



INSTRUCTION MANUAL

iPX5101 Ethernet Paging Server



Thank you for choosing another quality product from Amperes Electronics.

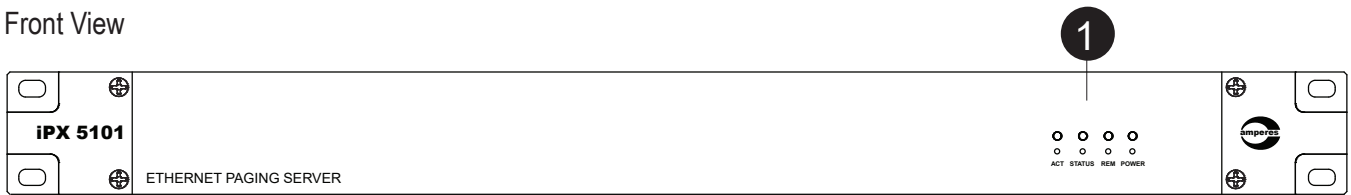
iPX5101 has been upgraded further with newer technology in keeping pace with the demands of today's PA complexity. Among them is the Ultra Low Latency audio and data transmissions.

It functions as a traffic controller for all paging clients (iPX5151 / iPX5155 / iEP1202). Every activity from Clients shall be monitored by iPX5101 and would determine the intended routing to be allowed or otherwise, considering the priority level, traffic condition and the zone configuration.

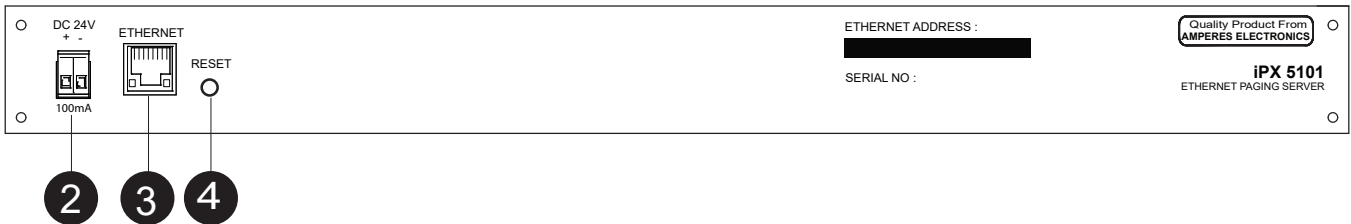
With the growing demand of IP Paging System, Amperes IP related products such as iPX5101 shall be the great tool for coming future. Do read through the manual in order to tap the many advantages that Amperes IP system has to offer.

Parts Identification

Front View



Rear View



1. INDICATOR LEDS

POWER: This blue LED shall light up when iPX5101 is powered up.

REM: Light up when iPX5101 is ready to communicate with paging clients.

STATUS: Blink whenever there is a network activity ongoing.

ACT: Light up when we reset iPX5101 to default setting

2. POWER CONNECTOR

24V DC input for power, use only regulated power supply.

3. ETHERNET PORT

Connect iPX5101 to a network switch via this port.

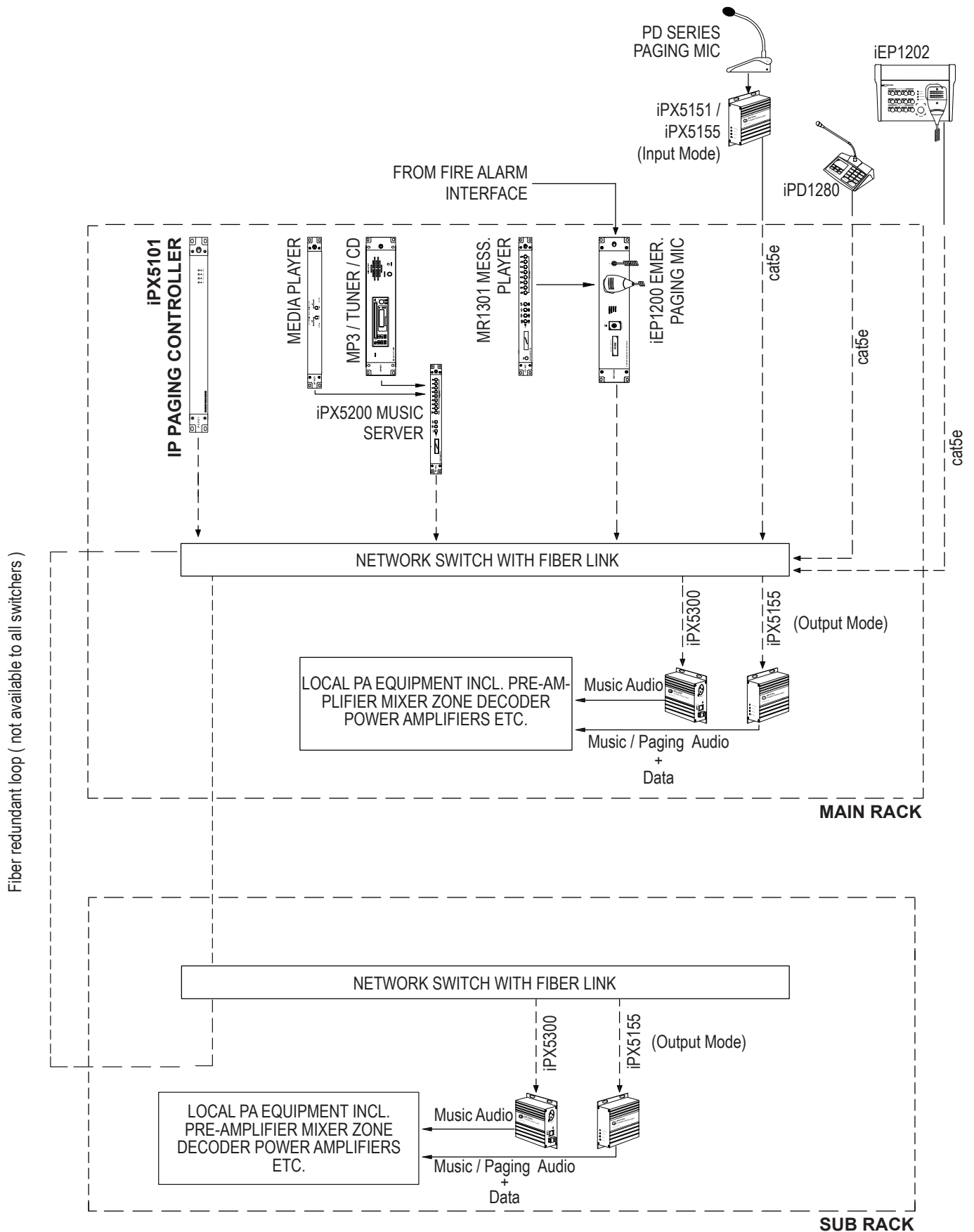
4. RESET SWITCH

Button to allow iPX5101 enters bootloader mode or resets to factory default settings.

Bootloader mode: To enter this mode, hold the reset button until POWER, REM and STATUS LEDs lit. Enter this mode to do update firmware if normal mode updating via web browser does not work. All iPX5101 settings remain intact in this mode.

Reset factory default settings: Hold the reset button until POWER, REM, STATUS and ACT LEDs lit will reset all iPX5101 settings to factory defaults.

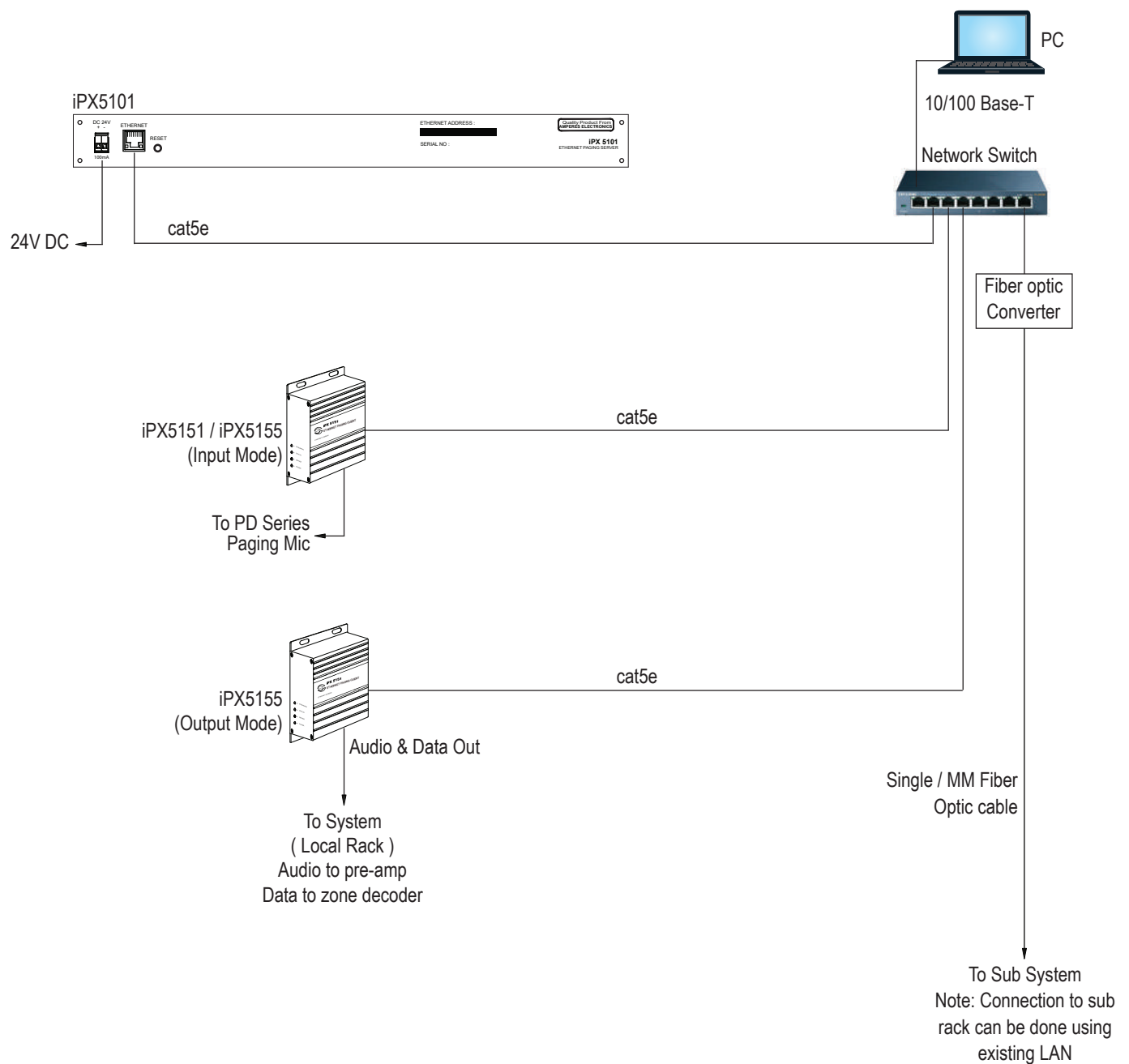
Schematic Diagram



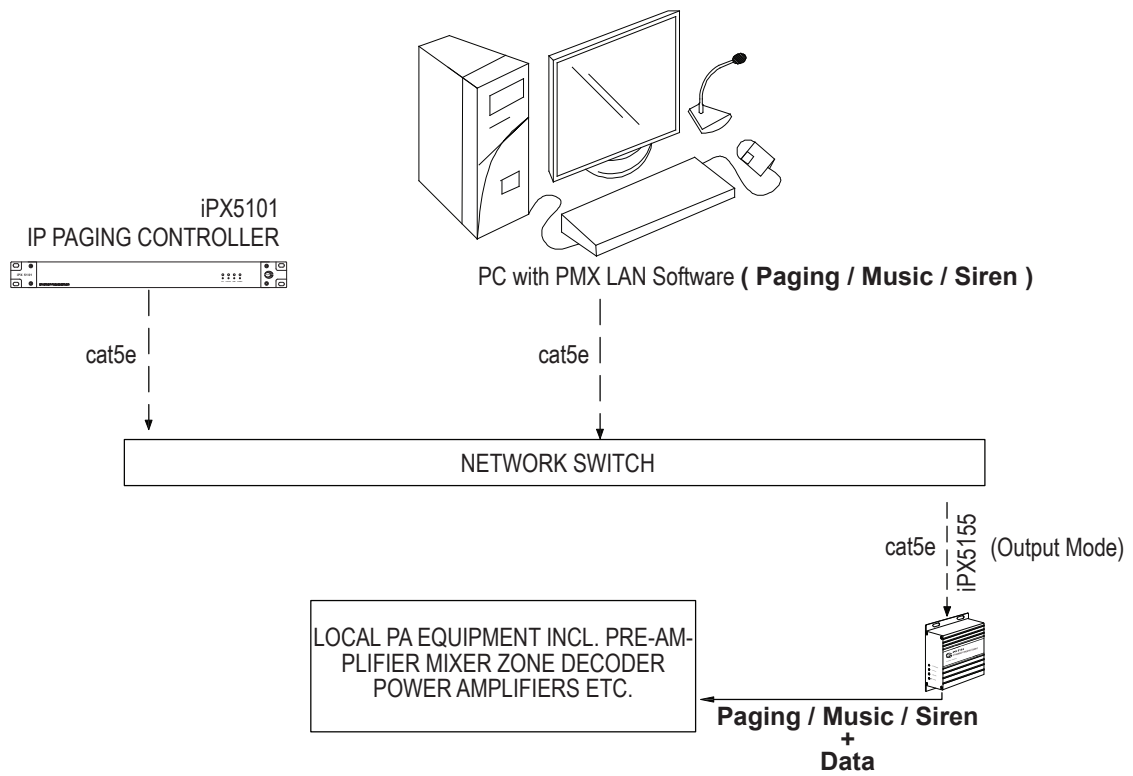
Note:

In a system, only one iPX5101 is required, no matter what the size of the system or the number of clients (iPX5151 or iPX5155) are installed.

Connecting The Unit



Interface with PMX LAN



iPX5101 can work with PMX LAN to allow a user to conduct paging, music playing or initiate a siren from a PC.

Device Setup Via Browser

iPX5101 shall require some setups via web browser. Kindly follow instructions listed below.

Open a browser (Chrome / IE) and enter iPX5101 IP address. The default address is **192.168.0.100**. Default username and password are both **"admin"**.

Device Info

The first page appear upon login shall be Device Info. Information such as firmware version, networking addresses and paging configuration are shown. No configuration is needed in this page.

Network Configuration

Edit iPX5101 IP address, Subnet address and Gateway address here to suit you networking environment. It is recommended to leave the Data port number unchanged. Click the "SAVE" button to save your changes.

 **Device Info**

 **Device Information**

Firmware Version	2.29
Serial Number	00000000000000000000
Build Date	11-10-20
Device Name	BLK A Paging Server

 **Network Information**

MAC Address	114:106:118:17:6:25
IP Address	192.168.0.101
Subnet Mask	255.255.255.0
Gateway Address	192.168.0.1
Data Port	3000
Streaming Port	3001
Stream Multicast IP	224.1.1.11

 **Paging Configuration**

Concurrent Paging	3
Remap Zones	Disabled

 **Network Configuration**

 **IPv4 Configuration**

IP Address

192.168.0.101

Subnet Address

255.255.255.0

Gateway Address

192.168.0.1

Data Port

3000

Stream Port

3001

Multicast IP

224.1.1.11

SAVE

Device Setup Via Browser

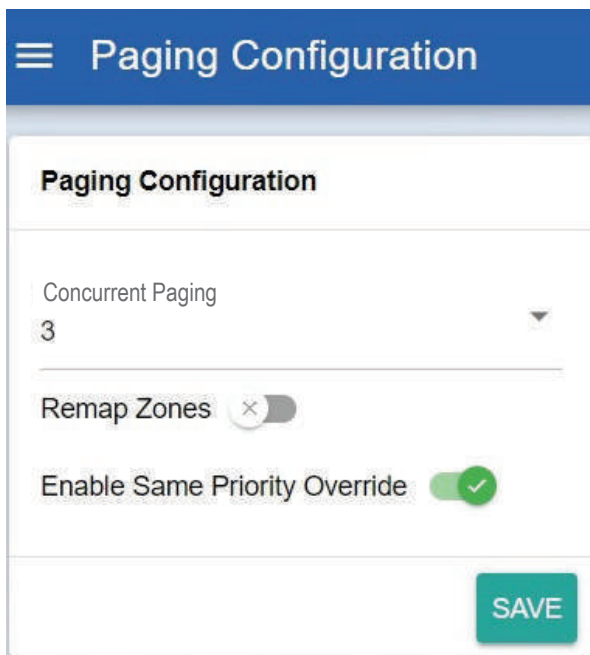
Paging Configuration

Concurrent Paging: Number of paging mic that allow to page concurrently. Note that in order to allow the paging mics to talk at the same time, multiple iPX5155 (operate in Output Mode) serving different zone ranges are needed to be present in the system. Also, the zone ranges that the paging mics are calling do not overlap. Disable this setting if we want to allow only one paging mic to be active at a time.

Remap Zones: (To be supported)

Enable Same Priority Override: When multiple paging mics with equal priority attempt to page the same zone range, enable this setting shall allow late caller to page first.

Note: Overlapped zone(s) are zone(s) that been served by two devices. E.g. if Mic 1 is paging zone 1 & 2; Mic 2 is paging zone 2 & 3 then zone 2 is an overlapped zone.



The screenshot shows the 'Paging Configuration' web interface. It has a blue header with a hamburger menu icon and the title 'Paging Configuration'. Below the header, there's a section titled 'Paging Configuration'. It contains three settings: 'Concurrent Paging' with a dropdown menu showing '3', 'Remap Zones' with a toggle switch and a close icon, and 'Enable Same Priority Override' with a toggle switch and a green checkmark. A green 'SAVE' button is at the bottom right.

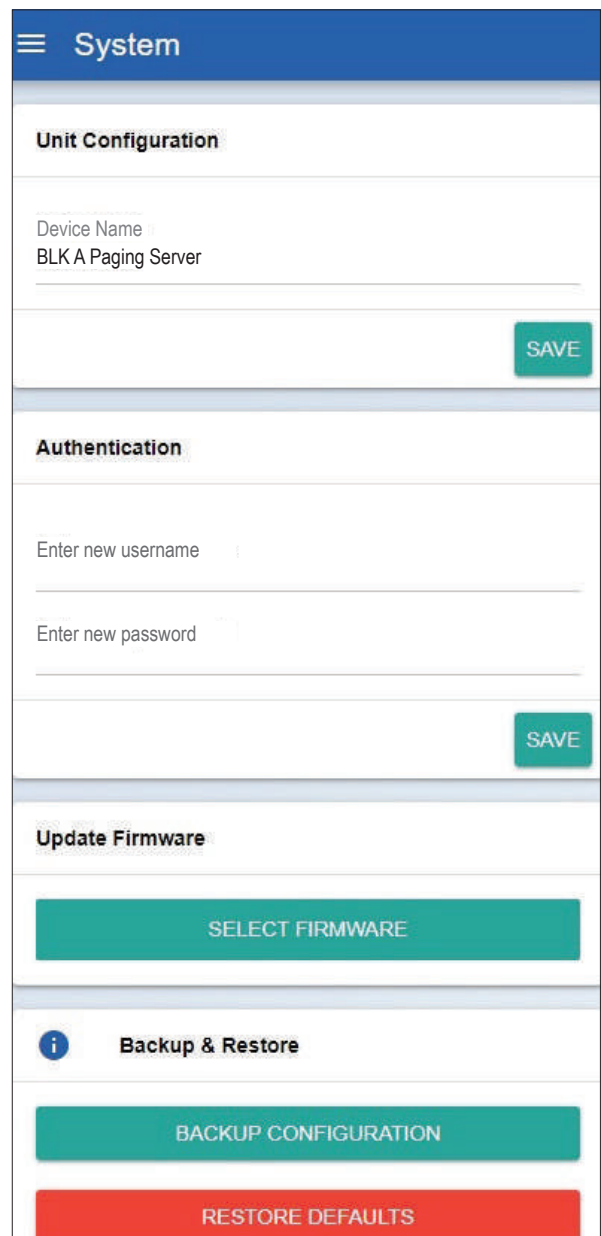
System

Unit Configuration: We can enter a meaningful Device Name here, e.g. "BLK A Paging Server". The name will be shown in Device Info page.

Authentication: You can alter the user name and password to avoid unnecessary access to the system.

Update Firmware : Firmware is stored in the unit's memory. Should there be any updates available, use this section to perform system upgrades accordingly.

Backup and Restore: You can backup the configuration and can reset the settings to default settings.



The screenshot shows the 'System' web interface. It has a blue header with a hamburger menu icon and the title 'System'. Below the header, there are four sections: 'Unit Configuration' with a text input for 'Device Name' containing 'BLK A Paging Server' and a green 'SAVE' button; 'Authentication' with text inputs for 'Enter new username' and 'Enter new password', and a green 'SAVE' button; 'Update Firmware' with a large green button labeled 'SELECT FIRMWARE'; and 'Backup & Restore' with an information icon and two buttons: a green 'BACKUP CONFIGURATION' button and a red 'RESTORE DEFAULTS' button.

Device Setup Via Browser

Paging Server

CLIENT BROWSER: Show all clients IP address, model, firmware version, connection status and serving zone range.

SERVER LOGS: Logging activities among server and clients.

Paging Server

CLIENT BROWSER

SERVER LOGS

Paging Clients

Search

Device Name	IP Address	Device Model	FW Version	Connection Status	Zone Range
IPX Device	192.168.0.220	iEP1200	2.10	Connected	N/A
5155 (Sub 5)	192.168.0.158	iPX5155	2.29	Connected	10 - 12
5151 (2) Main Build	192.168.0.152	iPX5151	2.17	Connected	N/A
5155 (Sub 2)	192.168.0.156	iPX5155	2.29	Connected	4 - 6
5155 (Sub 4)	192.168.0.157	iPX5155	2.29	Connected	7 - 9

Records per page: 5 1-5 of 9 < >

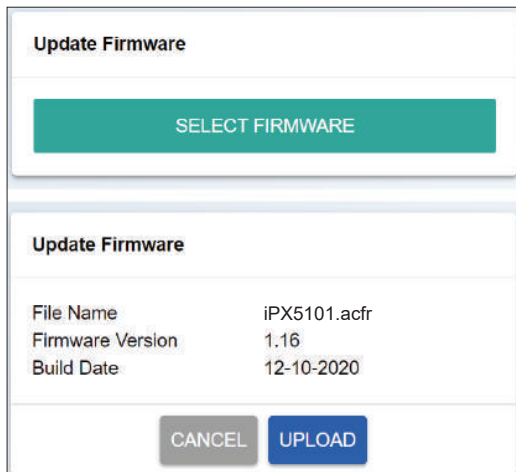
Paging Server		
CLIENT BROWSER		SERVER LOGS
No	Time	Log
2	10:00:05	[Socket:4] Timeout
1	10:00:03	Connected to SSE Socket: 5
Records per page: 5 1-2 of 2		

Firmware Update

System firmware shall be updated once in a while when new features are available or to fix bugs. There are 2 methods of doing;

Update firmware in Normal Operation Mode

1. Open a browser and type in the iPX5101 IP address.
2. Under “System Configuration” page look for “Firmware Update” section as shown in below.



The screenshot displays the 'Update Firmware' section of a web interface. At the top, there is a teal button labeled 'SELECT FIRMWARE'. Below this, a table provides details about the selected firmware. The table has two columns: the first column lists the attributes (File Name, Firmware Version, Build Date) and the second column lists the corresponding values (iPX5101.acfr, 1.16, 12-10-2020). At the bottom of the table, there are two buttons: a grey 'CANCEL' button and a blue 'UPLOAD' button.

Update Firmware	
Update Firmware	
File Name	iPX5101.acfr
Firmware Version	1.16
Build Date	12-10-2020
<button>CANCEL</button><button>UPLOAD</button>	

Click “SELECT FIRMWARE” and choose a binary file with “.acfr” extension. Click “UPLOAD”.

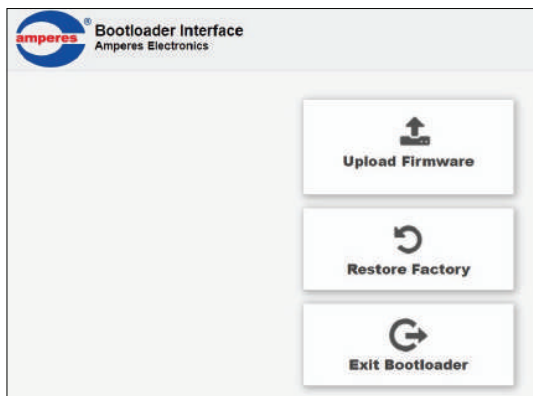
Once the update is completed, the browser shall enter the login page.

Firmware Update

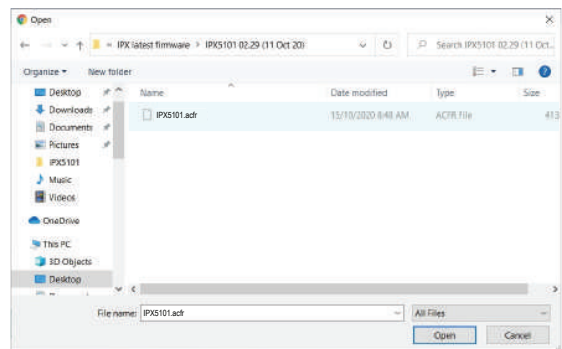
Update firmware in Bootloader Mode

If the iPX5101 “hanged”, it is required to perform system reset by :

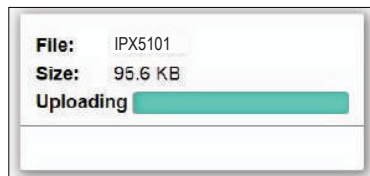
1. Press & hold the reset button until “STATUS” LED is turned ON. This will set the IP address to default address 192.168.0.100.
2. Open a browser and enter the IP address 192.168.0.100. A web page as shown below shall appear.
3. Select “ Upload Firmware ”, choose a binary file with “.acfr” extension and click “UPLOAD”
4. Once the uploading is completed, the browser shall enter the login page.



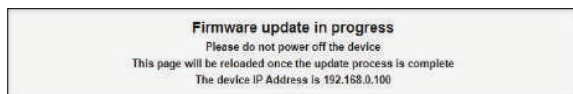
Click the Upload Firmware button to find the updated firmware file.



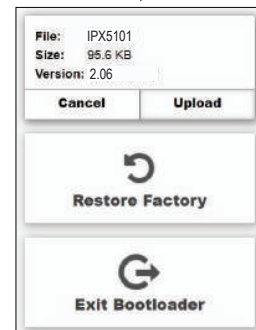
Find the updated firmware file.



Updating progress



After finish updating firmware, the browser automatically restart.



Ready to upload, click Upload button to upload the firmware.

Paging Operation

Below 4 factors determine paging priority among paging mics :

1. Concurrent Paging and Same Priority Override (SPO) settings in iPX5101.
2. Auto Override Low Priority (AOLP) setting in iPX5155 (operate in Input Mode).
3. Priority (PR) level configured in iPD/PD series paging mic. If TI6000 or PM series paging mic were used this shall be configured in iPX5155.
4. Serving zone range and Restricted zones settings in iPX5155 (operate in Output Mode).

Priority (PR) - A paging mic with high priority level is allowed to override another active paging mic that with the same or lower priority level. For iPD / PD series paging mics, the priority level is configured in the mic settings. For PM series paging mics or devices that activate paging via iPX5151 / iPX5155 Remote Trigger port, the priority level is set in the iPX5151 / iPX5155. The lower the priority number the higher the priority level.

Same Priority Override (SPO) - Enable this setting to allow same priority level paging mics to override each other whenever they are calling to the same zone range or overlapped zone range. This setting is configured in iPX5101.

Auto Override Low Priority (AOLP) - Enable this setting allow a high priority paging mic to override lower priority mic or same priority mic (if SPO is enabled).

For PD series paging mics that connected to iPX5155, this setting is configured under iPX5155 paging configuration. If PM series mic / TI6100 were used this setting is configured under iPX5155 Remote Trigger section.

For PD series paging mics that connect to iPX5151, this setting is not available in iPX5151. The paging operation is behave the same as AOLP is disabled which mean overriding is not allowed.

For PM series mics / TI6100 that connected to iPX5155 Remote Trigger port, this setting is available in iPX5155 Remote Trigger configuration section. Likewise if iPX5151 is used as the paging client. Table 1 summarises above description.

Paging Device	Paging Client	
	Availability of AOLP	
PD Series Paging Mic	iPX5155 (Input Mode)	Configure under Paging configuration
PM Series Paging Mic		Configure under Paging configuration - Remote Trigger section
TI6100		
PD Series Paging Mic	iPX5151	Not available. Paging operation is the same as AOLP = Disabled
PM Series Paging Mic		Configure under Paging configuration - Remote Trigger section
TI6100		

Table 1: Availability of AOLP

Concurrent Paging - The Concurrent Paging limit in iPX5101 specify total number of paging mics that allow to talk concurrently. When this setting is disabled, only one paging is allowed to be active at a time. Since each iPX5155 (operate in Output mode) only able to serve one paging at a time, in order to have multiple pagings to take place concurrently a system requires to have multiple iPX5155 operate in Output mode and serving different zone ranges or non-overlapped zone ranges. Please refer to Paging Operation section - scenario 7 and 8 in this manual for more on this setting.

Input Mode - An iPX5155 that a PD/PM series paging mic / TI6100 connected to shall be operated in Input mode. This allows the iPX5155 to receive audio, RS485 data and dry contact triggering from the mic. This setting is available in Paging Configuration of iPX5155 but not iPX5151. iPX5151 is always operate in Input mode.

Output Mode - Audio and RS485 data from iPX5155 that operate in Input mode shall be sent to another set of iPX5155 via Ethernet. This another set of iPX5155 shall be operated in Output mode to receive the audio and data and have it broadcast to non-IP based amplifier, mixer and zone decoder.

Zone Range (Start Zone - End Zone) - Zones that an iPX5155 (operate in Output mode) serve.

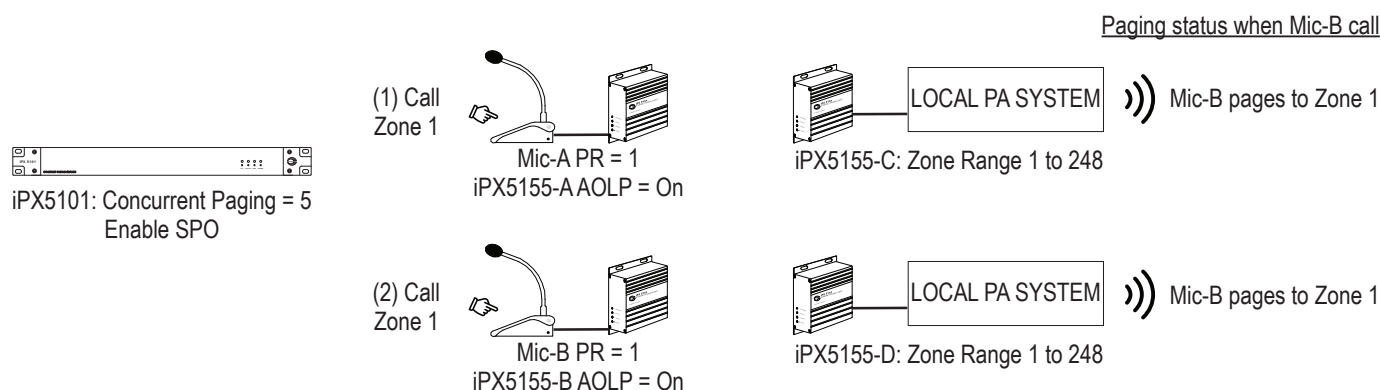
Restricted Zones - Zones that falls in this range will not be served. This setting only available in iPX5155 that operate in Output mode.

Overlapped Zones - E.g. If paging Mic A is calling zone 1 and zone 2 while Mic B is calling zone 2 and zone 3 then zone 2 is called overlapped zone.

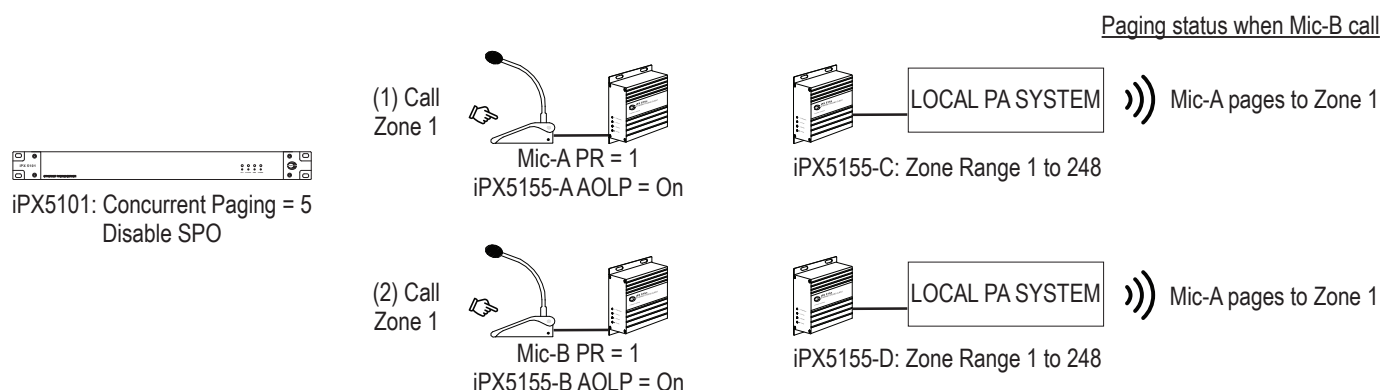
Paging Operation

Consider a system installed with multiple paging mics, iPX5155 / iPX5151 that operate in Input Mode (iPX5155 - A, B & E) and Output Mode (iPX5155 - C, D, F) below scenarios illustrate how the factors mentioned in page 11 affect a paging operation.

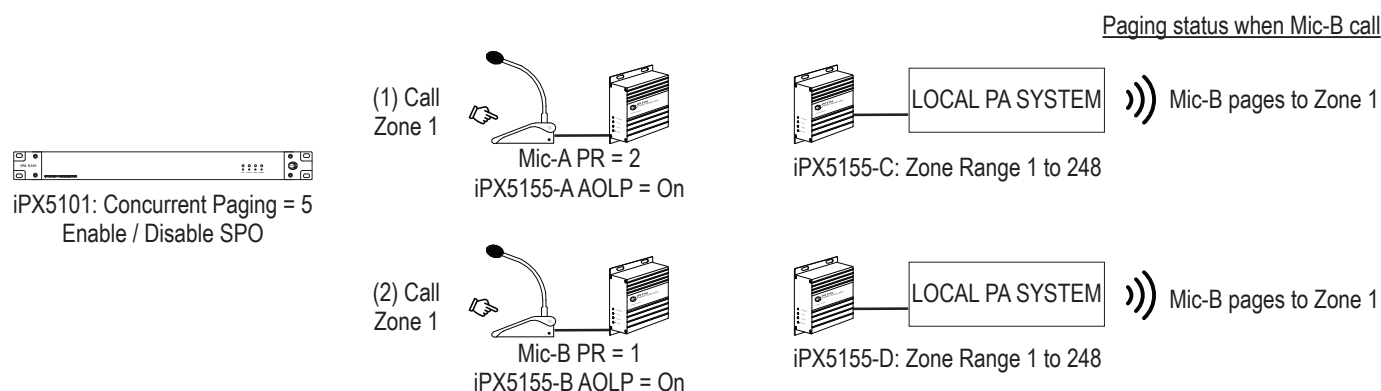
Scenario 1: iPX5101 allow same priority override. Since both mics have the same priority and their AOLP are set to On, when both mics are calling the same zone, the late caller (Mic-B) shall override Mic-A and be the one finally active in paging.



Scenario 2: Both Mic-A and B have the same priority but iPX5101 disallow same priority override. Hence when Mic-A is paging to zone 1, the late caller Mic-B shall not override Mic-A.

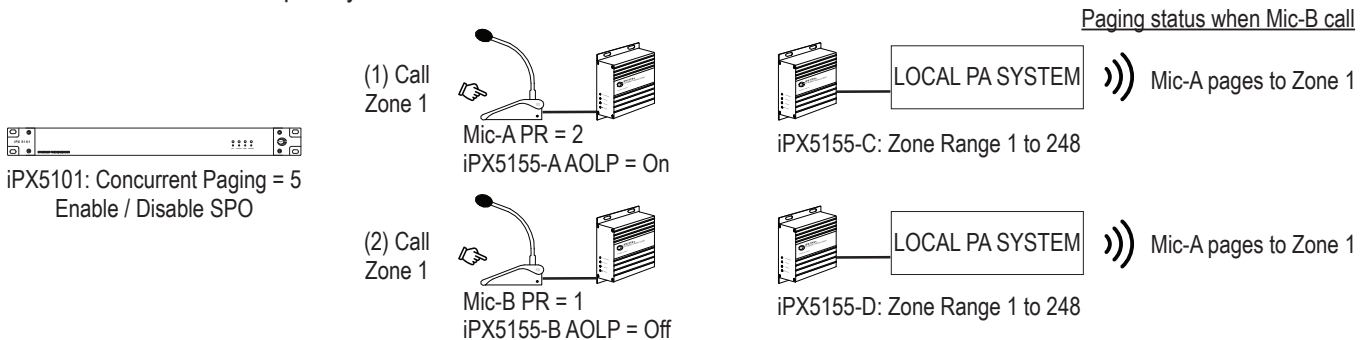


Scenario 3: Regardless iPX5101 enable / disable same priority override, late caller Mic-B shall override Mic-A due to Mic-B has higher priority level.

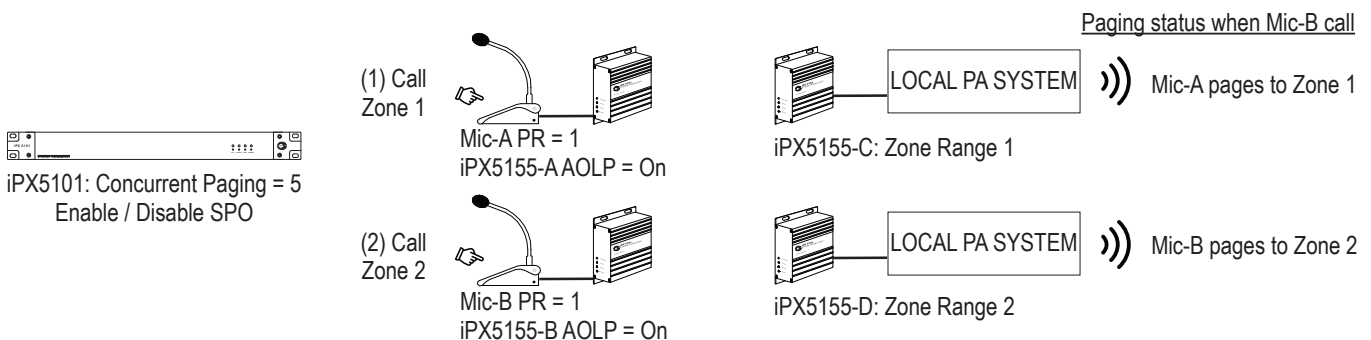


Paging Operation

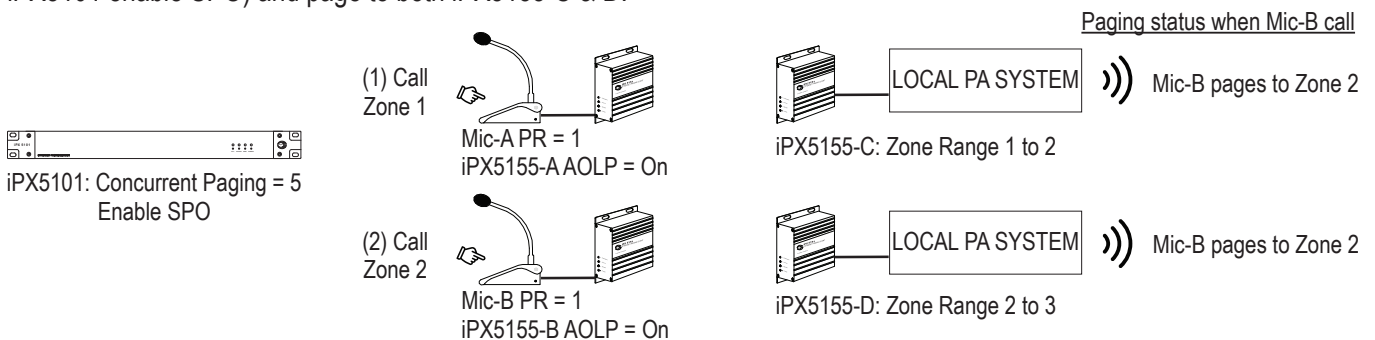
Scenario 4: Although Mic-B is with higher priority level, it unable to override Mic-A due Mic-B AOLP is turned Off. In case Mic-B is the mic that make the first call, Mic-A shall need to wait for Mic-B end its calling then only Mic-A able to page to zone 1. This is because Mic-A priority level is lower than Mic-B.



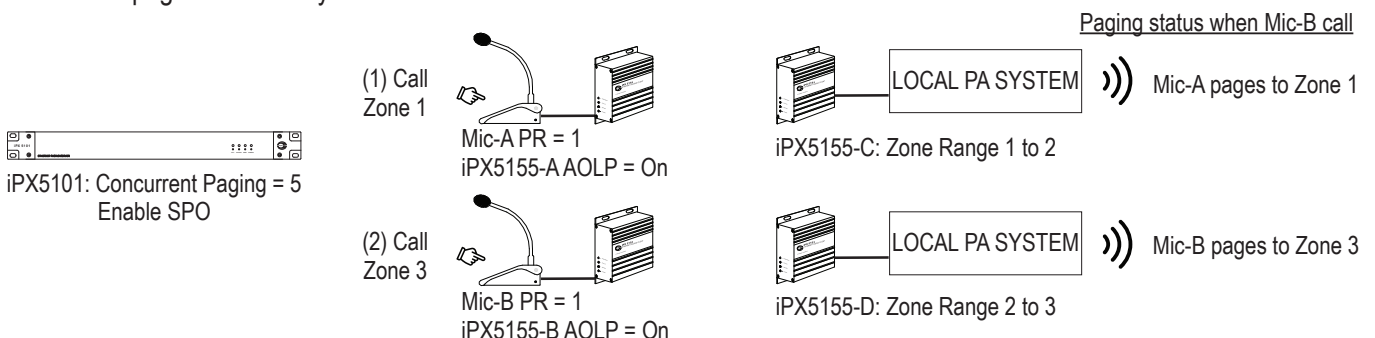
Scenario 5: In this case both Mic-A and Mic-B are calling different zones. Since the system has two units of iPX5155 (iPX5155-C & D) operate in Output mode and are serving different zones, both mics are allowed to talk concurrently.



Scenario 6: In this case both Mic-A and Mic-B are calling different zones. The system has two units of iPX5155 (iPX5155-C & D) and both unit has an overlapped zone (zone 2). When Mic-B call to zone 2 it will override Mic-A (due to iPX5101 enable SPO) and page to both iPX5155-C & D.

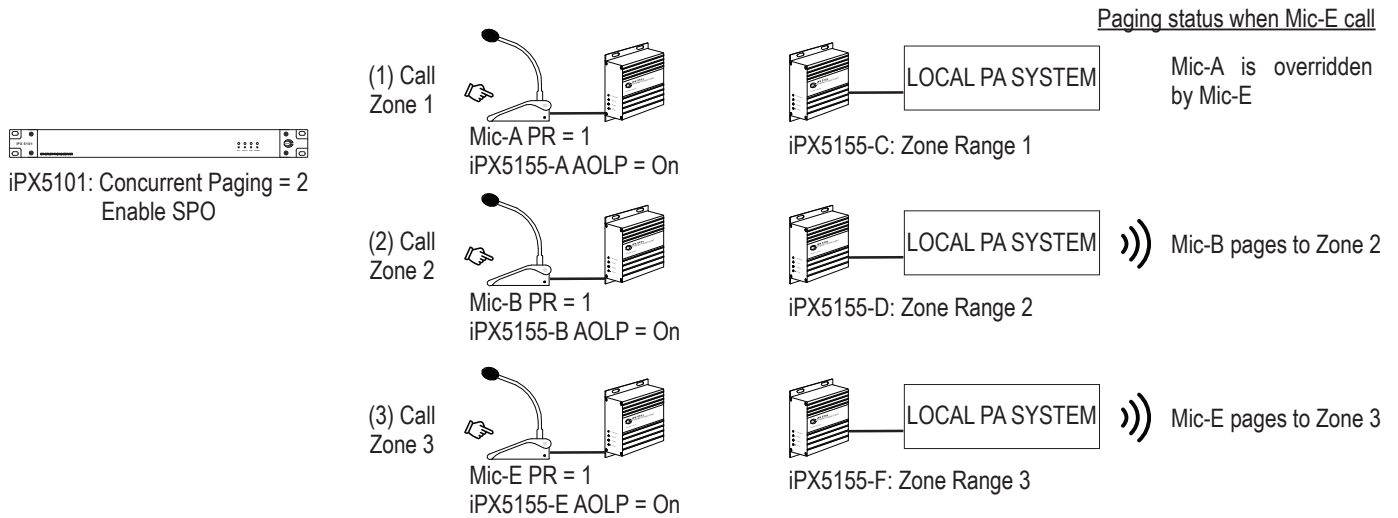


Scenario 7: In this case both Mic-A and Mic-B are calling different zones. The system has two units of iPX5155 (iPX5155-C & D) and both units has an overlapped zone (zone 2). Since both mics are not calling the overlapped zone, both are able to page concurrently.

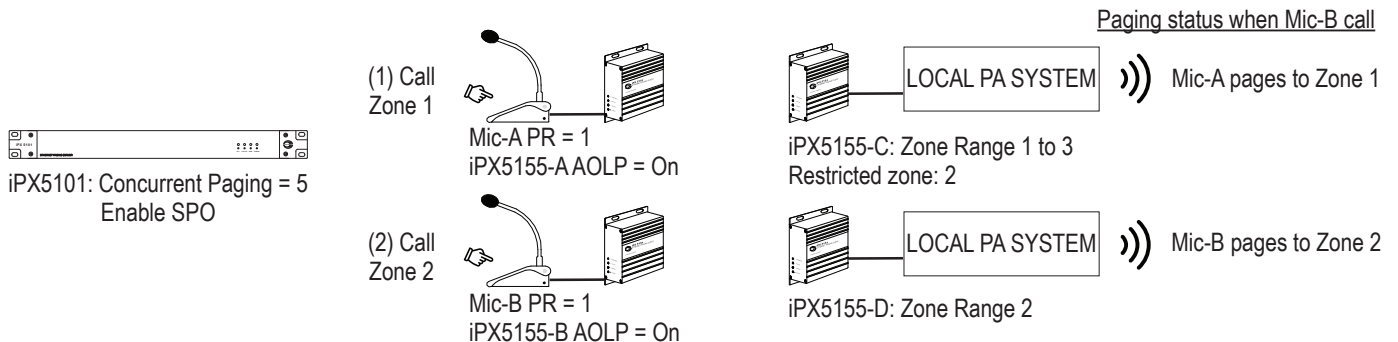


Paging Operation

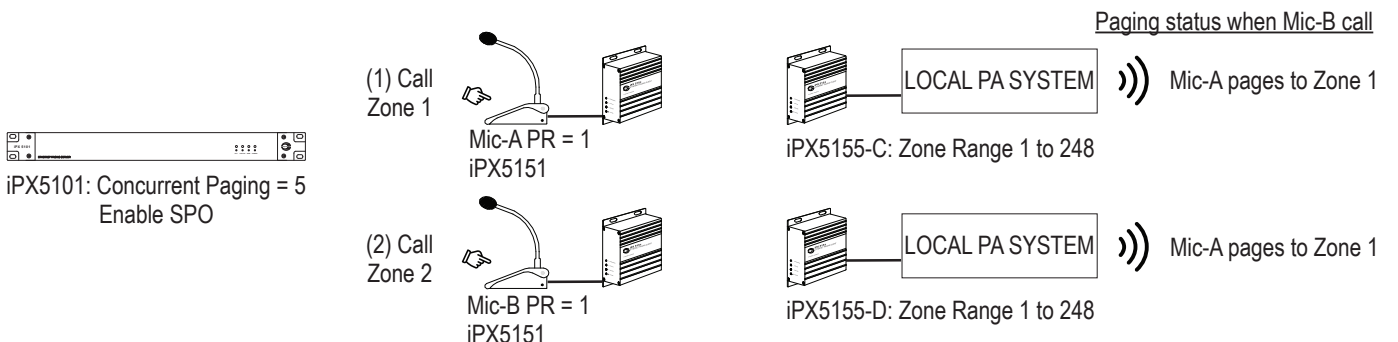
Scenario 8: In this case iPX5101 Concurrent Paging is set to 2 hence only two mics are allowed to talk concurrently. When Mic-E call to zone 3, it shall override the oldest active paging which in this case is the Mic-A.



Scenario 9: iPX5155-C is serving zone 1 to zone 3 and has a restricted zone 2. With this, when Mic-B call to zone 2 both Mic-A and Mic-B can page concurrently. If the restricted zone is removed from iPX5155-C, Mic-A shall be overridden by Mic-B.



Scenario 10: In this case, paging mics are connected to iPX5151. iPX5151 has no AOLP setting and its behavior is the same as AOLP is turned Off. Hence when Mic-B call, it shall not override Mic-A.



Technical Specification

Power requirement :

Voltage	18 ~ 24V DC (Normal DC 24V)
Current	60 mA
Power consumption	1.5W

Connection

- LAN interface	RJ45 (10 / 100 Base - T)
- Protocol	TCP/IP, UDP, IGMP, HTTP, ADMP

Client connection	64 Max
User interface	IE V8+, Google Chrome
Firmware upgrade	Via Web Browser

Operating condition :

Temperature	-20°C ~ 80°C
Humidity	80%

Case :

Dimension	482 x 44 x 180 mm
Weight	1.9 kg

Note:

The above specifications are correct at time of printing but subjected to changes without prior notice due to product improvements.

Warranty Conditions

Only Amperes Electronics Service Centres are allowed to make warranty repairs : a list of Amperes Electronics Service Centres may be asked for by the purchaser or send directly to Amperes Electronics Sdn Bhd at 70 Jalan Industri PBP 3, Tmn Perindustrian Pusat Bandar Puchong, 47100, Puchong, Selangor, Malaysia or its authorized dealers. This warranty is not valid if repairs are performed by unauthorized personnel or service centres.

This warranty covers only repairs and replacement of defective parts ; cost and risks of transportation as well as removal and installation of the product from the main system are for the account of the purchaser. This warranty shall not extend to the replacement of the unit.

This warranty does not cover damages caused by misuse, neglect, accident of the product as well as using the product with power supply voltage other than shown on the product, or any other power supply source / adaptor not recommended by the manufacturer.

This warranty does not cover damages caused by fire, earthquakes, floods, lightning and every cause not directly related to the unit.

This warranty does not include any indemnity in favor of the purchaser or the dealer for the period out of use of the unit; moreover the warranty does not cover any damages which may be caused to people and things when using the product.

This warranty certificate is valid only for the described product, and is not valid if modifications are made on this certificate or on the identification label applied on the product.

This warranty covers all the material and manufacturing defects and is valid for a period of 36 months from the date of purchase or for a specified period in countries where this is stated by a national law. In this case, the extension is valid only in the country where the product is purchased.

Amperes Electronics Sdn Bhd is not obliged to modify previously manufactured products under warranty if the design changes or improvements are made.

Disclaimer

Information contained in this manual is subject to change without prior notice and does not represent a commitment on the part of the vendor. AMPERES ELECTRONICS SDN BHD shall not be liable for any loss or damages whatsoever arising from the use of information or any error contained in this manual.

It is recommended that all services and repairs on this product be carried out by AMPERES ELECTRONICS SDN BHD or its authorized service agents.

AMPERES series must only be used for the purpose they were intended by the manufacturer and in conjunction with this operating manual.

AMPERES ELECTRONICS SDN BHD cannot accept any liability whatsoever for any loss or damages caused by service, maintenance or repair by unauthorized personnel, or by use other than that intended by the manufacturer.



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Certificate No. 16895 / A / 0001 / UK / En



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