

# IP Audio Broadcasting Solution



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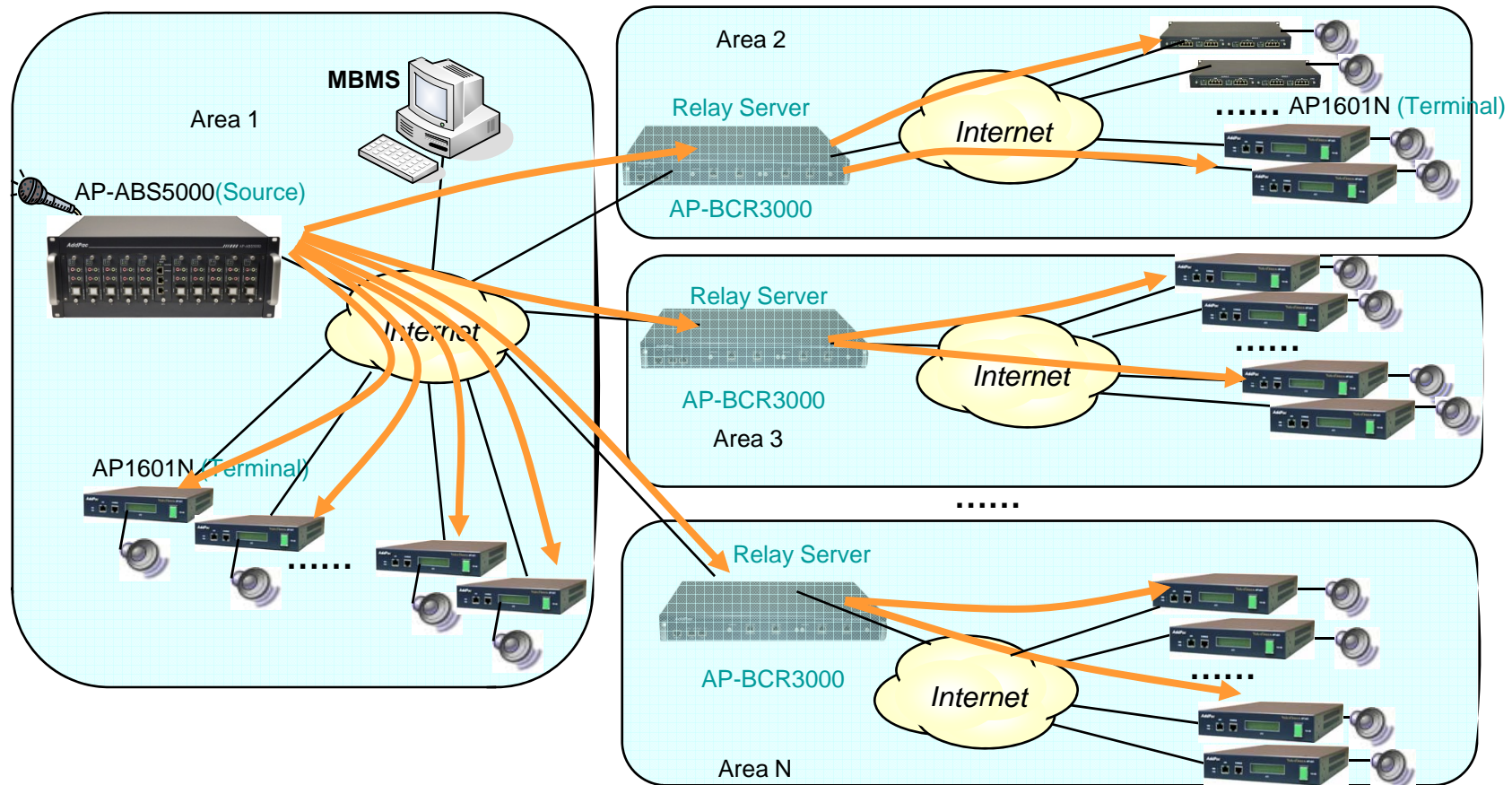
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  - MBMS(Multimedia Broadcasting Management System) 2.0

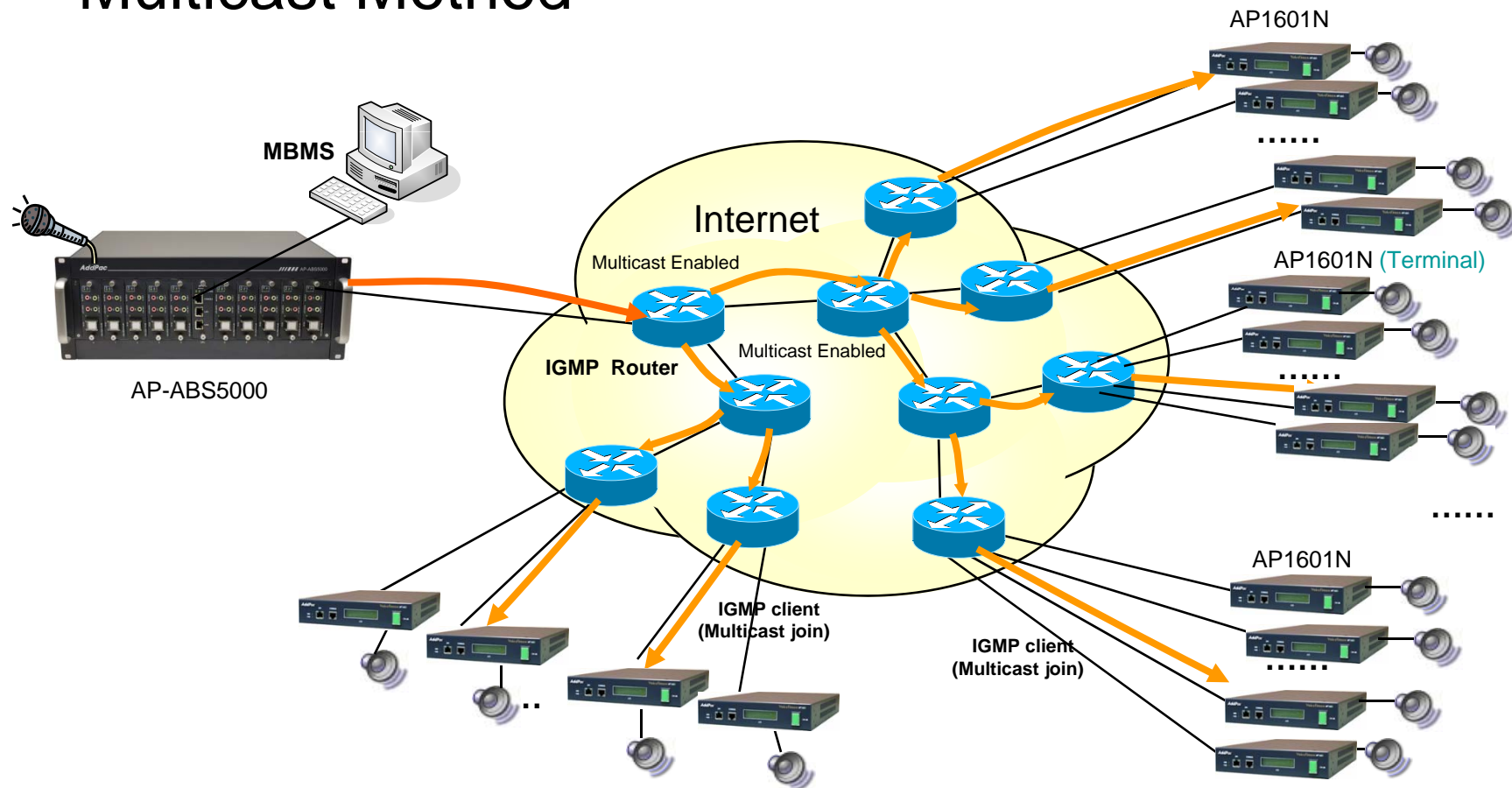
# IP Audio Broadcasting Network Service Diagram

## Unicast Method



# IP Audio Broadcasting Network Service Diagram

## Multicast Method



- Multicast protocol based such as [IGMP Protocol](#)
  - Available to broadcast multi destination with single channel bandwidth
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# IP HQ Audio Broadcasting Solution

Audio Broadcasting Manager S/W	HQ Audio Broadcasting Server AP-ABS5000	Audio Broadcasting Router (Relay Server)	HQ Audio Broadcasting Terminal AP1605A
			
<p>Window based Audio Broadcasting Management Software.</p>	<p>Embedded Hardware based Audio Codec. Ten(10) HQ Audio Codec Module. MP3,G.711 Audio Codec.</p>	<p>1:N Audio Broadcasting Router. Gigabit Ethernet Support</p>	<p>Embedded Hardware based Audio Terminal. <b>Volume Control Rotary Switch.</b> One(1) HQ Audio Codec Module. <b>Built-in AMP.</b> MP3, G.711,Audio Codec.</p>



# AP-ABS5000

## IP High Quality Audio Broadcasting Server

# Main Features

## AP-ABS5000 IP High Quality Audio Broadcasting Server

- IP based Audio Broadcasting Solution
- Hardware Architecture for Multichannel Audio Broadcasting Service
- Ten(10) Module Slots for Multichannel Audio Encoding Service
- High Quality Audio Codec Support (MP3, G.711)
- Unicast and Multicast Broadcasting Scheme
- Enhanced MBMS (Multimedia Broadcasting Management System) Support
- Multichannel Audio IN/OUT Port
- High-Quality Audio/Voice Service
- Firmware Upgradeable Architecture
- Broadcasting Solution with Outstanding Network Service Capability
- Module based Power Supply
- Dual Power Supply for Power Duplication

# Hardware Specification

## AP-ABS5000 IP High Quality Audio Broadcasting Server

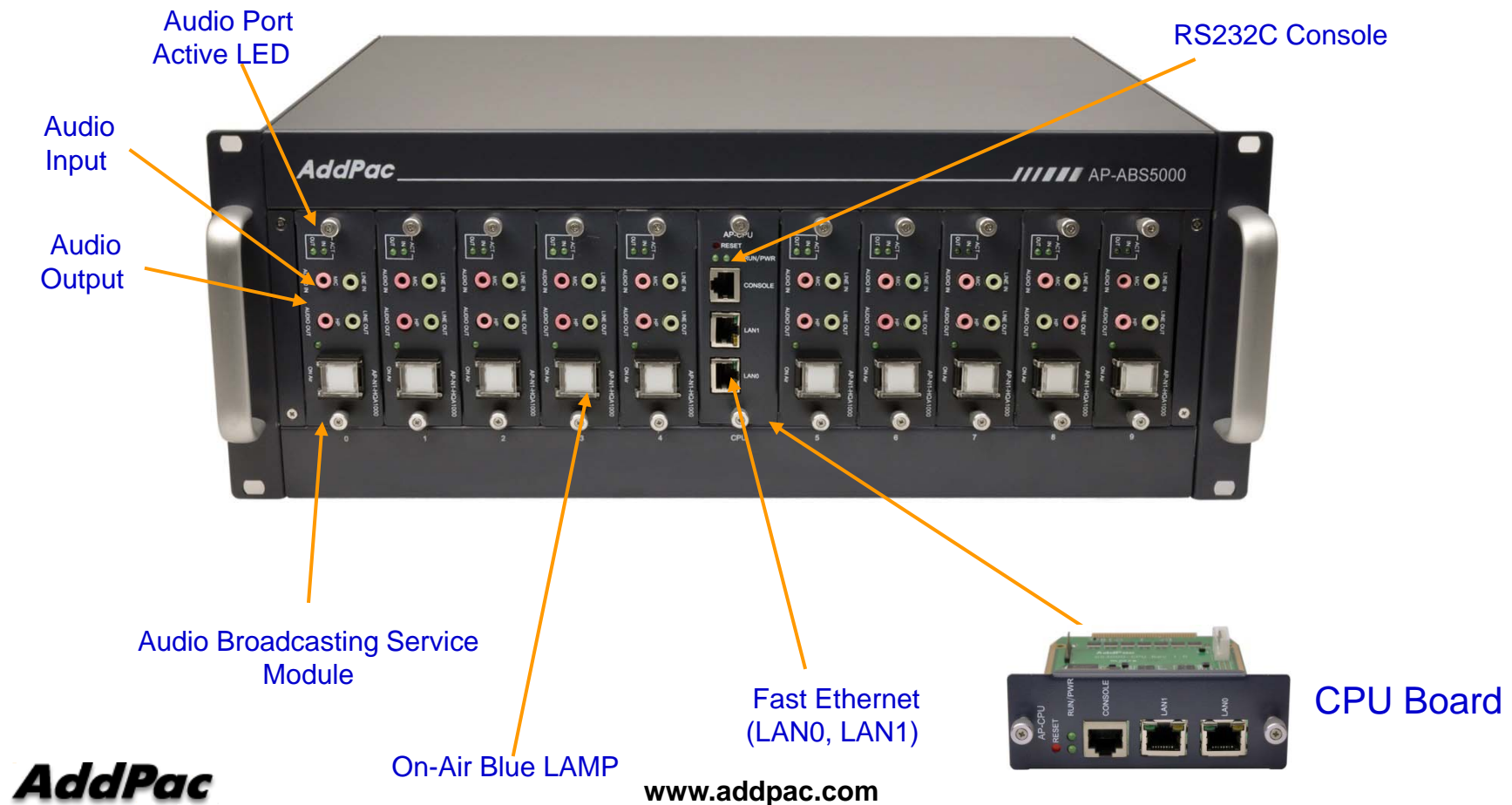
- RISC Microprocessor Computing Power
- High-end Programmable DSP Hardware Architecture
- Ten(10) Module Slots for Audio Broadcasting Codec Module
- Module Type Dual Power Supply
- High quality Audio and Voice Interface
  - Stereo Audio Input Connector
  - Stereo Audio Output Connector
- Network Interface
  - Two(2) 10/100Mbps Fast Ethernet (RJ45)
  - One(1) RS-232C Interface (RJ45) for Command Line Interface



# Hardware Specification

AP-ABS5000 IP High Quality Audio Broadcasting Server

## AP-ABS5000 Front Side



# Hardware Specification

AP-ABS5000 IP High Quality Audio Broadcasting Server

## AP-CPU Board



RS232C Console

Fast Ethernet  
(LAN0, LAN1)

## AP-N1-HQA1000 Board



Audio IN  
(MIC, Line IN)

Audio OUT  
(HP, Line OUT)

ON-AIR Blue LAMP

# Hardware Specification

AP-ABS5000 IP High Quality Audio Broadcasting Server

## AP-ABS5000 Back Side




Power ON/OFF  
Switch

Power Input  
Switch

# Hardware Specification

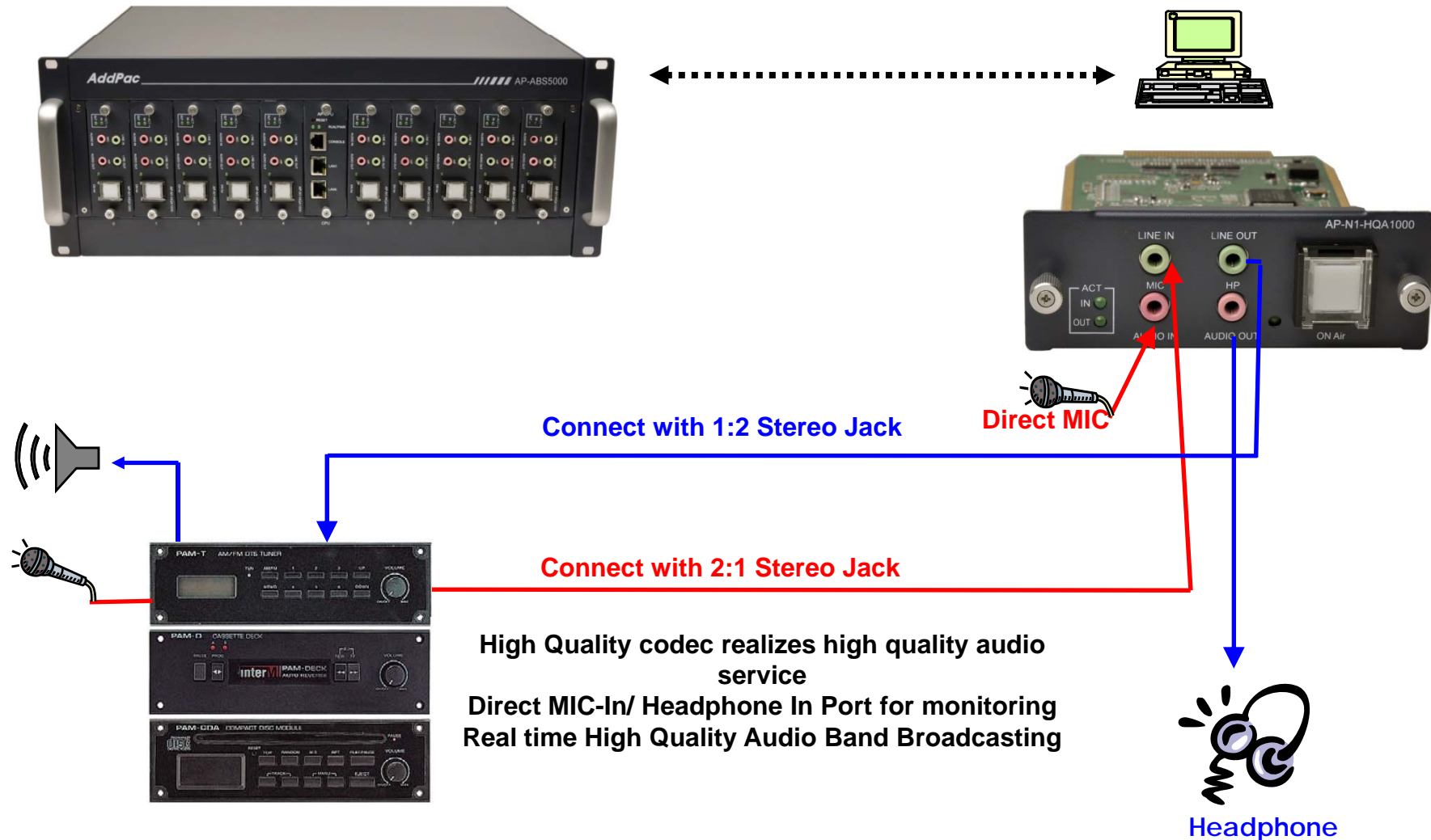
AP-ABS5000 IP High Quality Audio Broadcasting Server

## AP-ABS5000 Audio Modules

Audio Module Type (AP-N1-HQA1000)	Audio Module Features	Maximum Audio Channel in AP-ABS5000
 The image shows the AP-N1-HQA1000 audio module, a black rectangular device with a green PCB on top. It features several ports: a 3.5mm stereo jack on the left, a green line in port, a red mic in port, a green line out port, a red hp out port, and an ON AIR indicator. The model number AP-N1-HQA1000 is printed on the top right.	1-Channel Audio In/Out Port	Up to 10 channel = 10 Module x 1 Channel
	Audio IN : MIC, Line IN Audio OUT : Headphone, Line OUT	
	3.5mm Stereo JACK	
	High Quality MP3, G.711 Audio Codec	

# Hardware Specification

## AP-ABS5000 IP High Quality Audio Broadcasting Server





# AP-BCR3000 Broadcasting Router

# Main Features

## AP-BCR3000 Broadcasting Router

- High-End RISC Microprocessor Architecture
- Embedded System and Real-time OS
- Two(2) Module Slots for Broadcasting Service
- Two(2) Gigabit Ethernet Interface Module
- IP based Audio/Video Broadcasting Solution
- IP based Broadcasting Relay Service for Unicast Service
- IP based Network Surveillance Solution
- High-performance Audio/Video Broadcasting Service
- Routing on Demand Service for Video Monitoring
- Firmware Upgradeable Architecture
- Broadcasting Solution with Outstanding Network Service Capability

# Hardware Specification

AP-BCR3000 Broadcasting Router

RISC  
CPU

- 64bit RISC Microprocessor Computing Power
- Main Chassis
  - Network Interface
    - Two(2) 10/100Mbps Fast Ethernet
    - One(1) RS-232C Console (RJ45)
- Two(2) Gigabit Ethernet Module Slot



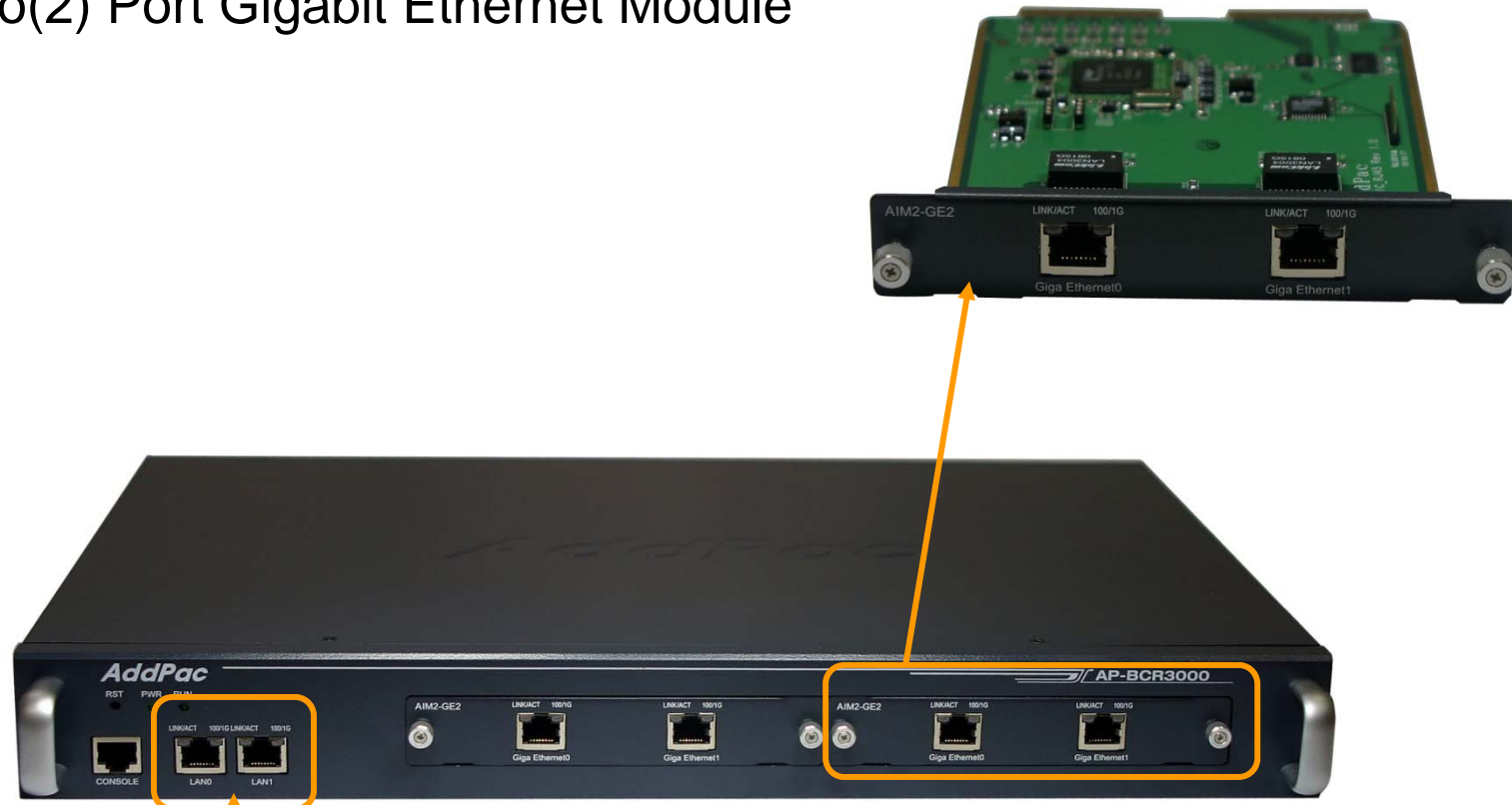


# Hardware Specification

AP-BCR3000 Broadcasting Router

RISC  
CPU

- Network Module (AP-AIM2-GE2)
  - Two(2) Port Gigabit Ethernet Module



Two(2) Fast Ethernet



# High Quality Audio Broadcasting Terminals



# AP1601N Audio Terminal

# Main Features

## AP1601N IP High Quality Audio Broadcasting Terminal

- IP based Audio Broadcasting Terminal Solution
- Hardware Architecture for Audio Broadcasting Terminal Service
- One(1) Module Slot for Audio Encoding & Decoding Service
- Remote Broadcasting Service at terminal side
- High Quality Audio Codec Support (MP3, G.711, etc)
- Unicast and Multicast Broadcasting Scheme
- Enhanced MBMS (Multimedia Broadcasting Management System) Support
- One(1) channel Audio IN/OUT Port
- On-AIR Blue LAMP
- High-Quality Audio/Voice Service
- Firmware Upgradeable Architecture
- Broadcasting Solution with Outstanding Network Service Capability

# Hardware Specification

AP1601N IP High Quality Audio Broadcasting Terminal

RISC  
CPU

High-end  
DSP

- RISC Microprocessor Computing Power
- High-end Programmable DSP Hardware Architecture
- One(1) Module Slot for Audio Broadcasting Codec Module
- High Quality Audio Encoding/Decoding Service
- ON-AIR Blue LAMP
- High Quality Audio and Voice Interface
  - Stereo Audio Input Connector
  - Stereo Audio Output Connector
- Network Interface
  - One(1) 10/100Mbps Fast Ethernet (RJ45)
  - One(1) RS-232C Interface (RJ45) for Command Line Interface

# Hardware Specification

AP1601N IP High Quality Audio Broadcasting Terminal

RISC  
CPU

High-end  
DSP

## AP1601N Front Side



Fast Ethernet  
(LAN0, LAN1)

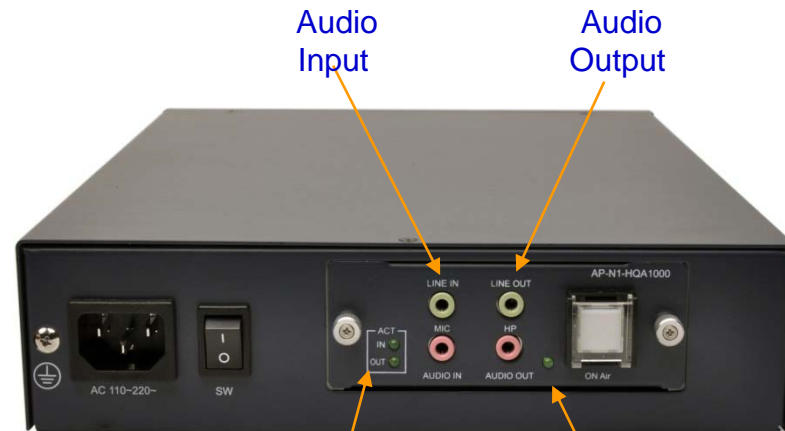
RS232C Console

Status LCD

On-Air Blue LAMP

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## AP1601N Back Side



Audio  
Input

Audio  
Output

Audio Port  
Active LED

Audio Broadcasting Service  
Module

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# Hardware Specification

AP1601N IP High Quality Audio Broadcasting Terminal

RISC  
CPU

High-end  
DSP

## AP-N1-HQA1000 Board



Audio IN  
(MIC, Line IN)

Audio OUT  
(HP, Line OUT)

ON-AIR Blue LAMP



# AP1605 Audio Terminal



# Main Features

## AP1605 IP High Quality Audio Broadcasting Terminal

- IP based Audio Broadcasting Terminal Solution
- Hardware Architecture for Audio Broadcasting Terminal Service
- One(1) Module Slot for Audio Encoding & Decoding Service
- Remote Broadcasting Service at terminal side
- High Quality Audio Codec Support (MP3, G.711, etc)
- Unicast and Multicast Broadcasting Scheme
- Enhanced MBMS (Multimedia Broadcasting Management System) Support
- One(1) channel Audio IN/OUT Port
- **Optional Built-In Digital AMP.**
- On-AIR Blue LAMP
- **Volume Control Rotary Switch at front panel**
- High-Quality Audio/Voice Service
- Firmware Upgradeable Architecture
- Broadcasting Solution with Outstanding Network Service Capability

# Hardware Specification

AP1605 IP High Quality Audio Broadcasting Terminal

RISC  
CPU

High-end  
DSP

- RISC Microprocessor Computing Power
- High-end Programmable DSP Hardware Architecture
- One(1) Module Slot for Audio Broadcasting Codec Module
- High Quality Audio Encoding/Decoding Service
- ON-AIR Blue LAMP
- Rotary Volume Control Switch
- Option Module : AP-N3-HQA1000
  - One(1) 10/100Mbps Fast Ethernet (RJ45)
  - One(1) RS-232C Interface (RJ45) for Command Line Interface
  - Stereo Audio Input/Output Connector
- Option Module : AP-N3-HQA1000A
  - One(1) 10/100Mbps Fast Ethernet (RJ45)
  - One(1) RS-232C Interface (RJ45) for Command Line Interface
  - Stereo Audio Input/Output Connector
  - Built-in Audio AMP.

# Hardware Specification

AP1605 IP High Quality Audio Broadcasting Terminal

RISC  
CPU

High-end  
DSP

## AP1605 Front Side



Status LCD

Rotary Volume  
Control Switch

On-Air Blue LAMP

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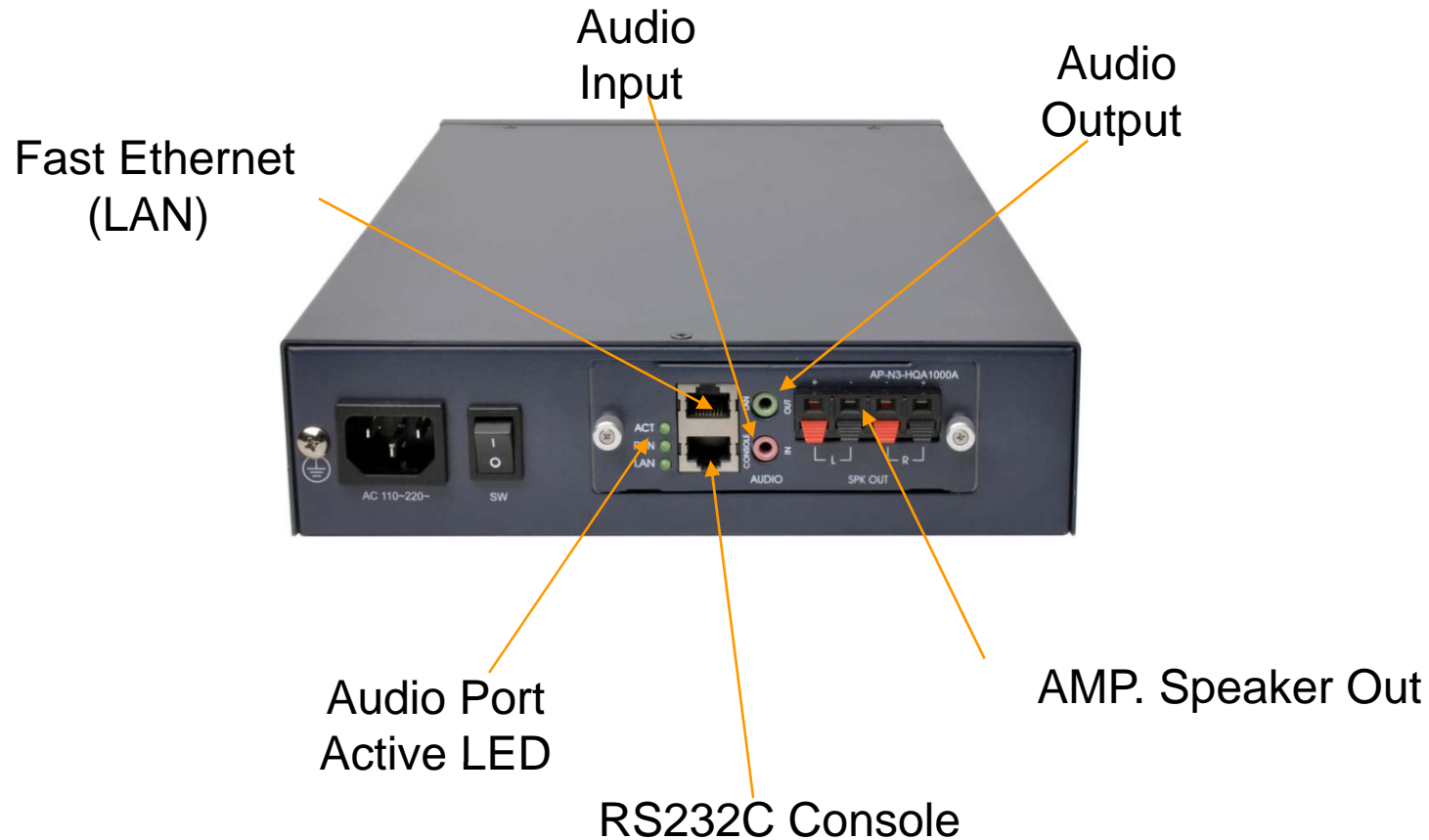
# Hardware Specification

AP1605 IP High Quality Audio Broadcasting Terminal

RISC  
CPU

High-end  
DSP

## AP1605 Back Side



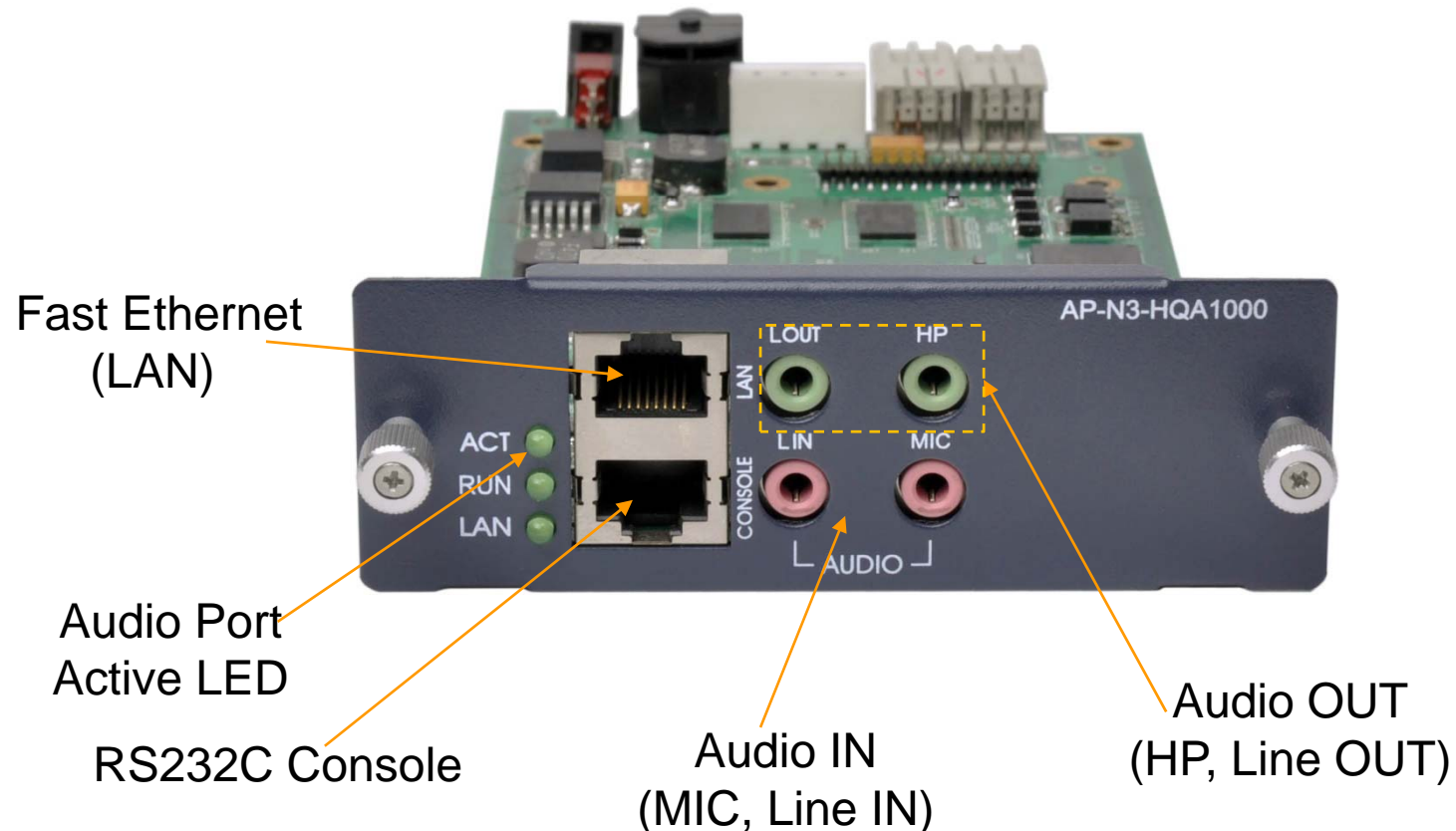
# Hardware Specification

AP1605 IP High Quality Audio Broadcasting Terminal

RISC  
CPU

High-end  
DSP

## AP-N3-HQA1000 Board



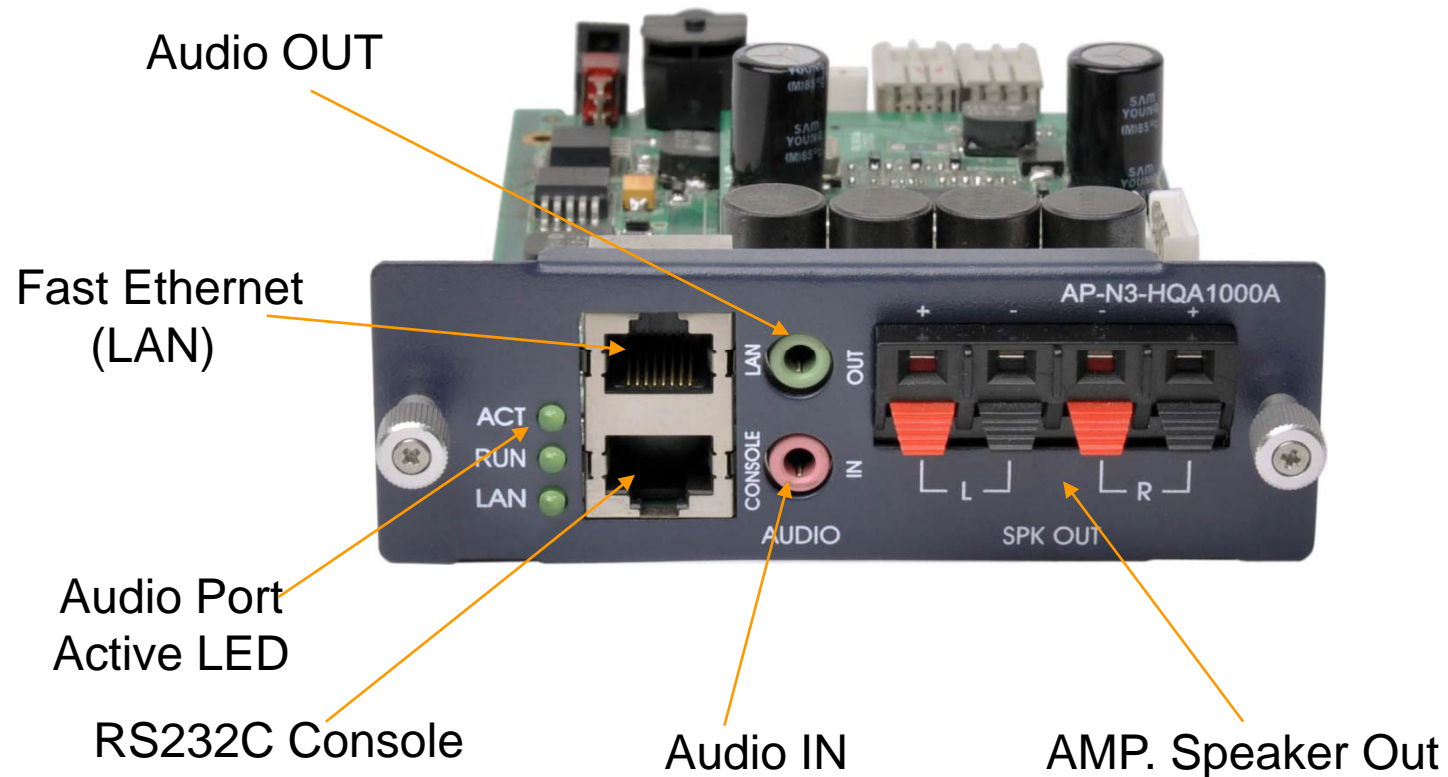
# Hardware Specification

AP1605 IP High Quality Audio Broadcasting Terminal

RISC  
CPU

High-end  
DSP

## AP-N3-HQA1000ABoard



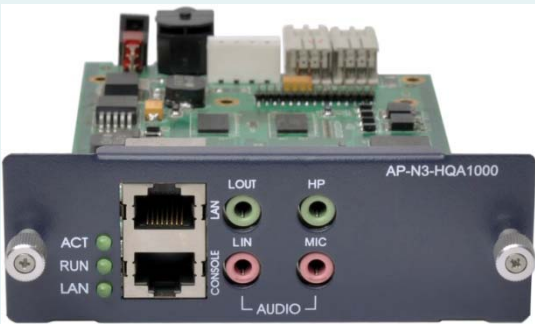
# Hardware Specification

AP1605 IP High Quality Audio Broadcasting Terminal

RISC  
CPU

High-end  
DSP

## AP1605 Audio Module

Audio Module Type	Audio Module Features
AP-N1-HQA1000	One(1)-Channel Audio In/Out Port
 The image shows a dark grey audio module with a green PCB. On the front panel, there are three green LEDs labeled ACT, RUN, and LAN. To the right of the LEDs are a BNC connector, a LAN port, and a console port. Further right are two pairs of audio ports: a green LOUT and HP port, and a red LIN and MIC port. A 3.5mm stereo jack is also present. The model number AP-N3-HQA1000 is printed on the top right of the front panel.	One(1) Fast Ethernet Port
	One(1) RS232C Port
	Audio Encoding/Decoding Service
	Audio IN : MIC, Line IN
	Audio OUT : Headphone, Line OUT
	3.5mm Stereo JACK
High Quality MP3, G.711, etc Audio Codec	

# Hardware Specification

AP1605 IP High Quality Audio Broadcasting Terminal

RISC  
CPU

High-end  
DSP

## AP1605 Audio Module

Audio Module Type	Audio Module Features
AP-N1-HQA1000A	One(1)-Channel Audio In/Out Port
	One(1) Fast Ethernet Port
	One(1) RS232C Port
	Audio Encoding/Decoding Service
	Audio IN
	Audio OUT
	AMP. Built-in Speaker Out (Left, Right)
	4ohm Speaker : 50Watt
	8ohm Speaker : 30Watt
	High Quality MP3,G.711 Audio Codec



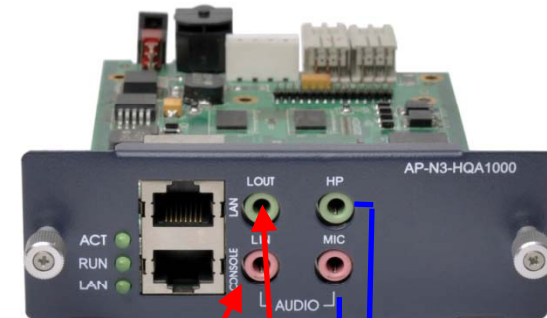


# Hardware Specification

AP1605 IP High Quality Audio Broadcasting Terminal

RISC  
CPU

High-end  
DSP



Connect with 1:2 Stereo Jack

Connect with 2:1 Stereo Jack

Direct MIC

MP3, WMA codec realizes high quality audio service  
Direct MIC-In/ Headphone In Port for monitoring  
Real time High Quality Audio Band Broadcasting



Headphone

# MBMS (Multimedia Broadcasting Management System) 2.0



# Contents

- User Registration Management
- User Access Restriction
- Broadcasting System Management
- Broadcasting Session Management
- Scheduling Broadcasting and On-time Broadcasting
- Emergency Broadcasting Management
- Scheduling Stop Management
- Event Log Management
- MBMS System Redundancy & Auto Data Backup

# MBMS S/W Startup (Example)

## AP1605 IP Audio Broadcasting Terminal

방송세션 이름	호스트	방송 상태	방송 소스	릴레이	방송 단말	방송예약	예약방송 이름	설명
전체 비디오 방송		ON-AIR	Normal	None	1 / 1 Normal			학교 전체 비디오 방송
전체 오디오 방송	화재긴급방송	ON-AIR	Normal	None	1 / 1 Normal			
▶ 방송실 오디오	172.16.7.55		Ok		Ok			방송실 오디오 서버
▶ 교무실1	172.16.19.101				Ok			
운동장 방송		ON-AIR	Unknown	None	None			운동장 방송
1학년 방송		ON-AIR	Fail	None	1 / 1 Normal			
▶ 방송실 비디오	172.16.19.102		Fail		NoSESS			방송실 비디오 서버 (AP5840)
▶ 교무실1	172.16.19.101							
2학년 방송		ON-AIR	Fail	None	0 / 1 Normal			

```

[2006-05-09 11:44:46] BC_POLL [5] SNA=1학년 방송 [Ok]
[2006-05-09 11:44:56] BC_POLL [1] SNA=전체 오디오 방송 [Ok]
[2006-05-09 11:45:06] BC_POLL [5] SNA=1학년 방송 [Ok]
[2006-05-09 11:45:16] BC_POLL [1] SNA=전체 오디오 방송 [Ok]
[2006-05-09 11:45:26] BC_POLL [5] SNA=1학년 방송 [Ok]
[2006-05-09 11:45:37] BC_POLL [1] SNA=전체 오디오 방송 [Ok]
[2006-05-09 11:45:46] BC_POLL [5] SNA=1학년 방송 [Ok]
[2006-05-09 11:45:51] BC_START [1] SNA=전체 오디오 방송 NTY=SOURCE ENA=방송실 오디오 IP=172.16.7.55 [Ok]
[2006-05-09 11:45:51] BC_START [1] SNA=전체 오디오 방송 NTY=PLAY ENA=교무실1 IP=172.16.19.101 [Ok]
[2006-05-09 11:45:56] BC_POLL [1] SNA=전체 오디오 방송 [Ok]
    
```

2006-05-09 오전 11:46:01      사용자: root (administrator)      1,0,0,14

# Broadcasting Equipment Management (Example)

AP1605 IP Audio Broadcasting Terminal

학교 멀티미디어 방송 시스템

관리 사용자 보기 도움말

학교 멀티미디어 방송 시스템  
AddPac

방송채널 구성

방송채널 이름: 전체 오디오 방송

방송 장비 이름	IP 주소	설명	포트 설명
과학실	1,1,1,1		
AP-AUDIO2	( 0/1, 0/1 )		
AP-AUDIO2	( 0/0, 0/0 )		
교무실1	172,16,19,101		
AP-AUDIO2	( 1/0, 1/0 )		
AP-AUDIO2	( 1/1, 1/1 )		
AP-AUDIO2	( 0/1, 0/1 )		
AP-AUDIO2	( 0/0, 0/0 )		
미술실	1,1,1,2		
AP-AUDIO2	( 1/1, 1/1 )		
AP-AUDIO2	( 1/0, 1/0 )		
방송실 비디오	172,16,19,102	방송실 비디...	
AP-AV1000	( 2/1, 2/0 )		
AP-AV1000	( 1/1, 1/0 )		
방송실 오디오	172,16,7,55	방송실 오디오...	
AP-AUDIO2	( 7/1, 7/1 )		
AP-AUDIO2	( 7/0, 7/0 )		
AP-AUDIO2	( 6/1, 6/1 )		
AP-AUDIO2	( 6/0, 6/0 )		
AP-AUDIO2	( 5/1, 5/1 )		

방송소스

방송 장비 이름	IP 주소
방송실 오디오	172,16,7,55
교무실1	172,16,19,101

삭제

Total : 6

2006-05-09 오후 12:18:22 사용자: root (administrator) 1,0,0,14

# Broadcasting Scheduling (Example)

AP1605 IP Audio Broadcasting Terminal

방송세션 이름	예약 방송 이름	예약 방송 종류	요일	시작 시간	종료 시간	설명
전체 오디오 방송	2교시 종료	월요일-금요일		10:50:00	10:50:15	
전체 오디오 방송	2교시 시작	월요일-금요일		10:00:00	10:00:15	
전체 오디오 방송	1교시 종료	월요일-금요일		09:50:00	09:50:15	
전체 오디오 방송	1교시 시작	월요일-금요일		09:00:00	09:00:15	
전체 오디오 방송	점심 방송	월요일-금요일		12:00:00	13:00:00	
전체 오디오 방송	아침 방송	월요일-금요일		07:30:00	08:30:00	
전체 오디오 방송	3교시 종료	월요일-금요일		11:50:00	11:50:15	
전체 오디오 방송	3교시 시작	월요일-금요일		11:00:00	11:00:15	

# Event Log (Example)

AP1605 IP Audio Broadcasting Terminal

이벤트 이력 조회

일자&시간: 2006-05-08 오후 12:16:21 ~ 2006-05-09 오후 12:16:21

일자&시간	이벤트	동작	방송종류	방송이름	장비종류	장비이름	IP주소	장비상태	예약방송이름
2006-05-08 14:43:33	Request	STOP	UNICAST	테스트 오디오 방송					
2006-05-08 14:43:05	Request	START	UNICAST	테스트 오디오 방송					
2006-05-08 14:43:03	Request	START	UNICAST	테스트 오디오 방송					
2006-05-08 14:42:56	Request	STOP	UNICAST	테스트 오디오 방송					
2006-05-08 14:42:49	Request	START	UNICAST	테스트 오디오 방송					
2006-05-08 14:42:48	Request	START	UNICAST	테스트 오디오 방송					
2006-05-08 14:42:48	Request	START	UNICAST	테스트 오디오 방송					
2006-05-08 14:42:48	Request	START	UNICAST	테스트 오디오 방송					
2006-05-08 14:42:47	Request	STOP	UNICAST	테스트 오디오 방송					
2006-05-08 14:42:46	Request	START	UNICAST	테스트 오디오 방송					
2006-05-08 14:42:46	Request	STOP	UNICAST	테스트 오디오 방송					
2006-05-08 14:07:19	Request	START	UNICAST	테스트 비디오 방송					
2006-05-08 14:07:17	Response	STOP	UNICAST	테스트 오디오 방송	PLAY	교실	172.16.19.1...	Not Response	
2006-05-08 14:07:17	Response	STOP	UNICAST	테스트 오디오 방송	SOURCE	방송실	172.16.7.55	Not Response	
2006-05-08 14:07:16	Request	STOP	UNICAST	테스트 오디오 방송					
2006-05-08 14:07:07	Response	START	UNICAST	테스트 오디오 방송	PLAY	교실	172.16.19.1...	Not Response	
2006-05-08 14:07:07	Response	START	UNICAST	테스트 오디오 방송	SOURCE	방송실	172.16.7.55	Not Response	
2006-05-08 14:07:06	Request	START	UNICAST	테스트 오디오 방송					
2006-05-08 14:05:09	Request	STOP	UNICAST	테스트 비디오 방송					
2006-05-08 13:57:05	Request	START	UNICAST	테스트 비디오 방송					

2006-05-09 12:16:57] BC\_POLL [1] SNA=전체 오디오 방송 [Ok]

2006-05-09 오후 12:16:56 사용자: root (administrator) 1,0,0,14



# Thank you!

**AddPac Technology Co., Ltd.**  
Sales and Marketing

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