

# GENIE

Base Stations BS1000, BS850

Remote Antennas RA100DW, RA100

Repeater RBS85

Ethernet Beltpack IBP10

Wireless Beltpack BP850, BP851

Wireless IFB Receiver WR850

Converged Intercom System

Genie Quick-Start Guide (Version V2230705)



**LaON** Technology

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## **Important Safety Information**

1. For Genie systems, to reduce the risk of electric shock, explosion or fire
  - Use only the supplied AC power adapter
  - Do not disassemble the product
  - Avoid contact with liquids besides the permitted certain equipment
  - Use only the proper type of battery and rechargeable battery supplied by the manufacturer
2. Battery Safety and Cautions
  - Do not charge with any other AC power adapter or charger.
  - Do not burn, disassemble, bend or short-circuit the battery.
  - Dispose of used up battery promptly and safely according to local regulations.
  - Keep battery away from children.
  - Do not short the metal contacts with electrically conducting material such as bracelets, keys, and etc.
  - Recommended battery storage temperature is -20 °C to 30°C for less than 1 year, -20°C to 40°C for less than 90 days, -20 °C to 50°C for Less than 30 days.
  - Recommended Battery charging temperature is 0°C to 40°C
  - Do not burn or expose batteries to excessive heat such as sunshine or other heat sources
  - When using alkaline or other maker's rechargeable batteries other than LaON provided rechargeable batteries, use the same batteries as packaged by the makers for the same specifications, related current and voltage. In case of using non-LaON provided rechargeable batteries, use the maker designated battery charger. Two or Four batteries to be used together by putting into the Battery Sled of LaON products should be managed to have the same residual time, life and recharged with same cycles. Using batteries together with different specifications and natures may cause damages on inner parts of the applicable LaON product and affect battery operating time.
3. Antenna Safety and Cautions
  - Use only manufacturer supplied antennas.
  - Antenna shall be mounted in such a manner to minimize the potential for human contact during normal operation. The external antenna should not be contacted during operation. The minimum separation distance of 7.9 inches (20 cm) from the antenna to the body of user required.

Genie system operates in the 5GHz UNII band frequency range. Genie system is approved for license free use in most countries. There may be restrictions on the use of some bands or RF spectrum operations in some countries. Therefore, it is your responsibility to confirm with the designated authorizer in your local area whether the equipment of the Genie system approved to use in your country or not.

### **NOTICE**

Illustrations, figures and images of this publication are only for explaining equipment's operations and functions and may roughly reflect the actual equipment.

Contact the designated distributors or retailers to avoid erroneous interpretations or language translations that may cause equipment malfunctioning.

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## **Section 1: Introduction**

**Genie is an interoperable 5Ghz wireless + IP Key Panel system.  
Key Panel, 'Matrix-free' IP network intercom system**

**Fully Scalable and Flexible Hybrid solution**

- **Genie Base Station BS1000: Wireless 70 Talk paths and 128 Listen paths**

Genie is the industry-first converged digital intercom system turning into a whole new creativity from a traditional concept of the intercom system. The Remote Antennas, Key Panels and Ethernet Beltpacks can all be connected through LAN or PoE (Power of Ethernet) to one Base Station while supporting the wireless Beltpack connections at the same time. By this boundaryless hybrid solution of wired or wireless, Genie offers a highly scalable and flexible system configurations and capabilities.

Genie provides easy-to-extend system structure from an initial small system to large scale system tier by tier upon the requirement. One Genie System (Solo) can connect 120 Ethernet Beltpacks or 60 Repeaters to 6 Remote Antennas. The 128 wireless Beltpacks connect to any Genie wireless device. The 70 Talk and unrestricted Listen paths are available on wired or wireless devices. And the GCM (or GCMW, GCMV2, Genie Configuration Manager) supports for an efficient and integrated management of the system by its easy setup of the configurations and various monitoring functions with full visibility.

GCM: Wireless device + Ethernet Beltpack + 20 Channel Key Panel Configuration

GCMW: Wireless device + Ethernet Beltpack + 20 Channel Key Panel + WAN Link Configuration

GCMV2: Wireless device + Ethernet Beltpack + 128 Channel Key Panel + WAN Link Configuration

Genie is a Daisy-chain connection enabled system that allows Remote Antennas and Ethernet Beltpacks are connected to the Base Station using a PoE transmitting both data and power. In view of system redundancy, loopback can also be set by building a ring connection and other linking topologies such as a Star and Tree connections are also available. These special features allow for the use of cat-5e STP cables to easily wire and install complex systems with a minimal workload.

### **Key Panel**

Genie Key Panels are 'matrix-free' IP network intercom system. It is also designed to be used in conjunction with Genie Base Station, an integrated system of IP intercoms and wireless Beltpacks. The Key Panels provide various audio paths such as the peer-to-peer communication paths and group key, interoperation with Genie group channels, Line (4-Wire or 2-Wire) connections, Line audio routings and configuring IFBs. By the interoperation between Genie wireless devices and Key Panels, the system provides an integrated 'matrix-free' IP networking intercom solution that comprises Ethernet Beltpacks, Wireless devices and Key Panels.

See Genie Key Panel User Manual.

### **1.1 System overview**

- Ethernet synchronization is applied between devices connected to the Ethernet, avoiding RF interference, packet loss, delay, and jitter among all devices being connected to the Ethernet.
- The GCMV2 (Genie Configuration Manager-Version2) enables setting and pairing, as well as monitoring each device's frequency data spectrum, links and battery status.

#### **Base Station BS1000**

- System configured by Base Station BS1000 + Remote Antenna RA100DW or RA100 + Ethernet Beltpack IBP10 + Wireless Beltpack BP850 or BP851 + Repeater RBS85.

One Base Station (Genie Solo) offer up to 60 Genie devices (Ethernet Beltpacks, Remote Antennas, Repeaters) and 128 wireless Beltpacks simultaneously. Up to six Remote Antennas (RA100DW, RA100) can be connected to each Base Station. And, up to 128 wireless Beltpacks and, 10 Ethernet Beltpacks or Repeaters can be connected to one Remote Antenna.

One Remote Antenna supports 10 Talk and 128 Listen paths. Even while multiple Talk channels of a device such as Ethernet Beltpack are in active, it only occupies one Talk path. Thus, one Base Station with six Remote Antennas offers up to 70 Talk paths for the wireless and Ethernet devices. However, for an instant, while the Ethernet Beltpack is talking with two Base Stations simultaneously, it occupies two Talk paths.

- With the configuration of three Base Stations (Genie Trio), you can increase these audio paths.

#### **Base Station BS850**

Base Stations BS1000 and BS850 have different connection capacities. The Remote Antenna is connected up to six to the BS1000, and up to three to the BS850.

- One Base Station BS850 (Genie Solo) offer up to 30 Genie devices (Ethernet Beltpacks, Remote Antennas, Repeaters) and 128 wireless Beltpacks simultaneously.
- With the configuration of three Base Stations (Genie Trio), you can increase these audio paths.

## Genie devices

Model	Description	Talk key	4W or 2W Lines	4W Lines	Daisy-chain PoE	PoE In	Relay	OPTO Input	Multi-Sync	Power Redundancy
BS1000	Base Station	8	2	2	2	1	2	2	O	(2xPSU)+PoE
BS850	Base Station	1		2					O	PSU
RA100DW	Remote Antenna Daisy-chain, IP53 sealing				2	1				PSU+PoE
RA100	Remote Antenna					1				PoE
RBS85	Repeater					1				PoE
BP850(851)	Wireless Beltpacks	2 (4*)								Battery
WR850	Wireless IFB Receiver									Battery
IBP10	Ethernet Beltpack	4			1	1				PoE

## Key Panels

Model	Description	Talk key	4-Wire	Daisy-chain PoE	LAN	PoE In	Relay	Opto Input	Format	Power Redundancy
GRP32	Rack Panel	32	4		2	1	2	2	2RU	(2xPSU)+PoE
GRP16	Rack Panel	16	4		2	1	2	2	1RU	(2xPSU)+PoE
GDP16	Desktop Panel	16	4		2	1	2	2	Desk/Wall	(2xPSU)+PoE
GRP8	Rack (Discontinued)	8	4	2		1	2	2	1RU	(2xPSU)+PoE
GRP8-12V	Rack Panel	8	4		2	1	2	2	1RU	(2xPSU)+PoE
GDP4	Desktop/Wall Panel	4				1			Desk/Wall	PoE
GLR4	Line Router		4		2	1			1RU	(2xPSU)+PoE
GWL	WAN Link		4		2	1			1RU	(2xPSU)+PoE

### Talk keys of the Key Panel

Description	GRP32	GRP16/GDP16	GRP8-12V	GDP4
Talk keys	32	16	8	4
Shift keys		16	8	X
Pages	4	4	4	X
Talk channels in one Group key	20	20	20	20

## Genie system capacity

Description	Base Station BS1000	Base Station BS850	Remote Antenna RA100	Repeater RBS85
Connections of Remote Antenna RA100	6	3		
Connections of Repeater RBS85	60 (6 Remote Antenna)	30 (3 Remote Antenna)	10	
Connections of wireless Beltpack (BP850, BP851)	128	128	128	128
Connections of Ethernet Beltpack IBP10	120(6 Remote Antenna)	60 (3 Remote Antenna)	20	
Talk paths	70 (6 Remote Antenna)	40 (3 Remote Antenna)	10	10 with RA100
Listen paths	Min 128	Min 128	Min 128	Min 128
Description	Connections			
Recommended multiple Base Stations	Up to 5			
Base Stations paired with BP850, BP851	Up to 5			
Base Stations paired with IBP10	Up to 2			

## Genie main features

LaON's patent-technology based Genie offers the best audio quality with an excellent clarity by using 5GHz UNII band and RF interference avoidance technologies. It guarantees the system stability even in large site environments where various A/V and wireless equipment are co-located. Highly scalable Ethernet-based Remote Antenna RA100DW can transmit power and audio data. With the deployment of the multiple Remote Antennas and Repeaters, the antenna coverage area can amazingly be extended.

- **Converged intercom system: Hybrid IP intercoms and wireless Beltpacks on one Base Station**  
One Base Station, with wireless Beltpacks, Ethernet Beltpacks, Ethernet Beltpacks and Genie Key Panels.
- **License-free 5GHz UNII BAND**  
5GHz UNII Band, the worldwide license-free frequency band provides up to 29 RF channels depending on the regions as opposed to few RF channels on 2.4GHz ISM band. Therefore, users can enjoy pleasant wireless communications with even less traffics or RF interferences. With the advantages of high frequency band, the system is also hardly affected by high-power digital equipment such as amplifiers and speakers.
- **Super-scalable Ethernet Remote Antenna(RA100DW or RA100) and Repeater(RBS85) solutions**  
Remote Antennas and Repeaters dramatically increase antenna coverage areas. Using standard LAN network, you can easily integrate multiple studios or floors by adding a Remote Antenna or Repeater to each antenna coverage area. Base Station BS1000 and Remote Antenna RA100DW provide PoE for an efficient power supply. Automatic roaming is available between a Base Station, Remote Antennas and Repeaters. Up to 128 wireless Beltpacks and, 22 Ethernet Beltpacks or Key Panels can be connected to one Remote Antenna. Up to 10 Repeaters can be connected to one Remote Antenna.

- **Ten Talk paths and unrestricted Listen paths per Base Station or Remote Antenna**  
Each Base Station or Remote Antenna provides 10 additional Talk paths and unrestricted Listen paths. Therefore, one Base Station BS1000 with six Remote Antennas provides up to 70 Talk paths and unrestricted Listen paths for the wireless Beltpacks or Genie IP devices.
- **128 wireless Beltpacks connect to any Genie Antenna device**  
The 128 wireless Beltpacks connect to any Genie Antenna device (such as the Base Station, Remote Antenna, Repeater) without limitation.
- **Ethernet synchronizations**  
Ethernet synchronization avoids RF interference, packet loss, delay, and jitter between devices. Ethernet synchronization applies to all Genie devices which are connected on the Ethernet.
- **Industry-top level audio quality**  
23ms low latency and 7.2KHz audio bandwidth ensure high-quality audio performance.
- **Five Genie group channels on the wireless Beltpack**  
Five Genie group channels can be set to the wireless Beltpack. Each Genie group channel can be selected to open the talk/listen path. The simultaneous talk/listen function also provides, there are four simultaneous Genie group channels for the BP851, two simultaneous Genie group channels for the BP850. These features provide level control for each Genie group channel.
- **Wireless Beltpack in Master mode**  
One of all wireless Beltpacks can be set as a Master Beltpack. 128 Wireless Beltpacks can communicate using this Master Beltpack without a Base Station.
- **Line interfaces: 4-Wire, 2-Wire and auxiliary I/O**  
Line input and output ports are provided to secure seamless connections with wired intercom systems, external audio devices etc.
- **GCMV2 (Genie Configuration Manager) for setting and monitoring**  
With GCMV2, users can pair and set each device over the Ethernet connection and monitor the connectivity status of each device. In the monitoring function, the battery and microphone level of the wireless Beltpacks, and the RSSI (Received Signal Strength Indication) of each Antenna in its place are displayed.
- **Top security with AES 256 bits level 3 encryption**  
Confidential communication is secured with AES 256-bit level 3, highest encryption technology.
- **Various options on battery**  
Either LaON provided rechargeable battery pack or AA type Alkaline battery with LaON designated battery Sled can be used for supplying power to the Beltpack. Also, commercial rechargeable battery which meets the specification can be used with the LaON provided battery Sled.
- **Efficient 7 or 8 ports chargers**  
The BATCHG125 charger has five bays that can charge the Beltpack with the battery pack inserted. And, there are 2 bays for charging the battery pack BAT50. The BATCHG225 charger provides eight bays for charging battery packs and eight storages.
- **Compact design**  
A compact Beltpack with internal antennas supports high level of mobility with a comfortable headset during harsh broadcasting and event operations.
- **LaON In-house technologies and solutions**  
LaON has developed all LaON intercom systems by using its own wireless SoC and patent-based technologies. Based on its know-how and comprehensive experience, LaON is able to offer various communication solutions as well as flexible and timely service for customer satisfactions with a top priority.

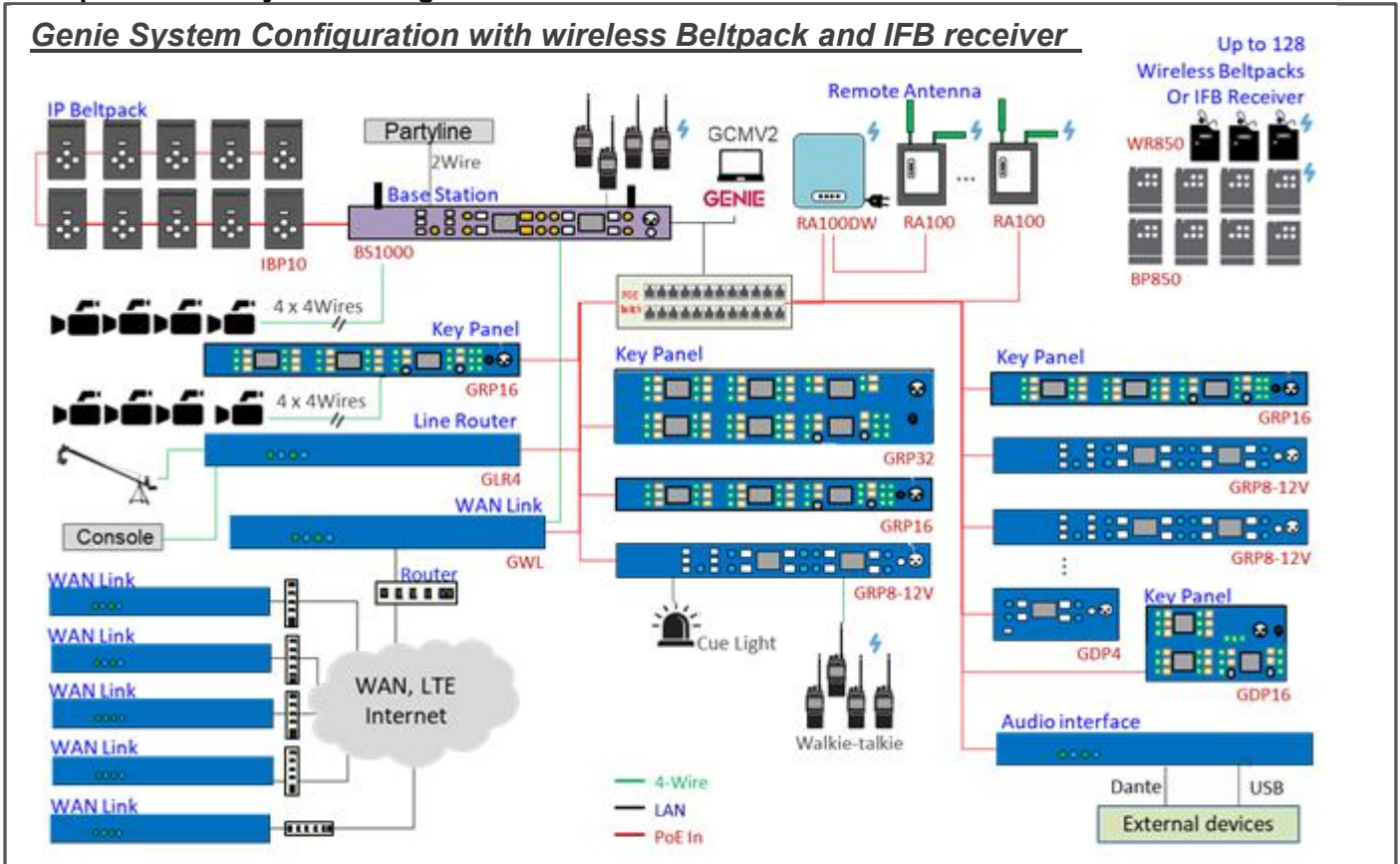


## 1.2 Example of using Genie system

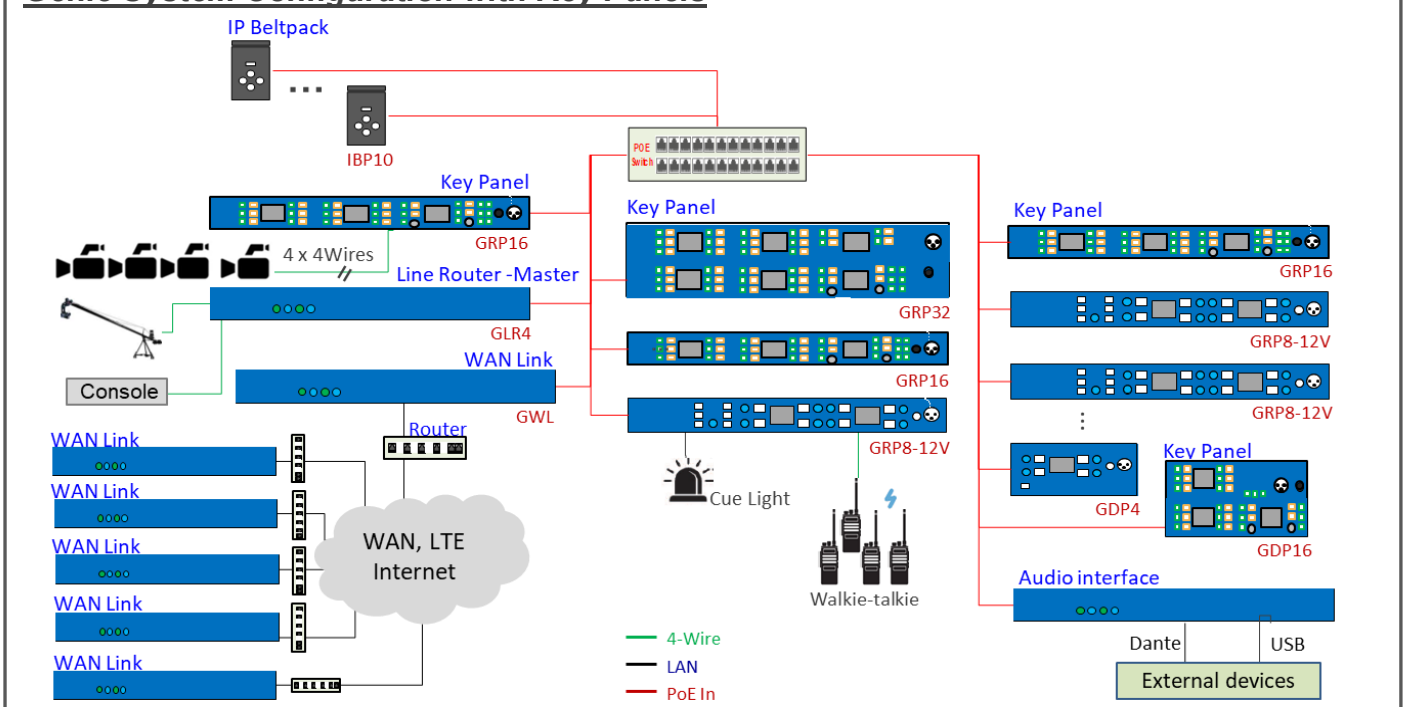
### Using Remote Antennas and Repeaters

- Three or six Remote Antennas can be connected to each Base Station. And up to ten Repeaters (or 22 Ethernet Beltpacks, Key Panels for wireless connection) can be connected to one Remote Antenna. With the industry standard LAN network configuration, multiple studios or multi-floor sites can be easily consolidated.
- Base Station BS1000 and Remote Antenna RA100DW provide very efficient functions such as PoE and Daisy-chain connections. The Remote Antenna RA100 does not provide Daisy-chain connections.
- 128 wireless Beltpacks can roam freely between antenna coverage zones.
- The system allows various types of network connections such as fiber-optic cable, PoE and Daisy-chain.
- Redundant system and WAN solutions are available.

### Example of Genie system configuration

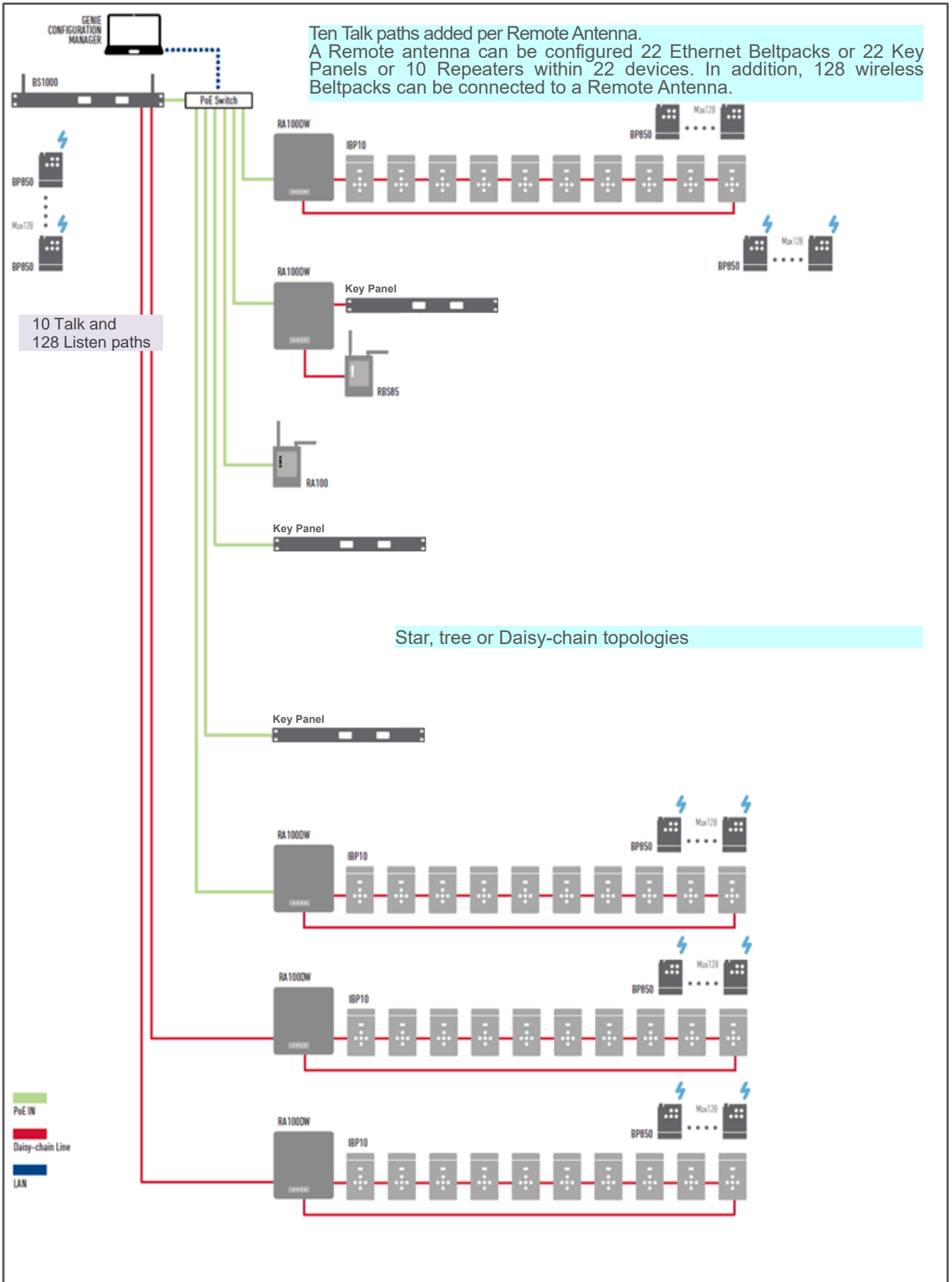


### Genie System Configuration with Key Panels



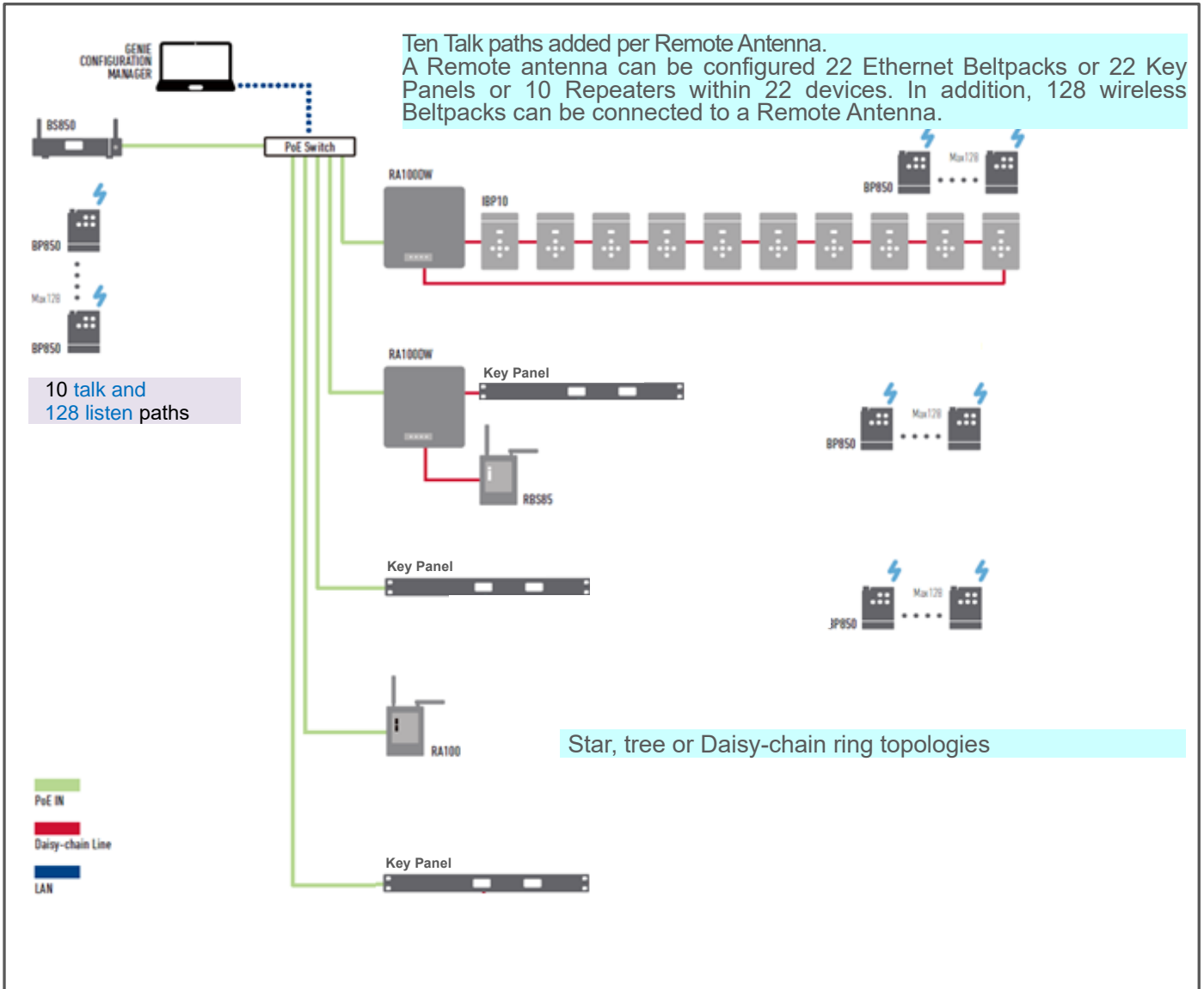
## Base Station BS1000

- Using one Base Station BS1000, it consists of 6 Remote Antennas (RA100DW or RA100) + 128 Ethernet Beltpack IBP10s or Key Panels (or 60 Repeater RBS85s) + 128 wireless Beltpack BP850s.



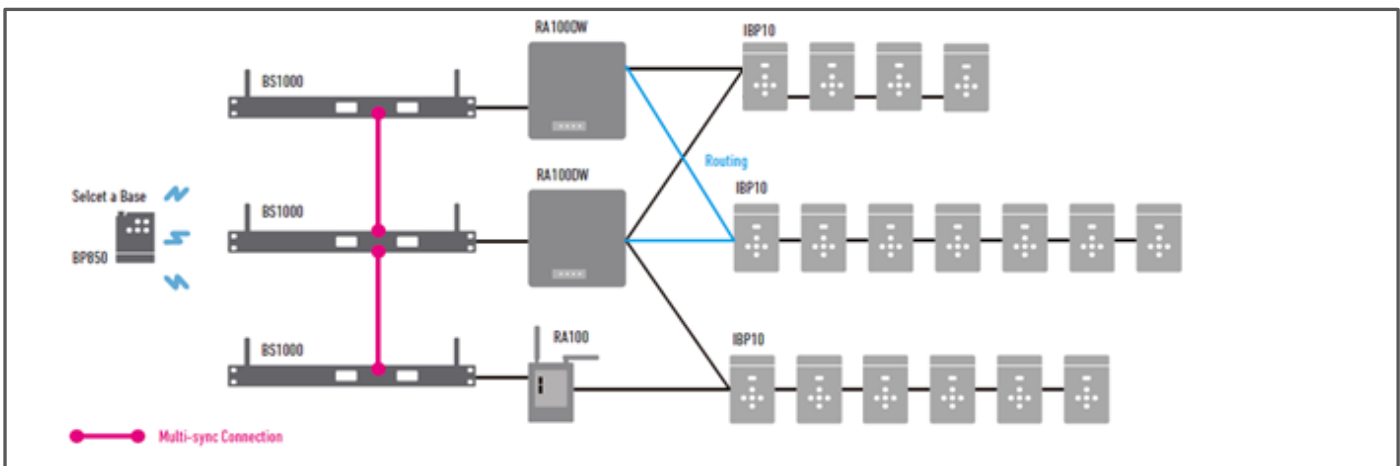
### Base Station BS850

- Using one Base Station BS850, it consists of 3 Remote Antennas (RA100DW or RA100) + 66 Ethernet Beltpack IBP10s or Key Panels (or 30 Repeater RBS85s) + 128 wireless Beltpack BP850s.

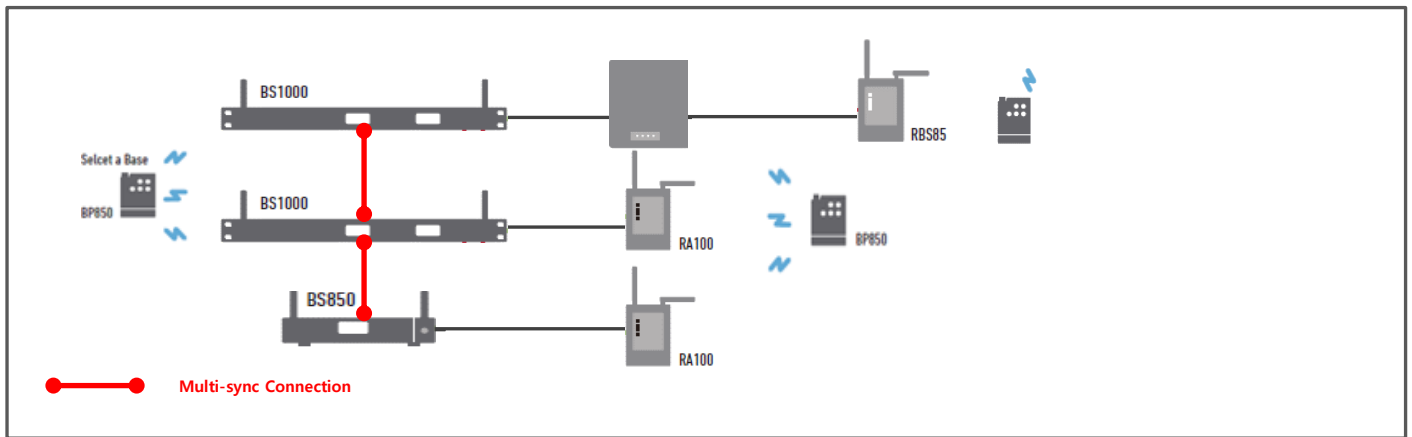


### Genie Trio system

You can configure Genie Duo with 2 Base Stations and Genie Trio with 3. Up to five Base Stations can be connected to configure. This configuration allows wired and wireless connectivity Genie devices to be used more than twice as much.



## Multi-Sync connections for Ethernet synchronizations

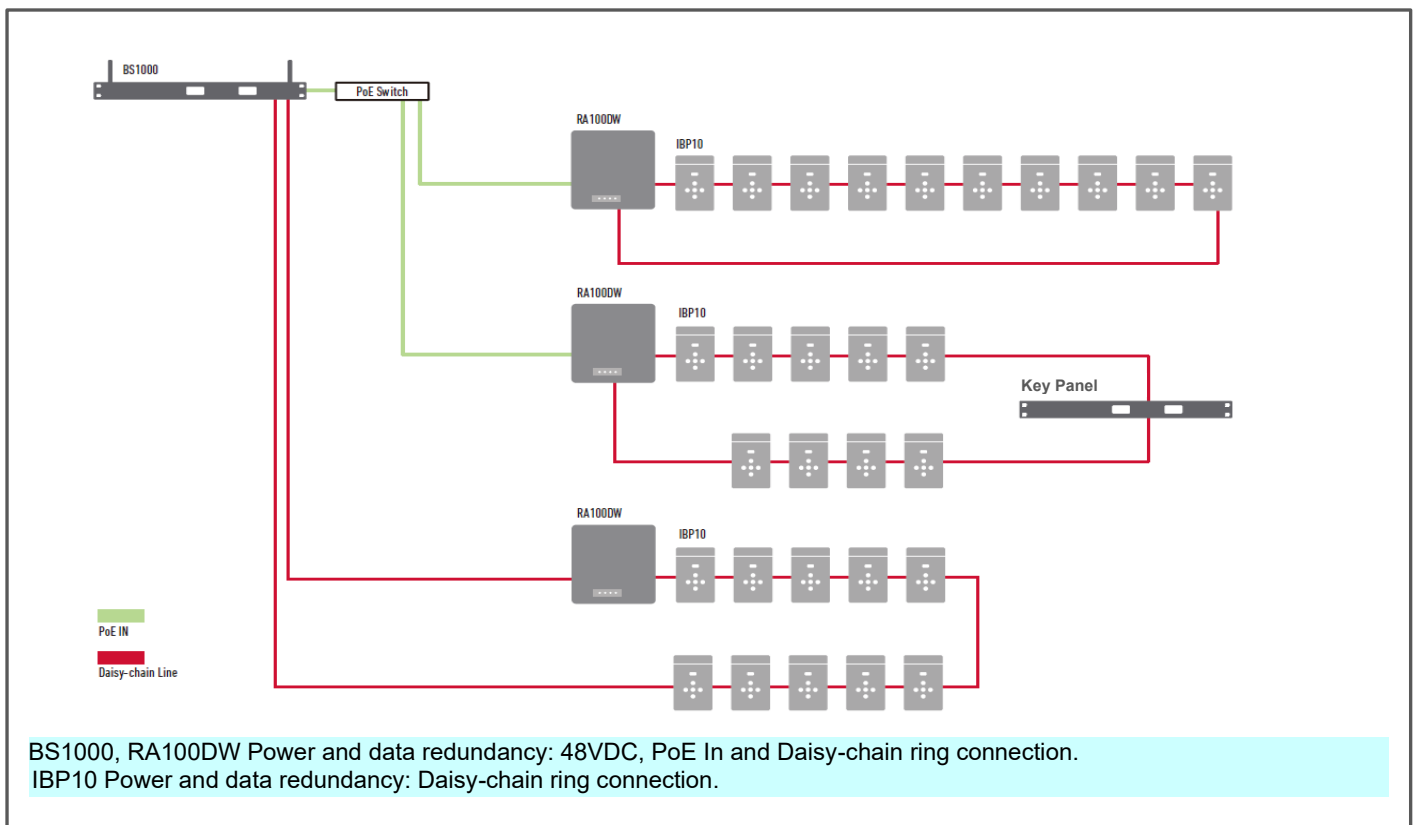


Genie is designed to use multiple Base Stations, Remote Antennas and Repeaters in one antenna coverage area. Multi-Sync connections between Base Stations are required for the smooth coexistence of these Genie devices. Wireless Beltpacks can be used by selecting a Base Station. This configuration allows wired and wireless connectivity Genie devices to be used more than twice as much.

## Genie Connections

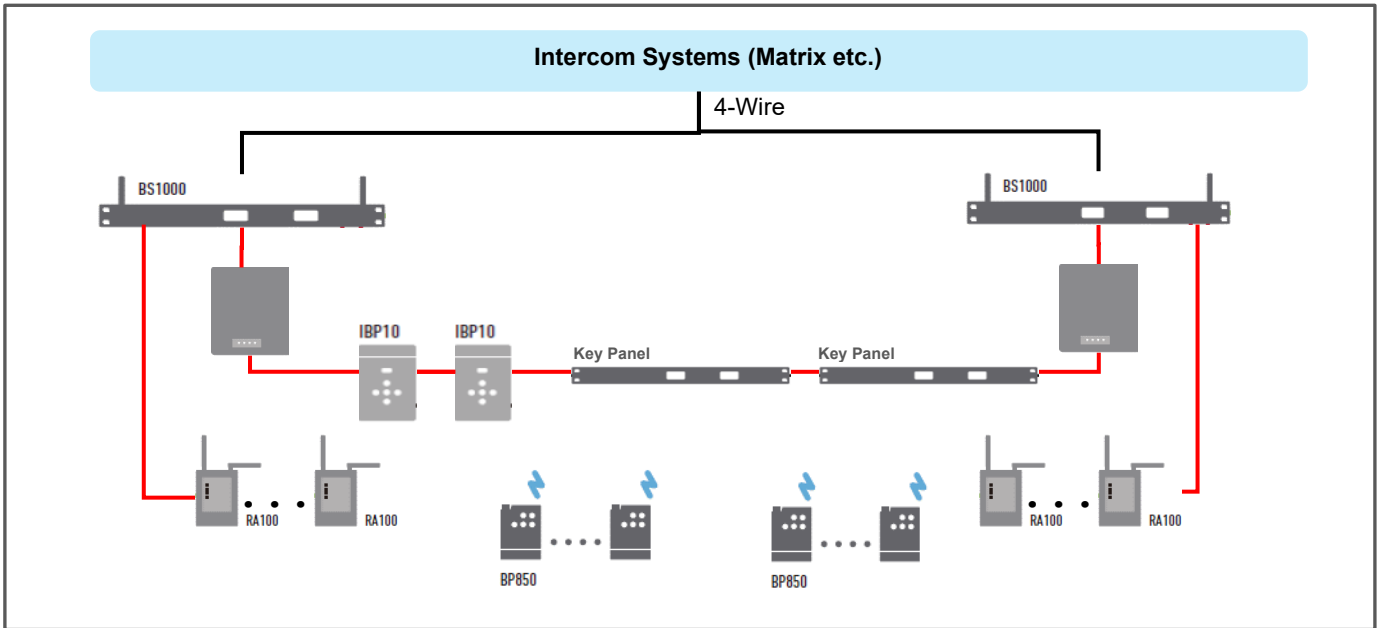
Genie devices can be connected in several different ways.

### Daisy-chain ring configuration (Power and data redundancy)



**Configures a redundancy system (This has been applied to BS1000 version V4030)**

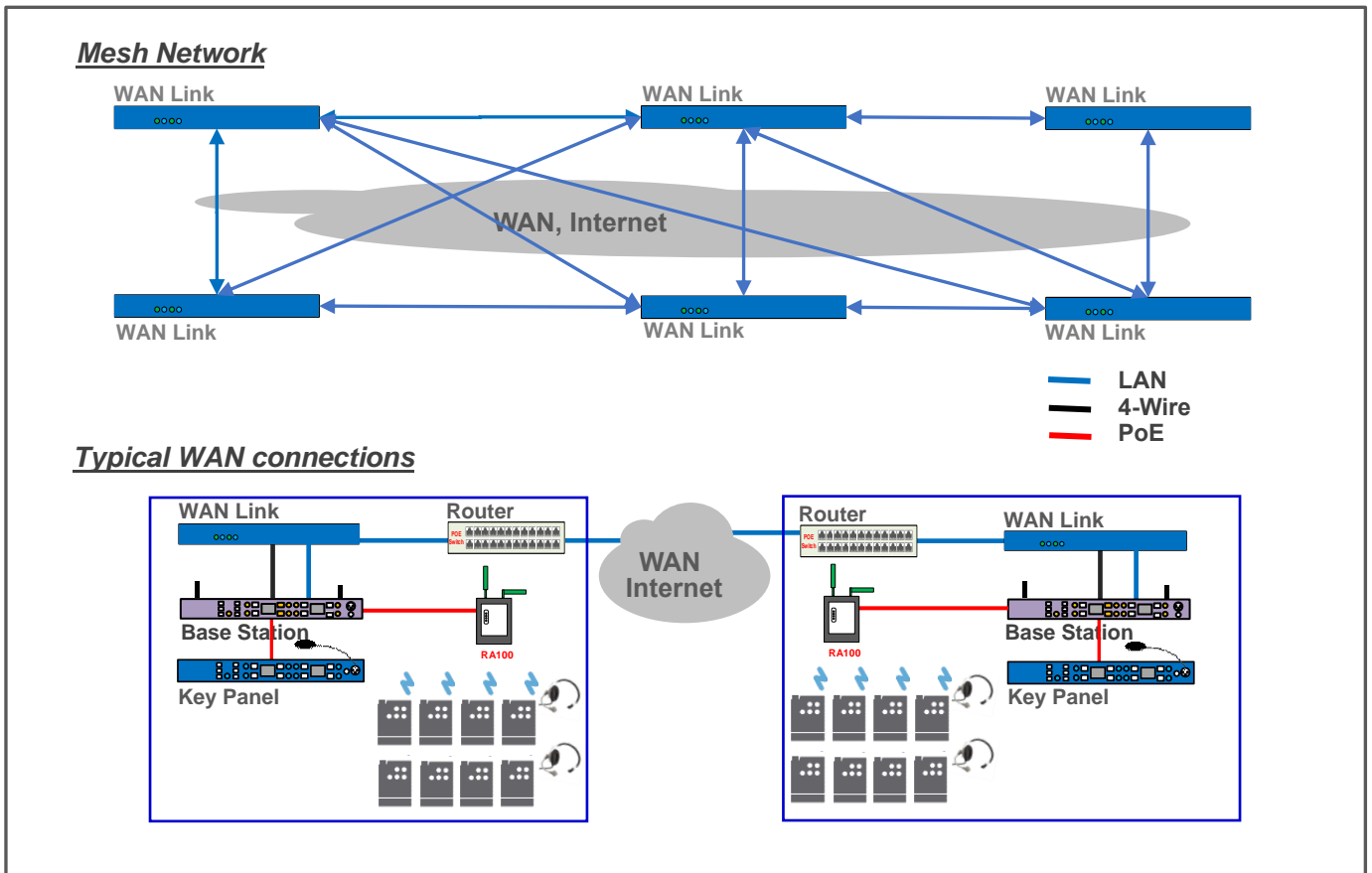
The redundancy system consists of a redundancy setting and a Genie Duo system and daisy chain ring connection. One Base Station BS1000 or Remote Antenna in monitoring mode monitors for failure of another Base Station or Remote Antenna. When a fault occurs, it automatically changes from monitoring mode to normal operating mode.



**WAN connections**

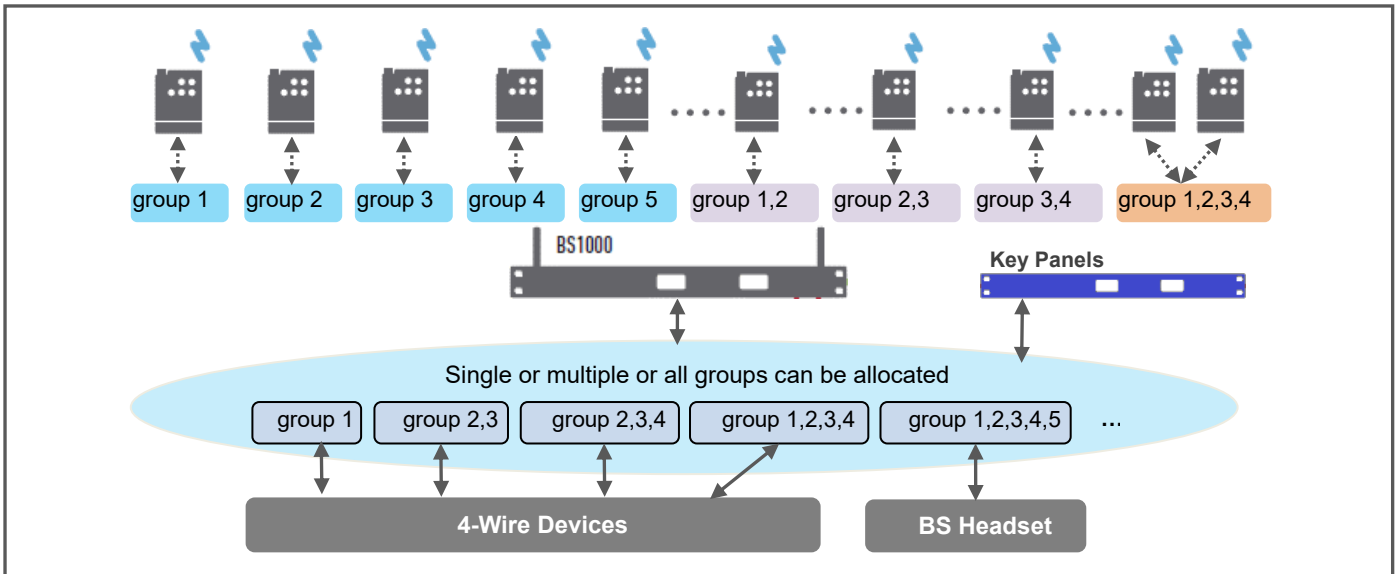
WAN Links establish a robust mesh network when transporting audio. Six WAN Links can be connected to any other WAN Link. Communication is possible between the wireless Beltpacks of Base Stations connected to the Line (4-Wire) of each WAN Link. Peer to Peer communication is also possible between the Key Panel connected to any WAN Link.

For more information, see WAN Link User Manual.



### Genie group channels (Conference mode)

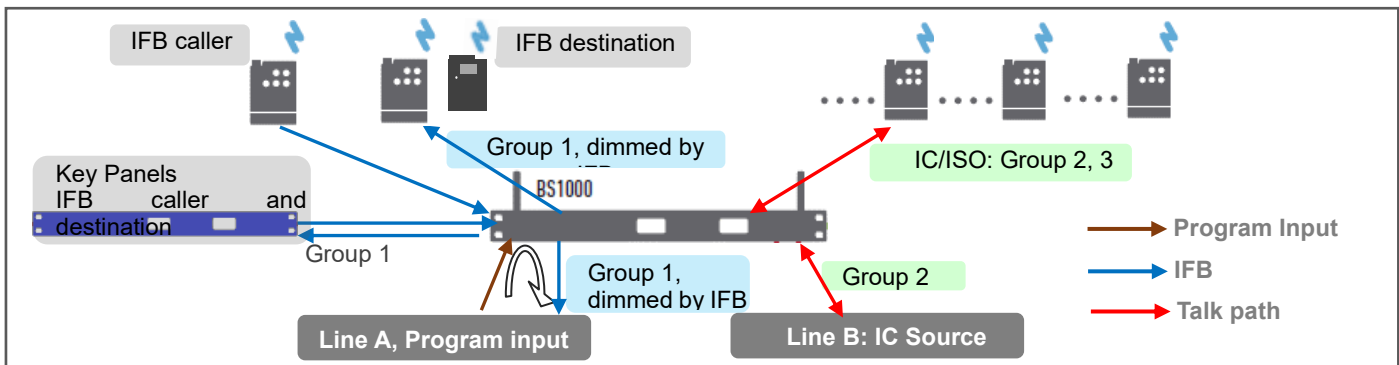
- Single or multiple Genie group channels up to five can be allocated flexibly to each device.
- Since the Genie group channels can be allocated to the 4-Wire and auxiliary devices, a system supports various communication ways such as IFB as well as IC and ISO.
- Wireless Beltpack users can communicate with two (BP850) or four (BP851) Genie group channels at the same time. It also provides the function of the Talk to All.



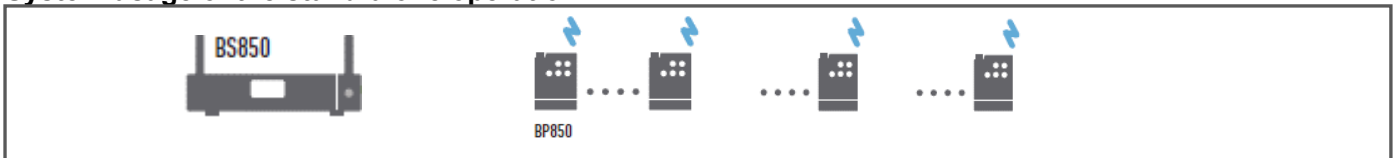
### IFB and IC/ISO communications in one system

With the GCMV2 setting of the Base Station BS1000, you can specify the IFB group channel and dim level of the Program audio (Program input). With this setting on the BS1000, when an IFB path is created on a Genie group channel set as the Program audio, the Program audio is dimmed and mixed with IFB audio. With this function, the wireless Beltpack may be used as the IFB caller or destination. You can also apply IFB to set up to send Line input audio back to Line output. **(This has been applied to BS1000 version V4030)**

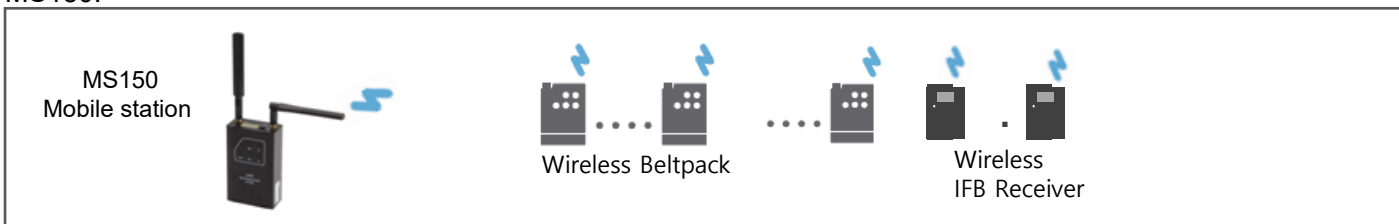
With this feature of Genie, you can conveniently use the wireless IFB receiver as an IFB destination



### System usage of the stand-alone operation



You can use the MS150 Mobile Station or Base Station (BS1000, BS850) to form an independent IFB system. When using the MS150, the function to adjust the program audio dim (or Mute) when an IFB path is created on a Genie group channel set to Program audio is not provided, but an external microphone can be connected to the MS150.





## Section 2: Product overview

### 2.1 Genie equipment

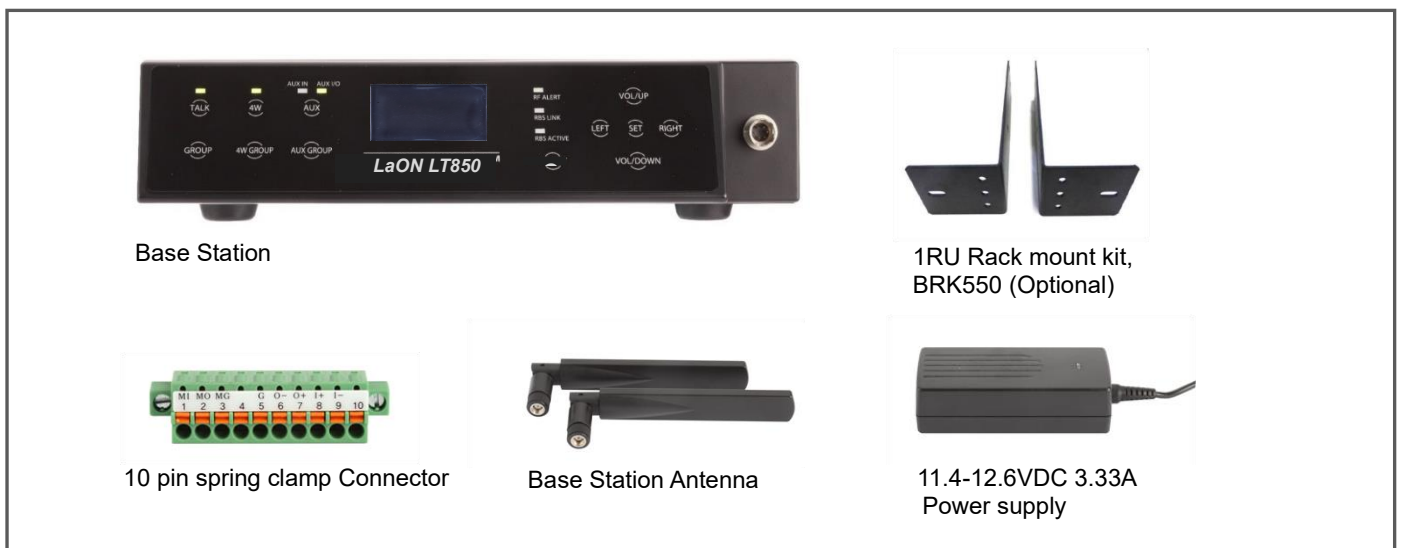
#### Base Station BS1000 equipment



- Rear panel: 2 Antennas, 4 Lines (4-Wires with 2 x 2-Wires and null control), 2 Multi-Sync, SA, 2 Relays and 2 Opto-isolated inputs, I/O with 12VDC, PC Programming (Firmware), PoE In, 2 Daisy-chain ring PoE Lines (PoE standard power and data), 2 Power input 48VDC
- Front panel: Power switch, loudspeaker, gooseneck Mic, Headset connector (6pin Mini-Din Receptacle) Master Volume with Push to Select, SPKR/Mic/RMK/TTA/ SA and Menu buttons, 8 Talk keys, 8 Volumes with push to call, 2 OLED displays
- Power and data redundancy: 2 x 48VDC, PoE In and Daisy-chain ring connection

**Note:** It is recommended to connect the ground wire from the chassis ground screw to earth ground.

#### Base Station BS850 equipment



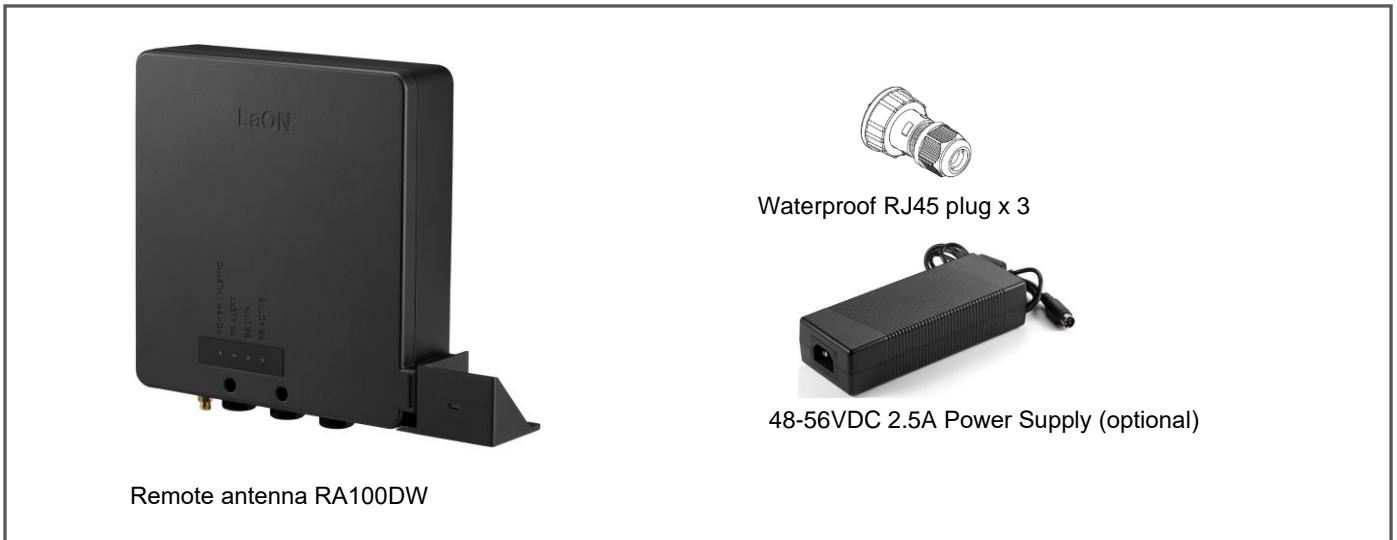
- Rear panel: 2 Antennas, Line (4-Wire), AUX I/O, Multi-Sync, LAN, 8ohm Speaker, Power switch
- Front panel: Talk key, 4-Wire enable button, AUX enable button, Select Group buttons, Call button, Set/Up/Down/Left/Right buttons, Headset connector (6pin Mini-Din Receptacle), OLED display

**Note:** It is recommended to connect the ground wire from the chassis ground screw to earth ground.



**Remote Antenna RA100DW equipment**

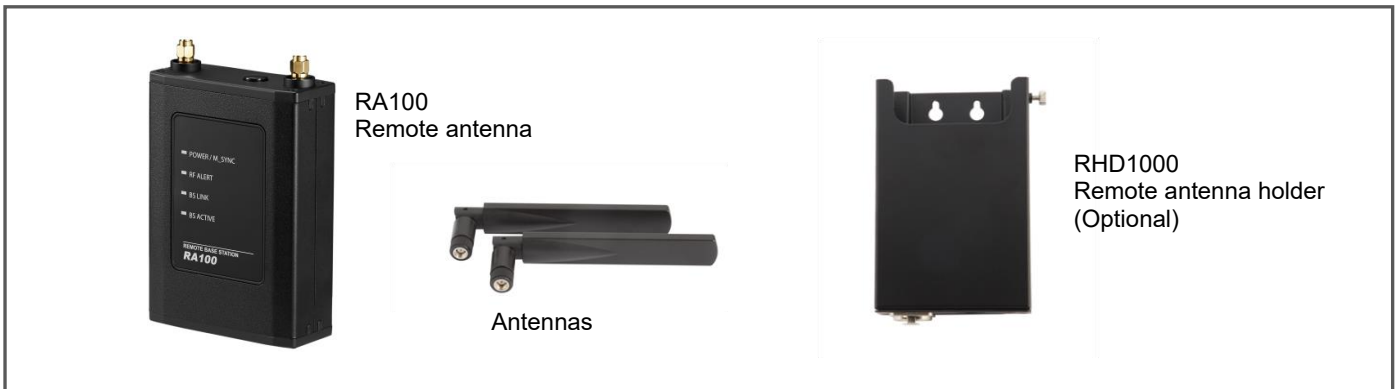
- Can be configured with Base Stations BS850 or BS1000.
- IP53 sealing (Dust + water spray at up to 60° from vertical) and antennas are mounted internally. (IP65 sealing when fixing the power rubber cap with waterproof adhesive)
- Power and data redundancy: 48VDC, PoE Input and Daisy-chain ring connection.



- PoE Input (1Gbps/100Mbps), 2 Daisy-chain ring PoE Lines (PoE standard power and data), 48VDC, Multi-Sync
- Install them on the wall or camera tripod or microphone/light stand with interfacing screws, M6 and Kensington lock

**Remote Antenna RA100 equipment**

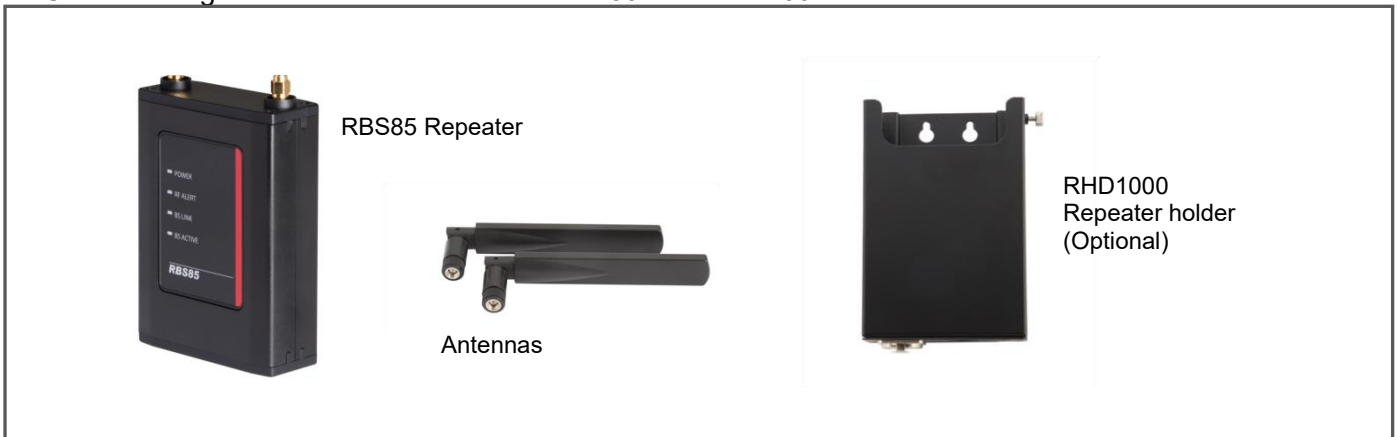
- Can be configured with Base Stations BS850 or BS1000.



- PoE Input

**Repeater RBS85 equipment**

- Can be configured with Remote Antenna RA100DW or RA100.

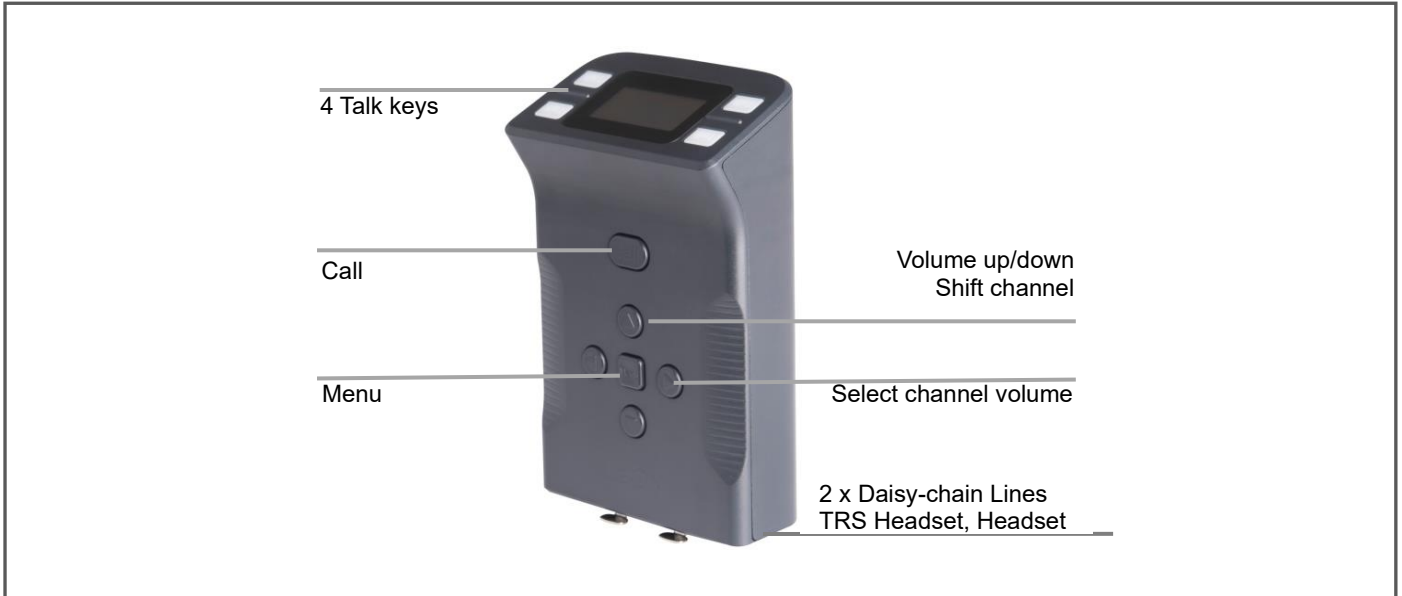


- PoE Input

**Remote Antenna and Repeater holder:** Insert a RA100 and fix it with a screw on the holder. Connect the LAN cable by using the 'Push-Pull Locking' type EtherCON connector on the bottom of the holder. Install them on the wall or camera tripod or microphone/light stand with interfacing screws.

**Ethernet Beltpack IBP10 equipment**

- Can be configured with Base Station BS850 or BS1000 through the Remote Antenna.
- Power and data redundancy: Daisy-chain ring connection.



- Two Daisy-chain ring PoE Lines (PoE standard power and data), Headset connector (6pin Mini-Din Receptacle), 3.5Ø TRS Headset connector
- OLED display, 4 Talk keys, 2 x Volume buttons (Channel shift), 2 x Volume Shift, Menu button, Call button

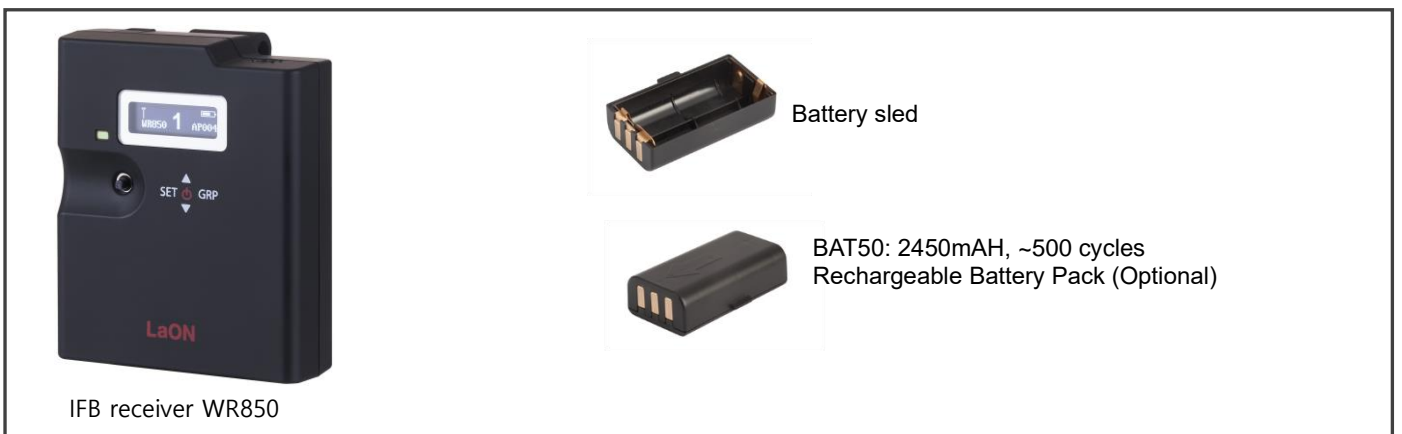
**Wireless Beltpack BP850 (2 channels), BP851 (4 channels) equipment**

- Can be configured with Base Station (BS850, BS1000) or Remote Antenna or Repeater
- Optional IP65 sealing (Adopting IP67 waterproof headset connector.)



**Wireless IFB Receiver WR850 equipment**

Connects to a base station (BS850, BS1000), remote antenna, repeater, or mobile station (MS150).



## Battery charger equipment



BATCHG225 Battery Charger



BATCHG125 Battery Charger



15VDC 8A Power Supply

## Headset and microphone



LSH-S125D (Dynamic)



LMH-125D (Dynamic)



LMH-10 (Dynamic)



LNH-20D (Neckband, Dynamic)



PTE-850 (Electret)



LME-880 (Earphone)



GM8 (7.5inch, Electret)

GM26 (Telescoping 17.5~26inch, Electret)

## 2.2 Menu maps

### Genie Configuration Manager-Version 2 (GCMV2)

Menu	Setting window	Descriptions
Pairing	128 channel Key Panels and all Genie devices	Set and pairing
Monitoring	128 channel Key Panels and all Genie devices	Monitoring, Change some settings

### Base Station BS1000 menu

Normal menu	Main menu	Sub menu and Screen 2
Display four Group labels.		Screen 2: Display Base Station's label, Radio Tx on/off status, Master/Slave status, Model, firmware version, Paired date
Each Channel Listen level	<b>Set Gains:</b> Setting the levels	<b>GN Mic:</b> Gooseneck microphone level <b>HS Mic:</b> Headset microphone level <b>SA:</b> Stage announce level <b>A In:</b> Line A input level <b>A Out:</b> Line A output level <b>B In:</b> Line B input level <b>B Out:</b> Line B output level <b>C In:</b> Line C input level <b>C Out:</b> Line C output level <b>D In:</b> Line D input level <b>D Out:</b> Line D output level
	<b>Pair Belt:</b> Pairing the Beltpack	Edit Beltpack label, groups. Pair Beltpacks to the Base Station.
	<b>Set Base:</b> Set the Base Station BS1000	<b>GN ELECT DYN:</b> Select gooseneck Mic as Electret or Dynamic <b>Call Tone On Off:</b> Enable or disable call tone. <b>LowCut Off -3 -6:</b> Reduce the low frequency -3dB or -6dB. <b>VOX Level #:</b> Set the VOX level. <b>Latched Talk</b> <b>1 2 3 4 5 6 7 8:</b> Set the latched Talk channels. <b>Sidetone Option</b> <b>Track Non-Track:</b> Set sidetone Tracking or non-tracking <b>A 4-Wire 2-Wire:</b> <b>B 4-Wire 2-Wire:</b> Select the type of Line A and Line B to 4-Wire or 2-Wire. <b>Screen Save ###:</b> Setting the display off time period, Range: 10~900 minute <b>RF-TX On Off:</b> Enable or disable radio transmission <b>Indoor-RF On Off:</b> Enable or disable Indoor radio <b>Multi-BS MST SLV:</b> Set as Master or Slave Base Station <b>Redundant #:</b> Enable or disable redundancy system.  <b>A G12345</b> <b>B G12345</b> <b>C G12345</b> <b>D G12345:</b> Set a Group or Groups for Line A, B, C, and D. <b>OPTO1 T12345678:</b> Assign the Opto1 input to Talk channels. <b>OPTO2 T12345678:</b> Assign the Opto2 input to Talk channels. <b>Relay1 T12345678)</b> <b>Relay2 T12345678:</b> (This has been applied to BS1000 version V3516) Set Relay1 or Relay2 to Talk key.  <b>T1 G12345 ABCD</b> <b>T2 G12345 ABCD</b> <b>T3 G12345 ABCD</b> <b>T4 G12345 ABCD</b> <b>T5 G12345 ABCD</b> <b>T6 G12345 ABCDR</b> <b>T7 G12345 ABCDR</b> <b>T8 G12345 ABCDR:</b> Set the Talk channels  <b>G1 Label LaON001</b> <b>G2 Label LaON002</b> <b>G3 Label LaON003</b> <b>G4 Label LaON004</b> <b>G5 Label LaON005</b> <b>A Label LaON006</b> <b>B Label LaON007</b> <b>C Label LaON008</b> <b>D Label LaON008:</b> Displays the labels for five Groups and four Lines.
	<b>Reset Belt Label</b>	<b>Reset Belt Label</b> <b>No Yes</b>
	<b>Reset Belt Group</b>	<b>Reset Belt Group</b> <b>No Yes</b>

## Base Station BS850 menu

Normal menu	Main menu	Sub menu 1	Sub menu 2
Display Headset Group, Lock status AUX I/O Group, 4-Wire Group, Tx on/off status Master/Slave status Base Station Label Date paired from GCMV2	Main Menu's item is as follow	Sub menu's item is as follow	
	<b>Set Gains:</b> Set levels Setting the levels	<b>Speaker #:</b> headset volume level <b>Mic #:</b> microphone level <b>Sidetone #:</b> sidetone level <b>AUX In #:</b> Auxiliary input level <b>AUX out #:</b> Auxiliary output level <b>4WSND #:</b> 4-Wire send level <b>4WRCV #:</b> 4-Wire receive level	
	<b>ScrSave:</b> Screen save Setting the display off time period	<b>Screen Save ###:</b> Range: 10~900 minute	
	<b>RMK:</b> Remote Mic kill Mute remote microphones	<b>RMK Line Wireless:</b> Line: IBP10 Wireless: BP850 and BP851	
	<b>RA:</b> Remote Antenna Show link status for Remote antennas.	<b>RA:</b> Remote Antenna # <b>Link:</b> Link status	
	<b>PairBelt:</b> Pair Belt Pairing the wireless Beltpacks	<b>BPK#:</b> Edit BP 850 Registration count	
		<b>Label/Group/Pair:</b> Edit wireless Beltpack Labels and usage Groups	Edit Beltpack label, groups. Pair Beltpacks to the Base Station.
		<b>Reset:</b> Reset wireless Beltpack labels or groups	<b>Reset Belt Label or group</b>
	<b>SetBase:</b> Set Base Set the Base Station	<b>Set Group:</b> Set the usage group for base station	<b>Talk Group:</b> Headset usage Groups <b>AUX Group:</b> AUX usage group <b>4W:</b> 4-Wire usage group
		<b>Set RF:</b> Set which radio channel to use.	<b>TX On Off:</b> Turn off wireless transmissions. <b>Indoor RF On Off:</b> Set which radio channel to use
		<b>VOX Level:</b> Set the VOX level.	<b>VOX Level #:</b>
	<b>Multi-BS:</b> Multi Base Set as Master or Slave Base Station	<b>Primary On Off:</b>	

## Ethernet Beltpack IBP10 menu

Normal menu	Main menu
Display four Group labels.	Display Beltpack's label, Linked Base Station labels, Model, firmware version,
Each Channel Listen level	Main menu's item is as follow
	<b>Sidetone:</b> Sidetone level <b>Microphone Gain:</b> Headset microphone level <b>TRS Volume:</b> TRS headset volume level <b>TRS Mic:</b> TRS headset microphone level <b>Talk1 ~ Talk8 LaON001 11:</b> Displays the settings of the Talk channels <b>Rotate Display:</b> Select Rotate Display <b>Screen Save ### Min:</b> Setting the display off time period, Range: 10~900 minute <b>Call Tone Enable Disable:</b> Enable or disable call tone. <b>Vibration Enable Disable:</b> Enable or disable vibration. <b>Low Cut off -3dB -6dB:</b> Reduce the low frequency -3dB or -6dB. <b>Latched Talk 1 2 3 4 5 6 7 8:</b> Set the latched Talk channels. <b>Sidetone Option Track Non-Track:</b> Set sidetone Tracking or non-tracking

### Wireless Beltpack BP850 menu

Normal menu	Main menu
Display RSSI level, Linked device symbol, Battery level, Latched status, Group, label,	Display Beltpack's Label, Model, firmware version, ID number  Main menu's item is as follow
	<b>Hands Free On Off:</b> Latched talk enable or disable <b>Speaker Volume:</b> Headset Volume level. Up to two audio paths with individual level control. <b>Microphone Gain:</b> Headset microphone level <b>Sidetone:</b> Sidetone level <b>Two Groups:</b> Set groups for two Talk channels <b>Select Mode:</b> Set Beltpack operation mode. (Beltpack or Master Beltpack) <b>Low Cut off -3dB -6dB:</b> Reduce the low frequency -3dB or -6dB. <b>Handoff Sens. High Mid Low:</b> Set handoff sensitivity (Roaming) <b>Select Base 1 2 3 4 5:</b> Select the Base Station to pair or link. <b>Call Tone Enable Disable:</b> Enable or disable call tone. <b>Sidetone Option Track Non-Track:</b> Set sidetone Tracking or non-tracking <b>Tx Power 0dB +3dB:</b> Set Radio transmission power <b>TTA Enable Disable:</b> Enable the Talk to All function

### Wireless Beltpack BP851 menu

Normal menu	Main menu
Display RSSI level, Linked device symbol, Battery level, Latched status, Group, label,	Display Beltpack's Label, Model, firmware version, ID number  Main menu's item is as follow
	<b>Hands Free On Off:</b> Latched talk enable or disable <b>Speaker Volume:</b> Headset Volume level. Up to four audio paths with individual level control. <b>Microphone Gain:</b> Headset microphone level <b>Sidetone:</b> Sidetone level <b>Select Groups:</b> Set groups for four Talk channels <b>Select Mode:</b> Set Beltpack operation mode. (Beltpack or Master Beltpack) <b>Low Cut off -3dB -6dB:</b> Reduce the low frequency -3dB or -6dB. <b>Handoff Sens. High Mid Low:</b> Set handoff sensitivity (Roaming) <b>Select Base 1 2 3 4 5:</b> Select the Base Station to pair or link. <b>Call Tone Enable Disable:</b> Enable or disable call tone. <b>Sidetone Option Track Non-Track:</b> Set sidetone Tracking or non-tracking <b>Tx Power 0dB +3dB:</b> Set Radio transmission power <b>TTA Enable Disable:</b> Enable the Talk to All function

### Wireless IFB Receiver WR850 menu

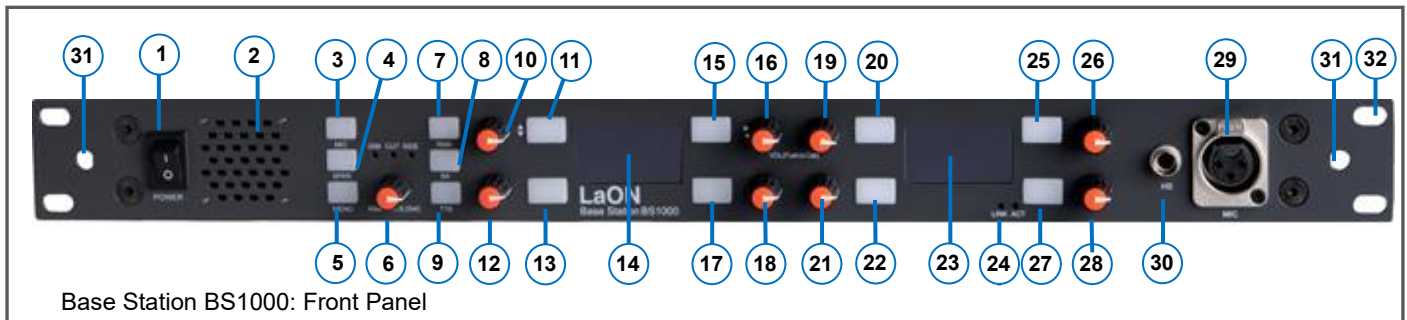
Normal menu	Main menu
Display RSSI level, Linked device symbol, Battery level, Latched status, Group, label,	Display Beltpack's Label, Model, firmware version, ID number  Main menu's item is as follow
	<b>Pair:</b> Pair Beltpacks to the Base Station or Mobile Station. <b>Speaker Volume:</b> Headset Volume level. Up to four audio paths with individual level control. <b>Two Groups:</b> Set groups for two Talk channels <b>Low Cut off -3dB -6dB:</b> Reduce the low frequency -3dB or -6dB. <b>Handoff Sens. High Mid Low:</b> Set handoff sensitivity (Roaming) <b>Select Base 1 2 3 4 5:</b> Select the Base Station to pair or link.

## Section 3: Installing a System

See Genie User Manual.

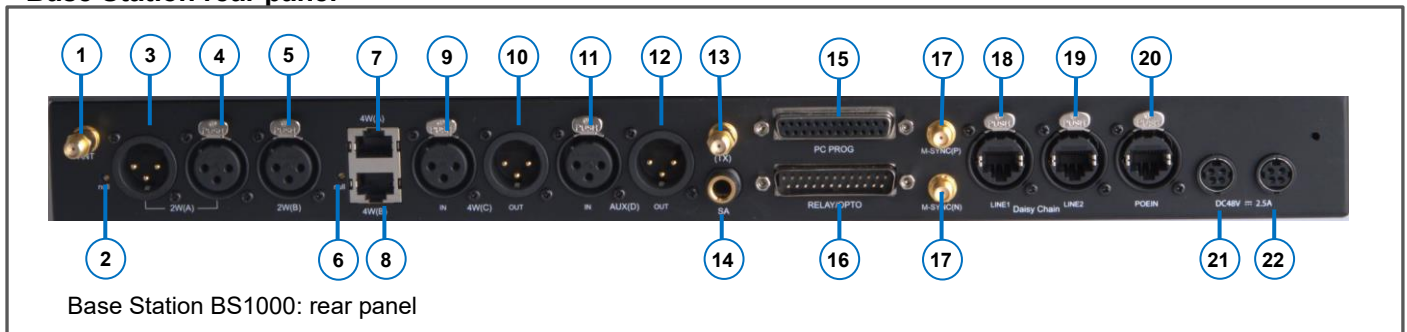
## Section 4: Operating the Base Station BS1000

### 4.1 Connecting the Base Station BS1000



1. Power switch
2. Loudspeaker
24. Network status LEDs (Link/Active)
29. Gooseneck microphone connector (XLR-3F)
30. Headset connector (6pin Mini-Din Receptacle)
31. Antenna cable ANT-70 and Antenna mounting hole
32. Ear for rack mounting

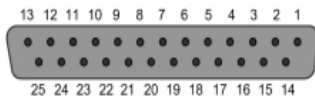
#### Base Station rear panel



1. Antenna
13. Antenna
2. Sidetone Null adjustment (Screwdriver) for Line A (2-Wire)
6. Sidetone Null adjustment (Screwdriver) for Line B (2-Wire)
3. Line A (2-Wire) connector (XLR-3M)
4. Loop-through Line A (2-Wire) connector (XLR-3F)
5. Line B (2-Wire) connector (XLR-3F)
7. Line A (4-Wire) connector (RJ-45)
8. Line B (4-Wire) connector (RJ-45)
9. Line C (4-Wire) input connector (XLR-3F)
10. Line C (4-Wire) output connector (XLR-3M)
11. Line D (4-Wire) input connector (XLR-3F)
12. Line D (4-Wire) output connector (XLR-3M)
14. Stage Announce connector (1/4" Phone Jack)
15. PC PROG connector: Firmware upgrade

## 16. Relay/Opto/AUX(D) connector (25-pin male D-type)

This has been applied to BS1000 version V3516.



Pin	Description	Pin	Description
1	Reserved (Tx+)	14	12VDC +
2	Reserved (Tx-)	15	12VDC +
3	Reserved (Rx+)	16	GND (12VDC)
4	Reserved (Rx -)	17	GND (12VDC)
5	Relay 1 (Open)	18	Relay 1 Common
6	Relay 2 (Open)	19	Relay 2 Common
7	SA Relay (Open)	20	SA Relay Common
8	Opto-isolated input 1	21	Opto-isolated input 1 Common
9	Opto-isolated input 2	22	Opto-isolated input 2 Common
10	Not connected	23	Not connected
11	Not connected	24	Unbalanced Audio Input _GND
12	Unbalanced Audio Input	25	Unbalanced Audio Output GND
13	Unbalanced Audio Output		

Pin1~4 are reserved for connection with other devices. Pin14~17 can supply 12VDC to other devices.

### Opto-isolated inputs

Base Station provides two optically isolated inputs.

### Relays

The Relay output allows the use of a Talk key to trigger any external device that allows standard contact closure.

Base Station provides three Relay outputs. One is activated by pressing the SA button. Press the SA button to activates a Relay 7 (SA) pin. Two Relays can be allocated to the Talk channel. The Relays can be set on Talk channel 1 to 8. When the Talk key set to Relay 1 is pressed, Relay 1 (pin 5,18) is activated. In the same way, pressing the Talk key set to Relay 2, activates Relay 2 (pin 6,19). Relay cannot be set up by adding to a Talk channel that uses a Genie group channel.

### AUX D (unbalanced audio)

Pin 12,13,24,25 are unbalanced audio signal pins that are shared with Line D (4-Wire). If this AUX D is used, 4-Wire Line D shall not be used.

These pins can be connected to a gooseneck microphone or a walkie-talkie, etc.

## 17. Multi-Sync connector (1/2" wave dipole, SMA)

### Multi-Sync connection

When using multiple remote antennas and repeaters in the same antenna coverage area with two or more Base Stations, a Multi-Sync connection between the Base Stations is required for the best communication performance without wireless interference.

## 18. Daisy-chain PoE Line1 connector (Ethercon RJ45, PSE)

## 19. Daisy-chain PoE Line2 connector (Ethercon RJ45, PSE)

Provides Daisy-chain connection function to supply data and power from PoE or 48VDC inputs to another PoE Line.. Do not use the network switch to connect to the Daisy-chain PoE Lines.

## 20. 100Mbps, PoE input connector (Ethercon RJ45, PD)

The Base Station can automatically select and use any power from the PoE In and two power input sockets. A Base Station supplies power to itself and PoE Line 1 and 2, using power from PoE In or two power input sockets.

## 21. 48VDC 2.5A Power input connector (4-pin Din)

## 22. 48VDC 2.5A Power input connector for duplex (4-pin Din)

Each power input is 48-56VDC. The external PSU provides the 48VDC 2.5A required and at its input takes 100-240VAC, 47-63Hz. The Base Station can automatically select and use any power from the PoE In and two power input sockets.

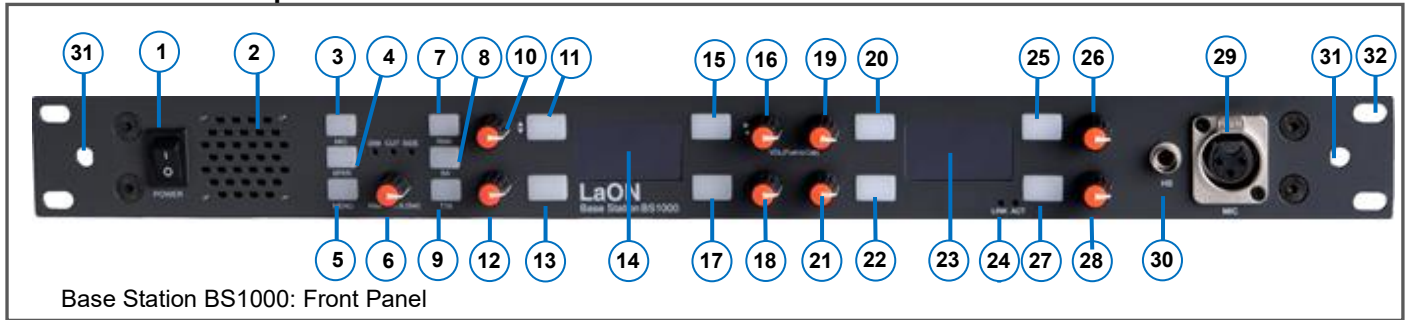
A Base Station supplies power to itself and PoE Line1 and 2, using power from PoE In or two power input sockets.



## 4.2 Operating the Base Station BS1000

- Controls wireless and wired device connections
- Base Station with 8 Talk keys
- One PoE In and two Daisy-chain PoE Lines (PoE standard power and data).

### Base Station: Front panel



Base Station BS1000: Front Panel

- Mic on/off button (LED indicator)**
- Loudspeaker on/off button (LED indicator)**
- Menu/Exit/Lock button (LED indicator)**
- Master volume, (Press to select Dim, Cut, Sidetone)**
- RMK: Remote Microphone Kill button (LED indicator)**
- SA: Stage Announce button (LED indicator)**  
Only audio from either the headset or the gooseneck microphone is transmitted to the SA output port on the Base Station's rear panel.
- TTA: Talk to All button (LED indicator)**  
Pressing the TTA button transmits the microphone audio (create the talk path) to all Talk channels set on the Talk channels.
- 10. 12. 16. 18. 19. 21. 26. 28. For each Talk channel, volume control and Call**  
Tune to increase or decrease the listen level of each Talk channel.  
Press the rotary control for more than a second to send a call signal to the corresponding Talk channel.  
10. In menu mode: Up/down/set  
16. in menu mode: Left/right/set
- 11. 13. 15. 17. 20. 22. 25. 27. Talk key for each Talk channel (LED indicator)**  
The user can specify that the latch is enabled or disabled on the Talk key. And the user can set the Genie group channel, Relay, or Opto-isolated Input on the Talk channel.  
See this manual, SetBase menu.  
Or see GCMV2 user manual, 1.1 Configuring each device, Configuring the Base Station.  
The Relay can be set on each Talk channel. Pressing the Talk key set to Relay to trigger a Relay pin on the rear panel of the Base Station. Set Opto-isolated input to the Talk channels. When this input is detected, the corresponding Talk keys are latched.  
The Talk keys themselves act as status indicators. The status LEDs signal is as following.

LED state	Description	Display
<b>Solid red</b>	A talk path is active	Channel label and listen level
<b>Green flashing slowly</b>	Received audio above VOX level	Channel label and listen level
<b>Solid Green</b>	A listen path is open	Channel label and listen level
<b>Amber flashing slowly</b>	Reserved	
<b>Solid amber</b>	Reserved	
<b>Red flashing slowly</b>	Call signal received.	Channel label and listen level
<b>LED is off</b>	Relay channel. (A talk path cannot be activated.)	Label
	Talk channel is not assigned.	'Not set' or No indication
	Not paired	'Not paired'
	Not linked	'Unlink'
	Channel is busy (When press Talk key, LED is not on)	'Channel is busy'

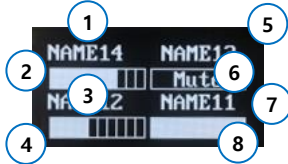
#### Note: LED status for Call

In the case of an incoming call from the last caller, the LED flashes red until the Talk key or Call is pressed to release it.

### 24. Network status LEDs (Link/Active)

## Menu controls

### Normal menu



The labels and listen levels of the eight Talk channels are displayed on two screens. You can set when the screen automatically turns off. The display will turn off if key is not used or there is no incoming call during a set time period. If there is any operation of the key, the display will turn on again. The listen level of each Talk channel is controlled by each Rotary control, with each Talk path is created by pressing each Talk key.

First screen (Front panel left screen):

- 1: Label of the Talk channel 1
- 2: Listen level of the Talk channel 1
- 3: Label of the Talk channel 3
- 4: Listen level of the Talk channel 3
- 5: Label of the Talk channel 2
- 6: Listen level of the Talk channel 2
- 7: Label of the Talk channel 4
- 8: Listen level of the Talk channel 4

Turn to increase or decrease the listen level for each Talk channel.

Second screen (Front panel right screen):

In the same way, it represents Talk channels 5 through 8.

### Main menu



You enter Main menu by pressing and releasing the Menu button.

The Main menu appears in the first screen, and Base Station label, Radio Tx on/off status, Master/Slave status, Base Station model, Firmware version and paired date from the GCMV2 appears in the second screen.

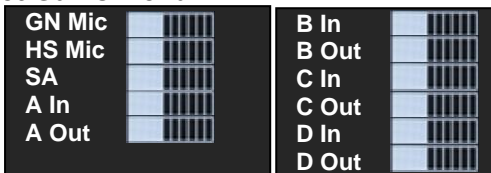
#### Master/Slave status display

Displays the status that the Base Station is set to Master or Slave. If the Multi-Sync cable is connected between the Base Stations and is operating normally, the Base Station set to slave displays 'On' to the right of 'Slave'.

For each menu, turn the right hand rotary control(#16) clockwise to scroll down the menu items and turn counter clockwise to scroll up the menu items. The current setting is indicated by a reversed box around the menu item. Turn the left hand Rotary control(#10) clockwise to increase a setting and turn counter clockwise to decrease a setting. When you have selected a setting by rotating the left hand rotary control, press that rotary control or turn the right hand rotary control to enable the setting on the Base Station.

To exit Menu mode, press the Menu button.

### Set Gains Menu



**GN Mic:** Turn the left rotary control (#10) to set the gooseneck microphone input level.

**HS Mic:** Turn the left rotary control (#10) to set the microphone input level.

**SA:** Turn the left rotary control (#10) to set the stage announcement output level.

**A In, B In, C In, D In:** Turn the left rotary control (#10) to set the Line input levels.

**A Out, B Out, C Out, D Out:** Turn the left rotary control (#10) to set the Line output levels.

### Pair Belt menu

When registering a Beltpack with a Base Station for the first time, it must be paired with the Base Station in accordance with the following procedure. This pairing process allows a Base Station and a Beltpack to recognize each other and an own cryptic code will be given for the corresponding system. The Base Station will identify all paired Beltpacks and recognizes the difference between the Beltpacks. If a Beltpack is added or replaced later, the new one is necessarily to be paired with the Base Station. Each Base Station allows up to 128 Beltpacks connections. Five Base Stations can be paired on the wireless Beltpack.

**Note:** Wireless Beltpack(BP850,BP851) can be paired with the Base Station BS1000, BS850 and MS150.

## Pairing wireless Beltpacks

Turn on the power of the Base Station and each Beltpack which will be paired with. Beltpacks should not go further than 3 feet (1 meter) from the Base Station while they are being paired.

### Set Beltpack labels and Genie group channels for pairing



- A. Beltpack Label
- B. Group channel
- C. Pairing Icon

Figure. Label/Group/Pair menu

On the Base Station, you can edit the Beltpack label and the Genie group channel that the Beltpack will use. In the main menu, move to and select Pair Belt. The Pair Belt menu appears, as shown in Figure. The Beltpack labels are shown as ‘\_P001’ ~ ‘\_P128’ sequentially.

### Pairing icons

- : No edited data
- : Pairing can be run with edited data.
- : The state in which the pair is running.
- : Pairing failed
- : Pairing completed - The Beltpack is now paired and ready for operation.

### Rotary control (#10, #16) in the Pair Belt menu

Rotate the rotary control (#16) to move to the next Beltpack item.  
Press the rotary control (#10) to edit.  
Rotate the rotary control (#16) to move to the next character.  
Rotate the rotary control (#10) to change the setting value.  
Press the rotary control (#16) to finish editing and save changes.

### Edit Beltpack labels

To set Beltpack Label, move to Beltpack Label (A). Turning the rotary control displays the alphabet and numbers sequentially on the screen. After setting of the Beltpack labels, move to Group channel (B). Then the icon () will be changed to ().  
When edit a Beltpack Label which is already paired, follow the same process. In this case, the icon () will be changed to ()

### Allocating Group channels to Beltpack

This process is to assign single or multiple Group channels to each Beltpack.  
Move to a Group channel number which you want to select by rotary control (#16). Single or multiple groups within the five groups (1 2 3 4 5) can be saved by pressing rotary control (#10) on each Group channel number. To reverse the saved groups, press rotary control (#10) on the group number to be reversed. In order to change the Group channel for a Beltpack which is already paired, follow the same process. When you enter the edit mode, the icon () will be changed to ()

**Note:** Any edited data require pair to the applicable Beltpacks for reflecting it.

### Pairing with a Base Station

Once the Beltpack Label and Group channel is edited and the applicable Beltpack is ready, move to the pairing icon ()

### Ready for Beltpack

Turn on the Beltpack by pressing PWR button for 2 seconds and confirm the Normal menu is appeared. If the Beltpack is not paired with the Base Station, the LED adjacent to the Talk key flashes red.

### Beltpack operation for pairing

For pairing to a Beltpack, press rotary control (#10) on the pairing icon () of the Base Station. Then pairing icon will be shown as the icon (). At this point, on the Beltpack, press and hold the SET button immediately after pressing the PWR button. With this operation, the Beltpack will also be in ‘pairing mode’ and the message ‘Pairing...’ will appears, then release both buttons.

If the pairing is completed successfully, the pairing icon, () will be shown on the Base Station menu screen. On the Beltpack menu screen, a completion message will appear as shown in the following figure. And will shortly return to the Normal menu. If registration fails, the failed message appears.

**Note:** When executing pairs on the Beltpack, within 3 seconds of pressing the Beltpack PWR button, press and hold the Set button together. Otherwise, the Beltpack power may be off.

**Note:** All radio transmissions are temporarily interrupted during pairing and recovered when the pair is complete.

**Note:** When each Beltpack is paired with the Base Station for the first time, each ID number of the Beltpack is generated sequentially.

**If pairing completed properly:**

On the main menu of the Beltpack, appears an ID number label that is generated sequentially from 1 to 128. Once the pairing has been successfully completed, the 'Pairing...' message will be changed to 'Pairing Completed' within 20 seconds as shown in the figure. And the LED adjacent to the Talk key on the Beltpack flashes green.

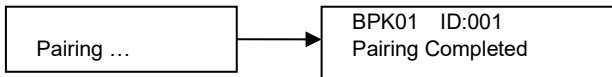


Figure. Pairing completed status

Repeat the pairing processing for each Beltpack.

**If pairing is failed:**

If the message 'Pairing...' appears in the Beltpack menu, it will take up to 20 seconds for the message 'Pairing Failed' to appear. If pairing fails, try again. If these processes still do not work, contact your dealer or manufacturer for further support.

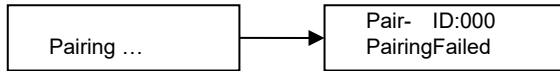


Figure.: Pairing failed status

**Reset Beltpack labels, Genie group channels.**

**Reset Belt Label:** Initialize all set labels on the wireless Beltpack.

**Reset Belt Group:** Initialize the Genie group channel settings for the wireless Beltpack.

**Note:** After resetting, the corresponding data stored at the Base Station will be stored as factory defaults. Unless initialization is actually required, run the reset with due care. All edited data will be missing.

**SetBase menu**

GN ELECT DYN  
Call Tone On Off  
LowCut off -3 -6  
VOX Level 1  
Latched Talk  
1 2 3 4 5 6 7 8  
Sidetone Option  
Track Non-Track  
A 4-Wire 2-Wire  
B 4-Wire 2-Wire

Screen Save 900  
RF-TX On Off  
Indoor-RF On Off  
Multi-BS MST SLV  
Redundant 0  
A G12345  
B G12345  
C G12345  
D G12345

OPTO1 T12345678  
OPTO2 T12345678  
T1 G12345 ABCDRr  
T2 G12345 ABCDRr  
T3 G12345 ABCDRr  
T4 G12345 ABCDRr  
T5 G12345 ABCDRr  
T6 G12345 ABCDRr  
T7 G12345 ABCDRr  
T8 G12345 ABCDRr

G1 Label LaON001  
G2 Label LaON002  
G3 Label LaON003  
G4 Label LaON004  
G5 Label LaON005  
A Label LaON006  
B Label LaON007  
C Label LaON008  
D Label LaON008

**GN ELECT DYN:** Select Electret (ELECT) or Dynamic (DYN) to set the type of Gooseneck microphone.

**Call Tone on off:** In the Call Tone menu, select On (enable) or Off (disable).

**Low Cut off -3 -6:** In Low Cut menu, you can set the cutoff level of low-frequency audio up to -6dB.

**VOX Level:** To set the VOX level. If the audio level of the Talk channels is higher than this level, the audio is detected, and the Talk key LEDs flash green. The same level applies to Ethernet Beltpack.

Selection range: 0: disable, 1 to 9 (From -58dB to -10dB)

**Note:** When using in a noisy place, adjust this level if the Talk key LED is always off.

**Latched Talk:** The user can set on the Talk key that the latch is enabled or disabled. If each Talk channel number is selected, the latch can be enabled. If the latch is disabled (Momentary) the Talk path is only open while the Talk key is pressed. If the latch is enabled, quickly tapping the Talk key will latch a key, and a second tap will release it.

**Sidetone Option:**

Track (default): The sidetone level will track the master volume level.

Non-track: The sidetone level is fixed to the set level.

**A 4-Wire 2-Wire**

**B 4-Wire 2-Wire:** In the menu, select the 2-Wire or 4-Wire to set the type of the Line.

**Screen Save:** Set the period when the screen will automatically turn off. Selection range: 10 to 900 minutes

**RF-TX On Off:** Select Off if the Base Station does not need to transmit and receive radio wave.

**Note:** Cannot pair with Beltpack in RF-TX Off state. Change to RF-TX On when pairing with the Beltpack.

**Indoor-RF On Off:**

**Select RF channel**

On 5GHz UNII RF bands, there is a separate definition and guideline for RF band to be used in indoor environments. Select On if you use the system at any indoor environments. When using the system at any outdoor environments, you must Select Off. Selecting On allows the use of the indoor and outdoor RF bands.

**Note:** Upon the change of the setting of indoor or outdoor, the Base Station should be rebooted.

**Multi-BS MST SLV:**

**Using multiple Base Stations in an Antenna coverage zone.**

The Genie is designed so multiple Base Stations, Remote Antennas and Repeaters can work in one antenna coverage. To ensure smooth coexistence of these devices, you will need connecting the Multi-Sync cable between the Base Stations. If multiple Base Stations are connected by Multi-Sync cable, a Base Station should be set to 'Primary on' (Master) in the Multi BS menu and all other Base Stations should be set to 'Primary off' (Slave).

## Redundant 0:

You can set 0,1,2.

**When this Redundant is set to 0:** On a Standalone system that uses one Base Station, set to 0.

**When this Redundant is set to 1:** Each device perform automatic access to another Base Station in case one Base Station fails.

**When this Redundant is set to 2:**

### Assign Antenna

If you install three Remote Antennas in one antenna coverage zone and use 30 Talk paths for the wireless Beltpacks, this Redundant can be set to 2. When this Redundant is set to 2, wireless Beltpack ID 1 to 10 is connected to Remote Antenna 1. In 10 units, ID numbers 11 to 20 are connected to Remote Antenna 2 and 21 to 30 to Remote Antenna 3. In the same way, ID numbers 31 to 40 are connected to Remote Antenna 1.

## A G12345

## B G12345

## C G12345

## D G12345:

Line audio routing:

Set the Genie group channels on the Lines (Line A,B,C,D).

In this menu, use the rotary control (#16) to navigate to each number and press rotary control (#10) for setting. You can set up a single or multiple Genie group channels on each Line. Once the Genie group channel is set on the Line (4-Wire, 2-Wire, AUX), it is possible to communicate with all devices set to the same group channel. The user can also set one Line without setting a Genie group channel on the Talk key.

With GCMV2, you can set the IFB features, and you can set to send the Line input audio back to the Line output.

**Note:** If a Genie group channel is set on the Line, set the Genie group channel on the Talk key and do not set the Line on the Talk key. In this case, setting the Line on the Talk key may distort the sound.

## OPTO1 T12345678

## OPTO2 T12345678

## T1 G12345 ABCDRr

## T2 G12345 ABCDRr

## T3 G12345 ABCDRr

## T4 G12345 ABCDRr

## T5 G12345 ABCDRr

## T6 G12345 ABCDRr

## T7 G12345 ABCDRr

## T8 G12345 ABCDRr: (This has been applied to BS1000 version V3516)

Relay/Opto/AUX(D) Pinout

Pin	Description	Pin	Description
1	Reserved (Tx+)	14	12VDC +
2	Reserved (Tx-)	15	12VDC +
3	Reserved (Rx+)	16	GND (12VDC)
4	Reserved (Rx -)	17	GND (12VDC)
5	Relay 1 (Open)	18	Relay 1 Common
6	Relay 2 (Open)	19	Relay 2 Common
7	SA Relay (Open)	20	SA Relay Common
8	Opto-isolated input 1	21	Opto-isolated input 1 Common
9	Opto-isolated input 2	22	Opto-isolated input 2 Common
10	Not connected	23	Not connected
11	Not connected	24	Unbalanced Audio Input _GND
12	Unbalanced Audio Input	25	Unbalanced Audio Output GND
13	Unbalanced Audio Output		

One Relay or Line or Genie group channel can be set to Talk channel 1 in the T1 G12345 ABCDRr menu. G12345 stands for each Genie group channels, ABCD stands for each Line, and R stands for Relay1, and r stands for Relay 2. In this menu, use the rotary control (#16) to navigate to each symbol and press rotary control (#10) for setting. Do the setup in the same way for each Talk channel.

For the number of the Talk channel such as T1~T8, see 4.2 Operating the Base Station BS1000, Base Station: Front panel.

You can assign one Opto-isolated input to multiple Talk channels. Opto-isolated Input 1 (pin 8) and Input 2 (pin 9) can be set to the Talk channel using the OPTO1 T12345678, OPTO2 T12345678 menus. In this menu, use the rotary control (#16) to navigate to each Talk channel number and press rotary control (#10) for setting.

## Opto-isolated Inputs

Base Station provides two optical isolated inputs.

You can trigger Talk channels by connecting the foot switch or other control to the Opto-isolated Input.

Each input consists of a pair of pins (pin 8/21 or pin 9/21) with an operating range of 5 VDC to 20 VDC. The inputs are operated by applying a voltage between 5 VDC and 20 VDC across the pins and is detected by the opto-coupler. The voltage may be derived from the Base Station itself using the 12V (pin 14,15) and 0V (pin 16,17) pins or it may be from an external source.

These inputs can be used for user programmable functions such as switching a Talk on or off. Assign this Opto-isolated input to the Talk channels. When this input is detected, the corresponding Talk channels are activated. You can assign one Opto-isolated input to multiple Talk channels. You can assign the Opto-isolated input functions and one Genie group channel to one Talk key.

### **Relays**

The Relay output allows the use of a Talk key to trigger any external device that allows standard contact closure. The Relay can activate an external device, such as a cue light, or a walkie-talkie. All Relay contacts can support 1Amp 30 VDC. Base Station does not supply any power to the circuit.

Base Station provides three Relay outputs. One is activated by pressing the SA button. Press the SA button to activates a Relay 7 (SA) pin. The Relays can be set on Talk channel 1 to 8. When the Talk key set to Relay 1 is pressed, Relay 1 (pin 5,18) is activated. In the same way, pressing the Talk key set to Relay 2, activates Relay 2 (pin 6,19). Relay cannot be set together on one Talk key set to a Genie group channel.

### **AUX D (unbalanced audio)**

Pin 12,13,24,25 are unbalanced audio signal pins that are shared with Line D (4-Wire). Line D (4-Wire) cannot be used when using these pins. These pins can be connected to a gooseneck microphone or a walkie-talkie, etc. Additional connections such as resistor may be required when connecting a specific walkie-talkie.

**G1 Label01**

**G2 Label02**

**G3 Label03**

**G4 Label04**

**G5 Label05**

**A Label06**

**B Label07**

**C Label08**

**D Label09:**

Displays labels for the Genie group channels and Lines set in the GCMV2 .

### **Reset Belt Label**

Initialize all set labels on the wireless Beltpack.

### **Reset Belt Group**

Initialize the Genie group channel settings for the wireless Beltpack.

# Section 5: Operating the Base Station BS850

## 5.1 Connecting the Base Station BS850



Front panel of the Base Station

### 1. Headset connector (6pin Mini-Din Receptacle)

The headset is with 'Push-Pull Lock' type connector. Put a headset into the headset connector on the front panel. To disconnect the headset, grab the entire outer metal plug on the headset connector and pull it slightly up to release the lock.

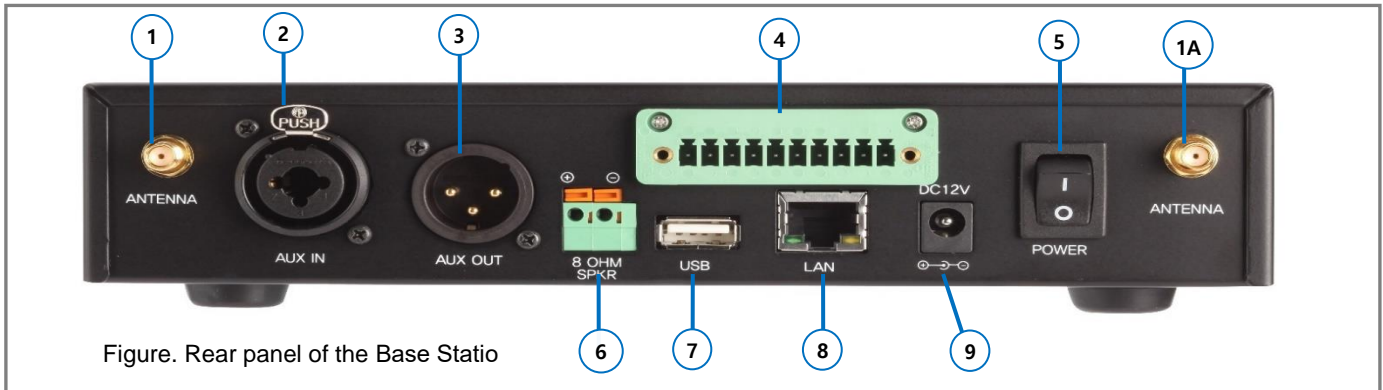


Figure. Rear panel of the Base Station

1. Antenna connectors
2. Auxiliary (4-Wire) input connector
3. Auxiliary (4-Wire) output connector
4. 4-Wire and Multi-Sync connector

Pin	Description	Function
1	Input+/Output+	Multi-Sync
2	Input-/Output-	Multi-Sync
3	No connection	
4	No connection	
5	GND	4-Wire
6	Audio output -	4-Wire
7	Audio output +	4-Wire
8	Audio input -	4-Wire
9	Audio input +	4-Wire
10	No connection	

Figure. Pin assignments for the 4-Wire and Multi-Sync connector

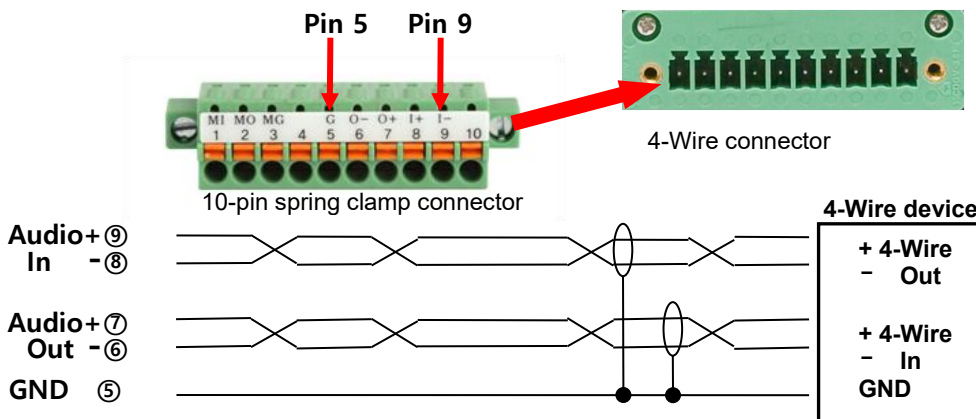


Figure. 4-Wire connections

### Multi-Sync connection

To use two or more Base Stations with Remote Antennas and Repeaters together in one antenna coverage, Multi-Sync connection should be made for the best communication performance.

5. Power switch
6. 8-OHM speaker 2-pin spring clamp connector
7. Reserved USB connector
8. LAN RJ-45 connector
9. 12VDC Power input connector

## 5.2 Operating the Base Station BS850



Figure Front panel of the Base Station

Base Station is designed with soft-touch buttons to select menus, call, 4-Wire, auxiliary input/output, Genie group channel, and so on. LEDs on the front panel indicate each selected modes and link status.

### Normal menu

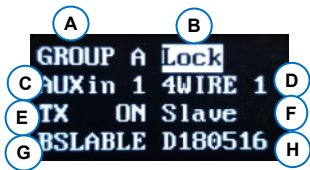


Figure: Normal Menu

When Base Station is turned on, the Normal menu appears. Press Set button to go to the Main menu. With the Normal menu displayed, you can adjust the headset volume level directly by pressing the up or down buttons. The following is a description of the Normal menu.

Item **(A)** indicates the Genie group channel of the Base Station. The number 1 through 5 stands for the Genie group channel that is selected by the user. The letter 'A' indicates that all Genie group channels have been selected. The listen paths are created for all Genie group channels selected in the Talk Group menu, and when you press the Talk key on the front panel, all Talk paths are created for them.

Item **(B)** indicates key lock status. To lock and release the menu, press the Right button for 3 seconds.

Item **(C)** indicates the Genie group channel for the auxiliary device. The display shows AUX In when AUX In is enabled. And shows AUX IO when AUX In and AUX Out are enabled both. The number 1 through 5 next to AUX In or AUX IO stands for the Genie group channel for the auxiliary device that is selected. The letter 'A' indicates that all Genie groups have been selected. The Genie group channel will be shown on Normal menu as following examples.

AUX In 2: Auxiliary input is enabled and the Genie group channel for the auxiliary device is set to 2.

AUX IO 1: Auxiliary Input and Output are enabled both and the Genie group channel for the auxiliary device is set to 2.

AUX IO A: Auxiliary Input and Output are enabled both and the Genie group channels for the auxiliary device are set to all.

AUX X: Auxiliary devices are not enabled.

Item **(D)** indicates the Genie group channel for the 4-Wire. The display shows the status of the 4-Wire enabled or disabled status and the corresponding 4-Wire group channel. The number 1 through 5 next to 4-Wire stands for the 4-Wire group channel that is selected. The letter 'A' indicates that all Genie group channels have been selected.

Item **(E)** indicates whether Base Station radio transmission is enabled.

Item **(F)** indicates that the Base Station is set to either Master or Slave. When the Multi-Sync cable is connected between the Base stations and functioning normally, the Base station set to Slave displays 'On' as Slave On.

Item **(G)** indicates the Base Station label.

Item **(H)** indicates the date of pairing with the GCMV2.



## The Talk key and Genie group channel button

### Group channel Button (#2)

Press the group channel (#2) button on the front panel and select the Genie group channel.

If the same Genie group channel as the Base Station is set to a 4-Wire or AUX IO group channel, it is possible to communicate with the connected intercom devices.

**Talk key (#1):** The Talk key is operated Momentary/Latching

**Talk LED:** When the Talk path is created by pressing the Talk key, the LED on the Talk key is lit solid green.

If the Base Station is ready but you have not created a Talk path (just listening), the LED on the Talk key will flash green.

## The AUX and AUX group channel buttons

**AUX button (#5):** You can select three options - auxiliary Input (AUX In) only or auxiliary Input and Output (AUX I/O) or no use of auxiliary device.

**AUX group channel button (#6):**

Press AUX group (#6) button on the front panel and select the Genie group channel for the auxiliary device. The Genie group channel will be changed from 1 to 5, and 'A' (All) by each pressing. The group channel 1 will come again after 'A' (All). Selected AUX group channel is displayed on the Normal menu.

## The 4-Wire AND 4-Wire group channel buttons

**4-Wire button (#3):** The 4W button allows for enabling or disabling the connection for the 4-Wire device.

**4-Wire group channel button (#4):** Press the 4-Wire group button (#4) on the front panel and select the Genie group channel for the 4-Wire device. The Genie group channel will be changed from 1 to 5, and 'A' (All) by each pressing.

**Lock the Menu:** Press the Right button for 3 seconds to lock or unlock the menu.

## Network status LEDs on the front panel

**RF Alert LED (#7):** If audio breakups occur seriously, the RF Alert LED flashes.

**RA Link LED (#8):** This green LED indicates that the Base Station is connected to a Remote Antenna.

**RA Active LED (#9):** This flashing LED indicates that the Base Station is receiving data from the Remote Antenna.

## Main menu

Press Set on the Normal menu, the Main menu appears, as shown in Figure. Move to and press Set to select each menu item. Select Quit or press Set for 2 seconds on any item to return to the Normal menu.

SetGains	ScrSave
RMK	RA
PairBelt	SetBase
Multi-BS	Quit

Figure. Main menu

### Set Gains menu

When you select the Set Gain menu, the menu appears as follows. You can adjust volume level of the headset and external speaker by selecting Speaker. You can adjust each level by selecting each of the following menu items: Mic (headset microphone), Sidetone, AUX In (auxiliary input), AUX Out (auxiliary output), 4WSND (4-Wire Sending), 4WRCV (4-Wire receiving). Move to and select Quit or press Set for 2 seconds on any item to return to the Main menu.

Speaker	7 Mic	5
Sidetone	5 AUXin	0
AUXout	0 4WSND	0
4WRCV	0	Quit

Figure. Set Gains menu

**Adjust the volume level:** Scroll to the Speaker in the menu and press the Set button. Then press the Up or Down button to adjust the volume level. In the Normal menu, you can also adjust the level immediately by pressing the button Up or Down.

**Adjust the sidetone level:** Scroll to the Sidetone in the menu, press the Set button, and press the Up or Down button to adjust the sidetone level.

**Adjust the microphone level:** Scroll to the Mic in the menu and press the Set button. Then press the Up or Down button to adjust the microphone level.

**Adjust the Aux input or output level:** Scroll to the AUXin or AUXout in the menu and press the Set button. Then press the Up or Down button to adjust the Aux level.

**Adjust the 4-Wire Sending or Receiving level:** Scroll to the 4WSND or 4WRCV in the menu and press the Set button. Then press the Up or Down button to adjust the 4-Wire level.

**ScrSave Menu:** Set the period when the screen will automatically turn off. Selection range: 0 to 900 minutes (10 minutes per step)

## RMK Menu

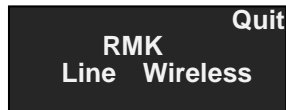


Figure. RMK menu

With this RMK menu, you can unlatch the Talk keys of devices such as BP850, BP851, IBP10. Select Line, release all the latch of the Ethernet Beltpack. Select Wireless, release all the latch of the wireless Beltpacks.

## RA Menu

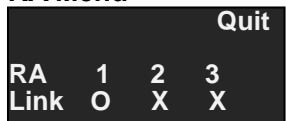


Figure. RA menu

The connection status between the Base Station and the Remote Antennas is displayed.

## PairBelt Menu

When registering a Beltpack with a Base Station for the first time, it must be paired with the Base Station in accordance with the following procedure.

This pairing process allows a Base Station and a Beltpack to recognize each other and an own cryptic code will be given for the corresponding system. The Base Station will identify all paired Beltpacks and recognizes the difference between the Beltpacks. If a Beltpack is added or replaced later, the new one is necessarily to be paired with the Base Station.

Each Base Station allows up to 128 Beltpacks connections. Five Base Stations can be paired on the wireless Beltpack.

**Note:** Wireless Beltpack(BP850,BP851) can be paired with the Base Station BS1000, BS850 and MS150.

### Pairing wireless Beltpacks

Check out the power status of the Base Station and each Beltpack's, which will be paired up with. To execute a pairing process, the Base Station and Beltpacks should be turned on. Beltpacks should not go further than 3 feet (1 meter) from the Base Station while they are being paired.

Under Main menu, select 'Pair Belt', then the Beltpack menu appears, as shown in Figure.

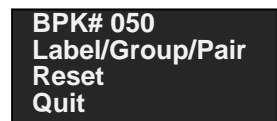


Figure. PairBelt menu

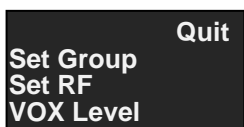
### Set the maximum number of Beltpacks (BPK#)

Enter the maximum number of Beltpacks that you want to pair up with the Base Station. Under the Pair Belt menu, select BPK# then input the maximum number by pressing Up, Down.

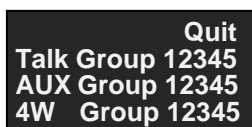
### Set the Beltpack labels and Genie group channels for pairing

See the description of 4.2 Operating the Base Station BS1000.

## SetBase Menu



SetBase Menu



Set Group Menu

### Set the range of Genie group channels to use on the Base Station

Set available Genie group channels for the Line (4-Wire or AUX) or Base Station. In the Set Group menu, scroll to each row with Up or Down button to set single or multiple Genie group channel channels. The Talk Group in the menu is Genie group channels available on the Base Station. The AUX Group is Genie group channels available on the Aux. The 4W Group is Genie group channels available on the 4-Wire.

## Set RF menu

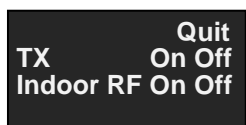


Figure. Set RF menu

**TX On Off:** Select Off if the Base Station does not need to transmit and receive radio wave.

### Indoor-RF On Off:

#### Select RF channel

On 5GHz UNII RF bands, there is a separate definition and guideline for RF band to be used in indoor environments. Select On if you use the system in any indoor environments. When using the system at any outdoor environments, you must Select Off. Selecting On allows the use of 'Indoor' and 'Outdoor' RF bands.

## VOX Level menu

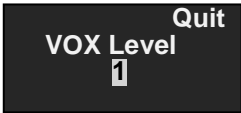


Figure. VOX Level menu

To set the VOX level.

If the audio level of the Talk channels is higher than this level, the audio is detected, and the Talk key LEDs flash green. The same level applies to Ethernet Beltpack.

## Multi-BS menu

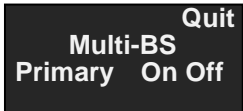


Figure. Multi-BS menu

### Using multiple Base Stations in an Antenna coverage zone.

The Genie is designed so multiple Base Stations, Remote Antennas and Repeaters can work in one antenna coverage. To ensure smooth coexistence of these devices, you will need set the Ethernet synchronization and connecting the Multi-Sync cable between the Base Stations. If multiple Base Stations are connected by Multi-Sync cable, a Base Station should be set to 'Primary on' (Master) in the Multi BS menu and all other Base Stations should be set to 'Primary off' (Slave). In this setting, the Remote Antennas and Repeaters are automatically set to the Master or Slave. If you are using one Base Station, you must set the Base station to 'Primary On' (Master) to apply Ethernet synchronization to all devices.

### Voice messages in the headset of the Base Station

- 'Beep'
- 'Maximum'
- 'Minimum'
- 'group one'
- 'group two'
- 'group three'
- 'group four'
- 'group five'
- 'group all'

## Section 6: Operating the Remote Antenna and Repeater

### 6.1 Connecting the Remote Antenna RA100DW, RA100

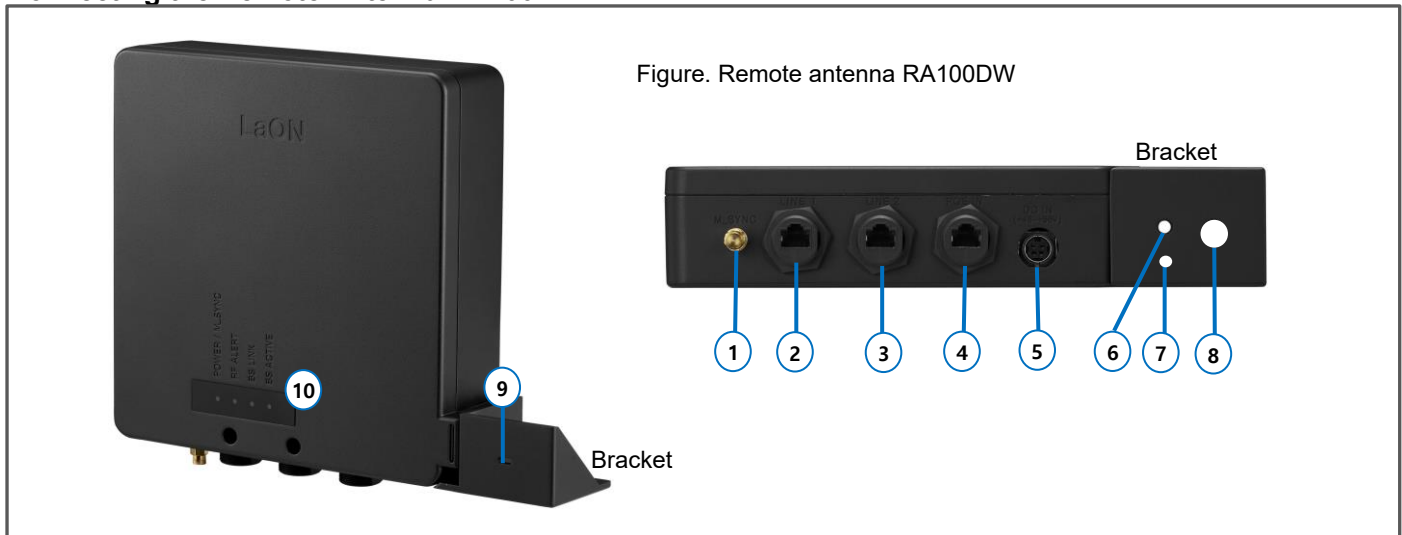
- Can be configured with Base Station BS850 or BS1000.
- The Remote Antenna provides an additional 10 Talk and 128 Listen paths.
- Within 22 devices, 22 Ethernet Beltpacks or Key Panels or 10 Repeaters can be connected to one Remote Antenna. It can be also connected to 128 wireless Beltpacks. The Key Panel connects only when used in conjunction with the wireless Genie group channel of the Base Station.
- RA100 has a PoE input, and RA100DW has a PoE input and two PoE Daisy-chain Lines (PoE standard power and data).
- The RA100DW supports the IP53 sealing (Dust + water spray at up to 60° from vertical) and the antenna is mounted internally. (IP65 sealing when fixing the power rubber cap with waterproof adhesive)

The Remote Antennas are connected to the Base Stations over the PoE (Power-over-Ethernet), forming extended coverage by user definition, and enabling automatic roaming between antenna coverage zones. The Remote Antenna and Repeater support communication with Beltpacks in remote area from the Base Station. The standard CAT-5e STP cables are used to connect the Remote Antenna directly to the PoE port of the Base Station or the network switch. Remote Antenna RA100DW can be powered by PSU or PoE.

Up to three Remote Antennas can be connected to each Base Station BS850. Up to six Remote Antennas can be connected to each Base Station BS1000.

Even with four Talk paths within a device such as Ethernet Beltpack, it occupies one Talk path. Therefore, one Base Station with six Remote Antennas provides 70 simultaneous Talk paths for wireless and Ethernet wired devices.

#### Connecting the Remote Antenna RA100DW



- 1. Reserved Multi-Sync connector (1/2" wave dipole, SMA)**
- 2. Daisy-chain PoE Line1 connector (Ethercon RJ45, PSE)**
- 3. Daisy-chain PoE Line2 connector (Ethercon RJ45, PSE)**  
Provides Daisy-chain connection function. This device provides the ability to use the input power from the PoE or 48VDC inputs and supply the remaining power to the other PoE Line.  
Do not use the network switch to connect to the Daisy-chain PoE Lines.
- 4. 1Gbps/100Mbps, PoE input connector (Ethercon RJ45, PD)**  
A Remote Antenna supplies power to itself and PoE Line 1 and 2, using power from PoE In or a power input socket. A Remote Antenna uses maximum 8 Watt of power. A Remote Antenna can provide up to 82 watts of power for the two Daisy-chain PoE Lines. The Remote Antenna can automatically select and use any power from the PoE In and a power input socket. You can use these ports to configure power redundancy.  
See 3.2 Notes on Installation, PoE pinout
- 5. 48VDC 2.5A Power input connector (4-pin Din)**  
A power input is 48-56VDC. The external PSU provides the 48VDC 2.5A required and at its input takes 100-240VAC, 47-63Hz.
- 6. Mounting element (Camera tripod threaded socket 3/8")**
- 7. Mounting element M6**
- 8. Mounting element (Microphone stand mounting hole)**
- 9. Kensington lock hole,**

## 10. Power/Multi-Sync, RF Alert, BS Link, BS Active LEDs

**Power/Multi-Sync LED:** This LED is lit in green when a PoE or PSU is connected. During the boot process of the Base Station, this power LED is briefly lit in red while the Antenna is connecting sequentially to the Base Station.

**RF Alert LED:** When there are audio breakups seriously, RF Alert LED flashes.

**BS Link LED:** When the Remote Antenna is connected to the Base Station, BS Link LED is lit.

**BS Active LED:** When the Remote Antenna exchanges data with the Base Station, BS Active LED flashes.

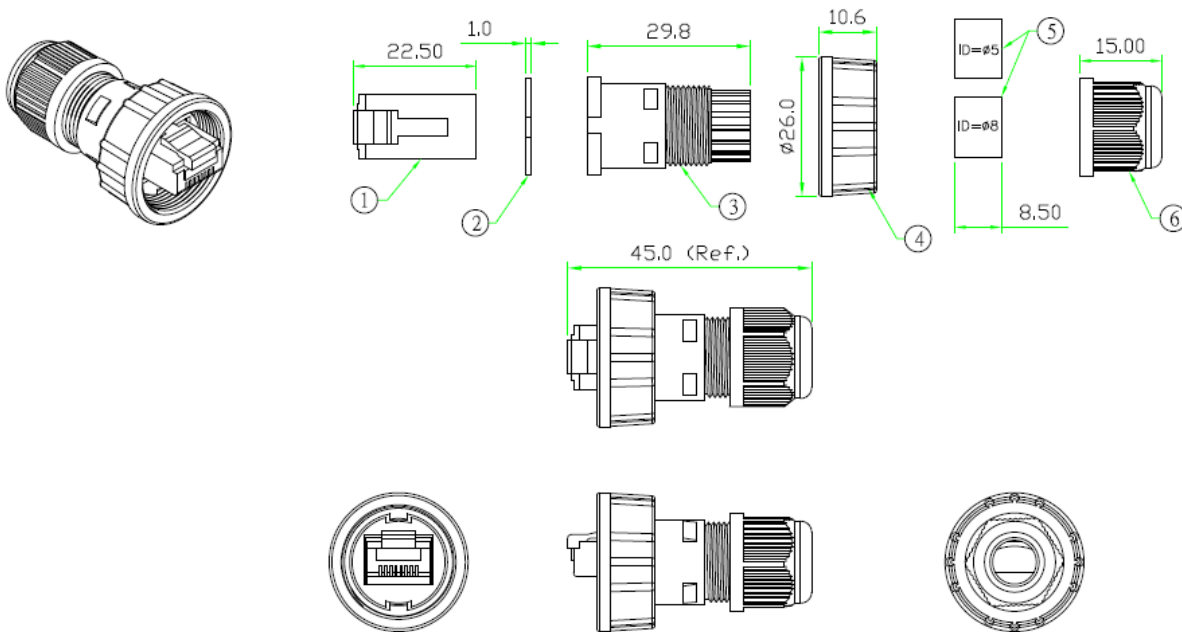
### Antenna installation:

The RA100DW have two antennas mounted inside and perpendicular to the top panel. Therefore, when installing RA100DW, install the front or rear panel towards the workspace. The radio signal from the top or the bottom panel is weak.

**Note:** The RA100DW should be away from any metal obstructions and electronic equipment that can create RF interference. It is highly recommended to place the antenna as high as possible in the center of the coverage and away from obstructions.

For pairing and setting the Remote Antenna, See GCMV2 user manual, Configuring the Remote Antenna.

### Waterproof RJ45 plug assembly diagram (RA100DW)

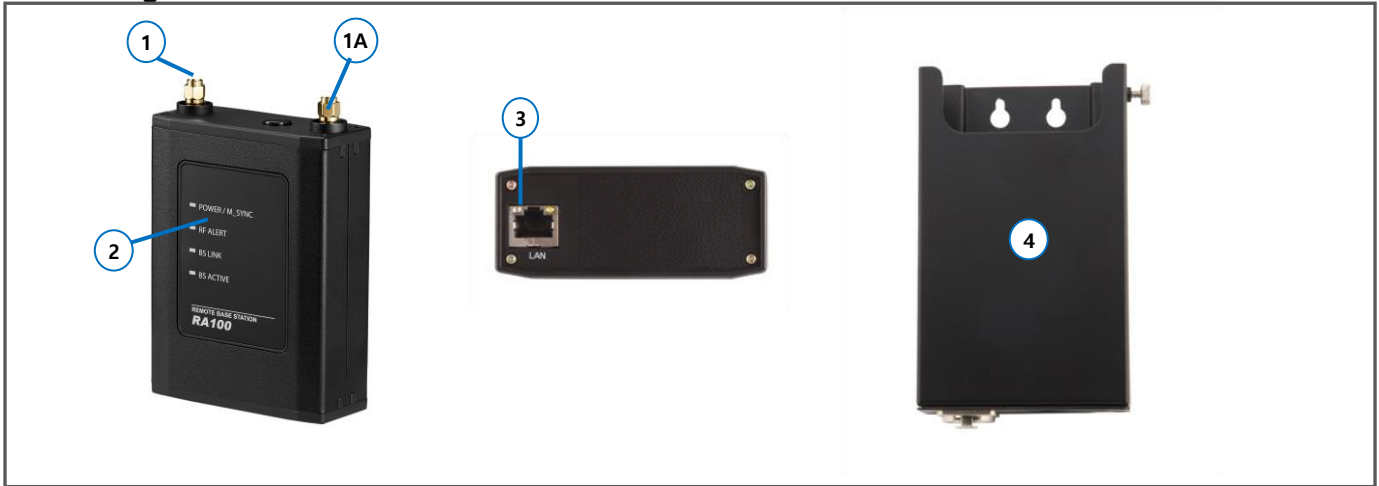


6	SCREW	PRESSING SCREW, NYLON.	BLACK	1
5	SEAL	SANTOPRENE, for cable OD: 3~5mm & 5~8mm,	BLACK	2
4	SCREW NUT	SCREW NUT, NYLON+GF.	BLACK	1
3	SLEEVE	CABLE SLEEVE, NYLON.	BLACK	1
2	GASKET	RUBBER	BLACK	1
1	RJ-45 PLUG	RJ-45 8P8C SHIELDED PLUG.		1
No.	PART NAME	DESCRIPTION	COLOR	Q'TY

**Note:** Make sure that the RJ45 cable is fabricated using the connector included (number 1 of the above illustration). Connecting to the water-proof terminal using a conventional RJ45 connector is likely to cause poor connection.

**Note:** The RJ45 cable must be equipped with a waterproof plug, and it is used in a locked state by turning it into the connector of the main unit. If used unlocked, the connection will easily drop.

## Connecting the Remote Antenna RA100



### 1. Antenna connectors

### 2. Status LEDs on the front panel of the Remote Antenna

**Power LED:** This LED is lit in green when a PoE is connected.

**RF Alert LED:** When there are audio breakups seriously, RF Alert LED flashes.

**BS Link LED:** When the Remote Antenna is connected to the Base Station, BS Link LED is lit.

**BS Active LED:** When the Remote Antenna exchanges data with the Base Station, BS Active LED flashes.

### 3. LAN RJ-45 connector with the PoE (PD) function

### 4. Antenna holder (optional)

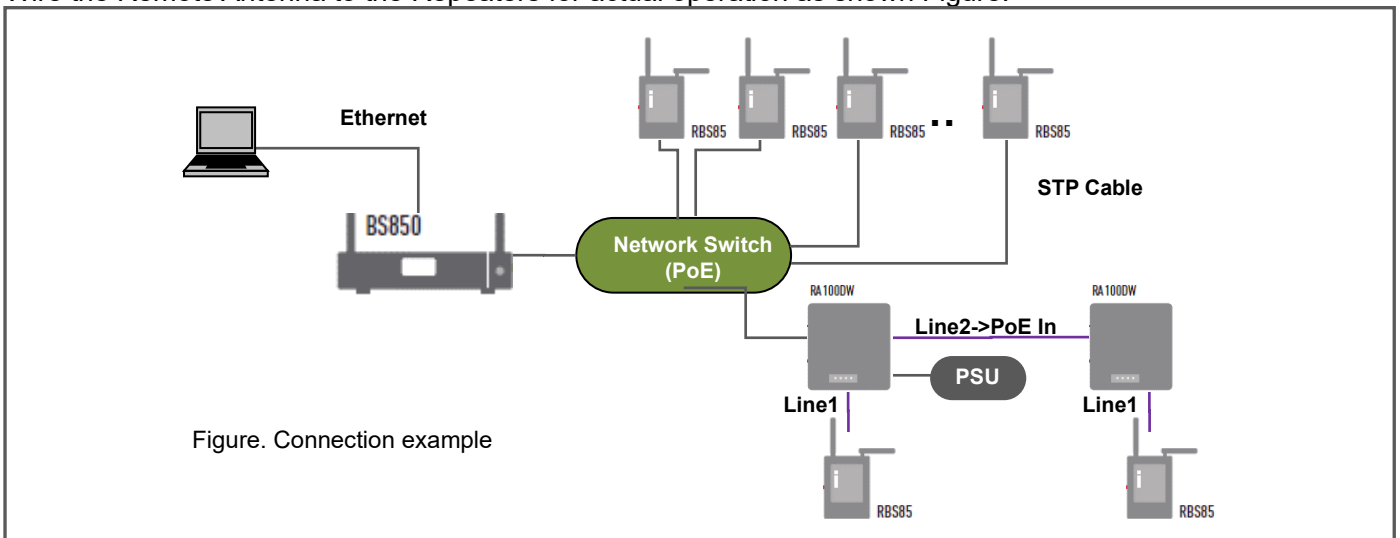
## 6.2 Operating the Remote Antenna RA100DW, RA100

For pairing and setting the Remote Antenna,  
See GCMV2 user manual, Configuring the Remote Antenna.

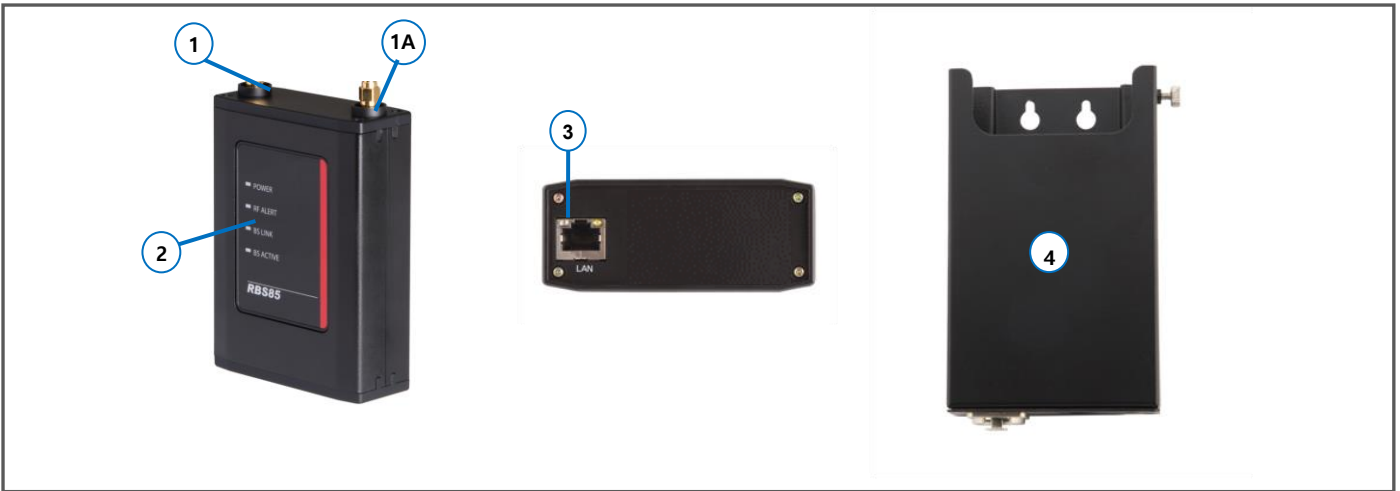
## 6.3 Connecting the Repeater RBS85

The Repeaters are connected to the Remote Antenna over the PoE (Power-over-Ethernet), forming extended coverage by user definition, and enabling automatic roaming between antenna coverage zones. The Repeater supports communication with Beltpacks in remote area from the Remote Antenna. Using a standard CAT-5e STP cable, connect the Repeater to the PoE Line1 or PoE Line2 port on the Remote Antenna RA100DW, or to the PoE port on the network switch. Repeater can be powered by a Genie device (such as BS1000, Remote Antenna RA100DW, GRP8) or network switch which has the PoE. Repeater shares up to ten Talk and 128 Listen paths with the Remote Antenna. Up to ten Repeaters can be connected to a Remote Antenna.

Wire the Remote Antenna to the Repeaters for actual operation as shown Figure.



The figure above is an example of the basic system configuration. Since the connection between the Repeater and the Remote Antenna follows the standard LAN network configuration method, so the system can be configured to be fully flexible with Remote Antennas and network switches. Also, the antenna coverage zones can be expanded by adapting Daisy-chain connection, fiber optic cable, etc.



**1. Antenna connectors**

**2. Status LEDs on the front panel of the Repeater**

**Power LED:** This LED is lit in green when a PoE is connected.

**RF Alert LED:** When there are audio breakups seriously, RF Alert LED flashes.

**BS Link LED:** When the Remote Antenna is connected to the Base Station, BS Link LED is lit.

**BS Active LED:** When the Remote Antenna exchanges data with the Base Station, BS Active LED flashes.

**3. LAN RJ-45 connector with the PoE (PD) function**

**4. Antenna holder (optional)**

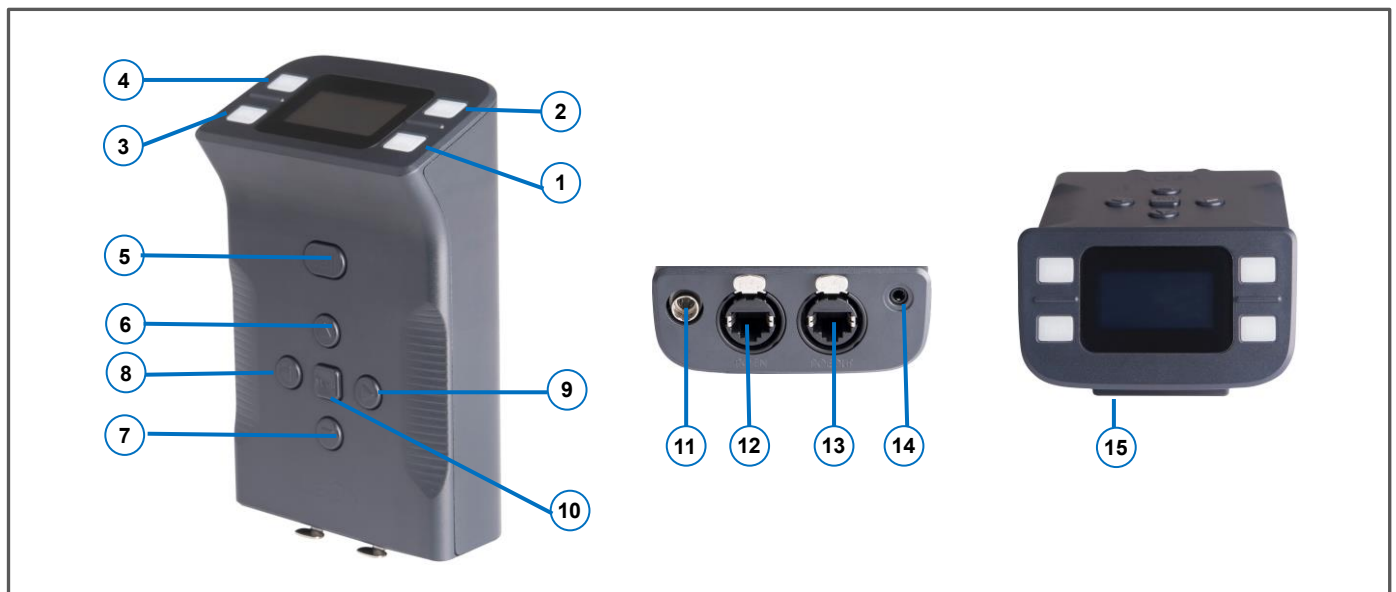
**6.4 Operating the Repeater RBS85**

For pairing and setting the Repeater  
See GCMV2 user manual, Configuring the Repeater.

**Section 7: Operating the Ethernet Beltpack IBP10**

**7.1 Connecting the Ethernet Beltpack IBP10**

- Ethernet Beltpack for 8 Talk channels (Master + Shift) with 4 Talk keys.
- A IBP10 can be connected to two Base Stations. In this case, a IBP10 can use ten Genie group channels.
- PoE In and PoE Out provide daisy-chaining capability
- 6-pin connector headset port and TRS headset port (Mic and Earphone)
- Available as a portable desktop
- Connected to the Remote Antennas that works with the Base Station.
- For wired system configurations, connect to Master Line Router.



**11. Headset connector (6pin Mini-Din Receptacle)**

The headset is with 'Push-Pull Lock' type connector. Put a headset into the headset connector on the bottom panel. To disconnect the headset, grab the entire outer metal plug on the headset connector and pull it slightly up to release the lock.

## 12. Daisy-chain PoE In connector (Ethercon RJ45, PD)

## 13. Daisy-chain PoE Out connector (Ethercon RJ45, PSE)

The PoE daisy chain provides the ability to use the power from the PoE In port and provide the remaining power to the PoE Out. Therefore, if you are connecting to a PoE network switch, connect it to the PoE In port (#12). Do not use the network switch to connect to the PoE Out.

You can use Daisy-chain connections to configure power and data redundancy.

**Using connection with the PoE Line of the Base Station BS1000:** Ten IBP10s can be connected in a daisy chain when using a Cat-5e STP specification or higher cable within 40m. If cables longer than 40 m are used, the number of IBP10 connections will be reduced.

## 14. 3.5mm TRRS Headset (Earphone and Mic) connector

This is one additional TRRS headset port. The function is the same as the headset port (#14), and the microphone and earphone level can be adjusted independently of headset (#14).

## 7.2 Operating the Ethernet Beltpack IBP10

### 1. 2. 3. 4. Talk keys (LED indicator)

The user can specify that the latch is enabled or disabled (Momentary) on the Talk key. And the user can set the Genie group channel on the Talk channel.

See this manual, Set Latched Talk menu. Or see GCMV2 user manual, 1.1.6 Configuring the Ethernet Beltpack.

The Talk keys themselves act as status indicators. The status LEDs signal is as following.

LED state	Description	Display
<b>Solid red</b>	A talk path is active	Channel label and listen level
<b>Green flashing slowly</b>	Talk channel is on Master page, and received audio above VOX level	Channel label and listen level
<b>Solid Green</b>	Talk channel is on Master page, and a listen path is active	Channel label and listen level
<b>Amber flashing slowly</b>	Talk channel is on Shift page, and received audio above VOX level	Channel label and listen level
<b>Solid amber</b>	Talk channel is on Shift page, and a listen path is active	Channel label and listen level
<b>Red flashing slowly</b>	Call signal received.	Channel label and listen level
<b>LED is off</b>	Talk channel is not assigned.	'Not set' or No indication
	Not paired	'Not paired'
	Not linked	'Unlink'
	Channel is busy (When press Talk key, LED is not on)	'Channel is busy'

### Note: LED status for Call

In the case of an incoming call from the last caller, the LED flashes red until the Talk key or Call is pressed to release it.

## 5. Call button

Press to send a call signal to the intercom or wireless device.

When you press the Call button, the call signal is sent to the currently active Talk channel and to the Talk channel that is activated within 5 seconds.

## 6. Volume up button, Shift Talk channel (Press 3 sec)

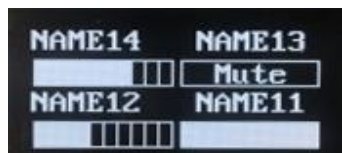
## 7. Volume down button, Shift Talk channel (Press 3sec)

## 8. Channel 2,4 volume select

## 9. Channel 1,3 volume select

### Master volume:

To increase the master volume level, press Volume up button (#6). To decrease the master volume level, press Volume down button (#7).



Normal menu

### Talk channel 1 or 3 listen level:

### Talk channel 2 or 4 listen level:

Press to select each Talk channel to increase or decrease the listen level.

Press the Left (# 8), Right (# 9) Volume select button on the Normal screen to select a Talk channel. The corresponding Talk channel flashes slowly. Press Left (# 8) button to select a Talk channel 2 or 4. Press Right (# 9) button to select a Talk channel 1 and 3. Navigate to the Talk channel with the Left or Right buttons, and then use the Up or Down buttons to adjust the listen level for the corresponding Talk channel.

Press the Menu button to return to the Normal menu.



**Shift channel:**

Press the Up or Down button for 3 seconds to toggle between Main and Shift channel. The Main displays Talk channel 1 through 4, and Shift displays Talk channel 5 through 8.

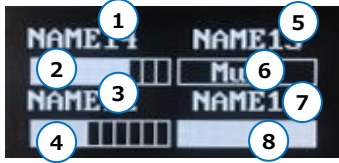
When the listen path is activated, the Talk key lights green on the Main channel and amber on the Shift channel.

**10. Menu button**

Press to display the menu. Press the Menu button for 3 seconds to lock or unlock the menu.

**Menu control**

**Normal menu**



Normal menu

The labels and listen levels of the four Talk channels are displayed on the screen. You can set the screen to turn off automatically. If there are no incoming calls without using the key for a set period, the display turns off. If there is any operation of the button, the display will turn on again. The listen level of each Talk channel is controlled, with each Talk path is created by pressing each Talk key.

**Main channel:**

- 1: Label of the Talk channel 4
- 2: Listen level of the Talk channel 4
- 3: Label of the Talk channel 2
- 4: Listen level of the Talk channel 2
- 5: Label of the Talk channel 3
- 6: Listen level of the Talk channel 3
- 7: Label of the Talk channel 1
- 8: Listen level of the Talk channel 1

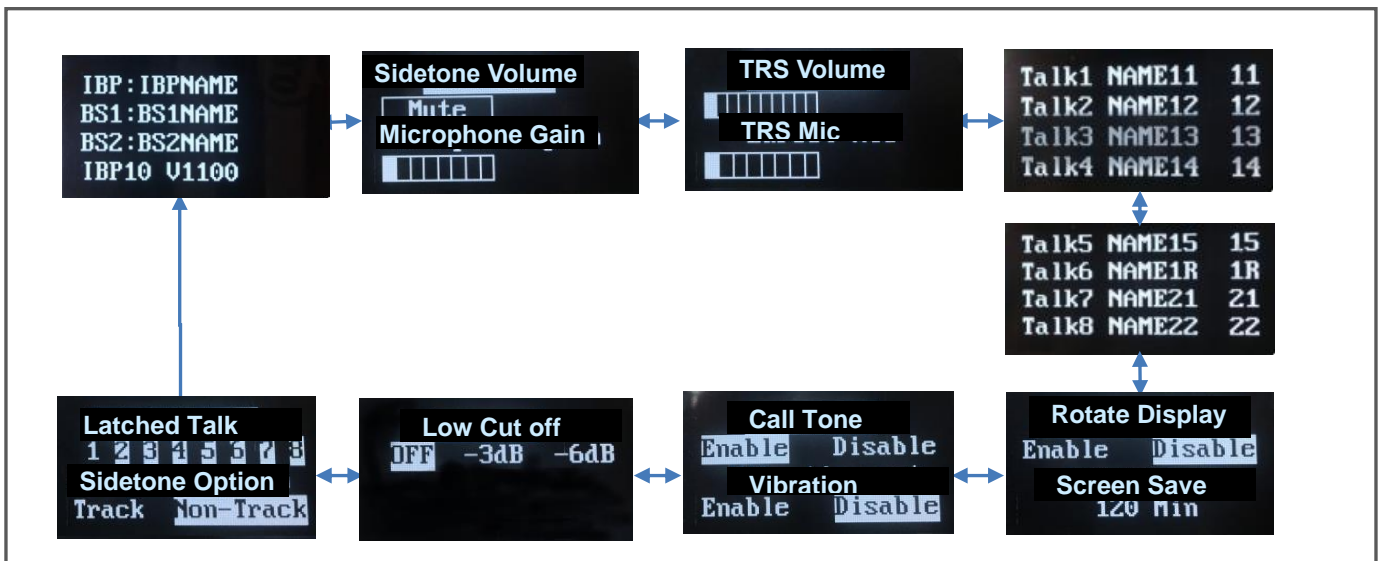
**Shift channel:**

Mark Talk channel 5 to 8 in the same way.

**Main menu**

When you press the menu button, Beltpack label, linked Base Station Labels, Beltpack model, Firmware version appears. For each menu, press the Right button(#9) to scroll down the menu items and press Left button(#8) to scroll up the menu items. The current setting is indicated by a reversed box around the menu item. Press the Up button (#6) to increase a setting and press Down button(#7) to decrease a setting of the menu item. Press the Up or Down buttons to select Settings, and then press the Right or Left button to move to the next menu. To exit menu mode, press the Menu button.

**Note:** If menu is locked, you must unlock the menu by pressing the menu button for 3 seconds.



**Sidetone Volume menu:** Adjust headset sidetone level with Up (#6) or Down (#7) button.

**Microphone Gain menu:** Adjust headset microphone level with Up (#6) or Down (#7) button.

**TRS Volume menu:** Adjust TRS headset volume level with Up (#6) or Down (#7) button.

**TRS Mic menu:** Adjust TRS headset microphone level with Up (#6) or Down (#7) button.

Talk1 LaON001 11  
Talk2 LaON002 12  
Talk3 LaON003 13  
Talk4 LaON004 14  
Talk5 LaON005 15  
Talk6 LaON006 21  
Talk7 LaON007 22  
Talk8 LaON008 23

The labels for Talk channels 1 through 8, connected Base Station number, and assigned Genie group channel are displayed sequentially.

**Rotate Display menu:** You can set the Beltpack display to rotate according to its physical position.

**Screen Save menu:** Set the period during which the screen will turn off automatically.

Selection range: 10 to 900 minutes (10 minutes per step)

**Call Tone menu:** When enabled, the user can hear the tone when a call occurs.

**Vibration menu:** Set the vibration to enable or disable. When enabled, it vibrates when a call signal is received.

**Low Cut off menu:** You can set the cutoff level of low-frequency audio. Up to -6dB.

**Latched Talk menu:** The user can set the latch to be enabled or disabled for the Talk key. If each Talk channel number is selected, the latch can be enabled. Select the Latched Talk mode, the corresponding Talk channel number is displayed as reverse. If the latch is disabled (Momentary) the Talk path is only open while the Talk key is pressed. If the latch is enabled, quickly tapping the Talk key will latch a key, and a second tap will release it.

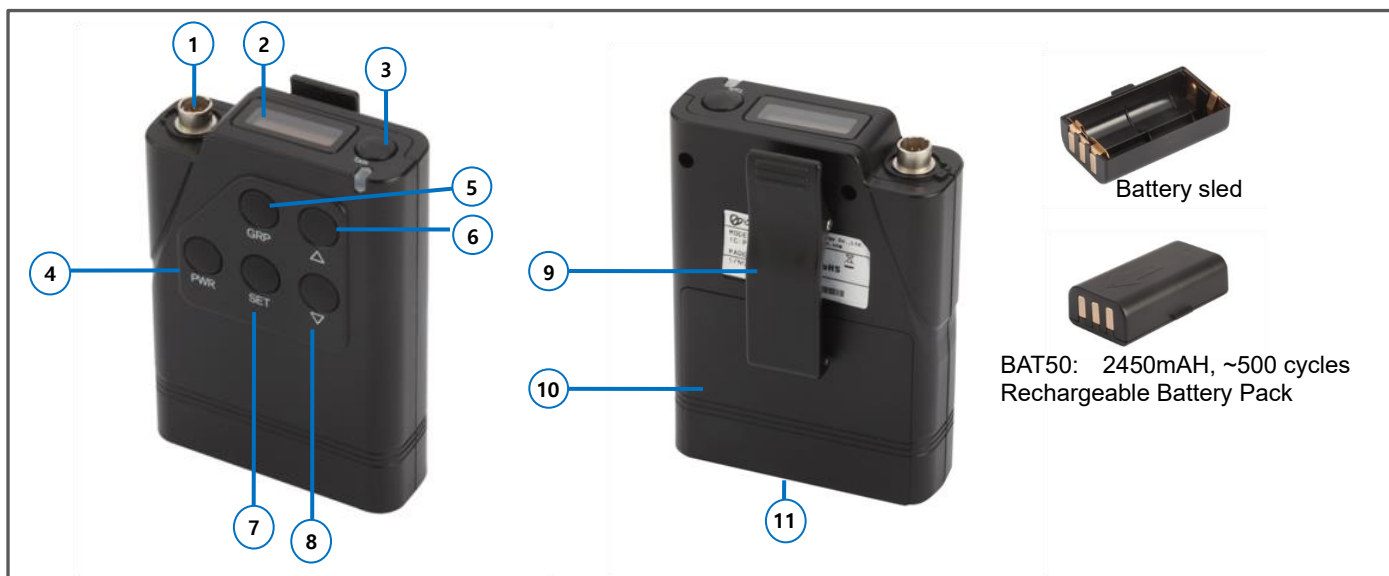
**Sidetone Option menu:**

Track (default): The sidetone will track the master volume level.

Non-track: The sidetone level is fixed to the set level.

## Section 8: Operating the wireless Beltpack BP850, BP851

### 8.1 Connecting the wireless Beltpack BP850, BP851



Press the battery cover (#10) to slide down to open the cover. The Beltpack batteries are located inside the Beltpack battery compartment. The Beltpack can use a rechargeable battery pack or two AA 1.5V alkaline batteries (Used by placing into the battery sled).

#### 1. Headset connector (6pin Mini-Din Receptacle)

The headset is with 'Push-Pull Lock' type connector. Put a headset into the headset connector on the top panel. To disconnect the headset, grab the entire outer metal plug on the headset connector and pull it slightly up to release the lock.

#### 11. Beltpack charging pinout

### Battery charger BATCHG-125, BATCHG-225

The BATCHG125 is a seven-bay charger for recharging the BAT50 rechargeable battery packs. The charger has five bays that can charge the Beltpack with the battery pack inserted in the battery compartment. Additionally, there are two separate bays that can only charge the battery pack. It takes approximately 4.5 hours to fully charge. LEDs indicate the recharging status. There is another charger BATCH225 that can charge eight BAT50 battery packs. The BATCHG225 is eight-bay charger for recharging the BAT50 battery pack. See BATCHG125/BATCHG225 User Manual for details.

### 8.2 Operating the the wireless Beltpack BP850, BP851

#### Power On/Off

**Power On:** Press the PWR button (#4) longer than three seconds to turn on the Beltpack. A voice message 'Power on' will be heard from the headset, and the Talk LED adjacent to the Talk key flashes red. After a few seconds, the Talk LED flashes green indicating that the Beltpack is ready to use.

**Power Off:** Press and hold the PWR button for approximately three seconds. A voice message 'Power off' will be heard in the headset and then Talk LED will turn off.

#### Normal menu on the Beltpack

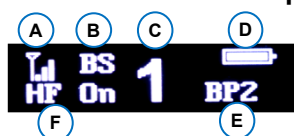


Figure. Normal menu

The item 'A' indicates the RSSI (Received Signal Strength Indication) level of the radio wave. The RSSI level is presented graphically.

The item 'B' indicates the device to which the Beltpack is connected. When the Beltpack is connected to the Base Station, 'BS' will be shown. When the Beltpack is connected to the Remote Antenna, the combination of 'A' and 'ID number of the Remote Antenna' will be shown. The 'ID number' is assigned to each Remote Antenna upon pairing up with the Base Station. When the Beltpack is connected to the Repeater, the combination of 'R' and 'ID number of the Repeater' will be shown. When the Beltpack is connected to the Master Beltpack, 'MB' will be shown. The item 'C' indicates the Genie group channel. The numbers 1 through 5 stands for the ID number of the Genie group channels.

The item 'D' indicates the level of battery used by the Beltpack. The battery level is presented graphically.

The item 'E' indicates the Beltpack's label. When the Lock is set, 'Lock' will be indicated here to instead.

The item 'F' indicates Talk key operation. If the Talk key latching is enabled, 'HF on' (Hands free on) appear. If the Talk channel latching is disabled (Momentary, Push-to-talk), 'HF off' (Hands Free off) appears.

**Talk key and the group channel button**

**Beltpack group channel button (#5)**

Up to five Genie group channels can be set and configured flexibly to Beltpack using the 'Label/Group/Pair' in the Beltpack menu of the Base Station. For example, a Beltpack can be registered as one Genie group channel (#1), or up to five Genie group channels (#1, #1, #1, #2, #4, #5). Belt packs, Key Panels, and Line devices set to the same Genie group channel can communicate in conference mode.

To select Genie group channel on the Beltpack, press the group channel button (#5). It will be changed sequentially by each pressing from 1 to 5 within the allocated group channels. Every time you press the group channel button, a voice message will be heard from the headset. The selected group channel number is displayed on the Normal menu (C).

**Note:** When the Beltpack is operated in Two or Four groups, the GRP button (#5) is operated as a Talk key.

**Talk key (#3)**

**Momentary or Latching**

Talk key can be selected for Hands-free Off (Momentary) or Hands-free On (Latching).

**Talk LED**

When a Talk path is created, the LED on top of the Talk key is lit green. When only a listen path is activated, the LED flashes green. When the Beltpack is not connected to any Antenna, the LED flashes red rapidly.

When the battery level is low, a voice message, 'Change the battery' will be heard from the headset and the LED will turn red.

**Lock the menu**

The Beltpack keys can be locked to avoid any wrong operation by accident. Press and hold the PWR button (#4) of the Beltpack and quickly press GRP button (#5) within two seconds and release both. In the Beltpack Normal menu, 'Lock' is displayed in the lower right corner of the screen. To unlock, press and hold the PWR button (#4) and quickly press GRP button (#5) within two seconds and release both again.

**How to control menus**

**Main menu**

If the screen is in sleep mode, press any button to display the Normal menu.

For BP850, the Main menu appears when you press the Set button in the Normal menu.

For BP851, the Main menu appears when you press the Set button for more than 3 seconds in the Normal menu, and a quickly tapping it will display the Volume menu for each Talk channel.

**Note:** If you do not press the button for 10 seconds in the menu, the edited settings are automatically saved, and the display is turned off. In this case, the settings in the Two groups menu are not saved.



Figure. Main menu

The item 'A' indicates the Beltpack's Label.

The item 'B' indicates the Beltpack's model name, firmware version and ID number.

Press the Set button to return to the Normal menu from the Main menu.

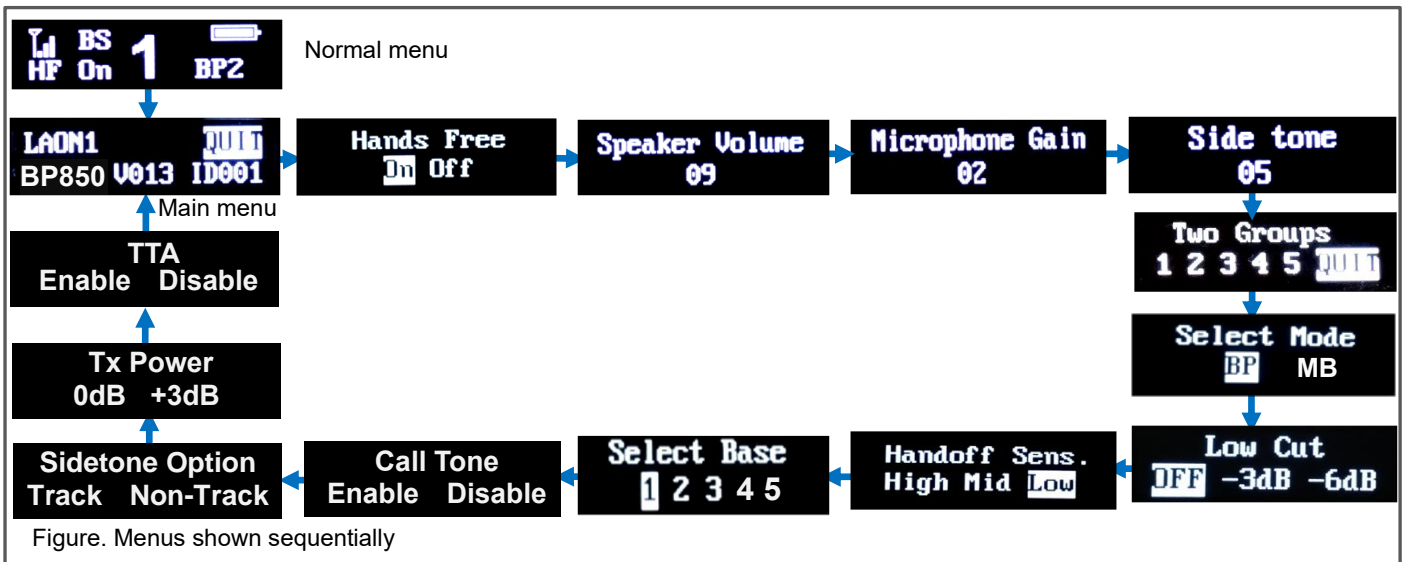


Figure. Menus shown sequentially

In the Main menu, using the Up or Down button, move to each menu sequentially and select a menu by pressing Set button. The selected menu will be flashing and ready to be edited. Use Up or Down button to

change settings. Press Set button to save the settings and move to next item. A short pressing once the power button (#4) will lead you to Normal menu directly.

### Hands free (latched Talk) menu



Figure. Hands free menu

Talk key can be selected for Hands-free Off (Momentary) or Hands-free On (Latching).

### Speaker volume menu



Figure. Speaker volume menu

Move to the Speaker volume menu, press the Set button to select menu and adjust the volume level with Up or Down buttons. You can also adjust the volume level directly by pressing the Up or Down buttons in the Normal menu.

### Microphone gain menu



Figure. Microphone gain menu

Move to Microphone gain menu, press Set button to select menu and adjust headset microphone level with Up or Down button.

### Sidetone menu



Figure. Sidetone menu

Move to Sidetone menu, press Set button to select menu and adjust headset sidetone level with Up or Down button.

### Two groups menu of the BP850



Figure. Two groups menu

In the Two groups menu, within the group channels assigned to the Beltpack, listen paths for the two selected groups is created, and talk path for each group channel is assigned to the Talk key and GRP Key. Once the Two groups are set, GRP button (#5) on the front panel works as Talk key for the latter group selected in the Two groups menu. And the Talk key (#3) works as Talk key for the 1<sup>st</sup> group selected in the Two groups menu. Pressing the Talk or GRP key creates a talk path for that group. If you press the Talk and GRP keys at the same time, the talk path of both groups is created simultaneously. Meanwhile, in two group settings, the listen paths of two groups are always open.

Move to the Two Groups menu and press the Set button to select the menu. Use the Up or Down buttons to move to the group channel number you want and press the Set button. Then the group channel number is displayed as dark text on a light background. In the Two groups menu, initially allocated group channel numbers to the Beltpack will only be displayed. In addition, two groups must be set, otherwise, the settings will not be saved. To reset a group, reverse the settings in the same way. To save, move to the Quit and press the Set button.

#### In Two groups operation, the Talk LED indicate:

- Green flashing slowly: Only the listen paths are activated for all selected groups, and not all Talk paths are created.
- Solid green: It indicates that the listen paths are activated for all selected groups, and a talk path is created for the first group.
- Solid orange: It indicates that the listen paths are activated for all the selected groups, and a talk path is created for the second group by pressing the GRP button.
- Orange flashing rapidly: The Talk and GRP buttons have been latched, indicating that the listen and talk paths for the two group channels are activated.
- Red flashing rapidly: The Beltpack is not paired, or it is not connected to a Base Station or Remote Antenna (Out of coverage).
- Solid red: It indicates that the TTA is in operation.

**Note:** If the Beltpack has only one group channel assigned to it or if the Beltpack is set to Master Belt Pack (MB) mode, the Two groups menu do not appear.

#### Speaker volume menu in Two groups operation



In Two groups operation, the listen level for each group will be adjustable individually in each menu as shown above. If you press the Up and Down button in the Normal menu, it can be adjusted the listen level of the two group channels together.

## Select groups menu of the BP851



Figure. Select groups menu

In the Select groups menu (BP851), within the group channels assigned to the Beltpack, listen paths for the four selected groups is created, and talk path for each group channel is assigned to the Talk key and GRP Key.

### Speaker volume menu in Four groups



In multi-group settings, the listen level for each group can be adjusted individually from each menu as shown above. For BP851, the Main menu appears when you press the Set button for more than 3 seconds in the Normal menu, and a quickly tapping it will display the Volume menu for each group channel.

### Select Mode menu



Figure. Mode selection menu

You can set the Beltpack to Master mode by selecting MB in the Mode Select menu. The Master Beltpack is operated as a Base Station function. When BP or MB mode is selected, the Beltpack is automatically powered off and the voice message 'power off' is heard. Turn the Beltpack on to operate in the selected mode. When the Beltpack set to MB mode is turned on, 'DFS Detecting' appears on the screen. When the scan process is complete for one minute, 'MB' appears in the Normal menu. The Master Beltpack (MB) menu is as follows.

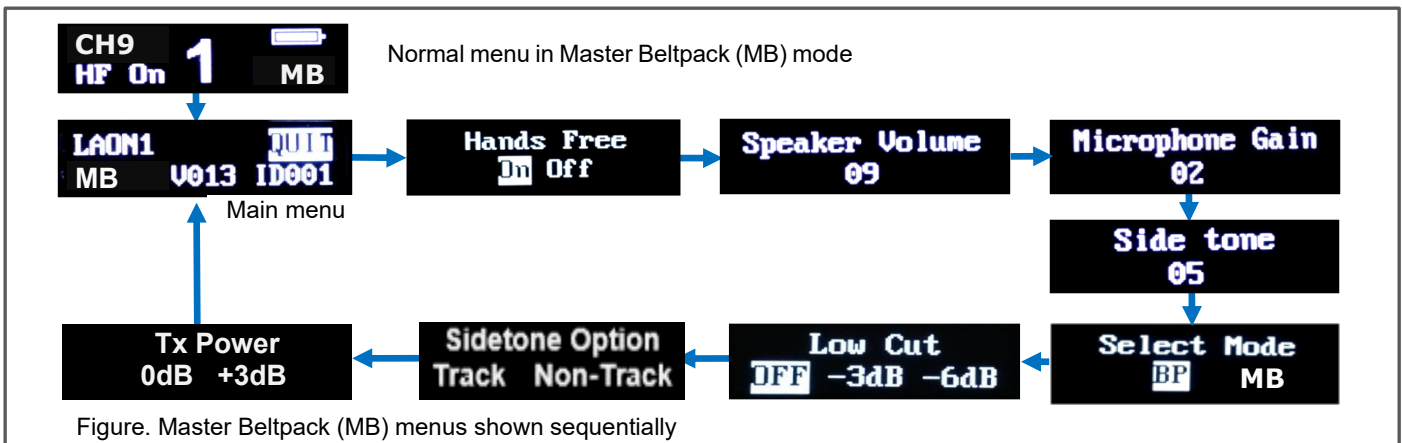


Figure. Master Beltpack (MB) menus shown sequentially

The symbol of the Antenna to which the Beltpack is connected is displayed in the Normal menu. When the Beltpack is connected to the Master Beltpack, 'MB' appears in the Normal menu. The following is the menu of the Beltpack connected to the Master Beltpack.

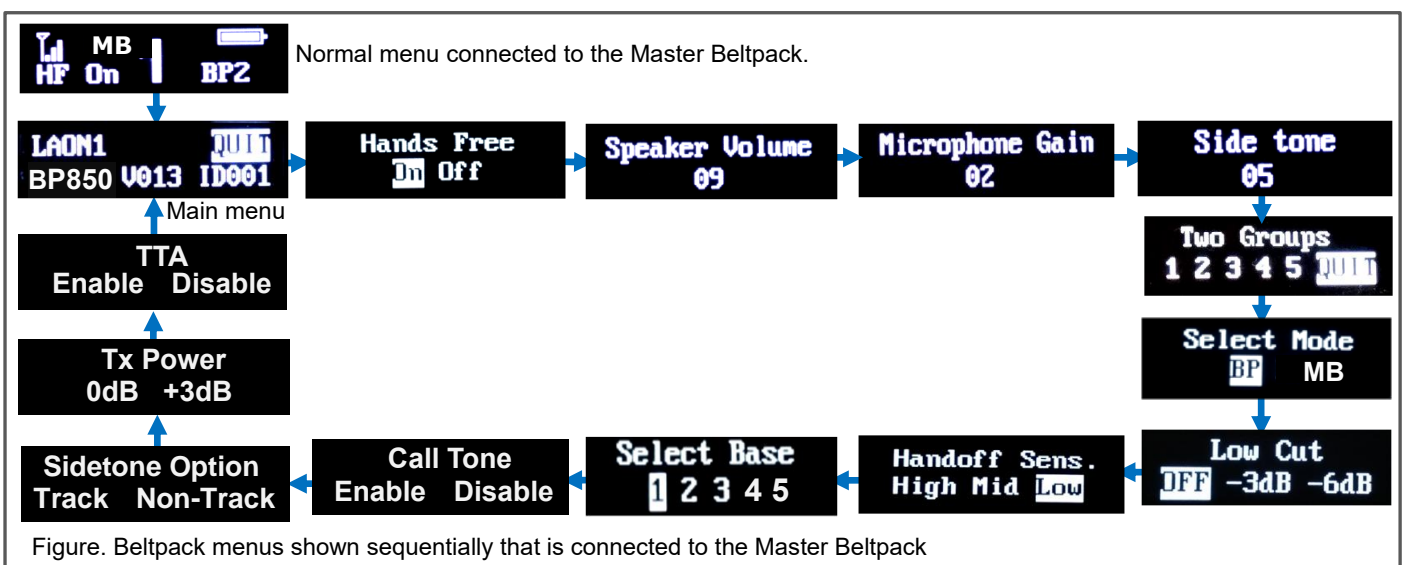


Figure. Beltpack menus shown sequentially that is connected to the Master Beltpack

### Master Beltpack operation

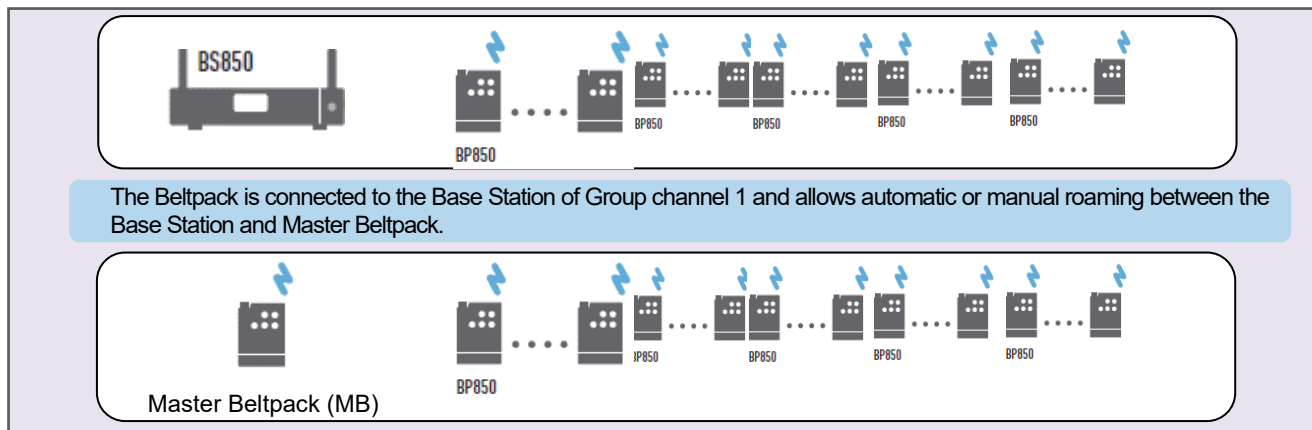
- Wireless communication between up to 128 Beltpacks can be used by setting one Beltpack as the master without Base Station.
- Beltpacks already paired with Base Station or Mobile Station are automatically connected to the Master Beltpack when the group channel is selected as group 1, otherwise the group channel must be set to 1 to connect to the Master Beltpack.
- The Beltpack automatically roaming between the Base Station and the master Beltpack. Manual roaming

is available by double-clicking the PWR button. When both the Base Station and the master Beltpack are operated within one antenna coverage, the Beltpack is automatically connected to a device with a strong wireless signal, which can cause confusion in the normal talk path.

- Master Beltpack provides five talk/listen path (1MB + 4BP) and a single group channel. Therefore, all Beltpacks should be set to group Channel 1.
- When the Beltpack is paired to the Master Beltpack again, the group channel settings with the Base Station are cleared.

**Note:** The battery life of the Master Beltpack is shorter than the Beltpack.

### Stand-alone operation in each Antenna coverage zone



### Pairing with Master Beltpack

Beltpacks already paired with Base Station or Mobile Station are automatically connected to the Master Beltpack when the group channel is selected as group 1, and any additional pairing is not required. If you need to pair the Beltpacks with the Master Beltpack, follow the procedure below. In any case, the Beltpack should initially be paired with Base Station.

- Turn on the Master Beltpack and each Beltpack which will be paired with. Beltpacks should be placed within 3 feet (1 meter) of the Master Beltpack while they are being paired. Make sure that the Normal menu is displayed on the screen of the Master Beltpack. In the Normal menu of the Master Beltpack, press and hold the PWR button and immediately hold down the SET button.
- With this operation, the Master Beltpack to operate in pairing waiting mode, and then the message 'Pairing...' appears. Then release both the PWR and Set buttons.
- Master Beltpack is waiting for a pairing signal from the Beltpack for 20 seconds, during which all communication between the Beltpacks will be interrupted.
- In the Normal menu of the Beltpack, press and hold the PWR button and immediately hold down the SET button. With this operation, the Beltpack to operate in pairing mode, and then the message 'Pairing...' appears. Then release both the PWR and Set buttons.
- On the Beltpack menu screen, a completion message will appear as shown in the following figure. And will shortly return to the Normal menu. If registration fails, the failed message appears.

#### If pairing completed properly:

On the main menu of the Beltpack, appears an ID number label that is generated sequentially from 1 to 128. Once the pairing has been successfully completed, the 'Pairing...' message will be changed to 'Pairing Completed' within 20 seconds as shown in the figure. And the LED adjacent to the Talk key on the Beltpack flashes green.

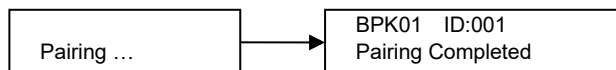


Figure. Pairing completed status

Repeat the pairing processing for each Beltpack.

#### If pairing is failed:

After the message 'Pairing...' appears on the Beltpack screen, it will take up to 20 seconds for the message 'Pairing Failed' to appear. If pairing fails, try again.

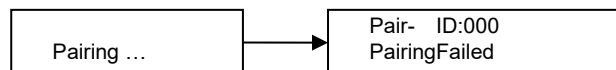


Figure.: Pairing failed status

### Low cut menu



Figure. Low Cut menu

In Low Cut menu, you can set the cutoff level of low-frequency audio such as wind noise and air conditioning. The maximum cutoff level is -6dB.

### Hands off sensitivity menu



Figure. Hands off sensitivity menu

The Hands Off (Roaming) Sensitivity menu allows you to set the sensitivity level for roaming. In case there are wide overlapping Antenna coverage zones, set the sensitivity to High. If you set it to High, roaming is most smoothly implemented.

### Select Base menu

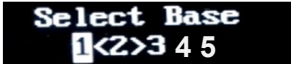


Figure. Select Base menu

The Beltpack can be paired with up to five Base Stations.

In the Select Base menu, you can select one Base Station to connect to from the five Base stations. The numbers 1, 2, 3, 4, and 5 indicate the Base Station to choose from.

Select one Base Station number and pair the Beltpack to the corresponding Base Station. Once the Beltpack has been paired with the Base Station, the corresponding numbers will be reversed in white. The Base Station number 1 is set as the factory default.



Figure. Normal menu screen indication upon the Base Station selection

The Base Station number which is selected from the Beltpack is indicated in the Normal menu.

<Status 1> is the indication when one Base Station is selected and Beltpack has been paired with it. In this case, there is no indication of the Base Station number.

<Status 2> is the indication when the Beltpack has been paired with two or more Base Stations and the Base Station #2 is selected.

<Status 3> is the indication of the selection of Base Station #2, but the Beltpack has not yet been paired with Base Station #2. In this case, instead of the Beltpack label (ID), 'Pair-' is displayed and the red LED flashes. For proper use, pair the Beltpack with Base Station #2, or use another Base Station already paired with the Beltpack.

In the Base Selection menu, to cancel pairing with Base Station #2, select the Base Station number and press the PWR and Set buttons to perform the pairing. That is, wait for 'Pairing Failed' to be displayed. In the Base selection menu, make sure that the white block of the Base Station number is reversed.

If one of the Base Station numbers already paired is selected (in white block on the number) and the Beltpack is paired back with Base Station A, the Beltpack is connected to Base Station A.

### Call Tone menu

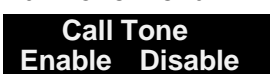


Figure. Call Tone menu

In the Call Tone menu, select Enable or Disable. When enabled, the user can hear the tone when a call occurs.

### Sidetone Option menu

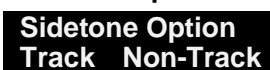


Figure. Sidetone Option menu

Track (default): The sidetone level will track the master volume level.

Non-track: The sidetone level is fixed to the set level.

### Tx Power menu

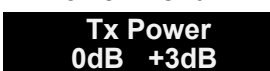


Figure. Tx Power menu

Select the maximum radio transmission power for the Beltpack.

Select +3 dB to increase the peak radio transmission power by 3dB. Battery life does not change if you only listen, but if you create the Talk path continuously at +3dB, battery life is less than when Tx power is set to 0dB.



## TTA (Talk to All) menu



Figure. TTA menu

When the TTA is enabled, pressing the Talk key for more than 2 seconds activates the TTA function. Perform simultaneous transmission to all available Genie group channels assigned to the Beltpack. The LED turns red. Release the Talk key to stop the TTA transmission. If the TTA is enabled even if the Talk key is set to Hands-free off (Momentary), the Talk key is automatically set to Hands free on (Latched) mode. Hands-free off (Momentary) mode is used to operate the TTA function.

The TTA function also operates in Two groups of BP850. However, it does not operate in the Four groups of BP851.

## Change batteries

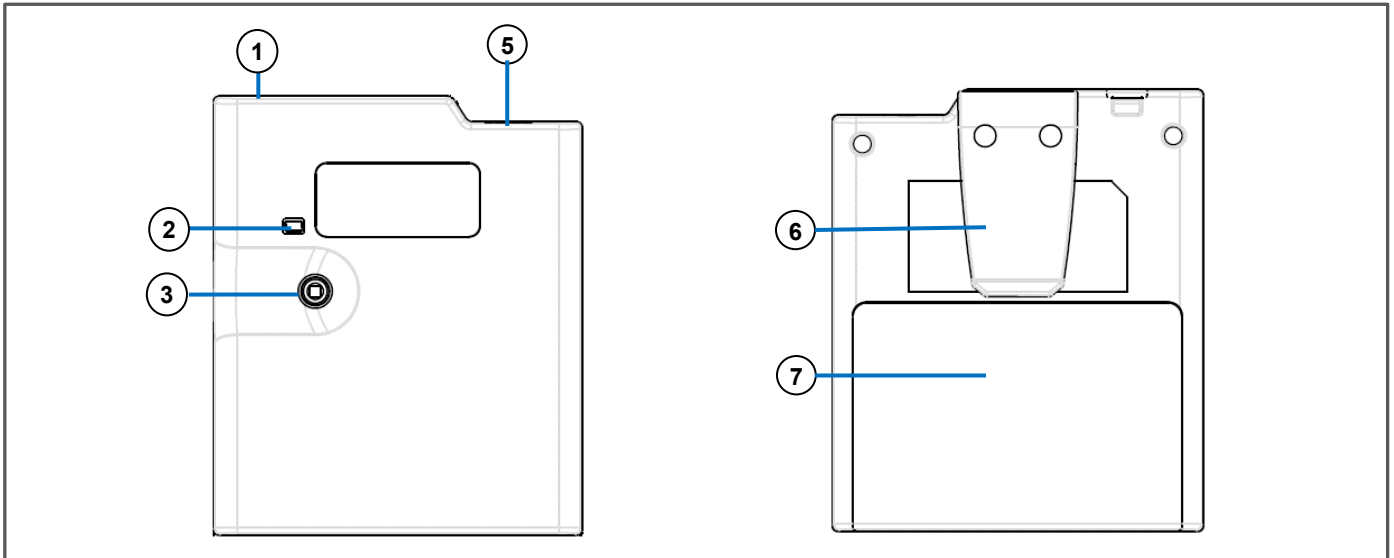
When the Battery level became weak, you can hear the voice message, 'Change battery'. When this happens, press the battery cover to slide down to open the cover. The Beltpack batteries are located inside the Beltpack battery compartment. The Beltpack can use a rechargeable battery pack or two AA 1.5V alkaline batteries (Used by placing into the battery sled). Make sure the position of polarity (+, -) is correct. Close the battery cover.

## Voice messages in the headset of the Beltpack

'Power on'	'Unlatched'	'Power off'	'Change battery'
'Hands free on'	'group one'	'hands free off'	'group two'
'Beep'	'group three'	'Maximum'	'group four'
'Minimum'	'group five'	'Audio channel is busy'	'Out of coverage'

## Section 9: Operating the wireless IFB receiver WR850

Wireless IFB receiver WR850 can be easily connected to a Genie system or MS150.



- 1. Hole for Neck Strap
- 2. LED indicator
- 3. 5 position, Navigation switch
- 4. OLED screen
- 5. Earphone plug
- 6. Blet Clip
- 7. Battery cover

Press down on the battery cover to open the cover. Using a fully charged battery pack BAT50 or the supplied battery sled, insert two AA 1.5V alkaline batteries, two charged Eneloop-pro, or two Lithium-ion 1.5V AA batteries and close the cover.

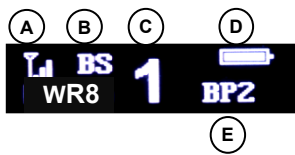


Figure. Normal menu

- The item 'A' indicates the RSSI (Received Signal Strength Indication) level of the radio wave.
- The item 'B' indicates the device to which the IFB receiver is connected.
- The item 'C' indicates the Genie group channel.
- The item 'D' indicates the level of battery used by the IFB receiver.
- The item 'E' indicates the IFB receiver's label.

### Operating the Navigation Switch

**Switch operations in Normal menu**

Volume up

Volume down

Select Genie group: 200ms

Lock the menu: 5 second

Menu: 1 second

Center: Push

Power on/off: 3.5 second

Manual roaming: Two clicks

Center: Push

**Switch operations in Main menu**

Move to Menu item or change the value

Confirm

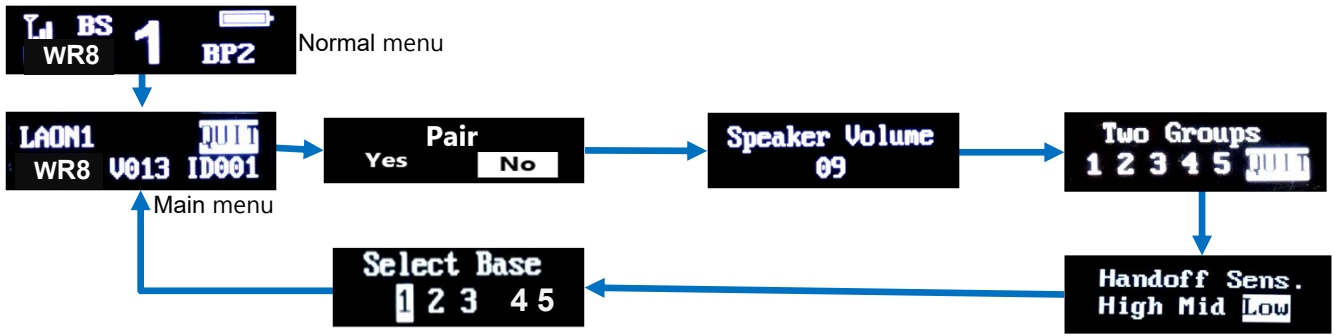
Confirm

Center: Push

Move to Normal menu

Move to Menu item or change the value

Main menu



For details, see Genie wireless IFB Receiver user manual

## Section 10: Specifications

### 10.1 Base Station BS1000

RF Frequency	Use 20Mhz channels within the 5GHz U-NII band, from 5180-5845MHz. Depending on region
Antenna	Two external 1/2 -wave dipole, SMA female
<b>Transmitter</b>	
RF Modulation	QPSK
Frequency Stability	± 2ppm
<b>Receiver</b>	
RF Sensitivity	-85dBm for 5 BER
Frequency Stability	± 2ppm
Beltpacks per Base Station	128 Beltpacks can be paired with a Base Station. It supports 10 Talk and 128 Listen paths at the same time. Including Base Station, eleven Talk paths are provided.
Genie group channels	Five conference channels
Audio Bandwidth	200 Hz to 7.2 kHz
Audio Dynamic Range	>70dB
S/N	>95dB @ 1Khz
Loudspeaker	3 watts
Headset output	500mW into 32 Ohm
Latency	One-way system latency less than 23ms direct
Communication Security	256 bits key AES level 3 Encryption
Front Panel Display	Two OLED, 128 x 64 Resolutions
Front Panel Button	8Talk key, LED indicated Buttons and Rotary encoders
Gooseneck Microphone	Dynamic or Electret, XLR-3F
Headset	Dynamic or Electret, 6-pin mini-DIN male, Receptacle
Line A (2-Wire)	XLR-3F with XLR-3M loop through
Line B (2-Wire)	XLR-3F
Line A and Line B (4-Wire)	Two RJ-45, 600Ω balanced, level adjustable
Line C (4-Wire)	Input: XLR-3F, Output: XLR-3M, 600Ω balanced, level adjustable
Line D (4-Wire)	Input: XLR-3F, Output: XLR-3M, 600Ω balanced, level adjustable
Stage announce output	Phone Jack (6.3Φ), Transformer isolated, Line-level output
Multi-Sync ports	SMA Female. Up to 5 Base Stations may be connected for Ethernet synchronization
PC PROG	25-pin D-type female, Updating the Base Station firmware
Relay/Opto/AUX (Line D)	25-pin D-type male, 3 Relay outputs, 2 Opto inputs, AUX I/O (Unbalanced)
PoE Input	RJ-45 Connector, 100Mbps Standard PoE specification
Daisy-chain PoE Line1, PoE Line2	Two RJ-45 Connectors, 100Mbps Standard PoE specification
Power Supply	Consumption: 17 watts Two 48-56VDC inputs, PoE input The external PSU provides the 48VDC 2.5A and at its input takes 100-240VAC, 47-63Hz.
Operating Temperature	0°C to 50°C (32°F to 122°F)
Dimensions	16.83W x 8.03D x 1.73H inch (42.75W x 20.4D x 4.4H cm) without connector and foot.
Weight	7.72 lb (3500g)

## 10.2 Base Station BS850

RF Frequency	Use 20Mhz channels within the 5GHz U-NII band, from 5180-5845MHz. Depending on region
Antenna	Two external 1/2 -wave dipole, SMA female
<b>Transmitter</b>	
RF Modulation	QPSK
Frequency Stability	± 2ppm
<b>Receiver</b>	
RF Sensitivity	-85dBm for 5 BER
Frequency Stability	± 2ppm
Belpacks per Base Station	128 Belpacks can be paired with a Base Station. It supports 10 Talk and 128 Listen paths at the same time. Including Base Station, eleven Talk paths are provided.
Genie group channels	Five conference channels
Audio Bandwidth	200 Hz to 7.2 kHz
Audio Dynamic Range	>70dB
S/N	>95dB @ 1Khz
Headset output	250mW into 32 Ohm
Headset	Dynamic or Electret, 6-pin mini-DIN male, Receptacle
Latency	One-way system latency less than 23ms direct
Communication Security	256 bits key AES level 3 Encryption
Auxiliary Input	XLR-3F/1/4" (6.35mm) combo jack, 600Ω balanced, level adjustable
Auxiliary output	XLR-3M, 600Ω balanced, level adjustable
8Ω Speaker Output	350mW into 8Ω
4-Wire I/O	10-Pin Spring Clamp connector, 600Ω balanced, level adjustable
Multi-Sync ports	10-Pin Spring Clamp connector. Up to 3 Base Station can be connected
LAN Connector	RJ-45
USB Connector	Reserved
Front Panel Display	OLED, 128 x 64 Resolutions
Front Panel Button	Touch buttons
Power Supply	Consumption: 9 watts The external PSU provides the 12VDC 3.3A and at its input takes 100-240VAC, 47-63Hz
Operating Temperature	0°C to 50°C (32°F to 122°F)
Dimensions	8.26W x 6.37D x 1.73H inch (21W x 16.2D x 4.4H cm) without connector and foot.
Weight	2.41 lb (1094g)

### 10.3 Remote Antenna RA100DW

RF Frequency	Use 20Mhz channels within the 5GHz U-NII band, from 5180-5845MHz. Depending on region
Antenna	Internal
<b>Transmitter</b>	
RF Modulation	QPSK
Frequency Stability	± 2ppm
<b>Receiver</b>	
RF Sensitivity	-85dBm for 5 BER
Frequency Stability	± 2ppm
Beltpacks per Remote Antenna	128 Beltpacks can be connected and supports additional 10 Talk paths and 128 Listen paths.
PoE Input	RJ-45 Connector, 100Mbps Standard PoE specification
PoE Line1, PoE Line2 (Daisy-chain)	Two RJ-45 Connectors, 100Mbps Standard PoE specification
Multi-Sync	Reserved.
Power Connector	M12 04pin (Female)
Power Consumption	Max. 8W
Power Supply	Consumption: 8 watts 48-56VDC input, PoE input The external PSU provides the 48VDC 2.5A and at its input takes 100-240VAC, 47-63Hz.
Operating Temperature	0°C to 50°C (32°F to 122°F)
Dimensions	7.48W x 1.96D x 7.87H inch (19W x 5D x 20H cm) without bracket
Weight	1.58 lb (720g)

### 10.4 Remote Antenna RA100

RF Frequency	Use 20Mhz channels within the 5GHz U-NII band, from 5180-5845MHz. Depending on region
Antenna	External $\frac{1}{2}$ -wave dipole, SMA connector
<b>Transmitter</b>	
RF Modulation	QPSK
Frequency Stability	± 2ppm
<b>Receiver</b>	
RF Sensitivity	-85dBm for 5 BER
Frequency Stability	± 2ppm
Beltpacks per Remote Antenna	128 Beltpacks can be connected and supports additional 10 Talk paths and 128 Listen paths.
Power Supply	Consumption: 6 watts RJ-45 Connector, 100Mbps Standard PoE specification
Operating Temperature	0°C to 50°C (32°F to 122°F)
Dimensions	3.46W x 1.47D x 4.80H inch (8.8W x 3.74D x 12.2H cm) without Antenna holder
Weight	1.01 lb (460g with Antennas)

## 10.5 Repeater RBS85

RF Frequency	Use 20Mhz channels within the 5GHz U-NII band, from 5180-5845MHz. Depending on region
Antenna	External $\frac{1}{2}$ -wave dipole, SMA connector
<b>Transmitter</b>	
RF Modulation	QPSK
Frequency Stability	$\pm 2$ ppm
<b>Receiver</b>	
RF Sensitivity	-85dBm for 5 BER
Frequency Stability	$\pm 2$ ppm
Beltpacks per Repeater	128 Beltpacks can be connected, and supports 10 Talk and 128 Listen paths with one Remote Antenna.
Power Supply	Consumption: 6 watts RJ-45 Connector, 100Mbps Standard PoE specification
Operating Temperature	0°C to 50°C (32°F to 122°F)
Dimensions	3.46W x 1.47D x 4.80H inch (8.8W x 3.74D x 12.2H cm) without RS holder kit
Weight	1.01 lb (460g with Antennas)

## 10.6 Ethernet Beltpack IBP10

Genie group channels	Five ~ Ten
Audio Bandwidth	200 Hz to 7.2 kHz
Audio Dynamic Range	>70dB
S/N	>95dB @ 1Khz
Headset output	500mW into 32 Ohm
Headset	Dynamic or Electret, 6-pin mini-DIN male
TRRS headset	3.5Ø, Connect to Earphone or Audio I/O
Power Supply PoE In, PoE Out (Daisy-chain)	Consumption: 4 watts Two RJ-45 Connectors, 100Mbps Standard PoE specification
Display	OLED, 128 x 64 Resolutions
Button	4 Talk keys with LED indicator, Push buttons
Operating Temperature	0°C to 50°C (32°F to 122°F)
Dimensions	3.42W x 5.47D x 1.85Hinch (8.75W x 13.9D x 4.7H cm) without Belt Clip
Weight	0.68 lb (310g)

## 10.7 Wireless Beltpack BP850, BP851

RF Frequency	Use 20Mhz channels within the 5GHz U-NII band, from 5180-5845MHz. Depending on region
Antenna	Internal
<b>Transmitter</b>	
RF Modulation	QPSK
Frequency Stability	± 2ppm
<b>Receiver</b>	
RF Sensitivity	-85dBm for 5 BER
Frequency Stability	± 2ppm
Master Belt Pack mode	128 Beltpacks can be paired with a Master Beltpack. It also supports four Talk and 128 Listen paths at the same time. Including one Master Beltpack, five Talk paths are provided. One group channel is available for the Master Beltpack mode.
Genie group channels	Five conference channels
Number of channels (Individual level control)	BP850: Two simultaneous Genie group channels or five selectable Genie group channels BP851: Four simultaneous Genie group channels or five selectable Genie group channels
Audio bandwidth	200 Hz to 7.2 kHz
Audio Dynamic Range	>70dB
S/N	>95dB @ 1Khz
Headset output	250mW into 32 Ohm
Headset	Dynamic or Electret, 6-pin mini-DIN male
Latency	One-way system latency less than 23ms direct
Communication Security	256 bits key AES level 3 Encryption
Display	OLED, 128 x 32 Resolutions
Button	Push buttons
Battery Requirement	2.4V 2450mAh Rechargeable NiMH Battery or Two AA size 1.5V alkaline batteries.
Rechargeable Battery life	Approximately 9 hours, Alkaline 5 hours
Operating Temperature	0°C to 50°C (32°F to 122°F)
Dimensions	2.89W x 0.92D x 3.83H inch (7.35W x 2.35D x 9.73H cm) without Belt Clip
Weight	0.45 lb (202g) with battery / 0.29 lb (133g) without battery

## 10.8 Wireless IFB receiver WR850

RF Frequency	Use 20Mhz channels within the 5GHz U-NII band, from 5180-5845MHz. Depending on region
Antenna	Internal
<b>Receiver</b>	
RF Sensitivity	-85dBm for 5 BER
Frequency Stability	± 2ppm
<b>Receiver</b>	
Genie group channels	Five conference channels
Number of listen paths (Individual level control)	Two simultaneous listen paths or five selectable paths
Audio bandwidth	200 Hz to 7.2 kHz
Audio Dynamic Range	>70dB
S/N	>95dB @ 1Khz
Earphone output	Max 300mW into 32 Ohm
Earphone	3.5 mm TRRS plug
Latency	One-way system latency less than 23ms direct
Communication Security	256 bits key AES level 3 Encryption
Display	OLED, 128 x 32 Resolutions
Button	5 positions, Navigation switch
Battery Requirement	2.4V 2450mAh Rechargeable NiMH Battery, Two AA size 1.5V alkaline (or Lithium-ion) batteries.
Rechargeable Battery life	Approximately BAT50 12 hours, Alkaline 8 hours
Operating Temperature	0°C to 50°C (32°F to 122°F)
Dimensions	2.67W x 0.88D x 3.18H inch (6.8W x 2.25D x 8.1H cm) without Belt Clip
Weight	0.33 lb (154g) with battery / 0.18 lb (82g) without battery



## **10.9 Battery charger BATCHG125**

Power Input	The external PSU provides the 15VDC 8A and at its input takes 100-240VAC, 47-63Hz.
Operating Temperature	32 °F - 104°F (0°C – 40°C)
Number of Charging Ports	A BATCHG125 battery charger can charge up to seven batteries (BAT50) simultaneously. Up to five Beltpacks (battery is located inside the Beltpack battery compartment) and two BAT50 batteries can be charged simultaneously.
Charging time	Full charge of the battery pack is obtained after 4 hours
Status Indicators	Power (green) 1ea
	Empty/Pending/Fail (amber) 1ea for each port
	Charge/Ready (red/green) 1ea for each port
Weight	2.85 lb (1294g) without adapter and power cord (1955g with adapter and power cord)
Dimensions	9.33W x 8.26D x 3.93H inch (23.7W x 21.0D x 10.0H cm)

## **10.10 Battery charger BATCHG225**

Power Input	The external PSU provides the 15VDC 8A and at its input takes 100-240VAC, 47-63Hz.
Operating Temperature	32 °F - 104°F (0°C – 40°C)
Number of Charging Ports	A BATCHG225 battery charger can charge up to eight batteries (BAT50) simultaneously, and eight ports for storing.
Charging time	Full charge of the battery pack is obtained after 4 hours
Status Indicators	Power (green) 1ea
	Empty/Pending/Fail (amber) 1ea for each port
	Charge/Ready (red/green) 1ea for each port
Weight	2.36 lb (1072.5g) without adapter and power cord (1910.5g with adapter and power cord)
Dimensions	8.78W x 7.08D x 2.28H inch (22.3W x 18.0D x 5.85H cm)

## **10.11 Rechargeable battery pack**

<b>BAT-50 Battery Pack</b>	
Battery type	2.4V 2450mAH NiMH rechargeable battery pack
Charging cycles	~500 cycles
Storage Temperature	-4 °F - 104°F (-20°C – 40°C)
Weight	0.16 lb (73g)

## 10.12 Headsets, Gooseneck Mic

### Headsets

Model		LSH-S125D	LMH-125D	LNH-20D	LMH-10	PTE-850
Type		Double Headphone	Single Headphone	Neckband, Boom Mic Single Earphone	Lightweight Single Headphone	Single Earphone
Micro phone	Type	Dynamic Unidirectional, Noise Cancelling	Dynamic Unidirectional, Noise Cancelling	Dynamic Unidirectional, Noise Cancelling	Dynamic Unidirectional, Noise Cancelling	Electret
	Boom	300-degrees rotation	300-degrees rotation	Adjustable	270-degrees rotation	PTT Mic
	Impedance	560 Ohms±20%	560 Ohms±20%	200 Ohms±20%	200 Ohms±20%	2.2K Ohms
	Sensitivity	-62dB±3dB	-62dB±3dB	-66dB±4dB	-68dB±4dB	-50dB±4dB
	Frequency Response	400Hz~7KHz	400Hz~7KHz	200Hz~12KHz	100Hz~10KHz	20Hz~20KHz
Head phone	Impedance	16 Ohms	32 Ohms	80 Ohms	32 Ohms	32 Ohms
	Max Input	500mW	500mW	300mW	300mW	50mW
	Output SPL	93dB±3.0dB at 1KHz	93dB±3.0dB at 1KHz	112dB±5.0dB at 1KHz	118dB±4.0dB at 1KHz	106dB±4.0dB at 1KHz
	Frequency Response	200Hz~10KHz	200Hz~10KHz	100Hz~3.5KHz	300Hz~4KHz	300~5KHz
Connector	6-pin mini-DIN		6-pin mini-DIN	6-pin mini-DIN	6-pin mini-DIN	6-pin mini-DIN
Cable	1300mm		1300mm	1350mm	1350mm	
Weight			120g	105g		

### Gooseneck Microphones

Model	GM8	GM26
Type	Electret	Electret
Polar Pattern	Cardioid	Cardioid
Impedance	200 Ohms	100 Ohms
Sensitivity	-65dB±3dB	-60dB±3dB
Frequency Response	80Hz~18KHz	60Hz~17KHz
Phantom Power	9V~52V	9V~52V
Connector	XLR-3M	XLR-3M
Length	7.58inch (192mm)	17.9 (454mm) ~ 26.2inch (665mm)
Weight	80g	200g

### Earphone LME-880

Model		LME-880
Type		Single Earphone
Head phone	Impedance	32 Ohms
	Rated input power	10mW
	Max Input power	300mW
	Sensitivity	98±3dB@1KHZ 1mW
	Frequency Response	200Hz~4KHz
Connector	3.5mm TRRS plug	
Cable	1300mm	
Weight	0.05 lb (24.5g)	

## **Section 11: Glossary**

**Talk channel:** By setting up a Genie group channel (conferencing mode), key panel, or Line (4-Wire), the channel available as a communication channel is called a Talk channel. Each Talk channel is operated by a Talk key, Call, Volume control, etc.

**Genie group channel:** A function provided by the Genie Base Station (BS1000 or BS850), a group that allows more than one person to have full-duplex conversations at the same time.

In a Genie group channel, the operator communicates with all members of a group at the same time. Then, when a group member responds by pressing the Talk key, the audio path is passed to all members simultaneously. Up to 10 members of one group can speak to all other members at the same time. And all members can listen these conversations at the same time.

**Genie Base Station:** Genie Base Station BS1000 or BS850

**Group key:** Set up multiple members (such as Key Panels, Line, and Genie group channels) on one Talk key, enabling simultaneous call with all set devices. the operator communicates with all members of a Group key at the same time. Then, when a Group key member responds by pressing the Talk key, the audio path is passed to all members simultaneously. Up to 8 members of one Group key can speak to all other members at the same time. And all members can listen these conversations at the same time.

**Line audio routing:** A function that provides full-duplex communication by connecting the input and output audio of a Line to specific Key Panels or Genie group channels, without setting up on the Talk key.

**Key Panel, Panel:** An intelligent IP intercom device connected to a Genie system.

**IFB: Interruptible Foldback:** This is commonly used in television news and live events. The term foldback refers to the sending of a program audio/feed or other audio mix. By sending these audios back to the broadcast host, the broadcast host can monitor himself and also monitor mixed audio from other hosts and other sources. Broadcast hosts only listen to foldback audio with small earphone. The Director shall interrupt these foldback audio to give instructions to the broadcast host on air or to inform him of any changes to the program. To this end, the Director uses a Talk channel set to IFB to interrupts the foldback audio.

**Source:** In this manual, the term source refers to a Key Panel that sends audio signal. A Key Panel to which audio signal is transmitted is called a Destination.

**Destination:** In this manual, a device such as a Key Panel to which audio signals are sent. A Key Panel from which audio signals are sent is called a Source.

**Program, FB (Fold Back) audio:** A separate audio source that is fed into the intercom channel. For example, in a live event, program audio is a live audio.

**Label:** A Label is up to seven alphanumeric names that identifies a source, destination, Key Panel, Line, or group channel. Labels appear on the Key Panel display.

**Partyline:** A wired shared communication system based on 2-Wires. A Partyline is a group of intercom ports which can always talk and/or listen to each other.

**Line:** A communications system where the path is different for talk and listen. In electrical pathways there are, in fact, four wires (two paths). Line is four-wire balanced.

**Sidetone:** The sound of the Key Panel operator's voice is literally heard on his earphone.

**Call signal:** A call signal is an electronic signal sent from one Key Panel to another. A call signal can be audible and/or Vibration. Typically, a call signal is sent to get the attention of a Key Panel operator who may have turned down their intercom speaker's volume level or removed their headset.

**Talk/ Listen (full-duplex) audio path:** Duplex communication allows simultaneous two-way conversations, that is one person can interrupt the other.

**Ethernet Synchronization:** This function eliminates inter-interference by simultaneously transmitting and receiving all devices connected to one Master Key Panel with Ethernet.

**Ethernet:** Ethernet is a family of computer networking technologies commonly used in local area networks (LAN), metropolitan area networks (MAN) and wide area networks (WAN).

**Pair:** Genie devices are registered to the GCMV2 over the LAN. This pairing process allows Key Panels to recognize each other and an own cryptic code will be given for the corresponding system.

**Rack Unit (RU):** A standard unit of measure used when dealing with electronic equipment racks. 1 RU = 1.75" (44.45 mm). For example, a particular piece of equipment is described as being 3 RU in height. This means that it is 5.25" (3 x 1.75") in height. Detailed information on the specification of standard electronic equipment racks can be found in EIA RS-310-D.

**Daisy-chain PoE Line1, Line2:** Provides Daisy-chain connection function to supply data and power from PoE to another PoE Line. PoE Line1 and Line2 provide the ability to use the input power from the PoE and supply the remaining power to the other Line. Only use the network switch according to the standard PoE specification when connecting the network switch to the Daisy-chain Lines.

# Thank you.

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