.3.1 Resource Manager

Resource manager is a container for files which can be used in a device configuration.

Update Bitma	p Wave G.722	AsZip Custom	ized Component	XML Fir	PSS AS Picture	IDA8C Front Panel Pictur
	Name	Size	Select			
All		-				
DNM_NET_V1.0).0.5.asu	326884				

• Path: Specify a path for searching resource files.

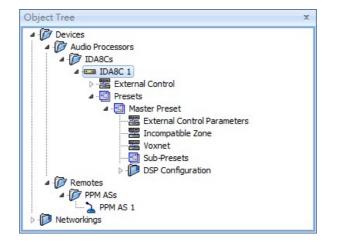
- [...]: [...] button to browse the folder if changing a path.
- Include File: Click the checkbox when the path has changed, it will copy the files from the original path to the new path.
- Pages of Resource File: There are various types of files which can be managed by Messenger Pro, each page is corresponded to a page in the resource manager.

Update
Bitmap
Wave
G.722
AsZip
Customized Component
xml

- Refresh: Search the resource files in the folder specified in the resource manager path.
- Add/Delete: Add/remove a file to the resource manager.
- Export/Import: Export/import selected files to a single resource packed file.

6.1.3.3.2 Object Tree

Display the designing of objects by tree structure, making it easy to understand and access objects.



6.1.3.3.3 Layers

Each design window can separate into multiple layers. Every object in the design window belongs to a layer.

- Current: Indicate which layer is the current layer. The new objects will be put into the current layer.
- Lock: Lock a selected layer. All objects belong to the locked layer cannot be edited.
- Hide: Hide all objects belonging to a selected layer.
- Name: The name of a layer.
- Select[...]: A button used to select objects of the layer.
- : Add a new layer as the current layer.
- 🖳: Remove a selected layer and the components

Layers				1	x
Current	Lock	Hide	Name	Select	
V			Layer 1		
	V		Layer2		
		V	Layer3		
		4			

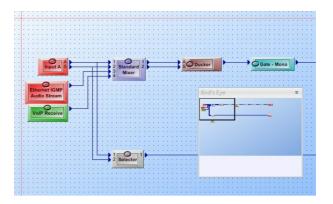
will belong to that layer.

 [↑] /
 [↓]: Move up/down a selected layer.

6.1.3.3.4 Birds Eye

When your configuration design is huge, Bird's Eye gives an overview that easily help you to understand the layout of the design.

 Bird's Eye : Move the Bird's Eye window to see an overview of your configuration.



6.1.3.3.5 Properties

Users can browse/edit the settings of the selected objects in the configuration design.

Pro	ope	rty		x
Ξ	Ар	pearance		
		Color	255.0.0 💌 …	
	Ξ	Geometry		
		Position		
		Left	50 \$	
		Тор	60 🇘	
		Size		
		Height	50 \$	
		Width	64 🇘	
		Name	Input A	
	1	Open		
Ξ		ments		
	Ξ	Global		
		Overload Thd		
	Ξ	Output 1		
		Bypass		
		Level		
		Mute		
		Overload		

6.1.3.3.6 Message Library

An interface to manage the message files used in Messenger Pro.

th : C:\Program Files (x86)\Messenger PRO\Messenger PRO v2.0.0.\Messages					Open
Name	Size	Format	Sample Rate(kHz)	Sample Size	Channels
GNG3TONS.WAV	63 KB	WAVE	16	16	Mono

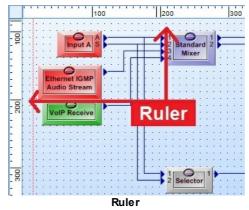
- Path: The working directory for message files.
- Open: Click to open a file browser and change its working directory.
- Message File List: A grid which lists all the messages in the working directory and displays information.
- Add/Delete: Add/delete a message into the working directory.
- Delete: Remove a selected entry of the message list.

6.1.3.4 Geometry





- Zoom In Q/Out Q: Zoom in/out the configuration.
- Zoom Original **Q**: Zoom to the original size of the configuration.
- Room Ratio: Set the configuration to a specific ratio.
- Ruler III: Display/hide the ruler in the DSP configuration.



- Ruler Unit: Specify the ruler unit of the configuration. There are three types of units:
 - \circ Inches
 - o Centimeters
 - o Pixels

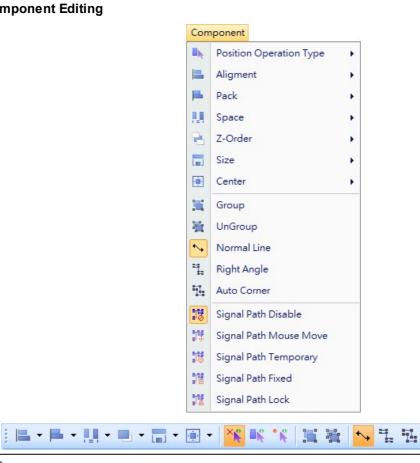
T	Pixels 👻	1 I	Ruler			
	Inches Centimeters		Ruler Unit	•		<u>1</u> Inches
	Pixels		Show Grid			<u>2</u> Centimeters
			Snap to Grid		1	<u>3</u> Pixels
		•	Layer	•		

- Show Grid ::: Shows or hides the grid of the graphic editor.
- Snap to Grid 🔜: Enables or disables moving an object by multiple pixels at a time.
- Layer:

Layer 🕨	R	Add Layer
	C	Remove Layer
	6	Lock Layer
		Hide Layer
	1	<u>1</u> Default Layer
		<u>2</u> Layer 1

- o Lock Layer 16: Locks a layer of the graphic editor to disable movement of any objects belonging in that layer.
- Hide Layer ■: Hide a layer. All objects belonging in that layer will become invisible.
- Select Layer: Selects a layer to be current. Any newly created object will belong to the current layer.

Component Editing 6.1.3.5



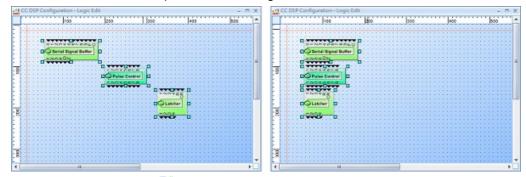
 $rac{1}{2}$ The components display on the configuration window are fixed and cannot be proceeded the functions such as changing the position of components, alignment etc. However, the other components which can be "Drag n Drop" on the Logic Edit component layout can be adjusted.

Position Operation

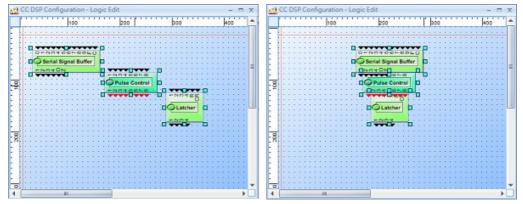
Position Operation Type .: Define what kind of reference you use which can be the place in the

Normal area, a Reference Component or a Reference point.

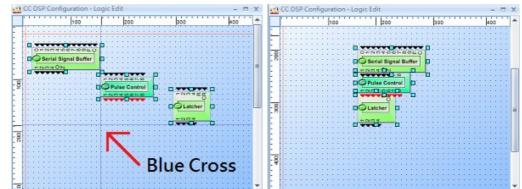
Normal X: The reference is the place in the configuration. If you select several components, and use "Align Left", then the reference will be the left side of the component at the left of the area. All the selected components will be aligned to this reference.



• Reference Component : Use the component for reference. If you select several components, and use "Align Left", the mouse cursor will change to a, and will ask you to select a component for reference. Select a component by clicking it. The mouse will change to when it is placed on a component. All the selected components will be aligned to this component. In this example, we chose the AEC component for reference.



• Reference Point *: Use the point for reference. If you select several components, and use "Align Left", the mouse cursor will change to a blue cross and will ask you to choose exactly where the reference is located. All the selected components will be aligned to this point.



• Alignment 📇: Select several elements and align all the elements.

	Aligment		Align Left	-	-	📕 • 🛄 • 🖷 • 🔚 • 🛞 •
-	Pack 🕨	Π	Align Top			Align Left
	Space •		Align Right		П	Align Top
2	Z-Order		Align Bottom			Align Right
	Size +	#	Align Horizontal Center			Align Bottom
۰	Center •	-	Align Vertical Center		#	Align Horizontal Center
				1		Align Vertical Center

• Pack E: Select several elements and then pack the elements.

-	Pack	• =	Pack Left
	Space	•	Pack Top
2	Z-Order	•	Pack Right
	Size	•	Pack Bottom

-	∭ • ■ • 🗒 •
-	Pack Left
•	Pack Top
-	Pack Right
	Pack Bottom

• Space 🛄: Select several elements and then define the space between all the elements. This method will be easier if you pack the elements first.

	Space •	 Space Across		
-	Z-Order	Space Horizontal Enlarge		Space Across
	Size	Space Horizontal Shrink		Space Horizontal Enlarge
۲	Center	Space Down		Space Horizontal Shrink
	Group	Space Vertical Enlarge	=	Space Down
	UnGroup	Space Vertical Shrink	=== ===	Space Vertical Enlarge
			=3	Space Vertical Shrink

• Z-Order 陆: If you have elements which are under other elements, you can define each by selecting one element choosing if this will be to the front or to the back. Pay attention as sometimes elements can be totally hidden with this action. For example, It is useful with background images and buttons.

8	Z-Order		Bring Forward One		- 🖬 - 💽 - 📉 🐝 🐝 🔛
	Size 🕨	•	Send Back One		Bring Forward One
(<u>.</u>)	Center •	•	Bring to Front	-	Send Back One
	Group	ъ.	Send to Back	-	Bring to Front
	UnGroup		Bring Before Component	-	Send to Back
**	Normal Line	-	Send After Component		Bring Before Component
				- E	Send After Component

• Size : Resize the components. You can also select several components altogether and adjust them to have the same dimensions. All the selected components will have the size of the component on the top left of the window.

	Size	• 🖬	Make Same Width	-	🖲 - <mark>%</mark> 🐝 % 🗮
٠	Center	• 🖪	Make Same Height		Make Same Width
	Group	300	Make Same Size		Make Same Height
				20	Make Same Size

• Center : Select several components and move the components to the window's middle, horizontally or vertically.



	Center	•	Center Horizontal	·	- 💦 🐝 🛠 📜 🙀 😽 🕹
-	Group		Center Vertical		Center Horizontal
	UnGroup	•	Center Horizontal & Vertical		Center Vertical
					Center Horizontal & Vertical

Ungroup 🗮:

Delay

(Basic)

5 ms

Delay

(Basic)

5 ms

Split the grouped components to a single

component. It's the reverse of the Group function.

Þ

Н

D

Delay

(Basic)

5 ms

Delay

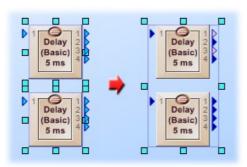
(Basic)

5 ms

Grouping

Group 其:

Select several components and group the components in one component.

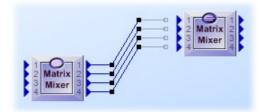


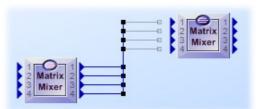
♦ Wiring Mode

Normal Line *>:

Right Angle 📜:

Select Normal Line if you want to draw the wire with different angles.



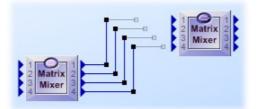


Select Right Angle if you want to draw the wire

only with right angles (90 degrees).

• Auto Corner 🔃

Select Auto Corner if you want the wires to be automatically arranged to have proper corner, with separated wires and with right angles.

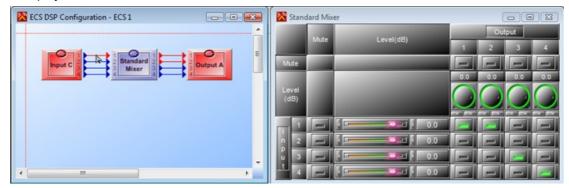


- ✤ Signal Path Mode
- Signal Path Disable 10:

Disable the signal path highlighting function. If the function is not disable, the signal path function allows to display where an audio signal is sent through the design. The signal path will be highlighted in red.

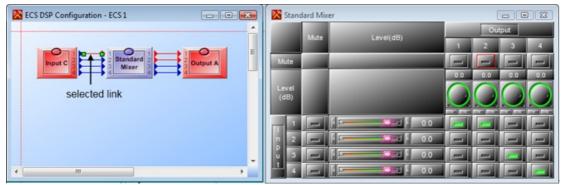
Signal Path Mouse Move 11.

In this mode, by placing the mouse on a signal link, the signal link and the entire signal path will be highlighted in red. In the example below, input C1 is routed in the matrix to outputs 1 and 2. If you place the mouse on the link of channel 1, then the signal path on outputs 1 and 2 will be displayed in red.



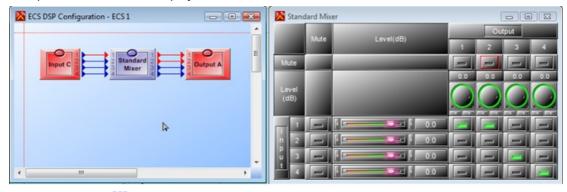
Signal Path Temporary 101:

In this mode, by selecting a signal link, the signal link and the entire signal path will be highlighted in red. If you click in a free zone, the signal path will be canceled. In the example below, input C1 is routed in the matrix to the output 1 and 2. If you place and select the link of channel 1, the signal path on outputs 1 and 2 will be displayed in red.



Signal Path Path Fixed 111:

In this mode, by selecting a signal link, the signal link and the entire signal path will be highlighted in red. The signal path is fixed, therefore, to cancel the fixed path, click another link or component which is not on a free zone). In the example below, input C1 is routed in the matrix to outputs 1 and 2. If you place and select the link of channel 1, the signal path on outputs 1 and 2 will be displayed in red.



Signal Path Lock 112:

In this mode, by selecting a signal link, the signal link and the entire signal path will be

highlighted in red, then the mouse cursor will change into 2 to ask you to select the link again, after selecting the link,the signal path will be locked. To cancel the locked path, select "Signal Path Disable 2". In the example below, input C1 is routed in the matrix to outputs 1 and 2. If you place and select the link of channel 1, the signal path on outputs 1 and 2 will be displayed in red.

ECS DSP Configuration - ECS 1		Stan	C					
	-	Mute	Level(dB)	Output				
		_			1	2	3 4	
Input C		Mute				0.0		
		Level (dB)		_				
		1		- 0.0	-			
		n 2				-		
-		u 3	-	0.0	-	-	_	
• •		4	-	0.0	-	-	-	

6.1.3.6 Operation

		Ope	eration				- 20						
			Com	ipile All									
			Store All										
		01	Rang	ge Element l	.imit	ę.							
System	Messenger Pri 👻	Master Pr	reset N	Master Preset	-	-	01	JJJ		噹	망		*

In this menu you will find the major operations related to system connection allowing you to compile the configuration design and then to store the compiled configuration into the device.

Most part of those windows have short access in the Tools bar. We are going to introduce you every items. To learn how to use these items please refer to the "create a project" and "how to" sections.

- System Selector: Allows to switch systems to the current one. All actions in the tool bar only
 work on the current system. These actions include master preset changing, store, online/
 offline and audio enable/disable.
- Master Preset Selector: Allow to switch master presets.
- Master Preset Settings 🖾: Open the master preset settings window.
- Sub-Preset Settings 🕮: Open the sub-preset settings window.
- Event E: Open event settings window.
- Compile All 冠: Start the compile process. The software verifies that no major errors remain before uploading the design into Audio Processor.
- Store All 🛎: Start the compilation process and then uploads your design into the audio processor.
- Save Parameters 🖼: Save parameters to device's flash.
- Online 🔁: Make Messenger Pro software online with the audio processors. Once online, the parameters will be synchronized including the adjustment of the parameters. When the software is online with devices, designing configuration is not allowed.
- Offline 💐: In the offline state, you can modify the configuration file.

• Audio Enable 📢 / Disable < Enable/disable the audio of Ateis devices.

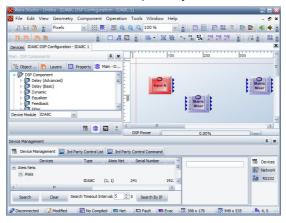
6.1.3.7 Tools

✤ Language:	Тоо	ls	
Choose the language which runs in Messenger PRO software.		Language Skin	•
	2	Communication	
	2	Route Table	
	P	Search Local Version Machine	

Tool: Change the skin style(color and appearance) on the windows of Messenger Pro software.

Office 2003 Blue	Mc Skin:
🔀 Ateis Studio - Untitle - (IDA8C DSP Configuration - IDA8C 1)	🔀 Ateis Studio - Untitle - [IDA8C DSP Configuration - IDA8C 1] 🔷 🔿 🔴
🔀 File Edit View Geometry Component Operation Tools Window Help 🗕 🗗 🗙	🔀 File Edit View Geometry Component Operation Tools Window Help
j 👔 🔐 🖄 🕼 📴 Pixels 🔹 🖽 🛄 🗃 🔍 🔍 🔍 100 % 🔹 🦉 🛄 🔛 😂 🔯 📢 💽 🦉	📝 🖓 🖄 🕶 Pixels 💽 🔛 📖 🔍 Q. Q. 100 % 💽 👻 🔠 🕅 🕮 👘 🖏 🚺 📢 💽 💌
] Layer Untitled 💦 🤨 🤨 🦉 💽 🖬 🖉 💷 🖉 💷 📲 🖓 🍇 💊 🖫 📴 🧱 🐹 🎊 🎆 👬 🎬 🕮	●● ●● ●
Devices IDA8C DSP Configuration - IDA8C 1	Devices IDA8C DSP Configuration - IDA8C 1
Main - DSP Components	Main - DSP Components
😤 Object T 🛅 Layers 🔯 Property 🕼 Main - D	🐮 Obje 🎦 Layers 🔄 Prop 🕕 Main
OSP Component	2 DSP Component
Delay (Advanced) E Delay (Basic)	Delay (Advanced)
Delay (Basic) Dunamic Mixer 3	Delay (Basic)
La Countrate	Equal zer
P Filter v -	Piller
Device Module IDASC -	- B* Fireman
	Device Module IDA8C -
Test Power 0.00%	
Device Management U ×	1 IB 🔯 >> DSP Power 0.00%
Device Management 🔛 3rd Party Control List 🖳 3rd Party Control Command	Device Management
Devices Type Ateis Net Serial Number 🔺	😰 Device Management 🖳 3rd Party Control List 🖳 3rd Party Control Command
Ateis Nets	Devices Type Ateis Net Serial Number A
- Ateis	Ateis Nets
IDAGC (1, 1) 241 192.	
Ateis	IDA8C (1, 1) 241 192. •
< >	
Search Clear Search Timeout Interval: 5 S Search By IP	
	Search Clear Search Timeout Interval: 5 🕈 S Search By IP
🖉 Disconnected 📝 Modified 📰 No Compled 📼 Net 📼 Fault 🛑 Evac 🖾 390 x 170 🔯 949 x 535 🖡 4, 5 , ;;	

• London Liquid Sky:



Communication

 Network Adapter Setting: Select the network adapter in your PC/Laptop >> click on "OK.

Tools Window Help

	Language	۲
	Skin	•
	Communication	
鹊	Route Table	
황	Search Local Version Machine	

Net Adapter IP	Atheros AR816x PCI-E Gigabit Ethernet Contro 👻
----------------	--

Cancel

Window

★ Route Table Image: Second Table Secting Image: Second

The devices with local version will not be searched and listed on the window of [Device Management]. If users want to update the local version of devices to latest version, you need to click this function to search first.

6.1.3.8 Window

- Close 🗵: Close the opened active window.
- Close All 🖾: Close all the opened windows.
- UI Preset : The UI Presets are pre-defined windows positioning.
- I'm Lost : The UI Preset "I'm Lost" will be auto activated by default, it allows to come back as the default standard windows positioning.
- ▼
 Close

 ▼
 Close All

 ■
 UI Preset

 ▲
 1 Devices

 ✓
 2 Messenger Pro DSP Configuration Messenger Pro 1

Active Windows

In the bottom of the window menu, you will find all the opened windows on your project. Select the windows in the list, and the window will come on the first displaying level.

Wine	dow
×	Close
X	Close All
	UI Preset
	<u>1</u> Devices
1	2 Messenger Pro DSP Configuration - Messenger Pro 1

6.1.4 Error & Warning

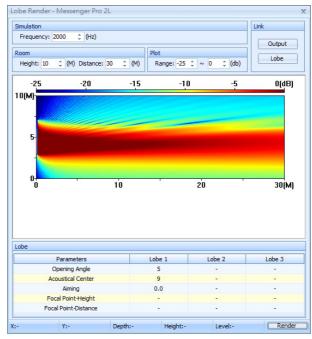
Code	Description
Main error a	and warning codes. These codes are hexadecimal values and multiple errors will be add
	up.
00000001 00000002 00000004	Supply Fault 24V (Remote) Supply Fault 48V Supply Fault 12V

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00000008 Supply Fault -12V	
00000010 DSP communication fail	S
00000020 FPGA communication fa	ils
00000040 SPI FLASH fails	
00000080 Checksum update incorrec	ctly
00000100 I2C ADS7830 fails	
00000200 SSI CPLD fails	
00000400 I2C ADT75 fails	
00000800 24V (Backup) Supply fai	ls
00001000 SSI FP fails	
00002000 SSI Audio fails	
00004000 DSP SDRAM fails	
00008000 Run Test program	
00010000 20k surveillance fails	
00020000 20k surveillance fails	
00040000 Slave Messenger fails	
00080000 AC Supply fails	
Amplifier error codes. These codes are hexadecimal values and r	multiple errors will be add up.
0001 AMP net cable was broken between this AMP board	and the previous AMP board.
0002 AMP net cable was broken between this AMP boar	rd and the next AMP board.
0004 AMP communication fail	S
0008 Frame slips	
0010 LRCK error	
0020 SCLK error	
0040 PLL auto lock error	
0080 Over temperature	
0100 Over current	

6.2 Lobe Assembler Output

The Lobe Output component allows to create your own lobes. Lobes are described as the output result of the array. Based on the chosen opening angle, steering angle and focal point, a sound output is created that will cover the audience area. This output is called a lobe. A lobe picture is normally shown in the way of a hot flame in red that comes from a certain point of the array, acoustic center, and is thrown into the room. Any color declines from red to green means a signal decay from loud to a lower level. Same color at ear level, means an even signal pattern. Using the cursor or a reference line, the signal decay versus distance can be visualized by means of figures or as graph.



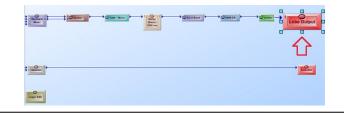
Typical Lobe

The Lobe Output component will shows you the direct energy distribution in an an echoing chamber. Lobe Assembler Output is not for a prediction program, its is only useful to get the information about the direct energy and the expected signal decay. It also allows you to calculate second and third lobes for balconies and for lobe-merging.

Lobe merging can be useful if you have to cover seats over great distances where the signal needs to be tuned for near, middle and far-field. This way you can tune a lobe such that the far-field lobe is gained in signal without causing any feedback effects on the near-field microphones. Beside the choices for opening angle and focal points, the Lobe Output also allows you to select an acoustic center. The acoustic center defines the basic shape of the lobe. It is selectable from A-symmetric to symmetric in 9 steps. This function allows for more flexibility when it comes down on mounting heights and mounting facilities. The Messenger XL, therefore, can be positioned at various heights starting from 1.60 up to 4 meters, counting from the audience ground section.

6.2.1 Edit Lobe

 Click the Lobe Output component to open its control window.



Please note to select the correct type of Messenger at the beginning when dragging the Messenger device from [Main-Device].

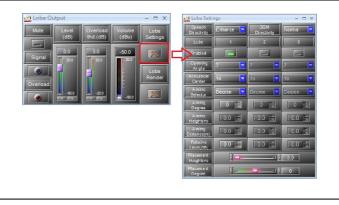
- Messenger L: An 18-way Array. Only restriction on this type is the minimum opening angle of 10 degrees, which is related to its reduced size.
- Messenger XL: A 24-way Array.
- Messenger Two-L: Two Messenger L units linked as one, it became a 36 way Array.
- Messenger Two-XL: Two Messenger XL units linked as one, it became a 48 way Array.

All Messenger units have triple lobe capabilities, 9-steps adaptable acoustic center, variable opening angles, full pre-processing controls and variable mounting heights from 1.60 up to 4 mt.

Lobe Settings:

Click the [Lobe Settings] button. The cursor movement and the parameter settings of the three lobes can be established here.

 Please refer to [Lobe Output component] chapter to know more about each element on lobe setting.



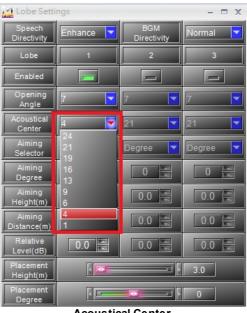
Note:

In case you have chosen for a dual lobe set-up or a triple-lobe set-up, click the checkbox at the top of the window.

• Moving the slide bar up and down will change the basic shape of the lobe. From Asymmetrical on driver number 1 to symmetrical on driver number 13 to reversed a-symmetrical on the top driver number 24. (In case of the XL). The number at the bottom of the slider indicates the driver number that corresponds with the acoustic center.

Speech Directivity	Enhance 🔽	BGM Directivity	Normal
Lobe	1	2	3
Enabled	_		
	Lo	be	

Lobe Settings

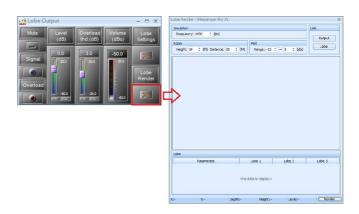


Acoustical Center

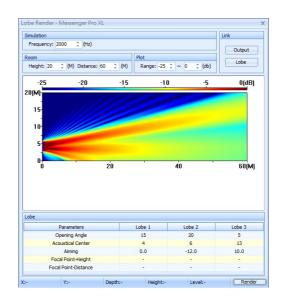
✤ Lobe Render:

After completed lobe settings, go back to the Lobe Output window, and click [Lobe Render] button. Then to start to set the height, depth, height of the Messenger, frequency etc. you want to evaluate.

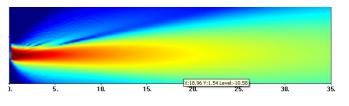
• Please refer to Lobe Output component chapter to know more about each element on lobe rendering.



 After that, click [Render] button to let the program run for the result. The result is showing the direct energy as the Messenger would be positioned in an echoing chamber.

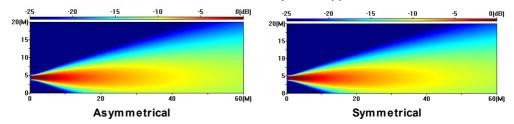


- This could be one of the results when a triple lobe set-up was selected. Two lobes for the ground field, one for the far and one for the near, and one for a balcony. Use the mouse to go through the picture and check for the direct SPL results on the listening plane. In case of too much variation, go back and retune the lobe by changing focal points, relative gains or opening angles.
 - The arrow shows the X, Y and level value. Y = height.
 - Make sure that the level does not varies more than 2 dB.



Lobe shape of asymmetrical & symmetrical:

One of the unique features of the Messenger is that you can adapt the acoustic center to accommodate for the required mounting height. Depending on the mounting position of the speaker, you can change the acoustic center and with that the basic lobe shape from asymmetrical to symmetrical and reversed. Each type of the messenger (L, XL, Two-L and Two-XL) has 9 acoustic centers that define the basic shape and application of the lobe.



A typical asymmetrical shape is used for the typical ground section coverage, symmetrical lobes are more likely to be used for remote placed balconies. Every basic lobe should be post-processed within the lobe-assembler software.

6.2.2 Examples

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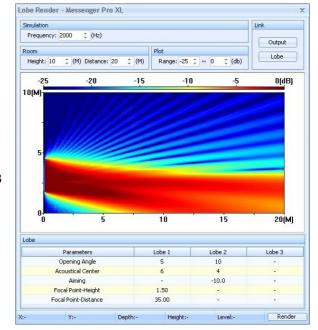
There are many ways of building and creating lobes. Because of the many possibilities it is not unusual that you will not gain the maximum results the first time. It is also very unusual for a sound engineer to shape a lobe where in earlier days the only way of directing sound was my means of re-positioning the speaker or cluster or by choosing a different type of speaker. This array technique has many benefits, but to be able to use it to the max you have to develop a feeling for it. This is the reason why we have put in this chapter with examples. We hope that we can extent this section and fill it with all your experiences. From our experience 8 out of 10 lobes are build the following way and are in this way the most successful to start with, giving the best gain before feedback and the highest STI results.

→Project 1

This is a typical solution for an average object where the Messenger units are hang on a height of 1.80 m, the first rows are at 5 meter from the Messenger and the last seat at a distance of 30 to 40mt.

Data settings:

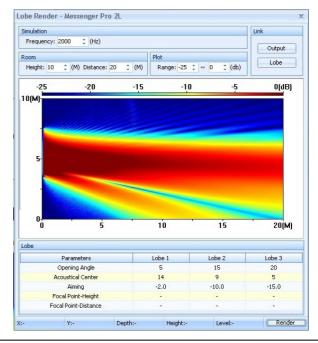
- Type of Messenger : XL
- Placement height : 1.80
- Nearfield row : at 5 mt
- Far field row : at 35 mt
- Balcony : no
- Relative Level of Lobe 1: 3 dB
- Relative Level of Lobe 2: -12 dB



✓Project 2

This is a typical solution for a shopping centre where the Messenger unit is also used for emergency messages and is positioned out of reach of people to become vandal-proof at a height of 3.5 mt. The mall has a depth of 60 mt.

- Data settings:
- Type of Messenger : Two-L
- Placement Height : 3.50
- Nearfield : at 5 mt
- Far field : at 65 mt
- Balcony : no
- Relative Level of Lobe 1: 0 dB
- Relative Level of Lobe 2: 6 dB
- Relative Level of Lobe 3: 6 dB

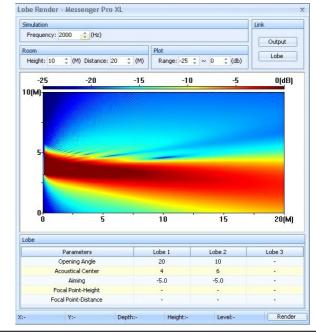


→Project 3

This example describes a system where 4 Messengers XL's were placed, serving the stales at the left and right from the stage in a theatre and two for two upper balconies. The trick was to radiate over the stage avoiding the stage microphones and arrive at the first seats. A second set of Messengers XL was serving the first and the second balconies with the most remote seat at 53 mt.

Data settings:

- Type of Messenger : XL
- Placement Height : 3.17
- Nearfield : at 10 mt
- · Far field : at 26 mt
- Balcony : no
- Relative Level of Lobe 1: 4 dB
- Relative Level of Lobe 2: 0 dB



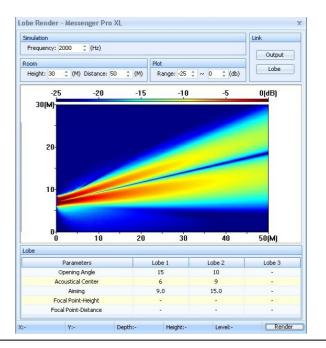
▼Project 4:

These are the balconies Messengers described in Project 3.

Data settings:

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- Type of Messenger : XL
- Placement Height : 6.27
- Nearfield : at 25 mt
- Far field : at 53 mt
- · Balcony : yes
- Relative Level of Lobe 1: 0 dB
- Relative Level of Lobe 2: 2 dB



6.3 Device Management

Device Management window helps to search the Messenger devices on network. Select the [Device Management] tab or open it through the menu [View > Device Management].

Devices	Type	Serial Number	ATEIS Net ID	Mapping	Redundancy	Fault	Connection	
Messenger Pro(s) MessengerG3-1	Messenger Pro	119968	(1, 1)				🧬 Disconnect	Deploy 💋 Health Source
MessengerG3-1 NetWorks	Messenger Pro	5472848	(1, 1)				Connect	Machine File Sys Machine Log Machine Setting Read Version Remote Reset
							F	Remote Update

Device Information

- Devices: List the information of the device.
- Type: The type of the device.
- Ateis Net: Display Ateis Net ID by (X, Y) format, where X is the global net ID and Y is the local net ID.
- Serial Number: Serial Number of the device. Each Ateis device has a unique serial number.
- Address: Shows the IP address of the device.
- Redundancy Addr: The redundancy address of the device.
- Device Status: Show the status of devices. If there is a fault in the audio processor, this field shows "Fault".
- Name: The object of the design window that corresponds to the device. After the relation of the
 object and device is created, the configuration of the object will set to the device after
 executing the "store" procedure.
- Communication: Shows the communication state of Messenger Pro software and the device.

2 Device Function:

Lists all available functions of the device which will be told in each topic later.

Search Devices:

- Search: Attempts to discover the Ateis devices on the network.
- Clear: Clears the current search results and empties the grid.
- Search Timeout Interval: Determines the length of time the device will reply to the search command.
- Search by IP: If you already know the IP address of a device, you can search for it by that address.

6.3.1 Search and Connect

Search and connect to a device for further editing:

Before searching the Messenger unit in the LAN, the device information area is empty as shown in the picture below. Click the [Auto Search] button under the Devices tab, the device list will appear after a few seconds.

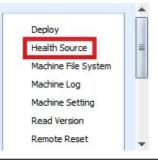
Devices	Туре	Serial Number	ATEIS Net ID	Mapping	Redundancy	Fault	Connection	ATEIS Net Status
Messenger Pro(s) MessengerG3-1	Messenger Pro	13579	(1, 1)				🍠 Connect	
Add Remove	Clear	Auto Search						

The connection signal shall appear in a blue icons is when the device is correctly connected to.

6.3.2 Health Source

This function allows users to check the status of devices that have been fully connected to the PC over CAT5 cable connection.

- 1. Open the Device Management Window.
- 2. Select the device on the device list and click [Health Source] button on the right grid.
- 3. After a pop-up window appears, check the device that ticks in the box.



This action can only be ticked one at a time.

			Serial Number			
MessengerG3-1	3-1	Messenger Pro	13579	(1, 1)	192.168.101.51	5
MessengerG3-1	5-1	Messenger Pro	13579	(1, 1)	192.168.101.51	

6.3.3 Machine File System

Allow to manage the audio (WAVE, G.722), figure (Bitmap) and messenger machine (HAC) with specific order and topic stored in your device.

Click to open [Machine File System Settings] window.

6.3.3.1 How To

Step 1: Click [Machine File System] button to open the control window.

	Name			Туре	Size	Link	MFI	Selected	Parameter	-
🖃 🗊 Root				Folder						1
Messenger	_2L.hac			Fir	2MB					
📢 Messenger				Fir	2MB					
Messenger	_2L_3_5.hac			Fir	2MB					ш
📢 Messenger	_2XL.hac			Fir	2MB					
📢 Messenger	_2XLS.hac			Fir	2MB					
Messenger	_2XL_3_5.hac			Fir	2MB					
📢 Messenger				Fir	1MB					
ALL	-	-	.//				-			

✤ Parameters:

The upper grid [black frame] lists the files in your device under the specific folder,

- MFI (Monitor File Integrity): Click to enable to monitor the selected files once/per hour, when the selected files are damaged and cannot be played, the IDA8 System will show [File Corruption] fault.
- Dove: Select the files you wish to put into on [Folders] window, then click [button to open the [Select the folder] window, and choose the folder you wish the files to put into. See the Picture below,

	Name		
	Name		
- 🏳 Root			
2			
1			
3			
1			
D folder			
D 5 D 6			
1 6			
		OK	Cancel

- 🔽 Folder edit : Add a folder or file.
- X Delete: Delete the folder or file.
- Market Refresh: Refresh the setting.
- Name: Name of the folder or file.
- Type: Types of source (folder or file)
- Size: Size of the folders or file.
- Link: Source of the folder or file.
- Selected: Choose the selected folder or file.

✤ Parameters:

The down grid [red frame] lists the procedure of files transition via the PC,

- Progress: Progress of the file. (0%-100%)
- Status: Status of the file. (Succeed or fail)
- Add: To add into the selected WAV format.
- Remove: To remove the selected files that listed on the bottom of [Folder] window.
- Clear: To clear all the files that listed on the bottom of [Folder] window.
- Save: To save the selected files in your device.
- Save: To display and save files from the PC into your device.
- Load: To display save uploaded files from your device into the PC.

 $rac{1}{2}$ Please make sure the software's version is correct as it will affect the file storing location.

Step 2: Create a new folder

To create a new folder, right clicks your mouse on the icon and types in the folder name.

	Name	Link	MFI		Path				-
Messeng	jer_2L.hac			.\\Root\					
le M	Edit Folder							- 8	X
'IC									
Me	~ -	Name			Add	Delete	Result		
	Root				2 🔶				
Чe	1					🚥 Wai	t for apply		
Чe			[Question			X		-
VIe									
ers				Please enter	new folder	name:			
=				folder			_		
-				I					
					ОК	Cancel			
						Concer			
			l						
				Apply	Cancel	Close			
					-	2.0	2.0	2.0	

- Parameters:
 - $\circ\,$ Name: Name of the file.
 - $_{\odot}$ Add / Delete: Add or delete the folder.
 - o Result: Result of the setting. Eg: [wait for apply]
 - Apply: Confirm the setting.
 - $\circ\,$ Cancel: Cancel the setting.

♦ Step 3: Load the file

2 Name	Link	MFI		Path		
Messenger_2L.hac			.\\Root\			
Messenger_2LS.hac			.\\Root\			
Messenger_2L_3_5.hac			.\\Root\			_
Messenger_2XL.hac			.\\Root\			
Messenger_2XLS.hac			.\\Root\			
Messenger_2XL_3_5.hac			.\\Root\			-
				3		4

Follow the 4 steps on the upper picture,

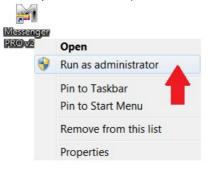
- Click the [Load] window.
- Select the file users intend to load.
- Add the selected file.

• Load the selected file.

✤ Parameters:

- File existed solution Auto remame * : Types of way to name a file (Auto rename, give up, replace)
- Auto Rename: Choose this to rename to file name + (x). x indicates the files with the same name. Eg: C011404.g722 will rename to C011404(1).g722
- Give up: Choose this to give up to load the file which is existed or with the same file name.
- Replace: Choose this to overwrite the file which is existed.

Please note that if the selected files you have loaded from the device cannot be seen on the Machine File System, please restart the software again by using the [Run as administrator] (Right click on your mouse to open the window). Please see the picture below,



Step 4 : Add and Save the selected file into the folder

	Name			Type	Size	Link	Selected	t l	
🗆 🗊 Root				Folder					(
- 1				Folder					
004Evacu	ation 4 languages :	16k_v2.wav	1	Wave	824KB		V		
001GNG3	ONS.WAV			Wave	63KB				
006Jimmy	Gets High .wav			Wave	6MB				
002BACK	min.wav			Wave	50KB				
			Ad		Remove		lear	Save	

- Go back to the [Save] window.
- Then, click [Add] button to open the [Resource Manager] window.

	Туре	Size	Link	MFI	Selected	Parameter
loot	Folder					
2	Folder					
\$ C011404.g722	G.722	62KB				
ද් C011404.g722 ද් C021401.g722 ද් C021403.g722	G.722	62KB				
	G.722	62KB				
1 4 1 3	Folder					
	Folder					
of Chime3.mp3	Wave	33KB				
🔀 Resource Manager						
All		Sample Rate			le Size(bit) -	
GNG3TONS.WAV	64892 1	16000			16	V
				C	Ok	Cancel
				C	Ok	Cancel

• Choose the format of file on top of the grid and select the file. Then click [OK] button.

🔀 Machine File Syste	m									- 🗆 X
🚸 问 🗙 🔄										
	Name			Туре	Size	Link	MFI	Selected	Parameter	*
🖃 💭 Root				Folder						
🖃 问 2				Folder						=
& C011404	.g722			G.722	62KB					
ର୍ଚ୍ଚ C011404 ରୁ C021401 ରୁ C021403	.g722			G.722	62KB					
🐇 C021403	.g722			G.722	62KB	· · · ·				
□ 4 □ □ 3				Folder						
🖃 问 3				Folder						
Chime3.r	mp3			Wave	33KB					- 3
- P 1				Folder						
GNG3TO	NS.WAV			Wave	63KB					
Tolder				Folder						
5				Folder						-
Folders Files										
Name	Туре	Size		Folder	Progress		Status	Select		
ALL	-	-	11.				-			
GNG3TONS.WAV	Wave	63KB	. 11		0 %		Fail	1		
								1		2
Save Load					Add	Re	move	Cle	ar	Save
	(140)	-				ve file	Gariala			
Space = 25 / 228	(MB)	Progress			Sa	ve file	nnish			

- Then, select the file you have just add in, and click [Save] button.
- It will automatically refresh again, then the file you have added in will be listed on the top grid of [Folder] window.
- Once the settings have been made, users can add a message player component and use the files in the device to play messages. This function provides users assorted audio and figure files stored in the devices.

Step 5 : modifying your way. file

Select the WAV format on the upper right grid, and click [...] on Parameter at the upper right grid to open the window [file name].

© 2020, MESSENGER PRO

Machine File System					- = x
	Name	Туре	Size	Link MFI	Parameter
		Wave	63 KB	6	
	File Parameter Settings	×			
	Wave				
Folders Files	Level 10				
	Message Priority 50		X	Delete	Refresh
	Status Apply	Reset			
Name Type	//	<u>incore</u> S	Status		
GNG3TONS.WAV Wave	: 63 KB .\\	100 % Si	uccess	ar	Save
Save Load					
Space 81/100 (MB) Pro	gress	Save file finish			
File Paran	neter Settings			x	
Wave					
	Level	10	÷		
M	essage Priority	50	4		
	Evac				
Status	No Modified	Apply	<u>R</u> ese		

- Parameters:
 - $_{\odot}$ Level: To increase and decrease audio volume. Please refer to mapping table below and see the actual db with its corresponded level.

Level	dB
0	-60
1	-41
1 2 3	-37
3	-33
4	-29
5	-25
5 6	-21
7	-19
8	-16
9	-13
10	-10
11	-7
12	-7 -4 -2 0
13	-2
14	0
15	2
16	4
17	6
18	8
19	9
20	10

 $_{\odot}$ Message Priority: The default priority of Modbus message when triggering the message

file.

- \circ Evac: The default type of Modbus message when triggering the message file.
- Apply: Confirm the alteration.

Once the settings have been made, applications of this function could allow you to manage the audio volume changing with the stored files.

6.3.4 Machine Log

Allow to read the log of Messenger device.

- 1. Open [Device Management] window.
- 2. Click [Log] to open the log window.

💥 Machine Log			- = x
Time	Device	ATEIS Net ID	Description
Every Processor 30	records	[Load 🔯 Terminate
		0 %	

3. Set the read count and click [Load button to show the logs. In case of sending the log to your technician, click [Save Record 📄] button to generate a .txt file. Click [Clear Record 📴] button to clear the whole display log.

Time	Device	ATEIS Net ID	Description
2013/4/16 20:33:07	MessengerG3-1	(1, 1)	AMP1 port B remove
2013/4/16 20:28:36	MessengerG3-1	(1, 1)	AMP2 Reg:07 W:44 R:00
2013/4/16 20:28:36	MessengerG3-1	(1, 1)	AMP1 Reg:07 W:44 R:00
2013/4/16 20:28:36	MessengerG3-1	(1, 1)	AMP0 Reg:07 W:44 R:00
2013/4/16 20:28:36	MessengerG3-1	(1, 1)	Unknow Log:99
2013/4/16 20:28:36	MessengerG3-1	(1, 1)	LVDT error
2013/4/16 20:28:36	MessengerG3-1	(1, 1)	LVDT error
2013/4/16 20:28:36	MessengerG3-1	(1, 1)	LVDT error
2013/4/16 20:28:36	MessengerG3-1	(1, 1)	LVDT error
2013/4/16 20:28:36	MessengerG3-1	(1, 1)	LVDT error
4			•

6.3.5 Read Version

Allow which version is loaded in the device and which version is available with the current software:

- 1. Open [Device Management] window.
- 2. Search and connect to the device.
- 3. Click [Read Version] to open the window.

Device Name	ATEIS Net ID	MCU	DSP	Read
Messenger Pro(s)		2.0.0.0	2.0.0.0	
MessengerG3-1	(1, 1)	2.0.0.0	2.0.0.0	

- 4. Click [Read] button to get the version data from the device.
 - Device Name: The name of each device that has fully connected with.
 - Firmware Unit (MCU, DSP, NET Card): The version of the firmware, software, and hardware program unit in the device.

If the version numbers or Network ID are marked in red which means the firmware needs to be updated or the device hasn't fully connected with Messenger Pro, please see <u>Update</u> chapter.

Press [Ctrl + F3] to open 4 hidden firmware grids in Read Version window: MCU/DSP/ FPGA/AEC.

Machine Settings

Time

Country (GMT+08:00) Taipe

2089/2/1

08:20:10

6.3.6 Machine Setting

Allow to monitor the general functions of Messenger device.

- 1. Open [Device Management] window.
- 2. Search and Connect to the device.
- 3. Click [Machine Setting] to open its control window.

6.3.6.1 Date/Time/NTP/Daylight Saving

• Date/Time:

Read the Time set in the device and manually adjust the time by clicking the [Read] and [Write] button. The adjustment is required in period for the component which is associated with the time such as the scheduler.

RTC Gain 0 Ethernet Adapt RTC Error Detect Read Write Status Read Succeed Machine Setti Network Time Protocol Retrieve Interva Log Enabled Server IP Server1 220.130.158.52 V Ethernet Ada Server2 220.130.158.72 V Server3 153 109 180 3 V Server4 91.121.117.23 Server5 208, 184, 49, 9 Read Write Status Read Succeed

Date/Time

Davlight Savin

Ethernet

• NTP:

You can use the NTP server to sync the clocks on your LAN.

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• Daylight Saving:

In case of using the daylight saving time, switch to the Daylight Saving tab to set.

Daylight Saving Time	OFF	-	Start			Date/Time
Time Difference	01:00	\$	Month	January	-	NTP
		*	Date	0	\$	Daylight Savin
Daylight Saving Type	Date	0.70	Time	00:00	\$	Ethernet
			End			
				1		
			Month	January	+	
			Date	0	¢	
			Time	00:00	\$	
				Read	Write	

6.3.6.2 Ethernet Monitor

• Ethernet:

Once enable the Ethernet Monitor, the fault message will show in the log list when the communication is broken.

🔏 Machine Settings	- = >
Capability Monitor	Date/Time
	NTP
	Daylight Saving
	Ethernet
	Ethernet Adapte
Status Read Succeed	

6.3.6.3 Ethernet Adapter

• Ethernet Adapter:

Display the information of IP, Subnet, Gateway of your device.

IP	192.168.103.120		Date/Tim
Subnet	255.255.252.0		NTP
Gateway	192, 168, 100, 249		Daylight Say
ostenay			Ethernet
ostenay			Etherne
Caterioy			Etherne
usicino)			Ethernet
osanoy			Ethernet
oseno,			Ethernet Ada
country (Ethernet
			Ethernet

6.3.7 Reset Machine

Allow to reboot the machine by Messenger PRO software.

- 1. Open [Device Management] window.
- 2. Click [Reset Machine] to open the control window.
- 3. Select the units needed to be rebooted first, and click [Reset] to start rebooting.

Devices	Type	Serial Number	ATEIS Net ID	IP	
lessengerG3-1	lessenger Pro	1234	(1, 1)	192.168.10.121	

6.3.8 Reverse

Allow to reverse designs from Messenger PRO devices.

1. Open the Device Management Window.

- 2. Make sure the firmware version are compatible before configuring "Reverse". Note: Please go to "Read Version" and "Update" before reverse a configuration.
- 3. Click [Reverse] to execute a reverse procedure.

everse		
State		
Reverse completed.		
reverse completeer.		
	Reverse completed.	

4. After a pop-up window appears, click Yes/No. Users can save the file if a configuration has already existed due to the Messenger PRO software can only edit a file a time.

File Module Message		X
File Modified,	do you want t	o save it?
Yes	No	Cancel

6.3.9 Update

- To know which version is loaded in the device and which version is available with the current Messenger PRO software:
- 1. Open the Device Management Window.
- 2. Click [Update] to open the Version window.
- 3. After a pop-up window appears, click on the [

		Serial Number	ATEIS Net ID	Status	
essengerG3-1	Network				
MessengerG3-1	lessenger Pro	13579	(1, 1)	-	

4. After opening the file browser window, search the asu (Ateis Studio Update) files on your PC. Next, click [Open] to start the update process.

6.4 3rd Party Control

An Messenger device supplies a flexible way for you to control the parameters inside of the device from a 3rd party control device, which allows an external device to control an Ateis device through Ethernet or RS232.

Feature

- Third party controller can connect to any Ateis device and any DSP parameter
- Selectable communication protocol
 - o Check sum using
 - o Answer for command of third party controller

MESSENGER PRO User Manual

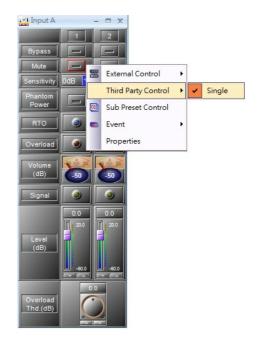
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6.4.1 Assign Elements to 3rd Party Control

To make an element controlled by 3rd party protocol, you need to specify that it is able to be controlled by 3rd party devices. To activate this setting, right click the element and click on menu [3rd Party Control > Single].

After the assignment is completed, you will receive a preview of the string used to control the Messenger devices by the 3rd party device. The 3rd Party Control Command is in the preview window for the command.

To have a global view of all elements controlled by 3rd party devices, you can use the 3rd Party Control List window. The window is described in later.



6.4.2 3rd Party Control List

List all elements available for 3rd party controlling. To open this window, click menu [View > 3rd Party Control List].

Item	Element	Channel	Device Name	Command ID
Single				
Input A	Mute	(Output 1)	Messenger Pro Ls 1	0001
PEQ 8 Band	Gain	(Band 1)	Messenger Pro Ls 1	0002
PEQ 8 Band	Frequency	(Band 1)	Messenger Pro Ls 1	0003

The following is the description:

- Tab for devices: There are separated tabs for each device. In the tab, a grid lists all elements which can be controlled by a 3rd party device.
- Item: This shows the elements set for 3rd party controlling in a tree structure. The parent item shown as "single" means the type is single. A single 3rd party control command can control only one element.
- Element: The name of the element listed.
- Channel: The channel to which the component element belongs.
- Device Name: Lists the element containing the component.

6.4.3 Machine Set Table

• Machine set table:

Function name	Command Name	IN/reply Data format
Ethernet MAC(Read Only)	M000	E1-00-00-AA-BB-A0
Ethernet IP	M001	192.168.100.254
Ethernet Sub Mask	M002	255.255.255.255
Ethernet Get Way	M003	255.255.255.255
Ethernet DHCP flag(Read Only)	M004	0 or 1 (On / Off)
Ethernet Receive port	M005	Example:19720
Ethernet Send port	M006	Example:19721

6.4.4 Communication Protocol

Programmable RS232 settings:

Communication can be established using a standard-asynchronous-serial protocol. The UART settings are shown in below.

Name	Setting
Baud rate	BR115200 /
	BR57600 /
	BR56000 /
	BR38400 /
	BR19200 /
	BR9600 (def.) /
	BR4800 /
	BR2400 /
	BR1200 /
	BR600 /
Data bits	8
Parity	None /
	Odd /
	Even /
Stop bit	1

6.4.5 3rd Party Control Commands

Control	Туре				Command				Command Data	
Control	Type	STX	OP	ID	Value	EXT	CS	CR	Command Data	
Single	Read	0x02	R	0004		0x03	0x16	0x0D	02 52 30 30 30	
Single	Write	0x02	W	0004	0	0x03	0x4B	0x0D	02 57 30 30 30	

This window shows a preview of the element that is assigned for 3rd party control. In the left part, a grid shows information of the command string for a 3rd party device to the control element. The right part is a visual object which allows the user to change its value and see the command string.

- Control: Indicates the row of command string which is for single control or multiple control.
- Type: Shows the command string which is for reading or writing parameters of Ateis devices.
- Command: There are several sub-fields in this field, STX, CP, ..., CR. Each is part of the

complete command string.

• Command Data: The content of a command string, represented by hexadecimal.

6.4.5.1 Commands

6.4.5.1.1 Command Frame

F	leader section	Data Section		Check-sum	
	STX	Command string	E	CS	CR

- STX: always be 0x02
- EXT: always be 0x03
- Command string: Number of Max is 50

Command code: 1 char, I/D/W/R/T/M/S/L/E/P/V/N/Y/U/B.

Function name: 4 char, named by user.

Value: depend on each command.

- CS: Sum of all all characters of command string
- CR: always be 0x0D

For each command, answer can be ACK CR (executed), NACK CR (not executed), DLE CR (not executed), or none, depend on communication protocol settings.

ACK : 0x06 DLE : 0x10 NACK : 0x10

The answers are not inserted inside STX...ETX LRC CR frame.

6.4.5.1.2 Increase/Decrease Command

Command string = I/D nnnn vvv

STX	Data Section			
STX	I/D nnnn vvv	EXT	CS	CR

STX	Data Section		
STX	I/D nnnn ww	EXT	CR

nnnn = function name (fixed 4 length)

vvvv = value (unfixed)

For example : Room1 volume, value = 3 dB

'STX' + IR0013 + 'EXT' + 'CS' + 'CR '

'STX' + IR0013 + 'EXT' + 'CR '

6.4.5.1.3 Write Parameter Command

Command string = W nnnn vvv

ST)	<	Data Section			
ST)	Κ	W nnnn vvv	EXT	CS	CR

STX	Data Section		
STX	W nnnn vvvv	EXT	CR

nnnn = function name (fixed 4 length)

vvvv = value (unfixed)

For example : cd1, value = 10 dB

'STX' + WCD110 + 'EXT' + 'CS' + 'CR '

'STX' + WCD110 + 'EXT' + 'CR '

6.4.5.1.4 Read Parameter Command

Command string =Rnnnn

STX	Data Section			
STX	Rnnnn	EXT	CS	CR

STX	Data Section		
STX	Rnnnn	EXT	CR

nnnn = function name (fixed 4 length)

Answer is always Rnnnvvvv (Reply Read Para. Com.)

(Please reference 3.3.6)

6.4.5.1.5 Connect Test Command

Command string = T

S	TX	Data	Section						
S	ТХ		Т	EX	Г	С	S	С	R
									_
	S	TX	Data Se	ection					
	S	TX	Т		E	EXT	С	R	

Answer is always **ACK CR** or None, depend on communication protocol settings.

6.4.5.1.6 Messenger Fault Read Command

Command string = F

STX	Data Section			
STX	F	EXT	CS	CR

STX	Data Section		
STX	F	EXT	CR

Answer is always (Reply Messenger Fault)

6.4.5.1.7 Reply Messenger Fault Command

Command string = Fsnnnn

STX	Data Section			
STX	Fsnnnn	EXT	CS	CR

STX	Data Section		
STX	Fsnnnn	EXT	CR

s = Messenger body size

Messenger body size	Reply word
Messenger G2A 2L 2.5	L
Messenger G2A 2L 3.5	
Messenger G2A 2L 4.5	
Messenger G2A 2XL 2.5	Х

Messenger G2A 2XL 3.5	
Messenger G2A 2XL 4.5	
Messenger G2A L 2.5	L
Messenger G2A L 3.5	
Messenger G2A L 4.5	
Messenger G2A M 2.5	М
Messenger G2A M 3.5	
Messenger G2A M 4.5	
Messenger G2A XL 2.5	X
Messenger G2A XL 3.5	
Messenger G2A XL 4.5	

- nnnn = fault bit mask
- Bit 001 : FLASH_ERROR
- Bit 002 : SPI_FLASH_ERROR
- Bit 003 : SSI_CPLD_ERROR
- Bit 004 : SSI_FP_ERROR
- Bit 005 : SSI_AUDIO_ERROR
- Bit 006 : I2C_ADS7830_ERROR
- Bit 007 : I2C_ADT75_ERROR
- Bit 008 : DSP_SDRAM_ERROR
- Bit 009 : DSP_COMM_ERROR
- Bit 010 : DSP_CODE_ERROR
- Bit 011 : FPGA_COMM_ERROR
- Bit 012 : INPUT1_20K_ERROR
- Bit 013 : INPUT2_20K_ERROR
- Bit 014 : POWER_24V_ERROR
- Bit 015 : POWER_LOW12V_ERROR
- Bit 016 : POWER_12V_ERROR
- Bit 017 : POWER_48V_ERROR
- Bit 018 : POWER_DC24V_ERROR
- Bit 019 : POWER_AC_ERROR
- Bit 020 : PRESET_TABLE_ERROR
- Bit 021 : NO_PRESET_TABLE
- Bit 022 : NO_PARAMETER_TABLE
- Bit 023 : PARAMETER_TABLE_ERROR
- Bit 024 : PHY_ERROR
- Bit 025 : ETHER_ER
- Bit 028 : USER_DEFINE_FAULT
- Bit 030 : WRONG_PA_PB_DIR
- Bit 050 : AMP1_PA_REMOVE
- Bit 051 : AMP2_PA_REMOVE

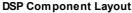
Bit 052 : AMP3_PA_REMOVE Bit 053 : AMP4_PA_REMOVE Bit 054 : AMP1_PB_REMOVE Bit 055 : AMP2_PB_REMOVE Bit 056 : AMP3_PB_REMOVE Bit 057 : AMP4_PB_REMOVE Bit 058 : AMP1_COMM_ERROR Bit 059 : AMP2_COMM_ERROR Bit 060 : AMP3_COMM_ERROR Bit 061 : AMP4_COMM_ERROR Bit 062 : AMP1_FRAME_SLIP Bit 063 : AMP2_FRAME_SLIP Bit 064 : AMP3_FRAME_SLIP Bit 065 : AMP4_FRAME_SLIP Bit 066 : AMP1_LRCK_ERROR Bit 067 : AMP2_LRCK_ERROR Bit 068 : AMP3_LRCK_ERROR Bit 069 : AMP4_LRCK_ERROR Bit 070 : AMP1_SCLK_ERROR Bit 071 : AMP2_SCLK_ERROR Bit 072 : AMP3_SCLK_ERROR Bit 073 : AMP4_SCLK_ERROR Bit 074 : AMP1_PLL_LOCK_ERROR Bit 075 : AMP2_PLL_LOCK_ERROR Bit 076 : AMP3_PLL_LOCK_ERROR Bit 077 : AMP4_PLL_LOCK_ERROR Bit 078 : AMP1_OVER_TEMPER Bit 079 : AMP2_OVER_TEMPER Bit 080 : AMP3_OVER_TEMPER Bit 081 : AMP4_OVER_TEMPER Bit 082 : AMP1 OVER CURRENT Bit 083 : AMP2_OVER_CURRENT Bit 084 : AMP3_OVER_CURRENT Bit 085 : AMP4_OVER_CURRENT Bit 129 : MATLAB_2L25_NOT_EXIST Bit 130 : MATLAB_2L35_NOT_EXIST Bit 131 : MATLAB_2L45_NOT_EXIST Bit 132 : MATLAB_2XL25_NOT_EXIST Bit 133 : MATLAB_2XL35_NOT_EXIST Bit 134 : MATLAB_2XL45_NOT_EXIST Bit 135 : MATLAB_L25_NOT_EXIST Bit 136 : MATLAB_L35_NOT_EXIST Bit 137 : MATLAB_L45_NOT_EXIST Bit 138 : MATLAB_M25_NOT_EXIST Bit 139 : MATLAB_M35_NOT_EXIST Bit 140 : MATLAB_M45_NOT_EXIST Bit 141 : MATLAB_XL25_NOT_EXIST Bit 142 : MATLAB_XL35_NOT_EXIST Bit 143 : MATLAB_XL45_NOT_EXIST Bit 144 : MATLAB_2L25_CORRUPTION Bit 145 : MATLAB_2L35_CORRUPTION Bit 146 : MATLAB_2L45_CORRUPTION Bit 147 : MATLAB_2XL25_CORRUPTION Bit 148 : MATLAB_2XL35_CORRUPTION Bit 149 : MATLAB_2XL45_CORRUPTION Bit 150 : MATLAB_L25_CORRUPTION Bit 151 : MATLAB_L35_CORRUPTION Bit 152 : MATLAB_L45_CORRUPTION Bit 153 : MATLAB_M25_CORRUPTION Bit 154 : MATLAB_M35_CORRUPTION Bit 155 : MATLAB_M45_CORRUPTION Bit 156 : MATLAB_XL25_CORRUPTION Bit 157 : MATLAB_XL35_CORRUPTION Bit 158 : MATLAB_XL45_CORRUPTION

7 Components

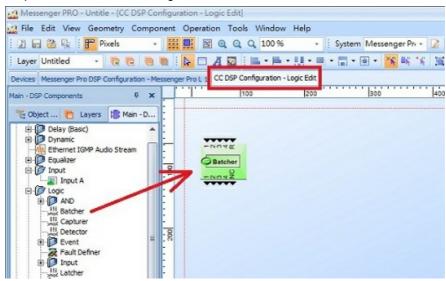
Once you click into the DSP component layout, you will find some of the components are fixed in the layout. See the picture below.

If you would like to control other components, please click Logic Edit component to enter a configurable layout, which allows "Drag n Drop" for creating components/objects for configuration.

The second secon		
Logic Edit		



User can also create many objects/components for specific applications. Each object works different jobs and you need to create it in the design window to make it work. The below figure shows how component template works with the design window:



There are three pages of component templates on the left is a component template and on the right is the design window. You can click into the different templates to switch between them.

- Object Tree(Devices Page): List the devices which are ready for drag and drop to a device design window. Some of the objects correspond to physical devices and some are only symbols.
- DSP Components Page: List the DSP components which allows to "drag and drop" into the DSP design window. Each of them corresponds to a signal processing unit inside the device.
- Layers Page: List each separated window into multiple layers. Every object in the design window belongs to a layer. You can also click menu [View > Layers] to open the layers window.

7.1 Delay (Basic)

Used to delay the audio signal input to the component. The delayed component records the audio into a internal buffer and then plays the stored audio based on parameters set by users. There are two ways to adjust the delay time for a channel. First, adjust the element delay time, then adjust the Element Temp and Distance. Element Type can be switched between two modes.

Main - DSP Components	×	
DSP Component DSP Component Delay (Basic) Onum Dynamic Dynamic Ethernet IGMP Audio Stream Delay Equalizer Delay Logic Output Output Mixer		
Selector Selector Custom Component Device Module Messenger Pro		1 Delay (Basic) 1000 ms

✤ Control Window



✤ Element Description

Max	Maximum Value Precision Value		Distance		
Туре	Maximum Value	Туре	Maximum Value	Туре	Maximum Value
5ms	5000 µs	5ms	5 µs	5ms	1.62 m
50ms	50000 µs	50ms	20 µs	50ms	16.25 m
100ms	100000 µs	100ms	20 µs	100ms	32.5 m
200ms	200000 µs	200ms	20 µs	200ms	65 m
500ms	500000 µs	500ms	20 µs	500ms	162.5 m
1000ms	1000000 µs	1000ms	20 µs	1000ms	325 m

• Type: Enable Choose between adjusting with Time or with Distance and temperature.

• Delay Time: Specify how much time will be delayed for the audio signal of a channel.

• Temp: Specify the temperature to compute the delay time of a channel.

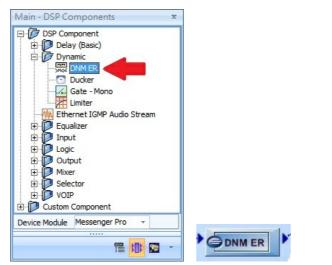
• Distance: Specify the distance to compute the delay time of a channel.

If a channel is muted and bypassed at the same time, the audio signal of the channel will be muted.

7.2 Dynamic

7.2.1 DNM ER

The DNM component is basically the same functions as the A.N.G. component, but it uses the DNM microphone as the S.M input of A.N.G.



Control Window

DNM ER					- 🗆 X
Min Gain (dB)	Max Gain (dB)	Sampling Time (10ms)	White Noise Level (dB)	Noise Threshold (dB)	AGC Level (dB)
-60 	6.0	50	-40.0	0.0	-25.0 25.0
Calibration	Over Unde	A\R Time(s)	_40.0		-25.0
Paging Activity De	crease Zone	Dead Zone	Increase Zon	ie Fast In	crease Zone
Sensing Mic Level (Hz-db)	C/Sensing Mie (dB) 0.0		(dB)	Different (d	
IP 0.0.0.0					

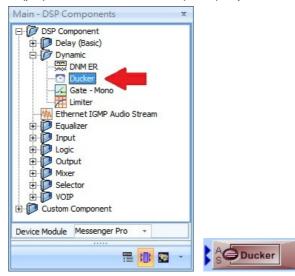
Element Description

- Min/Max Gain: The minimum/maximum level compensation.
- Sampling Time: Determine the period of time between the two ambient noise measurements.
- White Noise Level: The level which is automatically adjusted in the calibration process.
- Noise Threshold: The measurement of background noise level when the Calibration button is enabled.
- AGC Level: Display the current compensation gain.
- Calibration: Start the automatic calibration. Calibration proceeding: light up in red. Calibration succeeded: light up in green.
- Over/Under: Indicate the calibration result which White Noise Level is over/under the range now.
- AR Time: The attack/release time.

- Paging Activity: Light up when the paging is activated.
- Response Speed: Select the speed reaction of A.N.G., the speed of adapting the P.M. audio level depends on the ambient noise.
- Decrease/Increase Zone: Indicate the AGC gain is decreasing/increasing.
- Dead/Fast Increase Zone: Indicate the AGC is not changing/is increasing fast.
- Sensing Mic Level: Display the input level of sensing microphone.
- C/Sensing Mic Level: Display the input level of sensing microphone after the internal calibration function.
- Output Level: Display the output level.
- Differential Level: The difference level between the Output level and the C/Sensing Mic level.
- IP: Set the IP address of [Master DNM-ENET].

7.2.2 Ducker

The Ducker is a type of switch, allowing to automatically attenuate or switch off the signal before sending to input A channel(pin) when the chosen level (in dB) is perceived in input S channel(pin).



Control Window



- Element Description
- Bypass: Disable the Ducker's operations.
- Active: Light up when the Ducker is activated while the signal has been detected on input S channel(pin).
 - Thd.: The threshold of detection on input S channel. The input A channel is attenuated when the input S channel goes above this threshold.

To avoid the unexpected attenuation, don't set a threshold level too low.

 Response Time: Adjust the time between the level detection of input S and the beginning of the Ducker's operation on input A channel.

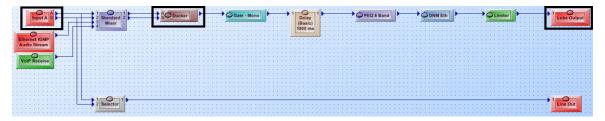
Lon't set the "response time" too long, otherwise you won't hear the beginning of input S channel(as the first word of a speech).

- Attack Time: Adjust the fade-in time of input A channel when the Ducker is working.
- Hold Time: Adjust the time between the end of level detection on Input S and the end of the Ducker's operation.

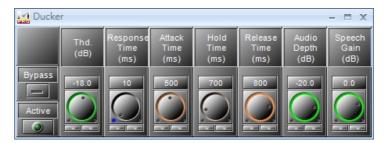
Leave Set enough "Hold time" to avoid the unexpected background level during the speeches breaks.

- Release Time: Adjust the fade-out time of input A channel when the Ducker is no longer working.
- Audio Depth: Adjust the level of input A channel when the Ducker is activated.
- Speech Gain: Adjust the level of input S channel when the Ducker is activated.
- Application

For example, when the speechmaker is talking, the background music must decrease its level. The component set is shown in the picture below. The microphone is connected to channel 2 of the "Input A" component with sensitivity set as -40dB, which means the microphone is linked to the input (S) of the Ducker. The music player (as a CD player) is connected to channel 1 of the "Input A" component then the music source is linked to the input (A) of the Ducker.



Elements



- Threshold: Set as -18dB, because less would activate the attenuation causing the microphone to catch some unexpected noise even when the speaker is not talking.
- Response Time: Set very short, because the background music must be attenuated as soon as the speaker is talking.
- Attack and Release Times: The "fade-in" and "fade-out" on the background music. Set about 1 second for hearing comfort.
- Hold Time: Set as 700(ms) which is enough to avoid the music increasing during the speech breaks.
- Audio Depth: Set as -20dB for constantly hearing the music during the speech but in a very low level (depending on the context).

7.2.3 Gate Mono

Main - DSP Components DSP Component Delay (Basic) DNM ER Ducker Gate -Ethernet IGMP Audio Stream 问 Equalizer ÷ Equalize E Custom Component Device Module Messenger Pro * Gate - Mono ч. nput threshold output plou response release attack

The Gate allows to cut off the signal below the chosen threshold.

Control Window



Element Description

- Mute/Bypass: Mute/disable the Gate's module.
- Gate On: Light up when gate is activated.
- Thd.: Set the threshold level above which Gate will open.
- Response Time: Adjust the time between the level's detection and the beginning of the Gate operation.
- Attack Time: Adjust the fade-in time of signal when Gate is activated.
- Hold Time: Adjust the time between the end level's detection and the end of the Gate operation.
- Release Time: Adjust the fade-out time of signal when Gate is no longer activated.
- Depth: Attenuate the level when Gate is activated.

7.2.4 Limiter

Offer the limitation of volume.



Control Window

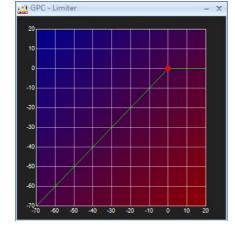


Element Description

- Bypass: Disable the Limiter's operation.
- Hard Clipping (Limiter): Enable/disable the "Hard clipping" mode.

It might cause 'audio distortion' when in [Hard Clipping] mode.

- Limiting: Light up when the Limiter is activated (open).
- Threshold (dB): Set the threshold level from where the limiter or compressor will start.
- Release Time: Set the time it takes to release the gain reduction.
- Gain reduction (dB): Set the current amount of gain reduction.
- Graphical Control Window: Adjust the compression ratio by moving the red cursor.
- Graphical Control Window
 - Axis
 - X: Input signal level(dB).
 - Y: Output signal level(dB).
 - Control Points
 - o Blue: Adjusts Threshold.
 - Red: Adjusts Threshold Range.
 - Yellow: Adjusts Ratio.



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7.3 Ethernet IGMP Audio Stream

This component is an Internet stream player which receives audio stream and play the streaming source. The Internet audio stream which sends the audio streaming from the devices such as PC or Terra device, and compose into the certain RTP format (Real-time Transport Protocol) and play the audio stream via this component. For example, TerraServer can be the source to stream audio to this component. The supported format are inlcuded PCM(16K 16Bit Mono), G711ulaw, G711alaw, G722 and MP3.

IGMP address 224.0.0.0~224.0.0.2 is reserved, which can not be used as the IP of IGMP address.

- 224.0.0.0: Base address (reserved).
- 224.0.0.1: For all the hosts on the same network segment.
- 224.0.0.2: For all the routers on the same network segment.



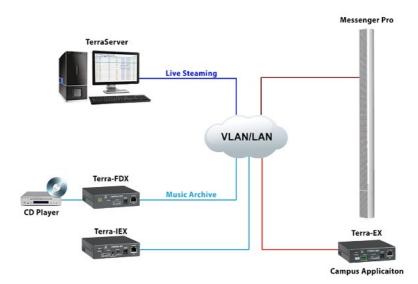
Control Window



♦ Element Description

- Stop: Disable the action of audio streaming.
- No.1- No.8: The channel of audio stream.
- [...]: Click to open the window of channel setting.

Application



There are several types as the server of Ethernet audio stream: Terra Server, Terracom device or computer software such as VLC Media Player. The picture below shows how to use the Audio Matrix on Ateis Web Interface to set the preset of audio stream on TerraServer.

						Au		I/O Con			
A	B			9	LINE O	UT (AM	IP OUT)			E STREAM OU	т
INPUT	MOE)E	PRIC	RITY	1(A)	2(B)	S/PDIF	OUT		IP ADDRESS	PORT
SIP	Mono	•	1	•	V	V	N/A				
MIC IN	Mono	•	6	-			N/A	OFF	-	239.240.100.1	9666
LINE IN	Mono	•	2	•	V	1	N/A	PCM16K	-	239.240.104.1	9444
MESSAGE	Auto	-	6	-	1	1	N/A	OFF	-	239.240.100.1	9666
							E N	thernet IGN	/IP A	udituream IP	Port
							1	239.24	0.10	D.1	9666
							2				0
							3				0
							4				0
							5				0
							6				0
							7				0
											0

7.3.1 Audio Matrix

Audio Matrix provides a clear interface to manage all audio in/output, here you can:

- Audio routing with priority.
- Audio routing with RAC-5/8.
- Volume control depends on audio source.
- Announcement has different volume with music.
- Send network stream.
- Play network streams.

ietup1	Setup	2	Upc	late	Statu	s /	bout	Logout														
	MOL		(RITY	LINE O	UT (AN	IP OUT)			E STREAM OUT				(ON		ОРТІ	DNS			BUF	
INPUT	PIOL		PKIU	жит	1(A)	2(B)	S/PDIF	OUT		IP ADDRESS		PORT		SELE	ст		INPU	JT V	DLUM		DUFI	TE P
SIP	Mono	•	1	•	V		N/A				E						Fix	•	24	•	RT	•
MIC IN	Mono	•	6	•			N/A	OFF	-	239.240.100.1		9666	Fix	-		•	Fix	•	24	•		
LINE IN	Mono	•	2	•		V	N/A	PCM16K	•	239.240.104.1		9444	Fix	-		•	Fix	•	36	•		
MESSAGE	Auto	•	6	-	1	V	N/A	OFF	-	239.240.100.1		9666	Fix	-		•	Fix	•	24	•		
MONITOR	Mono	•	6	•	V	V	N/A										Fix	•	24	•	RT	•
NETWORK	Auto	•	6	-	1	V	N/A										Fix	•	24	•	RT	•
	0	MO					🕒 ѕноц	TCAST/ICE	CAS	ar (STREAM		AST								
N/W IN	G	MO	DE					URL				IGMP IP		PO	RT							
SOURCE 1	Stream	n Mul	licast	-							239	.240.100.1		9012			Fix	•		•		
SOURCE 2	Stream	n Mul	licast	•							239	240.100.1		9012			Fix	•		•		
SOURCE 3	Stream	n Mul	licast	-							239	240.100.1		9012			Fix	•		•		
SOURCE 4	Stream	n Mul	licast	•							239	240.100.1		9012			Fix	•		•		
SOURCE 5	Stream	n Mul	licast	•							239	240.100.1		9012			Fix	•		•		
SOURCE 6	Stream	n Mul	licast	•							239	.240.100.1		9012			Fix	•		•		
SOURCE 7	Stream	n Mul	licast	•							239	240.100.1		9012			Fix	•		•		
SOURCE 8	Stream	n Mul	licast	•							239	240.100.1		9012			Fix	•		•		
						* Port 8	000~9000	has been us	ed b	v system, DO NOT us	e these	e ports on you	r design.									

Input: The audio input sources.

- SIP: SIP calls.
- MIC IN: Play Mic-in.
- LINE IN: Play line input music.
- MESSAGE: Play audio message.
- USB: Play USB music.
- NETWORK: Play network stream.

Even with the same priority set, the LINE IN has higher priority than the MIC IN in the default setting.

Odde: Select between Mono, Stereo and Auto depending on the input source, for example: MIC-IN is Mono.

Priority: Always set the SIP's priority as "1", or the call will be left aside. The SIP includes Call, Paging Group and Pre-define Message.

• Select inputs by RAC allows the user to switch the source manually, and the priority will be locked:

Go to Control Input page and set as the picture below:

	Adu B	DELIVERIN	G YOUR M	ESSAGE	. 99		TERRA-FDX, Version 1.2 FDX_101170@192.16 OUT-1: LINE IN /	8.101.170:
Setup 1 Se	etup 2 U	pdate Status	About Log	out			-	
				Control Input	Playlist			
Local Control								
CONTROL IN	PUT	CONTROLLER	POSITION	FUNCTION		SOURCE	TARGET	
	PUT	CONTROLLER RAC-5	-	FUNCTION Channel Sel	lect 💌	SOURCE	TARGET	CB
CONTROL IN IN1 IN2	PUT					SOURCE	TARGET	<u>CB</u> <u>CB</u>

Back to Audio Matrix page, the IN1 is RAC-5 sources selectors and IN2 is RAC's knob for volume control.

Once the inputs are assigned to RAC, their priority are controlled by RAC as well. You can easily switch them and adjust the volume.

Only USB and Network don't need trigger.

THOUT	MODE	DDIODITY/	LINE	OUT (A	MP OUT)			STREAM OUT		C	ONTROL	OPTI	ONS
INPUT	MODE	PRIORITY	1(A)	2(B)	S/PDIF	OUT	Г	IP ADDRESS	PORT	SELE	CT	V	OLUME
SIP	Mono 💌	1 💌	V		N/A							IN2	
MIC IN	Mono 💌	6 👻	V	V	N/A	OFF	-	239.240.100.1	4444	IN1 💌	1 💌	IN2	▼ 30 ▼
LINE IN	Mono 💌	6 💌			N/A	OFF	-	239.240.100.2	4444	IN1 💌	2 💌	IN2	▼ 30
USB	Auto 👻	6 👻	1		N/A			239.240.100.3	4444	IN1 💌	3 🗸	IN2	- 30 -
NETWORK	Auto 💌	6 👻	V	V	N/A							IN2	▼ 30
		0.00		SHOUTO	CAST/ICEC	CAST		STREAM MUL	TICAST				
N/W IN	M	ODE			URL			IGMP IP	PORT				
SOURCE 1	SHOUTcast	t/icecast 💌	http://	/111.252	2.83.160:98	877/ices				IN1 💌	4 💌		
SOURCE 2	SHOUTcast	t/icecast 💌	http://	/192.168	8.100.61:98	378/jms				IN1 💌	5 💌		
SOURCE 3	Stream Mu	lticast 💌						239.240.100.2	4444	Fix 💌	💌		
SOURCE 4	Stream Mu	lticast 💌						239.240.100.3	4444	Fix 💌	💌		
SOURCE 5	Stream Mu	ticast 💌						239.240.100.5	9012	Fix 💌	💌		
SOURCE 6	Stream Mu	lticast 💌						239.240.100.6	9012	Fix 💌	💌		
SOURCE 7	Stream Mu	lticast 💌						239.240.100.7	9012	Fix 💌	🔻		
SOURCE 8	Stream Mu	lticast 👻						239.240.100.8	9012	Fix 💌	💌		

U Line out (AMP out): Check the checkbox to enable the audio output channels. The current audio outputs will show at the upper-right of the page. For example, it shows SIP during a SIP call.

Stream Out: Sends network streams.

- Out: Choose the encoder of the MIC-IN and LINE-IN.
- IP Address: The Multicast Address, choose between 225.0.0.0 ~ 239.255.255.255.
- Port: The RTP port should be an EVEN number.

Port 8000~9000 has been used by system, DO NOT use these ports on your design.

- · Source: Mic in/ Line in/ USB
- Encode: WAV/ MP3/ G.722/ AAC (Sample Rate: 48k Hz).
- Control Options:
 - Select: Assigns the channel of the RAC to the Audio inputs (includes Sources from Network).
 - Volume: Set a fixed volume or control it with the knob of a RAC.

ONE Network Stream Source Mode: Receive packet from the URL. Choose the source type, from Stream Multicast or SHOUTcast/Icecast.

Note: It may cause the sound quality problem if the audio received from the SHOUT cast/icecast isn't in 48k sampling.

SHOUTcast/Icecast URL: Type the URL of the Shoutcast or Icecast.

Stream Multicast (LAN Only): Receive RTP (Real-time Transport Protocol) packet from IGMP.

Type the Multicast Address and its port.

7.4 Equalizer

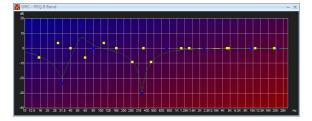
7.4.1 EQ 8 Band

PEQ (Parametric Equalizer) is a multi-band variable equalizers which controls the three primary parameters: amplitude, center frequency and bandwidth, making more precise adjustments to sound than other equalizers. The amplitude of each band can be controlled, the center frequency can be shifted, and bandwidth ("Q") can be widened or narrowed.



Control Window





Element Description-1

- Bypass all: Disable the EQ(all the frequency bands).
- Bypass: Disable the selected frequency band.
- Bandwidth: Set the width around the frequency(Q factor) of selected frequency band.
- Frequency: Set the frequency of a band.
- Gain: Set the gain(attenuate or increase the selected frequency).

Graphical Control Window

- Axis:
 - X: Frequency of output signal(Hz).
 - Y: Gain of output signal(dB).
- Control Points:
 - Blue: Adjusts Gain(using vertical direction) and Frequency(using horizontal direction).
 - Yellow: Adjusts Bandwidth

Element Description-2

• Filter:

The EQ-folder provides 8 free addressable filters. Every EQ has the following pre-selectable filter-characteristics:

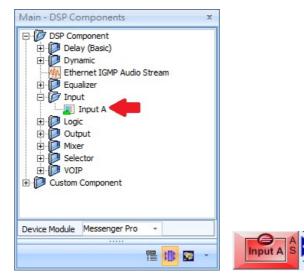
- 1. All pass filter (Phase shifting)
- 2. Low pass (high-cut)
- 3. High Pass (low-cut)
- 4. Low Shelving (Tone control)
- 5. High Shelving (Tone control)
- 6. Band pass
- 7. Notch filter (Anti-feedback)
- 8. Peak filter (Room resonance's)
- Application

An equalizer can be used to correct or "flatten" the frequency response of speakers rather than designing the speaker itself to be equalized. Some speaker systems don't use separate woofers and tweeters to cover the bass and treble frequencies but rather include full-range drivers. However, this speaker system is sold with an active equalizer designed to correct the poor frequency balance of those drivers. That equalizer must go into the sound system before the amplifier so that the amplified signal is sent to the speakers. The signal has its response increased at the frequencies where the response of these drivers falls off, producing a high fidelity reproduction regardless. Ateis audio processors give you the same solution without using an external equalizer, it's all done in the software component PEQ.

7.5 Input

7.5.1 Input A

Allow to control and monitor the parameters of analog input signal.



Control Window



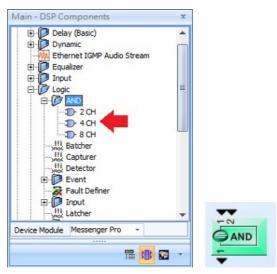
Element Description

- Bypass/Mute: Disable/mute the audio channel.
- Sensitivity: Set the input gain of the channel to the preamplifier.
- Phantom Power: Apply 48 VDC phantom power to the channel input for use with condenser mics.
- RTO: An input channel 'Routed To Output(s)'.
- Overload: Light up if the signal of an input channel is bigger than Overload Thd.
- Volume: The VU-Meter shows the channel of RMS level.
- Signal: Light up if the audio signal presents above -30 dB from the chosen 'Sensitivity'.
- Level: The signal output level of channel.
- Overload Thd.: A threshold value to determine the signal of channel is overloaded or not.

7.6 Logic

7.6.1 AND

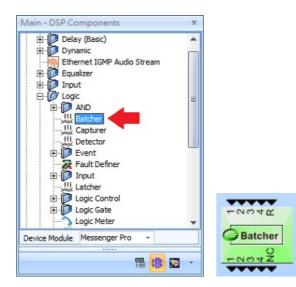
Allow the logical operation "AND" that applied on a logic signal.



7.6.2 Batcher

Allow to make multiple sets of inputs and outputs simultaneously. The status of output will be automatically clear as 0 after 1 second.

 $rac{1}{2}$ The number of input and output channels must be the same when using the Batcher component.



- R pin(Reset): The "pulse trigger" that will give the R pin the triggering signal.
- NC pin(No Change): When the input "remains the same", the NC will give a pulse to let the next component which is connected to the Batcher component to identify the remain status.

7.6.3 Capturer

Allow to capture the selected parameter of input and lock them as the output. Users can also use the pins of Capturer to choose the time to capture and lock.

The basis of Capturer is based on two modes: [Ready] and [Disable]. [Ready] indicates that once the input has changed, the Capturer component will capture the updated changes of input to output, and after capturing, the component will be in Disable mode, which means no matter the change of input, the output will not be affected.

11 The channel mapping of input and output via Capturer component need to be the same.

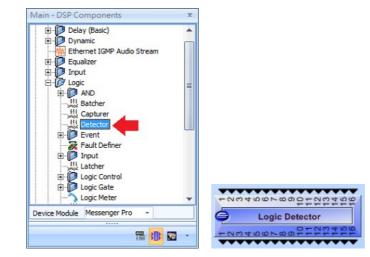
	A
Dynamic	
Ethernet IGMP Audio Stream	
🕀 问 Equalizer	
🕀 🗊 Input	
E- D Logic	=
D AND	
Batcher	
Detector	
Event	
Fault Definer	
Logic Control	
⊕ Digic Gate	
	-00400000
Device Module Messenger Pro 👻	Capturer

- R pin (Reset): The "pulse trigger" that allows to capture the updates changes of input to output, based on the [Ready] Mode.
- CR pin: To compulsively lock the status, based on the [Disable] mode.
- CT pin: If there's no changes on input, the Capturer component will still capture the input to output again.

• NC pin (No Change): When the input "remains the same", the NC will give a pulse to let the next component which is connected to the Capturer component to identify the remain status.

7.6.4 Detector

Used when the output is based on the range of input you select. Note that the setting of input range is according to the binary code.



Control Window

CH	Min	Max	
1	1	3	
2	0	12	=
3	0	6	
4	0	2	L
5	0	8	
6	0	7	
7	0	6	
8	0	0	

Detector Setting

- The range of every output pin can be set individually, the corresponded input needs to set by binary code.
- In Please connect the channel pins by the order of input, and avoid using the repeated pins among other mapping pins. The default number of blank mapping pin is 0.

7.6.6 Logic Control

Allow to generate the logic signal using buttons in Messenger Pro software.

Main - DSP Components	x	
Logic AND Will Batcher Will Capturer Detector Event Fault Definer Poly Input Latcher Cogic Control Will 1 CH Will 1 CH Will 2 CH Cogic Control Will 1 CH Will 2 CH Cogic Control		
Device Module Messenger Pro 🔹		Cogic Control
		-004

Control Window



Elements

The element allows to show the control logic signal for each channel output.

• On/Off: Output logic signal 0 or 1.

7.6.7 Logic Gate

Allow to delay the output time.

Main - DSP Components	x	
🖻 🕼 Logic		
AND		
🕀 🗊 Event		
Fault Definer		
🕀 🗊 Input	=	
Latcher		
E Dogic Control		
🖻 🕼 Logic Gate		
Logic Meter		-
Pulse Control	-	-
Device Module Messenger Pro	T	GLogic Gate
		Logic Gate
-	111 🖾 🔹	
		•

Control Window

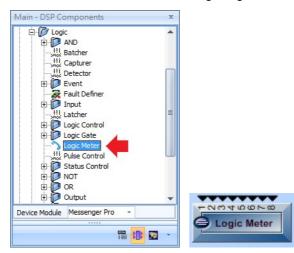


✤ Elements

Rising Response Time (100ms)/ Falling Response Time (100ms): The time of output delay when a rising signal/falling signal is triggered. The unit of time is 100ms, therefore, the actually value is N x 100 ms.

7.6.8 Logic Meter

This component has LEDs to indicate the statuses of the logic signal.

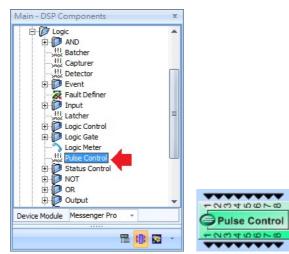


Control Window



7.6.9 Paulse Control

The Pulse Control component allows to have a duration of 1 second for pulse output when the status of Input Pin has been changed. Please see the picture below,

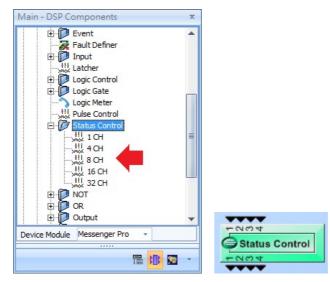


• The input pin and output pin of Pulse Control are mutually corresponded with each other. The status of each pin can be set individually. When the input is triggered, the output will result in a duration of 1 second pulse.

	CH	from Lo to Hi	from Hi to Lo
	1	V	
0 ~ 00 ~ 10	2	V	
ntrol	3		1
	4	V	
	5		V
	6		V
	7		1
	8	1	

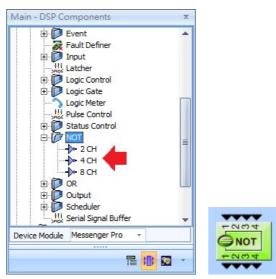
7.6.10 Status Control

Allow the status output to get locked and remains at the last status when the input has triggered the pulse. The Input Pin N and Output Pin N are mutually corresponded, they will not be affected by other Pins.



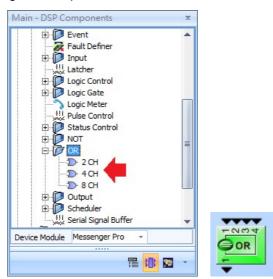
7.6.11 NOT

This component performs logical NOT operation.



7.6.12 OR

This component performs logical OR operation.



7.6.13 Output

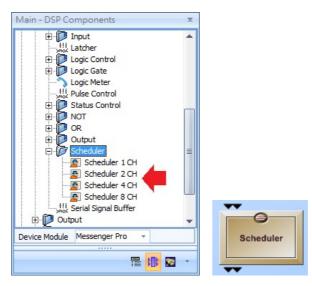
This component is corresponding to the contact outputs.

Main - DSP Components	x	
Event	-	
Fault Definer		
🕀 🔝 Input		
🕀 🔝 Logic Control		
🕀 🗊 Logic Gate		
Logic Meter		
🕀 🗊 Status Control		
🕀 🚺 NOT		
	=	
🖻 🚺 Output		
2 CH		
🕀 🗊 Scheduler		
HII Serial Signal Buffer		
🕀 🗊 Output		
🕀 问 Mixer	-	
Device Module Messenger Pro -		
		-N
	-	Contact Outp
		-

7.6.14 Scheduler

Allows to arrange the timing of generating logical pulse to output. The length of pulse is 1 sec. There are four types of schedulers: Scheduler 1 CH, Scheduler 2 CH, Scheduler 4 CH and Scheduler 8 CH.

The pins on the top side enables(signal = 1) or disables(signal = 0) the scheduler belongings to the channel. The pins at the button will generate the pulse signal depending on the settings of component.



✤ Control Window

Scheduler List

eduler 1 eduler 2	General Settings	Triggering Mode
souer 2	Name: Scheduler 1	Mode: Periodic *
	Start Time	Interval: 0 0 0 : 0 0 (hh:mm:ss)
	2016/1/7 10:06:41	
	Stop Condition	
	Continue ~	
	Number of Times: 1 Stop Time: 2016/1/7 10:06:41	
	Exception Duration	
	SN Start	Stop Add
		Delete

Scheduler 1 Scheduler 2 At the left side of the window, a box lists all channels of the scheduler. Click it to

all channels of the scheduler. Click it to change the focus on the scheduler. The right part of the window shows the settings of the scheduler which will be switched to the corresponding scheduler.

✤ General Settings

General S	Settings	
Name:	Scheduler 1	
Name:	Scheduler 1	

• Name: The name of Scheduler.

Start Time

Ŧ	
	×

• The start time of the scheduler.

Stop Condition

Continue	T		
Number of Times:	1	÷	
Stop Time: 2016/			

Specify the condition to stop a Scheduler. There are three types of condition:

- Continue: In this option, scheduler will never stop. The triggering setting is always valid.
- Number of Times: Scheduler is triggered N times using triggering setting where N can be set at "Number of Times parameter".
- Stop Time: Scheduler is activated from start time to the time which set in the "Stop Time parameter".

Triggering Mode

The triggering mode defines the rule of triggering a pulse to output.

• Periodic: The interval is the time between two triggers.

Trigger	ing Mode				
Mode:	Periodic		*		
Int	erval: 0	‡ : 1 0	\$:50	¢	(hh:mm:ss)

- Cyclic: The Occurrence parameter determines the cycle type of triggering. There are five types available: Hourly/Daily/ Weekly/Monthly/Yearly. It allows the user to define the interval between cycles by specifying the parameter of Every N cycle unit where the cycle unit can be Hour/Day/ Week/Month/Year.
- The box lists the Time of Triggering. You can add or remove the triggering time in the cycle.

ccurrence: Daily	 Only current selected occurrence will be enabled
List of Triggering Time 00:00:00 02:03:01	Time: 2 ‡ :3 ‡ : 1 ‡
	Save Delete

Exception Duration

SN	Start			5		Add	
L	2011/10/11	02:36:39	•	2011/10/19	02:36:39	-	
2	2011/10/23	02:36:41	-	2011/10/25	02:36:41	-	Delete

· By Excel File

	A	В	С	D	E	F	G	Н
1	2011.1	24HR						
2	1	08:00:00	09:00:00	10:00:00	11:00:00	12:00:00	13:00:00	14:00:00
3	2	08:00:00	09:00:00	10:00:00	11:00:00	12:00:00	13:00:00	14:00:00
4	3	08:00:00	09:00:00	10:00:00	11:00:00	12:00:00	13:00:00	14:00:00
5	4	08:00:00	09:00:00	10:00:00	11:00:00	12:00:00	13:00:00	14:00:00
6	5	08:00:00	09:00:00	10:00:00	11:00:00	12:00:00	13:00:00	14:00:00
7	6	08:00:00	09:00:00	10:00:00	11:00:00	12:00:00		

It allows to set the triggering times by using an excel file. The rules are listed below:

- Field A1 is the "Year. Month" for scheduling. Note: Refer to the format as shown in the picture above.
- B1 ~ X1 is the field for time format, there are two choices:

o 24HR

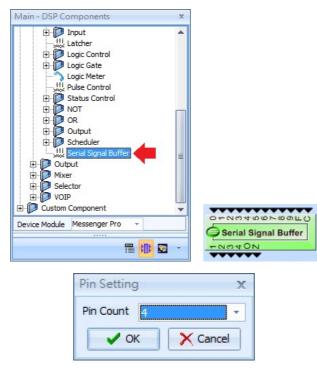
○ AM/PM

- A2 ~ A 32 represents the day of a month.
- For each row, B to X fields are the time to be triggered.

 The "Exception Duration" allows to edit a list for the exceptions of the triggering.
 Each exception consists of a start time and a stop time. During the exception time all triggering will be masked.

7.6.15 Serial Signal Buffer

Used for converting the decimal code to the binary code. After dragging this component to the configuration window, the [Pin Setting] window will be displayed, choose the number of pin, and click [OK] to proceed.



- Pin Count: Choose the binary code of the output.
- F Pin: Output the binary codes/binary combinations which are converted from decimal codes/ decimal combinations after the F Pin is triggered.

Please note that the higher of the Pin count indicates higher priority of decimal codes.

 $_{\odot}$ Pin 1: LSB stands for the first priority of decimal codes.

Pin 4: MSB stands for second priority of decimal codes.

- C Pin (Clear): All the decimal combinations will be 0 (clear away) if the C Pin is triggered.
- O Pin (Overflow): If the output range of decimal combinations are more than the range of binary codes, the O Pin will output a pulse as a warning.
- Z Pin (Zero): If the total output of decimal combination is 0, the Z Pin will output a pulse as a notification.

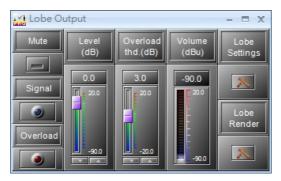
7.7 Output

7.7.1 Lobe Output

The lobe output modules represent the physical analog outputs accessible of your device. Analog input and output modules are added automatically to the fixed configuration of DSP window.

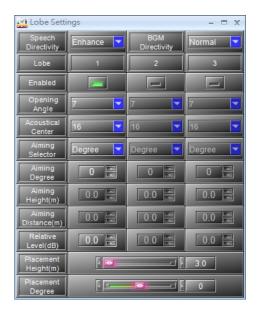


Control Window



Element Description

- Overload: Indicates the channel level above the chosen Overload Threshold (dB).
- Volume: The meter shows the channel level.
- Mute: Mute/unmute the output channel, the LED lights in red while the channel is muted.
- Signal: Indicate if a channel is activated or not.
- Level: The signal output level of the module.
- Overload thd.: Sets the threshold of the overload indicator.



Lobe Settings

rsonal	Speaker	Lobeshape	Lobe Properties	Visualisatio	n						
			⊙ Lobe :								
		CLO	be properties								
				Opening Ang	le:	Q: Th	row depth:				
			Lobe size:		15			~			
			Relative Level:	0	dB						
			Aiming								
			 Degree 	es 0							
			O Focal F	nink							
				ht from floor:	0		eters				
				nce from fro		_	ieters				
			Dista	nternanno			leters				
								OK	Co	ncel	Apply

Element Properties

- Speech Directivity: Adjust the speech directivity from enhance, normal to bypass. The default status of [Enhance] stands for clearer sounding for speechmaker.
- BGM Directivity: Adjust the BGM directivity from Aggressive, Medium, Normal to Bypass. The default status of [Normal] stands for all-around with rich stereo sound.
- Enable: [Enable] or [Disable] the angle or degree settings of Lobe 1-3.
- Opening Angle: The opening angle in steps of 5 degrees from 5 to 45 degrees (With exception of the 'L', that goes from 10 to 45 degrees).
- Acoustical Center: Select which embedded speaker as the center of sounding.

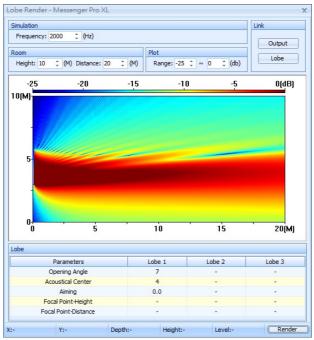
The number listed on the dropdown box 1, 3, 5, 7,10... etc. means the order of embedded speaker from "the bottom to the top".

• Aiming Selector: There are two types of selector: Degree and Focal Point.

Focal Point means it measures by the height and distance you set.

- Aiming Degree:
 - Degree: Set the aiming degree of your Messenger indicates the "steering angle + means steering up - means steering down".
 - Focal point: If you do not know the steering angle, you can also fill out the data required for the focal point that will exactly bring the lobes acoustic center through your measuring point.
- Aiming Height: Set the aiming height when rendering the measurement of focal point.
- Relative Level: This function will relatively compare the level from the other two lobes to the selected lobe. For example, set Lobe 1 as 0dB and Lobe 2 as 20 dB, and this indicates that the level of Lobe 1 will be 20dbB less than Lobe 2.
- Aiming Distance: Set the aiming distance when rendering the measurement of focal point.
- Placement Height: Set up the exact height between Messenger PRO and ground.
- Placement Degree: Set up the exact directing angle of Messenger PRO.

Lobe Render:



• Simulation: Frequency: The lobe results at the given frequency.

It is proven that the 2000 Hz result matches with Pink Noise measurements in the field. Other frequencies need to be played as sinewave and measured as sinewaves. See it as a practical tool.

- Room: Set up the exact height and distance of your environment (room).
 - Height: Height of the ceiling.
 - o Depth: Depth of the object.
- Plot scale: Set the dB scaling position of rendering.
- Link:
 - o Output: A link to the control window of [Lobe Output].
 - Lobe: A link to the control window of [Lobe Setting].

7.8 Mixer

7.8.1 Standard Mixer

Allow to mix the signals together and route the source signals to external processing components. But there is no ability to make independent mixing for each output channel. So the module primarily used for simple routing purposes.



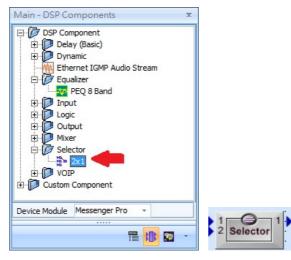
Control Window

March 1	Stand	dard Mi	xer	- 🗆 X
		Mute	Level(dB)	Output
				1 2
M	ute			
				0.0 0.0
	vel B)		_	
	1		0.0	
n	2		0.0	
n p u	3	-	· • 0.0	
t	4	-	0.0	

- ✤ Element Description
 - Input Mute: Mute/unmute the channel input.
 - Input Level: Set the input level of the channel.
 - Output Mute: Mute/unmute the channel output.
 - Output Level: Set the master output level of the channel.
 - Routing: Turns on/off the input on the particular output channel.

7.9 Selector

A simple selector allowing the user to select which input is routed to the single output.



Control Window



♦ Element Description

Input Select: Open the dropdown list to select the input.

7.10 VOIP

7.10.1 VoIP Receive

Allow the device such as PPM-IT5, IP phone, Terra-K etc. to call via LAN/WAN. G.711, G.722, L16 and MP3 format can be supported by MESSENGER PRO. The communication protocol via SIP protocol or Voxnet format.



- VoIP Recei x
- [VolP Receive]-Setting

[VolP Receive]-Control Window

Settings			- = x
	Server		Account
IP	0.0.0.0	User	Messenger Pro L 1
RTP Port	6912	Password	
SIP Port	5060	RU SEC User	Messenger Pro L 1
Codec	G.722	RU SEC Password	
Buffer	RT		

Server:

- IP: The connected IP of SIP server.
- RTP Port: The port that is using for streaming.
- protocol.
- streaming.
- · Buffer: The delay time of streaming.

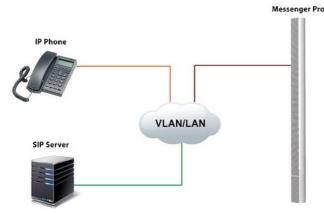
- Mute: Mute/unmute the channel input.
- Level: The level of the channel.
- Setting [🚵]

Account:

- User: The calling name(text or telephone number) can be user-defined.
- · Password: The password that is using to connected to SIP server.
- RU SEC User: The calling name(text or telephone number) of the secondary unit when using redundant configuration.
- RU SEC Password: The password of secondary unit when using redundant configuration using to connected to the SIP server.

• SIP Port: The port that is using via SIP • Paging: With the element of network paging, users can multi-paging through calling.

• Codec: The format that is using for • Answer Behavior: Select the ring tone time before the call picks up automatically. Select manual mode to manually pick up the call by clicking [] Call button.



The picture below shows using the VoIP component to paging to Messenger PRO on Terra Server:

- 1. Select the Input---IN1, IN2, IN3
- 2. Select the Controller(the connected input type)---Logic, RAC 5, RAC 8, RAC Analog, Edge Trigger Button, Push to Talk

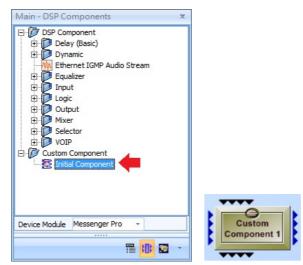
Application

- Select the Function (assign what kind of control of the input)---Call Button, Command (String), Message Button, Call Trigger, Message Trigger, Logic Out, On/Off Switch, Multi Function
- 4. Select the Mode--Paging
- 5. Select the Source---MIC IN or LINE IN
- 6. Select the Target --- The target (eg:Messenger PRO) users would like to paging.

setup1	Setup2 Updat	te Status	About L						OUT-1: LINE I	
		-		ogout						
asic Sett		iction Libraries	Audio Matrix	I/O Contr	ol Media S	Setting O	utput Volume			
Local Co	ontrol									
INPUT	CONTROLLER	POSITION	FUNCTION		MODE	SECURITY	SOURCE	TARGE	т	
IN1	-	•	-	-	Intercom 👻					CB
IN2		•	-	-	Intercom 👻					CB
IN3	Logic	•	Call Button	-	Paging 👻		MIC IN	 Device 	MessengerProL1	
OUTPU	IT DEFAULT									
OUT1	NO-RC	-								
OUT2 Remote	NO-RC	•								
		T	LLER POSITIC	N FUNCTION	ON	MODE	SECURITY	SOURCE	TARGET	
Remote		T		N FUNCTIO	ON	MODE V Intercom		SOURCE	TARGET	
Remote	e Control	CONTROL	LLER POSITIO	FUNCTION	ON		-	SOURCE	TARGET	
Remote	ADD IN4	CONTROL 	POSITIO		ON	✓ Intercom		SOURCE	TARGET	
Remote	ADD IN4 ADD IN5	CONTROL 	¥		ON	 Intercom Intercom Intercom Intercom 		SOURCE	TARGET	
Remote	ADD IN4 ADD IN5 ADD IN6	 CONTROL 	v v		ON	 Intercom Intercom Intercom Intercom Intercom Intercom 		SOURCE	TARGET	
Remote	ADD IN4 ADD IN5 ADD IN5 ADD IN5 ADD IN7 ADD IN8 ADD IN8 ADD IN9	 CONTROL 	V V V		ON	 Intercom Intercom Intercom Intercom Intercom Intercom Intercom 		SOURCE	TARGET	
Remote	ADD IN4 ADD IN5 ADD IN5 ADD IN6 ADD IN7 ADD IN8	 CONTROL <td>V V V</td><td></td><td>ON</td><td> Intercom Intercom Intercom Intercom Intercom Intercom </td><td></td><td>SOURCE</td><td>TARGET</td><td></td>	V V V		ON	 Intercom Intercom Intercom Intercom Intercom Intercom 		SOURCE	TARGET	

7.11 Custom Component

When the DSP component configuration is complex, the Initial component provides another new configuration window to put any component into it, allowing to see the connected components and pins clearly.



Control Window

I/O Pins			Properties	
Audio Input:	4	-	Name: Custom\nComponent	
Audio Output:	4	\$	Auto:	
Logic Input:	4	\$	Password Enable Password (1~20 Letters)	
Logic Output:	4	\$	Password:	
			Confirm:	

- I/O Pins:
 - o Audio Input/Output: Select the number of input/out pin you want.
 - Logic Input/Output: Select the [●] Export: number of logic input/output pin you want.
- Properties:
 - $\circ\,$ Name: The name of the Initial Component.
 - o Auto: Click or unclick the Auto button if users want to change the name of Initial Component.

Password:

Enable Password: Click to enable the password function. And enter the password and the confirmation password again. If the password function is enable, there will be a pop-up window as the picture below,

	Please Input Password	x
Custom Component 1	Please Input Password:	
	OK Cancel	

The Export function allows users to save and export the configuration on the Initial Component to the list of Custom Component list.

Right click on the component and click [Export] function. After the configuration has been exported, the configuration will be listed on the list of Custom Component. See the picture below,

	Custom	
	Cut	Main - DSP Components 🛛 🗙
	Сору	
	Delete	123.cts
	Export	Device Module IDA8C
· · · · · ·	Properties	

8 Technical Data

8.1 Messenger G2

✤ General

	Qty of Tranducers	Size	Net Weight	Shipping Weight
Messenger-M	12 Loudspeakers	1701 mm	27 kg	35 kg
Messenger-L	18 Loudspeakers	2372 mm	38 kg	47 kg
Messenger-XL	24 Loudspeakers	3046 mm	48 kg	58 kg
Messenger-Two-L	36 Loudspeakers	4744 mm	77 kg	2 x 47 kg
Messenger-Two-XL	48 Loudspeakers	6032 mm	96 kg	2 x 58 kg
Wall bracket	1 set supplied with each unit			
Temperature range	0-40°C			
Operating environment	-10 to +55°C, 0-70% relative humidity, non-condensing			
Tranducer type	4.25" (dual-cone with inverted surround, weatherproof, aluminum)			
Color	RAL9016			

Power

ltem	Voltage	Quiescent current	Power consumption	Condition
			*M: 211W	
	AC main input 210~230 VAC (+5% / -10%)		*L: 277W	
AC main input		-	*XL: 343W	
			*IIL: 554W	Full load at 0 dBu
			*IIXL: 686W	
	Paakup power	*M: 1.22A	*M: 8.36A	Pink Noise
Backup power		*L: 1.63A	*L: 10.95A	
supply (24VDC) 16VDC~27 VE	16VDC~27 VDC	*XL: 2.1A	*XL: 13.6A	
		*IIL: 3.26A	*IIL: 21.9A	
			*IIXL: 27.2A	

✤ DSP Module

Туре	ADSP21369-400 2.4 Gflops 400 tabs/filter/24 CH
Quantity	1 pce
Memory	2 Mb SRAM (External Memory)
Output filter	24 Channels / 400 tabs

✤Audio Processing

AD-converters	24 Bits
Sample rate	48kHz
Internal processing	32 Bits (floating points)

✤ Post Processing

1 Oot 1 Toocooning	
Equalizing	8-band parametric
Pre-delay	1000 mS
Input sensitivity setting	-20 to +20 dBu
Line out gain	-20 to +20 dBu
Messenger volume gain	-40 to +10 dBu
Noise gate	Level adjustable: - 20 to -100 dBu Hold time: 100 - 2000 mS Soft fade: 100 - 2000 mS
Peak limiter	Level adjustable: 0 to -20 mS Release time: 200 to 5000 mS
Mute	On / Off
Signal indicators	Clipping detect, Audio, Limiter activated, Noise gate activated
Equivalent Input Noise	-84 dBu (20~20kHz@150Ω)

0.02% (20~20kHz@+4dBu)
-65 dBu (10kHz@0dBu)
-70dBu (1kHz@0dBu)
-65 dBu @10kHz@150Ω
+18 dBu @ 0dBu
10kΩ (1kHz@sine wave)
90Ω (1kHz@sine wave)

* Acoustical

Parameters	Specifications	Condition	
Frequency response	90 - 18000 Hz	Complete Array, Typical for XL	
Max SPL	93 dB ± 1dB	Pink noise C-weighted @ 40 m	
Coverage angle	Vertical 25 - 5 degree, Horizontal 145 degree (For all units)		
Lobe shaping	Centered on driver: 1, 3, 6, 12, 15, 18, 21, 24		
Lobe steering	-25° to 0° to +25°		
Triple lobe software	YES on M, L, XL, IIL, IIXL versions		
S/N ration	> 110		

✤ Power amplifier

Туре	24 Class-D amplifier channels
Power rating	70 Watt
Amplifier quantity	4 x 6 pcs (6 channels per Amplifier board)
Output filter	24 Channels / 400 tabs

Audio input 1 & Audio input 2

Sensitivity	775 mV	103 dB SPL / 5 - 40 m. Typical for XL
Gain stage	-20 to +20 dBu	Software controlled in 0.5 dB steps
Туре	600 ohm	Transformer Balanced
Gain	0 dBu	Peak limiting software at -0.1 dB
Connector	3-pin	Phoenix type

✤ Audio output

Gain	775 mV	Slave audio output
Gain stage	-20 to +20 dBu	Software controlled in 0.5 dB steps
Туре	600 ohm	Transformer Balanced
Connector	3-pin	Phoenix type

✤ Communication

Data control	TCP/IP networking	RJ45	
Ethernet link	CAT5	1040	
One RS-232 port for connecting the PC when no TCP/IP networking available			

Digital specification:

ltem	Condition	Min	TY	Max.	Comment
Control input	low	-	0Vdc	0.1Vdc	-
Control input	high	-	4.2	5	-

EN standard

EN 54-16 standard comply			
EN 54-24 standards comply			
EN 54-4 standards comply			

8.2 Messenger SG2

* General

Messenger Type	Qty of Transducers	Size	Messenger SG2 (speaker only)	Messenger SG2 (total gross weight)
Messenger-M	12 Loudspeakers	1361 mm	24.2/29 kg	50.3 kg
Messenger-L	18 Loudspeakers	2033 mm	36.5/41 kg	62.4 kg

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Messenger-XL	24 Loudspeakers	2705 mm	44.5/51.9 kg	73.2 kg
Messenger-Two-L	36 Loudspeakers	4066 mm	71.1/82.1 kg	124.7 kg
Messenger-Two-XL	48 Loudspeakers	5410 mm	88.9/103.8 kg	146.4 kg
Wall bracket	1 set of wall bracket with each unit			
Temperature range	0-40°C			
Operating environment	-10 to +55°C, 0-70% relative humidity, non-condensing			
Tranducer type	4.25" (dual-cone with inverted surround, weatherproof, aluminum)			
Color	RAL9016			

Weight (MSGPRO-CB / MSGPSU-CB)

Messenger Type	MSGPRO-CB	MSGPSU-CB
M / L / XL	14/15 kg	5.4/6.3 kg
2L / 2XL	28/30 kg	10.8/12.6 kg

Dimension (MSGPRO-CB / MSGPSU-CB)

Mounting Bracket (W x H x D)	436 x 88 x 47.9mm	
MSGPRO-CB (W x H x D)	208 x 42.6 x 254.9mm	
MSGPSU-CB (W x H x D)	185 x 86.8 x 460.7mm	

The rest of specification is identical as Messenger G2 (all in one type).

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