



IP Speaker Module/ Box

Fulfill IP Speaker Paging, Hand-Free Intercom
And BGM Functions

User Manual

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1 About This Manual

This user manual will explicitly describe the hardware installation and the software configuration, provides installers and users the necessary information to setup and configure the system.

- Firmware version:

Model	Version
IPSM-2C20, IPBX-2C20	v0.0.0.1

1.1 Safety Instructions & Declaration

- 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.
- 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 TERRACOM dealer for replacement.
- Turn off immediately the unit, remove the power cord from the AC outlet and consult your TERRACOM 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 TERRACOM 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 -5°C ~ 55°C (23°F ~ 131°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.

1.2 Notice Sign

There are two types of signs can be used in this manual. The type is closely related to the effect that may be caused if it is not observed.



Note: Containing additional information.



Caution: The equipment or the property can be damaged, or persons can be lightly injured if the alert is not observed.

1.3 Copyright

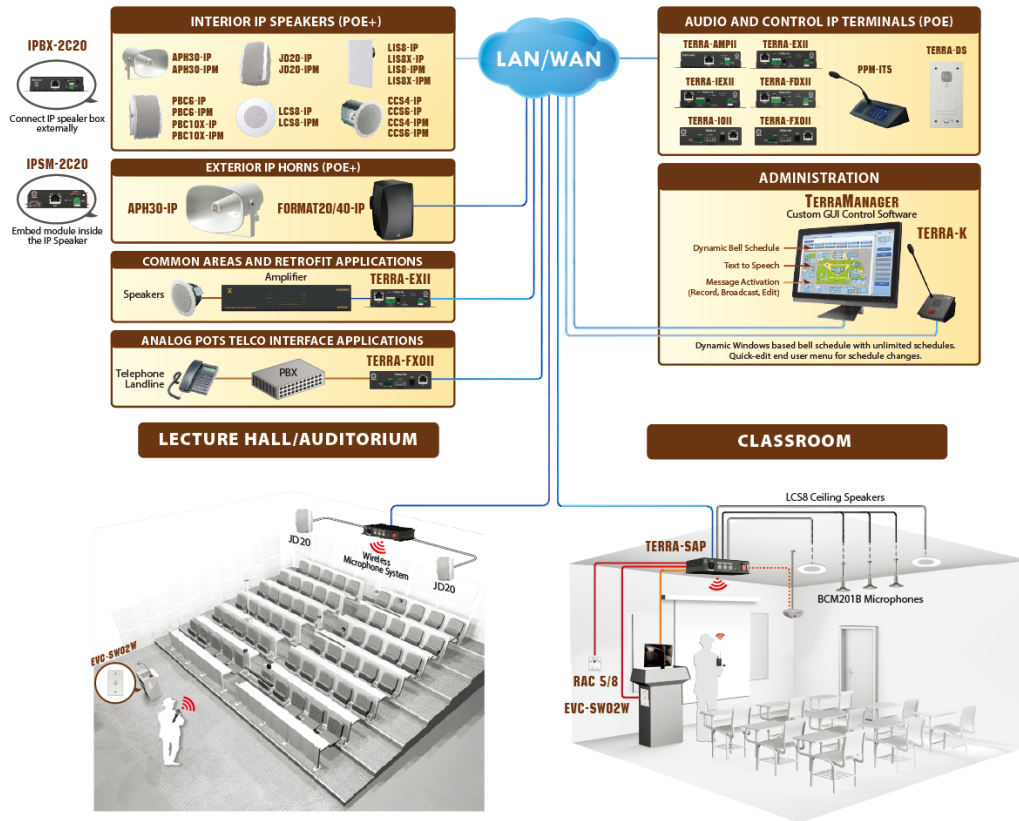
All rights reserved. No part of this document may be reproduced or transmitted in any form by any means, electronic, mechanical, photocopying, or otherwise, without the prior written permission of the publisher. The content and illustrations are subject to change without prior notice.

2 System Overview

❖ IP SM-2C20/ IP BX-2C20 application in system

The TERRACOM IP speaker can be utilized within a variety of applications for real time broadcasting, intercommunication, music playback etc. In addition, IP SM-2C20/ IP BX-2C20 supports user to control power switch of light, door, curtain and air condition.

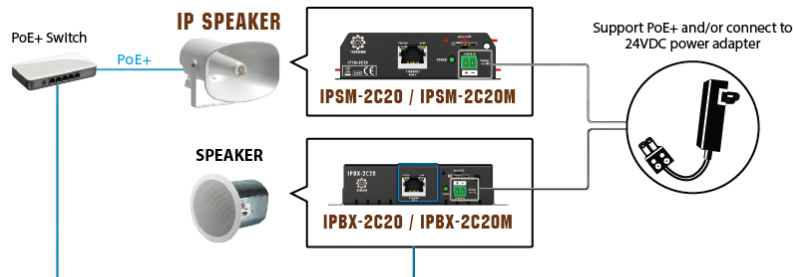
- System diagram



2.1 Quick Start

❖ Power connection

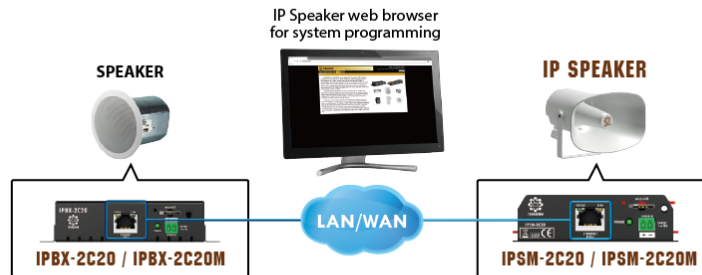
The IP speaker can be powered by PoE+ switch via CAT5/6 cable, or/and the IP speaker can also be powered by an external power supply adapter like PSU65-27 or PSU36-24.



❖ Network connection

Use a straight CAT5/6 cable to link your PC network card to the IP speaker. Open your favorite web

browser (we recommend Google Chrome or Mozilla Firefox). Each IP speaker is shipped from the factory with a default IP address of 192.168.100.49, type the default IP address into the address bar.



❖ Login

You will be asked for a login (By default: admin). After login, you can start to program the settings of IP speaker.

The screenshot shows a web interface titled 'Please Login'. It contains a 'Password' label, a text input field, and a 'Login' button.

❖ Assign IP address to IP speaker

- Change the IP address of your device at "[Machine > Setting > IP](#)". After the settings have been saved, please plug out & plug in the Ethernet cable of IP speaker to reboot the IP setting.

The screenshot shows the 'Net Setting' web interface. It includes the following fields and options:

- DHCP: ☐ Enable ☒ Disable
- IP Address: 192.168.101.49
- Subnet Mask: 255.255.252.0
- Gateway: 192.168.100.249
- DNS: 0.0.0.0 ☒
- Mac Address: 0.22.12.BF.C1.1D
- Save button

⚠ You might need to change the IP settings of your PC network card to be in the same network mask as the new IP address of your IP speaker. To avoid the conflict issues when connecting multiple IP speakers with the same IP address, be sure to only connect one IP speaker at a time to the Ethernet switch when assigning IP addresses.

❖ SIP Setting

- With SIP server

The audio streaming can be done using a SIP Server. Go to "[Machine > Setting > SIP](#)" and enter the settings of your SIP server.

SIP Settings

Firewall Traversal Mode: ☒ TERRA Net ☐ SIP Server

+ Username:

SIP Port:

RTP Port:

Global Priority:

Audio Codec:

Audio Delay Buffer:

Ring Tone Level:

Monitor Tone Interval(Second):

Save

- Without SIP server

If you don't have a SIP server, please follow the settings as below,

- Firewall Traversal Mode: TERRA Net
- SIP Port: 5060
- RTP Port: 6912

SIP Settings

Firewall Traversal Mode: ☐ TERRA Net ☒ SIP Server

+ Username:

+ Password:

SIP Server Call Only: ☐

SIP Server IP:

SIP Port:

RTP Port:

Global Priority:

Audio Codec:

Audio Delay Buffer:

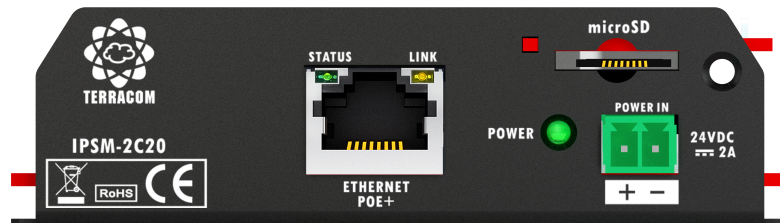
Ring Tone Level:

Monitor Tone Interval(Second):

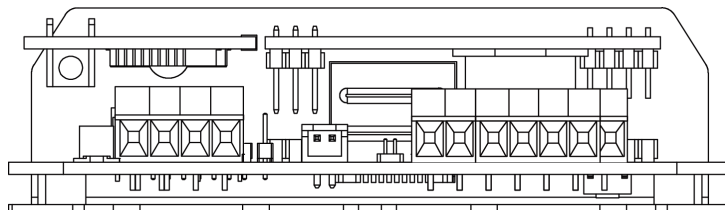
Save

3 Hardware Installation

3.1 IPSM-2C20/IPSM-2C20M




Front panel



Rear panel

Modules of IPSM-2C20 are equipped with 1 channel in 2 channels in 20W with 8 ohm loudspeaker, and PoE+ power (If PoE+ is not available, 24VDC power adapter will supply higher power). With Power over Ethernet (PoE+), both audio control and power can be flowed over the standard female RJ45 Ethernet

connector, giving a cost effective way to used as the SIP endpoint of paging, intercom, mass notification system and minimizing the number of cables. The IPSM-2C20 is designed to embed in TERRACOM's IP speaker. To fulfill hands-free intercom and monitoring, the IPSM-2C20M is equipped with a built-in microphone interface. The YMC0101-005 mic capsule could be connected to this microphone interface. The IPSM have 3 control inputs for level control and source selection using the RAC 5/8 controller, 1 relay contact output can be programmed to control an external device via TerraManager. To configure, control, monitor the IP speakers in real-time, this can be easily done through your favorite web browser interface, making the management even the most complex environments simpler than ever. The remarkable features include event management, volume control, paging, intercom, music streaming, routing, logic control, 3rd party control, DSP control, monitoring, etc.


 The 20W x 2CH amp output is applied for 8 ohm speaker. However, it can be bridged to 1 channel 40W for 4 ohm speaker by hand making.

- See the following table listed the supported audio codec by IPSM-2C20

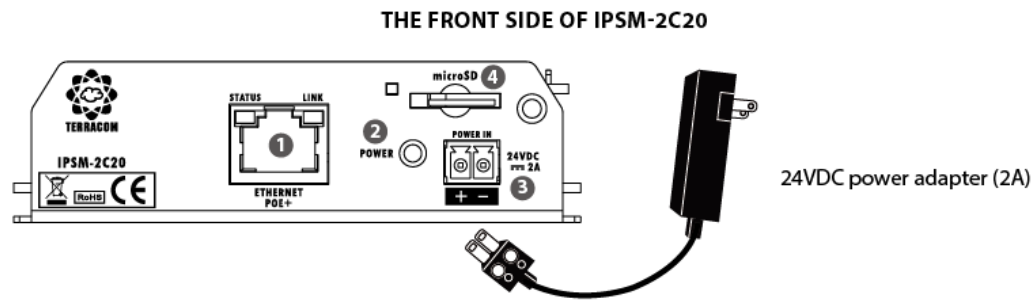
Function	Supported Audio Encoders/ Decoders
SIP	G.711 ulaw, G.711 alaw, G.722, G.726-32, G.727-32, PCM16K, WAVE(decode only), MP3(decode only)
SHOUTcast/ Icecast (decode only)	AAC, AAC+, MP3
Stream	G.711 ulaw, G.711 alaw, G.722, PCM16K, WAVE, MP3
Record (encode only)	WAVE, MP3

- Ordering information

Models	Model Description
IPSM-2C20	IP Speaker Module/2 ch/20W w/PoE+
IPSM-2C20M	IP Speaker Module/2 ch/20W w/mic in w/PoE+
IPSM-2C20P36	IP Speaker Module/2 ch/20W w/PSU36-24
IPSM-2C20P65	IP Speaker Module/2 ch/20W w/PSU65-27
IPSM-2C20MP36	IP Speaker Module/2 ch/20W w/mic in w/PSU36-24
IPSM-2C20MP65	IP Speaker Module/2 ch/20W w/mic-in w/PSU65-27
YMC0101-005	Mic Capsule w/40cm lead & connector

 All IPSM-2C20 models are not shipped with the mic capsule, please order **YMC0101-005** mic capsule if necessary.

3.1.1 Front Panel



1. Ethernet POE+ port


- Connect the IP speaker to Ethernet network via RJ45 plug, CAT5/6 cable, allowing the system to be configured, controlled and monitored via web browser.
- In addition, the IP speaker can use the power(20W) from PoE+ (PoE+ switch is required).

2. LED power light

Display the power of IPSM-2C20 is on or off.


3. Power Input

If the IP speaker require higher power or PoE+ power isn't available, external PSU power adapter (24VDC/ 2A) can supply power.

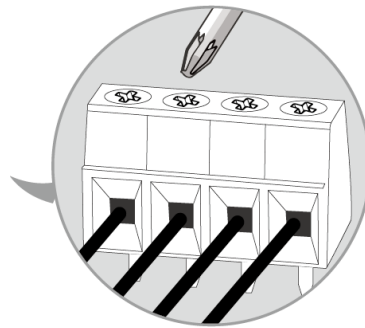
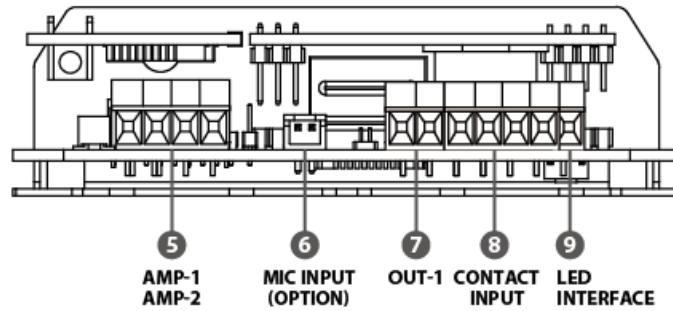
 External power adapter ordering information: "PSU65-27" supplies 65W and "PSU36-24" supplies 36W for IP speaker.

4. Micro SD card interface:

Micro SD Card interface and internal 200MB storage of IPSM-2C20 are for music message/recording storage.

 The micro SD card must be formatted to FAT32 to read (max. 512GB)

3.1.2 Rear Panel



Euro-style Terminal Block

5. Amp output

20W x 2 channel for 8 ohm speaker or can be bridged to 1 channel with 40W for 4 ohm speaker.

6. Microphone input

- To fulfill hands-free intercom and monitoring, the IPSM-2C20M module is equipped with a microphone input. The YMC0101-005 mic capsule could be connected to this microphone input.
- This mic input provides DC 2.5V phantom power for microphone.

7. Contact output

1 relay contact output can be programmed to control an external device.

8. Logic contact inputs

3 supervised control inputs are designed to work with a simple contact such as RAC 5/RAC 8 programmable source selector and volume control remote or a push button for two-state logic control.

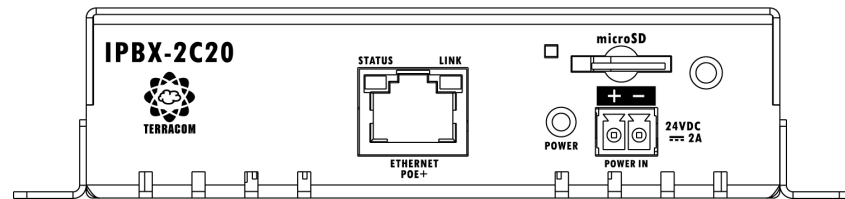
9. LED status controller interface (3.3V@10 mA)

For safety and emergency alerting.

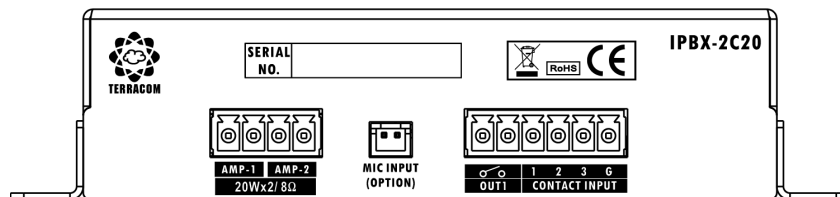
• Euro-style terminal block

It is embed on the board and can be wired directly by screwdriver for easy operation and saving place.

3.2 IPBX-2C20/IPBX-2C20M




Front panel



Rear panel

Modules of IPBX-2C20 are equipped with 1 channel in 2 channels in 20W with 8 ohm loudspeaker, and PoE+ power (If PoE+ is not available, 24VDC power adapter will supply higher power). With Power over Ethernet (PoE+), both audio control and power can be flowed over the standard female RJ45 Ethernet connector, giving a cost effective way to used as the SIP endpoint of paging, intercom, mass notification system and minimizing the number of cables. The IPBX-2C20 is with a outside box as an external connection for general speakers. To fulfill hands-free intercom and monitoring, the IPBX-2C20M is equipped with a built-in microphone interface. The YMC0101-005 mic capsule could be connected to this microphone interface.

The IPBX have 3 control inputs for level control and source selection using the RAC 5/8 controller, 1 relay contact output can be programmed to control an external device via TerraManager. To configure, control, monitor the IP speakers in real-time, this can be easily done through your favorite web browser interface, making the management even the most complex environments simpler than ever. The remarkable features include event management, volume control, paging, intercom, music streaming, routing, logic control, 3rd party control, DSP control, monitoring, etc.


 The 20W x 2CH amp output is applied for 8 ohm speaker. However, it can be bridged to 1 channel 40W for 4 ohm speaker by hand making.

- See the following table listed the supported audio codec by IPBX-2C20

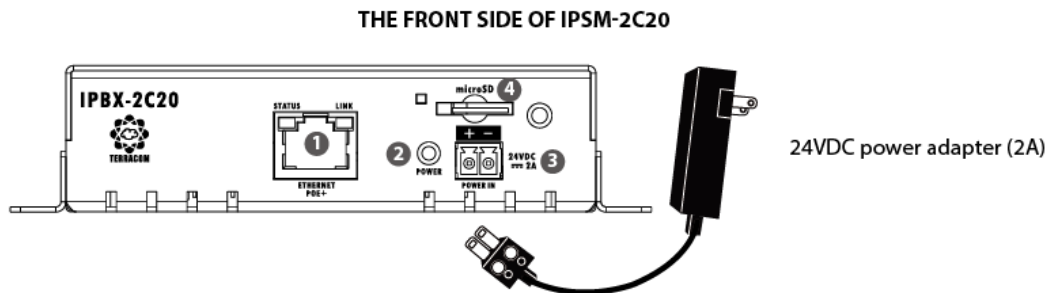
Function	Supported Audio Encoders/ Decoders
SIP	G.711 ulaw, G.711 alaw, G.722, G.726-32, G.727-32, PCM16K, WAVE(decode only), MP3(decode only)
SHOUTcast/ Icecast (decode only)	AAC, AAC+, MP3
Stream	G.711 ulaw, G.711 alaw, G.722, PCM16K, WAVE, MP3
Record (encode only)	WAVE, MP3

- Ordering information

Models	Model Description
IPBX-2C20	IP Speaker Box/2 ch/20W w/PoE+
IPBX-2C20M	IP Speaker Box/2 ch/20W w/mic in w/PoE+
IPBX-2C20P36	IP Speaker Box/2 ch/20W w/PSU36-24
IPBX-2C20P65	IP Speaker Box/2 ch/20W w/PSU65-27
IPBX-2C20MP36	IP Speaker Box/2 ch/20W w/mic in w/PSU36-24
IPBX-2C20MP65	IP Speaker Box/2 ch/20W w/mic-in w/PSU65-27
YMC0101-005	Mic Capsule w/40cm lead & connector

 All IPBX-2C20 models are not shipped with the mic capsule, please order **YMC0101-005** mic capsule if necessary.

3.2.1 Front Panel



1. Ethernet POE+ port


- Connect the IP speaker to Ethernet network via RJ45 plug, CAT5/6 cable, allowing the system to be configured, controlled and monitored via web browser.
- In addition, the IP speaker can use the power(20W) from PoE+ (PoE+ switch is required).

2. LED power light

Display the power of IPSM-2C20 is on or off.


3. Power Input

If the IP speaker require higher power or PoE+ power isn't available, external PSU power adapter (24VDC/ 2A) can supply power.

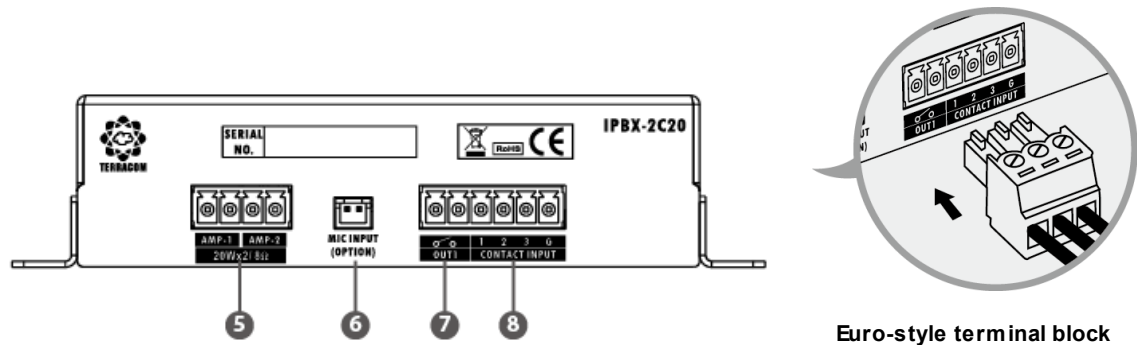
 External power adapter ordering information: "PSU65-27" supplies 65W and "PSU36-24" supplies 36W for IP speaker.

4. Micro SD card interface

Micro SD Card interface and internal 200MB storage of IPSM-2C20 are for music message/recording storage.

 The micro SD card must be formatted to FAT32 to read (max. 512GB)

3.2.2 Rear Panel



5. Amp output:

20W x 2 channel for 8 ohm speaker or can be bridged to 1 channel with 40W for 4 ohm speaker.

6. Microphone input:

- To fulfill hands-free intercom and monitoring, the IPBM-2C20M module is equipped with a microphone input. The YMC0101-005 mic capsule could be connected to this microphone input.
- This mic input provides DC 2.5V phantom power for microphone.

7. Contact output:

1 relay contact output can be programmed to control an external device.

8. Logic contact inputs:

3 supervised control inputs are designed to work with a simple contact such as RAC 5/RAC 8 programmable source selector and volume control remote or a push button for two-state logic control.

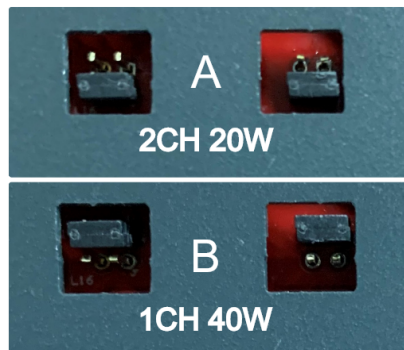
- Euro-style terminal block
Euro-style terminal block of IPBX-2C20 is pluggable for assembling easily.

3.3 Bridge Amp Output


[真實板子]

2 CH 20W amp board can be bridged to 1 CH 40W by hand making. The jumper position is at the bottom, please do the bridge operation from there.

Relocate jumpers from A to B and set amplifier output on product web browser.



Two jumpers must relocate simultaneously.

 The user must go setting the option of amplifier power on the webpage because the incorrect power setting may damage the speaker. Check out the web browser topic

4 Configuration-Web Browser

4.1 Getting Started

- Connect the IPSM/IPBX-2C20 to network switch.
- Open the web browser on your PC/laptop. The IPSM/IPBX-2C20 device is compatible with and optimized for the latest version of these web browsers:
 - Chrome (we recommend to use it)
 - Safari
 - Firefox
 - Opera
 - Edge

 Internet Explorer is not supported.

- Enter the default IP address into the address bar, then you can open the webpages of IPSM/IPBX device.

Default setting	Web browser
IP address	192.168.100.1
Subnet Mask	255.255.255.0
Gateway	192.168.100.254

4.2 IP & Network

4.2.1 IP Information

- The TERRACOM products are using the following Multicast address (IGMP)
 - 239.211.34.48: for ATEIS-NET status display
 - 239.211.34.45~49: for IDA8 or BOUTIQUE IGMP address
 - 239.240.38.25, Port 9000/9002: for Machines status
 - 239.240.38.25, Port 8998: for Paging control
 - 239.240.38.25, Port 8995: for Machines display status
 - 239.241.100.0 ~ 239.241.100.255, Ports 2000 ~ 3000: for Audio stream
 - 239.240.38.25, Port 9002: for BOUTIQUE protocol
-

- The Local Host Ports of TERRACOM products

- 20: File Sync
- 21: File Sync
- 20: Web Server
- 80: website
- 123, 14500, 4096: NTP Server
- 161: SNMP protocol
- 5060: SIP call
- 6912: RTP address
- 8010: Third Party commands
- 26570: Remote Control
- 19760: for IDA8
- 19761: 3rd party control
- 19762: for IDA8
- 19770: for IDA8
- 19780: for IDA8
- 19781: for IDA8
- 19782: for IDA8
- 9002: BOUTIQUE
- 9999: TerraServer File Access

4.2.2 IP Address

If user lose the IP address of IPSM/IPBX-2C20, please check the following instruction.

- ❖ With only one device
- Read Out the IP Address

Use the tool to push reset button of device bottom (long push over 10 sec will reboot the device), and it will read out the IP address via the connected loudspeakers. Please make sure the loudspeakers is connected to the amplifier outputs of IPSM/IPBX-2C20.



- Using Packet Analyzer software

Download the free Packet Analyzer software such as Wireshark and set the filter as "ip.addr == 239.240.38.25", a list of all TERRACOM units connecting to your LAN will be displayed.

Atheros L1C PCI-E Ethernet Controller [Wireshark 1.6.7 (SVN Rev 41973 from /trunk-1.6)]

File Edit View Go Capture Analyze Statistics Telephony Tools Internals Help

Filter: ip.addr == 239.240.38.25 Expression... Clear

No.	Time	Source	Destination	Protocol
21180	73.949788	192.168.100.130	239.240.38.25	IGMP
21182	73.985037	192.168.101.178	239.240.38.25	IPv4
21184	74.064949	192.168.101.216	239.240.38.25	UDP
21185	74.099805	192.168.101.175	239.240.38.25	IPv4
21186	74.103712	192.168.101.216	239.240.38.25	IPv4

4.2.3 Network Bandwidth And Bitrate

- The data rate over the network is calculated as below
 - Audio Streams: It is based on the number of audio stream channels and the audio format.
 - Control Streams: Each TERRACOM device is estimated at 28kbps.
- The total bit rate is calculated using the formula (in kbps) as below

$$((\text{number of products}) * 28\text{kbps}) + ((\text{number of streams}) * \text{stream bitrate})$$
- The example below is using 8 Terra-FDX units + 2 TerraManager, and altogether use 10 channels audio streams (MP3 format) at same time.

$$((8+2) * 28) + (10 * 150) = 1780\text{Kbps}.$$

❖ Audio Stream Format

- Mono:

- MP3: 150kbps
- G.722: 90kbps
- G.711ulaw: 90kbps
- G.722alaw: 90kbps
- PCM16k: 280kbps
- WAVE: 780kbps
- Stereo:
 - MP3: 150kbps
 - WAVE: 1560kbps

4.3 Login/Logout



Modules of IPBM/IPBX-2C20 is equipped with 2 channels in 20W with 8ohm loudspeaker, or be bridged to 1 channel in 40W with 4 ohm loudspeaker. And they support PoE+ power and external power adapter (If PoE+ is not available 24VDC will supply power). With Power over Ethernet (PoE+), both audio control and power can be owed over the standard female RJ45 Ethernet connector, giving a cost effective way to used as the SIP endpoint of paging, intercom, mass notification system and minimizing the number of cables.

The IPBM-2C20 is designed to embed in TERRACOM's IP speaker, and IPBX-2C20 is with an outside box as an external connection for general speakers. Both of them fulfill hands-free intercom and monitoring. The IPBM/IPBX-2C20M is equipped with a built-in microphone interface. The YMC0101-004 mic capsule could be connected to this microphone interface.

They have 3 control inputs for level control and source selection using the RAC 5/8 controller, 1 contact output can be programmed to control an external device via TerraManager. To configure, control, monitor the IP speakers in real-time, this can be easily done through your favorite web browser interface, making the management even the most complex environments simpler than ever. The remarkable features include event management, volume control, paging, intercom, music streaming, routing, logic control, 3rd party control, DSP control, monitoring, etc.



- Login/logout from IPBM/IPBX-2C20 web browser
 1. Enter a valid user name and password.
 2. To logout, click the [Logout] button located on the upper tab
- Forget Password
 1. Click [Forget PW] button if users forget the password, but you need to enter the user name first.
 2. Then a [pwd.] file will be downloaded into your PC/laptop, please send this [pwd.] file to our technical team to retrieve the password.

 A screenshot of the login form in the IPBX-2C20 web interface. The form has a yellow header with the word 'Login' in orange. Below the header, there are two input fields: 'User Name' and 'Password'. To the right of the 'Password' field, there are two buttons: 'Login' and 'Forget PW'. The 'Forget PW' button is highlighted with a red box.

4.4 Setup

4.4.1 Basic Setting

❖ Network

- DHCP: Enable/disable the DHCP (Dynamic Host Configuration Protocol).
 - IP Address: Click to change the IP address to fit your network.
 - Subnet Mask: Depend on the LAN where the IPSM/IPBX-2C20 is located.
 - Gateway Server: The IP address of the gateway server.
 - DNS: Tick the checkbox to enable the DNS server and set the IP address.

DHCP	<input type="radio"/> Enable <input checked="" type="radio"/> Disable
IP Address	<input type="text" value="192.168.101.165"/>
Subnet Mask	<input type="text" value="255.255.252.0"/>
Gateway	<input type="text" value="192.168.100.249"/>
DNS	<input type="text" value="8.8.8.8"/> <input checked="" type="checkbox"/>

❖ System Time

- NTP Client Server: Enable the NTP setting. If the NTP is activated, the system date/time of IPSM/IPBX-2C20 will be synchronized by NTP server.
 - + Timezone: The timezone of user's country.
 - + NTP Server IP: Set the IP address of NTP Server.
 - + Retrieve Interval: Set the internal to update the system time.

System Time


NTP Client Server ☒ Enable ☐ Disable

+ Timezone

+ NTP Server IP

+ Retrieve Interval h : m

Daylight Saving Time ☐ Enable ☒ Disable

- Date/Time  : If the NTP Client Server is disabled, user shall manually set the time and the timezone of your IPSM/IPBX-2C20.



If the IPSM/IPBX-2C20 is not powered for a period of time (approx. 23 days), the internal battery will be under low voltage, and result in incorrect system time of IPSM/IPBX-2C20. Should the system time is incorrect, please connect the power supply of IPSM/IPBX-2C20, and set the system setting or enable the NTP setting on its web browser again.




The changes in [System Time] will also affect the Scheduler function on web browser.

- Daylight Saving Time: Enable/disable the Daylight Saving Time function on IPSM/IPBX-2C20.
 - + Time difference: Define the time to be an hour/a minute earlier or more.
 - + Type: Choose [Date] or [Week] option to define the period of Daylight Saving Time.
 - ++ Start Date / ++ End Date: Set the start/end date of Daylight Saving Time.

- ++ Start Time / ++ End Time: Set the start/end time of Daylight Saving Time.

System Time

NTP Client Server ☐ Enable ☒ Disable

Date/Time  0 / 0 / 0 0 : 1

Daylight Saving Time ☒ Enable ☐ Disable

+ Time Difference 1 h : 0 m

+ Type ☒ Date ☐ Week

++ Start Date July / 15

++ Start Time 18 h : 20 m

++ End Date July / 15

++ End Time 19 h : 21 m

❖ Third Party Control

- Network Control Service: Enable/disable the Network Controls Service.
 - Network Port: Set the local network port.
 - Network IGMP Enable: Enable/disable to use IGMP address, the default network port is 8010.
 - Network IGMP Address: Set the IGMP address.

Third Party Control

Network Control Service ☒ Enable ☐ Disable

+Network Port 8010

+Network IGMP Enable ☒ Enable ☐ Disable

++Network IGMP Address 239.240.100.101

❖ AMP

- Total Output Channel: Number of available output channel. Two channels of amp output can be bridged to one which with 40W output, and it must be supplied by DC power.
- Power Supply: Options of power supply.
- Amplifier Output Power: Options of output power
 - There is four application of amp output power:
Please make the accurate setting before connecting to the loudspeakers to avoid the situation of "overload power failure".
 - Amplifier Output Power: xW & xΩ indicates power supplying(Watts) and connecting how much ohm loudspeaker.

AMP

Total Output Channel ☒ 1 ☐ 2 (Better Use DC external power)

Power Supply ☒ PoE+ ☐ DC External

Amplifier Output Power
(Basic Power Consumption:4W)

8W & 8Ω

8W & 4Ω

11W & 8Ω

11W & 4Ω

14W & 8Ω

14W & 4Ω

17W & 8Ω

17W & 4Ω

18W & 8Ω

18W & 4Ω

19W & 8Ω

19W & 4Ω

20W & 8Ω

20W & 4Ω

1 output channel & PoE+ power

AMP

Total Output Channel ☒ 1 ☐ 2 (Better Use DC external power)

Power Supply ☐ PoE+ ☒ DC External

Amplifier Output Power
(Basic Power Consumption:4W)

8W & 8Ω

8W & 4Ω

11W & 8Ω

11W & 4Ω

14W & 8Ω

14W & 4Ω

17W & 8Ω

17W & 4Ω

18W & 8Ω

18W & 4Ω

19W & 8Ω

19W & 4Ω

20W & 8Ω

20W & 4Ω

40W & 4Ω (External DC & Bridge)

1 output channel & DC power

AMP

Total Output Channel ☐ 1 ☒ 2 (Better Use DC external power)

Power Supply ☒ PoE+ ☐ DC External

Amplifier Output Power
(Basic Power Consumption:4W)

16W & 8Ω

16W & 4Ω

2 output channels & PoE+ power

AMP

Total Output Channel ☐ 1 ☒ 2 (Better Use DC external power)

Power Supply ☐ PoE+ ☒ DC External

Amplifier Output Power
(Basic Power Consumption:4W)

16W & 8Ω

16W & 4Ω

22W & 8Ω

22W & 4Ω

28W & 8Ω

28W & 4Ω

34W & 8Ω

34W & 4Ω

36W & 8Ω

36W & 4Ω

38W & 8Ω

38W & 4Ω

40W & 8Ω




40W & 4Ω

2 output channels & DC power

❖ SIP

SIP

Transfer Protocol	<input type="radio"/> TCP <input checked="" type="radio"/> UDP
Firewall Traversal Mode	<input type="radio"/> SIP Server <input checked="" type="radio"/> TERRA Net
+ Username	<input type="text" value="IPSM"/>
SIP Port	<input type="text" value="5060"/>
RTP Port	<input type="text" value="6912"/>
Identification Send Interval	<input type="text" value="2"/> sec
Audio Codec	<input type="text" value="G.722"/>
Global Priority	<input type="text" value="20"/>
Time To Stop Ring	<input type="text" value="10"/> sec
Chime Volume	<input type="text" value="1"/>
Ring Volume	<input type="text" value="5"/>
SIP Auto Answer	<input type="radio"/> Disable <input checked="" type="radio"/> Enable
SIP Stop Ringing	<input checked="" type="radio"/> Disable <input type="radio"/> Enable
Pre-Chime	<input type="text" value="--"/>
Post-Chime	<input type="text" value="--"/>
Answer-Tone	<input type="text" value="--"/>
SIP Active	<input type="text" value="--"/>
SIP Inactive	<input type="text" value="--"/>
Ringing Active	<input type="text" value="--"/>
Ringing Inactive	<input type="text" value="--"/>

- Transfer Protocol: Select either TCP or UDP for the communication protocol between the IPSM/IPBX-2C20 and SIP Server. You can only choose one protocol at a time.
-  The transfer protocol of the IPSM/IPBX-2C20 and SIP Server should be the same.
- Firewall Traversal Mode: Use [TERRA Net] to relay the audio packet through TCP/UDP or use [SIP Server].
- + Username
 - TERRA Net: Set the calling name for SIP call, normally this username is defined in the telephone number.
 - SIP Server: Set the username (account) for using to connect to the SIP server, this username is the account you've registered on SIP server.
- + Password (SIP Server only): Enter the password for using to connect to the SIP server, this password is the one you've registered on SIP server.
-  ☒ Enable the checkbox to reveal the hidden password.
- SIP Server IP (SIP Server only): Set the IP address of SIP server which you've registered on SIP server.
- SIP Port: The network port for SIP protocol, set 5060 by default.
- RTP Port: The network port for RTP protocol for receiving and transmitting audio, set 6912 by default.
- Identification Send Interval (sec): The IPSM/IPBX-2C20 supports to paging to other TERRACOM devices via Internet Paging Server (IPS). Here you can set the time interval of sending IPS signal.
-  If the time interval is set higher, it can decrease the occupied bandwidth on network; but it will also cause the response time which IPS detects the IPSM/IPBX-2C20 become slower.
- Audio Codec: The supported audio codec for SIP (G.711, G.722 and PCM16K decoder).

- **Global Priority:** When TERRACOM devices are calling (SIP intercom) TerraManager, the order of which device can intercom with TerraManager shall be based on Global Priority setting. 1 is the highest priority, and 99 is the lowest priority.
- **Time to Stop Ring:** The SIP call will be hung up after the set time. If sets up as 0 second, it won't stop ringing.
- **Chime Volume:** The volume of pre-chime/post-chime.
- **Ring Volume:** The volume of ring tone.
- **SIP Auto Answer:** Enable/disable to pick up the SIP call automatically.
- **SIP Stop Ringing:** Enable/disable to ring when receiving SIP call.
- **Pre-Chime/Post-Chime:** Support to program the pre-chime/post-chime setting when making SIP call and paging to chosen zones.
- **Answer-Tone:** Choose an audio tone which this tone will be played to your caller after the caller picks up the call.
- **SIP Active/Inactive:** Trigger an action after the SIP call has picked up or trigger an action after the SIP call ends. The triggered action can be the Contact Out, Command (string) and Multi Function.
- **Ringing Active/Inactive:** Trigger an action when the SIP ringtone starts ringing or trigger an action after the SIP ringtone ends. The triggered action can be the Contact Out, Command (string) and Multi Function.

4.4.2 Device

❖ Paging Zone List

Select devices that will execute commands and will appear on the setting drop-down options.

Paging Zone List

Name	Type	URI / Member	Zone	Tele Number	Status	Action
TERRA_FDX_II	TERRA-FDX	TERRA_FDX_II@192.168.101.129:5060	1		offline	Edit / Add Zone / Delete
TERRA_SAP	TERRA-SAP	TERRA_SAP@192.168.101.126:5060	1		offline	Edit / Add Zone / Delete

[Add 3rd-Party SIP Device](#)

- **Add 3rd-Party SIP Device**
Type in the name of 3rd-party device, choose [other] product type and set the URI of the device.

Create Device

Name	<input type="text" value="Enter a name"/>
Product Type	<input type="text" value="Other"/>
URI	<input type="text" value="Example.name@192.168.100.1:5060"/>

- **Create Device**
Choose TERRACOM's device of [Product Type] options for adding it in the device list.

❖ Device List

List the TERRACOM devices located in the same LAN or the devices which users add in manually.
The different color on status of device will be indicated as below.

- Black color: The devices that users manually add in.
- Grey color: The devices are located in the same LAN, but they haven't been added into the Device List.

Device List

Name	Type	URI	Status	Action	<input type="checkbox"/> Select
Machine	Boutique	Machine@192.168.102.81:5060	online	Add	<input type="checkbox"/>
TerralEX	TERRA-IEX536	TerralEX@192.168.101.163:5060	online	Add	<input type="checkbox"/>
EX_127	TERRA-EX	EX_127@192.168.101.127:5060	online	Add	<input type="checkbox"/>
1	UAP-G2	1@192.168.101.168:5060	online	Add	<input type="checkbox"/>
TerraServer	TerraServer	TerraServer@192.168.100.35:5060	online	Add	<input type="checkbox"/>
fdx21	TERRA-FDX	fdx21@192.168.101.21:5060	online	Add	<input type="checkbox"/>
IEX_213	TERRA-IEX	IEX_213@192.168.101.213:5060	online	Add	<input type="checkbox"/>
TerraManager	TerraManager	TerraManager@192.168.100.163:5060	offline	Add/Delete	<input type="checkbox"/>
TerralO	TERRA-IO	TerralO@192.168.101.183:5060	online	Add	<input type="checkbox"/>
Machine	Boutique	Machine@192.168.102.77:5060	online	Add	<input type="checkbox"/>

[Add Selected Device](#) [Add To Device Group](#)

- Name: The name of device.
- Type: The type of device.
- URI: The URI of device.
- Status: The green button will indicate the device is in online status, and grey button indicates the device is in offline status.
 - Online (green): Device is online (connected).
 - Offline (grey): Device is offline (disconnected).
 - Paging: Device is currently paging.
 - Phone: Device is currently in intercom.

- Action:

- Add: Create a new device in the device list which the zone settings require to be different from the same device. For example, the zone setting of IP-SPEAKER on first device is Zone 1, and on the second device is Zone 2.

Add Device

Name	<input type="text" value="IP_SPEAKER"/>
Product Type	<input type="text" value="IP-Speaker"/>
URI	<input type="text" value="IP_SPEAKER@192.168.100.50:5060"/>
ALL Zone	<input type="checkbox"/>
Zone Number	All 1
Local Device 1	<input type="checkbox"/> <input checked="" type="checkbox"/>

- Delete: Delete the device.

- ❖ Add To Device Group

Add the device to the group to perform the same operation synchronously.

1. Select which devices that be in the group
2. Click [Add To Device Group] button for further setting

Device List

Name	Type	URI	Status	Action	<input type="checkbox"/> Select
IEX_213	TERRA-EX	IEX_213@192.168.101.213:5060	online	Add	<input type="checkbox"/>
TerraEX	TERRA-EX536	TerraEX@192.168.101.163:5060	online	Add	<input type="checkbox"/>
TerraAMP	TERRA-AMP	TerraAMP@192.168.101.114:5060	online	Add	<input type="checkbox"/>
Machine	Boutique	Machine@192.168.102.77:5060	online	Add	<input type="checkbox"/>
tw240	TERRA-PPMK	tw240@192.168.101.240:5240	online	Add	<input type="checkbox"/>
TerraIO	TERRA-IO	TerraIO@192.168.101.183:5060	online	Add	<input type="checkbox"/>
fdx21	TERRA-FDX	fdx21@192.168.101.21:5060	online	Add	<input type="checkbox"/>
TerraServer	TerraServer	TerraServer@192.168.100.35:5060	online	Add	<input type="checkbox"/>
1	UAP-G2	1@192.168.101.168:5060	online	Add	<input type="checkbox"/>
TerraIFX	TERRA-IFX	TerraIFX@192.168.101.28:5060	online	Add	<input type="checkbox"/>

[Add Selected Device](#) [Add To Device Group](#)

3. Name: Name the group.
4. Zone: The paging zone of the group.



The max. number of supported zones is 1024.

5. Action: Delete the device.
6. Add Member: Add device in the group.

Add Device Group

Name 3.

6. [Add Member](#)

Name	Type	URI	Zone 4.		Action 5.
			1	2	
TerraEX	TERRA-IE536	TerraEX@192.168.101.163:5060	<input type="checkbox"/>	<input type="checkbox"/>	Delete
TerraAMP	TERRA-AMP	TerraAMP@192.168.101.114:5060	<input type="checkbox"/>	<input type="checkbox"/>	Delete

4.4.3 Function Libraries

The [Function Libraries] allows to set the functions and action for controlling the IPSM/IPBX-2C20. Follow the steps to create an action.

1. Select the function from drop-down box.
2. Click [Add] button for next operation.

Setup Update Status DSP About Logout English

Basic Setting Device **Function Libraries** Audio Matrix Media Setting I/O Control Account Manager Third Party Scheduler

Function Command (String) 1

Name	String	Interface	Action
		NULL	2 <input type="button" value="Add"/>

4.4.3.1 Command (String)

Third party devices send command string to IPSM/IPBX-2C20 such as TERRACOM device, IDA8 processor, BOUTIQUE controller, etc.

Setup Update Status DSP About Logout English

Basic Setting Device **Function Libraries** Audio Matrix Media Setting I/O Control Account Manager Third Party Scheduler

New - Command (String)

Name

String (%XXh if Hex Code which XX is hexadecimal)

Interface

+IP Address

+Port

+Sending Interval(ms)

+Sending Time(s)

- Name: The name of this [Command String] action.
- String: The code of the string will depend on the 3rd party devices.

The picture above is an example of sending the command string in ASCII code to Ateis processors (IDA8, BOUTIQUE, UAP G2, ECS, LAP G2T), the Ateis processors use Hex code, then users need to change the string in Hex code to ASCII code. The Hex code is %XXh, the XX indicates the character of Hex code.



For TERRACOM device: accept in ASCII code.
 For BOUTIQUE processor: accept ASCII code.
 For ATEIS processor (IDA8, UAP G2 etc.): accept Hex code.

- Interface: Choose the protocol of sending the command string, Ethernet UDP by default.
- +IP Address: Set the IP address of TERRACOM device.
- +Port: The network port setting requires to be the same as the TERRACOM device, IDA8 device, BOUTIQUE device, see the table as below.

Default Port	
Terracom device	8010
IDA8, ECS, LAP	19761
BOUTIQUE	8010

- +Sending Interval (ms): The interval of sending the command string to TERRACOM device, IDA8 device, BOUTIQUE device.
- +Sending Time(s): The device will stop sending the command string after receiving the answer string from the 3rd party device.

4.4.3.2 DSP Element Adjust

The [DSP Element Adjust] event is used for adjusting the DSP parameter such as the audio level of input source.

- First, choose [DSP Element Adjust] function and click [Add] to open setting window for next operation. Second, Type in the name of the setting and click [Add] button to create a new parameter setting.

- Choose the [Target] which will be sent a string of the action
 The [Target] combo box lists all the inputs/outputs of IPSM/IPBX-2C20 on [DSP Function] window.

New - DSP Element Adjust

Name:

Parameter Count (current/max.): (1/1)

No.	Target	Parameter	Mode	Value	Action
1	SIP Input	Mute		OFF	Delete

[Add](#) [Save](#) [Cancel](#)

Target dropdown menu options: SIP Input, Message Player, NET1 Input, NET2 Input, Music Player, Record Network, OUT-1, OUT-2, Record Output

- Choose [Mute] or [Level] of setting parameter

New - DSP Element Adjust

Name:

Parameter Count (current/max.): (1/1)

No.	Target	Parameter	Mode	Value	Action
1	SIP Input	Mute		OFF	Delete

[Add](#) [Save](#) [Cancel](#)

Parameter dropdown menu options: Mute, Level

- Set [Value] of [Mute]
 - OFF: The function of mute will turn off.
 - ON: The function of mute will turn on.
 - Toggle: No matter the current situation of mute is on or off, the mute function will switch to opposite situation.

New - DSP Element Adjust

Name:

Parameter Count (current/max.): (1/1)

No.	Target	Parameter	Mode	Value	Action
1	SIP Input	Mute		OFF	Delete

[Add](#) [Save](#) [Cancel](#)

Value dropdown menu options: OFF, ON, Toggle

- Set [Mode] and [Value] of [Level]
 - Absolute: The level adjustment will follow the [Value] that set by user, and change the current value to the same value as [Value] grid. For example, if the [Value] grid is set as -60dB, and the current level value is -50dB, and once this event is triggered, the level of input/output will be change to -60dB.
 - Relative: The level adjustment will follow the [Value] that set by user, and increase/decrease the level value when each time the event is triggered. For example, if the [Value] grid is set as -10dB,

and the current level value is -35dB, and once this event is triggered, the current level value will be change to -25dB (-35dB minus -10dB equals -45dB)

Modify - DSP Element Adjust

Name:

Parameter Count (current/max.): (1/1)

No.	Target	Parameter	Mode	Value	Action
1	SIP Receive	Level	Absolute	-60	Delete

[Add](#) [Save](#) [Cancel](#)

- [Action]: Delete the setting

New - DSP Element Adjust

Name:

Parameter Count (current/max.): (1/1)

No.	Target	Parameter	Mode	Value	Action
1	SIP Input	Level	Absolute	-60	Delete

[Add](#) [Save](#) [Cancel](#)

- After saving the individual settings use [Action] to edit or delete the existing settings.

Function: DSP Element Adjust

Name	Action
SIP Level_Absolute_-60	Edit / Delete
MSG Mute_Toggle	Edit / Delete
SIP Mute-Off	Edit / Delete

[Add](#)



The PM001 module can expand more DSP adjustment parameters and options of [Target], please order it if the scale of application is bigger and more complex.

4.4.3.3 DSP Element Read

The [DSP Element Read] event is used for remote monitoring the DSP parameter of device.

Basic Setting | Device | **Function Libraries** | Audio Matrix | Media Setting | I/O Control | Account Manager | Third Party | Scheduler

Function: DSP Element Read

Name	Action
DSP Read	Edit / Delete

[Add](#)

- Choose the [Target] which will be sent a string(Name) of the monitoring action
The drop-down options of [Target] lists all the inputs/outputs of IPSM/IPBX-2C20 on [DSP Function] window.

Basic Setting Device **Function Libraries** Audio Matrix Media Setting I/O Control Account Manager Third Party Scheduler

Modify - DSP Element Read

Name

Parameter Count (current/max.) (1/1)

No.	Target	Parameter	Action
1	OUT-1	Level	Delete

[Add](#) [Save](#) [Cancel](#)

SIP Input
Message Player
NET1 Input
NET2 Input
Music Player
Record Network
OUT-1
OUT-2
Record Output

- Choose [Mute] or [Level] of monitoring parameter
Please use the auxiliary software to send the string and get the status prompt. There are many free downloadable software for user.

Modify - DSP Element Read

Name

Parameter Count (current/max.) (1/1)

No.	Target	Parameter	Action
1	OUT-1	Level	Delete

[Add](#) [Save](#) [Cancel](#)

Mute
Level

4.4.3.4 Contact Out

The contact output of IPSM/IPBX-2C20 can be programmed and send a pulse or a static closing/opening to an external device

Setup Update Status DSP About Logout

Basic Setting Device **Function Libraries** Audio Matrix Media Setting I/O Control Account Manager Third Party Scheduler

New - Contact Out

Name

Remote Target

Channel

Output

[Save](#) [Cancel](#)

Open
Close
Toggle
NO-Pulse
NC-Pulse

- Name: The name of this [Contact Out] action.
- Remote Target: The remote consoles and paging consoles that add in [Device] setting.

Basic Setting Device **Function Libraries** Audio Matrix Media Setting I/O Control Account Manager Third Party Scheduler

New - Contact Out

Name TERRA-IT5

Remote Target Local

Channel Local

Output TERRA-IT5

Save Cancel



How to add device in the option of [Remote Target] drop-down list:

Click the connecting device and the setting window will pop up. And, tap in the target name and choose product type.

Basic Setting **Device** Function Libraries Audio Matrix Media Setting I/O Control Account Manager Third Party Scheduler

Edit Device

Name TERRA-IT5

Product Type PPM-IT5

URI TerraIO@192.168.101.183:5060

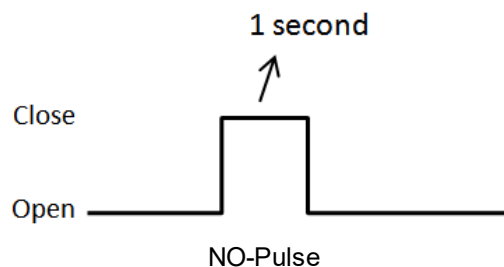
ALL Zone ☐

Zone Number All 1

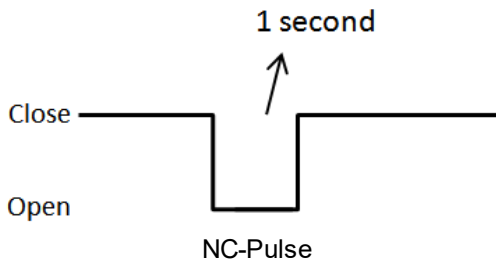
Local Device 1 ☐ ☒

Save Cancel

- Channel: The contact output channel on the rear panel of IPSM/IPBX-2C20.
- Output:
 - Open: The contact output's channel is opened when the action is triggered.
 - Close: The contact output's channel is closed when the action is triggered.
 - Toggle: Trigger the relay switch of contact output's channel between open and close.
 - NO-Pulse: The NO (normally open) contact is opened, and when the action is triggered, the contact is closed for 1 second.



- NC-Pulse: The NC (normally close) contact is closed, and when the action is triggered, the contact is opened for 1 second.



When choosing [NO-Pulse] or [NO-Pulse] option, please set the default state (open or close) of relay output on I/O Control window > Contact Output, see the picture below.

CONTACTINPUT & OUTPUT

INPUT	TYPE	MONITOR	POSITION	FUNCTION	EVAC	MODE	SECURITY	SOURCE	TARGET
IN1	Logic		OPEN	Message Stop					
			CLOSE	Message Play	<input type="checkbox"/>			song	
IN2	--								
IN3	--								
OUTPUT	DEFAULT								
OUT1	Open								
	Open								
	Close								

Save Cancel

4.4.3.5 User Fault

Create the user-defined fault, and once this user-defined fault is being triggered/released, the fault can be displayed on the [Monitor] window of TerraManager software.

Function: User Fault

Name	String	Type	Input Source	Action
Channel 1 - R	CH1-Release	Release	Contact In 1	Edit / Delete
Channel 2 - T	CH2-Trigger	Trigger	Contact In 2	Edit / Delete

Add

- Name: The name of this [User Fault] action.
- String: The display message of TerraManager software > Monitor window.
- Action: The action (Trigger/Release) of this User Fault.
- Input Source: Select the source (Contact Input of IPSM/IPBX) to trigger/release the [User Fault] action.



After completed the User Fault setting, please go to [I/O Control](#) to continue configuring its control setting.

New - User Fault

Name

String

Action

Input Source

Release

Channel 1

Contact In

Channel 1

Channel 2

Channel 3

Save Cancel

Edit Window

4.4.3.6 Record

Display the built-in Record function (Record Start/Record End) of TERRA-SAP, and allows users to assign the [Record Start]/[Record End] action on [I/O Control > Record](#) window.

Function Record

Name

Record Start

Record End

4.4.3.7 Multi Function

Create a group of action with multiple functions. There are three default functions - [Call Function], [Message Function] and [Hang up Function]. If users wish to use other functions such as [Contact Out], please create it on [Function Libraries] first, then the function you create will be listed on [Function] drop-down box.

New - Multi Function

Name: Multi Function_1

Number	Function	Mode	Security	Source	Target/State	Delay(Sec)
1	Call	Paging	<input checked="" type="checkbox"/>		TerraEX	2
2	Message Call	Paging	<input type="checkbox"/>	--	Group-2021726171147	0
3	--					
4	--					
5	--					
6	--					
7	--					
8	--					
9	--					
10	--					
11	--					
12	--					
13	--					
14	--					
15	--					
16	--					
17	--					
18	--					
19	--					
20	--					
21	--					
22	--					
23	--					
24	--					
25	--					

Save Cancel

- Name: The name of this [Multi Function] action.
- Function: Select a function from the drop-down list, these functions will be triggered by the order of the list.
- Mode: Choose the calling mode (intercom/paging).
- Security: If the [Security] option is enable, the caller cannot hang up the call during paging unless the caller cancels the call itself.
- Source (message call only): Choose a playlist which you've created on Setup 1 > Media Setting.
- Target/State: Choose a TERRACOM device to paging/SIP intercom, play message, etc.
- Delay (Sec): The delay time between the previous action and the next upcoming action in [Multi Function] list.

4.4.4 Audio Matrix

The Audio Matrix allows to manage all audio input/output with the following functions:

1. Audio routing with priority.
2. Audio routing with RAC 5/8.
3. Volume control depends on audio source.
4. Announcement has different volume with music.
5. Send network stream.

6. Play network stream.

Basic Setting Device Function Libraries Audio Matrix Media Setting I/O Control Account Manager Third Party Scheduler															
GROUP	INPUT	PRIORITY	MODE	DISABLE	OUTPUT		S/PDIF	STREAM OUT			RAC CONTROL			BUFFER	
					1	2		MODE	IP ADDRESS	PORT	SELECT	LEVEL(dB)			
MAJOR	SIP	1 ▾	--	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	N/A						FIX ▾	0 ▾	RT ▾
	MESSAGE	1 ▾	--	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	N/A				PRIORITY ▾	-- ▾	FIX ▾	0 ▾	
MINOR	NET1	1 ▾	SOURCE 1 ▾	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	N/A						FIX ▾	0 ▾	RT ▾
	NET2	1 ▾	SOURCE 2 ▾	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	N/A						FIX ▾	0 ▾	RT ▾
	MUSIC	1 ▾	--	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	N/A				PRIORITY ▾	-- ▾	FIX ▾	0 ▾	

- Group
The priority of group [MAJOR] will always bigger than group [MINOR].

- Input
The audio input sources.
 - SIP: SIP calls.
 - MESSAGE: Play message audio input.
 - NET1: The first channel of playing network stream.
 - NET2: The second channel of playing network stream.
 - Music: Play background music.

- Priority
Set the priority of the audio input sources.



Always set the the priority of SIP input as "1" (the highest priority), otherwise the SIP call will be left aside. The SIP includes Call, Paging Group and Pre-define Message.



The priority of source of will be based on the priority setting here. If the priority of input source is the same, the priority order will be followed by "first in first serve" basis.

- .Mode
Receive the network stream: Source 1~8 and proceed audio routing via TerraManager (TM).
- Disable
When enables the [Disable] option, the corresponded audio input source will no longer output even its priority is higher than other input sources.
- Output 1 and 2
Tick the checkbox to enable the audio output channels.
- RAC Control
 - Select: Assign which contact input channel (IN1/IN2) of IPSM/IPBX-2C20 will be used for channel selection of RAC 5/8 (including the sources from NET1).
 - Level (dB): Either set a fixed level for an assigned source channel or control the level with the rotary knob of RAC 5/8, see [How-to: Use RAC for music/source selection and level control](#) for

details.

- Buffer

Set the buffer time (by second) before the receiving input sources. This function will be particularly helpful for a Terracom system which multiple Terracom devices are located in different area and lots of network switches are connected, this will cause a delay time for audio transmission for the devices located at remote area, then please set the Buffer in longer delay time. If user wants to play the message audio in real-time for example, please set [RT] Buffer.

NET IN	MODE	SHOUTCAST/ICECAST		STREAM UDP		NET1		NET2	
		URL	IP ADDRESS	PORT					
SOURCE 1	STREAM UDP		239.240.100.1	9012	FIX	--	FIX	--	
SOURCE 2	STREAM UDP		239.240.100.2	9012	FIX	--	FIX	--	
SOURCE 3	STREAM UDP		239.240.100.1	9012	FIX	--	FIX	--	
SOURCE 4	STREAM UDP		239.240.100.1	9012	FIX	--	FIX	--	
SOURCE 5	STREAM UDP		239.240.100.1	9012	FIX	--	FIX	--	
SOURCE 6	STREAM UDP		239.240.100.1	9012	FIX	--	FIX	--	
SOURCE 7	STREAM UDP		239.240.100.1	9012	FIX	--	FIX	--	
SOURCE 8	STREAM UDP		239.240.100.1	9012	FIX	--	FIX	--	

* Port 8990~9010 has been used by system, **DO NOT** use these ports on your design.

Save Cancel

- NET IN

The setting of source 1~8.

- Mode

Choose a received type of network stream (Stream UDP or SHOUTcast/Icecast) on Source 1~Source 8.

- Stream UDP

The IGMP setting of [IP ADDRESS] and [PORT].

- NET1 and 2

Assign a RAC 5/8 and its channel, and use this RAC 5/8 to switch the network stream source (Source 1~Source 8).

4.4.4.1 How-to: Use RAC for music/source selection and level control

Go to [\[I/O Control\]](#) window and select a [RAC 5/8] for channel selection, and select [RAC Analog] for controlling the source level which is currently playing. Here we assign the [Channel Select] to IN1 and [Level Control] to IN2.

INPUT	TYPE	MONITOR	POSITION	FUNCTION	EVAC	MODE	SECURITY	SOURCE	TARGET
IN1	RAC5		Channel 1	Channel Select					
			Channel 2	Channel Select					
			Channel 3	Channel Select					
			Channel 4	Channel Select					
			Channel 5	Channel Select					
IN2	RAC Analog			Level Control					
IN3	Logic		OPEN	User Fault					Channel 1 - R
			CLOSE	Hang Up					
OUTPUT	DEFAULT								
OUT1	Open								

Save Cancel



IN1~3 indicates as the contact input channel 1~3 on the rear panel of IPSM/IPBX-2C20.

Go to [Audio Matrix] window:

GROUP	INPUT	PRIORITY	MODE	DISABLE	OUTPUT			STREAM OUT		RAC CONTROL		BUFFER
					1	2	S/PDIF	MODE	IP ADDRESS	PORT	SELECT	
MAJOR	SIP	1	--	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	N/A			IN1	1	
	MESSAGE	2	--	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	N/A			IN2	FIX	0
MINOR	NET1	1	SOURCE 1	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	N/A			IN2	FIX	0
	NET2	1	SOURCE 2	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	N/A			IN2	FIX	0
	MUSIC	1	--	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	N/A			IN2	FIX	0

NET IN	MODE	SHOUTCAST/ICECAST		STREAM UDP		NET1		NET2	
		URL	IP ADDRESS	PORT	NET1	NET2	NET1	NET2	
SOURCE 1	STREAM UDP		239.240.100.1	9012	FIX	--	FIX	--	
SOURCE 2	STREAM UDP		239.240.100.2	9012	FIX	--	FIX	--	
SOURCE 3	STREAM UDP		239.240.100.1	9012	FIX	--	FIX	--	
SOURCE 4	STREAM UDP		239.240.100.1	9012	FIX	--	FIX	--	
SOURCE 5	STREAM UDP		239.240.100.1	9012	FIX	--	FIX	--	
SOURCE 6	STREAM UDP		239.240.100.1	9012	FIX	--	FIX	--	
SOURCE 7	STREAM UDP		239.240.100.1	9012	FIX	--	FIX	--	
SOURCE 8	STREAM UDP		239.240.100.1	9012	FIX	--	FIX	--	

* Port 8990~9010 has been used by system, **DO NOT** use these ports on your design.

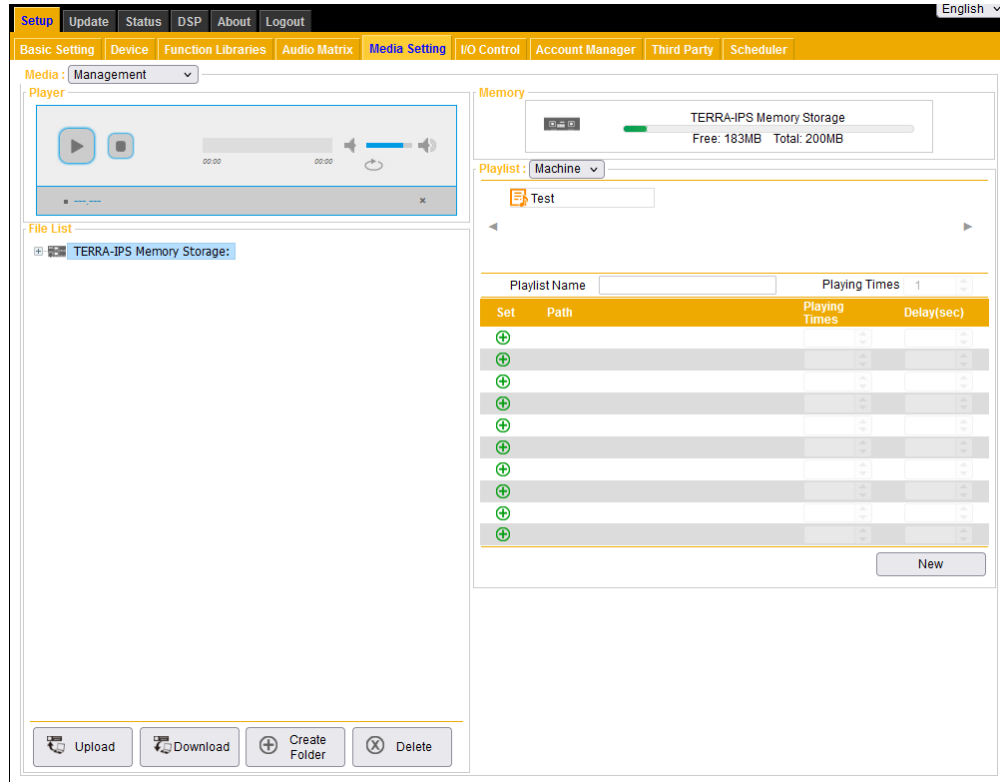
Save Cancel

- Select: Assign [IN1] as RAC 5 source selector, and set the five steps of RAC 5 from [SELECT] drop-down box (incl. the sources from NET1).
- Level (dB): Assign [IN2] as RAC's level control knob, and set either a fixed level or control the level by the knob of RAC 5 from [LEVEL] drop-down box.

4.4.5 Media Setting

4.4.5.1 Management

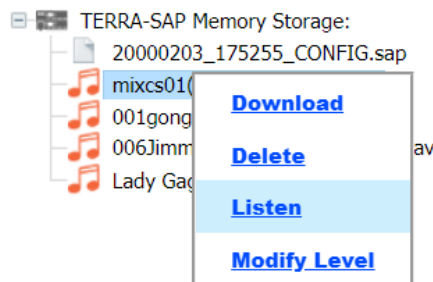
Display all the message files stored in the IPSM/IPBX-2C20 or Micro SD card.







❖ Player

Preview the audio file on your PC

- Select an audio file on File List, and right click the audio file, then click [Listen], see the picture on the right.
- And the audio file will be played automatically on [Player] window.

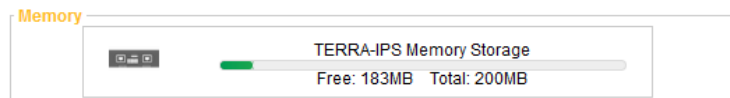


Symbol	Function
	Play
	Stop
	Repeat
	Volume adjustment

	Click  to mute, click  to unmute
...	Display the current audio file which is selected from the File List.
	Remove the audio file from Player


❖ Memory

Check current memory storage of IPSM/IPBX-2C20 on Media Setting > Management












❖ Playlist

Playlist: Machine ▼




 Playlist 01

◀ ▶

Playlist Name Playing Times 1



Set	Path	Playing Times	Delay(sec)
			
			
			
			
			
			
			
			
			

New

- Playlist name: Rename the selected playlist.
- Playing times: Set the playing times of the selected playlist. The range of playing times is from 1~65535, 65535 indicates to repeat the the playlist endlessly.
- Delay (sec): Set the delay time (sec) for each audio song. If the audio file is set as 5 seconds for delay time, it will delay 5 seconds before playing a next audio file.
-  Add file into the playlist
-  Remove file from the playlist
-  Select the playlist
- New: Create a new playlist, and set the name and the storage location (Machine/USB) of this playlist.

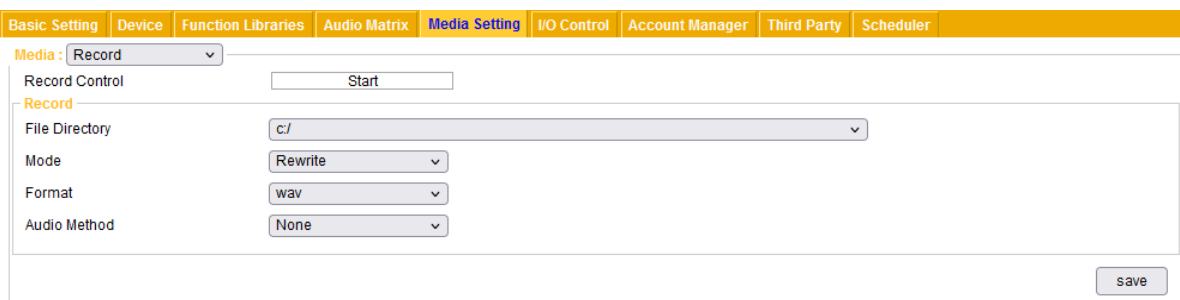
❖ Example of creating a playlist

1. First, click [New] to create a new playlist.

2. Select the audio file you want to have it on your list, the list is located on the left side of the window.
3. Then click  button to add the audio file in, click  button to remove it. And click [Save to Machine] button to complete the setting.

4.4.5.2 Record

Before operating the [Record] function of IPSM/IPBX-2C20, please configure the basic recording settings in this webpage.



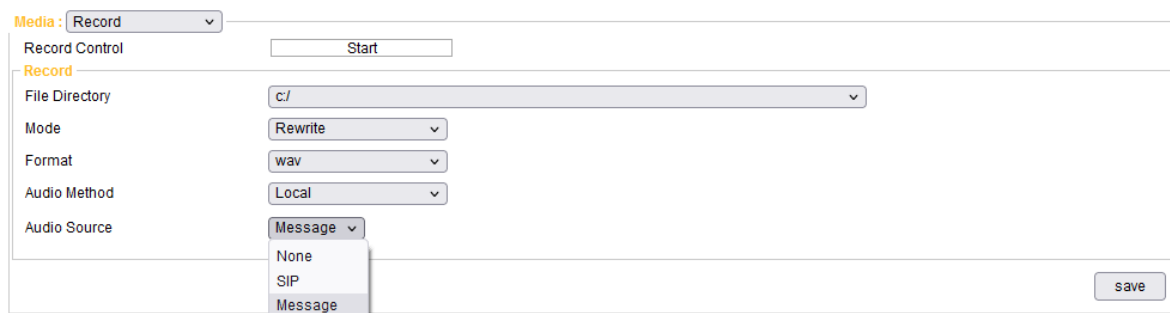
The screenshot shows the 'Media Setting' page with the 'Record' tab selected. The 'Record Control' section has a 'Start' button. The 'Record' section includes the following settings:

- File Directory: c/
- Mode: Rewrite
- Format: wav
- Audio Method: None

A 'save' button is located at the bottom right of the form.

❖ Record Setting

- File directory: The file path where the recorded files will be stored.
- Mode: When the memory storage is not enough, choose either [Rewrite] or [Stop] mode.
 - Rewrite: Rewrite the file from the first recorded file when the memory storage is full. If there are no other recorded files which can be deleted, the recording will be stopped.
 - Stop: Stop recording if the memory storage is full.
- Format: Choose which audio codec (Wav or MP3) the recorded file will be saved as.
- Audio method: Choose the audio source of recorded file either from [Local] IPSM/IPBX-2C20 or [Network].



The screenshot shows the 'Media Setting' page with the 'Record' tab selected. The 'Record Control' section has a 'Start' button. The 'Record' section includes the following settings:

- File Directory: c/
- Mode: Rewrite
- Format: wav
- Audio Method: Local
- Audio Source: Message (dropdown menu is open showing options: None, SIP, Message)

A 'save' button is located at the bottom right of the form.

- Network: Record the audio source from the network. Please set the [Network IP address] and [Network Port].

Media : Record ▾

Record Control

Record

File Directory

Mode

Format

Audio Method

Network

Network IP Netowrk Port

❖ Record action

- Start: Click this button to start recording.

Basic Setting Device Function Libraries Audio Matrix **Media Setting** I/O Control Account Manager Third Party Scheduler

Media : Record ▾

Record Control

Record

File Directory

Mode

Format

Audio Method

- The [REC ON] status will be shown on the top-right corner during recording.

TERRACOM™ SIP-based audio and control over local network and internet

Version 1.00, 00/00/00 01:09:58
IPSM, IPSM@192.168.101.123
MAJOR OUT:None / MINOR OUT:None / SIP:None **REC:ON**

Setup Update Status DSP About Logout

Basic Setting Device Function Libraries Audio Matrix **Media Setting** I/O Control Account Manager Third Party Scheduler

Media : Record ▾

Record Control

Record

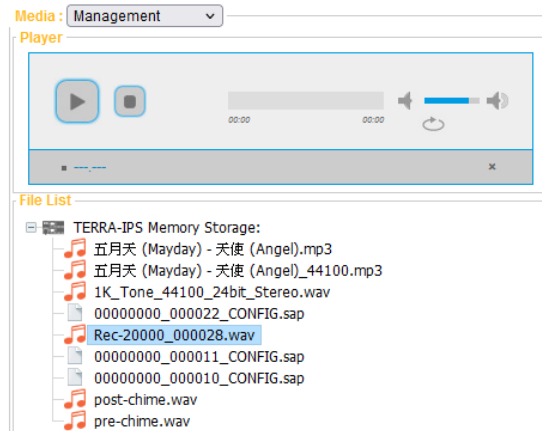
File Directory

Mode

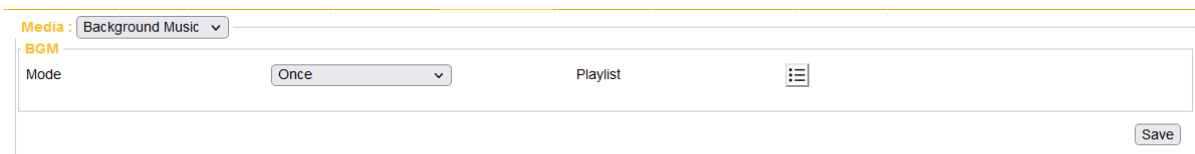
Format

Audio Method

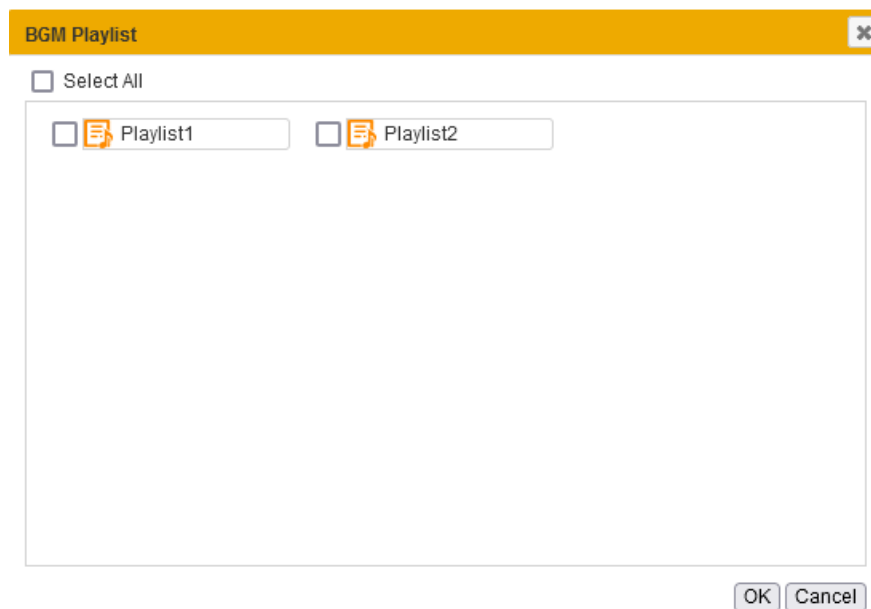
- End: Click this button to stop recording. Then the recorded file will be listed on Media Setting > Management. See the picture as below.



4.4.5.3 Background Music



- Mode: The play mode of playlist.
 - Once: Play all the audio files which are added in [Playlist] setting once.
 - Repeat All: Play the audio files which are added in [Playlist] setting repeatedly in order.
 - Shuffle: Play the audio files which are added in [Playlist] setting randomly.
- Playlist: Click to choose the playlist(s) you wish to be played.
- Tick the checkbox of the playlist(s) that user would play.



- Please go to [Audio Matrix] window, and set the priority.



GROUP	INPUT	PRIORITY	MODE	DISABLE	OUTPUT			STREAM OUT		RAC CONTROL				BUFFER
					1	2	S/PDIF	MODE	IP ADDRESS	PORT	SELECT		LEVEL(dB)	
MAJOR	SIP	<div>1</div>	--	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	N/A					<div>FIX</div>	<div>0</div>	<div>RT</div>
	MESSAGE	<div>1</div>	--	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	N/A			<div>PRIORITY</div>	<div>--</div>	<div>FIX</div>	<div>0</div>	
MINOR	NET1	<div>1</div>	<div>SOURCE 1</div>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	N/A					<div>FIX</div>	<div>0</div>	<div>RT</div>
	NET2	<div>1</div>	<div>SOURCE 2</div>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	N/A					<div>FIX</div>	<div>0</div>	<div>RT</div>
	MUSIC	<div>1</div>	--	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	N/A			<div>PRIORITY</div>	<div>--</div>	<div>FIX</div>	<div>0</div>	

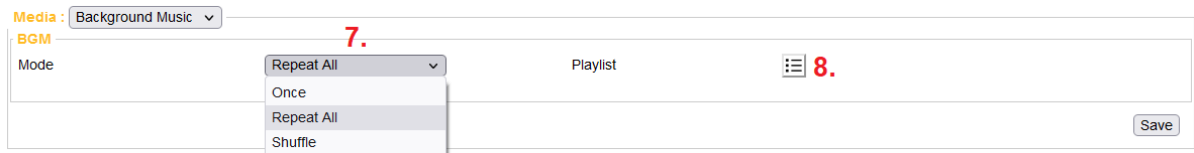
4.4.5.4 Add Audio Files/Create playlist for BGM


The screenshot displays the 'Media Setting' interface. On the left, the 'File List' shows a directory structure under 'TERRA-IPS Memory Storage' containing various audio files like '五月天 (Mayday) - 天使 (Angel).mp3' and '1K_Tone_44100_24bit_Stereo.wav'. On the right, the 'Playlist' section shows a table for managing playlists. The table has columns for 'Set', 'Path', 'Playing Times', and 'Delay(sec)'. A 'New' button is highlighted in the bottom right of the playlist section. Below the table, there is a 'Add New Playlist' dialog box with fields for 'Playlist Name' and 'Storage Location' (set to 'Machine').

1. Click [Upload] to browse an audio file, and upload it into IPSM/IPBX-2C20.
2. To create a new playlist, click [New] to add a new playlist first.

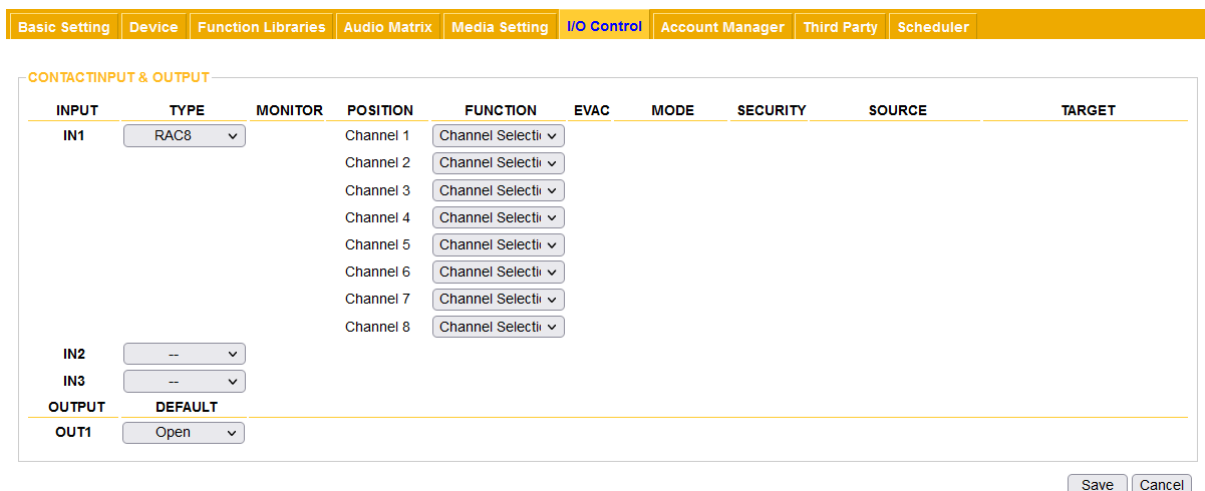
This screenshot shows the 'File List' and 'Playlist' sections. In the 'File List', the file 'pre-chime.wav' is highlighted. A red arrow points from this file to the 'Path' column in the 'Playlist' table, where 'c:/pre-chime.wav' is entered. The 'Playing Times' column is set to '1' and the 'Delay(sec)' column is set to '0'. A 'New' button is highlighted in the bottom right of the playlist section. Below the table, there is a 'Save To Machine' button.

3. Select the audio file you want to have it on your list, the list is located on the left side of the window.
4. Then click  button to add the audio file in, click  button to remove it.
5. Set the [Plying Time] and [Delay(sec)] of the list.
6. Click [Save to Machine] button to complete the setting.



7. Choose the play mode (play once/repeat/random) and play target setting (internal/external/detect by external). For example, set [Repeat All] mode for BGM playing.
8. Click  to choose one or multiple playlists as the BGM source.

4.4.6 I/O Control



❖ Contact Input

- Input: The contact input which will be used for triggering an action, IN1 means contact input channel 1. IN1 have the function of monitoring.
- Type: Choose the type of interface which will be used for controlling the action, including logic and remote device (RAC 5/8, RAC Analog and Logic switch).
 - Logic: Switching between "open" and "close" situations.
 - Logic-Click: Single click button that without "on" and "off" function.
- Position:
- Function: Select a function from the drop-down list, see the table as below.

Function
Call
Message Call
Hang Up

Function
Message Play
Message Stop
Contact Out
Command (String)
Multi Function
Record
User Fault
DSP Element Adjust
Music Play
Music Stop

❖ Contact Output

- Output: The relay contact output of IPSM/IPBX-2C20, it can be programmed to open or close the contact to an external device.
- Default: Set the default state (open or close) of logic relay outputs after the TERRA-SAP is powered.

4.4.6.1 Call/Hang Up

Basic Setting	Device	Function Libraries	Audio Matrix	Media Setting	I/O Control	Account Manager	Third Party	Scheduler
CONTACT INPUT & OUTPUT								
INPUT	TYPE	MONITOR	POSITION	FUNCTION	EVAC	MODE	SECURITY	SOURCE
IN1	Logic		OPEN	Hang Up				
			CLOSE	Call		Intercom	<input type="checkbox"/>	TerraEX
IN2	Logic-Click	<input type="checkbox"/>	Active	Call		Paging	<input type="checkbox"/>	TerraAMP
			InActive	Hang Up				
IN3	RAC Analog			Level Control				
OUTPUT								
	DEFAULT							
OUT1	Open							

Save Cancel

• Call (Intercom/Paging)

Proceed intercom or paging call by using the connected contact inputs of IPSM/IPBX-2C20 to a chosen TERRACOM device target when closing or activating the logic switch .

• Hang Up

Hang up the intercom and paging call by opening or inactivating the logic switch .

• Security

If the [Security] option is enable, the caller cannot hang up the call during paging unless the call receiver cancels the call itself.

4.4.6.2 Message Call

CONTACTINPUT & OUTPUT

INPUT	TYPE	MONITOR	POSITION	FUNCTION	EVAC	MODE	SECURITY	SOURCE	TARGET
IN1	Logic		OPEN	--		Paging	<input type="checkbox"/>	Test	TerraAMP
			CLOSE	Message Call		Intercom	<input checked="" type="checkbox"/>	Test	TerraEX
IN2	Logic-Click	<input type="checkbox"/>	Active	Message Call					
			InActive	--					
IN3	--								
OUTPUT	DEFAULT								
OUT1	Open								

Save Cancel

The Message Call action allows to play the messages directly to a chosen TERRACOM device target when closing or activating the logic switch which have connected to the contact inputs of IPSM/IPBX-2C20.

- Stop the message call
Open or inactive the logic switch.
- Source
Select the playlist source which user have created on [Setup 1 > Media Setting > Management](#).

4.4.6.3 Message Play/Stop

CONTACTINPUT & OUTPUT

INPUT	TYPE	MONITOR	POSITION	FUNCTION	EVAC	MODE	SECURITY	SOURCE	TARGET
IN1	Logic		OPEN	Music Stop					
			CLOSE	Music Play				Test	
IN2	Logic-Click	<input type="checkbox"/>	Active	Music Play				Test	
			InActive	Music Stop					
IN3	RAC5		Channel 1	Music Selection	<input type="checkbox"/>			Test	
			Channel 2	Music Stop					
			Channel 3	Music Selection	<input type="checkbox"/>			Test	
			Channel 4	Music Selection	<input type="checkbox"/>			Test	
			Channel 5	Music Stop					
OUTPUT	DEFAULT								
OUT1	Open								

Save Cancel

Play the message (important broadcast content, such as fire emergency evacuation message) when closing or activating the logic switch which have connected to the contact inputs of IPSM/IPBX-2C20.



The priority of message always higher than music.

- Source
Select the playlist source which user has created on [Setup 1 > Media Setting > Management](#).
- EVAC
When the [EVAC] option of Contact IN1~3 is enabled, the TerraManager software will show the source name on Monitor window > EVAC tab > Status grid. In addition, when the IPSM/IPBX-2C20 is proceeding multiple EVAC paging, **ONLY** the latest EVAC call will be displayed on the EVAC tab of TerraManager software.

4.4.6.4 Contact Out

CONTACTINPUT & OUTPUT

INPUT	TYPE	MONITOR	POSITION	FUNCTION	EVAC	MODE	SECURITY	SOURCE	TARGET
IN1	Logic		OPEN	--					
			CLOSE	Contact Out					out_open
IN2	Logic-Click	<input type="checkbox"/>	Active	Contact Out					out_open
			InActive	--					--
IN3	--								Contact Out
OUTPUT	DEFAULT								out_open
OUT1	Open								test
									DSP Element Adjust

Save Cancel

- Program the only one contact output of IPSM/IPBX-2C20 to control the external device with the target that user set on [Setup 1 > Function Libraries > Contact Out](#).
- Close or active the logic switch to trigger the setting.

4.4.6.5 Command(String)

CONTACTINPUT & OUTPUT

INPUT	TYPE	MONITOR	POSITION	FUNCTION	EVAC	MODE	SECURITY	SOURCE	TARGET
IN1	Logic		OPEN	--					Command(String) test1
			CLOSE	Command(String)					--
IN2	Logic-Click	<input type="checkbox"/>	Active	Command(String)					--
			InActive	--					Command(String)
IN3	--								Command(String) test1
OUTPUT	DEFAULT								
OUT1	Open								

Save Cancel

- Send the 3rd party command (string) to the external device with the target that user set on [Setup 1 > Function Libraries > Command \(String\)](#).
- Close or active the logic switch which have connected to the contact inputs of IPSM/IPBX-2C20 to trigger the target.

4.4.6.6 Multi Function

CONTACTINPUT & OUTPUT

INPUT	TYPE	MONITOR	POSITION	FUNCTION	EVAC	MODE	SECURITY	SOURCE	TARGET
IN1	Logic		OPEN	--					Test1
			CLOSE	Multi Function					Test2
IN2	Logic-Click	<input type="checkbox"/>	Active	Multi Function					
			InActive	--					
IN3	--								
OUTPUT	DEFAULT								
OUT1	Open								

Save Cancel

- Trigger a group of action with multiple functions to different devices by closing or activating the logic switch which have connected to the contact inputs of IPSM/IPBX-2C20.
- Close the logic switch to trigger the "Test1" setting of [Multi Function], and active the logic switch to

trigger the "Test2" setting of [Multi Function].

- Target
Set on [Setup 1 > Function Libraries > Multi Function](#).


4.4.6.7 Record

CONTACT INPUT & OUTPUT

INPUT	TYPE	MONITOR	POSITION	FUNCTION	EVAC	MODE	SECURITY	SOURCE	TARGET
IN1	Logic		OPEN	Record					End
			CLOSE	Record					Start
IN2	Logic-Click	<input type="checkbox"/>	Active	Record					Start
			InActive	Record					End
IN3	RAC5		Channel 1	Record					Start
			Channel 2	Record					End
			Channel 3	Channel Select					
			Channel 4	Channel Select					
			Channel 5	Channel Select					
OUTPUT									
DEFAULT									
OUT1	Open								

Save Cancel

- Record the chosen audio source when closing or activating the logic switch which have connected to the contact inputs of IPSM/IPBX-2C20, and switching RAC5 to channel 1 can also do this record action.
- To stop the recording, open or inactivate the logic switch, or switching RAC5 to channel 2.

 The chosen audio source (SIP, MESSAGE, LINE IN, USB PC, NETWORK etc.) needs to be programmed on [Media Setting > Record](#) webpage first.

4.4.6.8 User Fault

CONTACT INPUT & OUTPUT

INPUT	TYPE	MONITOR	POSITION	FUNCTION	EVAC	MODE	SECURITY	SOURCE	TARGET
IN1	Logic		OPEN	--					
			CLOSE	User Fault					Channel 1 - R
IN2	Logic-Click	<input type="checkbox"/>	Active	User Fault					Channel 2- T
			InActive	--					
IN3	--								
OUTPUT									
DEFAULT									
OUT1	Open								

Save Cancel

- Assign the [User Fault] to an input source, then select the trigger/release action from [Target] drop-down list.
- The trigger/release action of [User Fault] needs to be configured on [Setup 1 > Function Libraries > User Fault](#) first.

 Make sure the input source you set on [Function Libraries] window is matched with the settings on

[I/O Control] window.

4.4.6.9 DSP Element Adjust

CONTACT INPUT & OUTPUT

INPUT	TYPE	MONITOR	POSITION	FUNCTION	EVAC	MODE	SECURITY	SOURCE	TARGET
IN1	Logic		OPEN	--					DSP Mute_off
			CLOSE	DSP Element Ac					Channel 2- T
IN2	Logic-Click	<input type="checkbox"/>	Active	DSP Element Ac					--
			InActive	--					DSP Element Adjust
IN3	--								DSP Mute_off
OUTPUT	DEFAULT								
OUT1	Open								

Save Cancel

- To trigger the action of [DSP Element adjust] setting when closing or activating the logic switch.
- Target
Select the DSP element adjust action from the target that user have created on [Setup 1 > Function Libraries > DSP Element Adjust](#).

4.4.6.10 Music Play/Stop

CONTACT INPUT & OUTPUT

INPUT	TYPE	MONITOR	POSITION	FUNCTION	EVAC	MODE	SECURITY	SOURCE	TARGET
IN1	Logic		OPEN	Music Stop					
			CLOSE	Music Play				Test	
IN2	Logic-Click	<input type="checkbox"/>	Active	Music Play				Test	
			InActive	Music Stop					
IN3	RAC5		Channel 1	Music Selection	<input type="checkbox"/>			Test	
			Channel 2	Music Stop					
			Channel 3	Music Selection	<input type="checkbox"/>			Test	
			Channel 4	Music Selection	<input type="checkbox"/>			Test	
			Channel 5	Music Stop					
OUTPUT	DEFAULT								
OUT1	Open								

Save Cancel

Play the music playlist (ON-state action) when closing or activating the logic switch which have connected to the contact inputs of IPSM/IPBX-2C20.

- RAC5/RAC8
Set channel 1, 3 and 4 to play next music in the "Test" playlist, and set channel 2 and 5 to stop the music.
- Source
Select the playlist source which user have created on [Setup 1 > Media Setting > Management](#).

4.4.7 Account Manager

Except the [ADMIN] user ID, multiple sets of user ID can be created in [Account Manager] function, and have access to the IPSM/IPBX-2C20 web browser.

The screenshot shows the 'Account Manager' tab selected in the top navigation bar. The 'Management' section on the left has a 'Select Function' dropdown menu with three options: 'Change a user's setting' (highlighted with a red box), 'Add a user's ID', and 'Delete a user's ID'. The 'Change a user's Setting' section below it contains input fields for 'User's ID', 'User's Old Password', 'User's New Password', and 'Re-enter To Confirm', each with a checkbox. The 'User Information' section on the right shows the 'ID' as 'admin'. An 'Edit' button is located at the bottom right.

❖ Three functions of account management

1. Change a user's setting
2. Add a user's ID
3. Delete a user's ID



The default [User Name] is admin and its [Password] is admin. The admin user ID cannot be deleted, but its password can be user-defined.

❖ Change a user's setting-password

Select the user ID which user gonna change, type in new password and click [Edit] button.

The screenshot shows the 'Change a user's setting' form. The 'Select Function' dropdown is set to 'Change a user's setting'. The 'Change a user's Setting' section has the 'User's ID' field filled with 'admin', 'User's Old Password' field with '*****', 'User's New Password' field, 'Re-enter To Confirm' field, and 'User's Level' dropdown set to 'Admin'. The 'User Information' section on the right shows the 'ID' as 'admin' and 'Level' as 'Admin'. An 'Edit' button is located at the bottom right.

❖ Add a user's ID

Enter the User ID and the password, and choose the access level of new account, then finish the steps by clicking [Add] button.

- The password must contain at least one number or letter, and cannot leave blank on password field.
- Letters are case sensitive.

Management
 Select Function Add a user's ID ▾

Change a user's Setting
 New User's ID
 New User's Password ☐
 Re-enter To Confirm ☐
 New User's Level Admin ▾

User Information

ID	Level
admin	Admin

Admin ▾

Level 1
Level 2
Level 3
Level 4
Level 5
Level 6
Level 7
Level 8
Level 9

Add

❖ Delete a user's ID

Select the ID that to be deleted from the drop-down options.

Management
 Select Function Delete a user's ID ▾

Change a user's Setting
 Delete ID admin ▾

User Information

ID	Level
admin	Admin
Test1	Level 1


admin ▾

admin
Test1

Delete

4.4.8 Third Party

Set the 3rd party commend to allow other devices to control the IPSM/IPBX-2C20.

 Please enable [Network Controls Service] and set [+Network Port] on [Steup1 > Basic Setting > Third Party Controls](#) first.

Basic Setting | Device | Function Libraries | Audio Matrix | Media Setting | I/O Control | Account Manager | **Third Party** | Scheduler

New Third Party
 Name
 Function -- ▾
 Enable State Enable ▾

Save

Cancel

- Name: The [Name] field is the command string for triggering an action via 3rd party control.
- Function

Function
Call
Hang Up
DSP Element Adjust

Function
DSP Element Read
Net Stream 1 Select
Net Stream 2 Select
Record

- **Enable State:** To enable or disable this 3rd party command. If this field is set disable, the Terracom device will not execute the function even receives the command.

4.4.8.1 Call/Hang Up

New Third Party

Name	<input type="text"/>
Function	Call ▼
Source	-- ▼
Target	-- ▼
Security	<input type="checkbox"/>
Enable State	Enable ▼

Save Cancel

- **Call**
 - **Source:** The analog input source of MIC sound.
 - **Target:** The device that controlled by 3rd party device.
 - **Security:** Mechanism that cannot be rejected and hang up.

New Third Party

Name	<input type="text"/>
Function	Hang Up ▼
Enable State	Enable ▼

Save Cancel

- **Hang up**
Set the 3rd party command to let target hang up the call.

4.4.8.2 DSP Element Adjust

New Third Party

Name	<input type="text"/>
Function	DSP Element Adjust ▼ DSP Mute_off ▼
Enable State	Enable ▼

Save Cancel

Make the 3rd party device to send the action command of [DSP Element Adjust] to the IPSM/IPBX-2C20.

 The action was set by the user from [Setup > Function Libraries > DSP Element Adjust](#).

4.4.8.3 DSP Element Read

New Third Party

Name	<input type="text"/>	
Function	DSP Element Read ▼	DSP Read ▼
Enable State	Enable ▼	

Save Cancel

Make the 3rd party device to send the action command of [DSP Element Reas] to the IPSM/IPBX-2C20.



The action was set by the user from [Setup > Function Libraries > DSP Element Read](#).

4.4.8.4 Net Stream Select

New Third Party

Name	<input type="text"/>	
Function	Net Stream 1 Select ▼	SOURCE 1 ▼
Enable State	Enable ▼	SOURCE 1 SOURCE 2 SOURCE 3 SOURCE 4 SOURCE 5 SOURCE 6 SOURCE 7 SOURCE 8

Save Cancel

Set the 3rd party command, and choose to receive the network audio stream. Every Terracom device provides 8 sets of [SOURCE], the setting of every [SOURCE] can be configured on [Setup1 > Audio Matrix](#).

- Command

Choose the Network that receiving from [Net Stream 1] or [Net Stream 2], and to recognize which audio stream source (channel 1~8) in a quicker way, please send **string:n-c** command string behind the [Name] string.

Command	Meaning	Range
:n-c	n indicates the number of network (NET)	1~2
	c indicates the source channel	1~8

- Command - Net Stream Select

If user would record the chosen audio source, please send the command string (Name). The IPSM/IPBX-2C20 device will send back in ASCII code as below.

- 200 (ASCII Code) indicates OK (received).
- 400 (ASCII Code) indicates NG (the 3rd party command sent from 3rd party device is not the same as [Name] field).

- Example

If users do not wish to send the 3rd party command from [NET 1 SOURCE 1~8] and [NET 2 SOURCE 1~8] one by one, send **string:n-c** command string.

- Assume the value of Name is "TARGET".
- To choose to receive the [NET 2 SOURCE 7], the command string is TARGET:2-7.

4.4.8.5 Record

New Third Party

Name	<input type="text"/>	
Function	Record ▾	End ▾
Enable State	Enable ▾	End ▾
		Start

Save Cancel

Set the 3rd party command to record the chosen audio source (SIP, MESSAGE, NETWORK, etc.).



The chosen audio source needs to be programmed on [Media Setting > Record](#) webpage first.

- Command - Record Start/Stop

If user would record the chosen audio source, please send the command string (Name). The IPSM/IPBX-2C20 device will send back in ASCII code as below.

- 200 (ASCII Code) indicates OK (received).
- 400 (ASCII Code) indicates NG (the 3rd party command sent from 3rd party device is not the same as [Name] field).

4.4.9 Scheduler

The Scheduler allows to schedule the events such as messages playing, commands triggering, etc.

Scheduler Enable ☐

Today

Day Week Month

July 2021

Load Excel File

Excel File Example

Agenda

Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday
28	29	30	01	02	03	04
05	06	07	08	09	10	11
12	13	14	15	16	17	18
19	20	21	22	23	24	25
26	27	28	29	30	31	01

- Scheduler Enable: Tick this checkbox to enable the scheduler function.
- Today: Click to go back to the area which displays today's schedule.
- Day/Week/Month: Choose from the three types of display window template on scheduler. The default window is Month.
- Load Excel File: Click to load an excel sheet with the listed events you want to create on Scheduler.
- Excel File Example: Click to download the excel file of event examples. The listed events must be followed by the order on the excel sheet.
- Agenda: Switch to [Agenda] template for editing schedules

4.4.9.1 Add/Edit/Delete

❖ Add an event

Double click the date user would add an event, then the Event window will be opened.

The screenshot shows the 'Scheduler' tab in a software interface. At the top, there's a navigation bar with tabs: Basic Setting, Device, Function Libraries, Audio Matrix, Media Setting, I/O Control, Account Manager, Third Party, and Scheduler. Below the navigation bar, there's a 'Scheduler Enable' checkbox and a calendar for July 2021. A modal form is open in the center, titled 'Scheduler1'. It contains fields for 'Schedule name', 'Enable' (checked), 'Start at' (2021-07-01), 'Event' (Test), and 'Description'. There's also a 'Repeat' checkbox and a 'Start time' selector with a list of times (08:00, 12:00, 17:00) and 'Add'/'Remove' buttons. At the bottom of the modal are 'Save', 'Cancel', and 'Delete' buttons.

- Enable: Tick this checkbox to enable this event.
- Start at: Click the date to open a calendar window, double check and select a date to start this schedule.
- Event: Display which event is affiliated to the schedule action, see [Event](#) for details.

- The criteria of the event name and description:
- Event name: Contain a max. number or letter of 40.
 - Description: Contain a max. number or letter of 100.

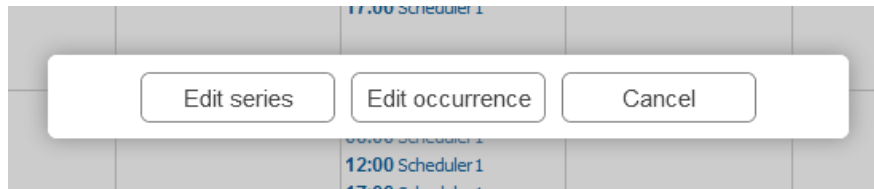
- Description: Memo area.
- Start Time: Set the time and click [Add] button to make an activation time. Select the time and click [Remove] button to delete time. Several time can be scheduled and the format is HH:MM.
- Repeat: Tick this checkbox to enable the [Recurrence] function (repeat event).

This screenshot shows the 'Scheduler1' modal form with the 'Repeat' checkbox checked. It displays recurrence options: 'Daily', 'Weekly', 'Monthly' (selected), and 'Yearly'. For the 'Monthly' option, there are two sub-options: 'On the 1st day of every 1 month' and 'On the 1st Monday of every 1 month'. A dropdown menu is open for the '1st' day, showing options 1st, 2nd, 3rd, 4th, and 5th. There's also a 'No end date' option and an 'End by' date field (2021-08-27). The 'Start time' selector is also visible, showing 08:00, 12:00, and 17:00. At the bottom are 'Save', 'Cancel', and 'Delete' buttons.

- Recurrence event: The event can be repeatable by daily, monthly, weekly and yearly. And, user can set an end date or let the "recurrence" not end.

❖ Edit the existed event

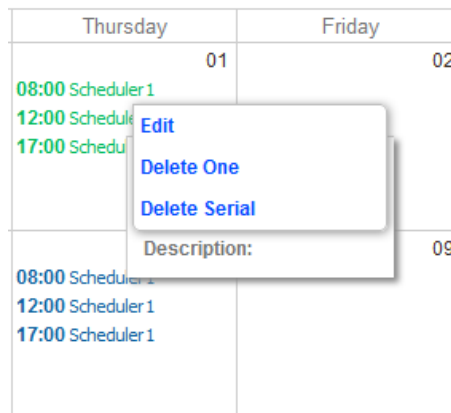
Double click the event that user would modify its parameters.



- Edit series: Edit the date of a series repeated event
- Edit occurrence: Edit the date with the selected event Individually.

❖ Delete the event

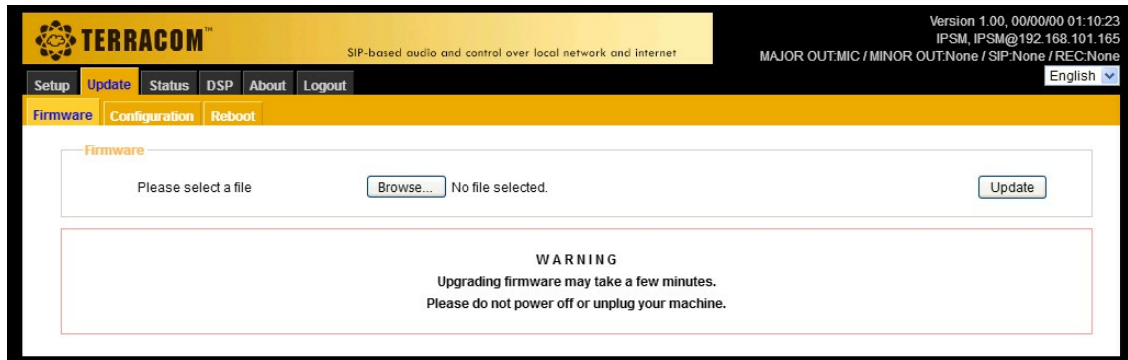
Left click the event for deleting or editing.



- Delete One: Delete one event of one time in the day.
- Delete Serial: Delete whole event in the recurrence situation.

4.5 Update

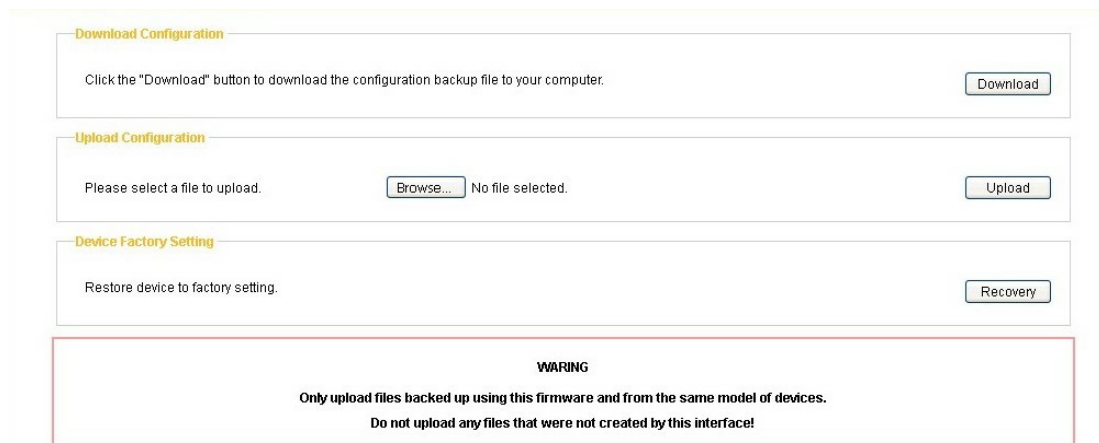
4.5.1 Firmware



Update the IPSM/IPBX-2C20 firmware to the latest version. Follow the steps as below:

1. Click [Browse File...] button to choose the firmware path specified to the one corresponding to the IPSM/IPBX-2C20 device.
2. Click [Update] to proceed this action.
3. At last, click [Reboot] button to apply to the IPSM/IPBX-2C20 device.

4.5.2 Configuration



- Download Configuration: Click [Download] button to download the current configuration file to the selected path of PC/laptop.
- Upload Configuration: Click [Browse File...] button to choose a configuration file from the selected path of PC/laptop, then click [Upload] button to load this configuration file to device.
- Device Factory Setting: Click [Recovery] button to restore the IPSM/IPBX-2C20 to factory setting.

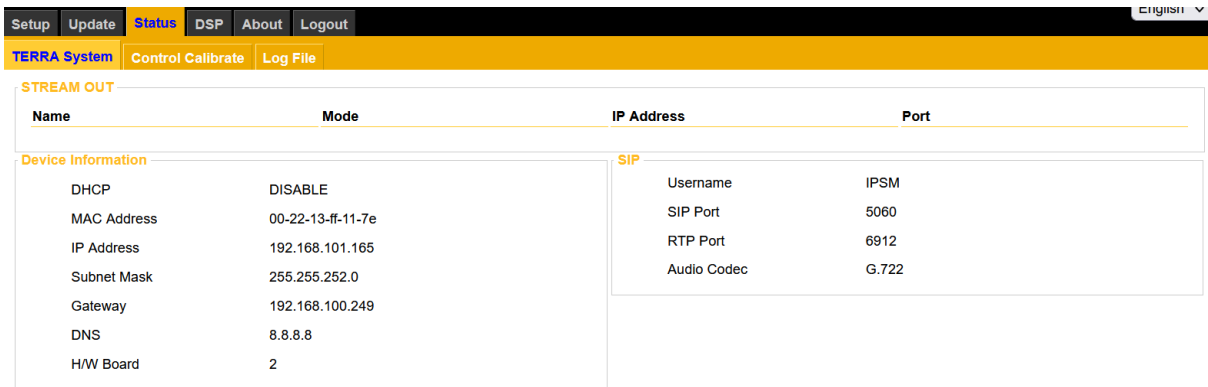
4.5.3 Reboot

Click [Reboot] to reboot the IPSM/IPBX-2C20 device.

4.6 Status

4.6.1 TERRA System

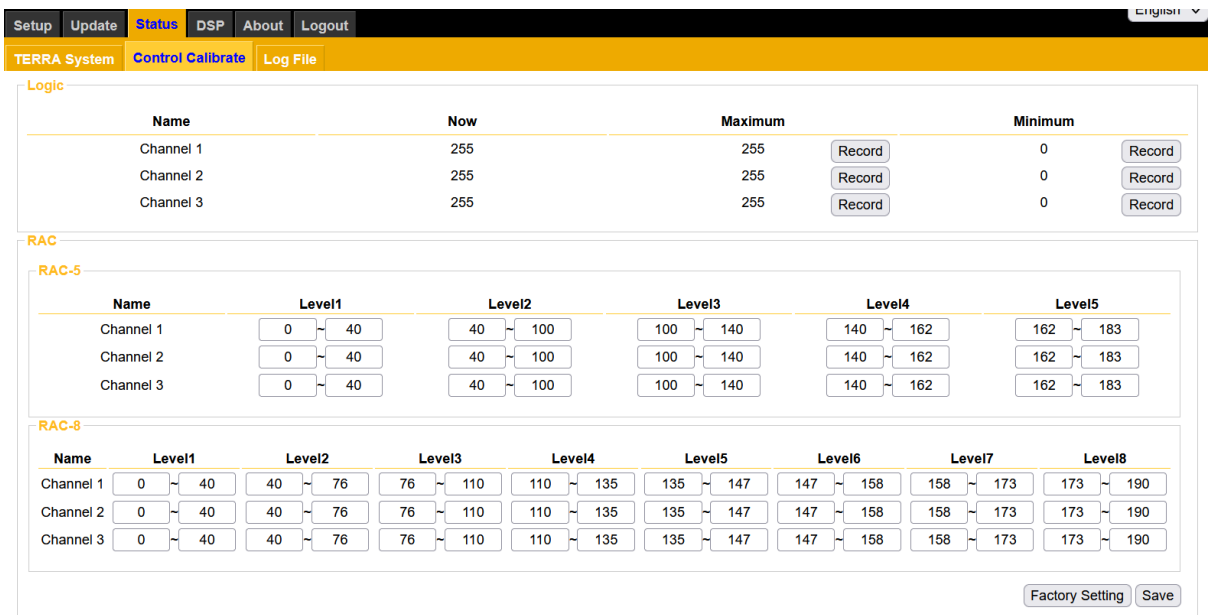
Display the general information of IPSM/IPBX-2C20.



Name	Mode	IP Address	Port
Device Information			
DHCP	DISABLE		
MAC Address	00-22-13-ff-11-7e		
IP Address	192.168.101.165		
Subnet Mask	255.255.252.0		
Gateway	192.168.100.249		
DNS	8.8.8.8		
H/W Board	2		

SIP	
Username	IPSM
SIP Port	5060
RTP Port	6912
Audio Codec	G.722

4.6.2 Control Calibrate



Name	Now	Maximum	Minimum
Channel 1	255	255	0
Channel 2	255	255	0
Channel 3	255	255	0

Name	Level1	Level2	Level3	Level4	Level5
Channel 1	0 ~ 40	40 ~ 100	100 ~ 140	140 ~ 162	162 ~ 183
Channel 2	0 ~ 40	40 ~ 100	100 ~ 140	140 ~ 162	162 ~ 183
Channel 3	0 ~ 40	40 ~ 100	100 ~ 140	140 ~ 162	162 ~ 183

Name	Level1	Level2	Level3	Level4	Level5	Level6	Level7	Level8
Channel 1	0 ~ 40	40 ~ 76	76 ~ 110	110 ~ 135	135 ~ 147	147 ~ 158	158 ~ 173	173 ~ 190
Channel 2	0 ~ 40	40 ~ 76	76 ~ 110	110 ~ 135	135 ~ 147	147 ~ 158	158 ~ 173	173 ~ 190
Channel 3	0 ~ 40	40 ~ 76	76 ~ 110	110 ~ 135	135 ~ 147	147 ~ 158	158 ~ 173	173 ~ 190

Factory Setting Save

- Logic: Display the calibration result (value between 0~255) of contact input channel on IPSM/IPBX-2C20, it is commonly used for a two-state push button or an analog knob on RAC 5/RAC 8. Record: Calibration button of maximum and minimum value.
- RAC: The RAC 5/RAC 8 are the remotes which features the wall-mount volume display and source selection for Terracom system. When the channel selection on RAC 5/8 does not work correctly, the [RAC] calibration function allows users to manually set the range of each level value on RAC 5/RAC 8.
- Factory Setting: Restore to original factory settings.



If the level value are too close or overlap with other level value, please set the value manually. To set the correct values, please see the example picture as below.

- Channel 1: The Level1 (17~22) on Channel 1 does not overlap the Level2 (51~59), and so does other values on Channel 1.
- Channel 2: The Level1 (16~20) on Channel 2 is overlapped the Level2 (20~39), and so does other values on Channel 2, therefore, please adjust the level values again.

RAC-5

Name	Level1	Level2	Level3	Level4	Level5	
Channel 1	17 ~ 22	51 ~ 59	60 ~ 87	99 ~ 107	118 ~ 122	✓
Channel 2	16 ~ 20	20 ~ 39	38 ~ 69	69 ~ 109	108 ~ 129	X

4.6.3 Log File

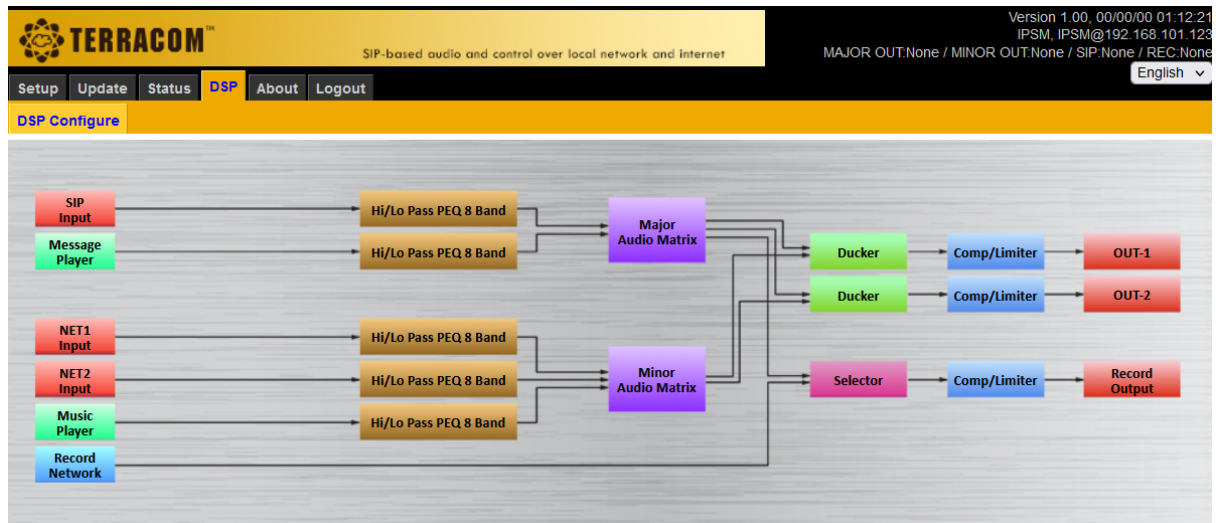
Read Log Export the listed logs to a file Export all the logs to a file

NO.	Description
1	0/0/0 00:00:40 FunSet Stable
2	0/0/0 00:00:16 NetStram 2 IP = 239.240.100.2
3	0/0/0 00:00:16 NetStram 2 Port = 9012
4	0/0/0 00:00:16 NetStram 1 IP = 239.240.100.1
5	0/0/0 00:00:16 NetStram 1 Port = 9012
6	0/0/0 00:00:16 SIP Mode: TERRA Net
7	0/0/0 00:00:00 Message Player: None
8	0/0/0 00:00:00 IPSM None PM005 Ver
9	0/0/0 00:00:00 Ver: 1.00 HW:0
10	0/0/0 00:00:00 Power ON
11	0/0/0 00:00:00 Power OFF
12	0/0/0 00:00:11 Load MCU COMP Factory Setting
13	0/0/0 00:00:11 Load MCU COMP Factor0/0/0 00:00:11 C Disk Mount Success
14	0/0/0 00:00:11 Load User Login Info Factory Setting
15	0/0/0 00:00:11 Load IO Control Factory Setting
16	0/0/0 00:00:11 Load File Level Factory Setting
17	0/0/0 00:00:11 Load Media Setting Factory Setting
18	0/0/0 00:00:11 Load Audio Matrix Factory Setting
19	0/0/0 00:00:11 Load All DSP Table Factory Setting
20	0/0/0 00:00:11 Load Basic Setting Factory Setting
21	0/0/0 00:00:11 Restart over 6 times to clear all config
22	0/0/0 00:00:11 Load RAC Calibrate Factory Setting
23	0/0/0 00:00:11 Load MCU COMP Factory Setting
24	0/0/0 00:00:11 Load User Login Info Factory Setting
25	0/0/0 00:00:11 Load IO Control Factory Setting
26	0/0/0 00:00:11 Load File Level Factory Setting
27	0/0/0 00:00:11 Load Media Setting Factory Setting

Already Read : 100 Reset Clear

- Read: Click this button to read the logs of device. Click this button again to read the entries of log based on the setting on the right field. For example, if the setting of entries of log is 100, click [Read] button to read from 1 to 100 logs; click [Read] button again, then the list will show 1~200 logs on the list.
- Reset: Click this button to reset the log list. The [Already Read] log will also be reset.
- Clear: Click this button to clear the entries of log displayed on the window. The [Already Read] log will remain from the last [Read] count.
- Export the listed logs to a file: Export the device logs displayed on current log list to a text file.
- Export all the logs to a file: Export all the device logs to a text file.

4.7 DSP Function



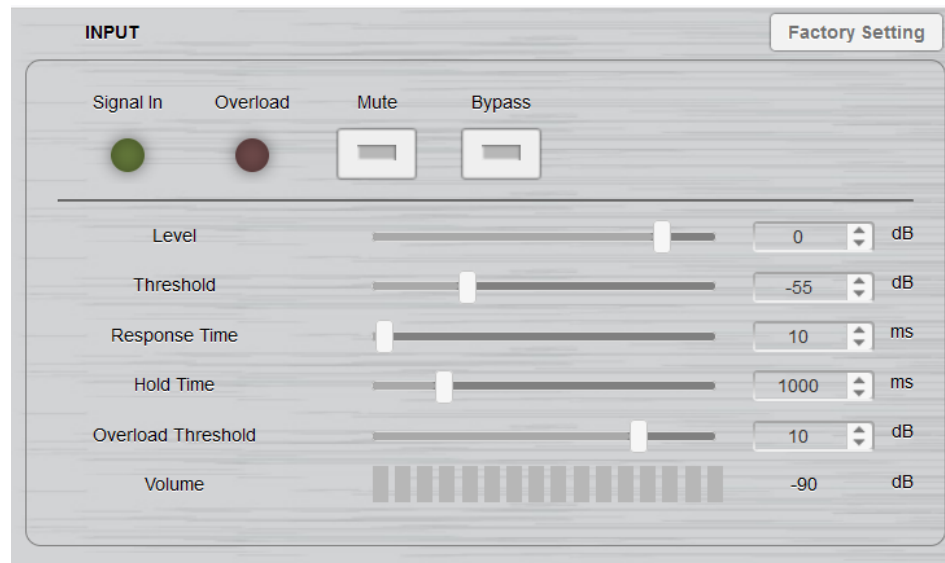
DSP function of IPBM/2C20



DSP function of IPBM/2C20 with PM005

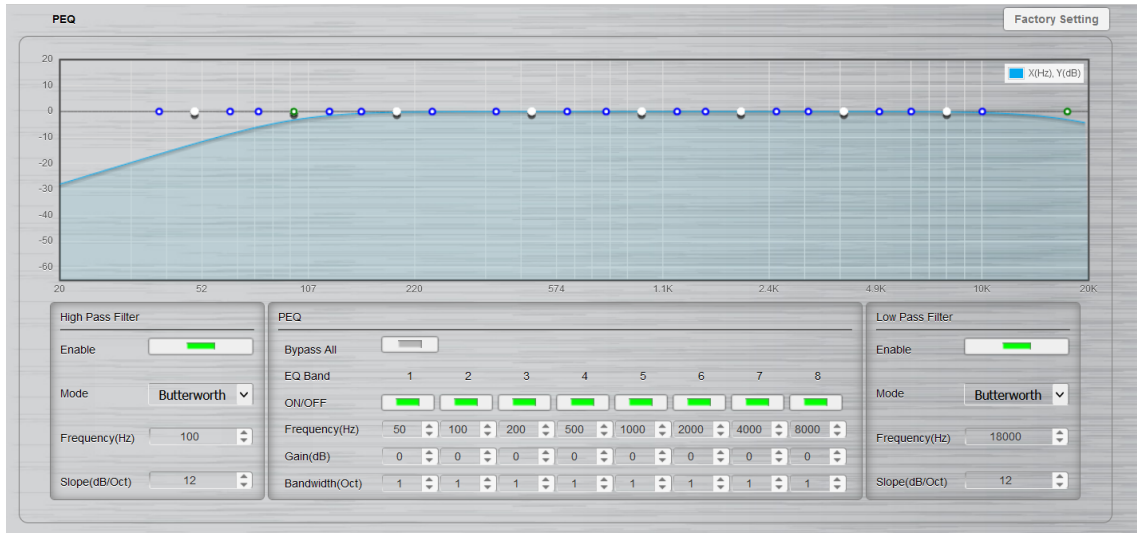
4.7.1 Input

The pop-up control window of the source settings are identical, see as below.



- Signal In: LED light up when the level of mic input is above -30 dB.
- Overload: LED light up when the level of input source is above the Overload Threshold (dB).
- Mute: Mute/unmute the source input, the LED will light in red while the input channel is muted.
- Bypass: Bypass the input signal to the output of Input component, the [Level] setting will be disabled.
- Level (dB): The input level of this source channel/mic channel.
- Threshold: The threshold that user can take it as a standard of pass on audio signal.
- Response Time: The processing time between level detection and sound passing.
- Hold Time: When the sound level is lower than the standard of threshold, the setting of the [Hold time] will define the time to stop transmitting the input audio.
- Overload threshold (dB): This threshold value is to determine the input signal is overloaded or not.
- Volume (dB): Display the real-time volume of input by meter.
- Factory setting: Click to restore all settings to factory default value.

4.7.2 Hi/Lo Pass PEQ 8 Band



This components combines Hi/Low pass filter and PEQ together. It offers a dynamical graphical control window to easily know the overall results.

- Graphical control window

The parameters which are mentioned above can also be adjusted by a graphical control window. Once the parameters change, the graph will move together, and vice versa. It will show the result for the parameters.

- Axis-X: Frequency of output signal (Hz).
- Axis-Y: Level of EQ gain (dB).
- Blue control point: Adjust bandwidth.
- White control point: Adjust EQ gain (using vertical direction) and frequency (using horizontal direction).
- Green control point: Adjust the frequency of High/Low Pass filter.

- High/low pass filter

This DSP component passes the high/low frequency and attenuate the frequency lower/higher than its cutoff frequency.

- Enable: Enable the filtering.
- Mode: The type of filtering (Linkwitz-Rilet, Butterworth, Bessel).
- Frequency (Hz): The frequency of cut.
- Slope (dB/Oct): The slope of attenuation.

- 6 band PEQ

PEQ (Parametric Equalizer) is a multi-band variable equalizers which controls the three primary parameters: gain, center frequency and bandwidth, making more precise adjustments to sound than

other equalizers. The gain of each band can be controlled, the center frequency can be shifted, and bandwidth ("Q") can be widened or narrowed.

- Bypass all: Disable the PEQ function.
- ON/OFF: Activate/disable the selected EQ band.
- Frequency (Hz): Set the central frequency of a band.
- Gain (dB): Set the PEQ gain (attenuate or increase the selected frequency band).
- Bandwidth (Oct): Set the width around the frequency (Q factor) of selected frequency band.

- Factory setting: Click to restore all settings to factory setting.

4.7.3 Major Audio Matrix

This setting is the same as [Audio Matrix], the button on the DSP page is the shortcut to jump to [Audio Matrix].

GROUP	INPUT	PRIORITY	MODE	DISABLE	OUTPUT		STREAM OUT			RAC CONTROL			BUFFER
					1	2	S/PDIF	MODE	IP ADDRESS	PORT	SELECT	LEVEL(dB)	
MAJOR	SIP	1 ▾	--	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	N/A					FIX ▾ 0 ▾	RT ▾
	MESSAGE	1 ▾	--	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	N/A				PRIORITY ▾ -- ▾	FIX ▾ 0 ▾	
MINOR	NET1	1 ▾	SOURCE 1 ▾	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	N/A					FIX ▾ 0 ▾	RT ▾
	NET2	1 ▾	SOURCE 2 ▾	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	N/A					FIX ▾ 0 ▾	RT ▾
	MUSIC	1 ▾	--	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	N/A				PRIORITY ▾ -- ▾	FIX ▾ 0 ▾	

- Input settings are divided into Major and minor to distinguish priority.

4.7.4 Ducker

DUCKER

Factory Setting

Active

Bypass

Threshold

-45 dB

Attack Time

10 ms

Response Time

10 ms

Hold Time

200 ms

Release Time

600 ms

Attenuation Depth

-30 dB

Speech Gain

0 dB

The Ducker lowers the level of one audio signal (NET1/ NET2/ Music Player) based upon the level of an

audio signal (SIP Input/ Message Player/ MIC IN). A typical application is the paging over background music: The device senses the presence of audio from MIC IN, and it triggers a reduction to the level of background music signal. And, make a level gain to the paging signal. The background music restores to the original level once the paging is over.

- Active: The function of [Ducker] is activated while the level of audio signal has been passed the value of [Threshold], and the LED lights up to remind user.
- Bypass: Unconditionally let the audio signal of [Minor] group play.
- Threshold (dB): The threshold of detection on audio signal. And, The level value of threshold decides that which audio signal will play: major group or minor group or both of them and with [Attenuation Depth] and [Speech Gain] functions.



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

- Attack Time (ms): The fade-in time for main audio when the Ducker is activated.
- Response Time (ms): The time between the level detection and the beginning of Ducker's activation.



The shorter the attack and response time, the faster the conversion efficiency.

- Hold Time (ms): The length of audio pause that is regarded as the end of the Ducker action.



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

- Release Time (ms): The fade-out time for main audio when the Ducker is not activated.
- Attenuation Depth (dB): When main audio is broadcasting and the level of second audio is too high, set the attenuation depth for level reduction.
- Speech Gain (dB): If the volume of main audio is too low, the function of [Speech Gain] is for enhancing the level automatically.
- Factory setting: Click to restore all settings to factory setting.

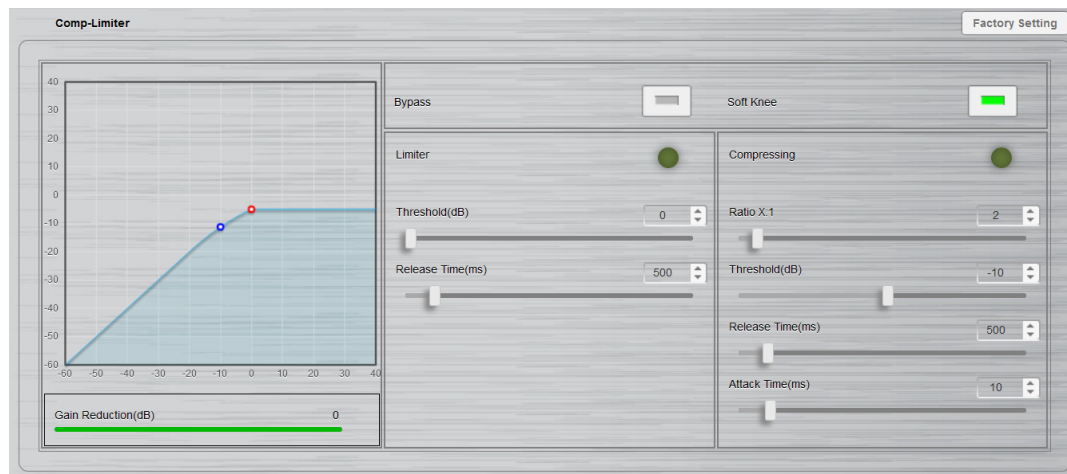
4.7.5 Selector

There is no setting page but to let user know the sequence and structure of sound processing. Set the function with [Audio Method] option on the [\[Record\]](#) page.

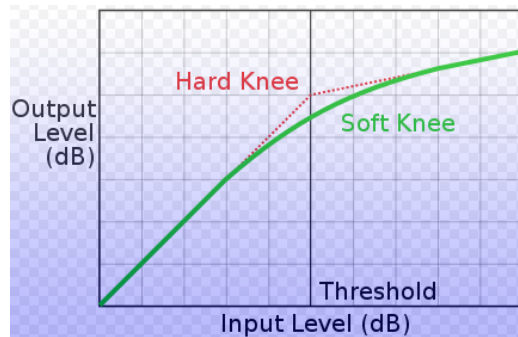
The screenshot displays the 'Media Setting' page of a configuration web browser. The top navigation bar includes 'Setup', 'Update', 'Status', 'DSP', 'About', and 'Logout'. Below this, a secondary bar contains tabs for 'Basic Setting', 'Device', 'Function Libraries', 'Audio Matrix', 'Media Setting' (which is active), 'I/O Control', 'Account Manager', 'Third Party', and 'Scheduler'. The main content area is titled 'Media : Record' and features a 'Record Control' section with a 'Start' button. Below this, there are settings for 'File Directory' (set to 'c:/'), 'Mode' (set to 'Rewrite'), and 'Format' (set to 'wav'). The 'Audio Method' dropdown menu is highlighted with a red rectangle, showing a list of options: 'None', 'Local', and 'Network'. A 'save' button is located at the bottom right of the settings area.

4.7.6 Comp/Limiter

Comp-limiter is a combination of the Compressor and the Limiter Component.



- Bypass: Disable the Comp-limiter function.
- Soft Knee: Enable/disable the “Soft Knee” mode. This element controls whether the bend in the response curve is a sharp angle or has a rounded edge. A soft knee slowly increases the compression ratio as the level increases and eventually reaches the compression ratio set by user. A soft knee reduces the audible change from uncompressed to compressed, especially for higher ratios where the changeover is more noticeable.



Enable to smoothly increase the audio level to reduce distortion.

- Limiter:
 - Limiter LED: Light up when the limiting is activated.
 - Threshold (dB): Activate the Limiter function when input level above this value.
 - Release time (ms): The time it takes to release gain reduction.
- Compressing:
 - Compressing LED: Light up when the compression is activated.
 - Ratio X:1: Set the compression ratio, which the compressor will compress the input level by this compression ratio setting to be the output level.

- Threshold (dB): Activate the Compression function when input level above this value.
- Release time (ms): Set the time it takes to release the compressor gain. The Release Time is the period when the compressor is increasing gain to the level determined by the ratio or to 0 dB, once the level has fallen below the threshold.
- Attack time (ms): Set the time it takes to respond to the input signal. The Attack Time is the period when the compressor is decreasing gain to reach the level that is determined by the ratio.



The attack time can decide the sensitivity of compressor. The longer of Attack Time is, the slower of the compression it will take, and vice versa.

- Gain reduction (dB): Indicate the current amount of gain reduction.
- Graphical Window
 - Axis-X/Y: Input/output signal level (dB).
 - Blue control point: Threshold (Compressor).
 - Red control point: Threshold (Limiter).
- Factory setting: Click to restore all settings to factory setting.

4.7.7 Output



- Signal out: LED lights up when the signal level of output > -30 dB.
- Overload: LED lights up when the channel level is above the value of Overload Threshold (dB).
- Mute: Mute/unmute the output signal, the LED will be on/off the red light.
- Level (dB): The level of output channel.
- Overload threshold (dB): This threshold value is to determine the output signal is overloaded or not.
- Volume (dB): Display the real-time volume of output by meter.
- Factory setting: Click to restore all settings to factory default value.

4.8 About-Copy Right



TERRACOM
SIP-based audio and control over local network and Internet

Version 1.00, 00/00/00 01:40:23
IPSP, IPSP@192.168.101.123
MAJOR OUT:None / MINOR OUT:None / SIP:None / REC:None
English

Setup Update Status DSP About Logout

Copyright

Modules of IPSP/IPBX-2C20 is equipped with 2 channels in 20W with 8ohm loudspeaker, or be bridged to 1 channel in 40W with 4 ohm loudspeaker. And they support PoE+ power and external power adapter (If PoE+ is not available 24VDC will supply power). With Power over Ethernet (PoE+), both audio control and power can be owed over the standard female RJ45 Ethernet connector, giving a cost effective way to used as the SIP endpoint of paging, intercom, mass notification system and minimizing the number of cables.

The IPSP-2C20 is designed to embed in TERRACOM's IP speaker, and IPBX-2C20 is with an outside box as an external connection for general speakers. Both of them fulfill hands-free intercom and monitoring. The IPSP/IPBX-2C20M is equipped with a built-in microphone interface. The YMC0101-004 mic capsule could be connected to this microphone interface.

They have 3 control inputs for level control and source selection using the RAC 5/8 controller, 1 contact output can be programmed to control an external device via TerraManager. To configure, control, monitor the IP speakers in real-time, this can be easily done through your favorite web browser interface, making the management even the most complex environments simpler than ever. The remarkable features include event management, volume control, paging, intercom, music streaming, routing, logic control, 3rd party control, DSP control, monitoring, etc.

5 Technical Data

5.1 IPSP-2C20/IPSP-2C20M

❖ Electrical

Item	Voltage	Output power	Connect Type
PoE+	-	25W	RJ45
PSU power adapter	24 VDC	36W(PSU36-24) / 65W(PSU65-27)	Euro-style terminal block

- Audio Characteristics- Amplified Output
 - Rated output power: 20W x 2CH
 - Frequency response: 20Hz ~ 20kHz (±3 dB) @ 0 dBu
 - THD+N: 1% (50~20 kHz @ full power)
 - SNR: > 85dBu
- Audio Characteristics- Mic Input
 - Phantom power: 2.5VDC
 - Frequency response: 50Hz ~ 20kHz (±1 dB) @ 0 dBu
 - Input impedance (unbalanced): 1k ohm
 - Equivalent Input Noise (EIN): < -90 dBra @ 14 dB gain
 - THD+N: 0.1%
- Interconnection
 - Female RJ45 socket, CAT5/6 cables

- Max. cable length: 100m
- Contact output
 - Maximum voltage: 60V
 - Maximum current: 0.5A
- LED STATUS CONTROLLER
 - Output: 3.3V@10 mA
- Mechanical & Environmental

Dimensions (W x H x D):	95mm x 27mm x 58mm
Weight:	0.53kg
Operating temperature:	-5°C ~ 55°C (23°F~131°F)
Storage temperature:	-40°C~ +70°C (-40°F ~158°F)
Relative humidity:	20% to 95%
Air pressure	600 to 1100 hPa
Heat dissipation	6.28 BTU/hr

5.2 IPBX-2C20/IPBX-2C20M

- Electrical

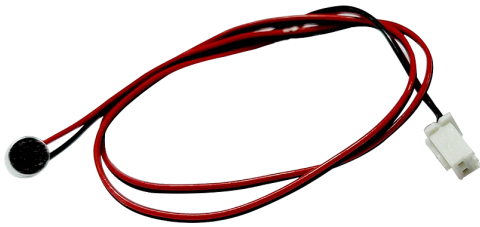
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- Mechanical & Environmental

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Relative humidity:	20% to 95%
Air pressure	600 to 1100 hPa
Heat dissipation	6.28 BTU/hr

5.3 YMC0101-005 MIC capsule



- Audio Characteristics

- Directional characteristic: Omni-directional
- Sensitivity: -38 (±2) dBu @ 1 kHz (0 dBu=1VPa)
- Impedance: 2.2k (max.)
- S/N ratio (a weighted network): 62 dB
- Maximum SPL: 110 dB
- Frequency response: 50 Hz ~ 20 kHz (±3 dB) @ 0 dBu

Endnotes 2... (after index)

Back Cover