GENIE

Base Stations BS1000, BS850
Remote Antennas RA100DW, RA100
Repeater RBS85
Speaker Station ISS800
Ethernet Beltpack IBP10
Wireless Beltpack BP850, BP850S

Converged Intercom System
Genie User Manual (Version V2210615)

LaON Technology

Contents

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, LTWI-BAT50, LTWI-BAT50R and LTWI-BAT150, 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.

The information herein, including but not limited to, illustrations, figures and images subject to change without prior notice and shall not be interpreted as an expressed or implied commitment on LaON Technology's part.

With due respect, LaON Technology, the manufacturer of the equipment does not provide any expressed or implied warranty to anything included in this operating instruction and shall have no legal responsibility for any implied warranties of suitableness for a specific application or for any special, indirect, or consequential damages. LaON Technology may update this publication at its own discretion.

Section 1: Introduction

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

Fully Scalable and Flexible Hybrid solution

- **Genie Solo: 10 to 70 talk/listen paths**
- **Genie Trio: 30 to 210 talk/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, Speaker Stations and Ethernet Beltpacks can all be connected through Power of Ethernet (PoE) 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. Genie Solo provides connectivity for 60 Speaker Stations, Ethernet Beltpacks or Repeaters and 128 wireless Beltpack connections via six Remote Antennas. 10 to 70 talk/listen paths are available on wired or wireless devices. And the GCM (or GCMW, Genie Configuration Manager-WAN) supports for an efficient and integrated management of the system by its easy setup of the configurations and various monitoring functions with full visibility.

Genie is a Daisy-chain connection enabled system that allows Remote Antennas, Speaker Stations 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.

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

1.1 System overview

Base Station BS1000

- System configured by Base Station BS1000 + Remote Antenna RA100DW or RA100 + Ethernet Beltpack IBP10 + Speaker Station ISS800 + Wireless Beltpack BP850 or BP850S + Repeater RBS85.
  One Base Station (Genie Solo) offer up to 60 Genie devices (Ethernet Beltpacks, Speaker Stations, 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 Speaker Stations or Repeaters can be connected to one Remote Antenna.
  One Remote Antenna supports 10 talk/listen paths. Even while multiple Talk channels of a device such as Speaker Station are in active, it only occupies one talk/listen path. Thus, one Base Station with six Remote Antennas offers up to 70 talk/listen paths for the wireless and Ethernet devices. However, for an instant, while the Speaker Station is talking with two Base Stations simultaneously, it occupies two talk/listen paths.
- Three Base Stations (Genie Trio) offer up to 210ch talk/listen paths for the wireless and Ethernet devices. The Genie Trio, with 384 wireless Beltpacks, and 180 Ethernet Beltpacks or 180 Speaker Stations.
- 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 GCM (or GCMW, Genie Configuration Manager-WAN) enables setting and pairing, as well as monitoring each device's frequency data spectrum, links and battery status.

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, Speaker Stations, Remote Antennas, Repeaters) and 128 wireless Beltpacks simultaneously.
- Three Base Stations BS850 (Genie Trio) offer up to 120ch talk/listen paths for the wireless and Ethernet devices. The Genie Trio, with 384 wireless Beltpacks, and 90 Ethernet Beltpacks or 90 Speaker Stations.
- 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 GCM (or GCMW) enables setting and pairing, as well as monitoring each device's frequency data spectrum, links and battery status.

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	2+(3xPoE)
BS850	Base Station	1		2					O	1
RA100DW	Remote Antenna Daisy-chain, IP53 sealing				2	1			O	1+(3xPoE)
RA100	Remote Antenna					1				PoE
RBS85	Repeater					1				PoE
BP850(850S)	Wireless Beltpacks	2 (4*)								Battery
ISS800	Speaker Station	8	2	2	2	1	2	2		2+(3xPoE)
IBP10	Ethernet Beltpack	4			2					(2xPoE)

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	30	10	
Connections of wireless Beltpack (BP850, BP850S)	128	128	128 With Base Station	128 with RA100
Connections of Ethernet Beltpack IBP10	120 (Max)	60 (Max)	10	
Connections of Speaker Station ISS800	120 (Max)	60 (Max)	10	
Talk/listen paths	70	40	10	10 with RA100
Description	**Connections**			
Recommended multiple Base Stations	Up to 5			
Base Stations paired with BP850, BP850S	Up to 5			
Base Stations paired with IBP10, ISS800	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 the large congested 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, Speaker Stations and Genie 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, 10 Ethernet Beltpacks or Speaker Stations or Repeaters can be connected to one Remote Antenna.
- **Ten talk/listen paths per Base Station or Remote Antenna**
  Each Base Station or Remote Antenna provides 10 additional talk/listen paths. Therefore, one Base Station BS1000 with six Remote Antennas provides up to 70 talk/listen paths for the wireless Beltpacks or Genie IP devices.
- **128 wireless Beltpack connections and 10 talk/listen paths per Antenna**
  Each Antenna such as Base Station, Remote Antenna provides an Antenna coverage area with a respective 10 wireless talk/listen paths in each area. Repeater shares the wireless audio paths with the corresponding Remote Antenna. And 128 Beltpacks can be connected per one Base Station in total regardless of how many Remote Antennas and Repeaters are connected. And there is no limitation on the number of the wireless Beltpack connection per any Antenna within up to 128.
- **Ethernet synchronizations**
  Ethernet synchronization avoids RF interference, packet loss, delay, and jitter between devices. Ethernet synchronization applies to all 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 talk/listen paths for the BP850S, two audio paths for the BP850. These features provide level control for each audio path.
- **Wireless Beltpack in Master mode**
  One of all wireless Beltpacks can be set as a Master Beltpack. Wireless Beltpacks can communicate with each other via this Master Beltpack without a Base Station.

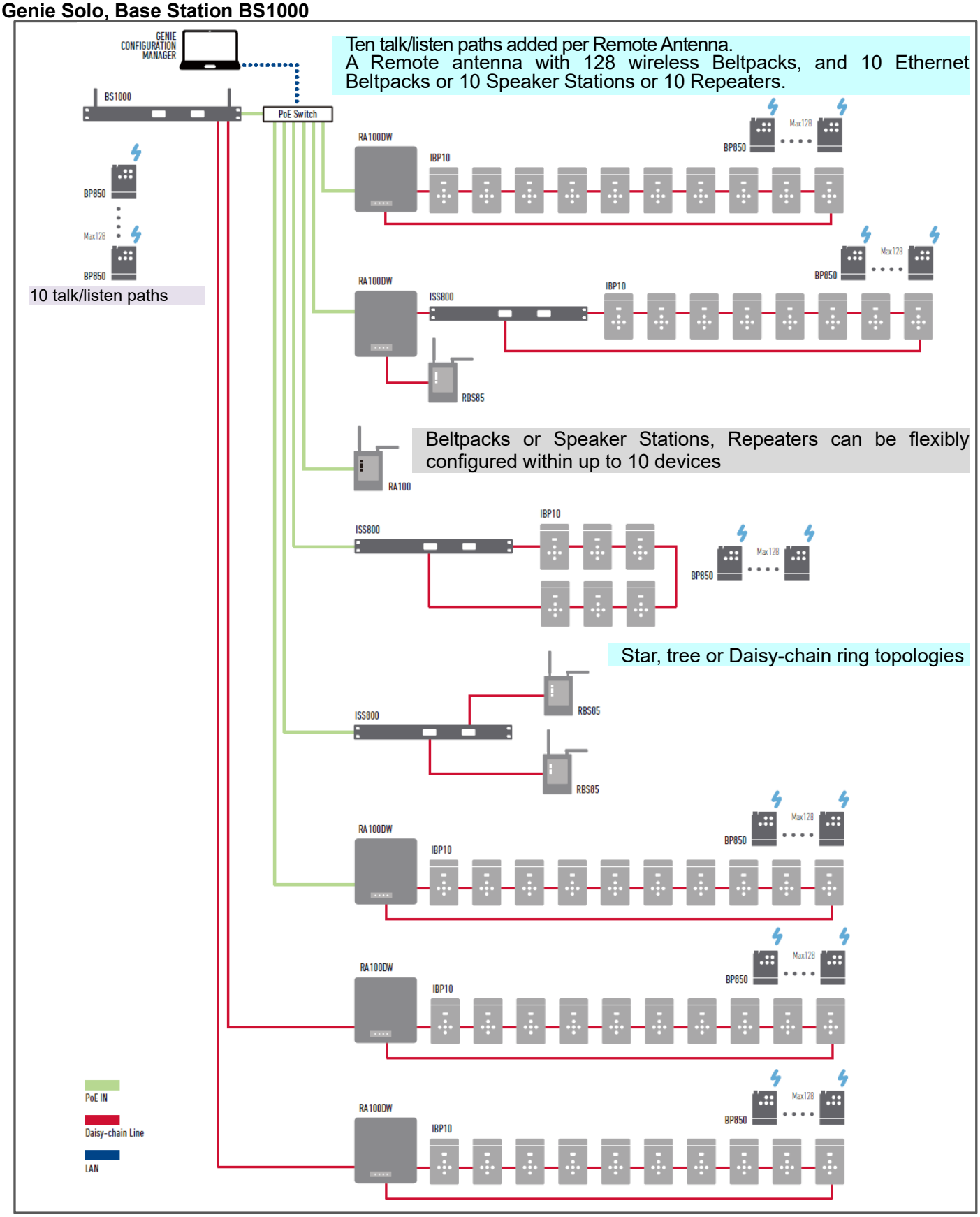
- **Line interfaces: 4-wire, 2-wire and auxiliary I/O**
  Line input and output ports are provided to secure seamless connections with wired intercom systems, external audio devices etc.
- **GCM (or GCMW, Genie Configuration Manager-WAN) for setting and monitoring**
  With GCM, users can pair and set 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 or BAT50R. Two bays of the seven can be used to charge the Mobile Station battery BAT150 as well. 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

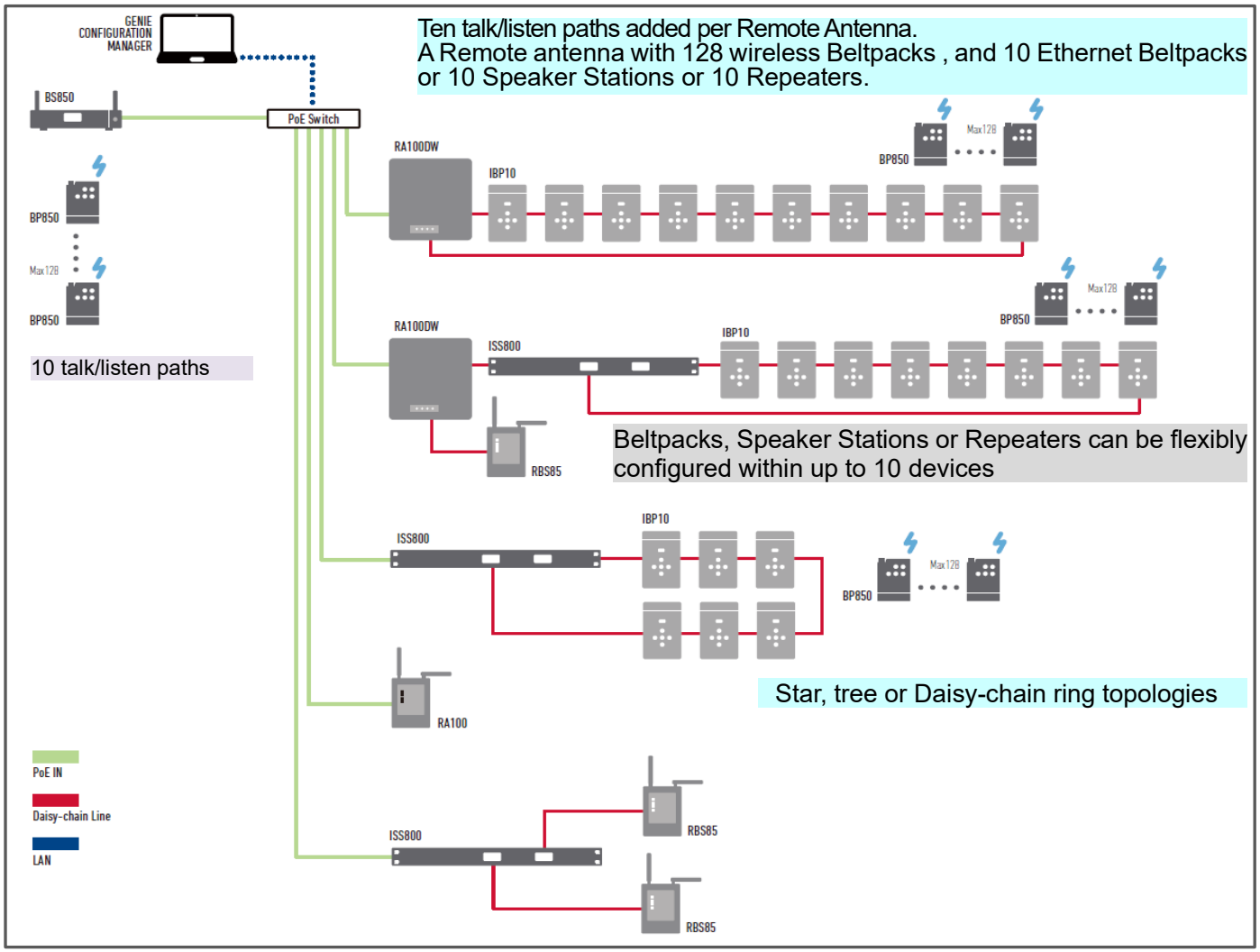
Using Remote Antennas and Repeaters

- Three or six Remote Antennas can be connected to each Base Station. And up to ten Repeaters or Ethernet Beltpacks or Speaker Stations can be connected to a 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 ring.
- Redundant system and WAN solutions are available.

Genie Solo, Base Station BS1000



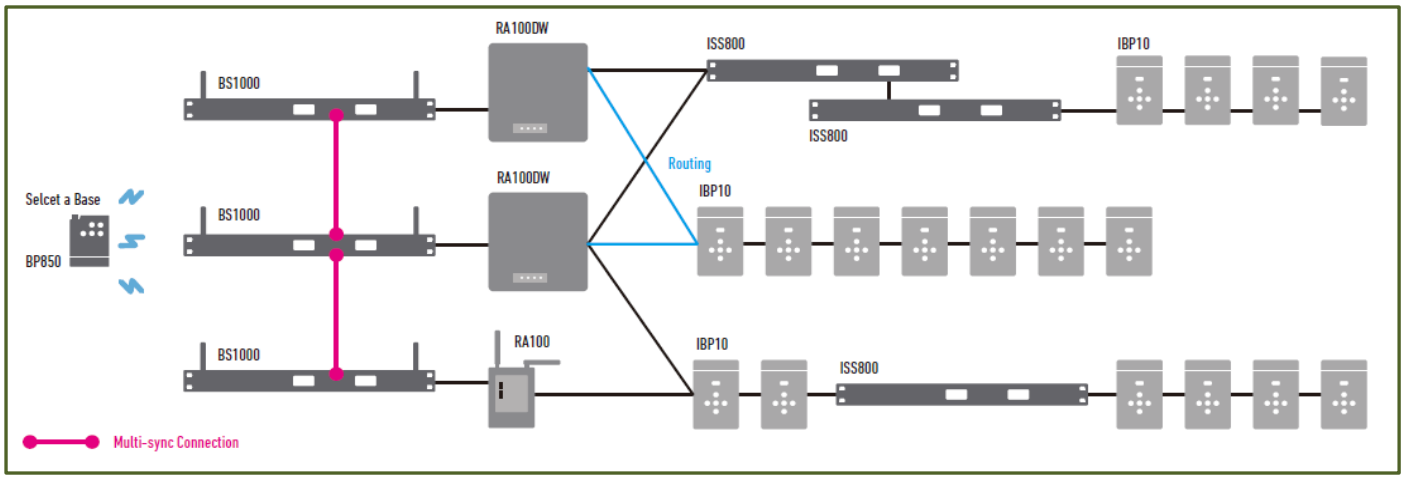
Genie Solo, Base Station BS850



Genie Trio system

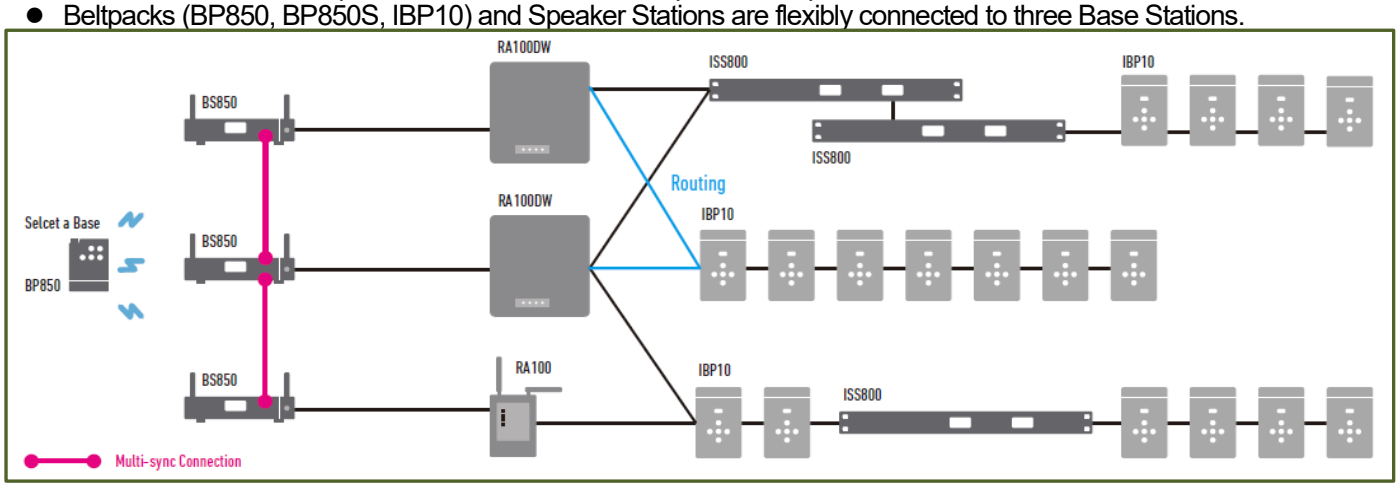
Base Station BS1000

- The use of three Base Stations provides 210 talk/listen paths for wireless and wired device connections.
- With 384 wireless Beltpacks and 180 Ethernet Beltpacks or Speaker Stations.
- Beltpacks (BP850, BP850S, IBP10) and Speaker Stations (ISS800) are flexibly connected to three Base Stations.

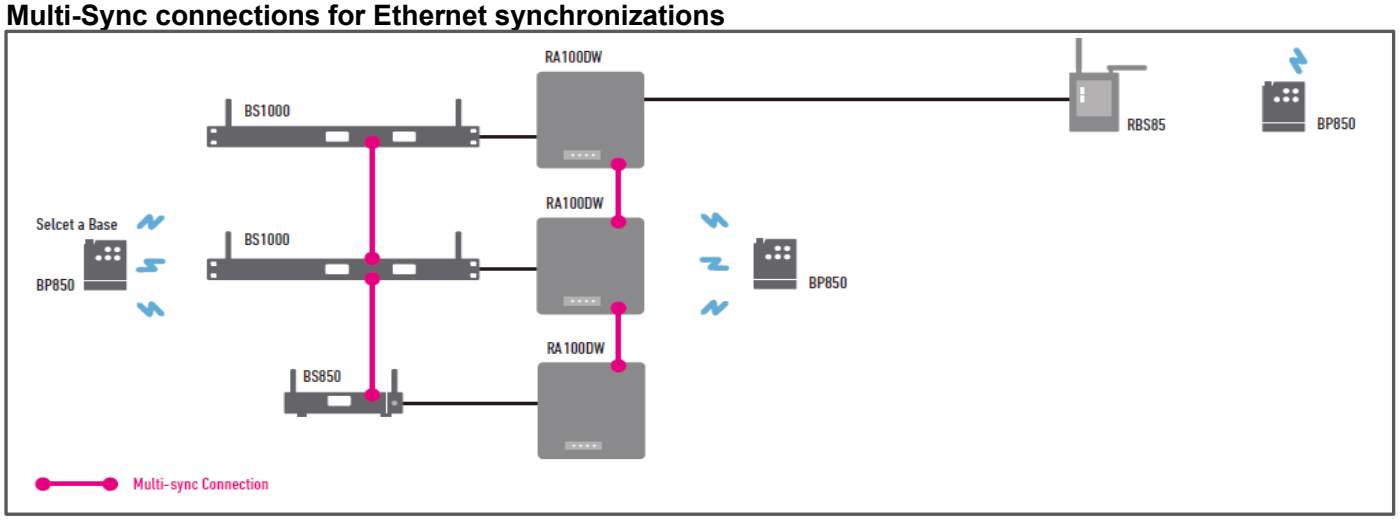


Base Station BS850

- The use of three Base Stations provides 120 talk/listen paths for wireless and wired device connections.
- With 384 wireless Beltpacks and 90 Ethernet Beltpacks or Speaker Stations.
- Beltpacks (BP850, BP850S, IBP10) and Speaker Stations are flexibly connected to three Base Stations.



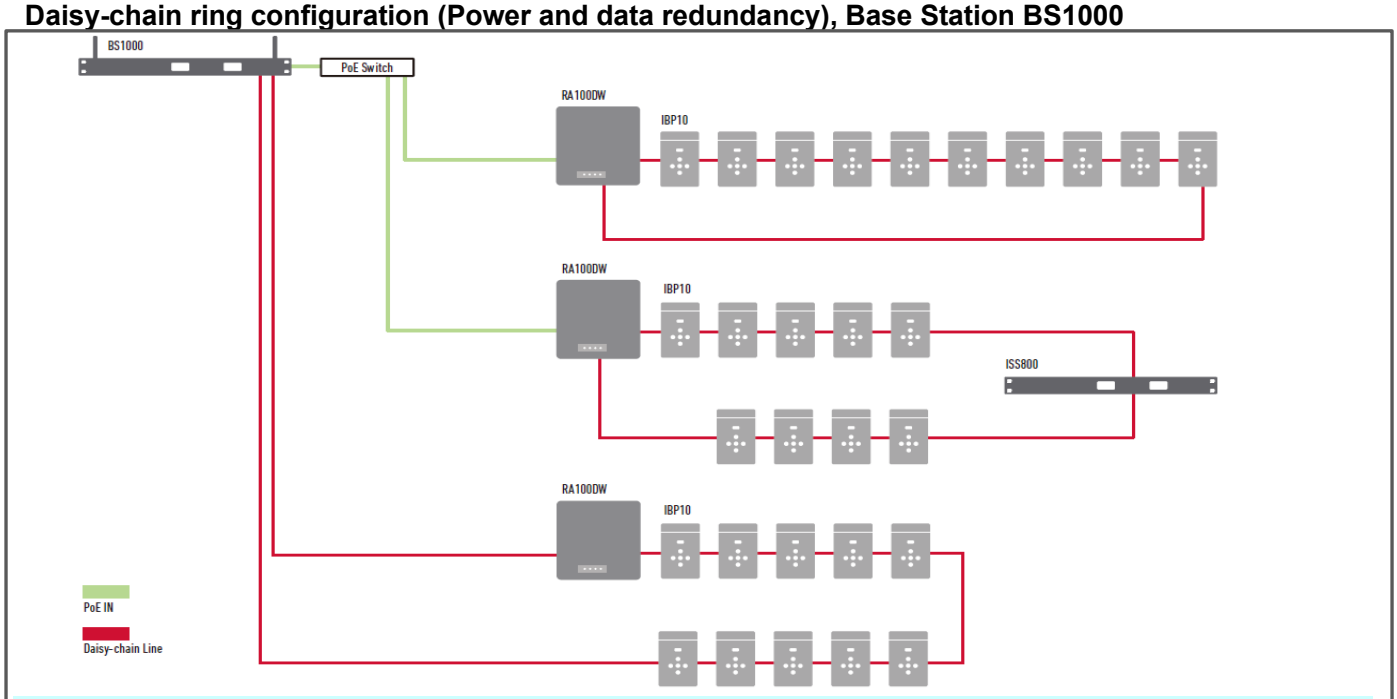
Multi-Sync connections for Ethernet synchronizations



Genie Connections

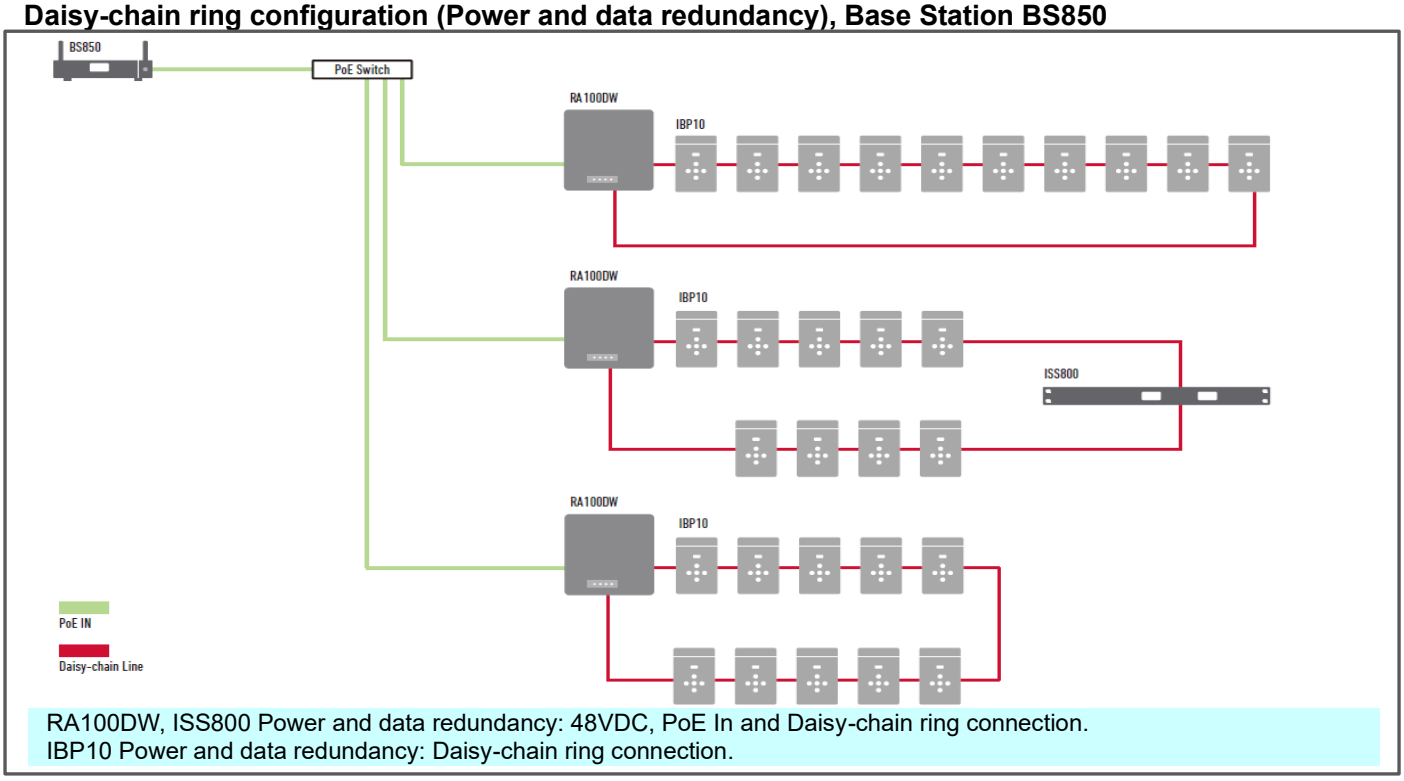
Genie devices can be connected in several different ways.

Daisy-chain ring configuration (Power and data redundancy), Base Station BS1000



BS1000, RA100DW, ISS800 Power and data redundancy: 48VDC, PoE In and Daisy-chain ring connection.
IBP10 Power and data redundancy: Daisy-chain ring connection.

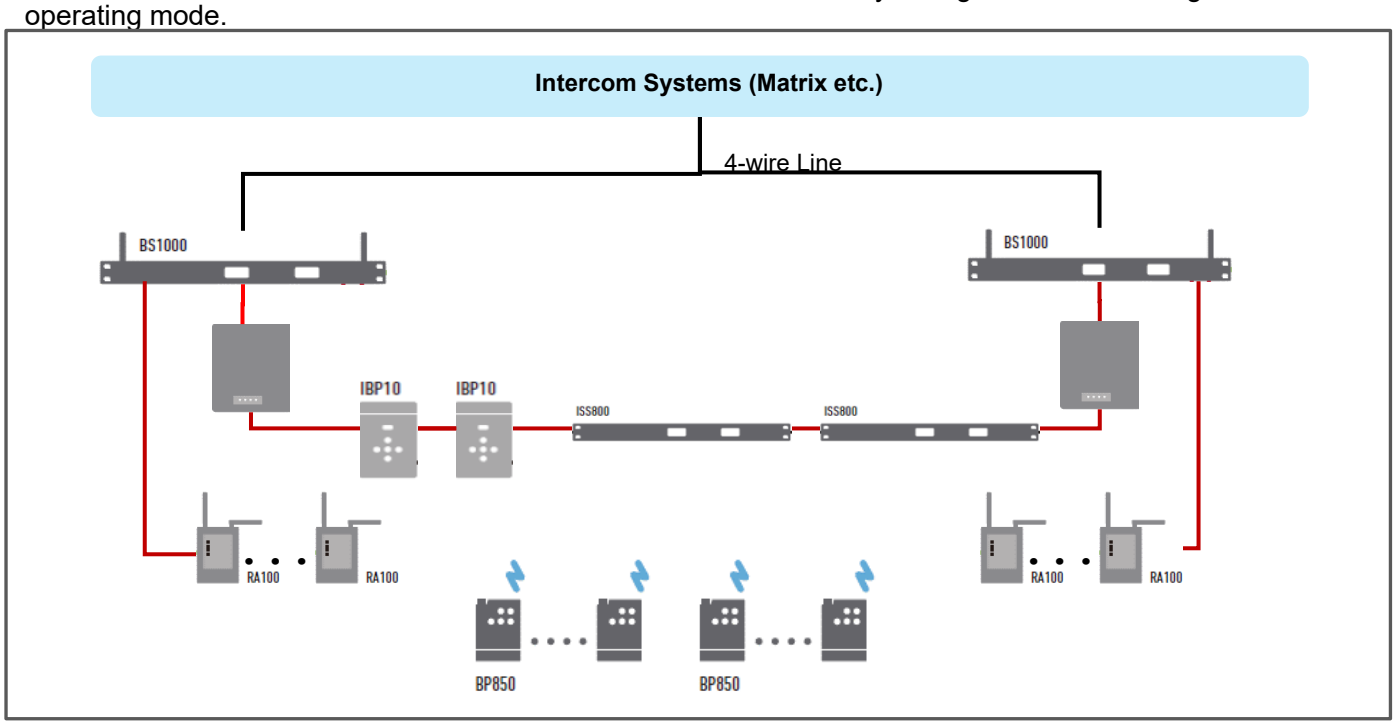
Daisy-chain ring configuration (Power and data redundancy), Base Station BS850



RA100DW, ISS800 Power and data redundancy: 48VDC, PoE In and Daisy-chain ring connection.
IBP10 Power and data redundancy: Daisy-chain ring connection.

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

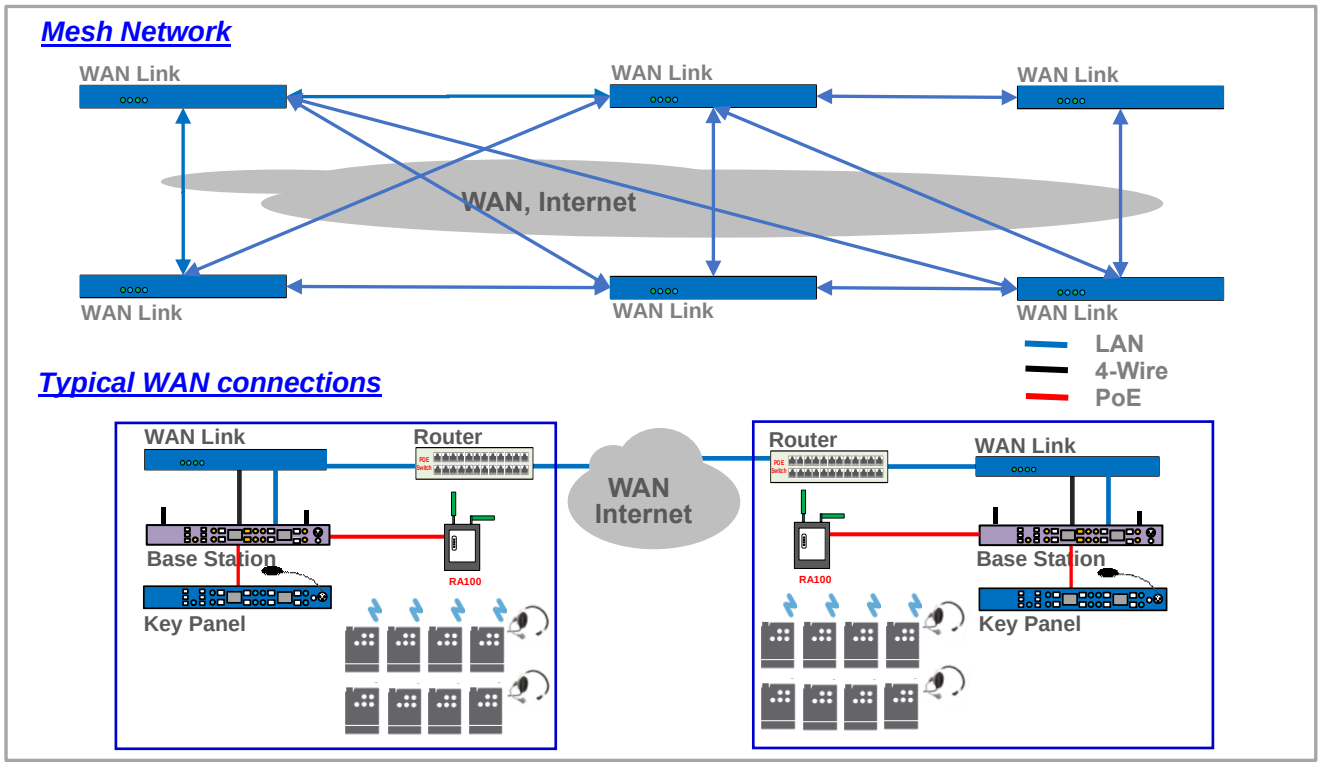
The redundancy system consists of a redundancy setting and a Genie Duo system and daisy chain ring connection. One Base Station BS1000 or Remote Antenna in monitoring mode monitors for failure of another Base Station or Remote Antenna. When a fault occurs, it automatically changes from monitoring mode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



WAN connections

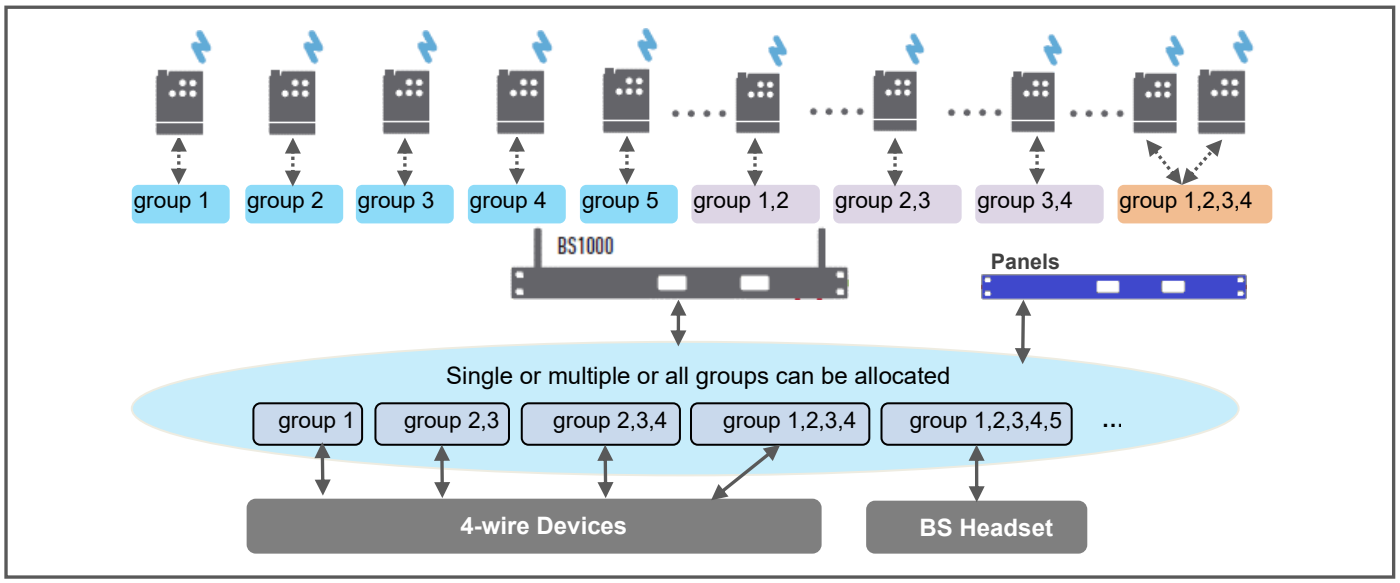
WAN Links establish a robust mesh network when transporting audio. Six WAN Links can be connected to any other WAN Link. Communication is possible between the wireless Beltpacks of Base Stations connected to the Line (4-Wire) of each WAN Link. Peer to Peer communication is also possible between the Key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

Genie Rack Panel GRP8: Version V3330, Genie Desk Panel GDP4: Version V0730
Versions lower than those described above are available for WAN Link connections after a firmware upgrade.



Genie group channels

- 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 (BP850S) group channels at the same time. It also provides the function of the Talk To All.

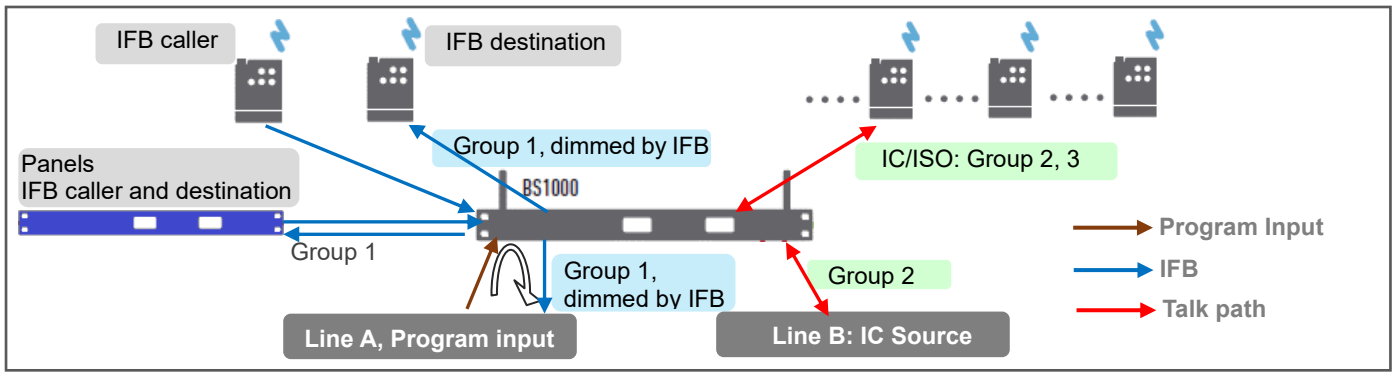


IFB and IC/ISO communications in one system

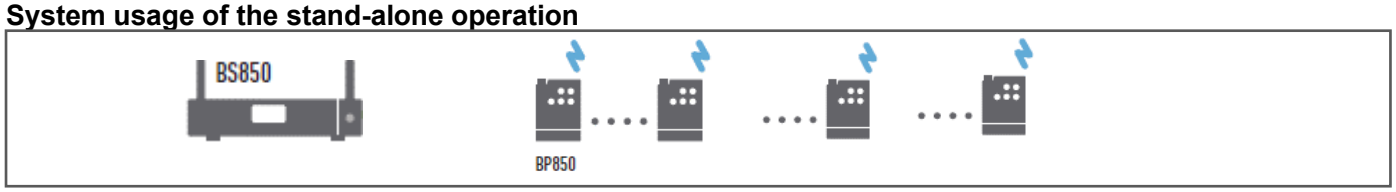
With the GCM (or GCMW) setting of the Base Station BS1000, you can specify the IFB group channel and dim level of the FB audio (Program input). With this setting on the BS1000, when an IFB path is created on a Genie group channel set as the FB audio, the FB audio is dimmed and mixed with IFB audio. With 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.

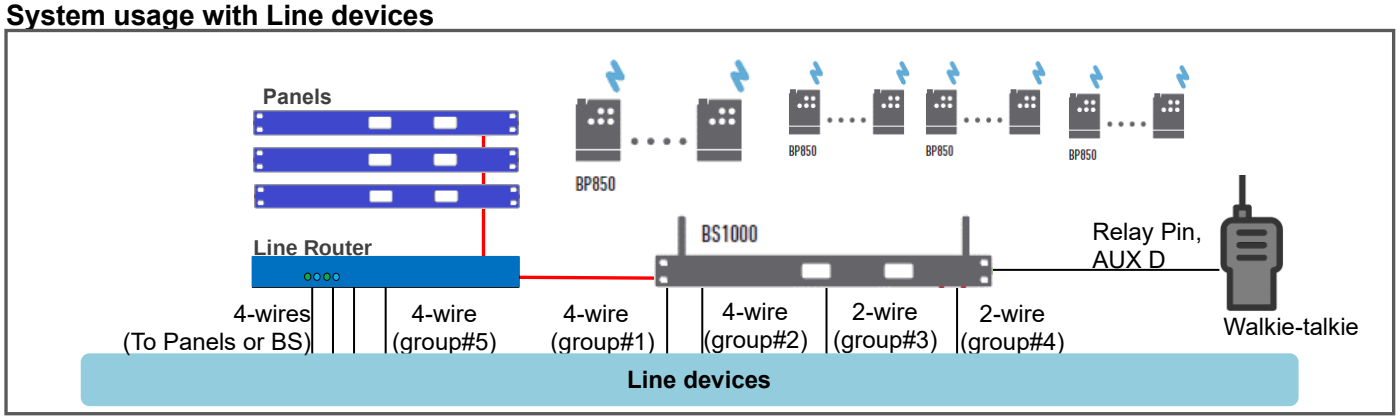
(This has been applied to BS1000 version V4030)



System usage of the stand-alone operation



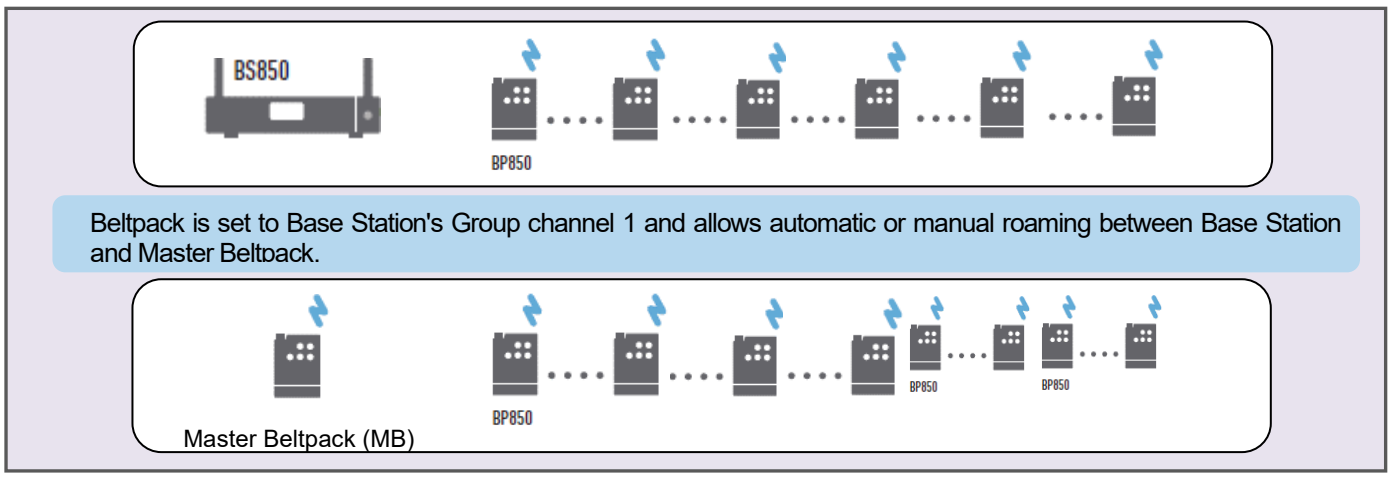
System usage with Line devices



Master Beltpack (MB) mode

- A Master Beltpack mode consists of only wireless Beltpacks. Only one of the Beltpacks is set as the master and provides the coverage area for other Beltpacks
- A Master Beltpack mode provides a group channel with five talk/listen paths (1 MB + 4 BPs).
- Beltpacks can roam between Base Station and the Master Beltpack installed in a separate coverage zone.

Stand-alone operation in each Antenna coverage zone



Note: Do not use Base Station and Master Beltpack(MB) in one Antenna coverage zone. That would automatically connect the Beltpack to an Antenna with stronger radio waves, causing confusion in operation.

Section 2: Product overview

2.1 Genie equipment

Base Station BS1000 equipment

- System configured with Base Station BS1000 + Remote Antennas + Ethernet Beltpacks + Speaker Stations + wireless Beltpacks + Repeaters. It can also be used in conjunction with the Genie Panels.

48-56VDC 2.5A Power Supply
(One more is available as an option)

Base Station Antenna

- 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

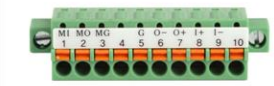
Note: It is recommended to connect the ground wire from the chassis ground screw to earth ground.

Base Station BS850 equipment

- System configured with Base Station BS850 + Remote Antennas + Ethernet Beltpacks + Speaker Stations + wireless Beltpacks + Repeaters. It can also be used in conjunction with the Genie Panels.

Base Station

11.4-12.6VDC 3.33A Power supply



10 pin spring clamp Connector

1RU Rack mount kit, BRK550 (Optional)

Base Station Antenna

- 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

1RU Cascade kit (Optional):

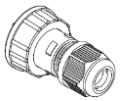
- Rear panel: 12VDC, 2 Multi-Sync, 2 Antennas, Line (4-wire), AUX I/O, 8ohm Speaker phone jack
- Front panel: Power switch

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.
- Provides an additional 10 talk/listen paths.
- 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.

Remote antenna RA100DW



Waterproof RJ45 plug x 3

48-56VDC 2.5A Power Supply (optional)

- 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.

RA100
Remote antenna

Antennas

RHD1000
Remote antenna holder
(Optional)

- PoE Input

Repeater RBS85 equipment

- Can be configured with Remote Antenna RA100DW or RA100.

RBS85 Repeater

Antennas

RHD1000
Repeater holder
(Optional)

- 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.

Speaker Station ISS800 equipment

- Can be configured with Base Station BS850 or BS1000 through the Remote Antenna
- Power and data redundancy: 2 x 48VDC, PoE In and Daisy-chain ring connection

48-56VDC 2.5A Power Supply
(One more is available as an option)

- Rear panel: 4 Lines (4-wires with 2 x 2-wires and null control), 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

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), BP850S (4 channels) equipment

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

BP850, BP850S Beltpack

BPPCH100
Beltpack Pouch (Optional)

Battery sled

BAT50: 2450mAH, ~500 cycles
BAT50R: 2000mAH, ~2000 cycles
Rechargeable Battery Pack (Optional)

Battery charger equipment

BATCHG225 Battery Charger

BATCHG125 Battery Charger

15VDC 8A Power Supply

Headsets and microphones

LSH-S125D (Dynamic)

LMH-125D (Dynamic)

LMH-10 (Dynamic)

LNH-20D (Neckband, Dynamic)

PTE-850 (Electret)

GM8 (7.5inch, Electret)
GM26 (17.5~26inch, Electret)

2.2 Menu maps

Genie Configuration Manager-WAN (GCMW)

Menu	Window Menu	Descriptions
Pairing	Base Stations: BS1000, BS850	Set and pairing
	Antennas: RA100DW, RA100, RBS85	Set and pairing
	Speaker Station ISS800	Set and pairing
	Ethernet Beltpack IBP10	Set and pairing
	Key Panels: GRP8, GDP4	Set and pairing
	WAN Link, Line Router GLR4	Set and pairing
Monitoring	Speaker Station, Ethernet Beltpack Antennas, Key Panels, WAN Link etc.	Monitoring Change some settings
	Wireless Beltpacks: BP850, BP850S	Monitoring

Base Station BS1000 menu

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

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 GCM	Main Menu's item is as follow	Sub menu's item is as follow	
	Set Gains: Set levels Setting the levels	**Speaker #**: headset volume level **Mic #**: microphone level **Sidetone #**: sidetone level **AUX In #**: Auxiliary input level **AUX out #**: Auxiliary output level **4WSND #**: 4-wire send level **4WRCV #**: 4-wire receive level	
	ScrSave: Screen save Setting the display off time period	**Screen Save ###:** Range: 10~900 minute	
	RMK: Remote Mic kill Mute remote microphones	**RMK Line Wireless:** Line: Kill IBP10, ISS800 Wireless: Kill BP850 and BP850S	
	RA: Remote Antenna Show link status for Remote antennas.	**RA:** Remote Antenna # **Link:** Link status	
	PairBelt: Pair Belt Pairing the wireless Beltpacks	**BPK#:** Edit BP 850 Registration count	
		Label/Group/Pair: Edit wireless Beltpack Labels and usage Groups	Edit Beltpack label, groups. Pairing icon: Click to execute pairing.
		Reset: Reset wireless Beltpack labels or groups	**Reset Belt Label or group**
	SetBase: Set Base Set the Base Station	**Set Group:** Set the usage group for base station	**Talk Group:** Headset usage Groups **AUX Group:** AUX usage group **4W:** 4-wire usage group
		Set RF: Set which radio channel to use.	**TX On Off:** Turn off wireless transmissions. **Indoor RF On Off:** Set which radio channel to use
		VOX Level: Set the VOX level.	**VOX Lebel #:**
	Multi-BS: Multi Base Set as Master or Slave Base Station	**Primary On Off:**	

Speaker Station ISS800 menu

Normal menu	Main menu	Sub menu and Screen 2
Display four Group labels. Each Channel Listen level		Screen 2 Display Speaker Station's label, Paired date, Linked Base Station labels, Model, firmware version,
	Set Gains: Setting the levels	**GN Mic:** Gooseneck microphone level **HS Mic**: Headset microphone level **SA**: Stage announce level **A In**: Line A input level **A Out**: Line A output level **B In**: Line B input level **B Out**: Line B output level **C In**: Line C input level **C Out**: Line C output level **D In**: Line D input level **D Out**: Line D output level
	Set ISS800: Set the Speaker Station ISS1000	**GN ELECT DYN:** Select gooseneck Mic as Electret or Dynamic **Call Tone On Off:** Enable or disable call tone. **LowCut Off -3 -6:** Reduce the low frequency -3dB or -6dB. **VOX Level #:** Set the VOX level. **Latched Talk** **1 2 3 4 5 6 7 8:** Set the latched Talk channels. **Sidetone Option** **Track Non-Track:** Set sidetone Tracking or non-tracking **A 4-Wire 2-Wire:** **B 4-Wire 2-Wire:** Select the type of Line A and Line B to 4-wire or 2-wire. **Screen Save ###:** Setting the display off time period, Range: 10~900 minute **A G12345** **B G12345** **C G12345** **D G12345:** Set a Group or Groups for Line A, B, C, and D. **OPTO1 T12345678:** Assign the Opto1 input to Talk channels. **OPTO2 T12345678:** Assign the Opto2 input to Talk channels. **Relay1 T12345678)** **Relay2 T12345678:** (This has been applied to ISS800 version V3516) Set Relay1 or Relay2 to Talk key. **Talk1 LaON001 11** **Talk2 LaON001 12** **Talk3 LaON001 13** **Talk4 LaON001 14** **Talk5 LaON001 15** **Talk6 LaON001 1R** **Talk7 LaON001 21** **Talk8 LaON001 22:** Displays the settings of the Talk channels.

Ethernet Beltpack IBP10 menu

Normal menu	Main menu
Display four Group labels. Each Channel Listen level	Display Beltpack's label, Linked Base Station labels, Model, firmware version, Main menu's item is as follow
	Sidetone: Sidetone level **Microphone Gain:** Headset microphone level **TRS Volume:** TRS headset volume level **TRS Mic:** TRS headset microphone level **Talk1 LaON001 11** **Talk2 LaON001 12** **Talk3 LaON001 13** **Talk4 LaON001 14** **Talk5 LaON001 15** **Talk6 LaON001 1R** **Talk7 LaON001 21** **Talk8 LaON001 22:** Displays the settings of the Talk channels **Rotate Display:** Select Rotate Display **Screen Save ### Min:** Setting the display off time period, Range: 10~900 minute **Call Tone Enable Disable:** Enable or disable call tone. **Vibration Enable Disable:** Enable or disable vibration. **Low Cut off -3dB -6dB:** Reduce the low frequency -3dB or -6dB. **Latched Talk 1 2 3 4 5 6 7 8:** Set the latched Talk channels. **Sidetone Option Track Non-Track:** 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
	Hands Free On Off: Latched talk enable or disable **Speaker Volume:** Headset Volume level. Up to two audio paths with individual level control. **Microphone Gain:** Headset microphone level **Sidetone:** Sidetone level **Two Groups:** Set groups for two Talk channels **Select Mode:** Set Beltpack operation mode. (Beltpack or Master Beltpack) **Low Cut off -3dB -6dB:** Reduce the low frequency -3dB or -6dB. **Handoff Sens. High Mid Low:** Set handoff sensitivity (Roaming) **Select Base 1 2 3 4 5:** Select the Base Station to pair or link. **Call Tone Enable Disable:** Enable or disable call tone. **Sidetone Option Track Non-Track:** Set sidetone Tracking or non-tracking **Tx Power 0dB +3dB:** Set Radio transmission power **TTA Enable Disable:** Enable the Talk to All function

Wireless Beltpack BP850S 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
	Hands Free On Off: Latched talk enable or disable **Speaker Volume:** Headset Volume level. Up to four audio paths with individual level control. **Microphone Gain:** Headset microphone level **Sidetone:** Sidetone level **Select Groups:** Set groups for four Talk channels **Select Mode:** Set Beltpack operation mode. (Beltpack or Master Beltpack) **Low Cut off -3dB -6dB:** Reduce the low frequency -3dB or -6dB. **Handoff Sens. High Mid Low:** Set handoff sensitivity (Roaming) **Select Base 1 2 3 4 5:** Select the Base Station to pair or link. **Call Tone Enable Disable:** Enable or disable call tone. **Sidetone Option Track Non-Track:** Set sidetone Tracking or non-tracking **Tx Power 0dB +3dB:** Set Radio transmission power **TTA Enable Disable:** Enable the Talk to All function

Section 3: Installing a System

3.1 Installation procedure

Installation procedure is as follows

1. Configure and pair Base Stations using GCM (or GCMW, Genie Configuration Manager-WAN).
2. Configure and pair Remote Antennas using GCM.
3. If you use Repeaters, configure and pair Repeaters using GCM.
4. If you use wireless Beltpacks, the wireless Beltpack is paired only using the Pair Belt menu of the Base Station.
5. If you use Speaker Stations or Ethernet Beltpacks, configure and pair using GCM.
6. If you use Key Panels, configure and pair using GCM.
7. Connecting devices
   See Connecting each device from Section 4 to Section 9.
8. Placing Base Station, Remote Antenna, Repeater
   See 3.3 Placing Base Station, Remote Antenna, Repeater
9. Monitoring each device
   Use the GCM to check the status of each device, test and modify its settings.
   See GCM (or GCMW) user manual, 1.2 Monitoring and setting changes

The GCM configures and pairs each device over an Ethernet connection. It also provides monitoring capabilities such as setting some items and the connectivity status of each device. It shows the remaining battery status of the wireless Beltpack and the RSSI (Received Signal Strength Indication) from the current location. To install the system, the Base Station, Remote Antenna, Beltpack and Repeater must be set up and paired using the GCM. As an exception, the pairing of the wireless Beltpack is paired only using the Pair Belt menu of the Base Station.
See GCM (or GCMW) user manual, 1.1 Configuring each device

3.2 Notes on Installation

Network Switch Specifications

Network switches and Genie devices can also be used. Use the network switch with **1 Gbps or 100 Mbps and 802.3 at (PoE)** specification. When connecting more than one Genie device using a daisy chain, use the daisy chain PoE Line1, PoE Line2.

LAN Cable

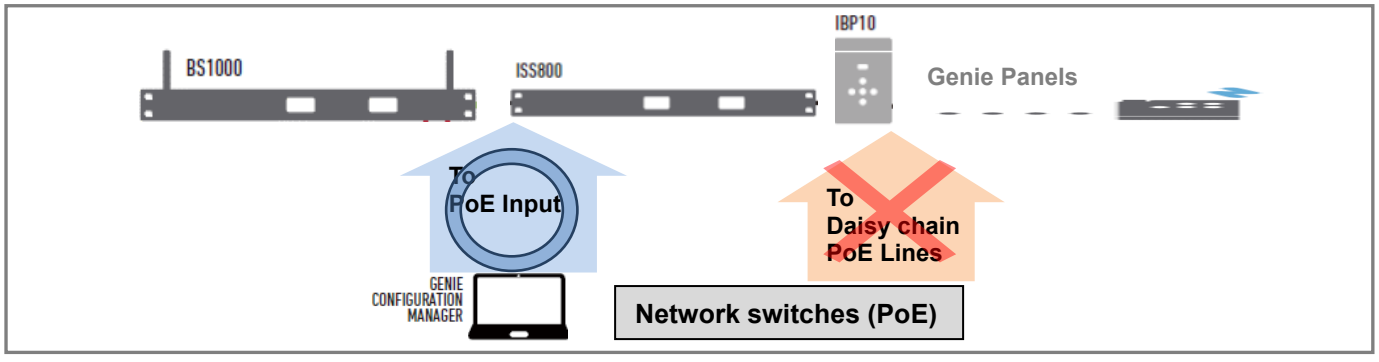
Use a LAN cable higher specification/quality than CAT-5e STP (Shield Twisted Pair). The use of the UTP cable can cause several problems depending on the installation environments.

!!! Note: Make sure that you **use straight cable for the LAN. Cross cables can cause serious damage** to the device.

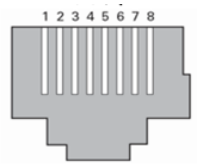
Caution needed on the connection between network switches and Genie devices.

Each network switch has **different power mode** depending on the type of device. Therefore, make ensure the connection as below.

- Make sure that the network switch is connected only to the **'PoE In' port of Genie device and do not connect it to Daisy-chain PoE Line ports.** Otherwise, the Genie device may possibly be **damaged** causing the stop of PoE power output and etc due to a cut in the fuse.
- **PC connection for GCM program**
  When connecting a PC to execute the GCM program, make sure you connect it to PoE In port of Genie device. You can also connect the PC to the network switch.



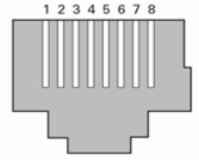
PoE input (PoE In) Pinout



Pin	Wire Color	Mode B		Mode A		Power
		Data	Power	Data	Power	
1	White/Orange	TxRx A +		TxRx A +	DC +	+PWR
2	Orange	TxRx A −		TxRx A −	DC +	+PWR
3	White/Green	TxRx B +		TxRx B +	DC −	-PWR
4	Blue	TxRx C +	DC +	TxRx C +		+PWR
5	White/Blue	TxRx C −	DC +	TxRx C −		+PWR
6	Green	TxRx B −		TxRx B −	DC −	-PWR
7	White/Brown	TxRx D +	DC −	TxRx D +		-PWR
8	Brown	TxRx D −	DC −	TxRx D −		-PWR

Daisy-chain PoE Line1, PoE Line2

Provides Daisy-chain connection function to supply data and power from PoE to another PoE Line.
PoE Line1 and PoE Line2 provide the ability to use the input power from the PoE and supply the remaining power to the other PoE Line. Make sure that you use only those network switches that follow the standard PoE specification when connecting the network switch to the Daisy-chain PoE Lines.



Pin	Wire Color	Mode B		Mode A		Power
		Data	Power	Data	Power	
1	White/Orange	Rx +		Rx +	DC +	+PWR
2	Orange	Rx −		Rx −	DC +	+PWR
3	White/Green	Tx +		Tx +	DC −	-PWR
4	Blue		DC +	Unused		+PWR
5	White/Blue		DC +	Unused		+PWR
6	Green	Tx −		Tx −	DC −	-PWR
7	White/Brown		DC −	Unused		-PWR
8	Brown		DC −	Unused		-PWR

!!! Note: Without the use of standard PoE specification network switches, **devices connected to the Daisy-chain PoE Line can be severely damaged.** Connect the network switch to the PoE In port.

!!! Note: Do not connect the Daisy-Chain PoE Lines to the PoE port on **the BSCCK550 cascade kit (for BS750, BS550, BS250)**.

Power-on Sequence

- **Power on the network switch** directly connected to the Genie Base Station first, and then power on the Genie devices.
- For use in conjunction with a Genie Panel, only the Genie Base Station shall be set to Master. If Panels are used only, set one Panel to Master. Always power on the device that is set to Master first.
- If the Multi-Sync cable between Base Stations is connected, the Master Base Station must be powered on first. Otherwise, the Slave Base Station will not operate normally.

Verify and Monitor with GCM program after Installation

- Check out the LAN connection status of the devices.
- Identify for the most ideal frequency settings for wireless devices such as BS1000, BS850, RA100DW, RA100, and RBS85 which are installed in an Antenna coverage zone.
- When setting frequencies, it is recommended that you maintain at least two frequency band intervals relative to the frequencies of other radio devices.
- When installing, deploy Genie wireless devices at a location further than 10 meters away from other wireless devices such as WiFi AP or Mobile phone Repeater.

Other Recommendations

- Use the key lock function on Beltpack to prevent it from abnormal operation.
- When connecting external equipment such as Matrix by using a 4Wire Line of Genie Base Station, make sure you perform the ground connection or ground cut to avoid any possible ground noise.
- Install the Ethercon connector on the LAN cable.
- For RA100DW, you must use an RJ45 connector for IP67 waterproofing, included with the product box.

Antenna installation

BS1000/BS850/RA100DW/RA100/RBS85 must be used after its antenna connection. If the antenna is not connected and operated, then **RF related circuits** may be **damaged.**

Coexistence with strong radio wave transmitter (This has been applied to BP850 version V403)

If you use a Beltpack in close proximity to a device, such as a wireless camera, there may be interference between the devices. In this case, the radio band is set differently. When using Genie Antenna in a frequency band's LaON ID 1 to 10, the wireless camera uses the radio band with LaON ID 11 to 28. When using Genie Antenna in the frequency band's LaON IDs 11-28, the wireless camera uses the radio band with LaON IDs 1 to 10. This setting allows for coexistence in close proximity to a strong radio wave transmitter.

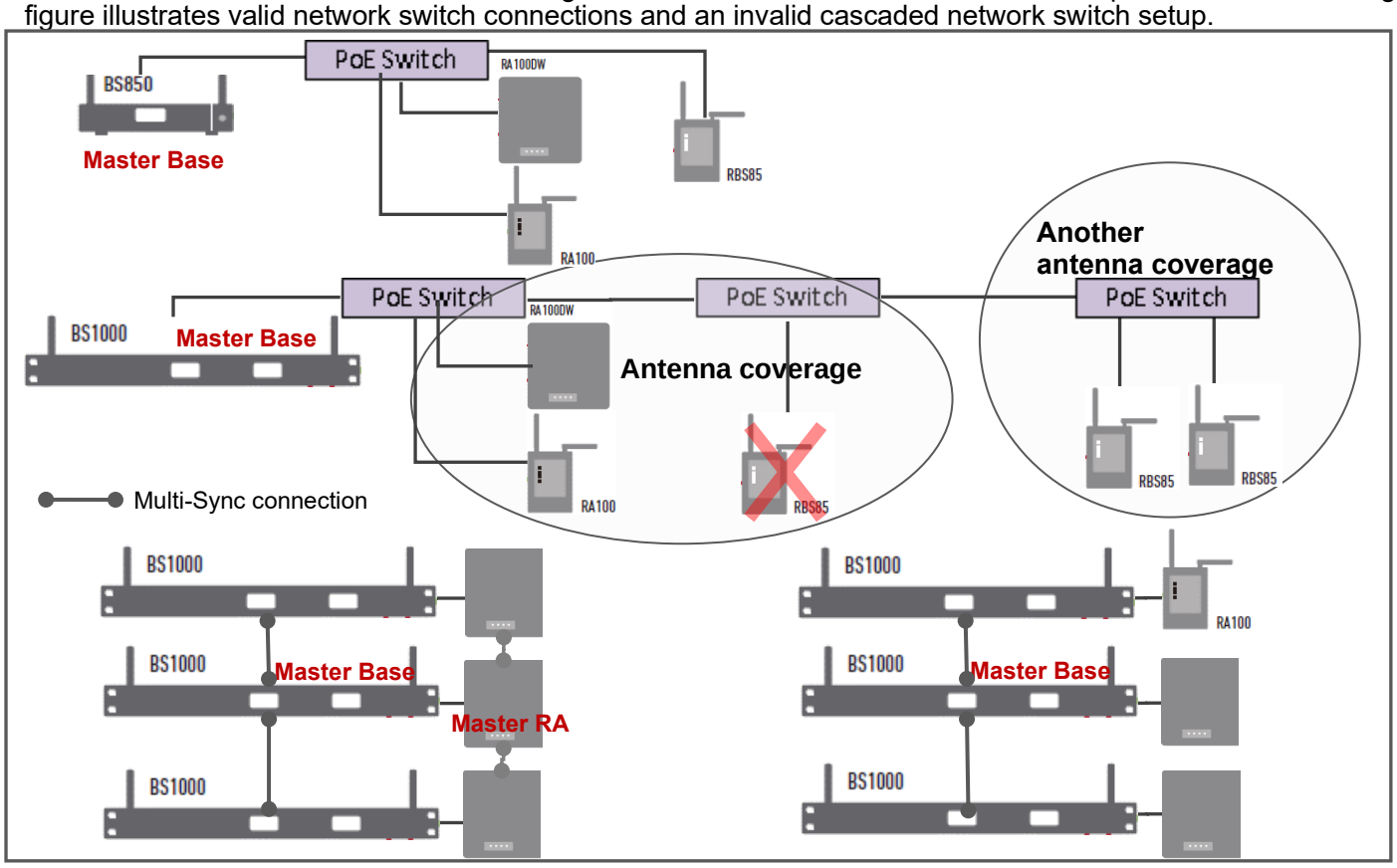
Ethernet Synchronization

Since all RF devices have the potential to cause RF interference, Genie includes a feature called Ethernet Synchronization, designed to minimize the RF interference. When multiple installations of Base Stations, Remote Antennas or Repeaters in an Antenna coverage zone, RF interference occurs between devices. Multi-Sync is a

special technology that synchronizes transmit and receive timing to avoid RF interference. Multi-Sync sends accurate timing signals to all Base Stations connected to the sync circuit. This allows all Base Stations to transmit simultaneously, so there is no transmitter active during the receive cycle of the other Base Stations. Activating the Multi-Sync between Base Stations, Ethernet synchronization is also configured between the Remote Antennas and Repeaters connected to Ethernet, thus avoiding RF interference among all devices connected to Ethernet. Multi-sync connections between Base Station BS1000s (or BS850 cascade kit) shall be made using a pair of coaxial cables and the coaxial cable length shall be within 12 m. T-form coaxial connectors may be used when connecting three Base Stations. One Base Station must be set as a 'primary on' (master) and all others as 'primary off' (slave) in the Multi BS menu. In this setting, the Remote Antennas and Repeaters are automatically set to the master or slave. When using one Base Station, setting the Primary On (Master) from the Multi BS menu applies Ethernet synchronization to all systems.

General requirements on the Ethernet synchronization

For devices installed in an Antenna coverage zone, connect to one network switch as possible. The following figure illustrates valid network switch connections and an invalid cascaded network switch setup.



Restrictions

1. Even if four Talk channels are used simultaneously within a device such as a Speaker Station, only one talk/listen path is used. However, when one device, such as a Speaker Station, simultaneously Talk with two Base Stations, it occupies two talk/listen paths.
2. In Speaker Station, if a Genie group channel is set to a Line (Line audio routing), one talk/listen path is occupied. Even if more than one Genie group channel is assigned to one Line, one talk/listen path is occupied. If the Genie group channels are assigned to the A, B, C and D Lines, four talk/listen paths are occupied.
3. A Base Station cannot assign a different Base Station's group channel to a Talk channel.
4. For Genie Duo or Trio system, power on the Master Base Station to complete the boot of the Master Base Station and the connected Remote Antennas. Then power on the Slave Base Stations sequentially in the same way.

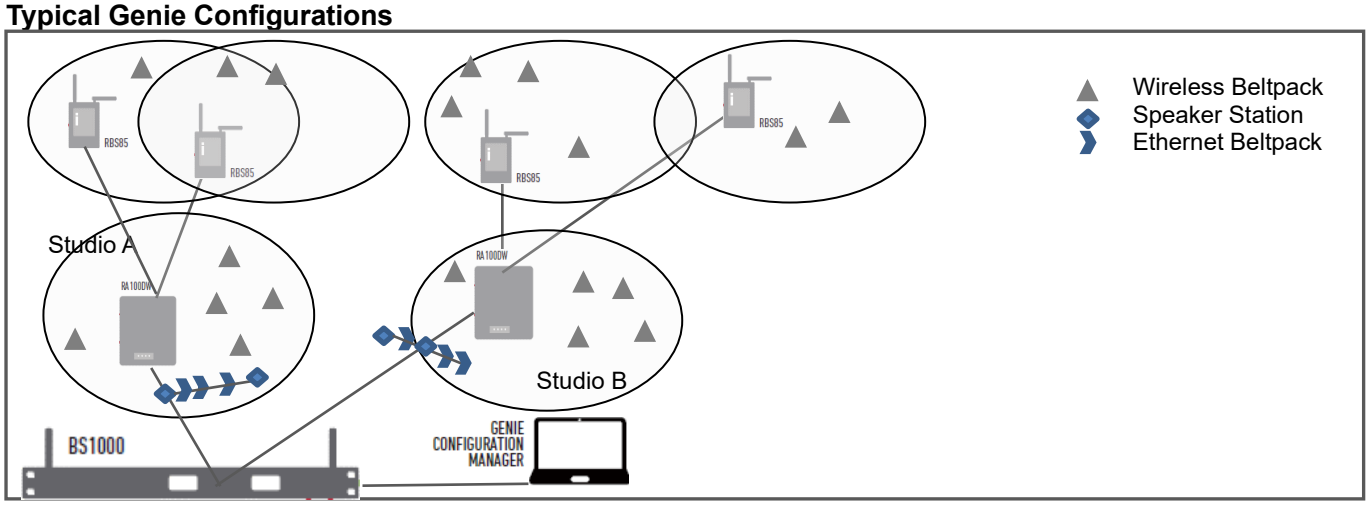
Using multiple Base Stations in an Antenna coverage zone.

The Genie is designed so multiple Base Stations, Remote Antennas and Repeaters can work in an Antenna coverage zone. To ensure smooth coexistence of these devices, you will need set Ethernet synchronization. In this use, the handoff (roaming) sensitivity of the wireless Beltpack should be set to 'High' to ensure smooth roaming.

Wireless Beltpack roaming

Wireless Beltpacks can roam between Base Station, Remote Antennas, or Repeaters. When the wireless signal begins to weaken due to the distance from an Antenna, the Beltpack automatically connects to the nearest Base Station, Remote Antenna, or Repeater where the wireless signal is strong.

Typical Genie Configurations



3.3 Placing the Base Station, Remote Antenna and Repeater

After placing the Remote Antennas or Repeaters, walk through the Antenna coverage zones to determine the optimum position and then re-locate it accordingly.

Testing coverage areas

Checking RSSI (Received Signal Strength Indication) level

Once the Antennas are properly connected and paired, turn on the Beltpack and walk through the Antenna coverage area to check the coverage zone. As you walk through the Antenna coverage areas, check the RSSI **(A)** level in the Normal menu of the Beltpack, and make sure the coverage is continuous without audio breakups. Reposition Antennas if necessary.
If RSSI Graphic bar is less than one and audio breakups start, that is the limit of Antenna coverage zone.

Figure: Beltpack's Normal Menu

A: RSSI level
B: Base Station, Remote antennas or Repeaters that the Beltpack is connected.
Base Station: 'BS'
Remote antennas: 'A1', 'A2' … 'A6'
Repeaters: 'R1', 'R2', 'R3' …… 'RA'

Mapping Antenna coverage zones

Draw a map of the Antenna coverage of each device as shown in Figure.
While repeating this process, see if devices cover each area enough. If not, add the required number of Remote Antennas or Repeaters. Place Antennas such as Antenna coverage areas A and B that create enough overlapping zone. Set the 'Hands off sensitivity' level to 'High' in the Beltpack menu to allow fast roaming. In some cases, place Antennas such as Antenna coverage areas C and D.

The Master (Primary On) must be set up in the Multi-BS menu of the Base Station to apply Ethernet synchronization to all devices.
See 3.2 Notes on Installation, Ethernet synchronization

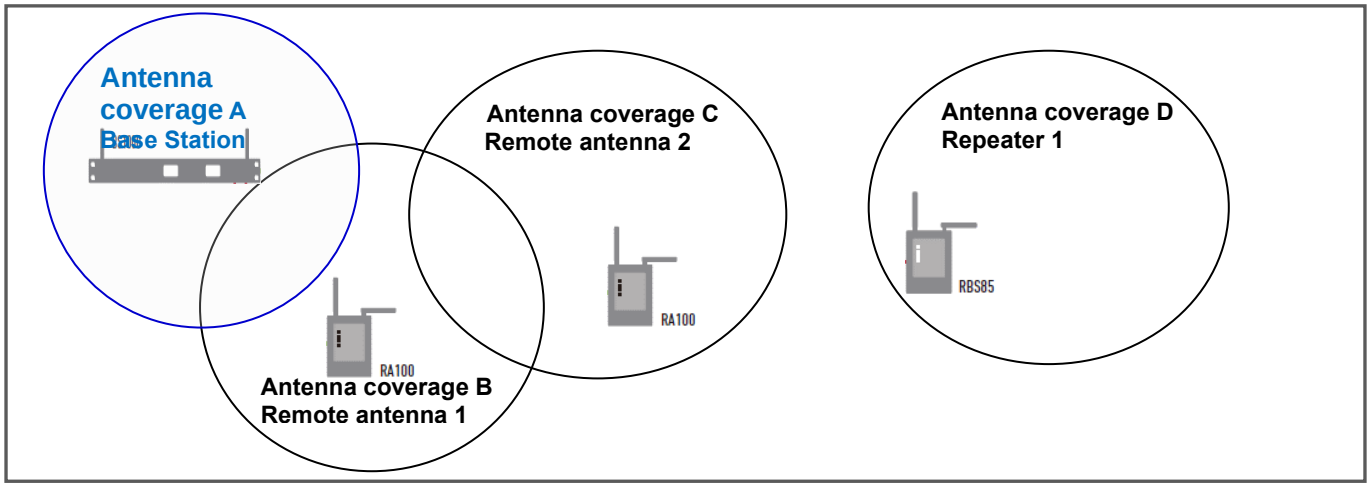


Figure: Mapping Antenna coverage zones

Antenna location

In a certain environment, audio breakups could occur even though high RSSI is observed.
There might be three reasons as followings:

- You do not set Ethernet synchronization Properly.
- A wireless Beltpack is within 6.5 feet (2 meters) from the antenna.
- Radio signal reflections can occur in environments with many reflective surfaces, such as metal obstacles, walls, or other large structures and electronic equipment that can cause RF interference.

The Antennas can be relocated to avoid reflecting surfaces. It is highly recommended to locate the Antenna as high as possible in the center of the coverage and away from obstructions.

Testing antenna Handoff

After testing the Antenna coverage areas, you can test handoff between coverage areas. When the automatic roaming is performed smooth while walking through antenna coverages A and C, the distance between the antenna locations maybe ideal.
To review which Antenna the Beltpack is connected to, refer to the Normal menu (Ⓑ) in the Beltpack. 'BS' appears when the Beltpack is connected to the Base Station. If the Beltpack is connected to the Remote Antenna, a symbol from 'A1' to 'A6' with the Remote Antenna ID number is displayed. If the Beltpack is connected to the Repeater, a symbol from 'R1' to 'RA' with the Repeater ID number is displayed. The status of the Beltpack can also be monitored by the GCM. The GCM shows which Antenna each Beltpack is connected to.
See GCM (or GCMW) user manual, 1.2 Monitoring and setting changes, Monitoring the wireless Beltpack
In case wide area is overlapped closely like between Antenna coverages A, B and C, set the 'Hands off Sensitivity' level as 'High' in the Beltpack menu which will make the handoff quickly. This arrangement is recommended when used in open spaces such as inside the stadium. When Beltpacks are used in isolated Antenna coverage areas, such as Antenna coverage D, if the 'Hands-off Sensitivity 'Level' is set to 'Mid' (or 'Low) in the Beltpack menu, the Beltpack will be disconnected if it is fully out of coverage.
The user can manually execute the hand-off by a quick 'double click' of the power button of the Beltpack. When the Beltpack is connected to another Antenna, a beep is heard.

5GHz UNII Radio Frequency (RF) bands

The following table lists the frequencies that can be used in 5GHz UNII RF bands. The LaON ID of frequency bands currently being used will be shown on the Base Station menu. Genie which operates in 5GHz is approved for license free use in most countries. However, some countries may restrict the use of some RF band or spectrum operations. Therefore, it is your responsibility to find out whether the Genie is permitted in your country or not.

Note: In the Base Station menu or GCMW, ID numbers stands for each RF band as shown in the table.

ID	Channel No	Frequency	Band width	Korea AUS, NZ	Japan	EU	US	China	Taiwan	Israel
01	32	5160MHz	20MHz	X	X	X	X	X	X	X
02	36	5180MHz	20MHz	Indoor	Indoor	Indoor	O	Indoor	Indoor	Indoor
03	40	5200MHz	20MHz	Indoor	Indoor	Indoor	O	Indoor	Indoor	Indoor
04	44	5220MHz	20MHz	Indoor	Indoor	Indoor	O	Indoor	Indoor	Indoor
05	48	5240MHz	20MHz	Indoor	Indoor	Indoor	O	Indoor	Indoor	Indoor
06	52	5260MHz	20MHz	O	Indoor	Indoor	O	O	Indoor	Indoor
07	56	5280MHz	20MHz	O	Indoor	Indoor	O	O	Indoor	Indoor
08	60	5300MHz	20MHz	O	Indoor	Indoor	O	O	Indoor	Indoor
09	64	5320MHz	20MHz	O	Indoor	Indoor	O	O	Indoor	Indoor
10	68	5340MHz	20MHz	X	X	X	X	X	X	X
11	96	5480MHz	20MHz	X	X	X	X	X	X	X
12	100	5500MHz	20MHz	O	O	O	O	X	O	Indoor
13	104	5520MHz	20MHz	O	O	O	O	X	O	Indoor
14	108	5540MHz	20MHz	O	O	O	O	X	O	Indoor
15	112	5560MHz	20MHz	O	O	O	O	X	O	Indoor
16	116	5580MHz	20MHz	O	O	O	O	X	O	Indoor
17	120	5600MHz	20MHz	O	O	O	O	X	O	Indoor
18	124	5620MHz	20MHz	O	O	O	O	X	O	Indoor
19	128	5640MHz	20MHz	O	O	O	O	X	O	Indoor
20	132	5660MHz	20MHz	O	O	O	O	X	O	Indoor
21	136	5680MHz	20MHz	O	O	O	O	X	X	Indoor
22	140	5700MHz	20MHz	O	O	O	O	X	O	Indoor
30*	144	5720Mhz	20Mhz	**O***	**O***	X	X	X	**O***	**O***Indoor
23	149	5745MHz	20MHz	O	X	SRD	O	O	O	Indoor
24	153	5765MHz	20MHz	O	X	SRD	O	O	O	Indoor
25	157	5785MHz	20MHz	O	X	SRD	O	O	O	Indoor
26	161	5805MHz	20MHz	O	X	SRD	O	O	O	Indoor
27	165	5825MHz	20MHz	O	X	SRD	O	O	O	Indoor
28	169	5845MHz	20MHz	X	X	SRD	X	X	X	Indoor
29	173	5865MHz	20MHz	X	X	SRD	X	X	X	X

Table. Typical Radio frequency (RF) bands

Indoor: Radio frequencies that can only be used indoors. Outdoor frequencies are also used when the Indoor is selected.

O*: New added RF band. Applies to BS1000 V4050, RA100 V5000, RBS85 V5000, and BP850 V500. If this RF band is used in the Antennas (BS1000, RA100, RBS85), the BP850 with a lower version than V500 is not connected to them. Therefore, Beltpack BP850 with a low version than V500 cannot be used together with them.

Select RF channel

On 5GHz UNII RF bands, there is a separate definition and guideline for RF band to be used in indoor environments. On the Base Station or GCM, select 'Indoor' if you use the system in any indoor environments. When using the system at any outdoor environments, 'Outdoor' should mandatorily be selected. Selecting 'Indoor' allows the use of 'Indoor' and 'Outdoor' RF bands. Refer to the Table above for usable RF bands of indoor and outdoor in each region.

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

Turn off Base Station radio transmission.

Select TX Off if the Base Station does not need to transmit and receive radio signals.

Note: Beltpack pairing is not available in TX Off mode. Change the mode to TX On for the Beltpack pairing.

Attenuate radio transmission power

If it is required to attenuate the radio wave to avoid RF interference, use GCM to attenuate radio transmission power of the Antennas.

Precautions to install multiple Antennas

When installing multiple Antennas, be aware of the following to avoid RF interference automatically in an efficient way.

- **Turn on the Antennas in the order specified as follows:**
  - When using the PoE switch, connect the Antennas to the PoE switch and turn on the PoE switch. When connecting Antennas to a Base Station, first connect the Antennas to a Base Station.
  - Then, turn on the Base Station.
  - When the Base Station is powered on, the Base Station uses the radio band with the least RF interference. After that, all Remote Antennas and Repeaters use the radio band with the least RF interference sequentially. During the search for the radio band to be used, the power LED on the Antenna changes to red. When the search is complete, a Link LED of the Base Station turns green. The connection status of the Antennas can be checked on the GCM. It takes 120 seconds (20 seconds per Antenna) for the six Antennas to operate normally.

Note: When the Remote antennas or Repeaters are connected and powered on after the Base Station power is powered on, the Antennas can assign a radio band that causes RF interference. In this case, the Base Station must be rebooted one minute after the Remote Antennas or Repeaters are powered on.

- **Install the Remote Antennas and Repeaters from A1, A2… A6, R1, R2… R10(RA) sequentially from the nearest location from the Base Station.**
  Place Remote Antenna 1 closest to the Base Station as shown, then place the Remote Antenna 2 next to the Base Station as shown. By following this rule, Antenna coverages A and G without RF interference can use the same frequency channel together. This arrangement makes available radio bands efficient and fully enjoyable. These power-on order can be determined by GCM. (See GCM (or GCMW) user manual, 1.1 Configuring each device.)
  Set the 'Hands off sensitivity' level to 'High' in the Beltpack menu to allow fast roaming.

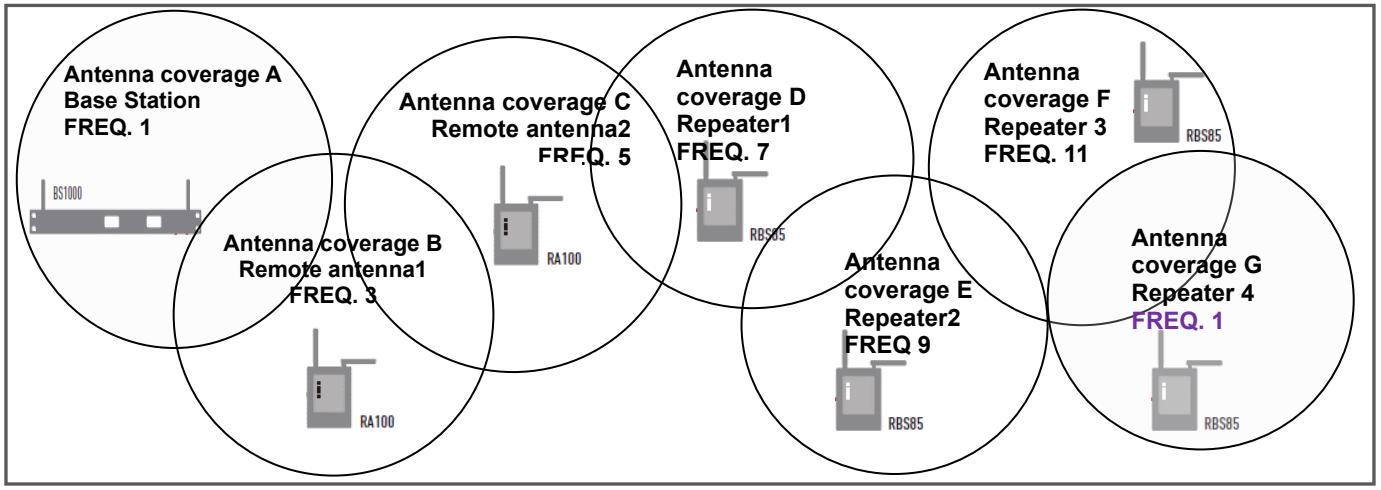


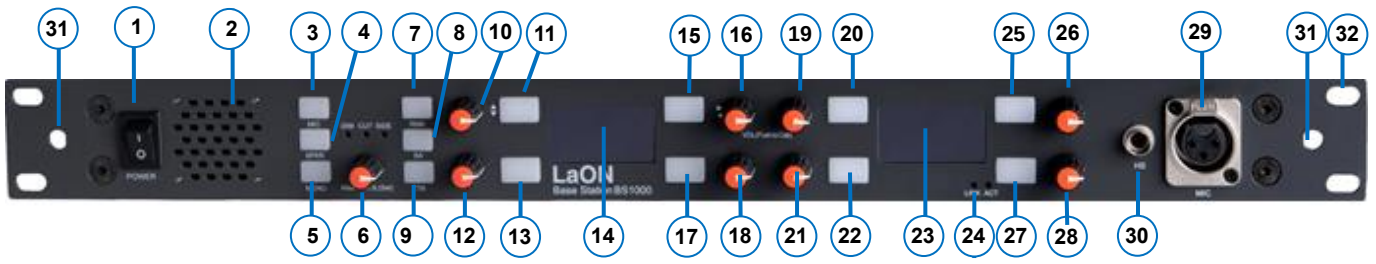
Figure. Configuration example with overlapping the Antenna coverage

Precautions for Pairing wireless Beltpacks

Pair the wireless Beltpack to the Base Station 200 seconds after the Normal menu is displayed on the Base Station. This period is during which the Antenna is booting. During pairing, the Base Station's radio transmission power is dramatically degraded. For this reason, if pairing is done during this period, the Antenna may be assigned to a RF band that causes RF interference.

Section 4: Operating the Base Station BS1000

4.1 Connecting the Base Station BS1000



Base Station BS1000: Front Panel

1. Power switch
2. Loudspeaker, 3 watts
3. Mic on/off button (LED indicator)
4. Loudspeaker on/off button (LED indicator)
5. Menu/Exit/Lock button (Warning LED indicator)
6. Master Volume, Push select Dim, Cut, Sidetone
7. RMK: Remote Mic Kill button (LED indicator)
8. SA: Stage Announce button (LED indicator)
9. TTA: Talk to All button (LED indicator)
10. CH1 Volume, push to call, setting when in menu mode
11. CH1 Talk key (LED indicator)
12. CH3 Volume, push to call
13. CH3 Talk key (LED indicator)
14. Display screen 1
15. CH2 Talk key (LED indicator)
16. CH2 Volume, push to call, operation when in menu mode
17. CH4 Talk key (LED indicator)
18. CH4 Volume, push to call
19. CH5 Volume, push to call
20. CH5 Talk key (LED indicator)
21. CH7 Volume, push to call
22. CH7 Talk key (LED indicator)
23. Display screen 2
24. Network status LEDs (Link/Active)
25. CH6 Talk key (LED indicator)
26. CH6 Volume, push to call
27. CH8 Talk key (LED indicator)
28. CH8 Volume, push to call
29. Gooseneck microphone connector (XLR3F)
30. Headset connector (6pin Mini-Din Receptacle)
31. Antenna mounting hole
32. Ear for rack mounting

1. Power switch

Press the front panel power switch to turn on the Base Station. 'DFS detecting' will be appears on the Base Station screen and once the detecting is completed, Normal menu appears. When the green LED on the Talk key is lit, the Base station is ready for use.

2. Loudspeaker

Loudspeaker, 3 watt, +18dBu before clipping, max level 18dBu.

24. Network status LEDs (Link/Active)

Link LED: This green LED indicates that a data connection has been established with the Remote Antenna.
Active LED: This flashing LED indicates that the Base Station is receiving data from the Remote Antenna.

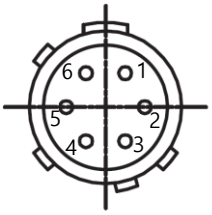
29. Gooseneck microphone connector (XLR-3F)

Pin	Description
1	Ground
2	Audio +
3	Audio -

Select the type of gooseneck microphone from the 'GN ELECT DYN' item in the SETBASE menu. ELECT stands for electret microphone, and DYN stands for dynamic microphone.
The gooseneck microphone and loudspeaker will automatically switch off when you connect the headset. Even when the headset is connected, press the SPK button to re-enable the loudspeaker. When a headset is connected, the Mic button controls the headset microphone only. Do not connect the headset when using the gooseneck microphone.

30. Headset connector (6pin Mini-Din Receptacle)

The gooseneck microphone and loudspeaker will automatically switch off when you connect the headset. Even when the headset is connected, press the SPK button to re-enable the loudspeaker. When a headset is connected, the Mic button controls the headset microphone only. Do not connect the headset when using the gooseneck microphone. 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.

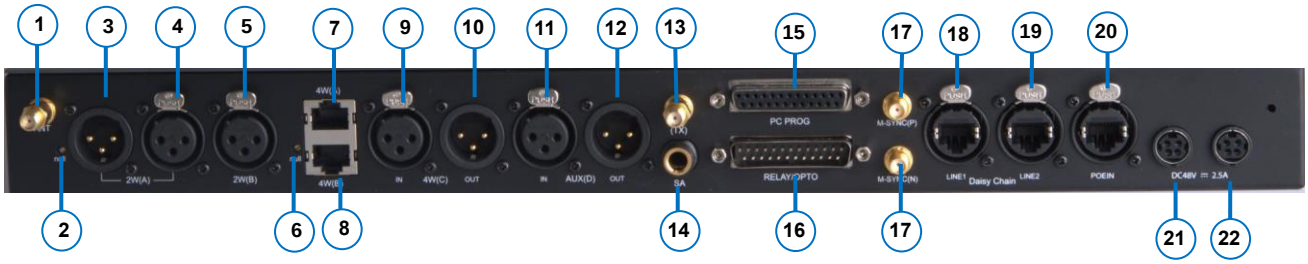


Pinout
1. Microphone VCC +2V (For electret mic.)
2. Microphone – (GND)
3. Microphone + (For dynamic mic.)
4. Push-To-Talk (PTT)
5. Earphone -
6. Earphone +

31. Antenna mounting hole
Mounting hole for front panel connection of antenna.

32. Ear for rack mounting
Ear for rack mounting.

Base Station rear panel



Base Station BS1000: rear panel

1. 13. Antennas
Sleeve on each of the antenna connectors clockwise to tighten them and ensure that the antennas are connected firmly.

Note1: Transmitting antenna (#15) must be positioned vertically and be folded completely as 90 degree, otherwise, it will be caused to weaken the radio wave.

Note2: The Base Station should be away from any metal obstructions, walls, 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.

2. Sidetone Null adjustment (Screwdriver) for Line A (2-wire)
6. Sidetone Null adjustment (Screwdriver) for Line B (2-wire)
2-wire sidetone can be nulled by the screwdriver-adjustable control.
To adjust the null control on each 2-wire channel

- When using the headset, the Sidetone Null setting, and when using the gooseneck microphone with the loudspeaker, the Sidetone Null setting may have different levels of adjustment.
- Adjust the volume level of the 2-wire channel to a comfortable level.
- Press Talk key on a 2-wire channel and speak into the microphone while turning the sidetone null control slowly back and forth.
- There may be a point where the voice and accompanying acoustic feedback disappear. This point is null.

3. 4. A pair of Line A (2-wire) connector (XLR-3M, XLR-3F)
Typically, 2-wire intercom connection would have a 30VDC on Pin 2, coming from a Main station or an intercom PSU. Base Station does not supply any power to the circuit. The second connector of a pair is a loop-through.
2-wire pinout.

Pin	Description
1	Ground (shield)
2	DC Power, 30V nominal
3	Unbalanced Audio

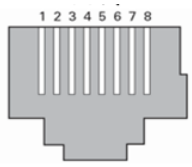
Note: Base Station does not provide 2-wire Line power. If this 2-wire Line A is used, 4-wire Line A shall not be used.

5. Line B (2-wire) connector (XLR-3F)
The pinout of this connector is the same as the 2-wire channel A connector.

Note: Base Station does not provide 2-wire Line power. If this 2-wire Line B is used, 4-wire Line B shall not be used.

7. Line A (4-wire) connector (RJ-45)
8. Line B (4-wire) connector (RJ-45)
4-wire pinout.

Pin	Wire Color	Description
1	White/Orange	No connection
2	Orange	No connection
3	White/Green	Audio out +
4	Blue	Audio in +
5	White/Blue	Audio in -
6	Green	Audio out -
7	White/Brown	No connection
8	Brown	No connection



If this 4-wire Line is used, 2-wire Line shall not be used.

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)

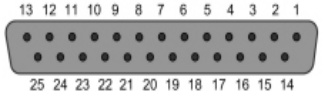
Pin	Description
1	Ground
2	Audio +
3	Audio -

14. Stage Announce connector (1/4" Phone Jack)

Pin	Description
Tip	Audio +
Ring	Audio -
Sleeve	Ground

15. PC PROG connector
Firmware upgrade, 25-pin female D-type

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, Pin14~17 are reserved for connection with other devices. Supply 12 VDC to other devices.

Opto-isolated Inputs
Base Station provides two optically isolated inputs.
You can trigger Talk keyls 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 keys. When this input is detected, the corresponding Talk keys are activated. You can assign one Opto-isolated input to multiple Talk keys. One Talk key can be assigned Opto-isolated input functions with Genie group channels.

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. Two Relays can be allocated to the Talk key. 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 a Talk key set to the 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. In some cases, additional connections such as resistor may be required when connecting a specific walkie-talkie.

See 4.2 Operating the Base Station BS1000, Set Base menu

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

Multi-Sync connection

To use two or more Base Stations with Remote Antennas and Repeaters together in an Antenna coverage zone, Multi-Sync connection, which is described hereafter, should be made for the best communication performance. Multi-sync connections between Base Stations shall be made using a pair of coaxial cables and the coaxial cable length shall be within 12 m. T-type coaxial connectors may be used when connecting three Base Stations. A Base Station must be set as a ‘primary on’ (master) and all others as ‘primary off’ (slave) in the Multi BS menu. With this setting, the Remote Antennas and Repeaters are automatically set to the Master or Slave. Connect the two same location Multi-Sync connectors at each Base Station with a coaxial cable.

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. PoE Line1 and PoE Line2 provide the ability to use the input power from the PoE or 48VDC inputs and supply the remaining power to the other PoE Line. Therefore, when connecting to an external network switch, a network switch with a standard PoE specification must be used.

See 3.2 Notes on Installation, PoE pinout

!!! Note: Without the use of standard PoE specification network switches, **devices connected to the Daisy-chain PoE Line can be severely damaged.** Connect the network switch to the PoE In port.

!!! Note: Do not connect the Daisy-Chain PoE Lines to the PoE port on **the BSCCK550 cascade kit (for BS750, BS550, BS250)**.

!!! Note: Be sure to **use straight cables for LAN cables. Cross cables can cause damage to the device.**

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

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

A Base Station supplies power to itself and PoE Line 1 and 2, using power from PoE In or two power input sockets. Base Station uses 19 watts of power. A Base Station can provide up to 71 watts of power for two Daisy-chain PoE Lines. The Base Station can automatically select and use any power from the PoE In and two power input sockets. You can use these ports to configure power redundancy.

See 3.2 Notes on Installation, PoE pinout

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

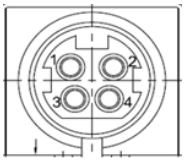
22. 48VDC 2.5A Power input connector for duplex (4-pin Din)

Each power input connector is 48-56VDC at a max power of 90Watt. The external PSU provides the 48VDC 2.5A required and at its input takes 100-240VAC, 47-63Hz.

A Base Station supplies power to itself and PoE Line1 and 2, using power from PoE In or two power input sockets. Base Station uses about 19 watts of power. A Base Station can provide up to 71 watts of power for two Daisy-chain PoE Lines. The Base Station can automatically select and use any power from the PoE In and two power input sockets. You can use these ports to configure power redundancy.

Plug the DC cable from the enclosed PSU into the 48VDC power input connectors (#21 or #22) on the rear panel.

Pinout

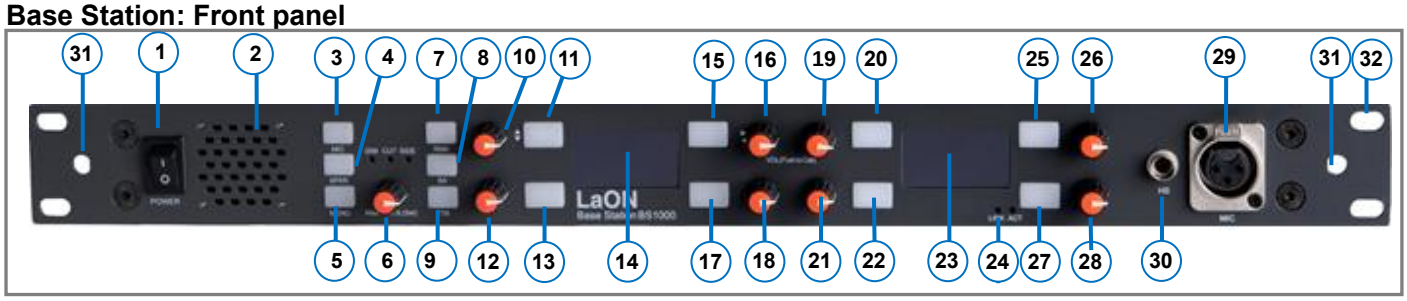


Pin	Description
1	48VDC +
2	48VDC +
3	Ground
4	Ground

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



1. Power switch
2. Loudspeaker, 3 watts
3. Mic on/off button (LED indicator)
4. Loudspeaker on/off button (LED indicator)
5. Menu/Exit/Lock button (LED indicator)
6. Master Volume, Push select Dim, Cut, Sidetone
7. RMK: Remote Mic Kill button (LED indicator)
8. SA: Stage Announce button (LED indicator)
9. TTA: Talk to All button (LED indicator)
10. CH1 Volume, push to call, setting when in menu mode
11. CH1 Talk key (LED indicator)
12. CH3 Volume, push to call
13. CH3 Talk key (LED indicator)
14. Display screen 1
15. CH2 Talk key (LED indicator)
16. CH2 Volume, push to call, operation when in menu mode
17. CH4 Talk key (LED indicator)
18. CH4 Volume, push to call
19. CH5 Volume, push to call
20. CH5 Talk key (LED indicator)
21. CH7 Volume, push to call
22. CH7 Talk key (LED indicator)
23. Display screen 2
24. Network status LEDs (Link/Active)
25. CH6 Talk key (LED indicator)
26. CH6 Volume, push to call
27. CH8 Talk key (LED indicator)
28. CH8 Volume, push to call
29. Gooseneck microphone connector (XLR3F)
30. Headset connector (6pin Mini-Din Receptacle)
31. Antenna mounting hole
32. Ear for rack mounting

3. Mic on/off button (LED indicator)

Press Mic button to turn the LED on and gooseneck or headset microphone on. Press again Mic button to turn off the LED and the gooseneck or headset microphone off. When the headset is connected, the gooseneck microphone is automatically disabled. Audio output to the loudspeaker is also disabled. Press the loudspeaker button (#4) again to enable the loudspeaker. When a headset is connected, the Mic button controls the headset microphone only. Do not connect the headset when using the gooseneck microphone. The Mic button is operated Momentary/Latching, Momentary is the audio path is open while the button is pressed, Latching opens the audio path when the button is quickly tapped, and the second tab will release it.

4. Loudspeaker on/off button (LED indicator)

Press this button to turn the LED on and enable the loudspeaker. Press again button to turn off the LED and disable the loudspeaker. When the headset is connected, the gooseneck microphone is disabled automatically. Audio output to the loudspeaker is also disabled. Press loudspeaker button again, you can enable the loudspeaker.
This button is operated Momentary/Latching, Momentary is the audio path is open while the button is pressed, Latching opens the audio path when the button is quickly tapped, and the second tab will release it.

5. Menu/Exit/Lock button (LED indicator)

Press to tune the LED on and display the Base Station menus. Use the rotary control (#10: up/down, #16 left/right) for display to scroll and select menu items. On the Menu screen, press the Menu button to return to the Normal screen.

Lock the Menu

Press the Menu button for 3 seconds to lock or unlock the menu. Press the Menu button for more than 3 seconds and Menu button is locked. In the lock mode, Menu button do not work, and 'Locked' is displayed on the screen for 3 seconds when any button is pressed. Lock mode does not release when power is turned back on, and the lock status remains. Press the Menu button again for more than 3 seconds to release the lock mode.

6. Master volume, (Press to select Dim, Cut, Sidetone)

To increase the listen level for the loudspeaker or headphone, turn clockwise. To decrease the listen level, turn anticlockwise. With Rotary control, adjust the listen level from -11dB to +11dB. When this switch is pressed and released, it is selected in the order of DIM, CUT and Off. Press this switch for more than 2 seconds, and release it, and the Sidetone level menu will appear. Adjust the sidetone level using the rotary control.

Status LEDs

Dim: When the Talk key is activated, the listen level of all channels except the active Talk channel is dimmed to - 6 dB.
Cut: When the Talk key is activated, the listen level of all channels except the active Talk channel is muted.
Side: Adjust the sidetone level. If there is no level adjustment, the Sidetone menu returns to the Normal menu after 8 seconds, and the Sidetone LED turns off.

7. RMK: Remote Microphone Kill button (LED indicator)

Press RMK button then the RMK menu appears.
With this RMK menu, you can unlatch the Talk keys of devices such as BP850, BP850S, ISS800, IBP10. Select Line, release all the latch of the Ethernet Beltpack and Speaker Station. Select Wireless, release all the latch of the wireless Beltpacks. When the RMK is complete, the Normal screen is automatically displayed.

8. SA: Stage Announce button (LED indicator)

Press SA button to transmits the microphone audio to connected Stage Announce (SA) system. The SA Relay is simultaneously triggered. Only audio from either the headset or the gooseneck microphone is transmitted to the SA output port on the Base Station's rear panel. When the SA button is pressed, microphone audio is automatically enabled either gooseneck or headset microphone and the Mic button LED is lit red.
This button is operated Momentary/Latching, Momentary is the audio path is open while the button is pressed, Latching opens the audio path when the button is quickly tapped, and the second tab will release it.

9. 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. When the TTA button is latched, the listen level of all channels is muted, and microphone audio is automatically active either gooseneck or headset microphone. The Mic button is lit red. This button is operated Momentary and Latching, Momentary is the TTA path is open while the button is pressed, Latching opens the TTA path when the button is quickly tapped, and the second tab will release it.

10. 12. 16. 18. 19. 21. 26. 28. T1~T8 Volume control, and push to call

Tune to increase or decrease the listen level of each channel. Adjust rotary control from -61dB to -12dB, mute. Press the rotary control for more than a second to send a call signal to the corresponding Talk channel of the Line (including 2-wire) or each Genie device

10. In menu mode: Up/down/set
In menu mode, turn the rotary control to scroll through, press to select a menu item.

16. in menu mode: Left/right/set
In menu mode, turn the rotary control to scroll through, press to select a menu item.

11. 13. 15. 17. 20. 22. 25. 27. T1~T8 Talk key (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 key.

See this manual, SetBase menu.
Or see GCM (or GCMW) user manual, 1.1 Configuring each device, Configuring the Base Station.

The Relay can be set on Talk key 1 to 8. 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 keys. 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
Solid red	A talk path is active	Channel label and listen level
Green flashing slowly	Received audio above VOX level	Channel label and listen level
Solid Green	A listen path is open	Channel label and listen level
Amber flashing slowly	Reserved	
Solid amber	Reserved	
Red flashing slowly	Call signal received.	Channel label and listen level
LED is off	Relay channel. (A talk path cannot be activated.)	Label
	Talk channel is not assigned.	'Not set'
	Not paired	'Not paired'
	Not linked	'Unlink'
	Channel is busy (When press Talk key, LED is not on)	'Channel is busy

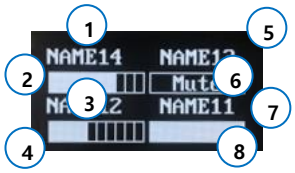
Note: LED status for Call
In the case of an incoming call from the last caller, the LED flashes red until any key is pressed.
When making a call signal, The LED is lit solid red for 3 seconds.

24. Network status LEDs (Link/Active)

Link LED: This green LED indicates that a data connection has been established with the Remote Antenna.
Active LED: This flashing LED indicates that the Base Station is receiving data from the Remote Antenna.

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

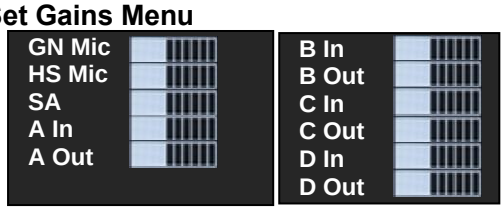
You enter Main menu by pressing and releasing the Menu button.
The Main menu appears in the first screen, and Base Station label, Radio Tx on/off status, Master/Slave status, Base Station model, Firmware version and paired date from the GCM (or GCMW) appears in the second screen.

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'.

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

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:
Pre-amplifier: 40dB(dynamic), 20dB(electret)
Turn the left rotary control (#10) to set the gooseneck microphone input level from -8 dB to 0 dB (default 0 dB). To confirm the selected settings, press right rotary control (#16) to return to the main menu or rotate to scroll to the next item.

HS Mic:
Pre-amplifier: 40dB(dynamic), 20dB(electret)
Turn the left rotary control (#10) to set the microphone input level from -8 dB to 0 dB (default 0 dB). To confirm the selected settings, press right rotary control (#16) to return to the main menu or rotate to scroll to the next item.

SA:
Turn the left rotary control (#10) to set the stage announcement output level from -20 dB to +6 dB (default 0 dB). To confirm the selected settings, press right rotary control (#16) to return to the main menu or rotate to scroll to the next item.

A In, B In, C In, D In:
Turn the left rotary control (#10) to set the Line input gains from -20 dB to +6 dB (default 0 dB). To confirm the selected settings, press right rotary control (#16) to return to the main menu or rotate to scroll to the next item.

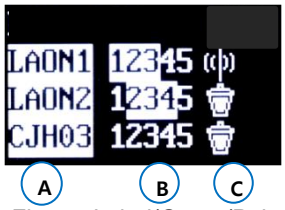
A Out, B Out, C Out, D Out':
Turn the left rotary control (#10) to set the Line output gains from -20 dB to +6 dB (default 0 dB). To confirm the selected settings, press right rotary control (#16) to return to the main menu or rotate to scroll to the next item.

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,BP850S) 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

The user can set the Beltpack label and the Genie group channel in the menu. To set up the Labels and Genie group channels of Beltpacks, under the Beltpack 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, and you can customize the Beltpack labels and Genie group channels.

Pairing icons

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

Rotary control (#10, #16) in the Pair Belt menu
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 paring 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 paring 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 paring is completed successfully, the paring 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.

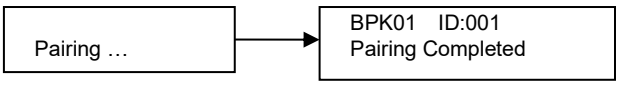


Figure. Pairing completed status

Repeat the paring 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.

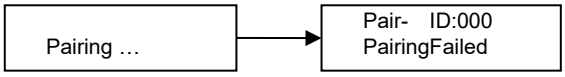


Figure.: Pairing failed status

Pairing for replacement
If a new Beltpack is being paired to replace the Beltpack ('BP001'), turn off 'BP001' and pair to ID 'BP001' with the new Beltpack.
Note: If the same Beltpack ID is duplicated, a communication error may occur.

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:
In the menu, select Electret (ELECT) or Dynamic (DYN) to set the type of Gooseneck microphone.
To save the selected setting, press rotary control or scroll to the next item.

Call Tone on off:
In the Call Tone menu, select On (enable) or Off (disable). When enabled, the user can hear the tone when a call occurs. To save the selected settings, press rotary control or scroll to the next item.

Low Cut off -3 -6:
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.

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 through 9 (From -58dB to -10dB)

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.
If sidetone level is set to zero, it is muted.

A 4-Wire 2-Wire
B 4-Wire 2-Wire:
Before using a Line, Line type should be set to ensure that the volume level and the call signal operate normally. In the menu, select the 2-Wire or 4-Wire to set the type of the Line. To save the selected setting, press rotary control or scroll to the next item.

Screen Save:
Set the period when the screen will automatically turn off.
Selection range: 10 to 900 minutes (10 minutes per step)
The Base Station display will turn off if key is not used or there is no incoming call during a set period.

RF-TX On Off:
Turn off Base Station radio transmission
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.
See 3.3 Placing the Base Station, Remote Antenna and Repeater, Frequency band
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 set the Ethernet synchronization and connecting the Multi-Sync cable. 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). With 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.
See 3.2 Notes on Installation, Ethernet synchronization

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. If you set the Redundant, radio roaming time may increase.

When this Redundant is set to 1:

This has been applied to the BS1000 version V4030.

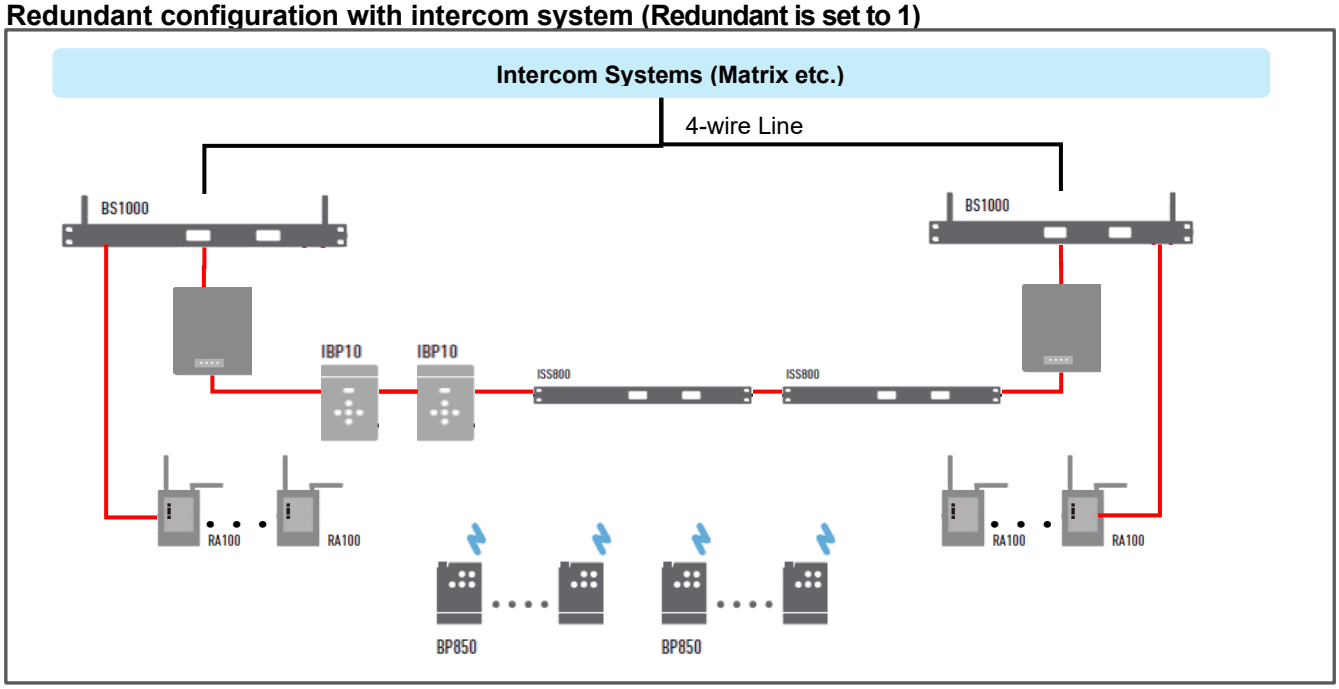
The redundancy system consists of a redundancy setting and a Genie Duo system and daisy chain ring connection. One Base Station BS1000 or Remote Antenna in monitoring mode monitors for failure of another Base Station or Remote Antenna. When a fault occurs, it automatically changes from monitoring mode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

When this Redundant is set to 1, and each device is paired with Base Station1 and Base Station2, the wireless Beltpack, Speaker Station, and Ethernet Beltpack are automatically connected to another Base Station 2 if no Base Station 1 or Remote Antenna 1 is detected. Each device perform automatic access to another Base Station in case one Base Station fails. After you set this item, pair each device again, turn it off and turn it back on.

Note: On a Standalone system that uses one Base Station, set Redundant to 0. Setting the redundant to 1 can increase radio roaming time.

Note: After you set this item, pair wireless Beltpack again, turn it off and turn it back on.

Redundant configuration with intercom system (Redundant is set to 1)



When this Redundant is set to 2:

Assign Antenna

If you install three Remote Antennas in one antenna coverage zone and use 30 talk/listen 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.

Note: After you set this item, pair wireless Beltpack again, turn it off and turn it back on.

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 GCM (or GCMW), 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 key 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. Each Talk key can be set one Genie group channel or Line or Relay. 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 key.
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 keys. Opto-isolated Input 1 (pin 8) and Input 2 (pin 9) can be set to the Talk key using the OPTO1 T12345678, OPTO2 T12345678 menus. In this menu, use the rotary control (#16) to navigate to each Talk key number and press rotary control (#10) for setting.

Opto-isolated Inputs
Base Station provides two optically 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 key 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. In some cases, 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 GCM (or GCMW).

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

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

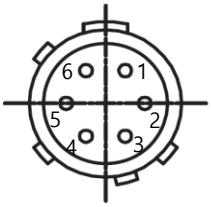
Section 5: Operating the Base Station BS850

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.



Pinout
1. Microphone VCC +2V (For electret mic.)
2. Microphone – (GND)
3. Microphone + (For dynamic mic.)
4. Push-To-Talk (PTT)
5. Earphone -
6. Earphone +

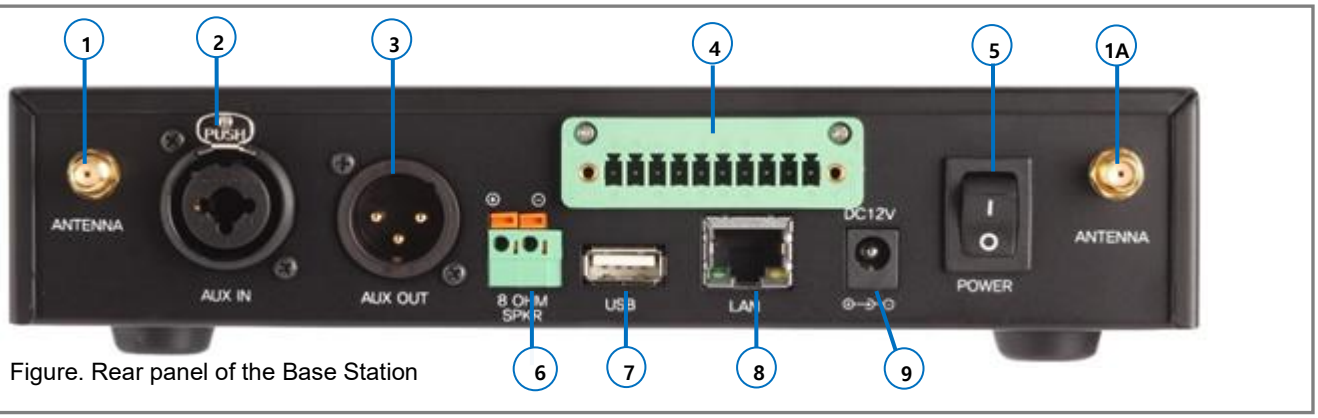


Figure. Rear panel of the Base Station

1. Receive antenna. **1A.** Transmit antenna connector
2. Auxiliary input connector
3. Auxiliary output connector
4. 4-wire and Multi-Sync connector
5. Power switch
6. 8-OHM speaker 2-pin spring clamp connector
7. USB connector
8. Ethernet RJ-45 connector
9. 12VDC power input connector

1. Antenna connectors

Put two enclosed antennas to the antenna connectors (#1) on the rear panel of the Base Station. Turn the sleeve on each of the antenna connectors clockwise to tighten them and ensure that the antennas are connected firmly.

Note1: Transmitting antenna (#1A) must be positioned vertically and be folded completely as 90 degree, otherwise, it will be caused to weaken the signal.

Note2: The Base Station should be away from any metal obstructions, walls, 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.

2. 3. Auxiliary input and output connector

When you use auxiliary device, such as another intercom or other audio sources, put its output cable connector into the AUX In connector (#2) and its input cable connector into the AUX Out connector (#3), as the following pin connections. The AUX Out and AUX In connectors are 3-pin XLR type for balanced +20dBV (10V) maximum level.

Pin 1: Ground
Pin 2: Audio +
Pin 3: Audio–

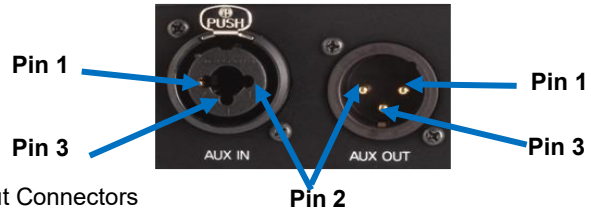


Figure. AUX In and AUX Out Connectors

4. 4-wire and Multi-Sync connector

Connecting to 4-wire

When you use with a 4-wire intercom device, plug the enclosed 10 pin spring clamp connector into the '4-wire connector' (#4) on the rear panel of the Base Station, as shown in Figure. Put wires as following wiring map into 10 pins spring clamp connector. To plug a cable, wire into the 10-pin spring clamp connector, push and hold an orange-colored wire-release latch on the top of the 10 pins spring clamp connector, then put a cable wire into its relevant pin and release a wire-release latch.

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

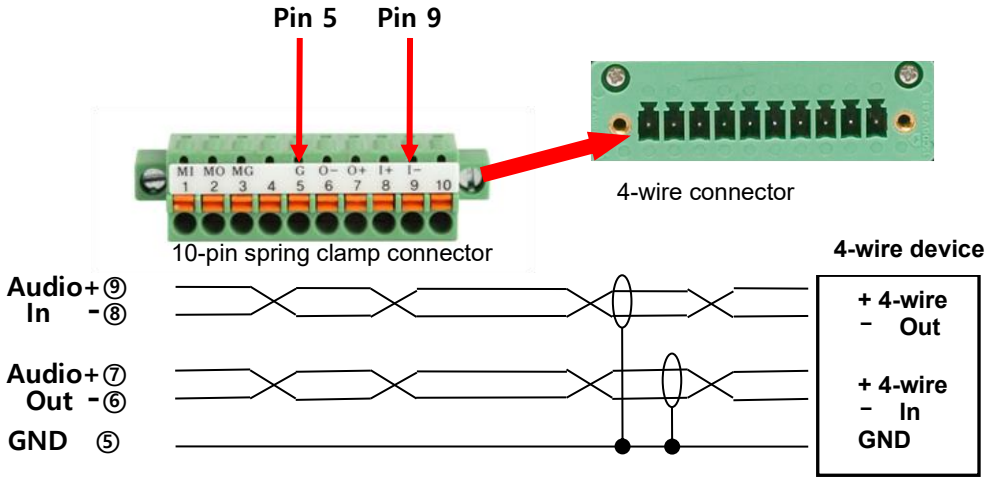


Figure. 4-wire connections

Note: It is recommended to use shielded twisted pair wire.

Multi-Sync connection

To use two or more Base Stations with Remote Antennas and Repeaters together in one antenna coverage, Multi-Sync connection, which is described hereafter, should be made for the best communication performance. A Base Station must be set as a 'primary on' (master) and all others as 'primary off' (slave) in the 'Multi-BS' menu. With this setting, the Remote Antennas and Repeaters are automatically set to the master or slave.
Put wires into the 4-wire& Multi-Sync connector (#4) on the rear panel of the Base Station, by the following pin connections. Plug the enclosed 10-pin spring clamp connector into the 4-wire& Multi-Sync connector as shown below Figures. Put wires as following wiring diagram into 10-pin spring clamp connector. To plug a cable wire into the 10-pin spring clamp connector, push and hold an orange colored wire-release latch on the top of the connector, then put a cable wire into its relevant pin and release a wire-release latch.

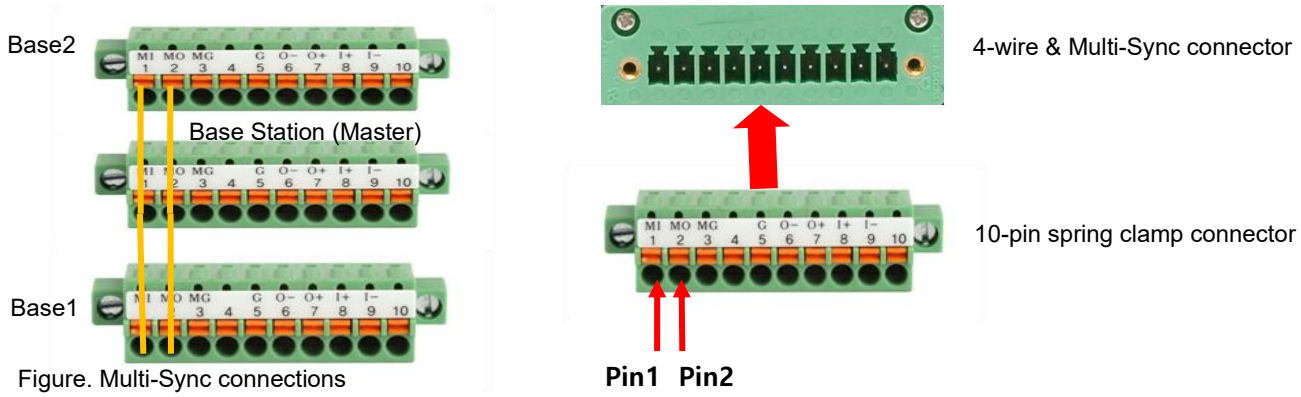


Figure. Multi-Sync connections

Note: Coaxial cable to be used for the Multi-Sync connections and it must not exceed a length of 10 meter.

5. Power switch

Power On

Turn on the Power switch (#5) on the rear panel. 'DFS detecting' appear on the screen. The green LED on top of the Talk key (#1) will be flashing slowly indicating the readiness of Base Station to start operations. Normal menu will be displayed.

Power Off

Turn off the Power switch on the rear panel.

6. 8-OHM speaker 2-pin spring clamp connector

When you use external 8ohm speaker, connect its cable to the 8 OHM SPKR 2-pin Spring Clamp connector (#6) on the rear panel of the Base Station, as the following pin connections. To plug a cable wire into the 2-pin spring clamp connector, push and hold an orange-colored wire-release latch on the top of the connector, then put a cable wire into its applicable pin and release a wire-release latch.

Pin 1: Audio +
Pin 2: Audio -

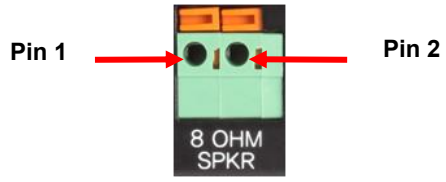


Figure. 8 Ohm SPKR 2-pin Spring Clamp connector

7. USB connector

Reserved

8. LAN RJ-45 connector

This LAN connector can be connected to a network switch. Connect to a network switch using a standard CAT-5e STP cable. A Remote Antenna can be powered by network switch which has the Power-over-Ethernet (PoE) feature. When using the network switch to connect PoE Line 1 or PoE Line 2 of the Remote Antenna RA100DW, Speaker Station and Ethernet Beltpack, the network switch with the standard PoE specification must be used. See 3.2 Notes on Installation.

Remote Antenna also provides the additional 10 talk/listen paths. Up to three Remote Antennas can be connected to a Base Station BS850. It is recommended to compose the network exclusively for LaON intercom system. If the existing network at the site is used there could possibly a network traffic, delay, audio breakups etc. in the intercom communications.

9. 12VDC Power input connector

The power input connector is 11.4-12.6VDC at a max power of 10.8Watt. The external PSU provides the 12VDC 3.33A required and at its input takes 100-240VAC, 47-63Hz.

Plug the DC cable from the enclosed PSU into the 12VDC power input connector (#9) on the rear of the Base Station. Plug the large female connector at the end of the AC power cord into the PSU. Plug the other end of the AC power cord into a standard wall outlet.

5.2 Operating the Base Station BS850

Figure Front panel of the Base Station

1. Talk key with indicator LED
2. Group channel button
3. 4-wire button with indicator LED
4. 4-wire Group channel button
5. AUX In, AUX In/Out button with indicator LED
6. AUX In, AUX In/Out Group channel button
7. RF Alert indicator LED
8. Remote Antenna Link Indicator LED
9. Remote Antenna Active indicator LED
10. Volume level (Up), scroll up in menu mode
11. Volume level (Down), scroll down in menu mode
12. Button to scroll left in menu mode
13. Button to scroll right in menu mode
14. Menu and Set button
15. Headset cable connector (Receptacle)
16. Call button
17. OLED Display

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

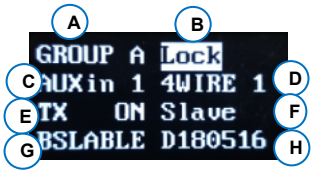


Figure: Normal Menu

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 GCM (or GCMW).

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. The Genie group channel will be changed from 1 to 5, and to A (All) by each pressing. The group channel 1 will come again after A (All). Every time you press and release the group channel button, a voice message 'group one to five or all' will be heard from the headset. Selected Genie group channel is displayed on the Normal menu.

Note: The Genie group channels available on the Base Station can be specified in the Set Group menu.

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, Momentary is the audio path is open while the button is pressed, Latching opens the audio path when the button is quickly tapped, and the second tab will release it.

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. Each mode is set by pressing AUX button sequentially. When auxiliary input is selected, AUX In LED on top of the AUX button will be on. When you use the auxiliary input and the auxiliary output devices at the same time, select AUX I/O. When AUX I/O is selected, AUX I/O LED on top of the AUX button will be on. When both are not activated, the LEDs of AUX In and AUX I/O on top of the AUX button will be off.

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.

Note: The Genie group channels available on the Base Station can be specified in the Set Group menu.

The 4-wire AND 4-wire group channel buttons

4-wire button (#3)

The 4W button allows for enabling or disenabling the connection for the 4-wire device. Two modes will be toggled by pressing 4W button. The LED on the top of the 4W button is lit when the connection is selected.

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. The group channel 1 will come again after 'A' (All). Selected 4-wire group channel is displayed on the Normal menu.

Note: The Genie group channels available on the Base Station can be specified in the Set Group menu.

Lock the Menu

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

Press the Right button for more than 3 seconds and the Base Station buttons are locked. In Lock mode, 'Lock' is displayed on the screen. Lock mode is maintained even when the power is turned back on.

Press the Right button again for more than 3 seconds to release.

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.

Menu menu

Press Set under the Normal menu, and 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.

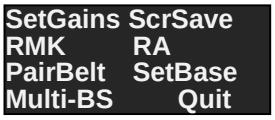


Figure. Main menu

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.

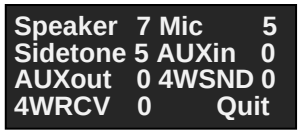


Figure. Set Gains menu

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.

Level up

You will hear a beep each time you press and release the Up button. When the level reaches its maximum level, you can hear the voice message ‘maximum’ on the headset.

Level down

You will hear a beep each time you press and release the Down button. When the level reaches its minimum level, you can hear the voice message ‘minimum’ on the headset.

Note: The Speaker menu is for adjusting the level of the headset earphone and external speaker.

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.

Level up

You will hear a beep each time you press and release the Up button. When the level reaches its maximum level, you can hear the voice message ‘maximum’ on the headset.

Level down

You will hear a beep each time you press and release the Down button. When the level reaches its minimum level, you can hear the voice message ‘minimum’ on the headset.

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.

Level up

Every time you press and release the Up button, the increased voice level will be heard from the headset while you are speaking to headset microphone. When the level reaches its maximum level, you can hear the voice message ‘maximum’ on the headset.

Level down

Every time you press and release the Down button, the decreased voice will be heard from the headset while you are speaking to headset microphone. When the level reaches its minimum level, you can hear the voice message ‘minimum’ on the headset.

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.

Input or output level up

You will hear a beep each time you press and release the Up button. When the level reaches its maximum level, you can hear the voice message ‘maximum’ on the headset.

Input or output level down

You will hear a beep each time you press and release the Down button. When the level reaches its minimum level, you can hear the voice message ‘minimum’ on the headset.

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.

Sending or Receiving level up

You will hear a beep each time you press and release the Up button. When the level reaches its maximum level, you can hear the voice message ‘maximum’ on the headset.

Sending or Receiving level down

You will hear a beep each time you press and release the Down button. When the level reaches its minimum level, you can hear the voice message ‘minimum’ on the headset.

Note: Headset safety

- Note that there may be various causes of cut-off of the microphone level, echoing or distortion of the headset. The initial setup recommends that you begin to adjust at a lower level for safe use and improve the level to meet the best levels required for various site environments.
- Setting the microphone level, sidetone, or earphone volume level for a specific headset too high can cause some kind of echo or distortion. Reduce these gains or levels to improve and mitigate related problems.

ScrSave Menu
Set the period when the screen will automatically turn off.
Selection range: 10 to 900 minutes (10 minutes per step)
The Base Station display will turn off if key is not used or there is no incoming call during a set period.

RMK Menu

Figure. RMK menu

Navigate to the RMK menu, press the Set button, the RMK menu appears as shown in Figure.
With this RMK menu, you can unlatch the Talk keys of devices such as BP850, BP850S, ISS800, IBP10. Select Line, release all the latch of the Ethernet Beltpack and Speaker Station. Select Wireless, release all the latch of the wireless Beltpacks. When the RMK is complete, the Normal screen is automatically displayed.

RA Menu

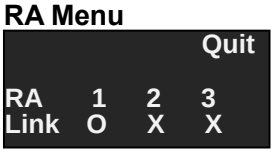


Figure. RA menu

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,BP850S) can be paired with the Base Station BS1000, BS850 and MS150.

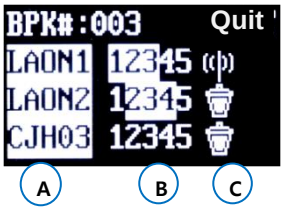
Pairing wireless Beltpacks
Check out the power status of the Base Station and each Beltpack's, which will be paired up with. To execute a paring process, the Base Station and Beltpacks should be turned on. Beltpacks should not go further than 3 feet (1 meter) from the Base Station while they are being 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. Move to 'Label/Group/Pair', and select it.

Set the Beltpack labels and Genie group channels for pairing



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

Figure. Label/Group/Pair menu

The user can set the Beltpack label and Genie group channel in the menu. To set the Labels and Genie group channels of Beltpacks, under the Beltpack menu, move to and select Pair Belt. The Pair Belt menu appears, as below. The Beltpack labels are shown as '_P001' ~ '_P128' sequentially, and you can customize the Beltpack labels and Genie group channels.

Pairing icons

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

Edit Beltpack labels

To set Beltpack Label, move to Beltpack Label **(A)**. Pressing UP or Down 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 Left or Right button. Single or multiple groups within the five groups (1 2 3 4 5) can be saved by pressing Set button on each Group channel number. To reverse the saved groups, press Set button 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. In this case, the icon ( ) will be changed to ( ) once you enter into the edit mode.

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 paring 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 Set button on the paring 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 paring is completed successfully, the paring 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.

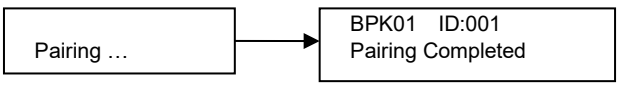


Figure. Pairing completed status

Repeat the paring processing for each Beltpack.

If pairing is failed:

After 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.

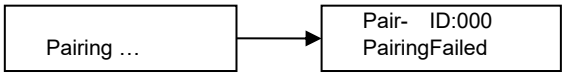


Figure.: Pairing failed status

Pairing for replacement

If a new Beltpack is being paired to replace the Beltpack ('BP001'), turn off 'BP001' and pair to ID 'BP001' with the new Beltpack.

Note: If the same Beltpack ID is duplicated, a communication error may occur.

Reset the Beltpack labels or Genie group channels.

Figure. Reset menu

All edited wireless Beltpack labels can be reset to factory defaults using the Reset Belt Label menu. And all edited wireless Beltpack group channels can be reset to factory defaults using the Reset Belt Group menu.

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

SetBase Menu

SetBase Menu

Set Group Menu

Set the Genie group channels for the Line or 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.

In each row, use Left or Right to move to the group channel number from 1 to 5. A maximum of five group channels can be set on each device by moving to a number and pressing the Set button.

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

Once group channels are set in this menu, users can select the Genie group channels within the range selected here. To return to the main menu, select Quit.

Set RF menu

Figure. Set RF menu

RF-TX On Off:

Turn off Base Station radio transmission

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 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.

See 3.3 Placing the Base Station, Remote Antenna and Repeater, Frequency band

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

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.

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

Multi-BS menu

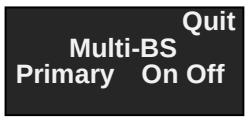


Figure. Multi-BS menu

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. 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.

See 3.2 Notes on Installation, Ethernet synchronization

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 10 in addition to the 10 Talk/listen paths provided by the Base Station.
- Within 10 devices, Ethernet Beltpacks or Speaker Stations or Repeaters can be connected to a Remote Antenna. And 128 wireless Beltpacks can also be connected.
- When Key Panels are used in conjunction with a Base Station, up to 20 Key Panels can be connected to one Remote Antenna.
- 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. If you use a network switch to connect PoE Line1 or PoE Line 2 of the Remote Antenna RA100DW, you must use a network switch with standard PoE specification.
See 3.2 Notes on Installation, PoE Pinout

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. Up to 128 wireless Beltpacks and up to 10 Ethernet Beltpacks or Speaker Stations or Repeaters can be connected to each Remote Antenna. A Remote Antenna also provides an additional 10 talk/listen paths. Even with four Talk paths within a device such as Speaker Station, it occupies one talk/listen path. Thus, one Base Station offers up to 70 talk/listen paths for wireless and digital Ethernet devices with six Remote Antennas. However, when one device such as Speaker Station talk with two Base Stations, it occupies two talk/listen paths. 20 Genie Key Panels can be connected to a Remote Antenna and can be used in conjunction with the Genie Base Station.

It is recommended to compose the network exclusively for LaON intercom system. If the existing network at the site is used there could possibly a network traffic, delay, audio breakups etc.

Connecting the Remote Antenna RA100DW

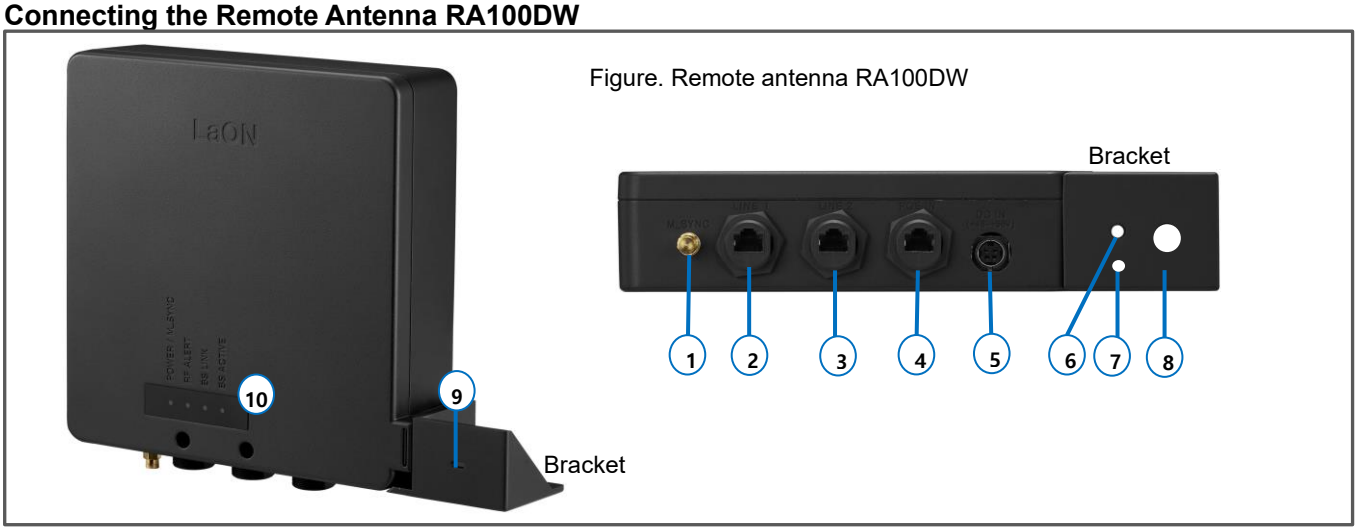


Figure. Remote antenna RA100DW

1. 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)
4. 1 Gbps/100Mbps, PoE input (Ethercon RJ45, PD)
5. 48VDC power input connector (4-pin Din)
6. Mounting element (Camera tripod threaded socket 3/8')
7. Mounting element (M6 hole)
8. Mounting element (Microphone stand mounting hole)
9. Kensington lock hole
10. Power/Multi-Sync, RF Alert, BS Link, BS Active LEDs

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

Multi-Sync connection

To use two or more Remote Antennas together in one antenna coverage, Multi-Sync connection, which is described hereafter, may be made for the best communication performance. These connections are used for more efficient Ethernet synchronization when multiple Remote Antenna installations are in a narrow range (may be within 1m). Multi-Sync connections between Remote Antennas shall be made using a coaxial cable. One Remote Antenna must connect with Base Station set as a 'Primary on' (master).

2. **Daisy-chain PoE Line1 connector (Ethercon RJ45, PSE)**
3. **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. PoE Line1 and PoE Line2 provide the ability to use the input power from the PoE or 48VDC inputs and supply the remaining power to the other PoE Line. Therefore, when connecting to an external network switch, a network switch with a standard PoE specification must be used.
See 3.2 Notes on Installation, PoE pinout

!!! Note: Without the use of standard PoE specification network switches, **devices connected to the Daisy-chain PoE Line can be severely damaged.** Connect the network switch to the PoE In port.

!!! Note: Do not connect the Daisy-Chain PoE Lines to the PoE port on **the BSCCK550 cascade kit (for BS750, BS550, BS250)**.

!!! Note: Be sure to **use straight cables for LAN cables. Cross cables can cause damage to the device.**

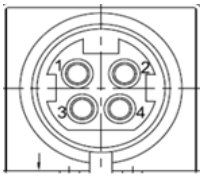
You can use Daisy-chain ring connections to configure power and data redundancy.
See 3.2 Notes on Installation, PoE pinout

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 connector is 48-56VDC at a max power of 90Watt. The external PSU provides the 48VDC 2.5A required and at its input takes 100-240VAC, 47-63Hz. 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. Plug the DC cable from the enclosed PSU into the 48VDC power input connector (#5) on the bottom of the Remote Antenna.



Pin	Description
1	48VDC +
2	48VDC +
3	Ground
4	Ground

6. **Mounting element (Camera tripod threaded socket 3/8")**
7. **Mounting element M6**
8. **Mounting element (Microphone stand mounting hole)**

Install them on the wall or camera tripod or microphone/light stand with interfacing screws.

9. **Kensington lock hole,**

Screw hole for a safety wire mounting

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

Status LEDs on the front panel of the Remote Antenna.

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 connected sequentially to the Base Station.
When the Multi-Sync cable is connected,
When the Remote Antenna is in Slave mode, and the signal is received, LED is lit in red.
When the Remote Antenna is in Slave mode, and the signal is not received, LED is lit in green.
When the Remote Antenna is in Master mode, LED is lit in green.

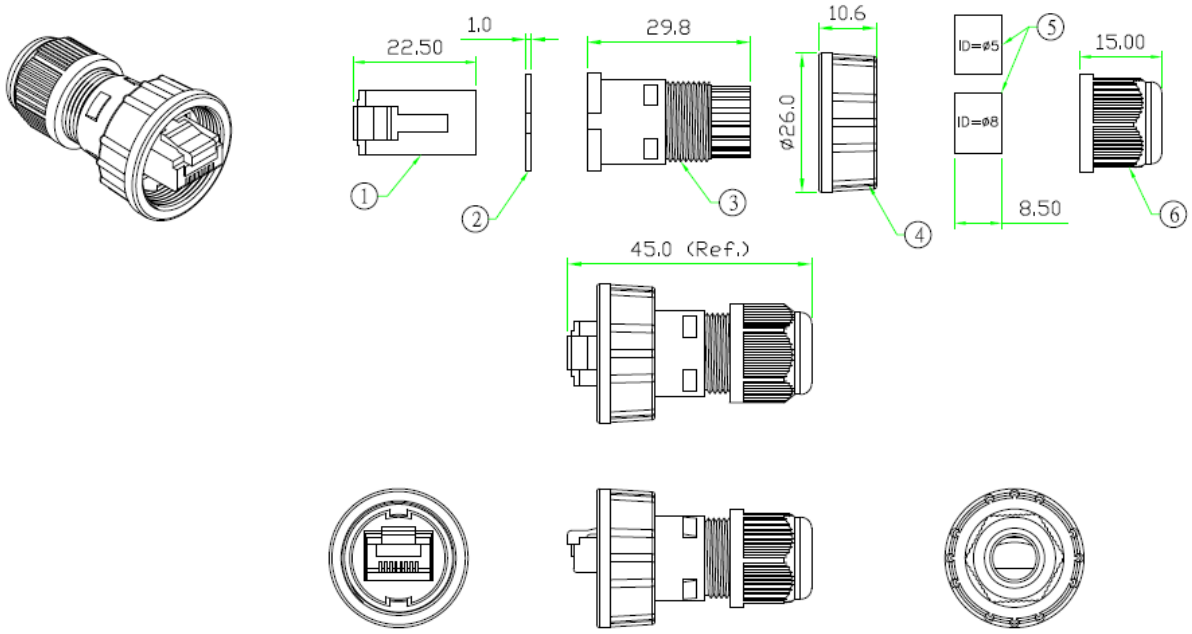
RF Alert LED: When there are audio breakups seriously, RF Alert LED flashes.
BS Link LED: When the Remote Antenna is connected to the Base Station, BS Link LED is lit.
BS Active LED: When the Remote Antenna exchanges data with the Base Station, BS Active LED flashes.

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, walls, 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 GCM (or GCMW) user manual, Configuring the Remote Antenna.

Waterproof RJ45 plug assembly diagram (RA100DW)



No.	PART NAME	DESCRIPTION	COLOR	Q'TY
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

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.

Connecting the Remote Antenna RA100

1. Receive antenna. **1A.** Transmit antenna connector
2. Status LEDs
3. LAN RJ-45 connector with the PoE (PD)
4. Antenna holder (optional)

1. Antenna connectors

Put two enclosed antennas to the antenna connectors (#1, #1A) on the top panel of the Remote Antenna. Turn the sleeve on each of the antenna connectors clockwise to tighten them and ensure that the antennas are connected firmly.

Note1: Transmitting antenna (#1A) must be positioned.

Note2: The Remote Antenna should be away from any metal obstructions, walls, 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.

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

Power LED: This LED is lit in green when a PoE is connected. During the boot process of the Base Station, this power LED is briefly lit in red while the Antenna is connected 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.

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

The Remote Antenna RA100 can be powered by the Genie devices (such as Remote Antenna RA100DW, BS1000, GRP8) or network switch. It receives power from the PoE RJ-45 port (PD) and uses it as its own power.

Pinout: See 3.2 Notes on Installation, PoE pinout

4. **Antenna holder (optional)**

Insert a Remote Antenna 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 the Antenna holder using interfacing screws on the wall or camera tripod or microphone/light stand.

6.2 Operating the Remote Antenna RA100DW, RA100

For pairing and setting the Remote Antenna,
See GCM (or GCMW) 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/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.

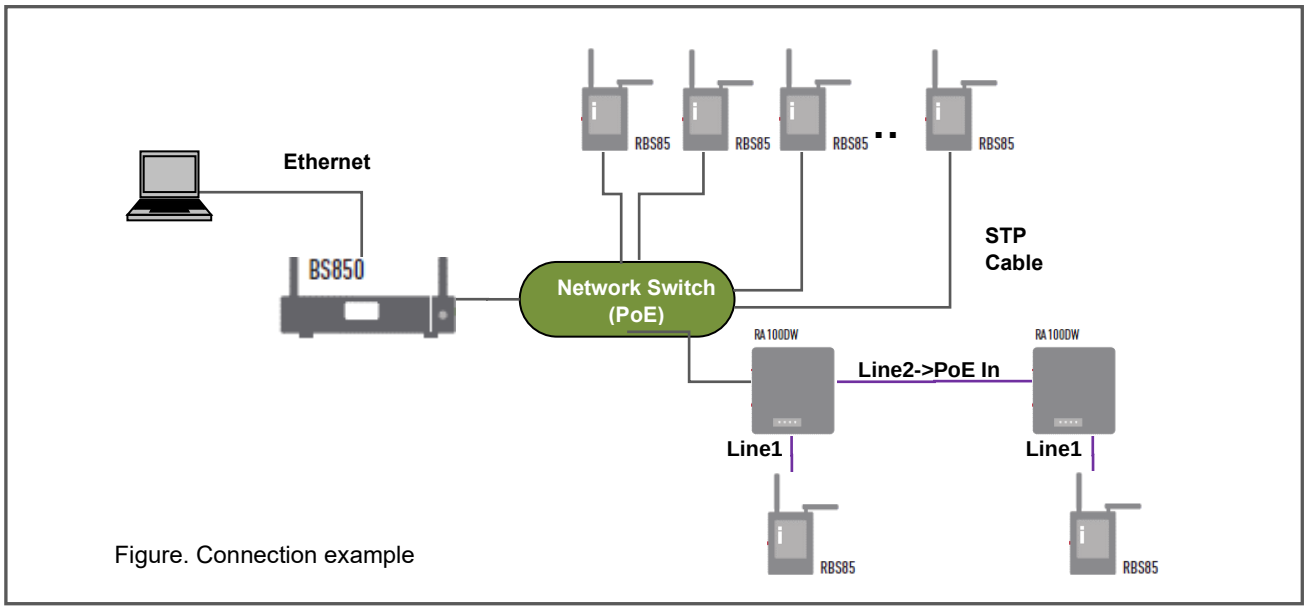


Figure. Connection example

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.

Note: Not using dedicated network between the Remote Antenna and the Repeaters, there could possibly be delayed due to network traffic. When there are audio breakups due to the delays, it is highly recommended to compose a dedicated exclusive network. A dedicated network means that the LAN network is only used for Genie devices.

1. Receive antenna. **1A.** Transmit antenna connector
2. Status LEDs
3. LAN RJ-45 connector with the PoE (PD)
4. Antenna holder (optional)

1. Antenna connectors

Put two enclosed antennas to the antenna connectors (#1, #1A) on the top panel of the Remote Antenna. Turn the sleeve on each of the antenna connectors clockwise to tighten them, and then make sure the antennas are firmly connected.

Note1: It is recommended to place the transmission antenna (#1A) vertically.
Note2: The Remote Antenna should be away from any metal obstructions, walls, 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.

2. Status LEDs on the front panel of the Repeater

Power LED: This LED is lit in green when a PoE is connected. During the boot process of the Base Station, this power LED is briefly lit in red while the Antenna is connected 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.

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

Repeater can be powered by a Genie device (such as BS1000, Remote Antenna RA100DW, GRP8) or network switch which has the PoE. It receives power from the LAN port (PD) and uses it as its own power.
Pinout
See 3.2 Notes on Installation, PoE pinout

4. Antenna holder (optional)

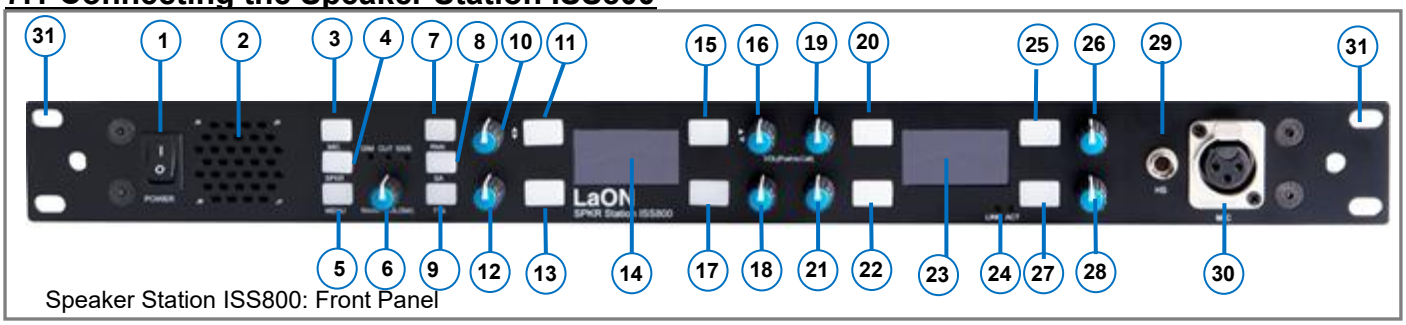
Insert a Remote Antenna and fix it with a screw on the holder. Connect the LAN cable by using the 'Push-Pull Locking' type Ethercon connector on the bottom of the holder. Install the Antenna holder using interfacing screws on the wall or camera tripod or microphone/light stand.

6.4 Operating the Repeater RBS85

For pairing and setting the Repeater
See GCM (or GCMW) user manual, Configuring the Repeater.

Section 7: Operating the Speaker Station ISS800

7.1 Connecting the Speaker Station ISS800



Speaker Station ISS800: Front Panel

1. Power switch
2. Loudspeaker, 3 watts
3. Mic on/off button (LED indicator)
4. Loudspeaker on/off button (LED indicator)
5. Menu/Exit/Lock button (LED indicator)
6. Master Volume, Push select Dim, Cut, Sidetone
7. RMK: Remote Mic Kill button (LED indicator)
8. SA: Stage announce button (LED indicator)
9. TTA: Talk to All button (LED indicator)
10. CH1 Volume, push to call, setting when in menu mode
11. CH1 Talk key (LED indicator)
12. CH3 Volume, push to call
13. CH3 Talk key (LED indicator)
14. Display screen 1
15. CH2 Talk key (LED indicator)
16. CH2 Volume, push to call, operation when in menu mode
17. CH4 Talk key (LED indicator)
18. CH4 Volume, push to call
19. CH5 Volume, push to call
20. CH5 Talk key (LED indicator)
21. CH7 Volume, push to call
22. CH7 Talk key (LED indicator)
23. Display screen 2
24. Network status LEDs (Link/Active)
25. CH6 Talk key (LED indicator)
26. CH6 Volume, push to call
27. CH8 Talk key (LED indicator)
28. CH8 Volume, push to call
29. Gooseneck microphone connector (XLR3F)
30. Headset connector (6pin Mini-Din Receptacle)
31. Ear for rack mounting

1. Power switch

Press the front panel power switch to turn on the Speaker Station. Normal menu will appear. When the green LED on the Talk key is lit, the speaker station is ready for use.

2. Loudspeaker

Loudspeaker, 3 watt, +18dBu before clipping, max level 18dB.

24. Network status LEDs (Link/Active)

Link LED: This green LED indicates that a data connection has been established with the Remote Antenna.
Active LED: This flashing LED indicates that the Speaker Station is receiving data from the Remote Antenna.

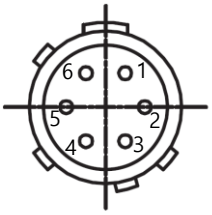
29. Gooseneck microphone connector (XLR3F)

Pin	Description
1	Ground
2	Audio +
3	Audio -

Select the type of gooseneck microphone from the 'GN ELECT DYN' item in the SETISS800 menu. ELECT stands for electret microphone, and DYN stands for dynamic microphone.
The gooseneck microphone and loudspeaker will automatically switch off when you connect the headset. Even when the headset is connected, press the SPK button to re-enable the loudspeaker. When a headset is connected, the Mic button controls the headset microphone only. Do not connect the headset when using the gooseneck microphone.

30. Headset connector (6pin Mini-Din Receptacle)

The gooseneck microphone and loudspeaker will automatically switch off when you connect the headset. Even when the headset is connected, press the SPK button to re-enable the loudspeaker. When a headset is connected, the Mic button controls the headset microphone only. Do not connect the headset when using the gooseneck microphone. 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.

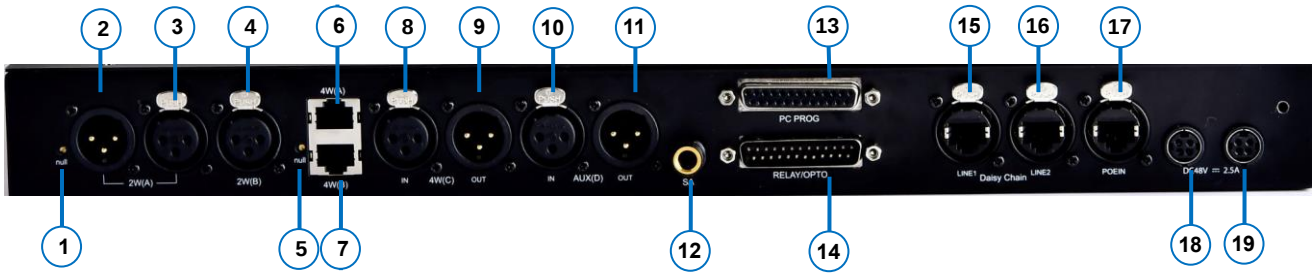


Pinout
1. Microphone VCC +2V (For electret mic.)
2. Microphone – (GND)
3. Microphone + (For dynamic mic.)
4. Push-To-Talk (PTT)
5. Earphone -
6. Earphone +

31. Ear for rack mounting

Ear for rack mounting Speaker Station

Speaker Station Rear panel



Speaker Station ISS800: Rear Panel

1. **Sidetone NULL adjustment (Screwdriver) for Line A (2-wire)**
5. **Sidetone NULL adjustment (Screwdriver) for Line B (2-wire)**

2-wire sidetone can be nulled by the screwdriver-adjustable control.
To adjust the null control on each 2-wire channel

- When using the headset, the Sidetone Null setting, and when using the gooseneck microphone with the loudspeaker, the Sidetone Null setting may have different levels of adjustment.
- Adjust the volume level of the 2-wire channel to a comfortable level.
- Press Talk key on a 2-wire channel and speak into the microphone while turning the sidetone null control slowly back and forth.
- There may be a point where the voice and accompanying acoustic feedback disappear. This point is null.

2. 3. A pair of Line A (2-wire) connector (XLR-3M, XLR-3F)

Typically, 2-wire intercom connection would have a 30VDC on Pin 2, coming from a Main station or an intercom PSU. Base Station does not supply any power to the circuit. The second connector of a pair is a loop-through.

2-wire pinout

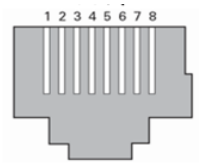
Pin	Description
1	Ground (shield)
2	DC Power, 30V nominal
3	Unbalanced Audio

Note: Speaker Station does not provide 2-wire Line power. If this 2-wire Line A is used, 4-wire Line A shall not be used.

4. **Line B (2-wire) connector (XLR-3F)**

This connector has the same pinout as the 2-wire Channel A connector.
Note: Speaker Station does not provide 2-wire Line power. If this 2-wire Line B is used, 4-wire Line B shall not be used.

6. **Line A (4-wire) connector (RJ-45)**
7. **Line B (4-wire) connector (RJ-45)**



Pin	Wire Color	Description
1	White/Orange	No connection
2	Orange	No connection
3	White/Green	Audio out +
4	Blue	Audio in +
5	White/Blue	Audio in -
6	Green	Audio out -
7	White/Brown	No connection
8	Brown	No connection

If this 4-wire Line is used, 2-wire Line shall not be used.

8. **Line C (4-wire) input connector (XLR-3F)**
9. **Line C (4-wire) output connector (XLR-3M)**
10. **Line D (4-wire) input connector (XLR-3F)**
11. **Line D (4-wire) output connector (XLR-3M)**

Pin	Description
1	Ground
2	Audio +
3	Audio -

12. Stage Announce connector (1/4" Phone Jack)

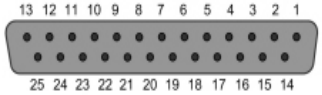
Pin	Description
Tip	Audio +
Ring	Audio -
Sleeve	Ground

13. PC PROG connector

For firmware upgrade, 25-pin female D-type

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

This has been applied to ISS800 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		

Pins 1~4, Pins 14~17 are reserved for connection with other devices. Supply 12 VDC to other devices.

Opto-isolated Inputs

Speaker Station provides two optically 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 Speaker 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. One Talk key can be assigned Opto-isolated input functions with Genie group channels.

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. Speaker Station does not supply any power to the circuit.

Speaker 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 key. 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 can be set to the Talk key. Relay cannot be set on one Talk key with 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. In some cases, additional connections such as resistor may be required when connecting a specific walkie-talkie.
See 4.2 Operating the Speaker Station ISS800, Set ISS800 menu

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

16. 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. PoE Line1 and PoE Line2 provide the ability to use the input power from the PoE or 48VDC inputs and supply the remaining power to the other PoE Line. Therefore, when connecting to an external network switch, a network switch with a standard PoE specification must be used.
See 3.2 Notes on Installation, PoE pinout

!!! Note: Without the use of standard PoE specification network switches, **devices connected to the Daisy-chain PoE Line can be severely damaged.** Connect the network switch to the PoE In port.

!!! Note: Do not connect the Daisy-Chain PoE Lines to the PoE port on **the BSCCK550 cascade kit (for BS750, BS550, BS250)**.

!!! Note: Be sure to **use straight cables for LAN cables. Cross cables can cause damage to the device**

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

17. 100Mbps, PoE input connector (Ethercon RJ45, PD)

A Speaker Station supplies power to itself and PoE Line 1 and 2, using power from PoE In or two power input sockets. Speaker Station uses maximum 15 watts of power. A Speaker Station can provide up to 75 watts of power for the two Daisy-chain PoE Lines. The Speaker Station can automatically select and use any power from the PoE In and two power input sockets. You can use these ports to configure power redundancy.

See 3.2 Notes on Installation, PoE pinout

18. 48VDC 2.5A Power input connector (4-pin Din)

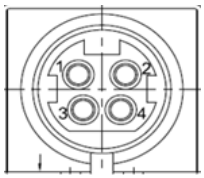
19. 48VDC 2.5A Power input connector for duplex (4-pin Din)

Each power input connector is 48-56VDC at a max power of 90Watt. The external PSU provides the 48VDC 2.5A required and at its input takes 100-240VAC, 47-63Hz.

A Speaker Station supplies power to itself and PoE Line1 and 2, using power from PoE In or two power input sockets. Speaker Station uses maximum 15 watts of power. A Speaker Station can provide up to 75 watts of power for the two PoE Lines. The Speaker Station can automatically select and use any power from the PoE In and two power input sockets. You can use these ports to configure power redundancy.

Plug the DC cable from the enclosed PSU into the 48VDC power input connectors (#18 or #19) on the rear panel.

Pinout

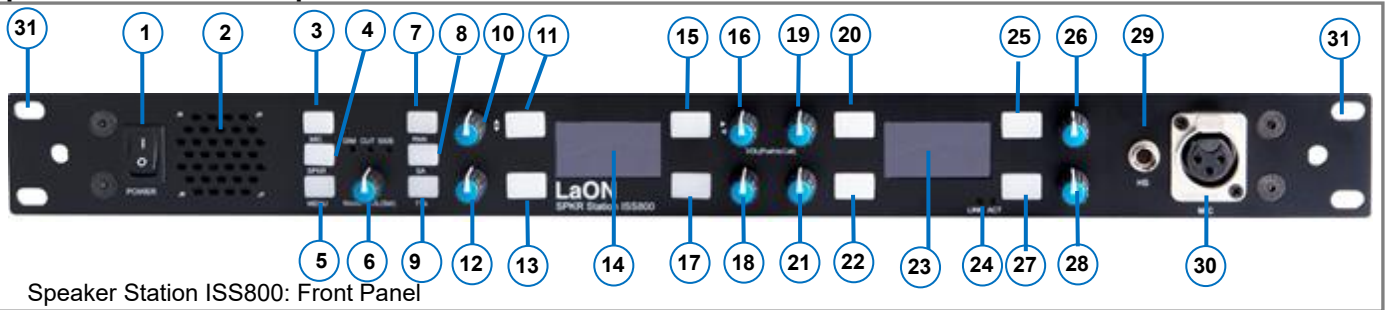


Pin	Description
2	48VDC +
3	Ground
4	Ground

7.2 Operating the Speaker Station ISS800

- Speaker Station with 8 Talk keys
- One PoE In and two Daisy-chain PoE Lines (PoE standard power and data).

Speaker Station: Front panel



Speaker Station ISS800: Front Panel

1. Power switch
2. Loudspeaker, 3 watts
3. Mic on/off button (LED indicator)
4. Loudspeaker on/off button (LED indicator)
5. Menu/Exit/Lock button (Warning LED indicator)
6. Master Volume, Push select Dim, Cut, Sidetone
7. RMK: Remote Mic Kill button (LED indicator)
8. SA: Stage Announce button (LED indicator)
9. TTA: Talk to All button (LED indicator)
10. CH1 Volume, push to call, setting when in menu mode
11. CH1 Talk key (LED indicator)
12. CH3 Volume, push to call
13. CH3 Talk key (LED indicator)
14. Display screen 1
15. CH2 Talk key (LED indicator)
16. CH2 Volume, push to call, operation when in menu mode
17. CH4 Talk key (LED indicator)
18. CH4 Volume, push to call
19. CH5 Volume, push to call
20. CH5 Talk key (LED indicator)
21. CH7 Volume, push to call
22. CH7 Talk key (LED indicator)
23. Display screen 2
24. Network status LEDs (Link/Active)
25. CH6 Talk key (LED indicator)
26. CH6 Volume, push to call
27. CH8 Talk key (LED indicator)
28. CH8 Volume, push to call
29. Gooseneck microphone connector (XLR3F)
30. Headset connector (6pin Mini-Din Receptacle)
31. Ear for rack mounting

3. Mic on/off button (LED indicator)

Press Mic button to turn the LED on and gooseneck or headset microphone on. Press again Mic button to turn off the LED and the gooseneck or headset microphone off. When the headset is connected, the gooseneck microphone is automatically disabled. Audio output to the loudspeaker is also disabled. Press the loudspeaker button (#4) again to enable the loudspeaker. When a headset is connected, the Mic button controls the headset microphone only. Do not connect the headset when using the gooseneck microphone. This button is operated Momentary/Latching, Momentary is the audio path is open while the button is pressed, Latching opens the audio path when the button is quickly tapped, and the second tab will release it.

4. Loudspeaker on/off button (LED indicator)

Press this button to turn the LED on and enable the loudspeaker. Press again button to turn off the LED and disable the loudspeaker. When the headset is connected, the gooseneck microphone is disabled automatically. Audio output to the loudspeaker is also disabled. Press loudspeaker button again, you can enable the loudspeaker.
This button is operated Momentary/Latching, Momentary is the audio path is open while the button is pressed, Latching opens the audio path when the button is quickly tapped, and the second tab will release it.

5. Menu/Exit/Lock button (LED indicator)

Press to tune the LED on and display the Speaker Station menus. Use the rotary control (#10: up/down, #16 left/right) for display to scroll and select menu items. Press the Menu button on the Menu screen to return to the Normal screen.

Lock the Menu

Press the Menu button for 3 seconds to lock or unlock the menu.
Press the Menu button for more than 3 seconds and Menu button is locked. In the lock mode, Menu button do not work, and 'Locked' is displayed on the screen for 3 seconds when any button is pressed. Lock mode does not release when power is turned back on, and the lock status remains. Press the Menu button again for more than 3 seconds to release the lock mode.

6. Master volume, (Press to select Dim, Cut, Sidetone)

To increase the listen level for the loudspeaker or headphone, turn clockwise. To decrease the listen level, turn anticlockwise. With Rotary control, adjust the listen level from -11dB to +11dB. When this switch is pressed and released, it is selected in the order of DIM, CUT and Off. Press this switch for more than 2 seconds, and release it, and the Sidetone level menu will appear. Adjust the sidetone level using the rotary control.

Status LEDs

Dim: When the Talk key is activated, the listen level of all channels except the active Talk channel is dimmed to - 6 dB.
Cut: When the Talk key is activated, the listen level of all channels except the active Talk channel is muted.
Side: Adjust the sidetone level. If there is no level adjustment, the Sidetone menu returns to the Normal menu after 8 seconds, and the Sidetone LED turns off.

7. RMK: Remote Microphone Kill button (LED indicator)

Press RMK button then the RMK menu appears.

With this RMK menu, you can unlatch the Talk keys of devices such as BP850, BP850S, ISS800, IBP10. Select Line, release all the latch of the Ethernet Beltpack and Speaker Station. Select Wireless, release all the latch of the wireless Beltpacks. When the RMK is complete, the Normal screen is automatically displayed.

8. SA: Stage Announce button (LED indicator)

Press SA button to talk to connected Stage Announce (SA) system. The SA Relay is simultaneously triggered. Only audio from either the headset or the gooseneck microphone is transmitted to the SA output port on the Speaker Station's rear panel. When the SA button is pressed, microphone audio is automatically enabled either gooseneck or headset microphone and the Mic button LED is lit red.

This button is operated Momentary/Latching, Momentary is the audio path is open while the button is pressed, Latching opens the audio path when the button is quickly tapped, and the second tab will release it.

9. 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. When the TTA button is latched, the listen level of all channels is muted, and microphone audio is automatically active either gooseneck or headset microphone. The Mic button is lit red. This button is operated Momentary and Latching, Momentary is the TTA path is open while the button is pressed, Latching opens the TTA path when the button is quickly tapped, and the second tab will release it.

10. 12. 16. 18. 19. 21. 26. 28. T1~T8 Volume control, and push to call

Tune to increase or decrease the listen level of each channel. Adjust rotary control from -61dB to -12dB, mute. Press the rotary control for more than a second to send a call signal to the corresponding Talk channel of the Line (including 2-wire) or each Genie device.

10. In the menu: Up/down/set

In the menu, turn the rotary control to scroll through, press to select a menu item.

16. in the menu: Left/right/set

In the menu, turn the rotary control to scroll through, press to select a menu item.

11. 13. 15. 17. 20. 22. 25. 27. T1~T8 Talk key (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 key.

See this manual, Set ISS800 menu.

Or see GCM (or GCMW) user manual, 1.1 Configuring each device, Configuring the Speaker Station.

The Relay can be set on Talk channel 1 to 8. Pressing the Talk key set to Relay to trigger a Relay pin on the rear panel of the Speaker 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
Solid red	Desktop is active	Channel label and listen level
Green flashing slowly	Received audio above VOX level	Channel label and listen level
Solid Green	A listen path is open	Channel label and listen level
Amber flashing slowly	Reserved	
Solid amber	Reserved	
Red flashing slowly	Call signal received.	Channel label and listen level
LED is off	Relay channel. (A talk path cannot be activated.)	Label
	Talk channel is not assigned.	'Not set'
	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 any key is pressed.

When making a call signal, The LED is lit solid red for 3 seconds.

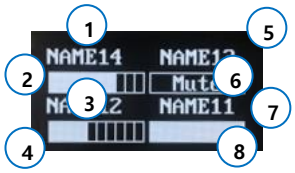
24. Network status LEDs (Link/Active)

Link LED: This green LED indicates that a data connection has been established with the Remote Antenna.

Active LED: This flashing LED indicates that the Base Station is receiving data from the Remote Antenna.

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

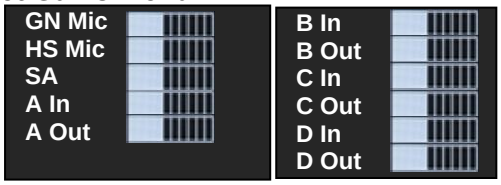
Main menu

You enter Menu mode by pressing and releasing the Menu button.
The Main menu is presented in the first screen, and Speaker Station label, paired date from the GCM, linked Base Station's labels, model and Firmware version is presented in the second screen.

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

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 Speaker Station.
To exit Menu mode, press the Menu button.

Set Gains menu



GN Mic:
Pre-amplifier: 40dB(dynamic), 20dB(electret)
Turn the left rotary control (#10) to set the gooseneck microphone input level from -8 dB to 0 dB (default 0 dB). To confirm the selected settings, press right rotary control (#16) to return to the main menu or rotate to scroll to the next item.

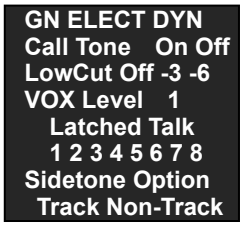
HS Mic:
Pre-amplifier: 40dB(dynamic), 20dB(electret)
Turn the left rotary control (#10) to set the microphone input level from -8 dB to 0 dB (default 0 dB). To confirm the selected settings, press right rotary control (#16) to return to the main menu or rotate to scroll to the next item.

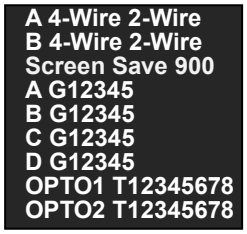
SA:
Turn the left rotary control (#10) to set the stage announcement output level from -20 dB to +6 dB (default 0 dB). To confirm the selected settings, press right rotary control (#16) to return to the main menu or rotate to scroll to the next item.

A In, B In, C In, D In:
Turn the left rotary control (#10) to set the Line input gains from -20 dB to +6 dB (default 0 dB). To confirm the selected settings, press right rotary control (#16) to return to the main menu or rotate to scroll to the next item.

A Out, B Out, C Out, D Out':
Turn the left rotary control (#10) to set the Line output gains from -20 dB to +6 dB (default 0 dB). To confirm the selected settings, press right rotary control (#16) to return to the main menu or rotate to scroll to the next item.

Set ISS800 menu





GN ELECT DYN:
In the menu, select Electret (ELECT) or Dynamic (DYN) to set the type of Gooseneck microphone.
To save the selected setting, press rotary control or scroll to the next item.

Call Tone on off:
In the Call Tone menu, select On (enable) or Off (disable). When enabled, the user can hear the tone when a call occurs. To save the selected settings, press rotary control or scroll to the next item.

Low Cut off -3 -6:
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.

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 through 9 (From -58dB to -10dB)

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.
If sidetone level is set to zero, it is muted.

A 4-Wire 2-Wire
B 4-Wire 2-Wire:
Before using a Line, Line type should be set to ensure that the volume level and the call signal operate normally. In the menu, select 2-Wire or 4-Wire to set the type of the Line A or Line B. To save the selected setting, press rotary control or scroll to the next item.

Screen Save:
Set the time period when the screen will automatically turn off.
Selection range: 10 to 900 minutes (10 minutes per step)
The display will turn off if key is not used or there is no incoming call during a set time period.

A G12345
B G12345
C G12345
D G12345:
Line audio routing:
Set the Genie group channels on the Lines (Line A through Line 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 up a Genie group channel on the Talk key.

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.

Note: In Speaker Station, if a Genie group channel is set to a Line, one talk/listen path is occupied. Even if two Genie group channels are assigned to a Line, one talk/listen path is occupied. If the Genie group channels are assigned to the A, B, C and D Lines, four talk/listen paths are occupied.

OPTO1 T12345678
OPTO2 T12345678:
Relay1, Relay2 (Set using GCM or GCMW. 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 on the Talk key using the GCM. Each Talk key can be set one Genie group channel or Line or Relay.

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

Opto-isolated Inputs
Speaker Station provides two optically 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 Speaker 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. One Talk key can be assigned Opto-isolated input functions with Genie group channels.

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. Speaker Station does not supply any power to the circuit.

Speaker 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 key 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 on one Talk key with a Genie group channel.

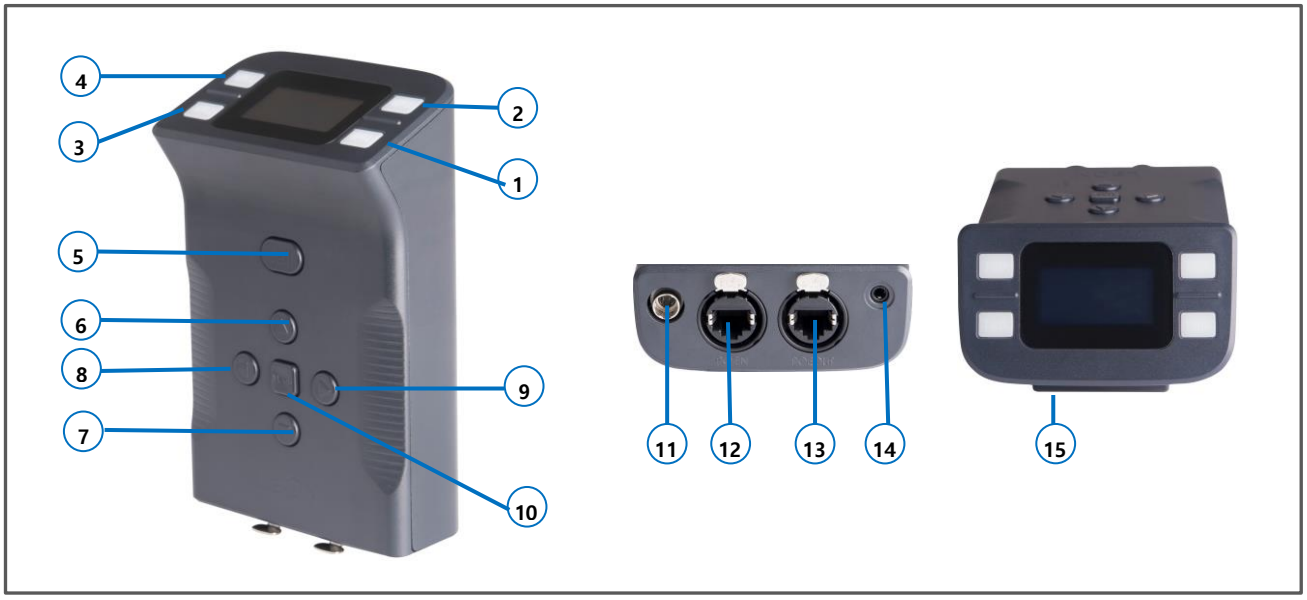
AUX D (unbalanced audio)
Pin 12,13,24,25 are unbalanced audio signal pins that are shared with Line D (4-wire). Line D (4-wire) cannot be used when using these pins. These pins can be connected to a gooseneck microphone or a walkie-talkie, etc. In some cases, additional connections such as resistor may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

Talk1 LaON001 11
Talk2 LaON001 12
Talk3 LaON001 13
Talk4 LaON001 14
Talk5 LaON001 15
Talk6 LaON001 1R
Talk7 LaON001 21
Talk8 LaON001 22
Labels for the Talk key 1 through 8, connected Base Station number, and assigned Genie group channel ('R' when Relay1 is assigned, 'r' when Relay2 is assigned,) are displayed sequentially.

Section 8: Operating the Ethernet Beltpack IBP10

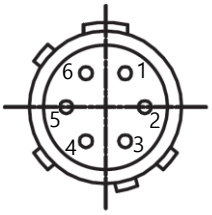
8.1 Connecting the Ethernet Beltpack IBP10

- Ethernet Beltpack for 8 Talk channels (Master + Shift) with 4 Talk keys.
- Two Daisy-chain ring PoE Lines (PoE standard power and data)
- 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.



1. Talk channel 1 (Shift 5) button (LED indicator)
2. Talk channel 3 (Shift 7) button (LED indicator)
3. Talk channel 2 (Shift 6) button (LED indicator)
4. Talk channel 4 (Shift 8) button (LED indicator)
5. Call button
6. Volume up button, Shift Talk channel (Press 3 seconds)
7. Volume down button, Shift Talk channel (Press 3 seconds)
8. Talk channel 2,4 (Shift 6,8) volume select (Left)
9. Talk channel 1,3 (Shift 5,7) volume select (Right)
10. Menu button
11. Headset connector (6pin Mini-Din Receptacle)
12. Daisy-chain PoE In connector (Ethercon RJ45, PD)
13. Daisy-chain PoE Out connector (Ethercon RJ45, PSE)
14. 3.5mm TRS Headset (Earphone and Mic) connector
15. Beltpack clip

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.



Pinout
1. Microphone VCC +2V (For electret mic.)
2. Microphone – (GND)
3. Microphone + (For dynamic mic.)
4. Push-To-Talk (PTT)
5. Earphone -
6. Earphone +

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

13. Daisy-chain PoE Out connector (Ethercon RJ45, PSE)
Provides Daisy-chain connection function to supply data and power from PoE In to another PoE Out. 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 to the PoE In port (#12). See 3.2 Notes on Installation, PoE pinout

!!! Note: When connecting the Daisy-chain ring, connect the PoE of another device to the PoE In connector and the PoE Out to the PoE In on another device. Only when the ring is configured with this type of connection, it automatically connects to the opposite cable in the event of a failure, such as a cable failure.
!!! Note: Without the use of standard PoE specification network switches, **devices connected to the Daisy-chain PoE Out (#13) can be severely damaged.** Connect the network switch to the PoE In port.
!!! Note: Do not connect the Daisy-Chain PoE Out to the PoE port on **the BSCCK550 cascade kit (for BS750, BS550, BS250)**.
!!! Note: Be sure to **use straight cables for LAN cables. Cross cables can cause damage to the device**

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

14. 3.5mm TRS Headset (Earphone and Mic) connector

This is one additional TRS 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).

Pinout

Pin	Description
Tip	Earphone + (Left)
Ring	Earphone + (Right)
Ring	Ground
Sleeve	Mic +

8.2 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 key.
See this manual, Set Latched Talk menu. Or see GCM (or GCMW) 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
Green flashing quickly	Talk channel is active	Channel label and listen level
Green flashing slowly	Talk channel is on Master page, and received audio above VOX level	Channel label and listen level
Solid Green	Talk channel is on Master page, and a listen path is active	Channel label and listen level
Amber flashing slowly	Talk channel is on Shift page, and received audio above VOX level	Channel label and listen level
Solid amber	Talk channel is on Shift page, and a listen path is active	Channel label and listen level
Red flashing slowly	Call signal received.	Channel label and listen level
LED is off	Talk channel is not assigned.	'Not set'
	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 any key is pressed.
When making a call signal, The LED is lit solid red for 3 seconds.

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 Talk channel:

Press the Up or Down button for 3 seconds. Four Talk channels of the Shift or Master are alternately displayed on the Beltpack screen. Press the Up or Down button for 3 seconds to toggle between Master and Shift. The Master displays Talk channel 1 through 4, and Shift displays Talk channel 5 through 8.
When the listen path is activated, the Talk key LED flashes green on the Master channel and it flashes amber on the Shift channel.

10. Menu button

Press to display the menu. Navigate to the menu item with Left/Right (#8, #9) button and change the setting to Up/Down (#6, #7) button. Press the Menu button again to return to the Normal screen.

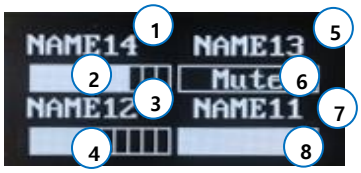
Lock the Menu

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

Press the Menu button for more than 3 seconds and Menu button is locked. In the lock mode, Menu button do not work, and 'Locked' is displayed on the screen for 3 seconds when any button is pressed. Lock mode does not release when power is turned back on, and the lock status remains. Press the Menu button again for more than 3 seconds to release the lock mode.

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.

Page 1:

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

For shifted Page 2
Mark Talk channel 5 to 8 in the same way.

Main menu

When you press the menu button, the Beltpack Menu appears. 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

Move to Sidetone menu, adjust headset sidetone level with Up (#6) or Down (#7) button.

Microphone Gain menu

Move to Microphone gain menu, adjust headset microphone level with Up (#6) or Down (#7) button.

TRS Volume menu

Move to TRS volume menu, adjust TRS headset volume level with Up (#6) or Down (#7) button.

TRS Mic menu
Move to TRS Mic menu, adjust TRS headset microphone level with Up (#6) or Down (#7) button.

Talk1 LaON001 11
Talk2 LaON001 12
Talk3 LaON001 13
Talk4 LaON001 14
Talk5 LaON001 15
Talk6 LaON001 21
Talk7 LaON001 22
Talk8 LaON001 23
The labels for Talk channels 1 through 8, connected Base Station number, and assigned Genie group channel are displayed sequentially.

Rotate Display menu
Set Rotate Display
You can set the Beltpack display to rotate according to its physical position.
Move to the Rotate Display menu, and press the Up or Down buttons to enable (or disable) the Rotate display setting.

Screen Save menu
Set the period during which the screen will turn off automatically.
Selection range: 10 to 900 minutes (10 minutes per step)
If the key is not used or there are no incoming calls for a set period, the Ethernet Beltpack display turns off automatically.

Call Tone menu
On the Call Tone menu, select Enable or Disable. When enabled, the user can hear the tone when a call occurs.
To confirm the selected setting, press the Right (#8) or Left button (#9).

Vibration menu
Set the vibration to enable or disable.
When enabled, it vibrates when a call signal is received.
To confirm the selected setting, press press the Right (#8) or Left button (#9).

Low Cut off 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.

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.
If sidetone level is set to zero, it is muted.

Section 9: Operating the wireless Beltpack BP850, BP850S

9.1 Connecting the wireless Beltpack BP850, BP850S

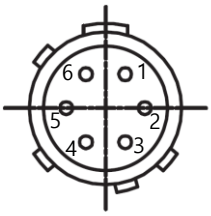
Battery sled

BAT50: 2450mAH, ~500 cycles
BAT50R: 2000mAH, ~2000 cycles
Rechargeable Battery Pack

1. Headset connector (Receptacle)
2. Display screen
3. Talk key (LED indicator)
4. Power (PWR) button, Manual roaming (press twice)
5. Group channel (GRP) button/ Talk key in Two groups (or Four groups of BP850S)
6. Volume up /Menu scroll button
7. Menu / Set button
8. Volume down / Menu scroll button
9. Beltpack clip
10. Battery cover
11. Charging pinout (Bottom of the Beltpack)

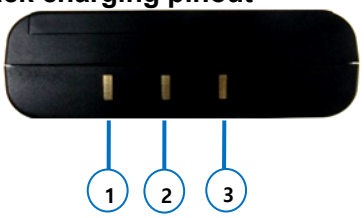
Slide the battery cover (#10) down and open. The Beltpack batteries are located inside the Beltpack battery compartment. The Beltpack can use a rechargeable battery pack (BAT50, BAT50R) or two AA 1.5V alkaline batteries (Used by placing into the battery sled). Make sure the position of polarity (+, -) is correct. Close the battery cover. Wireless Beltpack is moisture resistant which is excellent in using under humid environment.

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.



Pinout
1. Microphone VCC +2V (For electret mic.)
2. Microphone – (GND)
3. Microphone + (For dynamic mic.)
4. Push-To-Talk (PTT)
5. Earphone -
6. Earphone +

Beltpack charging pinout



1. –
2. Temperature sensor
3. +

Note: Do not contact the charging pins on the bottom of the Beltpack with electric conductive materials.
Note: The rechargeable battery pack should be fully charged, separated from the Beltpack and stored. Turn off the Beltpack before charging.

Battery charger BATCHG-125, BATCHG-225
The BATCHG125 is a seven-bay charger for recharging the BAT50 (or BAT50R) and BAT150 rechargeable battery packs. The charger has five bays that can charge the Beltpack with the battery pack inserted in the battery compartment. Of these five bays, two can charge the Beltpack or battery pack BAT150. 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 (or BAT50R) battery packs. The BATCHG225 is eight-bay charger for recharging the BAT50 (or BAT50R) battery pack.
See BATCHG125/BATCHG225 User Manual for details.

9.2 Operating the the wireless Beltpack BP850, BP850S

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

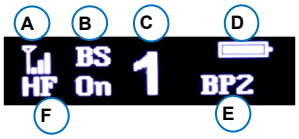


Figure. Normal menu

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. While 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 group channel (#1), two groups (#1, #2), three groups (#2, #3, #5), four groups (#1, #3, #4, #5), and five groups (#1, #1, #1, #2, #4, #5). Belt packs, Key Panels, and Line devices set up with the same Genie group channel can communicate with each other.

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)**.

If the group channel is the same as the Line (4-wire or 2-wire), communication between the Line devices and the Beltpacks is possible.

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

Talk key (#3)

Enabling Talk key latching

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

Momentary is the audio path is only open when the Talk key is pressed, Latching opens the audio path when the Key is quickly tapped, and the second tab will release it. You can set this in the Hands-free menu.

Note: After selecting the Hands-free Off (Momentary), Hand-free On (Latching) is disabled until it is changed to hands-free-on mode.

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. Set (#7) and GRP (#5) buttons will be locked and cannot be used. 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. This setting is maintained even if the Beltpack is turned off and re-started.

Note: When executing Lock/Unlock operation, within 3 seconds of pressing the Beltpack PWR button, press and hold the GRP button (#5) together. Otherwise, the Beltpack power may be off.

Note: When the Beltpack BP850 is operated in the Two groups, GRP button (#5) works as Talk key for the latter group selected in Two groups menu.

Note: In the Four groups (Beltpack BP850S), the GRP button (#5) acts as the Talk key for the second and fourth groups selected in the Select Group menu. When the GRP button is latched, it creates a talk path for the second group, and Momentary creates a talk path for the fourth group.

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 BP850S, 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.

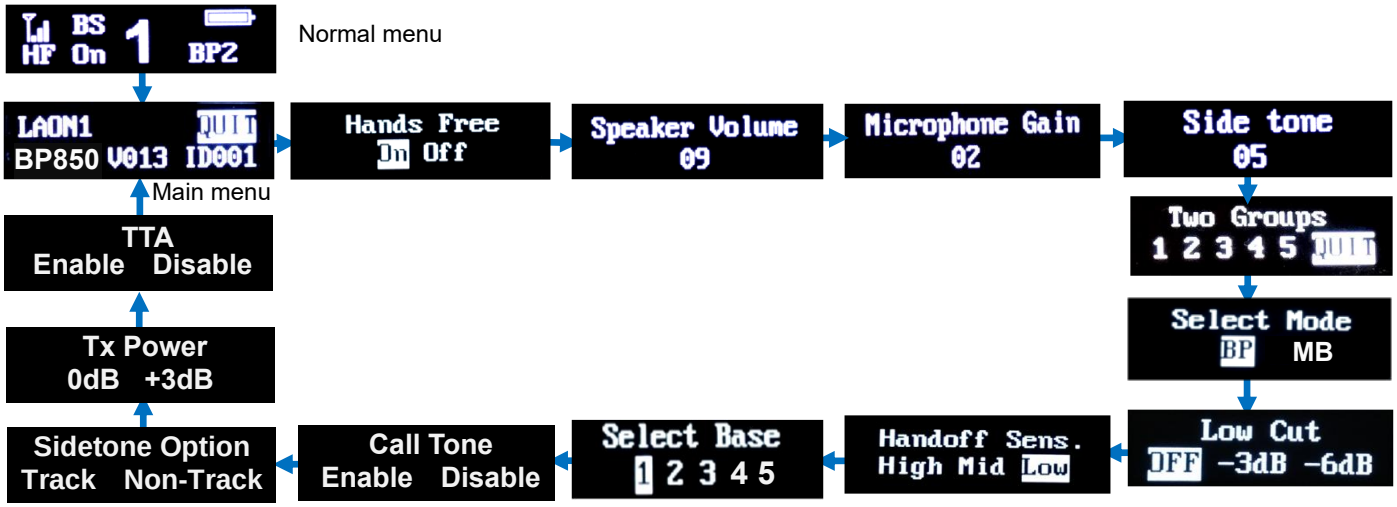


Figure. Menus shown sequentially

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).
Press the Set button to select the Hands Free menu and use the Up or Down buttons to move to On or Off. Press the Set button to save it. Depending on the settings you choose, you can listen to voice messages 'Handsfree Off' or 'Handsfree On'.

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.

Earphone Volume Up
You will hear a beep each time you press and release the Up button. When the level reaches its maximum level, you can hear the voice message 'maximum' on the headset.

Earphone Volume Down
You will hear a beep each time you press and release the Down button. When the level reaches its minimum level, you can hear the voice message 'minimum' on the headset.

Note: Headset safety

- Note that there may be various causes of cut-off of the microphone level, echoing or distortion of the headset. The initial setup recommends that you begin to adjust at a lower level for safe use and improve the level to meet the best levels required for various site environments.
- Setting the microphone level, sidetone, or earphone volume level for a specific headset too high can cause some kind of echo or distortion. Reduce these gains or levels to improve and mitigate related problems.

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.

Microphone level up

Every time you press the up button, increased voice level will be heard from the headset while you are speaking to headset microphone. When the level is reached out to a maximum, a voice message, 'maximum' will be heard from the headset.

Microphone level down

Every time you press the down button, decreased voice level will be heard from the headset while you are speaking to headset microphone. When the level is reached out to a minimum, a voice message, 'minimum' will be heard from the headset.

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.

Sidetone level up

You will hear a beep each time you press and release the Up button. When the level reaches its maximum level, you can hear the voice message 'maximum' on the headset.

Sidetone level down

You will hear a beep each time you press and release the Down button. When the level reaches its minimum level, you can hear the voice message 'minimum' on the headset.

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'st 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 BP850S

Figure. Select groups menu

In the Select groups menu (BP850S), 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. Once the group channels are set, GRP button (#5) works as Talk key for the second group selected in the Select groups menu. And the Talk key (#3) works as Talk key for the 1'st group selected in the Select groups menu. Quickly tapping the Talk or GRP key, it will latch the key, and creates a talk path for that group, and a second tap will release it. If you tap 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. In other words, quickly tapping the Talk key (#3) when creates talk path for the first group. Quickly tapping the GRP Key (#5) when creates talk path for the second group.

Three and four groups can be set in the same way. In the three groups, listen paths for the three selected groups is created. If you want to create talk path for the 3’rd group, press the Talk key (#3) (Momentary). In the four groups, listen paths for the four selected groups is created. If you want to create talk path for the 4’th group, press the GRP Key (#5) (Momentary). In this way, you can talk to all four groups. In other words, you can quickly tap the Talk key (#3) and GRP key (#5), and then press (Momentary) the Talk key (#3) and GRP key (#5). Audio from all the selected groups in the Select group menu is always heard.

Move to Select Groups menu, press Set button to select menu. Move to the desired group channel number to select by pressing Up or Down button and press Set on the number. Then the group channel number will show dark text on a light background. In the Select Groups menu, initially allocated group channel numbers to the Beltpack will only be displayed.
In addition, you must select at least two groups, or the settings will not be saved.
To reset the groups, reverse all the settings. Move to Quit in the menu and press Set to save.

In Four groups operation of the BP850S, 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 listen paths are activated for all selected groups. And the Talk and GRP buttons have been latched, indicating that the talk paths for the first and second group channels are created. Or, by pressing the Talk or GRP buttons (Momentary), indicating that talk path for the third or fourth group is created.
- Red flashing rapidly: The Beltpack is not paired, or it is not connected to a Base Station or Remote Antenna (Out of coverage).

Note: If all four groups are used, the use of rechargeable batteries may be reduced by about two hours.
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 Four groups

In multi-group settings, the listen level for each group can be adjusted individually from each menu as shown above. For BP850S, 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.

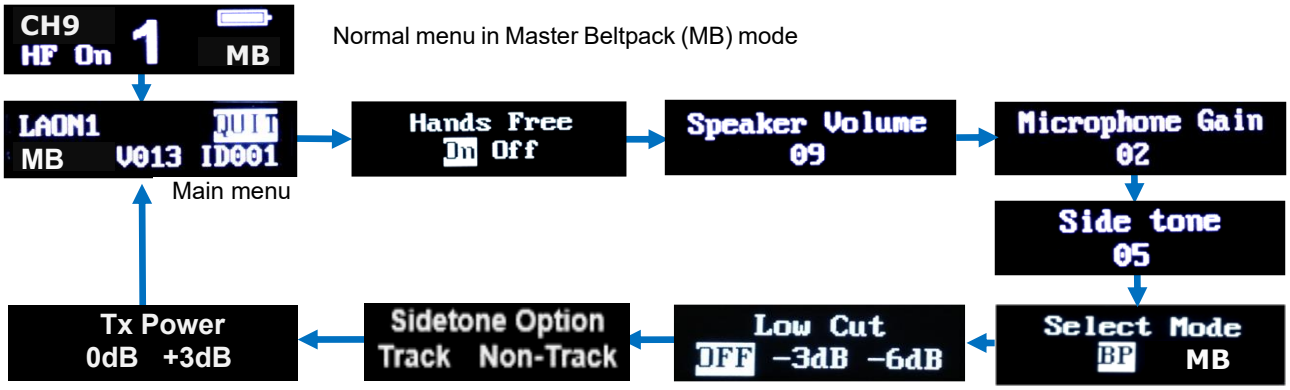


Figure. Master Beltpack (MB) menus shown sequentially

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.

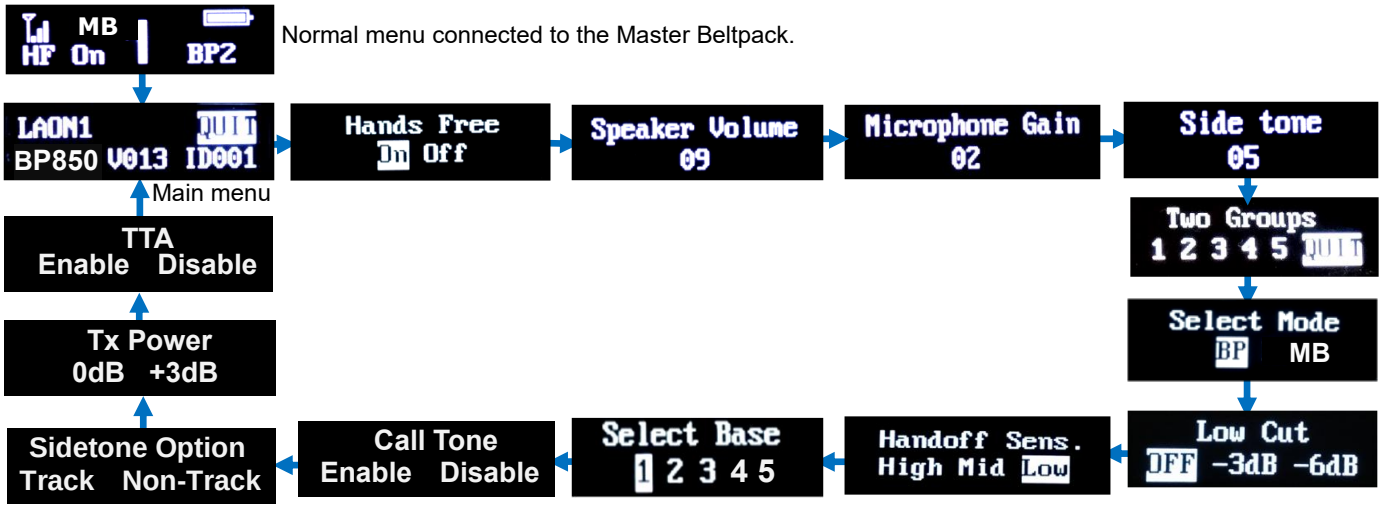


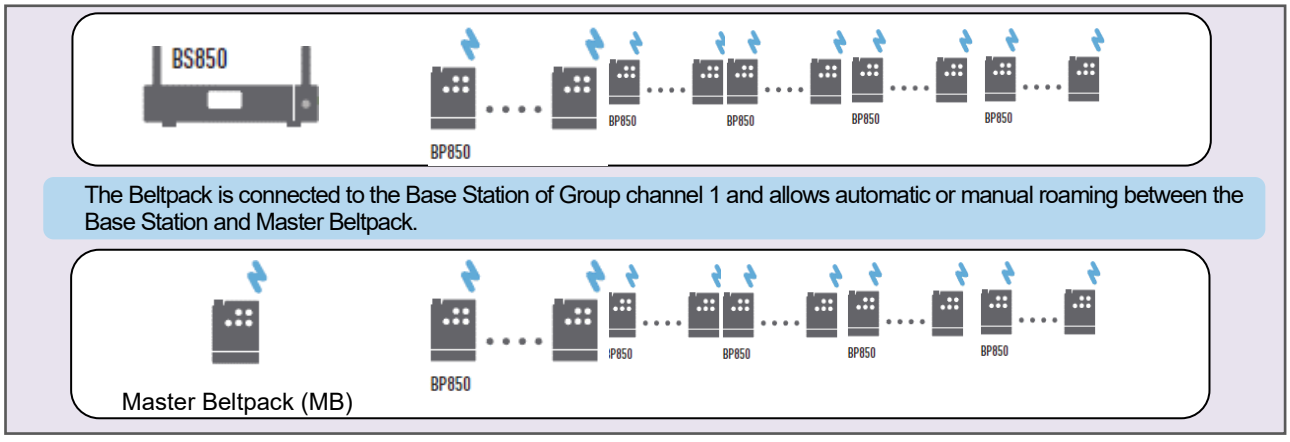
Figure. Beltpack menus shown sequentially that is connected to the Master Beltpack

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.

A. 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.

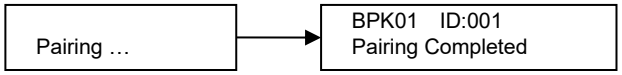


Figure. Pairing completed status

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.

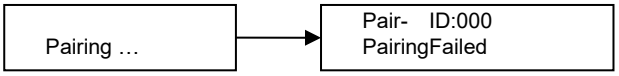


Figure.: Pairing failed status

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.

Note: Manual handoff is also available with a double click of the Power button.

Select Base menu

Figure. Select Base menu

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

In the Base Selection 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.

Status 1 Status 2 Status 3

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.

Note: If Tx power is set to 0 dB, there is no audio breakup in the listen path, but if there is sidetone breakup in the talk path, in this case, adjust the Tx power to +3 dB. This may occur if the Beltpack is far from the Antenna.

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 BP850S.

Change batteries

When the Battery level became weak, you can hear the voice message, ‘Change battery’. When this happens, slide the battery cover down and open. The Beltpack batteries are located inside the Beltpack battery compartment. The Beltpack can use a rechargeable battery pack (BAT50, BAT50R) 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 10: Specifications

10.1 Base Station BS1000

RF Frequency	UNII band: 5.16GHz~5.34GHz, 5.48GHz~5.70GHz, 5.745GHz~5.865GHz
Antenna	Two external 1/2 -wave dipole, SMA female
Transmitter	
Modulation Type	QPSK
Frequency Stability	± 2ppm
Receiver	
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/listen paths at the same time. Including Base Station, eleven talk/listen paths are provided.
Genie group channels	Five
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	LED indicated Buttons and Rotary encoders
Gooseneck Microphone	Dynamic or Electret, XLR-3F
Headset	Dynamic or Electret, 6-pin mini-DIN male, Receptacle
Antenna	Two External $^{1}/_{2}$ -wave dipole, SMA Female
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, 600Ω balanced, level adjustable
Line D (4-wire) 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-way D-type female, Updating the Base Station firmware
Relay/Opto/AUX (Line D)	25-way D-type male, 3 Relay outputs, 2 Opto inputs, AUX I/O (Unbalanced)
PoE Input	PoE RJ-45 Connector, 100Mbps Standard PoE specification
Daisy-chain PoE Line1, PoE Line2	Two PoE RJ-45 Connectors, 100Mbps Standard PoE specification
Power Input	Two 48-56VDC at a max power of 90Watt or PoE from the Network Switch 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 8.03L x 1.73H inch (42.75W x 20.4L x 4.4H cm) without connector and foot.
Weight	7.72 lb (3500g)

10.2 Base Station BS850

RF Frequency	UNII band: 5.16GHz~5.34GHz, 5.48GHz~5.70GHz, 5.745GHz~5.865GHz
Antenna	Two external 1/2 -wave dipole, SMA female
Transmitter	
Modulation Type	QPSK
Frequency Stability	± 2ppm
Receiver	
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/listen paths at the same time. Including Base Station, eleven talk/listen paths are provided.
Genie group channels	Five (5)
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
Multiple Base Stations	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 Input	100-240VAC, 47-63Hz, 11.4-12.6VDC, 10.8Watts Maximum
Operating Temperature	0°C to 50°C (32°F to 122°F)
Dimensions	8.26W x 6.37L x 1.73H inch (21 W x 16.2 L x 4.4 H cm) without connector and foot.
Weight	2.41 lb (1094g)

10.3 Remote Antenna RA100DW

RF Frequency	UNII band: 5.16GHz~5.34GHz, 5.48GHz~5.70GHz, 5.745GHz~5.865GHz
Antenna	Internal
Transmitter	
Modulation Type	QPSK
Frequency Stability	± 2ppm
Receiver	
RF Sensitivity	-85dBm for 5 BER
Frequency Stability	± 2ppm
Beltpacks per Remote Antenna	128 Beltpacks can be connected and supports the additional 10 talk/listen paths.
PoE Input	PoE RJ-45 Connector, 1Gbps/100Mbps Standard PoE specification
PoE Line1, PoE Line2 (Daisy-chain)	Two PoE RJ-45 Connectors, 100Mbps Standard PoE specification
Multi-Sync	SMA Female.
Power Connector	M12 04pin (Female)
Power Consumption	Max. 8W
Power Input	48-56VDC at a max power of 90Watt or PoE from the Network Switch 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 1.96L x 7.87H inch (19W x 5L x 20H cm) without bracket
Weight	1.46 lb (660g)

10.4 Remote Antenna RA100

RF Frequency	UNII band: 5.16GHz~5.34GHz, 5.48GHz~5.70GHz, 5.745GHz~5.865GHz
Antenna	External $^{1}/_{2}$ -wave dipole, SMA connector
Transmitter	
Transmit Power	300mW Maximum
Modulation Type	QPSK
Frequency Stability	± 2ppm
Receiver	
RF Sensitivity	-85dBm for 5 BER
Frequency Stability	± 2ppm
Beltpacks per Remote Antenna	128 Beltpacks can be connected and supports additional 10 talk/listen paths.
PoE Input	PoE RJ-45 Connector, 100Mbps Standard PoE specification
Operating Temperature	0°C to 50°C (32°F to 122°F)
Dimensions	3.46W x 1.47L x 4.80H inch (8.8W x 3.74L x 12.2H cm) without RS holder kit
Weight	0.83 lb (377g)

10.5 Repeater RBS85

RF Frequency	UNII band: 5.16GHz~5.34GHz, 5.48GHz~5.70GHz, 5.745GHz~5.865GHz
Antenna	External $^{1}/_{2}$ -wave dipole, SMA connector
Transmitter	
Modulation Type	QPSK
Frequency Stability	± 2ppm
Receiver	
RF Sensitivity	-85dBm for 5 BER
Frequency Stability	± 2ppm
Beltpacks per Repeater	128 Beltpacks can be connected, and supports the 10 talk/listen paths with one Remote Antenna.
PoE Input	PoE RJ-45 Connector, 100Mbps Standard PoE specification
Operating Temperature	0°C to 50°C (32°F to 122°F)
Dimensions	3.46W x 1.47L x 4.80H inch (8.8W x 3.74L x 12.2H cm) without RS holder kit
Weight	0.83 lb (377g)

10.6 Speaker Station ISS800

Genie group channels	Five ~ Ten
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
Front Panel Display	Two OLED, 128 x 64 Resolutions
Front Panel Button	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, 600Ω balanced, level adjustable
Line D (4-wire) Output	XLR-3M, 600Ω balanced, level adjustable
Stage announce output	Phone Jack (6.3Φ), Transformer isolated, Line-level output
PC PROG	25-way D-type female, Updating the Speaker Station firmware
Relay/Opto/AUX (Line D)	25-way D-type male, 3 Relay outputs, 2 Opto inputs, AUX I/O (Unbalanced)
PoE Input	PoE RJ-45 Connector, 100Mbps Standard PoE specification
Daisy-chain PoE Line1, PoE Line2	Two PoE RJ-45 Connectors, 100Mbps Standard PoE specification
Power Input	Two 48-56VDC at a max power of 90Watt or PoE from the Network Switch 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 8.03L x 1.73H inch (42.75W x 20.4L x 4,4H cm) without connector and foot.
Weight	7.72 lb (3500g)

10.7 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
TRS headset	3.5Ø, Connect to Earphone or Audio I/O
PoE In, PoE Out(Daisy-chain)	Two PoE RJ-45 Connectors, 100Mbps Standard PoE specification
Display	OLED, 128 x 64 Resolutions
Button	Push buttons
Operating Temperature	0°C to 50°C (32°F to 122°F)
Dimensions	3.42(W) x 5.47(L)x 1.85(H)inch (8.75 W x 13.9L x 4.7H cm) without Belt Clip
Weight	0.61 lb (275g)

10.8 Wireless Beltpack BP850, BP850S

RF Frequency	UNII band: 5.16GHz~5.34GHz, 5.48GHz~5.70GHz, 5.745GHz~5.865GHz
Antenna	Internal
Transmitter	
Modulation Type	QPSK
Frequency Stability	± 2ppm
Receiver	
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/listen paths at the same time. Including one Master Beltpack, five talk/listen paths are provided. One group channel is available for the Master Beltpack mode.
Genie group channels	Five
Number of talk/listen Paths (Individual level control)	BP850: Two simultaneous talk/listen paths or five selectable paths BP850S: Four simultaneous talk/listen paths or five selectable paths
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
Operating Temperature	0°C to 50°C (32°F to 122°F)
Dimensions	2.89W x 0.92L x 3.83H inch (7.35W x 2.35L x 9.73H cm) without Belt Clip
Weight	0.45 lb (202g) with battery / 0.29 lb (133g) 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 ℉ - 104℉ (0℃ – 40℃)
Number of Charging Ports	A BATCHG125 battery charger can charge up to seven batteries (BAT50, BAT50R, BAT150) simultaneously. Up to five Beltpacks (batterie is located inside the Beltpack battery compartment) and two BAT50 (or BAT50R) batteries can be charged simultaneously. Up to two BAT150 rechargeable battery packs can be charged instead of the two Beltpacks.
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 8.26L x 3.93H inch (23.7W x 21.0L 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 ℉ - 104℉ (0℃ – 40℃)
Number of Charging Ports	A BATCHG225 battery charger can charge up to eight batteries (BAT50, BAT50R) 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 7.08L x 2.28H inch (22.3W x 18.0L x 5.85H cm)

10.11 Rechargeable battery pack

BAT-150 Battery Pack	
Battery type	7.2V 2450mAH NiMH rechargeable battery pack
Charging cycles	~500 cycles
Storage Temperature	-4 ℉ - 104℉ (-20℃ – 40℃)
Weight	0.45 lb (206g)
BAT-50 Battery Pack	
Battery type	2.4V 2450mAH NiMH rechargeable battery pack
Charging cycles	~500 cycles
Storage Temperature	-4 ℉ - 104℉ (-20℃ – 40℃)
Weight	0.16 lb (73g)
BAT-50R Battery Pack	
Battery type	2.4V 2000mAH NiMH rechargeable battery pack
Charging cycles	~2000 cycles
Storage Temperature	-4 ℉ - 104℉ (-20℃ – 40℃)
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 Mute on/off	300-degrees rotation Mute on/off	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		1200mm	1200mm	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

Section 11: Glossary

Talk channel: If Genie group channel or Line to be connected is set to the Talk key, this Talk key is called the Talk channel.

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 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 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 an intercom Panel that sends audio signal. A Panel to which audio signal is transmitted is called a Destination.

Destination: In this manual, a device such as an intercom Panel to which audio signals are sent. A 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, Panel, Line, or group channel. Labels appear on the 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 Panel operator's voice is literally heard on his earphone.

Call signal: A call signal is an electronic signal sent from one Panel to another. A call signal can be audible and/or Vibration. Typically, a call signal is sent to get the attention of a 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 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 GCM over the LAN. This pairing process allows 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.

Section 12: Factory default setting

See GCM (or GCMW) initial files.

Thank you.

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