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I. OVERVIEW

Network PA system suitable for
skyscrapers or advanced business
buildings

Ring Architecture in preparation
for **fire, earthquake and disasters**

U-SOTEC SYSTEM

All kind of data and audio signal
can be transmitted through single
UTP or optical cable

Local area layout can be changed
with ease by **software**



II. FEATURES



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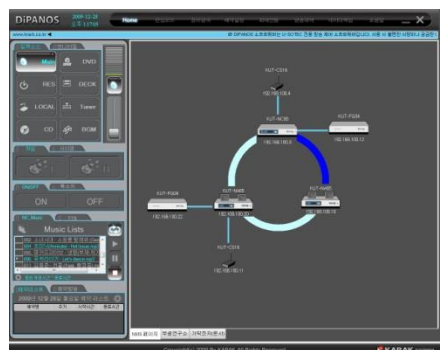


II. FEATURES



Basic Configuration

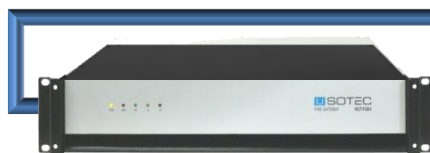
OPERATING Software DiPANOS™






DiPANOS



KUT-NC08



KUT-FG04

-  Optical cable
-  UTP/STP cable
-  VGA cable

KUT-NA35





KUT-NA65



KUT-NA130



KUT-CS16

-  Limitless Full Digital PA system based on network (KRNET™)
-  Convenient system design through simple equipment configuration



II. FEATURES



Simple cable connection with standard protocol (TCP/IP)

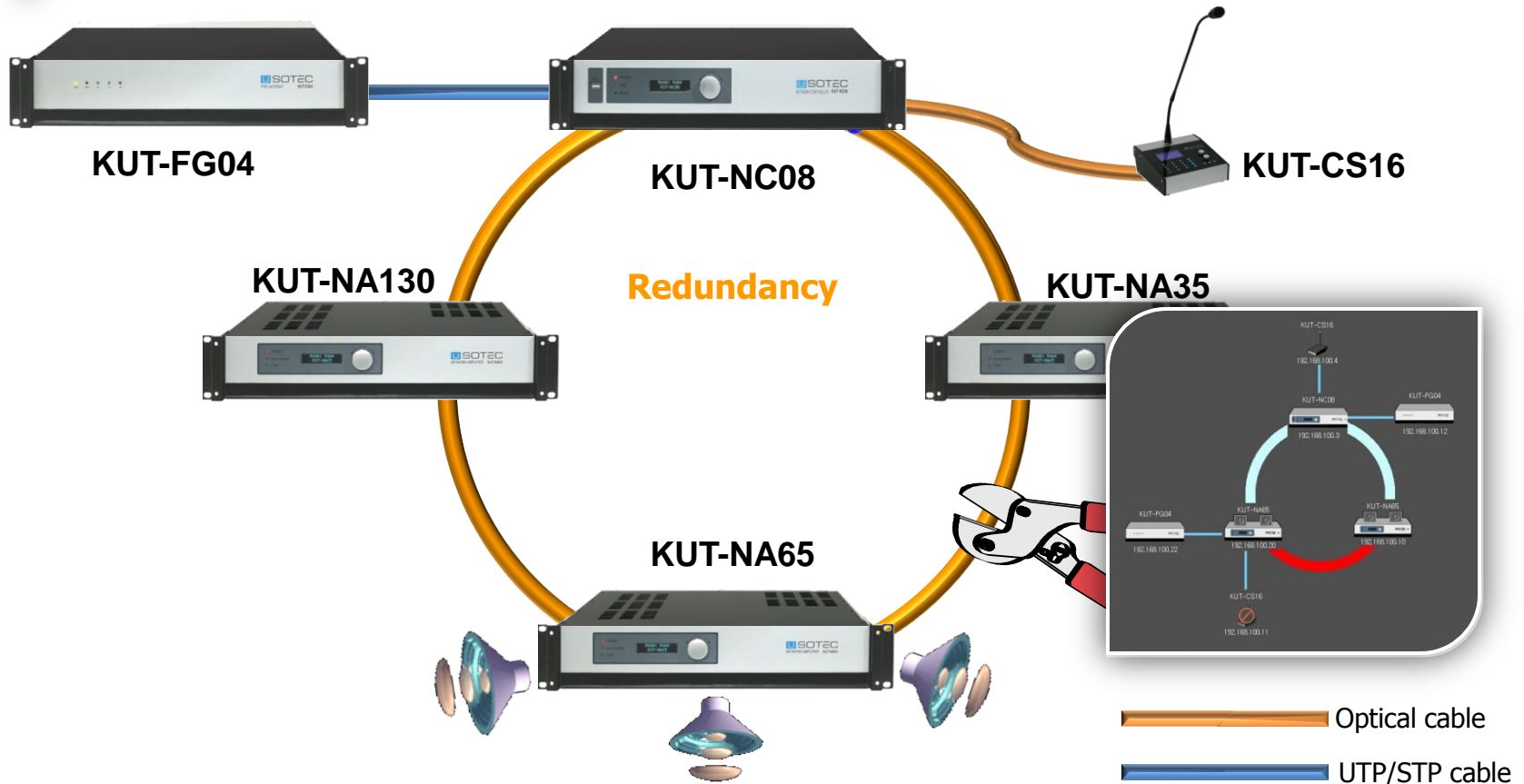


- Data and audio signal transmission through single cable using KACP(Karak Audio Control Protocol)
- Convenient cable connection completion with single cable
- Standard UTP/STP cable usage in tree configuration and short distance (within 100m)
- Optical cable usage in ring configuration and long distance



II. FEATURES

Reliability and Security guaranteed by GRR와 NMS



- GRR(Gigabit Ring Redundancy) provides communication safety
- NMS(Network Management System) provides real time equipment monitoring



II. FEATURES



Flexible System Configuration



[Ring type]



[Tree type]



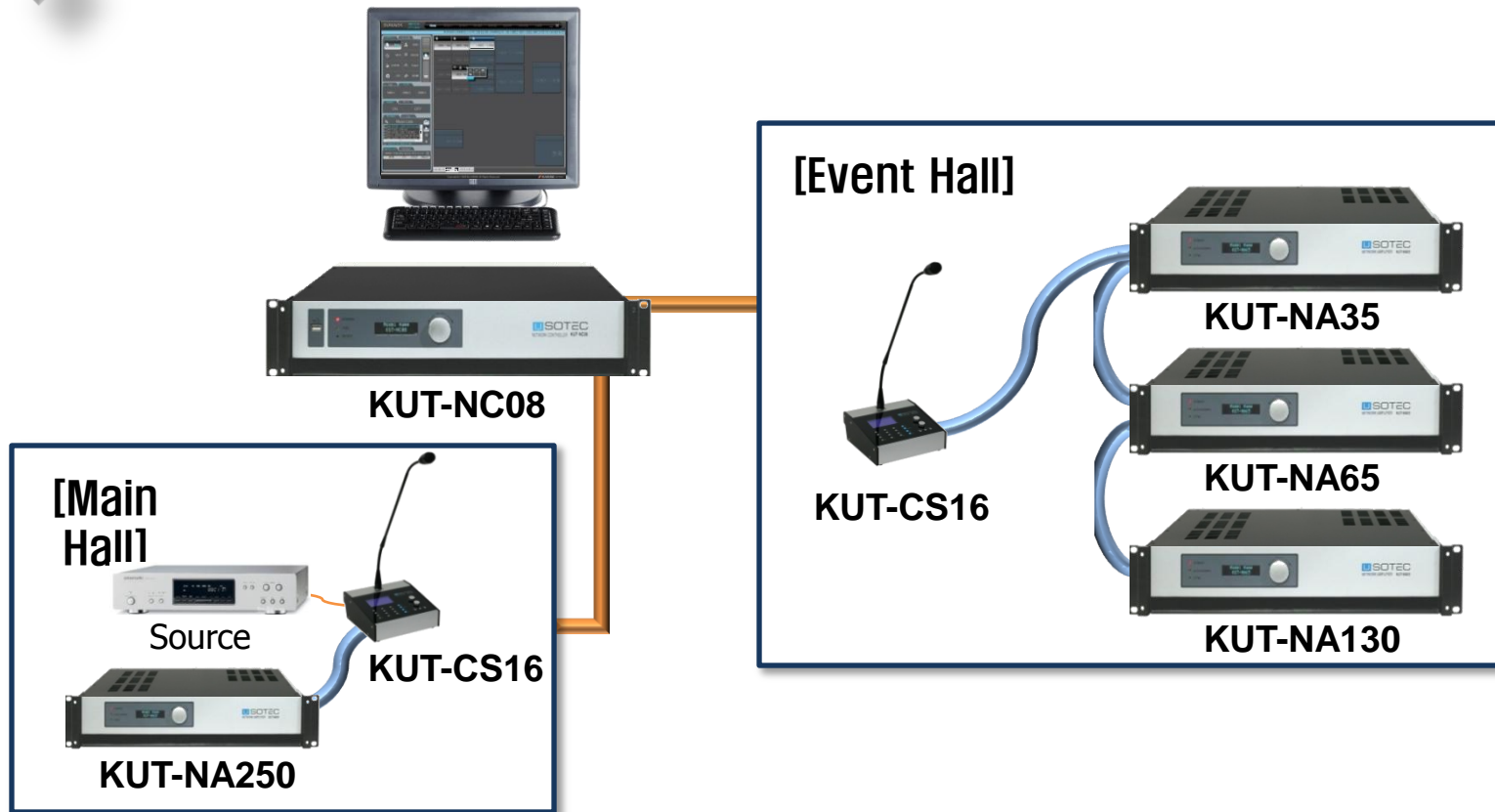
[Daisy chain]

- Limitless system configuration and zone division based on network (KRNET™)
- Support combined structure (Ring + Tree), suitable for extensive scale system



II. FEATURES

No separate Local Audio System is required



- Assigning authority, a call station can control the specific zone (local speaker)
- Call station, connected to the network, can provide local public addressing without additional equipments



II. FEATURES



Convenient selection and addressing of 8 channels

번호	방송 버튼명	이미지	사용 여부
1	Main		<input checked="" type="checkbox"/>
2	RES		<input checked="" type="checkbox"/>
3	LOCAL		<input checked="" type="checkbox"/>
4	CD		<input checked="" type="checkbox"/>
5	DVD		<input checked="" type="checkbox"/>
6	DECK		<input checked="" type="checkbox"/>
7	Tuner		<input checked="" type="checkbox"/>
8	BGM		<input checked="" type="checkbox"/>
9	화재		<input checked="" type="checkbox"/>

• 번호 2(예약),3(c/s),9(화재)는 특정방송으로 변경 할 수 없습니다.



- 8 channel audio sounds can be addressed at the same time through KRNET single cable without addition of cables
- Convenient selection and addressing of the sound source required in each zone



II. FEATURES



Convenient adjustment of mix/volume of the sound source



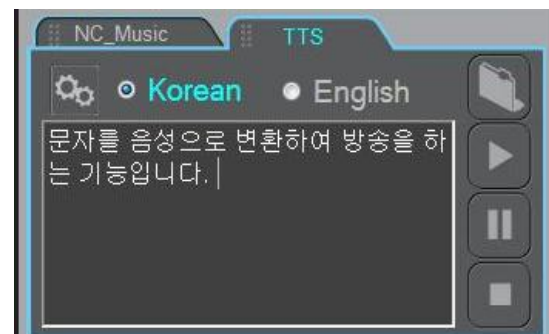
- **Volume can be adjusted at the sound source input(NC)/output(NA)**
- **Selection, volume adjustment and addressing status monitoring for the sound source at remote area network amplifier is available**
- **Mixing function without separate equipment, through built in DSP(Digital Signal Processor)**



II. FEATURES



TTS (Text to Speech) Addressing



- Text can be converted into sound and addressed
- Sound selection (male/female) and multi-language TTS addressing through module extension



III. CONFIGURATION



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III. CONFIGURATION



Centralized Type (for Skyscraper, IBS building and hotel)

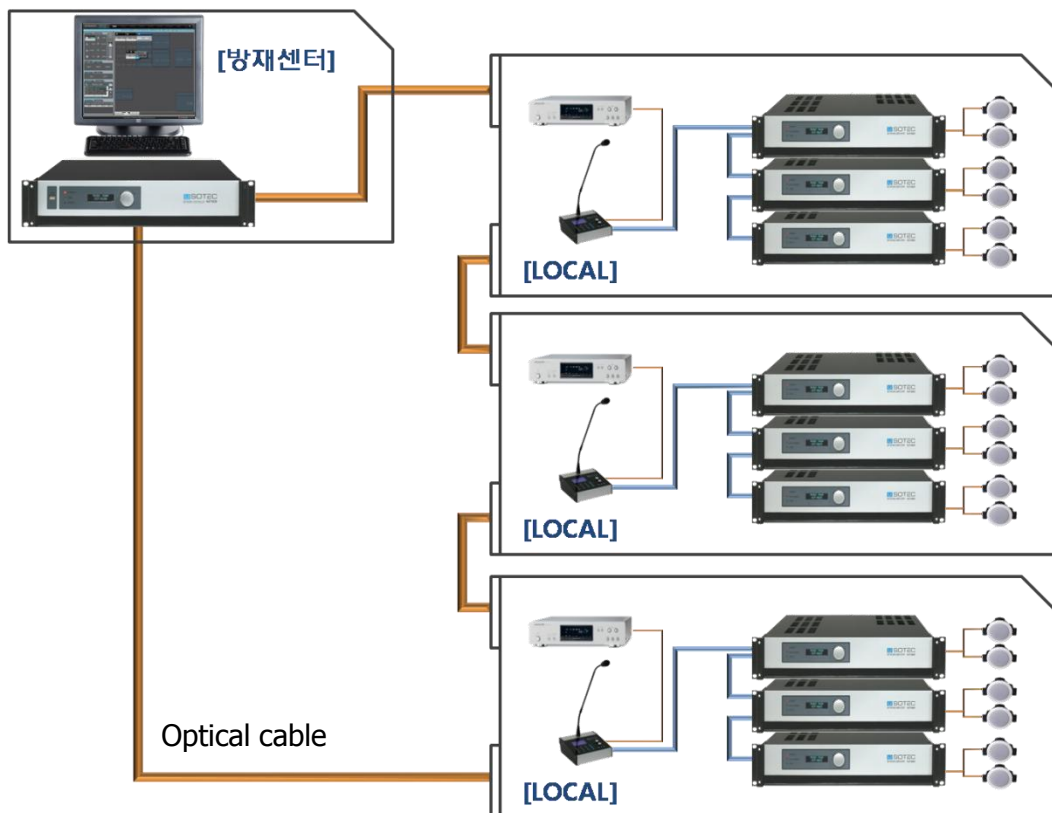




III. CONFIGURATION



Balanced Type (for Airport, Theme Park and University)





IV. EQUIPMENTS



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Equipment List

● KUT-NC08 : Network Controller



● KUT-NAxxx : Network Amplifier



● KUT-FG04 : Fire Gateway



● KUT-CS16 : Call Station



● KUT-WA65 : Wall-mount Amplifier(65WX8ch)



● KUT-NT40 : Network Terminal



● KUT-NG20 : Network Group



KUT-NC08



- Main Controller – Overall control over entire system
- Monitoring over entire system with DiPANOS
- 3 internal channels – Main, Booking, Local addressing
- 5 external channels – MIC/Line selection and usage
- EM MIC dedicated channel – in preparation for fire
- 1Giga optical 3 ports , 100Base-Tx UTP 5 ports – for network extension
- Power supply – AC220V & DC24V
- LED, VFD , Rotary switch – information search
- USB Port at front – MP3 file usage



KUT-NA65



- Network amplifier – addressing to specific zone
- Amplifier kinds – **8 × 35W, 8 × 65W, 4 × 130W, 2 × 250W, 1 × 500W**
- 1Giga 3 optical ports , 100Base-Tx UTP 5 ports – **Network extension**
- PLC Terminal(NT40), Serial port(NG20) – **System Extension**
- Power supply – **AC220V & DC24V**
- LED, VFD , Rotary switch – **Information Search**



KUT-FG04



- Fire Gateway – Transmit data to **Main equipment**
- To be installed – **at any place**
- Fire signal reception – **48 channel terminals**
- 10/100Base-Tx 1 port – **Network connection**
- Power supply – **DC24V**
- Front LED – **Equipment status**



KUT-CS16



- Local addressing – **ON/OFF** equipment
- Local button information – **to be downloaded from Main**
- 1 of 1Giga optical port and 1 of 10/100Base Tx port –
Network connection
- Audio channel – **1 Line**
- Power supply – **Adapter DC 5V**
- MIC, chime button and volume, mute switch
- Keypad – **information search and ON/OFF**
- Graphic LCD – **Monitoring and status display**



KUT-WA65



- Wall-Mount network amp – **8 × 65W**
- Configuration – **Balanced type**
- 3 of 1Giga optical port and 5 of 100Base-Tx UTP port – **Network extension**
- Built in Battery – **Emergency power supply in power failure**
- Front VFD – **Display status and information**





V. OPERATION S/W (DiPANOS)



KARAK electronics company



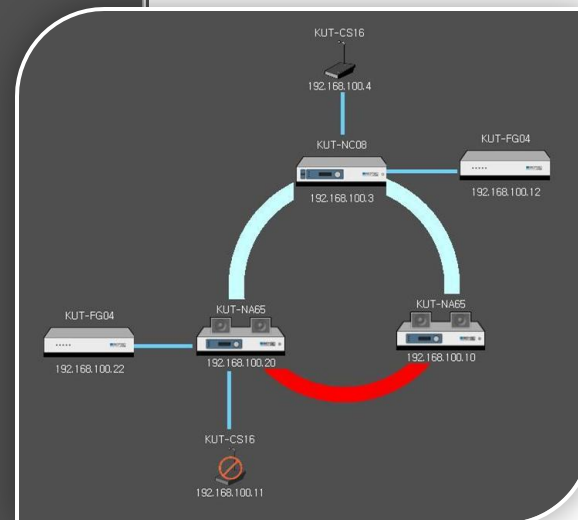
V. DiPANOS

NMS(Network Management System)

The screenshot shows the DiPANOS NMS web interface. The main area displays a network topology diagram with the following nodes and IP addresses:

- KUT-CS16 (192.168.100.4)
- KUT-NC08 (192.168.100.3)
- KUT-FG04 (192.168.100.12)
- KUT-FG04 (192.168.100.22)
- KUT-NA65 (192.168.100.20)
- KUT-NA65 (192.168.100.10)
- KUT-CS16 (192.168.100.11)

The interface also includes a sidebar with navigation options like 'Main', 'RES', 'DECK', 'LOCAL', 'Tuner', 'CD', 'BGM', and a 'Music Lists' section with a list of tracks. At the bottom, it shows 'Copyright(c) 2009 By KARAK All Rights Reserved' and the 'KARAK ELECTRONICS' logo.

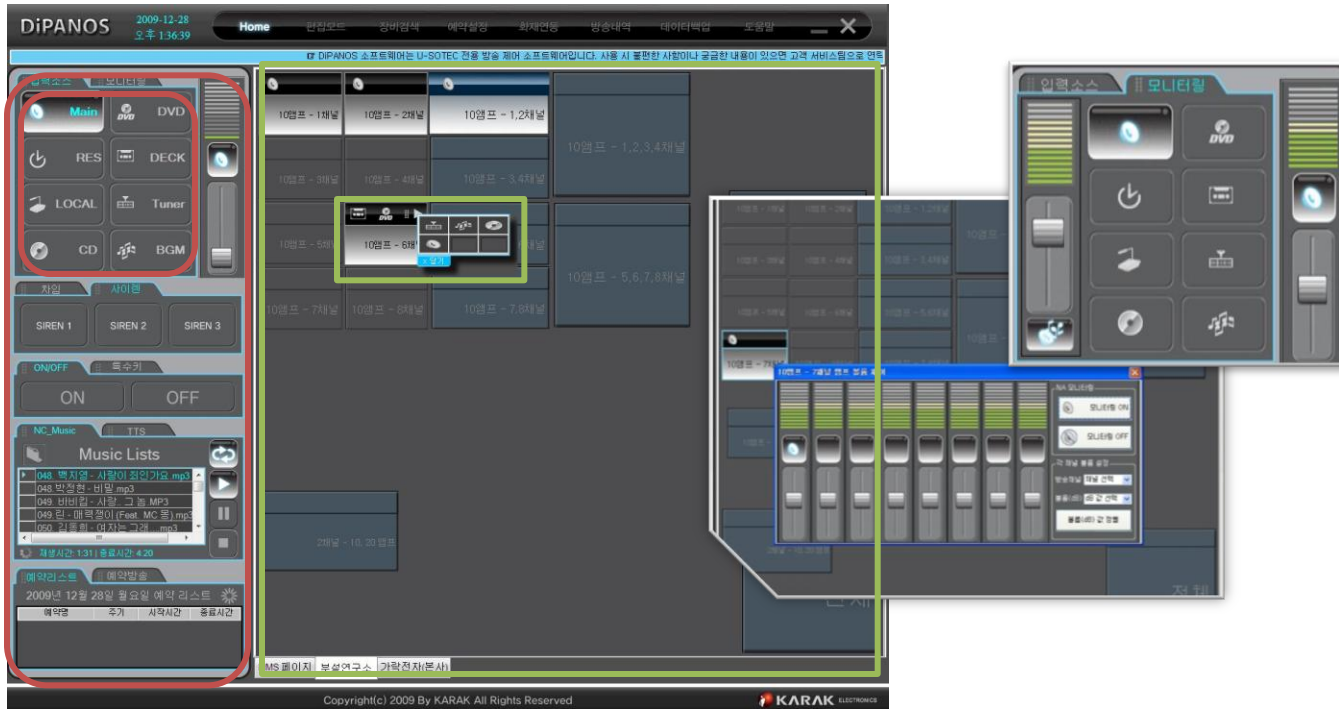


- NMS - Real time network status monitoring
- Cable disconnection, equipment trouble is displayed



V. DiPANOS

GUI(Graphical User Interface)



- Page division – addressing group and zone button
- Priority – Main(Fire) > RES(reserved) > Local > 5 Audios
- Mixing – Built in DSP function S/W
- Addressing status – Zone button
- Volume adjustment and Monitoring





V. DiPANOS

Addressing through Main



- 2 Chimes and 3 Sirens
- MP3 and music files – play and limitless repeated play
- TTS(Text To Speech) addressing – male/female voice and multi-language selection





V. DiPANOS

(Edit Mode)

번호	방송 버튼명	이미지	사용 여부
1	Main	[Icon]	<input checked="" type="checkbox"/>
2	RES	[Icon]	<input checked="" type="checkbox"/>
3	LOCAL	[Icon]	<input checked="" type="checkbox"/>
4	CD	[Icon]	<input checked="" type="checkbox"/>
5	DVD	[Icon]	<input checked="" type="checkbox"/>

- Address group and environment setting
- Page addition
- Button creation (individual & group)
- Call Station setting
- NMS setting

● All system setting is available here





V. DiPANOS

Equipment Monitoring

DiPANOS 2009-12-28 오후 1:38:45

Home 편집모드 장비검색 예약설정 화재연동 방송내역 데이터백업 도움말

프론트웨어는 U-SOTEC 전용 방송 제어 소프트웨어입니다. 사용 시 불안전 사항이나 공급한 내용이 있으면 고객센터로 연락 주시기 바랍니다. 고객센터

번호	상태	장비명	장비타입	설치장소	MAC 주소	IP 주소	CH 1	CH 2
1	ON	KUT-NC08	Network Controller	부설연구소	00-60-2b-05-51-2e	192.168.100.3	Main	RES
2	ON	KUT-NA65	Network 8Ch Amp	부설연구소	00-60-2b-05-51-21	192.168.100.10	1 Channel	2 Channel
3	ON	KUT-NA65	Network 8Ch Amp	부설연구소	00-60-2b-05-51-21	192.168.100.20		
4	ON	KUT-FG04	Network 4Ch Amp	부설연구소	00-60-2b-05-51-21	192.168.100.22		
5	ON	KUT-FG04	Fire Gateway	부설연구소	00-60-2b-05-51-21	192.168.100.12		
6	ON	KUT-CS16	Central Call Station	부설연구소	00-60-2b-05-51-21	192.168.100.4		
7	ON	KUT-CS16	Local Call Station	부설연구소	00-60-2b-05-51-21	192.168.100.11		

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Real time equipment **ON/OFF status monitoring** and **channel information display** – linked to **NMS**





V. DiPANOS

Reserved Setting

The screenshot displays the '예약 설정' (Reservation Setting) window. On the left, a calendar for January 2010 is shown with a table of dates and days. Below the calendar is a table of reservations:

번호	예약명	방송주기	시작일	종료일
33	주기예약(매월)	매월	2009-12-21	2010-01-31

The main window contains fields for reservation details:

- 예약명: 주기예약(매월)
- 예약기간: 2009년 12월 21일 월요일 ~ 2010년 1월 31일 일요일
- 현재 시간: 13:25:42
- 시작 시간: 14 시 : 50 분
- 종료 시간: 00 시 : 00 분
- 종료 방법: 음원종료
- File lists: D:\WU-SOTEC\WDIPANOS\Wsound\W\사\내화재멘트.WAV
- 현재 등록된 지역: [부설연구소] 10옴프 - 1채널 ~ 8채널, [다목적전자(문사)] 20옴프 - 1채널 ~ 4채널, [부설연구소] 10옴프 - 1.2채널 ~ 5.6채널
- 예약 할 지역: [부설연구소] 10옴프 - 1채널

An inset window shows playback controls:

- Buttons: Stop, Play, Pause, Stop
- Play Time ~ End Time
- Status: 녹음 대기 중입니다.
- Buttons: 파일열기, 닫기

- Addressing at reserved time – daily, weekly and monthly
- Reservation mode : Repetition or Termination
- Direct Recording is available





V. DiPANOS

Fire Linkage

전지역 화재 정보 리스트

지역명	Data1	Data2	Data3	Data4
10오프 - 1채널	1	1	1	0
10오프 - 2채널	1	1	2	0
10오프 - 3채널	1	1	3	0
10오프 - 4채널	1	1	4	0
10오프 - 5채널	1	1	5	0
10오프 - 6채널	1	1	6	0
10오프 - 7채널	1	1	7	0
10오프 - 8채널	1	1	8	0
20오프 - 1채널	2	1	1	0
20오프 - 2채널	2	1	2	0
20오프 - 3채널	2	1	3	0
20오프 - 4채널	2	1	4	0

수신된 화재 Data 리스트

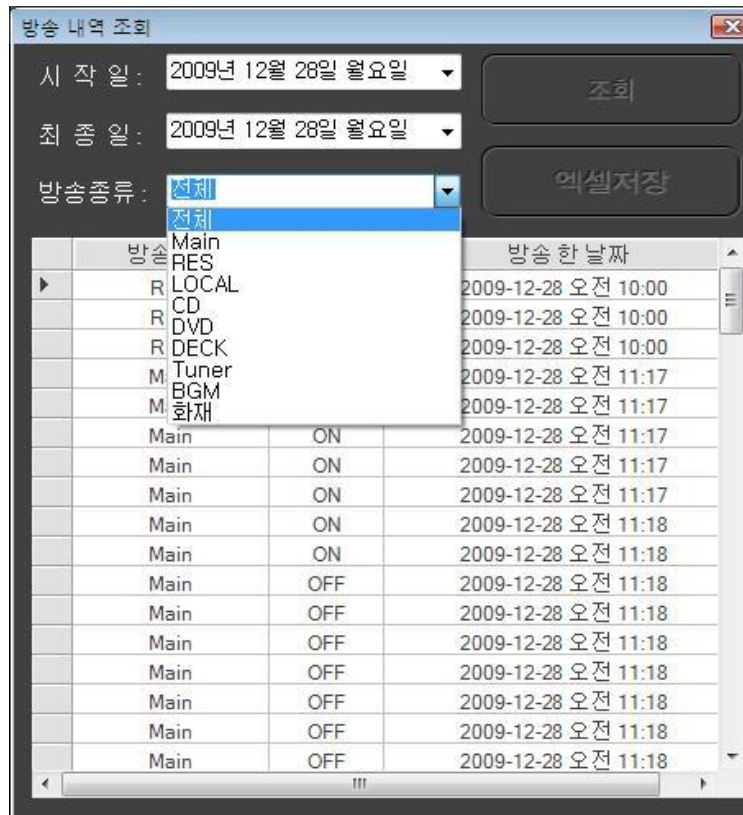
번호	시작시간	종료시간	상태	Data1	Data2	Data3	Data4
1	2009-07-20 오후 2:33	2009-07-20 오후 2:33	15	1	1	47	0
2	2009-07-20 오후 2:33	2009-07-20 오후 2:33	15	1	1	47	0
3	2009-07-20 오후 2:33	2009-07-20 오후 2:33	15	1	1	47	0
4	2009-07-20 오후 2:33	2009-07-20 오후 2:33	15	1	1	47	0
5	2009-07-20 오후 2:34	2009-07-20 오후 2:34	15	1	1	47	0
6	2009-07-20 오후 2:34	2009-07-20 오후 2:34	15	1	1	47	0
7	2009-07-20 오후 2:34	2009-07-20 오후 2:34	15	1	1	47	0
8	2009-07-20 오후 2:34	2009-07-20 오후 2:34	15	1	1	47	0
9	2009-07-20 오후 2:34	2009-07-20 오후 2:34	15	1	1	47	0
10	2009-07-20 오후 2:34	2009-07-20 오후 2:34	15	1	1	47	0
11	2009-07-20 오후 2:34	2009-07-20 오후 2:34	15	1	1	47	0
12	2009-07-20 오후 2:34	2009-07-20 오후 2:34	15	1	1	47	0
13	2009-07-20 오후 2:35	2009-07-20 오후 2:35	15	1	1	47	0
14	2009-07-20 오후 2:35	2009-07-20 오후 2:35	15	1	1	47	0
15	2009-07-20 오후 2:35	2009-07-20 오후 2:35	15	1	1	47	0
16	2009-07-20 오후 2:35	2009-07-20 오후 2:35	15	1	1	47	0
17	2009-07-20 오후 2:35	2009-07-20 오후 2:35	15	1	1	47	0
18	2009-07-20 오후 2:36	2009-07-20 오후 2:36	15	1	1	47	0
19	2009-07-20 오후 2:36	2009-07-20 오후 2:36	15	1	1	47	0
20	2009-07-20 오후 2:37	2009-07-20 오후 2:37	15	1	1	47	0

- Linkage to other areas in case of fire occurrence
- Display – Audible (siren) & Visible (flash, and fire icons)
- Display of fire information



V. DiPANOS

Inquiry on addressing contents

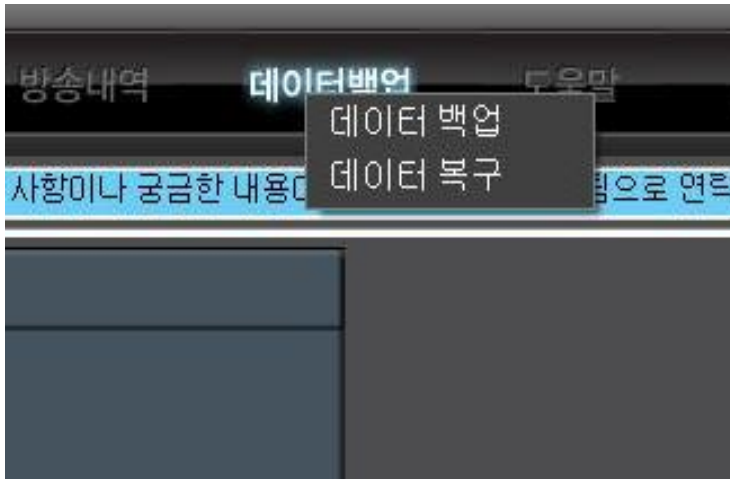


- Addressing contents display
- Inquiry within specific period
- Inquiry by addressing kind
- Contents saving by Excel file



V. DiPANOS

Data back up and recovery



- Display current status – **Back up** or **Recovery**
- Data back up – **Back up file creation by time**

ex> U-SOTEC(2009-12-21T15-31-49).sql





VI. Digital PA System Comparison



KARAK electronics company



VI. Digital PA System Comparison

Item	Digital PA)	Network PA (OTHERS)	Network PA (U – SOTEC)
CONFIG	Limit – Relay control	Limitless – S/W control	Limitless – S/W control
SPEED	9600 bps	50M bps	1Gigabit(Backbone) & 100M bps
CHANNEL	Need extension	Basic – 4CH	Basic – 8CH
EQUIP	LIMIT	LIMITLESS Extension	LIMITLESS Extension
VOLUME	Cannot controlled w/o equip	Cannot controlled w/o equip	Controlled with built in S/W
MIX	NIL	NIL	Built in S/W
Optical	NIL	OPTIONAL	Built in port
OS S/W	Simple Function	Composed of 3 programs – No GUI Touch S/W	Integrated S/W – GUI Touch S/W included
AMP	Cannot be controlled	Controlled – Zone setting	Controlled – Zone setting & VOL control
Safety	Disconnection –No addressing	Disconnection – Addressing	Disconnection – Addressing
Monitor	NIL	NIL	Available – NMS S/W
Layout	Cannot changed	Cannot changed	Changeable with S/W



VII. Reference Sites



KARAK electronics company

VII. Reference Sites

서울대학교



부산 외국어 대학교



대구경북과학기술원



주택공사 전북지사



아산병원



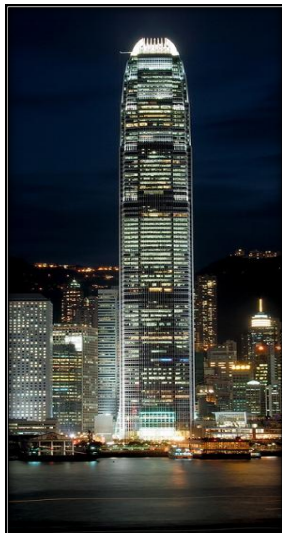
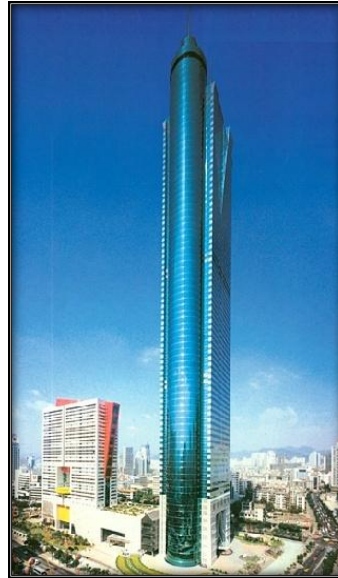
애경백화점





VII. Reference Sites

Skyscrapers



Airports



Theme Parks





VIII. Conclusion

[Benefits]

- ✓ Easy layout change with S/W according to site situation
- ✓ Real time monitoring with **NMS** in case of equipment/network trouble
- ✓ Suitable for skyscraper through **cable simplification**
- ✓ Integrated S/W – **System setting, monitoring and operation**
- ✓ **Fire. Earthquake and Disasters** – Addressing available even under cable disconnection status

[Core Technology]

- ✓ Multi Channel (**8CH**) support and Mixing (**DSP**)
- ✓ **AOIP** (KACP application)
- ✓ **Full Digital System** – for smart building
- ✓ **GRR(Gigabit Ring Redundancy)**
- ✓ Real time system monitoring thru **NMS**
- ✓ **DiPANOS** (Integrated S/W)





Q & A





Thank You

