# ROAMEO Wireless Intercom System

TR-1800, AP-1800


**en** User Manual

# Table of contents

# 1 Important information

## 1.1 Copyright and Disclaimer



## 1.2 Notices

| | | |
|---|---|---|
|  |  |  |
| The lightning flash and arrowhead within the triangle is a warning sign alerting you of dangerous voltage inside the product. | Caution: To reduce the risk of electric shock, do not remove the cover. No user-serviceable parts inside. Refer servicing to qualified service personnel. | The exclamation point within the triangle is a warning sign alerting you of important instructions accompanying the product. |
| See marking on bottom/back of product. | | |

**Warning!**
Apparatus shall not be exposed to dripping or splashing and no objects filled with liquids, such as vases, shall be placed on the apparatus.

**Warning!**
The main power plug must remain readily operable.

**Caution!**
To reduce the risk of electric shock, grounding of the center pin of this plug must be maintained.

**Warning!**
To reduce the risk of fire or electric shock, do not expose this apparatus to rain or moisture.

**Warning!**
To prevent injury, this apparatus must be securely attached to the floor/wall/rack in accordance with the installation instructions.

| | |
|---|---|
| ~ <br> ⎓ | This product is AC and DC. |

| | |
|---|---|
| CE <br> UKCA | CE Compliant and UKCA Certified |

**Warning!**
This is a CLASS A product. In a domestic environment, this product may cause radio interference, in which case the user may be required to take adequate measures.

## 1.3 Important Safety Instructions

1. Read these instructions.
2. Keep these instructions.
3. Heed all warnings.
4. Follow all instructions.
5. Do not use this apparatus near water.
6. Clean only with a dry cloth.
7. Do not block any ventilation openings. Install in accordance with the manufacturer's instructions.
8. Do not install near any heat sources such as radiators, heat registers, stoves, or other apparatus (including amplifiers) that produce heat.
9. Do not defeat the safety purpose of the polarized or grounding-type plug. A polarized plug has two blades with one wider than the other. A grounding type plug has two blades and a third grounding prong. The wide blade or the third prong is provided for your safety. If the provided plug does not fit into your outlet, consult an electrician for replacement of the obsolete outlet.
10. Protect the power cord from being walked on or pinched particularly at plugs, convenience receptacles, and the point where they exit from the apparatus.
11. Only use attachments/accessories specified by the manufacturer.
12. Use only with the cart, stand, tripod, bracket, or table specified by the manufacturer, or with the apparatus. When a cart is used, use caution when moving the cart/apparatus combination to avoid injury from tip-over.
13. Unplug the apparatus during lightning storms or when unused for long periods of time.

14. Refer all servicing to qualified service personnel. Servicing is required when the apparatus has been damaged in any way, such as power-supply cord or plug is damaged, liquid has been spilled or objects have fallen into the apparatus, the apparatus has been exposed to rain or moisture, does not operate normally, or has been dropped.
15. Do not disassemble or subject batteries to impact.
16. Do not operate or charge a battery that has been damaged.
17. Never heat the Li-Ion batteries or throw them into a fire.
18. Charging the Li-Ion batteries in temperatures below freezing can cause permanent damage.
19. Store the batteries in a cool, dry ventilated area.
20. Dispose of Li-Ion batteries properly.
21. Before flying with the ROAMEO system, consult the airline regulations concerning the Lithium batteries.
22. Use only the manufacturer’s supplied charger to charge the batteries.

## 1.4 Certification Information

### 1.4.1 FCC

The RTS TR-1800 and AP-1800 devices are accepted under United States Federal Communications Commission Part 15. This device complies with Part 15 of the FCC. Operation is subject to the following two conditions:

– This device may not cause interference
– This device must accept any interference, including interference that may cause undesired operation of the device

**Notice!**
Changes or modifications made by the user could void the user's authority to operate the equipment.

The beltpack is intended to be worn on the belt of the user. Placing the beltpack in any other location on the body may reduce performance and void the user's authority by the FCC to operate the equipment.
This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 if the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

– Reorient or relocate the receiving antenna.
– Increase the separation between the equipment and receiver.
– Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
– Consult the dealer or an experienced radio/TV technician for help.

**Mandatory Safety Instructions to Access Point Installers and Users**

1. Use only manufacturer or dealer supplied antennas. The antenna minimum safe distance, for an access point, as set by the FCC is 20 cm. Antenna gain: 3 dBi.

2. The FCC (Federal Communications Commission) has adopted a safety standard for human exposure to RF (Radio Frequency) energy, which is below the OSHA (Occupational Safety and Health Administration) limits.
3. To comply with current FCC RF Exposure limits, the antenna must be installed at or exceeding the minimum safe distance show here, and in accordance with the requirements of the antenna manufacturer or supplier.
4. Antenna substitution: Do NOT substitute any antenna for the one supplied by or recommended by the manufacturer or radio dealer. Substituting an antenna may expose a person or persons to harmful radio frequency radiation. Contact the radio dealer or the manufacturer for further instructions.

**Warning!**
Maintain a separation distance from the antenna to person(s) of at least 20 cm.

5. As the qualified end user of this radio device, control the exposure conditions of bystanders to ensure that the minimum separation distance (above) is maintained between the antenna and nearby persons to satisfy RF exposure compliance.

### 1.4.2 Industry Canada

The RTS TR-1800 and AP-1800 are certified to Industry Canada RSS-213 and ICES-003.
This device complies with Industry Canada license exempt RSS standard(s). Operation is subject to the following two conditions:
– This device may not cause interference, and
– This device must accept any interference, including interference that may cause undesired operation of the device.

Le présent appareil est conforme aux CNR d'Industrie Canada applicables aux appareils radio exempts de licence. L'exploitation est autorisée aux deux conditions suivantes:
– l'appareil ne doit pas produire de brouillage, et
– l'utilisateur de l'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement.

**Industry Canada Compliance Statement**. This Class B digital apparatus complies with Canadian ICES-003.
**Avis de conformité à la réglementation d'Industrie Canada**. Cet appareil numérique de la classe B est conforme à la norme NMB-003 du Canada.

### 1.4.3 Europe

This equipment is in compliance with the following directives;
– 2011/65/EU with 2015/863 Amendment
– 2012/19/EU WEEE Directive
– 2014/53/EU RED Directive

Please dispose of the access point and beltpacks at the end of its operational life by taking it to the closest collection point or recycling center.
This equipment is intended for use in professional audio intercom applications.
Equipment intended for sale in (ISO 3166-1, 2 letter country code): AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HR, HU, IE, IS, IT, LT, LU, LV, MT, NL, NO, PL, PT, RO, SE, SI, SK.
A license may be required to operate this equipment in certain regions. Consult the national authority for possible requirements.

The full EC Declaration of Conformity for the TR-1800 and AP-1800 may be found at the following website: www.rtsintercoms.com.

This equipment is in compliance with:

– The Radio Equipment Regulations 2017
– The Electromagnetic Compatibility Regulations 2016
– The Electrical Equipment (Safety) Regulations 2016
– The Restriction of the Use of Certain Hazardous Substances in Electrical and Electronic Equipment Regulations 2012

The full UK Declaration of Conformity for the TR-1800 and AP-1800 may be found at the following website: www.rtsintercoms.com.

# 2 Introduction

**General Description**

The RTS ROAMEO system is an integrated digital wireless communications system consisting of beltpacks (TR-1800) and access points (AP-1800) communicating over **DECT** (Digital Enhanced Cordless Telecommunications). Communication between access points and the Matrix uses OMNEO technology, the Dante-based platform for high-quality audio over IP.

DECT is a license-free standard, currently accepted in more than 80 countries worldwide. Easily create a large continuous radio coverage area by strategically placing access points throughout the coverage area. Beltpack users can roam freely within the coverage area without worry of losing communication.

ROAMEO uses a standard IP infrastructure as a backbone. RTS recommends the exclusive use of managed switches through the IP network.

Each TR-1800 ROAMEO beltpack is fully addressable and is conveniently programmed using the same software for configuring RTS wired keypanels.

## 2.1 Features

- Provides reliable, low latency communications between beltpacks and the intercom.
- Provides roaming ability between access point locations with seamless communication.
- User-selectable CODEC allows the best audio quality or narrowband audio quality with double the number of users.
- Uses DECT for RF path, a globally accepted, license-free standard.
- Ethernet backbone communications can be routed over existing LAN or WAN.
- The beltpack provides a USB port for software upgrades and the download of custom front display graphics on boot.
- Easy battery removal for bulk charging in a 4-bay battery charger or in-device charging.
- Large color screen with easily recognizable icons for easy configuration and setup, and a smaller call-waiting window located on top of the unit.
- Designed with four (4) independent talk/listen keys for full-duplex communications, CWW (Call Waiting Window) functionality, one (1) XLR connector, and one (1) 3.5mm connector for headset connections.
- Site Survey feature facilitates initial placement of access points for optimal performance.

# 2.2 Controls and connections

## 2.2.1 TR-1800

### 2.2.1.1 Controls

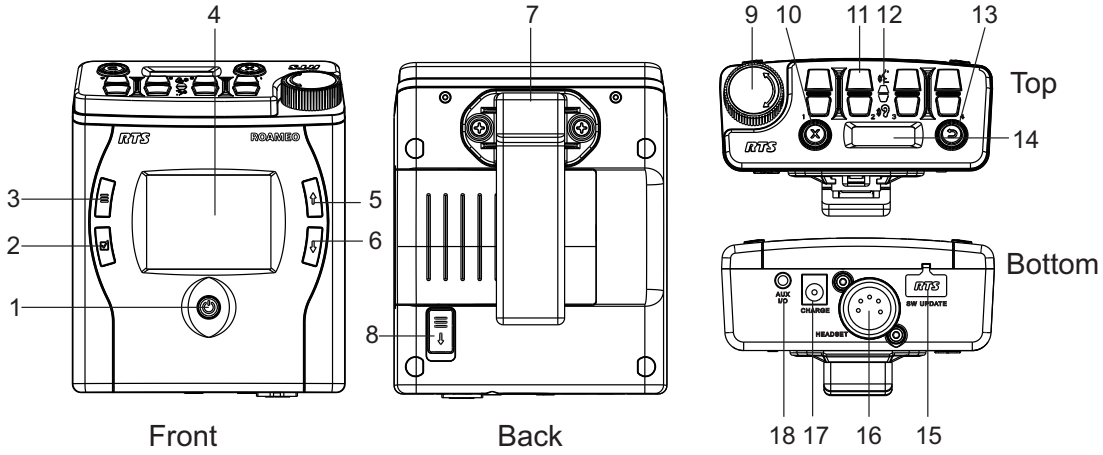
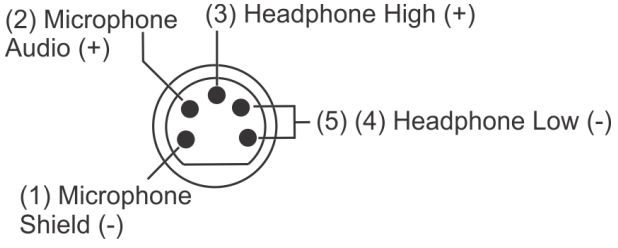



**Figure 2.1:** TR1800 Reference view

| | | |
|---|---|---|
| 1. Power button<br>2. Select button<br>3. Main menu button<br>4. Color backlit display - 320 x 240 pixels<br>5. Scroll Up navigation button<br>6. Scroll Down navigation button | 7. Removable belt clip<br>8. Battery release slide<br>9. Volume knob/Selection button<br>10. Call waiting clear button<br>11. Talk/Listen buttons: Four channel sets<br>12. Talk/Listen indicator icons | 13. Call waiting reply button<br>14. Call waiting monochrome backlit display - 128 x 32 pixels<br>15. USB connector - No charging, just data<br>16. Headset connector - standard 5-pin, female XLR connector<br>17. Charge jack - accepts a 5.5 mm x 2.5 mm plug with the center positive. Must be supplied with a 12 VDC regulated power supply with at least 400 mA current capacity<br>18. Auxiliary input/Headset connector - 3.5 mm connector |

### 2.2.1.2 Connections

**XLR - 5-pin Female**



| Pin | Description |
|---|---|
| 1 | Ground |
| 2 | Microphone |
| 3 | Headphone + |
| 4 | Headphone - |
| 5 | Headphone - (tied to pin 4) |

**Notice!**
Most XLR headsets use dynamic-type microphones that work well with radiated RF energy. However, some XLR headsets use Electret microphones that are susceptible to RF energy and can generate audio noise. Always test any electret type headsets with the product to troubleshoot any issues before using in the field.

### 3.5 mm Auxiliary Jack

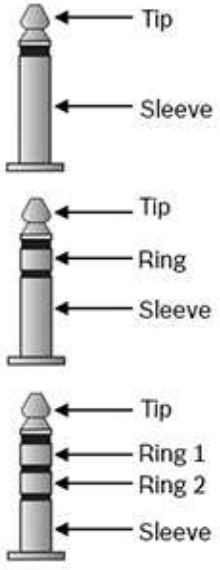



**Figure 2.2:** 3.5 mm Tip, ring, sleeve diagram
The auxiliary jack accepts a 3.5 mm TRS (Tip, Ring, Sleeve) stereo connector or a mono TS (Tip, Sleeve).
**NOTE**: Audio can be input via the Tip, Ring 1, or both.

| Item | Description |
|---|---|
| Tip | Audio Input |
| Ring 1 | Audio Input |
| Ring 2 | Ground |
| Sleeve | Not Connected |

**Headset Mode**

The headset accepts 3.5 mm iPhone-like TRRS (Tip, Ring 1, Ring 2, Sleeve) connector

| Item | Description |
|---|---|
| Tip | Headphone - |
| Ring 1 | Headphone + |
| Ring 2 | Ground |
| Sleeve | Microphone (+5 VDC bias supplied) |

**USB Jack - Type A**

| Pin | Description |
|---|---|
| 1 | +5 (only powered in firmware download process) |
| 2 | Data - |
| 3 | Data + |
| 4 | Ground |

**Charging Jack**

The charging jack accepts a 5.5 mm x 2.5 mm plug with positive center.

| | Description |
|---|---|
| Center | Accepts 12 VDC |
| Shell | Ground |

## 2.2.2 AP-1800

### 2.2.2.1 Controls

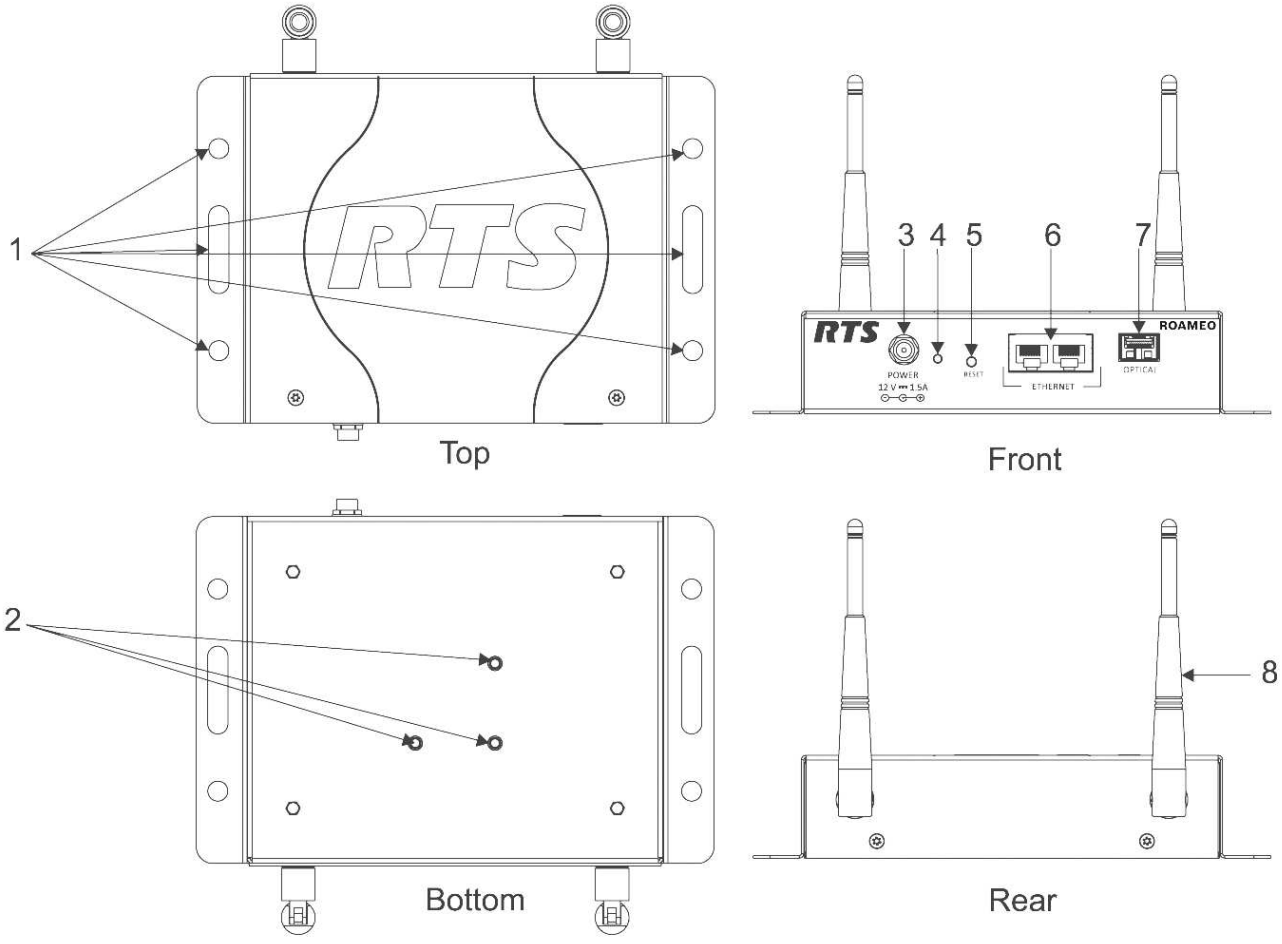



**Figure 2.3:** AP-1800 Reference view

| | |
|---|---|
| 1. Mounting tabs<br>2. Mounting holes (for use with optional clamp kit)<br>3. Power connector<br>4. Power LED indicator (for more information, see *AP-1800, page 127*) | 5. Reset button<br>6. Ethernet connector (x2)<br>7. Optical connector (accepts small form factor pluggable SFP transceiver)<br>8. Antenna (x2) |

### 2.2.2.2 Connections

**Dual Ethernet Connectors**

| Pin | Description |
|---|---|
| 1 | Data 1 + |
| 2 | Data 1 - |
| 3 | Data 2 + |
| 4 | Data 3 + |

| Pin | Description |
|---|---|
| 5 | Data 3 - |
| 6 | Data 2- |
| 7 | Data 4 + |
| 8 | Data 4 - |

**Fiber Optic Connector**

The fiber optic connector accepts small Form Factor Pluggable (SFP) transceivers:

– Single Mode (SM) SFP Module (F.01U.278.502)
– Multi Mode (MM) SFP Module (F.01U.278.503)

**Power Connector**

The power connector accepts a screw-on, locking 5.5 mm x 2.5 mm x 13.8 mm plug with a positive center.

| | |
|---|---|
| Center | Accepts 12 VDC @ 1.5 A |
| Shell | Ground |

**Antenna Connector**

– Reverse-polarity SMA Female Jack (R-SMA-F)

## 2.3 Frequencies of operation

– For Europe: 1880-1900 MHz
– For North America: 1920-1930 MHz

**ETSI Defined RF Channels for DECT**

DECT systems automatically select the best interference-free frequencies on which to operate. The user does not need to do any frequency coordination. The ETSI (European Telecommunications Standards Institute) Channel Plan shows the European and North American RF carrier pools the DECT systems use.
There are 10 frequencies in Europe and five frequencies in North America.

| RF Carrier Number | Carrier Frequency, MHz | Where Used |
|---|---|---|
| 0 | 1897.344* | Europe, Singapore, Austrailia |
| 1 | 1895.616* | Europe, Singapore, Austrailia |
| 2 | 1893.888* | Europe, Singapore, Austrailia |
| 3 | 1892.160* | Europe, Singapore, Austrailia |
| 4 | 1890.432* | Europe, Singapore, Austrailia |
| 5 | 1888.704* | Europe, Singapore, Austrailia |
| 6 | 1886.976* | Europe, Singapore, Austrailia |
| 7 | 1885.248* | Europe, Singapore, Austrailia |
| 8 | 1883.520* | Europe, Singapore, Austrailia |

| RF Carrier Number | Carrier Frequency, MHz | Where Used |
|---|---|---|
| 9 | 1881.972* | Europe, Singapore, Austrailia |
| 23 | 1921.536 | US, Canada, Mexico |
| 24 | 1923.264 | US, Canada, Mexico |
| 25 | 1924.992 | US, Canada, Mexico |
| 26 | 1926.720 | US, Canada, Mexico |
| 27 | 1928.448 | US, Canada, Mexico |

**Table 2.1:** ETSI defined RT Channels for DECT

* Most common carriers used in the world.

# 3 System overview

## 3.1 System description

A ROAMEO wireless intercom system consists of two types of devices: a wireless beltpack (TR-1800) and an access point (AP-1800).
The ROAMEO system can be configured for anything from small systems, one access point and a few beltpacks, to a large system, hundreds of access points and hundreds of beltpacks. The ROAMEO system provides quality, configurable wireless audio across the coverage area and is easily expandable.
The typical indoor coverage area varies widely depending on the installation area. The typical range of an access point is between 50-100 meters.

**System Considerations**

- The number of access points required for the coverage area.
- Sufficient access point coverage overlap to allow seamless roaming for beltpacks.
- The number of access points to provide sufficient capacity for all beltpacks planned to be in the area. It is especially important to consider the number of beltpacks that are booted in the same area and then moved to other areas. The initial beltpack staging area should be able to provide access to all devices.
- Area Considerations:
  - Metal Barriers - Signal reflects off metal, which can provide good signal fill for areas. However, the signal will not pass through metal.
  - Cement - Signal usually passes through with little problem. Dependent on the cement thickness and the presence of any metal rebar.
  - Wood and Drywall - No issues.
  - Overall Size - May need more access points to cover a large area even if only a few beltpacks are used.
  - Spectrum Bandwidth - Other DECT systems in the area (i.e., wireless phone systems that use some of the DECT spectrum allow less beltpacks in the area).
- The intercom system supports enough OMNEO channels for the number of beltpacks needed.
- The Ethernet infrastructure supports access points with sufficient bandwidth for additional traffic and uses managed OSI Layer 3-capable switches.

## 3.2 Access points

The ROAMEO AP-1800 converts DECT signaling to the OMNEO protocol, Audinate's Dante digital high-quality audio transport over IP.
Physically connect AP-1800 units through the Ethernet network to an ODIN, OMS, or ADAM or ADAM-M intercom using an OMI card. For more information, refer to the corresponding manuals, which you can find at www.rtsintercoms.com. The intercom maintains a bi-directional OMNEO channel for each beltpack. The AP-1800 acts as the interface between the intercom and the beltpack communicating through DECT.
There are two types of access points in a ROAMEO system:

- Home AP
- Visitor AP

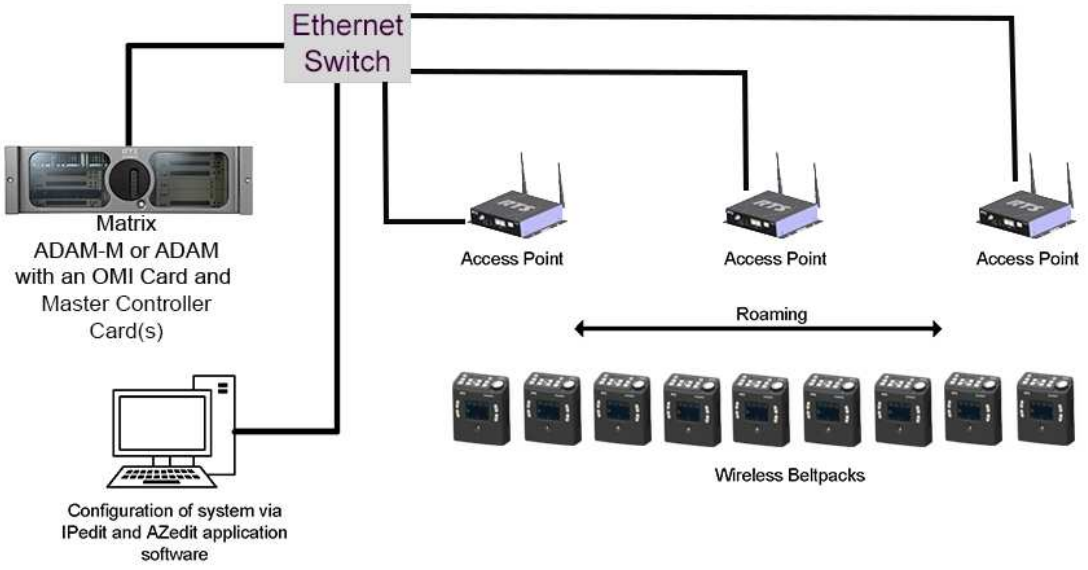



**Figure 3.1:** Components of a ROAMEO system

**Home AP**

The Home AP is any AP-1800 that configures the beltpack's BPID (Beltpack ID) to one of its available OMNEO channels using IPedit.

**Visitor AP**

The Visitor AP is any AP-1800 that does not configure the BPID to one of the OMNEO channels in IPedit. The Visitor AP acts like a bridge that allows the visiting beltpack to communicate within the system while outside of its Home AP radius (Figure 3.2).
**NOTE**: The Home and Visitor labels are in reference to the beltpack. A beltpack's Home access point could be a Visitor access point to a different beltpack.

## 3.3 Roaming

The ROAMEO system allows beltpacks to move between the radio coverage areas of one AP-1800 to the radio coverage area of another AP-1800. This is called roaming. Roaming is monitored and maintained by the system of access points, making it transparent to the user. Handoff from one coverage area to another is nearly seamless. Roaming does not involve any processing on the OMI, allowing the OMNEO bit stream to be completely uninterrupted.
In order for seamless hand-off to occur, the AP-1800 RF coverage area must overlap. This allows the beltpack hand-off commands to be sent to both the current access point and new access point in the coverage area.
The 80 RSSI (Received Signal Strength Indicator) contour line shown in Figure 3.2 is a number related to the access point's RF signal strength as received at the beltpack. This is measured using the beltpack's site survey screen when testing an access point location. For more information, see *Site Survey, page 27*.

**Notice!**
When there is little or no coverage overlap, a beltpack can experience undesirable audio break-ups before the hand-off to a new access point occurs.

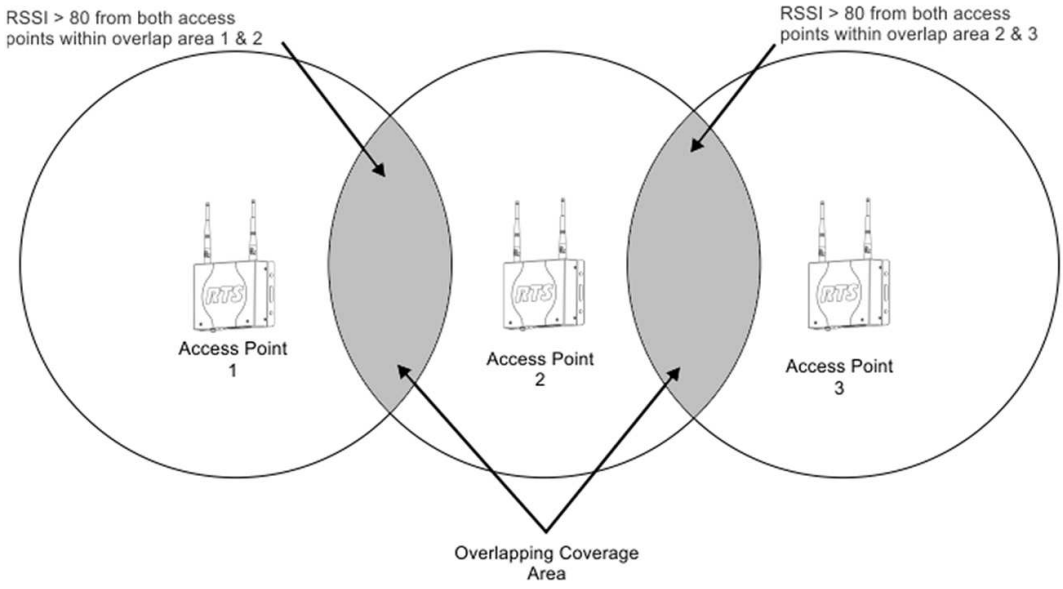



**Figure 3.2:** Simple Roaming diagram

When access points boot, they scan the area and pick an RF carrier and time slot based upon the other beacons detected in the area. The access points also avoid using carriers and time slots already in use by using AP IDs (access point identification). Each access point in a system must be set to a unique AP ID using the IPedit application. An algorithm based upon the AP ID of the access point forces access points never to select the same carrier and slots.

In high-density beltpack areas where more than six wideband access points can be required, some access points cannot detect an RF carrier already in use that can result in roaming issues. Avoid these scenarios by designing high-density areas with good access point overlap. Figure 3.3 shows how all seven access points can detect and coordinate carriers and time slots with each other, even when there are more than six devices present. The 112 RSSI contour line is measured by a beltpack using the site survey screen when testing an access point location. See *Perform a site survey, page 31*.

**Notice!**

If more than six wideband or ten narrowband access points are used to cover the same area, place all access points in a location where they can detect each other.

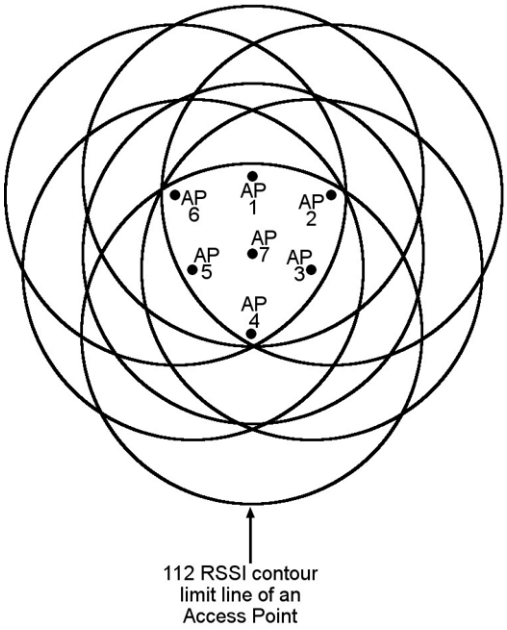



**Figure 3.3:** High density roaming

### Home Connections

**Notice!**
When configuring home connections, assign the configured access point channels to the OMI card in the Matrix. For more information, see *Connect the access point to the intercom, page 43*.

Each access point channel is a bi-directional OMNEO channel for audio, command, and control with the matrix. For a wideband system (CODEC G.722 or G.722-EX), five access point channels are available to assign BPIDs. For a narrowband system (CODEC G.726 or G.726-EX), 10 access point channels are available.

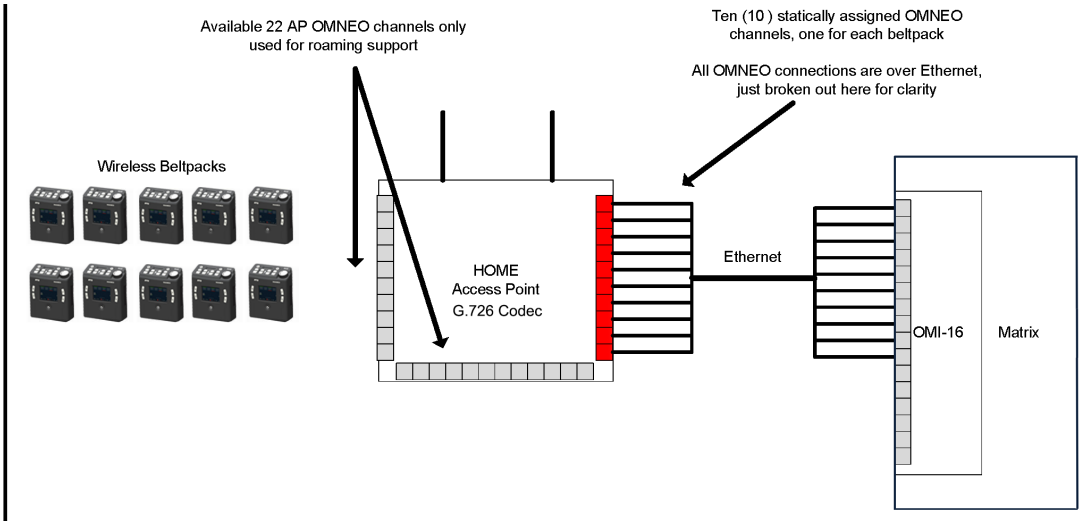



**Figure 3.4:** Home access point to matrix system drawing

### Home to Visitor Roaming

When a beltpack roams from its Home AP to a Visitor AP, a new OMNEO connection is made between both access points. However, before the new connection's OMNEO channel is used, the new DECT RF connection must be confirmed as good. The new DECT RF connection is made before breaking from the old connection. This means that the existing

DECT RF link to the Home AP is maintained until the new DECT RF link to the Visitor AP is confirmed. When the connection is confirmed, the existing DECT RF link is dropped and the new OMNEO channel from the Visitor AP is used.

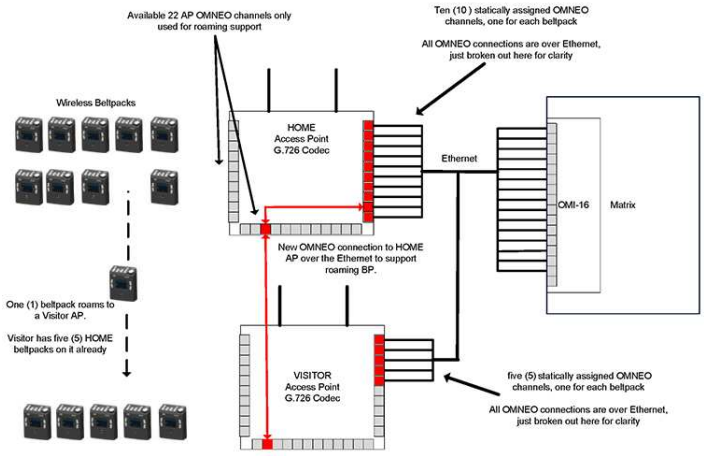



**Figure 3.5:** Home access point to visitor access point roaming system drawing

## 3.4 System drawings

The following drawings are basic examples of small, medium and large ROAMEO systems.

### Small Systems

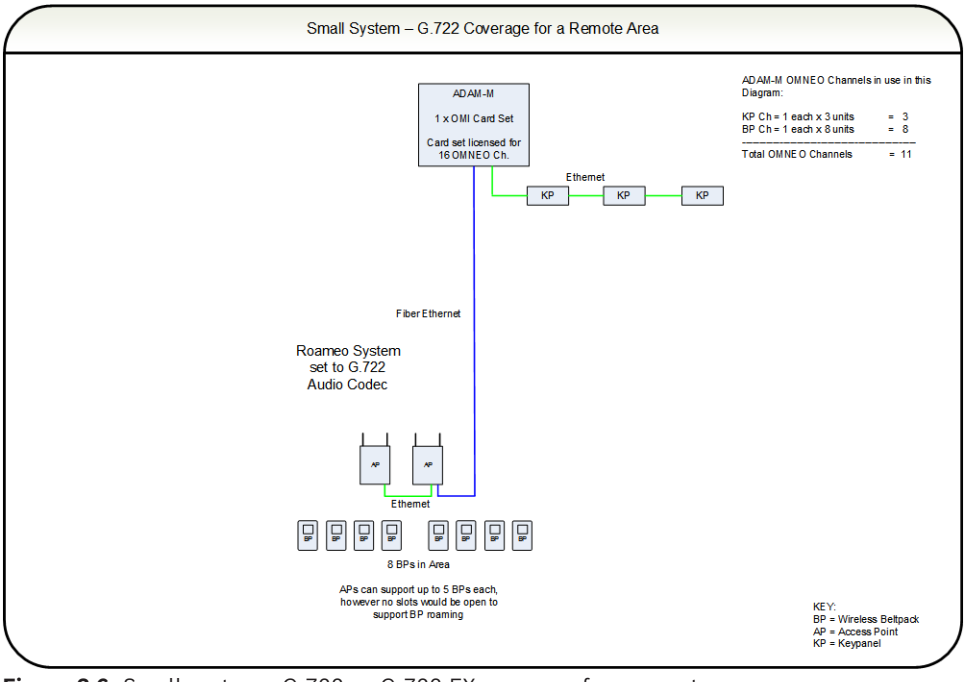



**Figure 3.6:** Small system - G.722 or G.722-EX coverage for a remote area

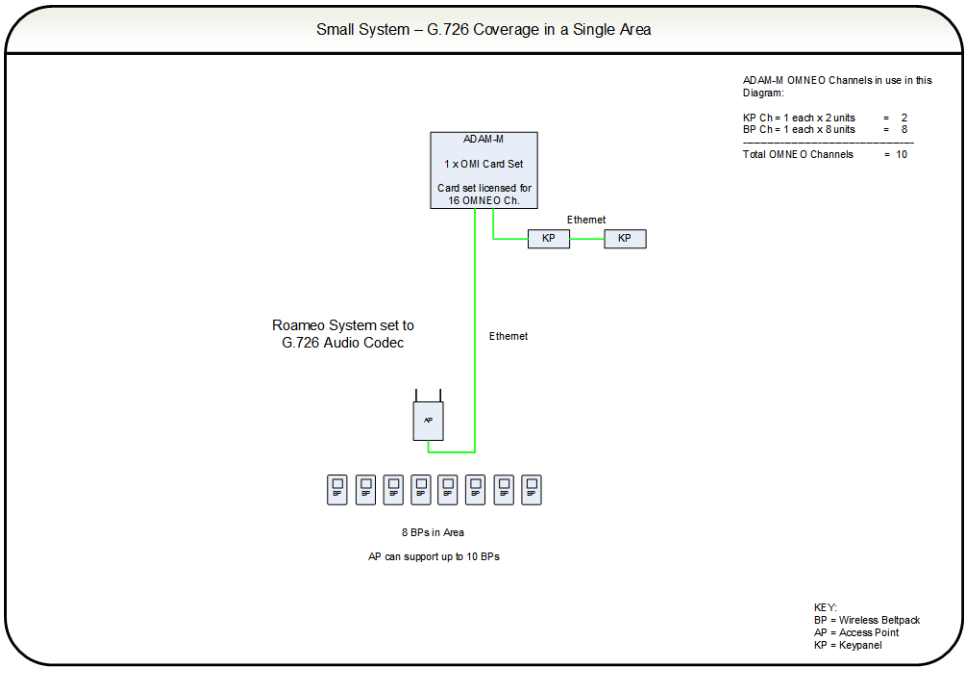



**Figure 3.7:** Small system - G.726 or G.726-EX coverage for a single area

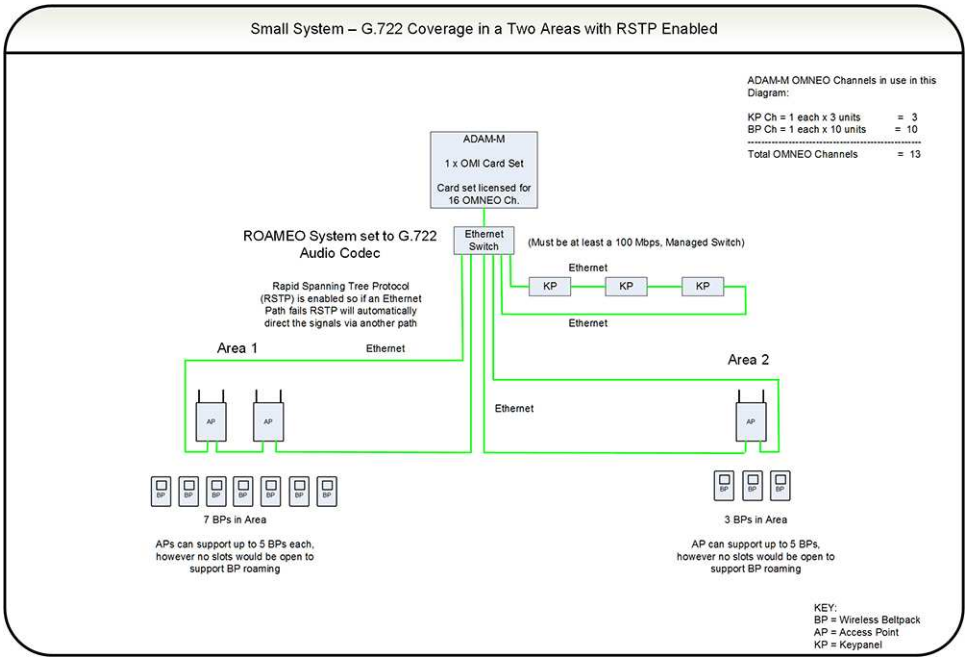



**Figure 3.8:** Small system - G.722 or G.722-EX coverage over two areas

## Medium Systems

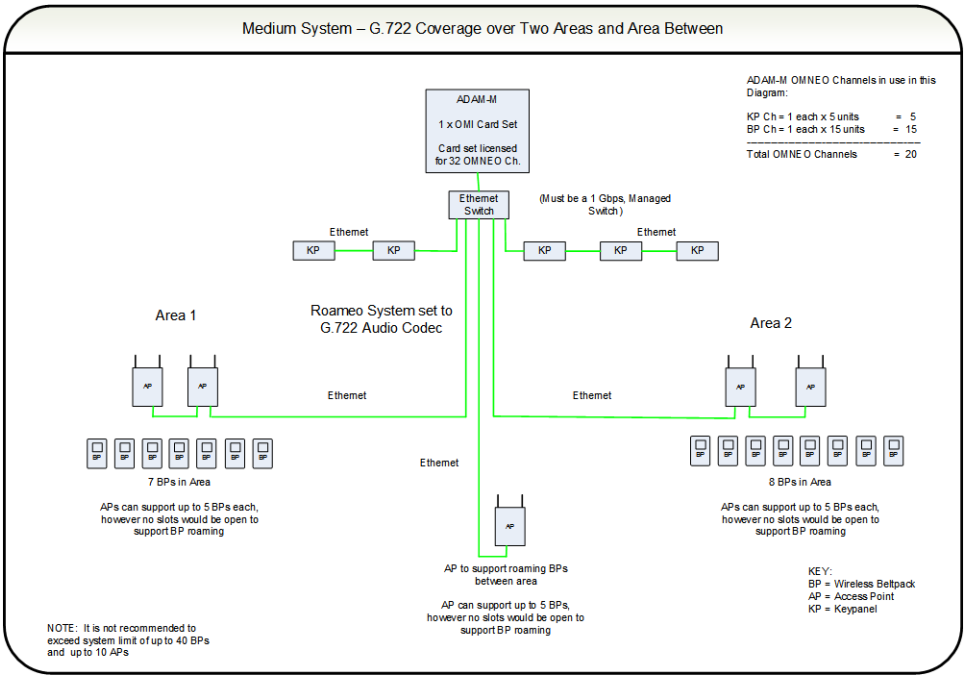



**Figure 3.9:** Medium system - G.722 or G.722-EX coverage over two areas and between

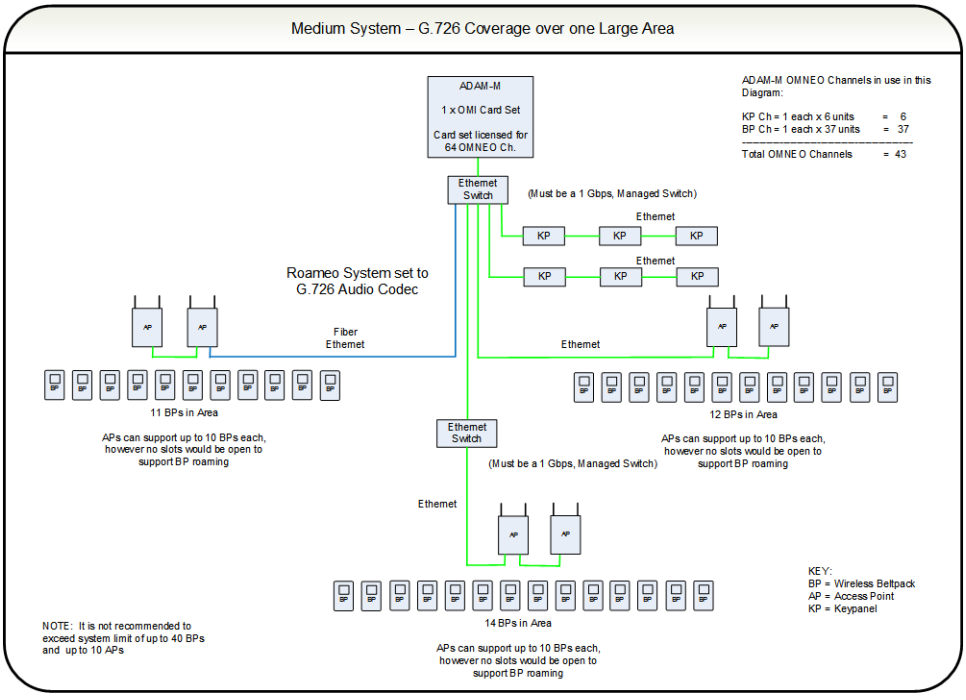



**Figure 3.10:** Medium system - G.726 or G.726-EX coverage over one large area

### Large Systems

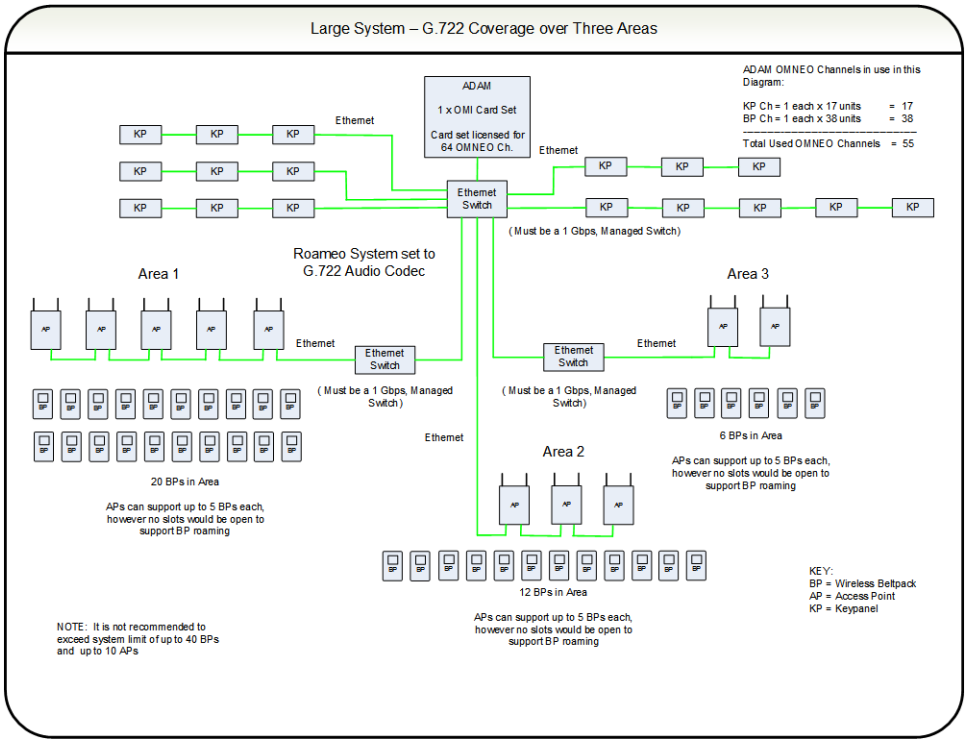



**Figure 3.11:** Large system - G.722 or G.722-EX coverage over three areas

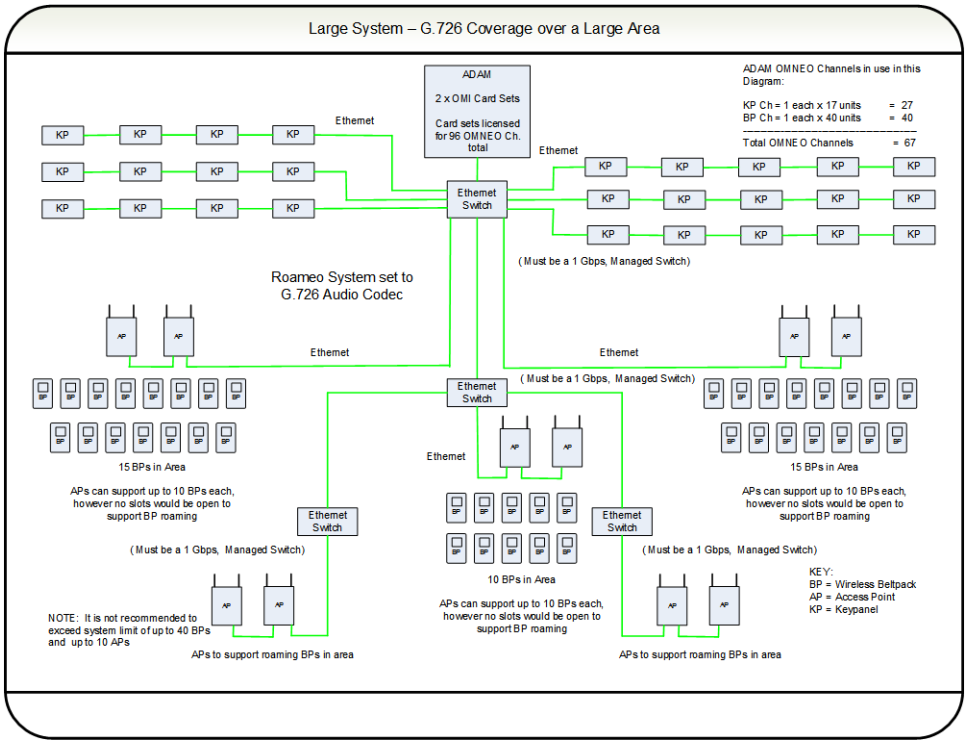



**Figure 3.12:** Large system - G.726 or G.726-EX coverage over one large area

## 3.5 ROAMEO system setup checklist

– Each beltpack has only one HOME access point.

- Each system can have only one active Primary Sync Master access point, which is set in IPedit.
- When subscribing a beltpack to the system, the beltpack must be within 40 feet (12 meters) of an access point in that system.
- Each access point set to the G.722 or G.722-EX CODEC can be host for up to five beltpacks with no channels left for roaming beltpacks.
- Only load each G.722 access point up to four beltpacks to allow for roaming beltpacks.
- Each access point set to the G.726 or G.726-EX CODEC can be host for up to 10 beltpacks with no channels left for roaming beltpacks.
- Only load each G.726 access point up to eight beltpacks to allow for roaming beltpacks.
- If the CODEC is changed for a system, the beltpacks must be subscribed again.
- No CODEC mixing is allowed. A system can only have all G.722, G.722-EX, G.726, or G.726-EX access points.
- Always have Ethernet connected to an access point before powering up the access point.
- The Ethernet network follows standard Ethernet practices.
- Use only CAT5e UTP or better Ethernet cables.
- Use only Layer 3 IP routing-capable, managed switches.
- 100 Mbit networks can only have up to seven hops. A link between the Matrix and an Ethernet switch counts as a hop, each link after daisy-chaining through an access point counts as a hop.
- 1 GBit networks can only have up to 20 hops. A link between the Matrix and an Ethernet switch counts as a hop, each link after daisy chaining through an access point counts as a hop.
- The recommended maximum size is 10 access points and 40 beltpacks.
- The overlap RF coverage area between two adjacent access points should have an RSSI reading of 80 or better from each access point for error free roaming.
- In a high density beltpack coverage area with more than six access points (G.722 or G.722-EX) or more than 10 access points (G.726 or G.726-EX) covering the area, all access points must be within each other’s -70 dBm RF coverage contour (112 or better on the beltpack’s RSSI site survey screen).
- If a PoE adapter is used, access points cannot be daisy-chained. You can only power one access point from the PoE adapter. For more information, see *Power over Ethernet, page 42*.

# 4 Site Survey

**Site Survey** is the application (standard on the TR-1800) used to plan and design the ROAMEO system. Site survey provides crucial information on roaming coverage. With the ROAMEO site survey application, finding coverage areas for access points is easier to accomplish, even though obstacles are encountered, such as metal walls, reinforced concrete, metal-coated glass, etc.

There are two ways to perform a site survey:

– With a Static IP Address
– With a Dynamic IP Address

## 4.1 Set up Site Survey

With a simple setup, site survey can be used and evaluated.

**Requirements**

– AP-1800 access point and power supply
– TR-1800 beltpack and battery
– Computer with an Ethernet port and IPedit software application installed
– Standard Ethernet cable

### 4.1.1 Prepare the hardware

1. Install the **antennas on the access point** (see *Antenna connection and placement, page 36*).
2. If performing a site survey without a matrix, use an Ethernet cable to **connect the AP-1800 to the computer**.
   OR
   If performing a site survey with a matrix, use an Ethernet cable to **connect the AP-1800 to the network**.

### 4.1.2 Set up an existing system with a static IP address

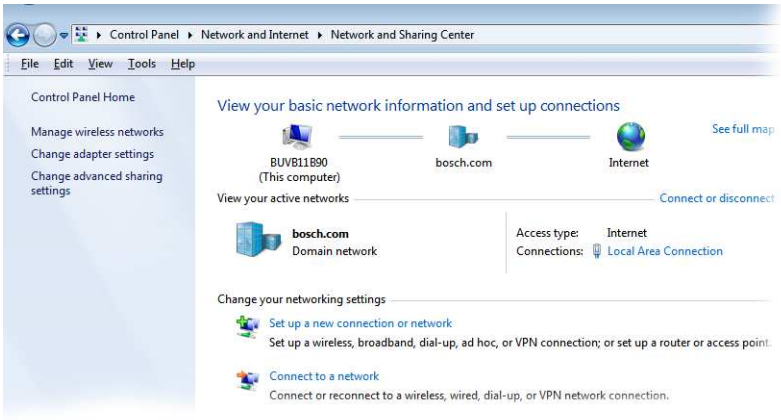
To **set the computer to a Link Local IP Address**, do the following:

**NOTE**: These instructions detail a typical setup for the Windows 7 platform or newer.

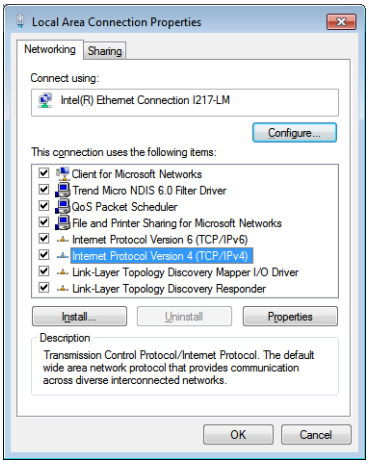
**Notice!**

If the AP-1800 was connected to a Matrix system in the past or assigned a static IP Address already, assigning the computer a Link Local Address will not work. If you know the AP-1800's IP Address, configure the computer to be in its network. If the IP Address is unknown, reset the AP-1800 back to a Link Local Address through a factory reset, see *Factory default reset, page 120*.

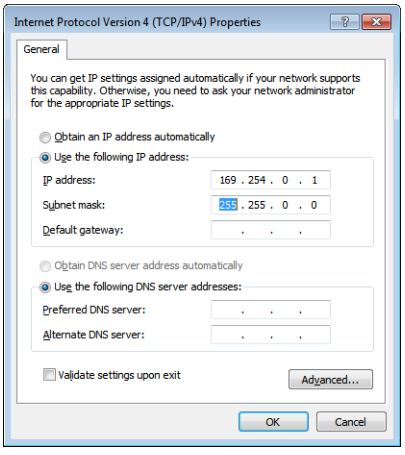
1. Open the **Network and Sharing Center**.




2. Click **Change Adapter Settings**.
3. **Double-click Local Area Connection** or **Ethernet**.
4. Click **Properties**.
   The **Local Area Connection Properties** screen appears.




5. Select **Internet Protocol Version 4 (TCP/IPv4)**.
6. Click **Properties**.




7. Select the **Use the following IP Address check box**.
   The IP fields become editable.
8. In the **IP Address:** field, enter **169.254.0.1**.
9. In the **Subnet mask:** field, enter **255.255.0.0**.
10. Click **OK** to exit the Internet Protocol Properties window.
11. Click **Close** to exit the Local Area Connection Properties window.

### 4.1.3 Set up an existing system with a dynamic IP address

**Notice!**
Set the computer to obtain an IP address automatically. The DHCP server for the matrix must be enabled in the AZedit application before the computer delivers an IP address.

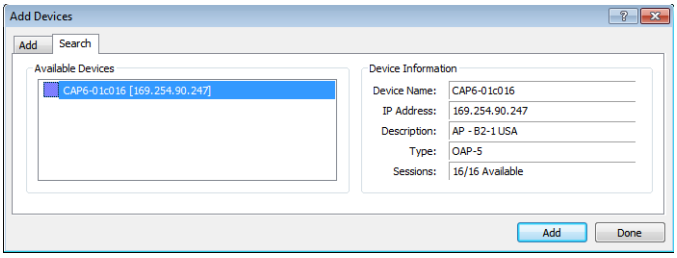
To **connect the AP-1800 to the matrix**, do the following:
1. Using an Ethernet cable, connect the **AP-1800 to the Matrix directly** or through a **network switch**.
2. Connect **one end of the power supply to the AP-1800 and the other end to the wall outlet**.
The AP-1800 powers on.
3. With IPedit, configure the **OMI card with the AP-1800 unit**.

**Notice!**
If the AP-1800 being used is already part of an operating system and a TR-1800 is subscribed to it, no further IP configuration is required. Turn off all other AP-1800 devices in the system so you can find the coverage of the single access point being tested. For more information, see *Perform a site survey, page 31* .

For complete instructions on how to configure the AP-1800, see *Connect the access point to the intercom, page 43*.

### 4.1.4 Add the access point to IPedit

To **add the access point to IPedit**, do the following:
1. Power on the **access point**.
When the power light turns solid green, the access point is ready.
2. Open **IPedit**.
3. Select **Add from the Device menu**.
The Add Devices screen displays.




4. Select **one or more available devices**.
The Add button becomes active.
5. Click the **Add button**.
The device catalog displays the selected devices.

**Notice!**
Access points display as device type OAP-5 or OAP-10.

6. Click the **Done button**.
The screen closes.

### 4.1.5 Assign the TR-1800 to an AP-1800 channel

To **assign the TR-1800 to an AP-1800 channel**, do the following:

1. From the Device Catalog on the left, select the **AP-1800**.
   The Device Information fields populate.
2. Select the **Sync Master check box** to set the AP-1800 to Sync Master.

**Notice!**
Note the 3-digit System ID (the default is B2B) and the 4-digit PIN (the default is 0000) of the access point. These are used later to subscribe the beltpack to the access point.

3. Power up the **TR-1800**.
   The BPID displays on the front panel. This is a 10-digit, hexadecimal number (for example, 00:09:22:B5:21).
4. In the **DECT BPID** field, enter the **beltpack ID** to assign to that channel.
5. From the **Changes** menu, select **Send All**.
   The Send Changes window appears.
6. Click **OK**.

The changes are sent to the AP-1800 and then it resets. After approximately one minute, the Sync check box turns green. The AP-1800 stores the BPID, even if the power is disconnected (for example, in non-volatile memory).

### 4.1.6 Subscribe the TR-1800 to the AP-1800

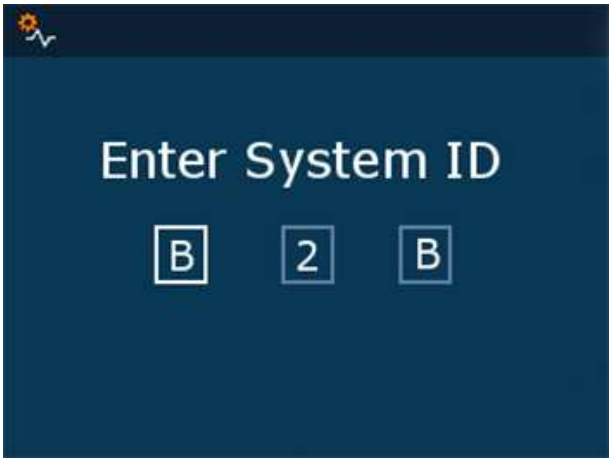
To **subscribe the TR-1800 to the AP-1800**, do the following:

**Notice!**
Be sure the beltpack is within 40 feet (12 meters) of the AP-1800.

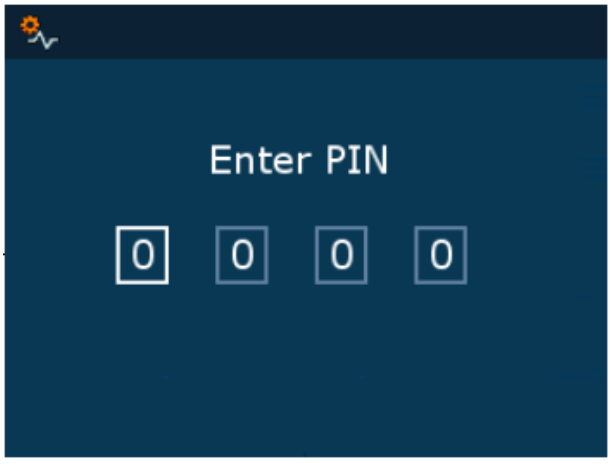
1. With the AP-1800 running, power up the **TR-1800**.
   The front color display activates.
2. Press the **Menu button**.
   The beltpack main menu appears.
3. Using the up and down arrow buttons, navigate to the **System Setup icon**.
4. Press the **Select button**.
   The Subscription Setup screen appears with the system setup icon highlighted.
5. Press the **Select button**.
   The Enter system ID screen appears.

**Notice!**
If the beltpack was subscribed to an access point previously, the last system ID used populates the screen. The default System ID is B2B.

6. Using the up and down buttons, enter the **first character of the access point system ID**.




7. Press the **Select button**.
   The focus moves to the next character space in the system ID.
8. Repeat **steps 8 and 9** until you enter the complete system ID.
9. Press the **Select button**.
   The Enter PIN screen appears.
10. Using the up and down buttons, enter the **first digit** of the access point pin number.
    The default is 0000.




11. Press the **Select button**.
    The focus moves to the next character space in the PIN.
12. Repeat **steps 12 and 13** until you enter the complete PIN.
    The Home screen appears in the front display, the DECT connection icon and the RSSI indication icon become active.

## 4.1.7 Perform a site survey

### 4.1.7.1 Perform a site survey

A site survey determines the placement of the access points to make sure RF covers of the desired area. A beltpack, communicating with an access point at a test location is set to the site survey screen where RSSI (Received Signal Strength Indication) and QF (Quality Factor) to find the RF coverage area.

**Pre-conditions**

– A beltpack that is successfully subscribed to an access point.
– A site map or blueprint of the building that you can mark up.

– You can supply power to the access point at the possible test locations by using power extension cables or battery power. For battery power, 12 VDC @ 0.600 Amps must be available to the access point. Use a charged 12 VDC battery rated for at least 2.4 Amp-hours for a typical site survey length of time. The input connector required for an access point is a 13.8 mm long, female barrel, 2.5 mm x 5.5 mm connector.

**Notice!**
The unit is marked 1.5 Amps. The upper limit handles peak loads when fully loaded. When doing site surveys, an access point is not heavily loaded.

To **perform a site survey**, do the following:

1. Place the **access point** in the location you want to test for coverage.
2. Power up the **access point**.
   The access point is ready when the power light turns to solid green.
3. Power up the **beltpack**.
   The splash screen momentarily shows before the home screen appears.

**Notice!**
When the beltpack finishes booting, the home screen of the beltpack indicates a wireless connection. If the wireless connection does not display, verify the settings in *Set up Site Survey, page 27*.

4. Press the **Menu button**.
   The beltpack main menu appears.
5. Use the up and down arrow buttons to navigate to the **System Setup icon**.
6. Press the **SELECT button**.
   The system setup menu appears.
7. Use the up and down arrow buttons to navigate to the **Site Survey icon**.
8. Press the **SELECT button**.
   The site survey screen appears.
9. Mark the access point’s location on the building layout diagram.
10. Walk around with the beltpack throughout the area(s) of interest while looking at the site survey screen.

**Notice!**
Record the RSSI and QF number on the building layout diagram at several locations throughout the area of interest.

**Site survey screen**


**Description of Site Survey Screen**

| | |
|---|---|
| CARRIER | The current RF carrier of the access point. This may change from time to time. |
| SLOT | The current time slot on the RF carrier the access point to the beltpack packets are located. This may change from time to time. |
| AP ID | Access Point Identification |
| RSSI | Radio Signal Strength Indication |
| QF | Quality Factor. This represents the number of packets received out of the number of packets sent. |

**Description of RSSI**

| RSSI | Color | Description |
|---|---|---|
| 0-47 | Red | Weak - poor to no reception in the area |
| 48-70 | Yellow | Marginal - some dropouts of audio in the area |
| 71-216 | Green | Strong - good RF coverage |

**Description of QF**

| QF | Color | Description |
|---|---|---|
| 0-4 | Red | Weak - too many dropouts in the area |
| 5-6 | Yellow | Marginal - some dropouts of audio in the area |
| 7-10 | Green | Strong - good RF coverage |

| DEFINITION OF GOOD COVERAGE AREA |
|---|
| RSSI = 71-216, Site survey bar in the green.<br>QF = 7-10, Site survey bar in the green. |

If the two indications are different, always use the worst case of the RSSI and QF indication for defining a good coverage area. Example: QF = 10 and RSSI = 71, use the RSSI level as the cutoff for the good coverage area.

**Notice!**
When you collect enough data points, use the coverage limits to draw a line on the building layout. If surveying for roaming coverage, refer to the access point coverage in *Roaming, page 19*.

#### 4.1.7.2 Notes

- Try other access point locations to improve the RF coverage in the desired area, if needed.
- If setting up a roaming system, make sure you have a good overlap of the coverage areas of the access points. Good roaming between access point areas requires overlap of coverage for error free roaming.
- The access points that support roaming beltpacks should have an RSSI of >80 from each access point involved in the overlap to provide error free roaming. See Figure 3.2 on page 20.
- In high beltpack density areas, where you require more than 6 access points on wideband (G.722 or G.722-EX) or more than 10 access points on narrowband (G.726 or G.726-EX) to provide coverage over the same area due to a larger number of beltpacks, it is important that the access points are located in good RF coverage of each other. In these scenarios, the access points need to be within -70 dBm of each other. As such, each access point should be in a coverage area with an RSSI reading of 112 or better on a site survey. See Figure 3.3 on page 21.

# 5 Installation

## 5.1 Access point placement

**Considerations**

- Access point placement
- System considerations - See *System drawings, page 22*
- Mounting options
- Mounting surfaces
- Site survey

The placement of access points can be critical for optimal RF performance of the system. When positioning the access points, place them in the best location for maximum, unimpeded coverage of the area. Installation of the access point should be high, above the area of interest, on a truss or ceiling. Tilt the antennas so they are approximately 15° to 30°. The access point could also be placed high on a vertical wall; in this case, the antennas should pointing straight up.

### 5.1.1 Site survey

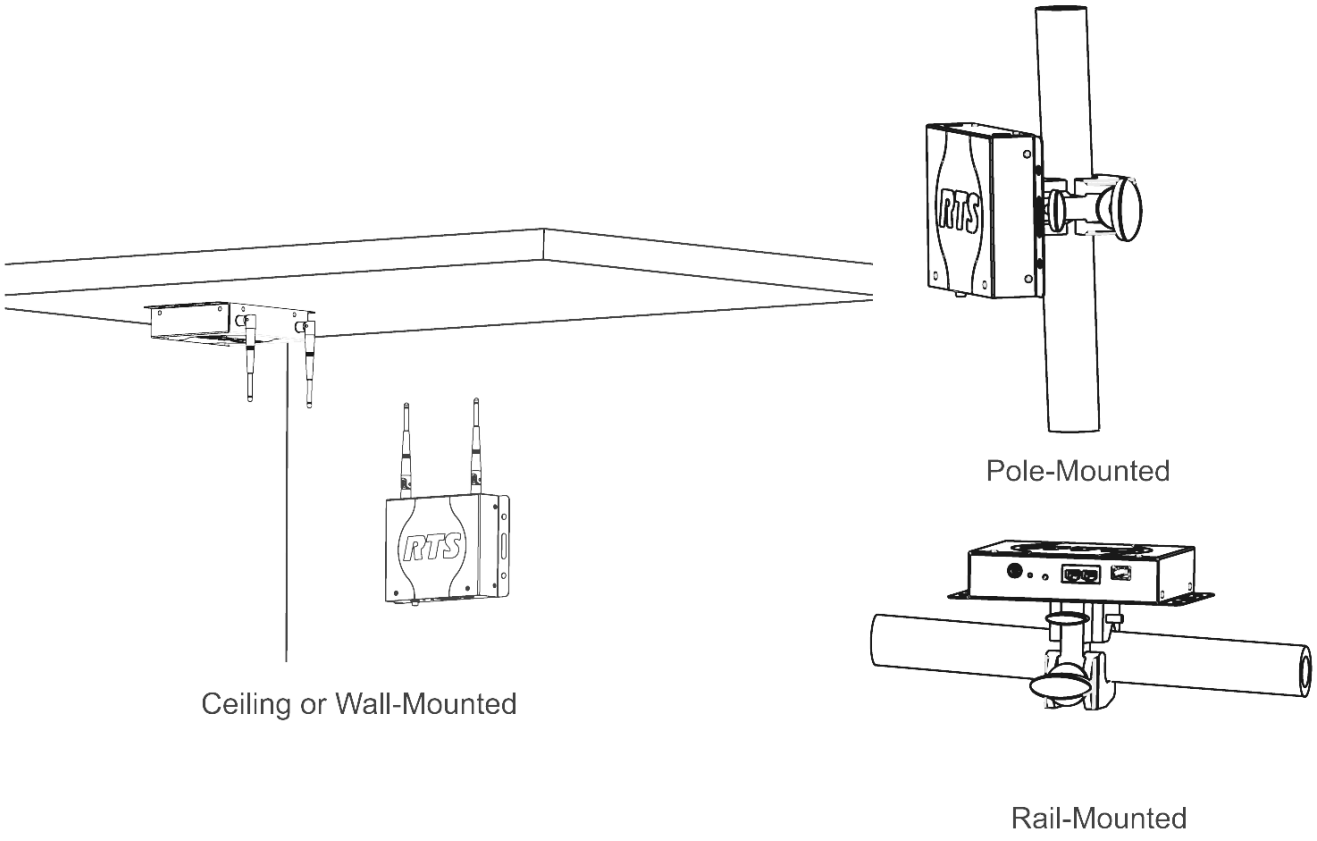
For more information, see *Site Survey, page 27*.

### 5.1.2 RF (radio frequency) considerations

Keep the antennas away from metal, as metal can detune them and distort the RF pattern. Keep the antennas at least 2λ (2 * wavelength) from any parallel metal object (about 30 cm/12 inches), not including metal trusses or metal roofs. A metal roof, metal trusses, or the access point's metal case becomes a reflector, offering advanced coverage by reflecting the RF signal down to the intended area of coverage, which can improve coverage. When mounting to drywall, be aware of metal studs that can affect signal quality. The metal in walls can greatly attenuate or even block RF signals. In the case of a metal wall, it might be necessary to place another access point on the other side of the wall if you need continued coverage.

The polarization of the access point antennas should match the polarization of the beltpack's internal antennas when worn on the belt. The standard position of the antennas is vertical. This means the electrical field of the antennas is also vertical. For best reception, the access point's antennas should be in the vertical position, either straight up or straight down.

### 5.1.3 Mounting options




There are four recommended ways to mount the ROAMEO AP-1800 access point unit:

- Wall-mount or ceiling mount
- Pole-mount
- Rail-mount
- Free-standing installation, such as a table or shelf - not shown above

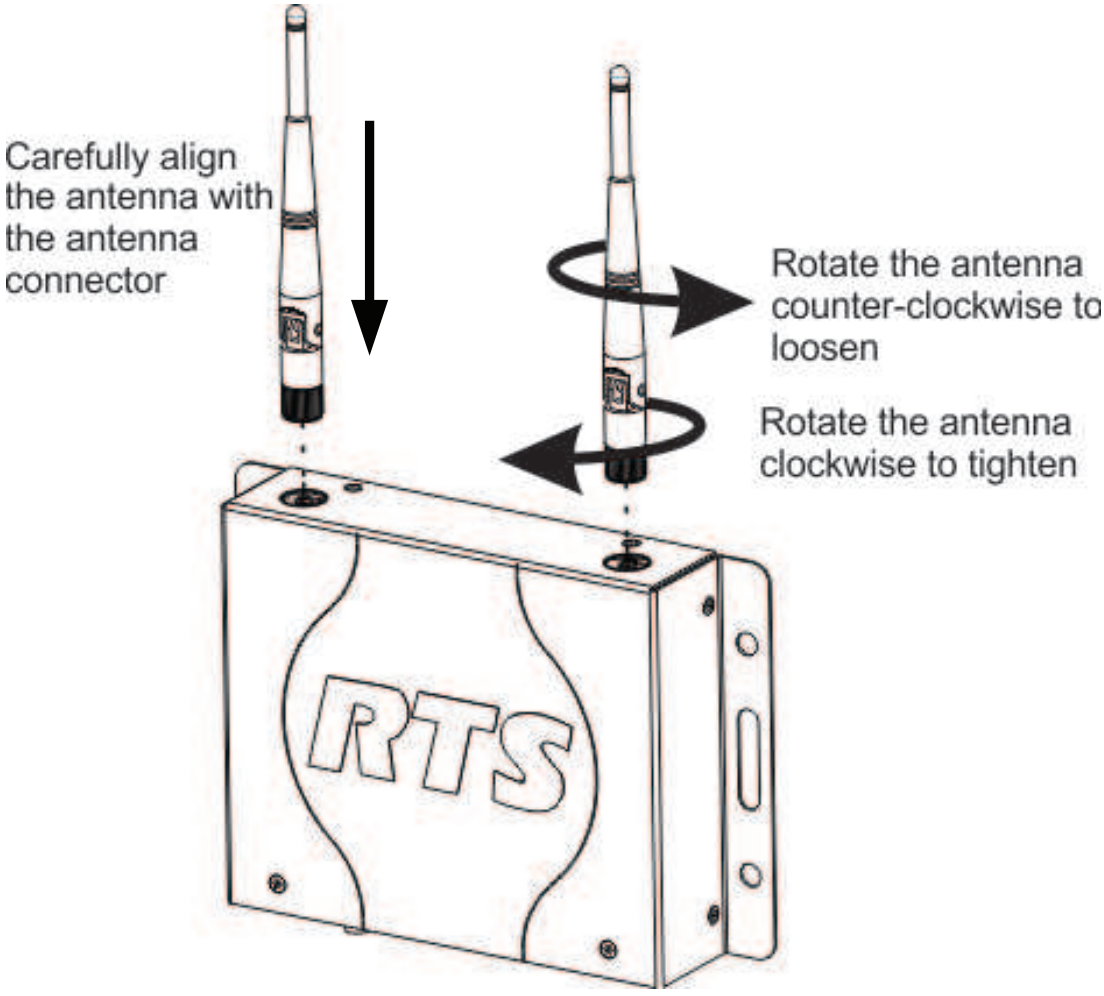
**Notice!**
The mounting clamp kit, for rail or pole mounting, sold separately.

### 5.1.4 Antenna connection and placement

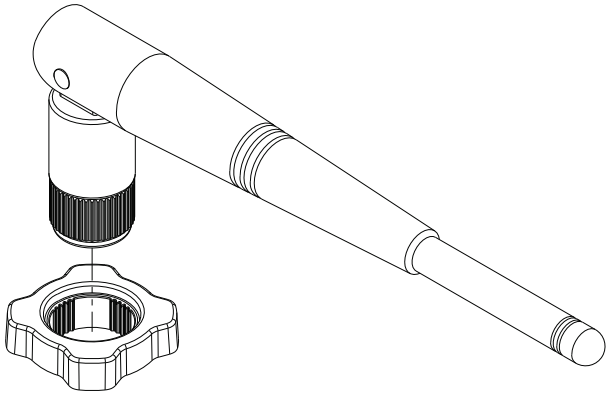
Antennas should be in the vertical position for the best reception of signal. The antenna has a joint to adjust the angle, if needed.

To **attach the antennas to the ROAMEO AP-1800**, do the following:

1. Gently push the **antenna** into the antenna connector on the ROAMEO AP-1800. Take care to align the connector pin with the antenna pinhole.
2. Turn the **antenna clockwise** to tighten it in place.



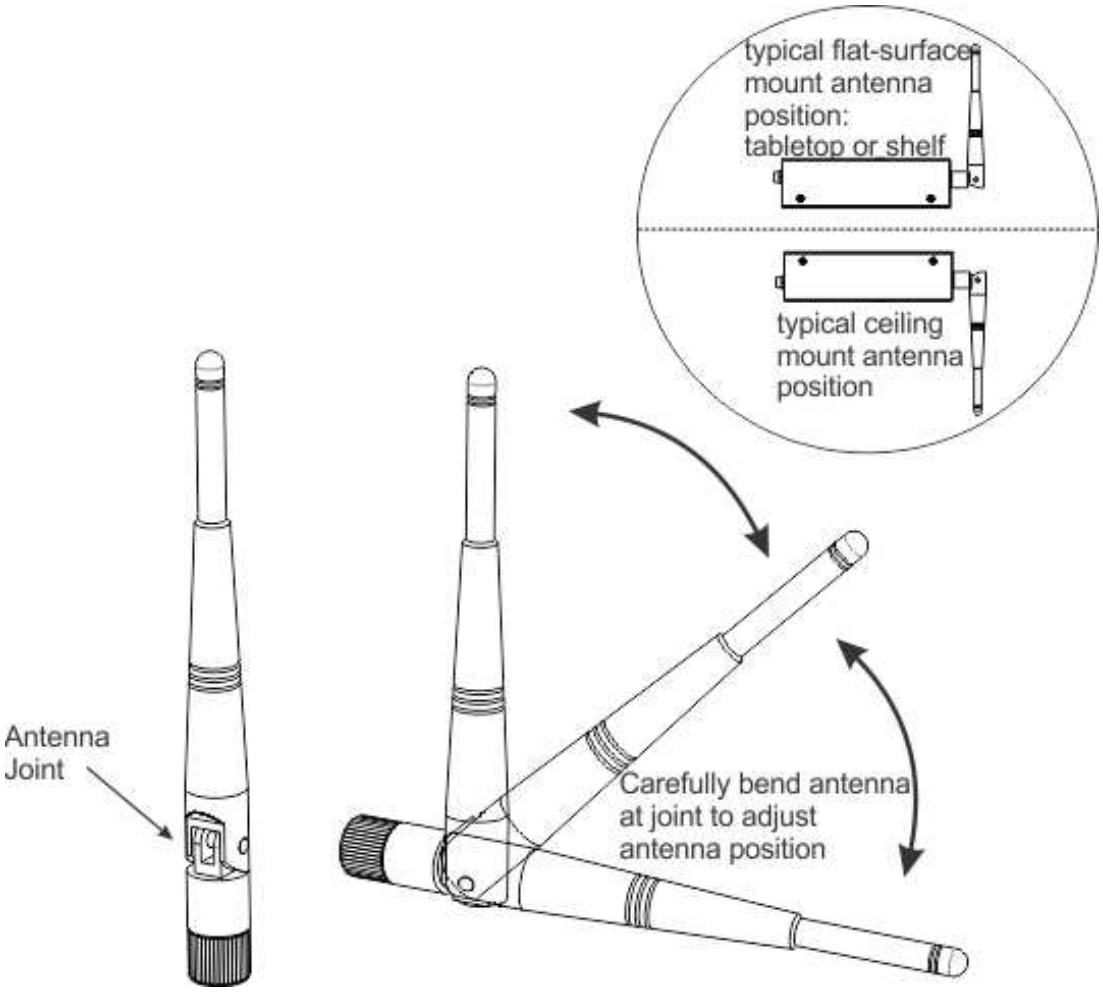

**Notice!**
Newer antennas come with a support washer that improves the strength of the connection of the antenna to the case. You can also use this washer to easily tighten the antenna to the access point case.



Antenna Support
Washer

To **adjust the antennas for the best signal reception when the access point is mounted horizontally**, do the following:

- Carefully bend the **antenna 90°** at the antenna joint until the antennas are aligned straight up or down.

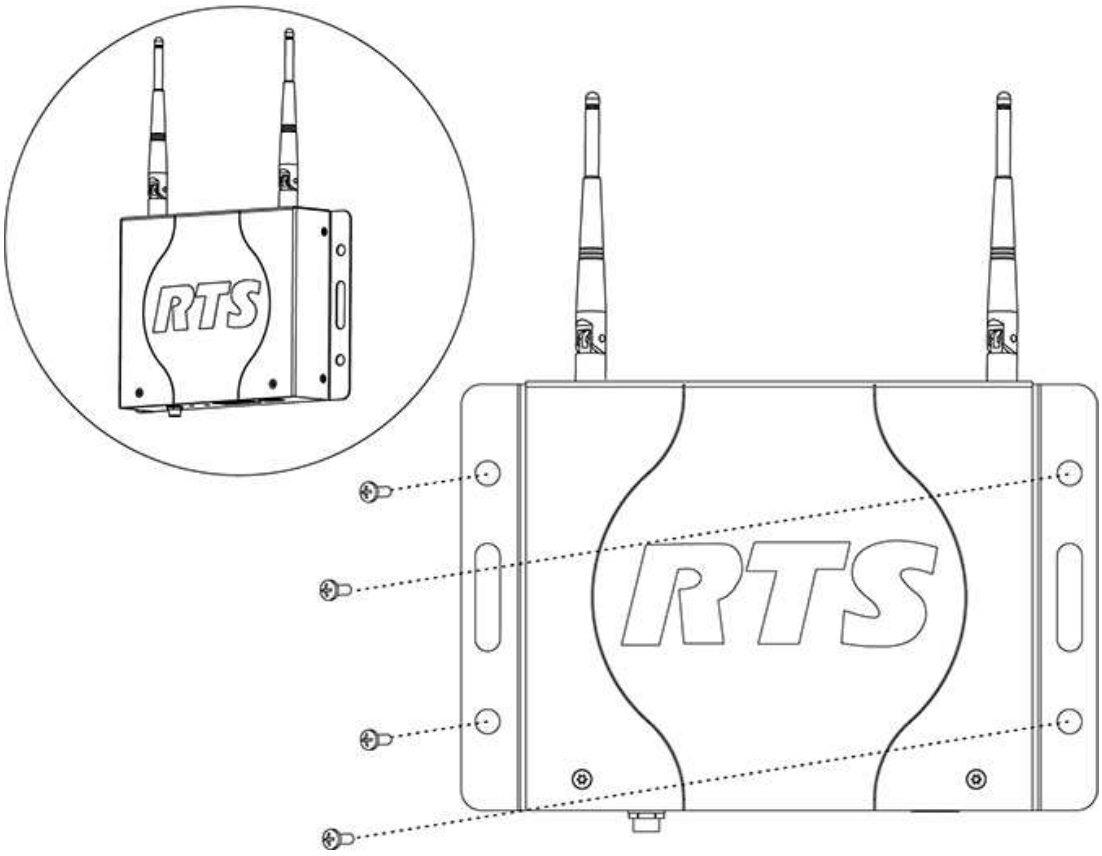



### 5.1.4.1 Wall or ceiling mounting

To **wall mount the ROAMEO AP-1800 access point**, do the following:

1. Use the access point and a pencil to mark the **four hole locations** on the wall or ceiling.

**Notice!**
It may be necessary to predrill the holes or use screw anchors, depending on the material of the wall.

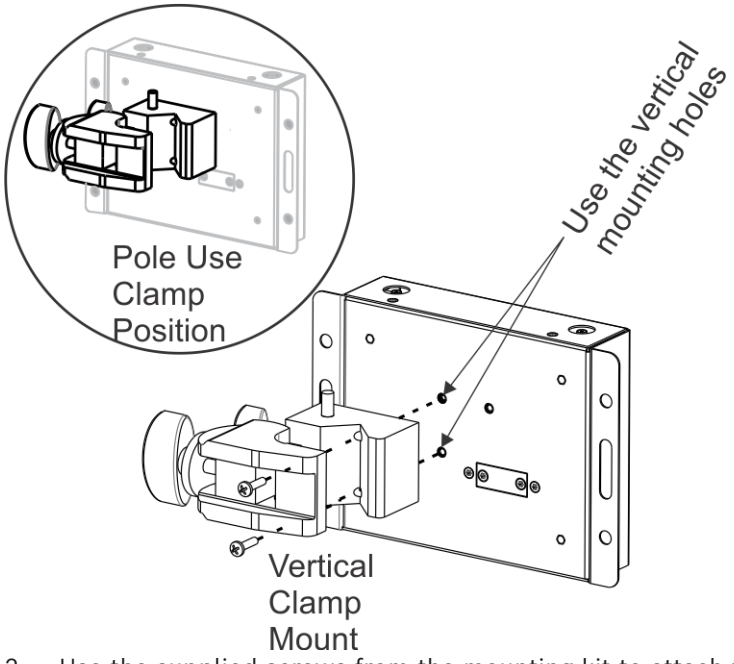



2. Align the **AP-1800 in the position** and placement desired.
3. Use a screw driver to drive the **screws** into the predefined holes.

### 5.1.4.2 Pole mounting

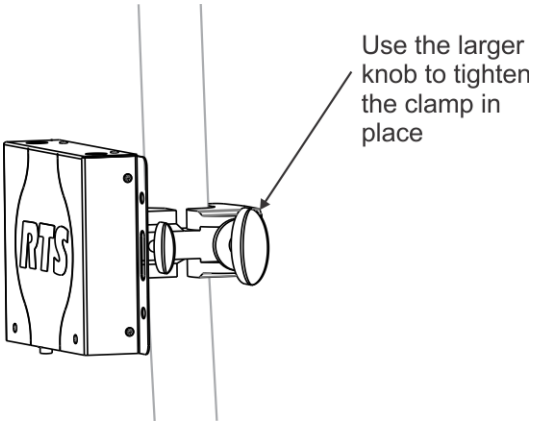
To **pole mount the ROAMEO AP-1800 access point**, do the following:

1. Align the **mounting clamp** in the pole use position on the bottom of the AP-1800.




2. Use the supplied screws from the mounting kit to attach the **mounting clamp** to the AP-1800.

3. Fit the **mounting clamp** around the pole desired.

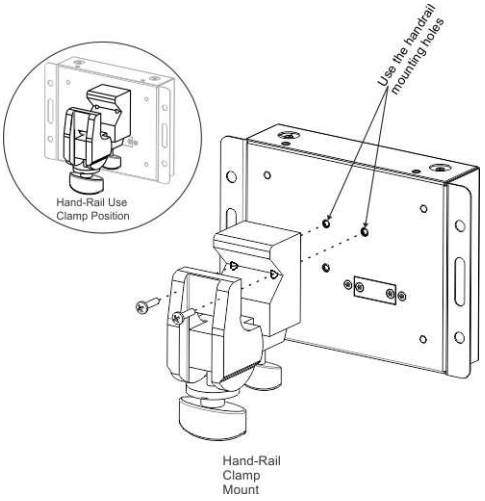



4. Once in position, use the **adjustment knobs** to tighten the clamp around the pole.

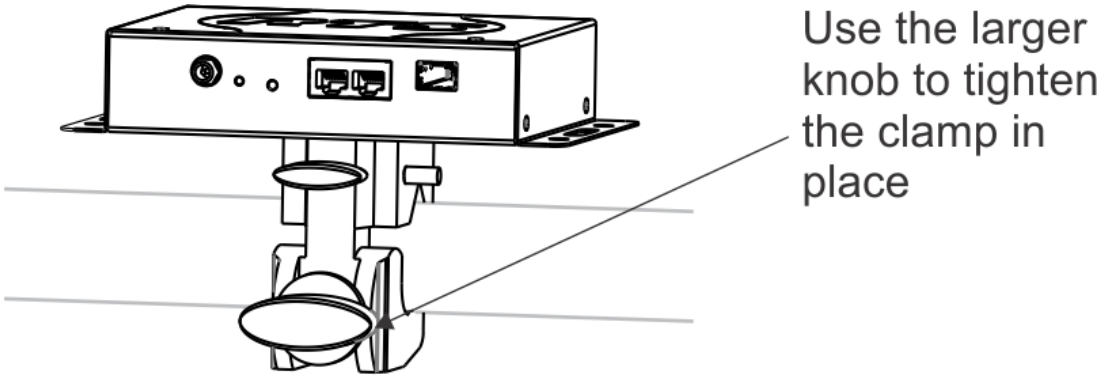
### 5.1.4.3 Rail mounting

To **rail mount the ROAMEO AP-1800 access point**, do the following:

1. Align the **mounting clamp** in the rail use position on the bottom of the AP-1800.
2. Use the supplied screws from the clamp kit, to attach the **mounting clamp** to the AP-1800.




3. Fit the **mounting clamp** around the rail.
4. Once in position, use the **larger adjustment knob** to tighten the clamp around the pole.



#### 5.1.4.4 Free-standing installation

Setting the AP-1800 unit on a table or shelf is commonly referred to as a free-standing installation. When you install the AP-1800 as free-standing, position the antenna perpendicular to the unit (antenna in the air) for the best signal reception.

### 5.1.5 AP-1800 mounting surfaces

You can mount the ROAMEO AP-1800 Access Point on many different surfaces. Using the following table, determine the proper mounting surface and mounting materials needed.

| Mounting Surface | Materials Used | Qty |
|---|---|---|
| Drywall | Drywall screws | 4 |
| | Drywall anchors (as needed) | 4 |
| | ¼-inch (max.) Flat washer (as needed) | 4 |
| Concrete | ¼-inch (max.) Concrete screws | 4 |
| | Concrete anchors (as needed) | 4 |
| | ¼-inch (max.) Flat washer (as needed) | 4 |
| Wood | ¼-inch (max.) Wood screws | 4 |
| | ¼-inch (max.) Flat washer (as needed) | 4 |
| Metal Surface | ¼-inch (max) Sheet metal screws | 4 |
| | ¼-inch (max.) Flat washer (as needed)<br>OR<br>¼-inch (max) Self-tapping or Self-drilling sheet metal screws<br>OR<br>¼-inch (max) Machine screw | 4 |
| | Machine nut or drilled and tapped holes | |
| | ¼-inch (max) Flat washer (as needed) | 4 |
| Rack Frame | 10-32 Rackmount screws | 2 to 4 |
| | ¼-inch (max) Flat washer (as needed)<br>OR<br>10-32 Truss Head Rackmount Screws | 2 to 4 |
| Building Structure Member (roof trusses, etc) | ¼-inch (max) U-bolts | 4 |
| | ¼-inch (max) Flat washers | 4 |
| | ¼-inch (max) Machine nuts | 4 |
| | OR see metal surface (above) | |

**Table 5.2:** Mounting Surfaces and Materials

## 5.2 Power over Ethernet

The access point is tolerant of PoE (Power over Ethernet) voltages on the Ethernet network, but cannot be powered by PoE directly without an add-on accessory kit (see *Accessories and replacement parts, page 113*). The add-on accessory kit can be used when combined with an existing PoE (802.3af), PoE+ (802.3at), or PoE++ (IEEE 802.3bt) managed Ethernet switch to provide power to the access point from the Ethernet network. This regulated Ethernet PoE splitter, due to the power consumption of the access points, can power only one access point.

**PoE Splitter Recommendation**
**Output Power**: Regulated 12VAC @ 1Amp
**Power Cable**: Most splitters have a 2.1 by 5.5mm terminated cable, however, for the AP-1800 input a long barrel 2.5x5.5mm connector with the length of 13.8mm is required
**PoE Type**: PoE (IEEE 802.3af),PoE+ (IEEE 802.3at), and/or PoE++ (IEEE 802.3bt)
**Ethernet Port**: 1000Mbps Auto-Negotiating type

## 5.3 Power up the AP-1800 access point

To **connect and configure the access point to the matrix**, do the following:

1. Using an Ethernet cable or an optical fiber cable, connect the **access point to the Matrix** via a network switch.
   Either Ethernet port can be used.


**Notice!**
To use the fiber option on the AP-1800, you must have the optional SFP fiber module installed. For ordering information, see *Accessories and replacement parts, page 113*.

2. Connect **one end of the power supply to the AP-1800 and the other end to the wall outlet**.
   The AP-1800 powers on.

**NOTE**: The connection to the access point should be screwed on tight for a locked connection.


## 5.4 Connect the access point to the intercom

### 5.4.1 Configure the OMI using AZedit

To **configure the OMI to the Access Point using AZedit**, do the following:

1. From the Status menu in AZedit, select **I/O Cards**.
   The I/O Card Status window appears showing a list of installed cards.
2. Right-click the **OMI card** to configure to the AP-1800.
   A pop-up menu appears.
3. From the pop-up menu, select **OMNEO Configuration**.
   The OMNEO Configuration window appears.
4. From the OMNEO card drop down menu, select the **slot number** where the OMI card is located in the frame.
   The device Name field auto-populates with the name of the device.
5. From the Local Channel drop down menu, select the **channel** to use to communicate to the AP-1800 across the network.

**Notice!**
Channels not already configured to connect to another device appear with an asterisk (*) next to them.

6. In the Partner Device Name field, enter the **name** of the AP-1800 to communicate with or select the Browse icon to select from a list of devices.
   OR
   In the Partner IP Address field, enter the **IP Address** of the device to make a connection.
   This field auto-populates when the Device Name is selected.
7. From the Partner Device Type drop down menu, select the **type of device** to which the OMI card is connecting.

8. From the Partner Channel drop down menu, select the **channel** on the device to which the OMI communicates.
9. When finished, click **Apply**.
   Apply sends all the changes to all the cards in the intercoms or click Cancel to discard all the changes made.

### 5.4.2 Add the OMI to the device catalog in IPedit

To **add the OMI to IPedit**, do the following:

1. Open **IPedit**.
2. From the Device menu, select **Add**.
   The Add Devices Window appears.
3. Select the **OMI card**.
   The Add button becomes active.
4. Click **Add**.
   The OMI card appears in the device catalog in the left panel.
5. Click **Done**.
   The Add Devices window closes.

### 5.4.3 Configure OMI using IPedit

To **configure the OMI using IPedit**, do the following:

1. In the Device Name field, enter the **device name**.
   Initially, OMI cards are given a default name.

**Notice!**
Changing the device name causes the device to reboot. It is not necessary to change the device name. However, if changed, it is best to do this early in the setup so revisiting other devices that connect to this device and updating them later is not necessary.

2. In the Description field, enter a **description** for the OMI card, if desired.
   Using the Channel Configuration and Status Pane
3. In the Channel Description field, enter a **channel description**, if applicable.
4. From the Destination Type drop down menu, select **OAP-5** or **OAP-10**.

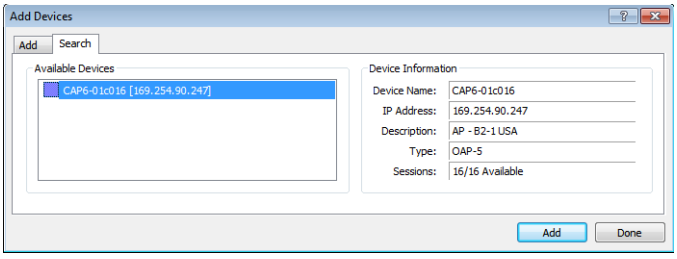
**Notice!**
The Destination Type does not need to be selected if using the Browse window to select the device. It fills the Type and IP Address automatically. The type is either OAP-5 (OMNEO Access Point - 5 Channel) or OAP-10 (OMNEO Access Point - 10 Channel) depending on the CODEC configured on the device.

5. In the Destination Device Name field, enter the **name of the device** to which the channel will connect.
   OR
   Click the **...** button.
   The Discovered Devices Window appears.
   - Expand the **tree** to view the destination devices available.
   - From the expanded tree, select the **destination device**.
   - Click **OK**.
6. From the Destination Channel drop down menu, select the **channel** to which the OMI will connect.
7. Send the **changes** to the OMI.

### 5.4.4 Add the AP-1800 to IPedit

To **add the AP-1800 to IPedit**, do the following:

1. Start **IPedit**.
2. From the Devices menu, select **Add**.
   The Add Devices window appears.



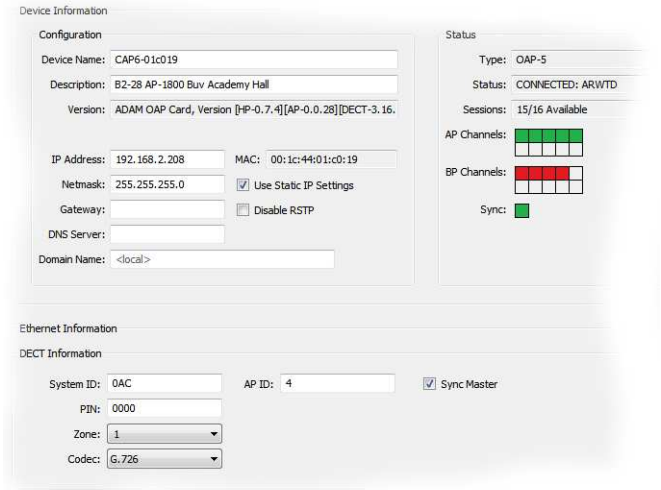

3. From the Available Devices pane, select the **Access Point**.
   The Add button becomes active.
4. Click **Add**.
   The AP-1800 appears in the device catalog in the left panel.
5. Click **Done**.
   The Add Devices window closes. The AP-1800 appears in the Device Catalog.

### 5.4.5 Configure the AP-1800 in IPedit

To **configure the Access Point with IPedit**, do the following:

**Notice!**
The user must sign in to IPedit with network administrator rights to complete these instructions.

1. From the Device Catalog on the left, select the **AP-1800**.
   The Device Information pane populates.




2. Enter a **unique description** for the access point.
3. Verify the **version information** is correct.
4. Verify the **IP Address** is correct, if using a Static IP Address.
5. (Optional) Select the **Disable RSTP check box** to disable the RSTP protocol.
6. Enter the **system ID** for the access point. This field accepts a 3-digit hexadecimal number.
   B2B is the default setting.

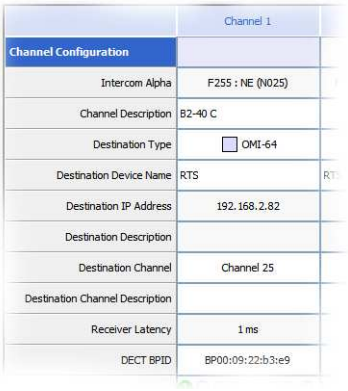
**Notice!**
All access points in a system must have the same System ID.

7. Enter the **unique AP ID** for the access point. The range for this field is 1-254.
8. Select the **Primary DECT Sync check box** if the access point is the master for the entire system.

**Notice!**
There can be only one active DECT sync master in each system at a time.

9. Enter the **PIN** of the access point.
   0000 is the default setting.
10. Select the **zone** the access point is assigned.
    Zone 0 is the default setting.
11. Select the **CODEC** the access point is running.

**Notice!**
The CODEC of the access point MUST be all G.722 (wideband), G.722-EX (wideband), G.726 (narrowband), or G.726-EX (narrowband). No codec mixing allowed.




12. Select the **channel** to configure (for example, Channel 1, etc).

**Notice!**
With CODEC G.722, five channels are available for configuration. With CODEC G.726, 10 channels are available for configuration.

**NOTE**: When setting up a multiple access point system, consider leaving one or two channels open for additional beltpacks and distribute the existing beltpacks equally among the access points.

13. Enter a **channel description**, if applicable.
14. Select the **OMI card** to which the channel is connected.
15. Enter the **name** of the OMI card to which the channel is connected.
    OR
    Click the **browse button**.
    The Discovered Devices window appears.

- Expand the **tree** to view the available destination devices.
- Select the **destination device**.
- Click **OK**.
  The Discovered Devices window closes.

16. Select the **destination channel** to which the channel is connected.
17. In the DECT BPID, enter the **beltpack ID** to assign to that channel.
    For information on obtaining the beltpack ID, see *Configure the TR-1800 to its home AP-1800, page 47*.
18. In the DECT Zone Selections field, enter the **zone** the beltpack is permitted to operate in (the default is zone one).
    OR
    From the DECT Zone drop down menu, select the **check box** next to each zone to assign to the beltpack.

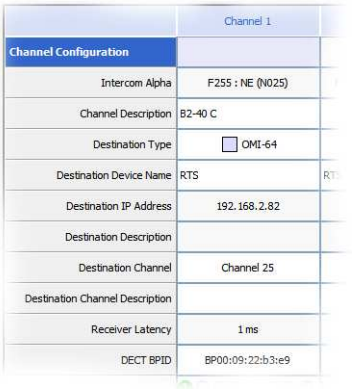
**Notice!**
At least one zone must be selected for the beltpack. Any combination of zones may be selected.

19. From the Changes menu, select **Send**.
20. From the File menu, click **Save**.

### 5.4.6 Configure the TR-1800 to its home AP-1800

To **assign a beltpack to an access point channel**, do the following:

1. From the Device Catalog in IPedit, select the **AP-1800**.
   The Channel Configuration populates.




2. Power up the **beltpack**.
   The BP ID displays on the front panel. This is a 10 digit, hexadecimal number in the format of: BP00:09:XX:XX:XX.
3. In the DECT BPID field, enter the **beltpack ID** to assign to that channel.
4. From the Changes menu, select **Send Changes**.
   The Send Changes window appears.
5. Click **OK**.
   The changes are sent to the access point. The AP stores the BPID even if power is disconnected.

## 5.5 First time operation - TR-1800

### 5.5.1 Battery charge

There are two ways to charge the battery for the TR-1800 beltpack:

– Quick charge charging via the CHG-1800 LI4 4-bay battery charger
– In-device charging

### 5.5.1.1 Quick charge

Charging the battery in the 4-bay quick charger requires about 2.5 hours to completely charge a fully discharged battery. Once charging is complete, you can leave the batteries on the charger indefinitely.

**4-Bay LED Charge Status Description**

In addition to the power light, the 4-bay charger has two LED indicator lights to notify of the charging status.

LED indicator definition

| | |
|---|---|
| Solid yellow | Charging in process |
| Flashing red | Fault detected |
| Flashing green | 95-99.9% charge |
| Solid green | Charge complete |

To **quick charge the batteries**, do the following:

1. Ensure the TR-1800 is **powered off** and remove the **battery**. See *Battery installation and removal, page 49*.
2. Plug the **4-bay battery charger into a standard AC wall outlet**.
3. Insert the **battery into one of the battery slots** on the charger.
   The LED in front of the battery slot indicates the charge status.

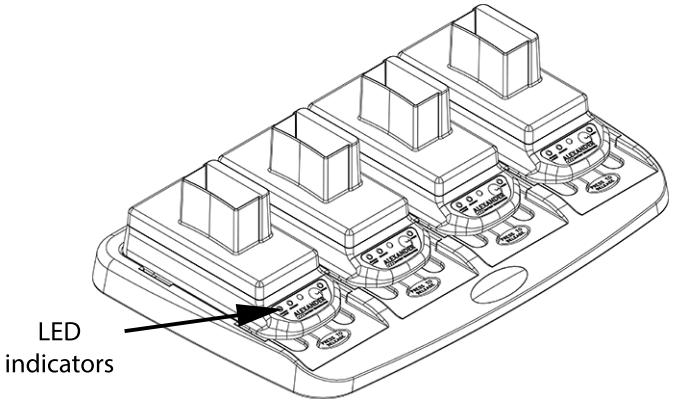



**Figure 5.1:** 4-Bay Charger

### 5.5.1.2 In-device charging

The TR-1800 is also capable of charging the battery while the battery is in the beltpack. It takes approximately eight hours to charge fully a completely discharged battery.

**Notice!**
The CH 4 talk button on the top of beltpack indicates the charge status.

The following charge status indicators include:

| | |
|---|---|
| Red | Charging in process |
| Green | Charging complete |

To **charge the battery in the beltpack**, do the following:

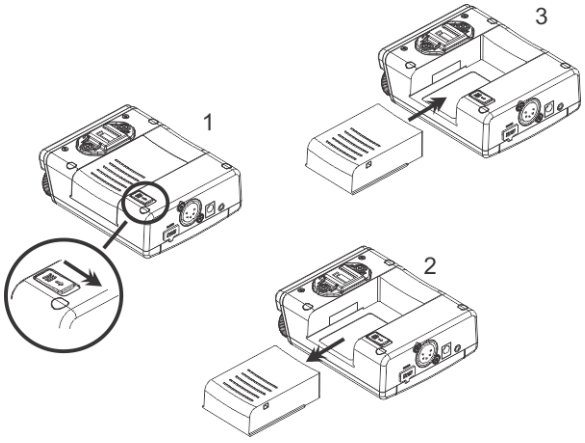
1. Power off the **beltpack**.
2. On the bottom of the beltpack, attach the **power cable** to the charge connector.
3. Plug the wall charger of the power cable into a **standard AC wall outlet**.

**Notice!**
Operation of the beltpack while charging the battery is not supported.

### 5.5.2 Battery installation and removal

To **install the battery in the beltpack**, do the following:

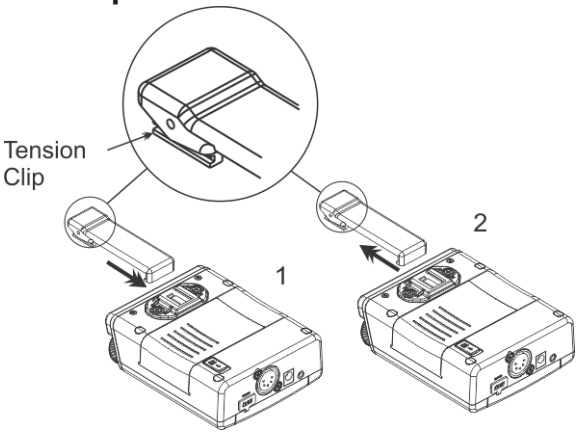
1. Align the **battery with the battery slot** on the beltpack.
2. Carefully slide the **battery** into the slot until it clicks in place (3).




To **remove the battery from the beltpack**, do the following:

1. Verify the **beltpack is powered off**.
2. Slide the **battery release button down** to release the battery pack (1).
3. Slide the **battery pack out of the beltpack** (2).

### 5.5.3 Belt clip installation and removal




To **install or remove the belt clip**, do the following:

- On the back panel of the TR-1800 beltpack, align and slide the **belt clip into the belt clip track** to install the belt clip (1).
  A click is felt/heard when the belt clip is securely in place.
  OR
  On the back panel of the TR-1800 beltpack, while lifting up on the tension clip, carefully **slide the belt clip out of the belt clip track** (2).

### 5.5.4 Subscribe the TR-1800 and connect to the AP-1800

**Notice!**
An access point must be configured using IPedit before a beltpack can be subscribed with a system.

To **subscribe the beltpack**, do the following:

1. Press the **power button** to turn the beltpack on.
   An unsubscribed beltpack powers up with the System Setup screen appears.

**Notice!**
A subscribed beltpack can access this setup screen through the beltpack menus. For more information, see *Subscribe the TR-1800 to the AP-1800, page 30*.


2. From the System Setup screen, press the **SELECT button**.
   The system ID screen appears.

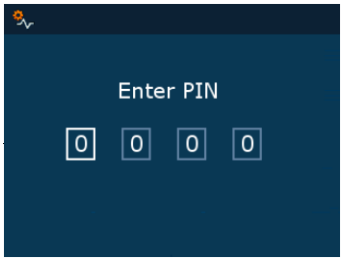

**Notice!**
If it becomes apparent that no access points can be found, the MENU key may be used to return to the System Setup screen to try again.

3. Using the UP and DOWN buttons, enter the **first digit of the System ID**.
4. Press the **SELECT button**.
   The focus moves to the next field in the system ID.

**Notice!**
The SELECT button advances the focus to the next field. The MENU button goes back one field.

5. Repeat **step 3** and **step 4** until the system ID is entered.
6. Press the **SELECT button**.
   The beltpack begins scanning for active access points with its RF coverage area. The search process can take several seconds. When an access point is found, the PIN entry screen displays.

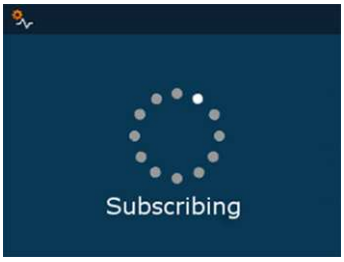
**Notice!**
The PIN number default is all zeroes.




7. Using the UP and DOWN buttons, change **the first PIN digit field**.

**Notice!**
The SELECT button advances the focus to the next field. The MENU button goes back one field.

8. Press the **SELECT button**.
   The focus moves to the next field.
9. Repeat **step 7** and **step 8** until the PIN is entered.
   After entering the four digit PIN, press the SELECT button. The beltpack/access point subscription process begins. This process can last several seconds.
   – If the subscription is successful, the beltpack displays the main operating screen.
   – If the subscription is unsuccessful, an appropriate error message is displayed.




**Notice!**
Once a beltpack is subscribed it requests a startup packet from the digital matrix. Beltpack subscription is only required for new beltpacks, or when making changes to the intercom system. A subscribed beltpack can be turned off and on, its battery changed, etc. without re-subscribing.

On power-up, a subscribed beltpack displays a splash screen, and then switches to the main operating screen. It may take several minutes (depending on the size of the system) to download the start-up packets from the digital matrix. Once downloaded, the talk/listen icons on the screen are populated with key assignments.

# 6 Basic operation

## 6.1 Intercom keys and displays

**Key Assignment Types and Descriptions**

| | |
|---|---|
| PP | Point to point (call from one port to another) |
| PL | Party Line (talk/listen to a party line) |
| IFB | Interrupt Foldback (interrupt program input to talk to output |
| SL | Special List (call a group of panels) |
| RY | Relay (activate a relay) |
| ISO | Camera Isolate (private call) |
| UR | UPL Resource (trigger a UPL statement) |
| IFBSL | IFB Special List (call multiple IFBs) |
| GRP | Group Call (call a group of panels, collapse to private call) |
| AD | Auto Dial (dial a TIF) |

**Color Display Descriptions for Intercom Keys**

The TR-1800 front displays use key colors to distinguish the type of key assignment programmed for each key. Use the following table to help determine the available key colors.

| Default Color | | Description |
|---|---|---|
| | Bright green | Listen indicator |
| | Brown | IFB special list |
| | Teal | Point-to-point |
| | Dark yellow | ISO |
| | Light blue | Unassigned |
| | Pale yellow | Special functions |
| | Magenta | Relay |
| | Pink | Party line |

| Default Color | | Description |
|---|---|---|
| | Salmon | IFB, Talk indicator |
| | Pale green | Special list |
| | Periwinkle | UPL resource |

**Table 6.3:** Default Color Keys

## 6.2 Display icons

**Notice!**
There is an internal help menu in the main menu structure to help define the icons used on the beltpack.

| Icon | Icon Name | Description |
|---|---|---|
| Home Screen | | |
|  | Home screen | The Home Screen icon is a navigational marker indicating the home screen is displayed. |
|  | Battery gauge | The Battery Gauge icon indicates the amount of battery life left on the beltpack. This icon, along with the percentage of battery life, displays in the lower left corner of the beltpack display window. |
|  | Hot Mic | The Hot Mic icon indicates when the hot mic is enabled. When the hot mic is enable, audio from the mic goes out to the Matrix without regard to the talk key state. When active, the icon appears on the Home screen. When the hot mic is disabled, there is no icon shown. |
|  | DECT Connection | The DECT Connection icon indicates the beltpack has a DECT connection. This icon appears on the Home screen.<br>The inner DECT ring on the icon represents a DECT connection, while the outer DECT ring represents that 2-way communication is established between the beltpack and access point. The yellow dot on the right indicates the beltpack is transmitting packets, while the green dot on the left indicates the beltpack is receiving packets. |
|  | Matrix Connected | The Matrix Connected icon indicates the beltpack is connected to the matrix. |
|  | Function Lockout | The Function Lockout icon indicates when a lock is engaged on the functions of the beltpack. |

| Icon | Icon Name | Description |
|---|---|---|
|  | RF Signal | The RF Signal icon indicates the RF signal strength the beltpack is receiving. |
|  | Scroll List | The Scroll List icon indicates a scroll list is available. A scroll list displays a list of available users. |
|  | Scroll List Not Loaded | The Scroll List Not Loaded icon indicates there are no scroll lists loaded. |
|  | Page(s) | The Page icon indicates the page of assignments currently displays. There are four pages of assignments available for configuration on the beltpack. |
|  | Screen Flip | Use the Screen Flip icon to flip the orientation of the front display screen for easy viewing when you clip the beltpack to pants or a belt. Use the up and down arrow buttons to navigate to the flip screen icon in the page list. Select the page flip by pressing the Select button. **NOTE:** You can use the menu to change the orientation of the front display. |
|  | Menu Screen | Use the Menu Screen icon to enter the main menu. You can configure audio levels, microphone types, display brightness, alert notifications, and key assignments from this menu. You can access certain system setup functions, such as subscribing the beltpack to the system, setting the language of the beltpack, performing a site survey, viewing diagnostic information, and updating the beltpack firmware from this menu. |
| Menu Screen | | |
|  | Speaker Settings | Use the Speaker Settings menu to access configuration options for Aux Input Levels, Aux Override Levels, Volume Limits, Max Audio Volume Limits, and Headset Select. |
|  | Microphone | Use the Microphone menu to access configuration options for mic gain, sidetone adjustments, mic noise gate, and hot mic enable/disable. |
|  | Brightness | Use the Brightness menu to access configuration options for the different display brightness options for the top panel button LED intensity, Color LCD brightness, CWW LCD brightness, LCD timeout, tally light settings, flip screen, and master talk mode. |
|  | Audio Alerts | Use the Audio Alerts menu to access configuration options for the different audio alerts such as low battery, call waiting, DECT connection, matrix connection, audio alert level, dark mode boot, and key clicks. |

| Icon | Icon Name | Description |
|---|---|---|
|  | Key Assignments | Use the Key Assignments menu to create, edit, and delete key assignments for the beltpack. |
|  | System Setup | Use the System Setup menu to access the system function options for the beltpack. |
|  | Icon Help | Use the Icon Help menu to access a listing of the different definitions for the various icons used on the beltpack. |
|  | Scroll List | Use the Scroll List menu to access the different scroll lists available. Scroll lists make searching for particular key assignments easier by grouping the assignments by type. |
| Audio Setup | | |
|  | Aux Input Levels | Use the Aux Input Level menu to adjust the volume of the input audio heard in the headset. |
|  | Aux Override Level | Use the Aux Override Level menu to configure the amount to decrease the aux volume when another call is received. |
|  | Max Audio Volume Limit | Use the Max Audio Volume Limit menu to configure the maximum output volume allowed by the beltpack. |
|  | Headset Select | Use the Headset Select menu to select the headset connector being used with the beltpack. |
|  | Headset XLR | The Headset XLR icon indicates the headset is attached to the XLR connector on the backpack. |
|  | Headset on Aux | The Headset AUX icon indicates the headset is attached to the AUX connector on the beltpack. |
| Mic Setup | | |
|  | Mic Gain | Use the Mic Gain menu to set the amount of gain of the headset mic. |
|  | Sidetone Adjust | Use Sidetone Adjust to set the level of sidetone in the headset. |
|  | Mic Noise Gate | Use the Mic Noise Gate menu to set the microphone activation level. |
|  | Hot Mic | Use the Hot Mic menu to turn the hot mic function on or off. |
| Backlights and LEDs | | |
|  | LED Intensity | Use the Talk/Listen LED menu to configure the LED brightness of the talk and listen LEDs. |
|  | Front Display Brightness | Use the Front Display Brightness menu to set the brightness of the front display. |

| Icon | Icon Name | Description |
|---|---|---|
|  | Top Display Brightness | Use the Top Display Brightness menu to set the brightness of the top display. |
|  | LCD Timeout | Use the LCD Timeout menu to configure the LCD timeout on the beltpack. |
|  | Call Tally Talk | Turns the Call Tally Talk flashing LED off or on for an incoming key assigned call. |
|  | Screen Flip | Flip the orientation of the front display screen. This helps to see the display without having to take the beltpack off. |
|  | Master Talk | Enable one-touch talk activation. This option configures the push button function of the volume encoder knob to activate all talk function buttons. |
|  | Exclusive | Set Exclusive keys on the beltpack. |
|  | Dark | Enable the dim active of the beltpack talk/listen keys when in Dark Mode. |
| Audio Alerts | | |
|  | Low Battery Alert | Enable or display a tone alert heard when a low battery is detected. |
|  | Call Waiting Alert | Enable or disable a tone alert heard when a call is received in the call waiting window queue. |
|  | Matrix Connection Alert | Enable or disable a tone alert heard when there is no matrix connection present. |
|  | Audio Alert Volume | Set the audio level of the alerts tone. |
|  | No DECT Connection | Enable or disable a tone alert heard when this is no DECT connection present. |
|  | Dark Mode Boot Alert | Enable or disable a tone alert heard when the beltpack is finished booting and is ready to use or is about to shut off. |
|  | Key Click Alert | Enable or disable a tone alert heard when you press or tap the button. |
| Key Assignments | | |
|  | Assigned Alpha | Assign alphas to specific keys. |
|  | Listen Key Assigned | Icon appears when the key has a listen assignment. |
|  | Talk Key Assigned | Icon appears when the key has a talk assignment. |
|  | Alpha Page 1..4 | Displays the page number of the current page. There are four configurable pages for assignments. |

| Icon | Icon Name | Description |
|---|---|---|
| System Functions | | |
|  | System Setup | Subscribes the beltpack to the AP-1800. |
|  | Set Language | Sets the language the beltpack displays. |
|  | Site Survey | View site survey information. |
|  | Diagnostics | Displays the beltpack's configuration, such as RSSI strength, access point RF channel, time slot, access point IP address, the CODEC the beltpack is currently using, etc. |
|   | Software Update | Performs software updates on the beltpack. |
|   | Vers | Displays the current software version of the beltpack. |
|   | Test | Displays an option for running tests on the beltpack. |
|  | Access Point | Icon represents an access point seen in the diagnostics display screen. |
|  | Beltpack | Icon represents a beltpack seen in the diagnostics display screen. |
|  | Alpha | Selects the length of alpha allowed on the beltpack. Available options: 4-character, 4-character talk/listen 6-character, 8-character, and 8-character Unicode. |

**Table 6.4:** Icon descriptions

## 6.3 Operation of buttons with auto-functions

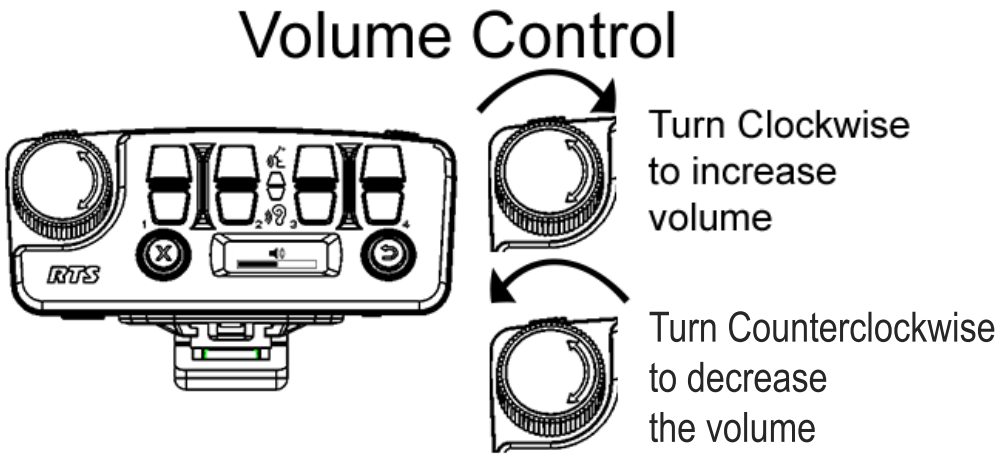
Operation of keys with auto functions is as follows:

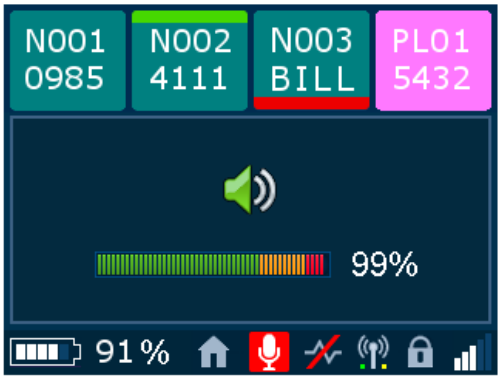
- **Talk+auto follow**. Talk and listen can be activated separately. The listen assignment listens to whatever is assigned to the talk key.
- **Talk+auto listen**. Both talk and listen activate when talk is activated.
- **Talk+auto mute**. Listen turns off when talk is activated.
- **Talk+auto reciprocal**. Listen is always on and talk may be turned on or off.
- **Talk+auto table**. If an IFB talk key has an auto table listen assignment, talk and listen are independently activated. The listen key listens to whatever is defined as the IFB Listen Source for the IFB assigned to the talk key.
- **All Call**. Activating this key activates all keys to the left of it, up to, but not including another All Call key.
- **Talk+DIM**. If a point-to-point key has the DIM function as a level 2 talk assignment, activating the key causes the crosspoint levels to diminish for any other intercom ports currently listening to the same destination and are in the same DIM tables.

## 6.4 Adjust the volume

To **adjust the volume on the beltpack**, do the following:

- On the top panel of the beltpack, turn the **volume dial clockwise** to increase the volume.
  OR
  Turn the **volume dial counter-clockwise** to decrease the volume.
  A progression bar appears in the front and top displays showing increases and decreases in volume.




## 6.5 Basic intercom key operation

### 6.5.1 Receive a call from an assigned alpha

When a call comes into the beltpack from a keypanel assignment that already has a key assigned on the beltpack, the front panel alpha starts flashing as well as the TALK LED button on the top panel that corresponds with the keypanel key in the front panel display.
To **answer a call from an assigned alpha**, do the following:

- On the top panel of the beltpack, tap the **flashing TALK LED** button.

**Notice!**
As soon as the TALK LED button starts flashing, audio is present, even though the corresponding TALK LED button has not been pressed.

### 6.5.2 Make a call to an assigned alpha

To **make a call**:

- On the top panel of the beltpack, tap the **TALK LED button** that corresponds with the keypanel assignment shown on the front panel display.
  A red talk bar appears on the talk assignment displayed in the front color display.

To **release a call**:

- On the top panel of the beltpack, tap the **TALK LED button** that corresponds with the alpha displayed in the front panel display.
  A red talk bar disappears from the talk assignment displayed in the front color display.

### 6.5.3 Receive a call from an unassigned alpha

Unassigned alphas are calls that have not been assigned a key on the beltpack. When a call comes to the beltpack from an unassigned alpha, the assignment displays in the call-waiting window and an audio chirp is heard in the headset. All unassigned calls and callers must use push-to-talk during the call.

For more information, see *Call waiting window, page 60*.

To **receive a call from a non-assigned alpha**, do the following:

- When a non-assigned alpha calls the beltpack, press and hold the **REPLY button** to answer.
  As long as the button is held, the audio is heard by the non-assigned caller.

**Notice!**
Audio is present as soon as the CWW displays the caller's alpha.

To **release a call from an unassigned alpha**, do the following:

- When finished, press the **CLEAR button** on the top panel of the beltpack.

### 6.5.4 Make an unassigned call from the beltpack

To **make a call to a unassigned alpha**:

1. From the Home screen, press the **MENU button**.
   The Main Menu appears in the beltpack display screen.
2. Use the arrow buttons to navigate to the **Scroll List icon**.


3. Press the **SELECT button**.
   A list of assignment types appear on the beltpack display screen.
4. Use the arrow buttons to scroll to the desired **assignment type**.
5. Press the **SELECT button**.
   A list of available assignments appear in the beltpack display screen.
6. Use the arrow buttons to scroll to the **assignment ID** desired.

7. Press the **SELECT button**.
   The alpha appears in the call waiting window display.
8. Press and hold the **REPLY button** to initiate the call.
   The call is made. The selected assignment ID appears in the call-waiting window.

**Notice!**
As long as the REPLY button is held, the audio is sent to the beltpack being called.

9. When finished, press the **CLEAR button** on the top panel of the beltpack.

## 6.6 Call waiting window

The **CWW** (Call Waiting Window) function is similar to traditional call waiting where the beltpack can receive and answer up to four calls.
The maximum number of calls stacked in the call-waiting queue is four.

**Notice!**
Only one call can be active at a time. To answer calls in the call-waiting queue, the active call must be released. Once the active call is released, the next call in the queue can begin.

When a call is received at a beltpack that is already engaged in a call, an audible chirp is heard and the alpha shown in the CWW window begins to blink. The alpha tally and audible chirp continue for 15 seconds and then stops. However, the call is still waiting to be answered. Once the first call is released, the second call is active and its alpha is seen in the CWW window.

**Unassigned caller calls, another unassigned caller calls**
When an unassigned call is received by the beltpack and a second unassigned call comes in:
– The alpha of the first call blinks in the CWW window and, if configured, an audible chirp is heard in the headset until the call is answered or until the first call is released and the second caller is engaged.

**Unassigned caller calls, an assigned caller calls**
When an unassigned call is received by the beltpack and a second assigned call comes in:
– The alpha of the first call blinks in the CWW window and, if configured, an audible chirp is heard in the headset until the call is answered or until the first call is released.
– Additionally, the red LED button associated with the assignment blinks, letting the beltpack user know an assigned call is waiting in the queue.

## 6.7 Scroll Lists

Scroll Lists are groups of alphas of the same assignment types. Scroll Lists are grouped by assignment types.
For more information on assignment types, see *Key assignments, page 82*.
To **access the scroll list**:
1. Press the **MENU button**.
   The Main Menu appears in the beltpack display screen.
2. Scroll to the **Scroll List icon**.

3. Press the **SELECT button**.
   A list of assignment types appear on the beltpack display screen.
4. Scroll to the **assignment type**.
5. Press the **SELECT button**.
   A list of available assignments appear in the beltpack display screen.

### 6.7.1 Scroll list shortcut

The **Scroll List** shortcut takes the user to the scroll list type select screen. This only activates if a scroll list is loaded into the beltpack.

To **access the scroll list via the HOME screen shortcut**:

- While on the HOME screen, press the **SELECT button**.
  The scroll list type selection screen appears.


## 6.8 Tally flash

A **Tally Flash** occurs when a call is received by an assigned user. The top panel talk LED button and the front display alpha start flashing. If the beltpack is set to the default, the tally flash lasts for 10 seconds before the tally times out.

For more information, see *Call tally talk, page 74*.

## 6.9 Latching vs momentary key operation

Latching is used to enable or disable the beltpack button to stay on when pressed. When Latching is enabled, the talk function stays on after the talk button is pressed. Momentary button operation works by pressing and holding the button to operate. Once the button is released, the button is no longer active.

To **latch a button on**, do the following:

- Tap the **button** to latch on.
  The button latches on.

To **unlatch a latched button**, do the following:

- Tap the **latched button** to unlatch.
  The button unlatches.

To **operate a button in momentary mode**, do the following:

1. Press and hold the **button** for at least 0.5 second.
2. Release the **button** to turn the key off.

## 6.10 Pages

**Use Setup Pages** to configure additional button assignments on the beltpack. The beltpack has four pages with four button assignments per page, giving a possible 16 assignments available. Pages provide the user the ability to quickly configure the alphas of the talk/listen buttons to another set of predefined alphas. Beltpack pages are defined by a user in the AZedit software and may be easily recalled by the beltpacks via the UP/DOWN and SELECT buttons from the home screen.

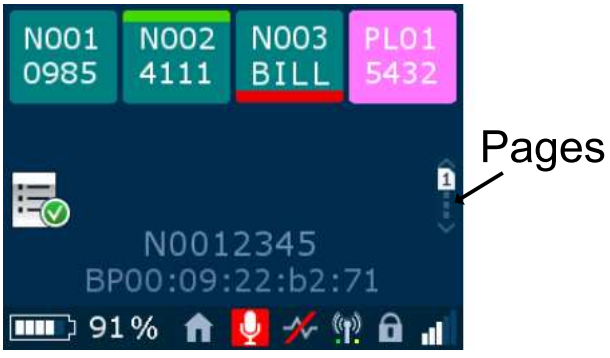
To **set up Pages in AZedit**:

**Notice!**
While editing Setup or Advanced settings, click **Apply** at any time to enter the changes.

1. In the Port field, enter the **port number**.
   OR
   From the Alpha drop down menu, select the **port name** (alpha).
2. Press **Enter**.
3. Select the **page** you want to configure.
4. Select **Setup Page 1**.
   The talk/listen fields on the Keypanel/Ports page become active.
5. Press the **OK button**.
   The Keypanel/Port Configuration window closes.
6. In the listen/talk field, define the **button assignments** for the page.
7. Repeat **steps 3 through 8** to populate pages 2 through 4, if desired.
8. When finished, click **Send Changes** to send the changes to the matrix.

To **access pages from the beltpack**:

1. Scroll to the **page** to be displayed.
   The page number flashes.
2. Press the **SELECT button**.
   The beltpack displays the alphas of the page selected.



**Assign a call assignment to a button on the beltpack**

**Notice!**
Changing pages is not possible if a top panel talk or listen button is active.

To **assign a call assignment to a button on the beltpack, do the following**:

1. On the beltpack, press the **MENU button**.
   The main menu appears.
2. Scroll to the **assignment icon**.
3. Press the **SELECT button**.
   The four button assignment columns appear.
4. Navigate to the **button column** to configure an assignment.
5. Press the **SELECT button**.
   A scroll list of assignment types appear.
6. Select the **assignment type** desired.
7. Press the **SELECT button**.
   The available alpha assignments appear.
8. Select the **alpha assignment** desired.
9. Press the **SELECT button**.
   The Auto-function screen appears.
10. Select the **auto-function** desired.
    For more information on auto-functions, see *Operation of buttons with auto-functions, page 57*.
11. Press the **SELECT button**.
    The button assignment is assigned and appears on the button in the front display screen.

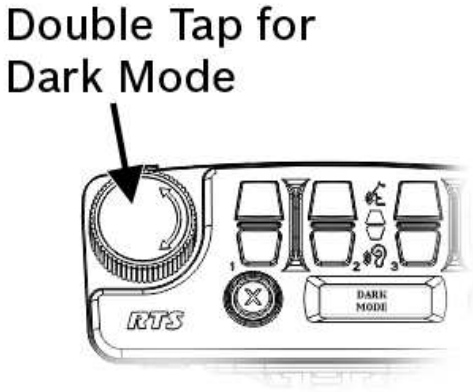
## 6.11 Dark mode

**Use Dark Mode** when you do not want light in the area. Putting the beltpack in Dark Mode, turns off the front and top displays as well as prevents the Talk/Listen LED buttons from lighting.

**Activate Dark Mode**

To **activate dark mode**:

- While pressing on the MENU button, double-tap the **Volume Control knob**.
  All lights on the beltpack turn off, and Dark Mode appears in the top display.




To **exit dark mode**:

- While pressing on the MENU button, double-tap the **Volume Control knob**.
  Dark Mode exits the top display, while the front display activates.

## 6.12 Lockout - Front

Use **Lockout Front** to disable the user from accessing the menu and setup areas of the beltpack. The user is still able to adjust the volume, activate the Talk/Listen buttons, use call waiting, flip the screen, and use dark mode.

To **lock the beltpack's front panel**, do the following:

- On the front of the beltpack, press and hold the **up and down buttons simultaneously** for three seconds.
  A lock icon with an F next to it appears on the bottom of the home screen; the beltpack is locked.

To **unlock the beltpack's front panel**, do the following:

- On the front of the beltpack, press and hold the **up and down buttons simultaneously** for three seconds.
  A lock icon disappears from the bottom of the home screen; the beltpack is unlocked.

## 6.13 Lockout - Top

Use **Lockout Top** to disable the user from changing the settings of the Talk/Listen buttons. The user is still able to adjust the volume, use call waiting, flip the screen, and use dark mode.

To **lock the beltpack's top panel**, do the following:

- On the front of the beltpack, press and hold the **Call Waiting and Clear buttons simultaneously** for three seconds.
  A lock icon with a T next to it appears on the bottom of the home screen and the beltpack is locked.

To **unlock the beltpack's top panel**, do the following:

- On the top of the beltpack, press and hold the **Call Waiting and Clear buttons simultaneously** for three seconds.
  The lock icon disappears from the bottom of the home screen and the beltpack is unlocked.

**Notice!**
To activate the top and front lockout of the beltpack, do the top and front lock/unlock sequences separately.

# 7 TR-1800 overview

## 7.1 System quick start

**Initial Beltpack Setup**

- Step 1 Charge the battery. See *Battery charge, page 47*.
- Step 2 Install the battery in the beltpack. See *Battery installation and removal, page 49*.
- Step 3 Set up the beltpack and the access point using IPedit and AZedit. See *Connect the access point to the intercom, page 43*.
- Step 4 Subscribe the beltpack. See *Subscribe the TR-1800 and connect to the AP-1800, page 50*.
- Step 5 Select the headset jack intended to use with the beltpack. See *Headset select, page 70*.

## 7.2 Button operation

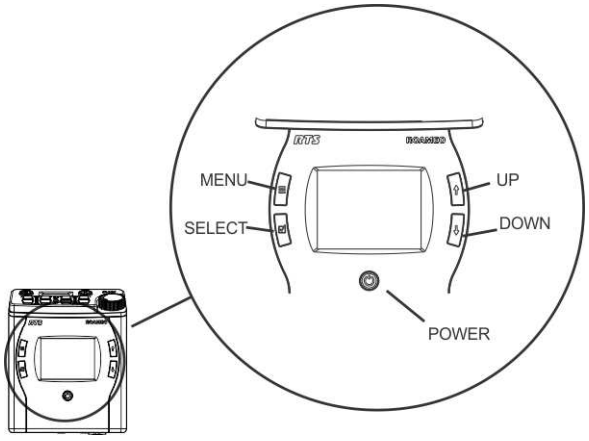



**Figure 7.1:** Front Controls

### 7.2.1 Power button

The **Power** button is used to turn the beltpack on and off.

**Power On the Beltpack**

On power up, the beltpack initiates a scan for an access point with a valid DECT system ID, a strong signal, a system where it has been subscribed, a valid zone and channel availability.

To **power on the beltpack**, do the following:

- Press the **power button** momentarily.
  The beltpack turns on. The talk/listen buttons on the top panel of the beltpack blink green and then blink red. The top and front displays light. The beltpack starts a scan for a valid DECT System ID, beltpack slots available, the strongest signal, and a valid zone for the beltpack to operate.

To **turn off the beltpack**, do the following:

- Press and hold the **power button** for two seconds.
  The beltpack turns off.

### 7.2.2 Menu button

The **Menu** button is used to open the main menu. It is also used to go back one spot in the menu structure.

**Notice!**
Press the **MENU button** from any menu to exit the menu structure and return to the home screen.

To **open the menu**, do the following:

- On the front of the keypanel, press the **MENU button**.
  The main menu appears.

### 7.2.3 Select Button

Use the **Select** button to select a menu option.
To **select a menu option**, do the following:

- Press the **SELECT button**.
  The item is selected and moves to the next menu options.

### 7.2.4 UP button

Use the **UP** button to navigate upwards in the menu structure, to increase the values of a menu item. For example, to increase the brightness of the CWW screen, go to the appropriate brightness menu item, and then using the up button, increase the brightness of the display.

### 7.2.5 Down button

The **DOWN** button is used to navigate downward in the menu structure. The DOWN button is also used to increase the values of a menu item. For example, to decrease the brightness of the CWW screen, go to the appropriate brightness menu item, and then using the down button, decrease the brightness of the display.

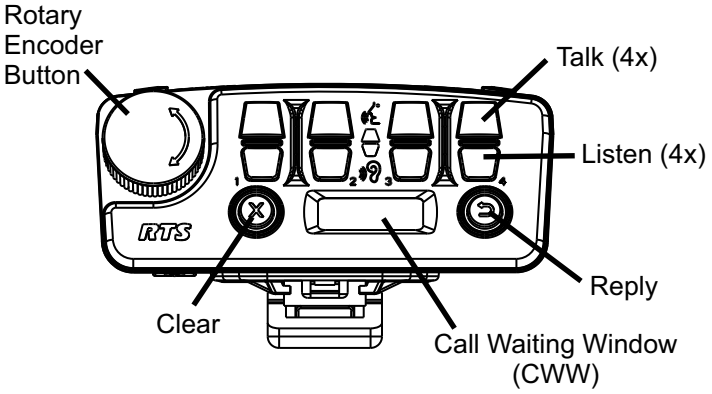



**Figure 7.2:** Top Controls

### 7.2.6 Call waiting reply button

The **Call Waiting Reply** button is used to answer a call waiting call. The replay button only operates in non-latching mode.
To **use the call waiting reply button**, do the following:

1. Press and hold the **Call Waiting Reply button** momentarily to turn the button on.
2. Release the **Call Waiting Reply button** again to turn it off.

### 7.2.7 Call waiting clear button

The **Clear** button is used to release a call in the call waiting window that is finished. Four calls can be stacked in call waiting. Once one call is cleared, the next call appears.

To **clear a call from the call waiting window**, do the following:

- Press the **CLEAR button**.
  The call disappears from the call waiting window.

### 7.2.8 Talk button

The **TALK** buttons are used to enable audio paths from the headset microphone. The talk light activates when the talk button is active.

To **talk to a caller**, do the following:

- Press the **TALK button** momentarily to latch the listen function on or off.
  OR
  Press and hold the **TALK button** for 0.5 seconds to turn the talk function on, and then release the button to turn the talk function off.

### 7.2.9 Listen button

The **LISTEN** buttons are used to listen to callers as well as to adjust the individual channel volume.

To **listen to a caller**, do the following:

- Press the **LISTEN button** momentarily to latch the listen function on or off.
  OR
  Press and hold the **LISTEN button** for 0.5 seconds to turn the listen function on, and then release the button to turn the listen function off.

To **adjust the individual channel volume**, do the following:

1. Press and hold the **LISTEN button** to adjust the channel volume.
2. Turn the **rotary encoder** to increase or decrease the volume.
   Turning the encoder clockwise increases the volume, while turning the encoder counterclockwise decreases the volume. The front panel and top panel displays show a progression bar showing the increase or decrease in channel volume.

### 7.2.10 Rotary encoder button

Use the **Rotary Encoder** button to:

– When rotated, it either increases or decreases the headset volume.
– When tapped once and Master Talk Switch is enabled, all talk keys that are latched on become active.
– When the MENU button is held and the encoder is tapped twice, the beltpack goes into or comes out of dark mode.

## 7.3 Menu structure - main menu access

The **Main Menu** is the topmost level of the menu structure.

Available menu items are:

– Speaker Settings
– Mic Menu
– Brightness
– Alerts
– Key Assignments
– System Menu
– Help
– Scroll List

To **access the main menu display**, do the following:

1. On the front of the beltpack, press the **MENU button**.
   The MENU icons appear in the beltpack display screen.


2. Using the **UP and DOWN buttons**, navigate through the menu options.
3. Press the **SELECT button** to select a menu.
   The subMENU icons appear in the beltpack display screen.

### 7.3.1 Speaker settings

Use the **Speaker Settings** menu to configure the headset being used with the beltpack. From this menu, the Aux Input level, the Aux diminish level, Maximum Volume, and the headset type can be configured.


Available menu items are:

- Aux Input
- Aux Diminish
- Volume Max
- Headset Select

#### 7.3.1.1 Aux input

Use the **Aux Input** to adjust input volume. This adjusts the audio input from the 3.5mm jack on the beltpack.


**Figure 7.3:** Aux Input icon

Input volume ranges from 0% to 100%.

By default, this field is set to 50%.

To **configure the Aux Input**, do the following:

1. Select the **Speaker icon**.

2. Press the **SELECT button**.
   The speaker setting options appear in the beltpack display screen.
3. Select the **AUX Input icon**.
4. Press the **SELECT button**.
   The Aux Input slider bar becomes active in the beltpack display screen.
5. Adjust the **Aux Input**, as necessary.
1. Press the **SELECT button** to save the modification.
2. Press and hold the **MENU button** to exit the menu.

#### 7.3.1.2 Aux dim

Use the **AUX DIM** menu to adjust the level of diminished or reduced volume of the aux input level when a top panel Talk/Listen button is engaged or when a call comes in on call waiting.


**Figure 7.4:** Aux DIM icon

AUX DIM volume ranges from 0% to 100%.

By default this field is set to 10%.

To **configure the AUX DIM**, do the following:

1. Select the **Speaker icon**.
2. Press the **SELECT button**.
   The speaker setting options appear in the beltpack display screen.
3. Select the **AUX DIM icon**.
4. Press the **SELECT button**.
   The Aux DIM slider bar becomes active in the beltpack display screen.
5. Adjust the **Aux DIM**, as necessary.
6. Press the **SELECT button** to save the modification.
7. Press and hold the **MENU button** to exit the menu.

#### 7.3.1.3 Volume limit

Use the **Volume Limit** menu item to reduce the maximum volume the headphone out amplifier can provide.


**Figure 7.5:** Volume Limit icon

Full output is 100%.

Limit volume ranges from 0% to 100%.

By default, this field is set to 100%.

To **set the max volume allowed**, do the following:

1. Select the **Speaker icon**.
2. Press the **SELECT button**.
   The speaker setting options appear in the beltpack display screen.
3. Select the **Volume Limit icon**.
4. Press the **SELECT button**.
   The Max Volume slider bar becomes active in the beltpack display screen.
5. Adjust the **Volume limit**, as necessary.
6. Press the **SELECT button** to save the modification.
7. Press and hold the **MENU button** to exit the menu.

#### 7.3.1.4 Headset select

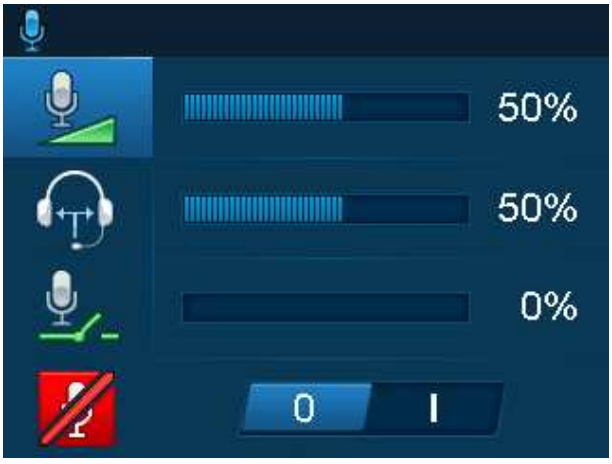
Use the **Headset Select** menu to select between a 5-pin XLR connector headset or a 3.5mm connector headset.

**Figure 7.6:** Headset Select icon

To **select the headset connector**, do the following:

1. Select the **Speaker icon**.
2. Press the **SELECT button**.
   The speaker setting options appear in the beltpack display screen.
3. Select the **Headset Select icon**.
4. Press the **SELECT button**.
   The XLR headset connector icon and 3.5mm headset connector icon become active in the beltpack display screen.
5. Select the **XLR connector icon** or the **3.5mm connector icon**.
6. Press **SELECT**.
   The selection is made.
7. Press and hold the **MENU button** to exit the menu.

### 7.3.2 Mic menu




Available menu items are:

- Mic Gain
- Sidetone
- Mic Noise Gate
- Hot Mic

#### 7.3.2.1 Mic gain

Use the **Mic Gain** menu to adjust the amount of gain from the headset mic.

**Figure 7.7:** Mic Gain icon

Mic Gain ranges from 0% to 100%.

By default, this field is set to 30%.

To **set the mic gain**, do the following:

1. Select the **Mic icon**.
2. Press the **SELECT button**.
   The mic setting options appear in the beltpack display screen.
3. Select the **Mic Settings icon**.

4. Press the **SELECT button**.
   The Mic Gain adjustment slider bar becomes active in the beltpack display screen.
5. Adjust **mic gain**, as needed.
6. Press the **SELECT button** to save the modification.
7. Press and hold the **MENU button** to exit the menu.

#### 7.3.2.2 Sidetone

Use the **Sidetone** menu to adjust the level at which the user hears their own voice in the headset. Most people prefer some amount of sidetone to overcome the muffled sensation when talking, especially when wearing a dual-sided headset.

**Figure 7.8:** Sidetone icon

The sidetone ranges from 0% to 100%.
By default this field is set to 50%.
To **configure the sidetone**, do the following:

1. Select the **Mic icon**.
2. Press the **SELECT button**.
   The mic setting options appear in the beltpack display screen.
3. Select the **Sidetone icon**.
4. Press the **SELECT button**.
   The Sidetone adjustment slider bar becomes active.
5. Adjust **sidetone**, as needed.
6. Press the **SELECT button** to save the modification.
7. Press and hold the **MENU button** to exit the menu.

#### 7.3.2.3 Mic noise gate

Use the **Mic Noise Gate** menu to enable or disable the audio level at which the mic turns on. When noise gate is active, the user can set a threshold the audio input to the microphone must be above before the microphone audio gate is activated to pass audio; when noise gate is disabled, set to 0%, the microphone is always on.

**Figure 7.9:** Mic Noise Gate icon

Mic Noise Gate ranges from 0% to 100%.
By default, this field is set to 14%.
To **set the noise gate**, do the following:

1. Select the **Mic icon**.
2. Press the **SELECT button**.
   The mic setting options appear in the beltpack display screen.
3. Select the **Noise Gate icon**.
4. Press the **SELECT button**.
   The Noise Gate adjustment slider bar becomes active.
5. Adjust the **noise gate level**, as needed.
6. Press the **SELECT button** to save the modification.
7. Press and hold the **MENU button** to exit the menu.

### 7.3.2.4 Hot mic

Use the **Hot Mic** menu to select between a normal operating mic and a hot mic. In Normal mode, audio from the active mic goes out to the Matrix when any talk button is active. In the Hot Mic mode, audio from the mic goes out to the Matrix without regard to the talk key state.

**Figure 7.10:** Hot Mic icon

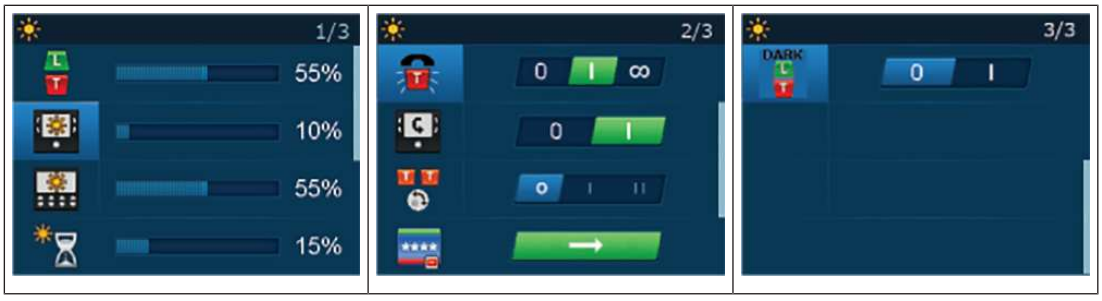
| | | |
|---|---|---|
| Hot Mic Enabled |  |  |
| Hot Mic Disabled |  |  |

To **enable/disable hot mic**, do the following:

1. Select the **Mic icon**.
2. Press the **SELECT button**.
   The mic setting options appear in the beltpack display screen.
3. Select the **Hot Mic icon**.
4. Press the **SELECT button**.
   The Hot Mic enable/disable switch becomes active.
5. Enable **Hot Mic**.
   The microphone appears on the main screen.
   OR
   Disable the **Hot Mic**.
   The microphone with a red line through it appears on the main screen.
6. Press the **SELECT button** to save the modification.
7. Press and hold the **MENU button** to exit the menu.

### 7.3.3 Brightness

Use the **Brightness** menu to set the brightness of the talk/listen keys, the front and top displays, LCD timeout, and enable or disable call tallies, screen flip, master switches, exclusive keys, and dark mode.




Available menu items:

- Talk/Listen LED
- Front display brightness
- Top display brightness
- LCD timeout
- Call tally talk
- Screen flip
- Master talk switch
- Exclusive key

– Dark mode dim switch

#### 7.3.3.1 Talk/listen LED

Use the **Talk/Listen LED** menu to adjust the brightness of the Talk/Listen buttons on the beltpack.

**Figure 7.11:** Talk/Listen LED Brightness icon

Brightness ranges from 0% to 100%.

By default, Talk/Listen LED brightness is set at 20%.

To **configure the LED brightness**, do the following:

1. Select the **Brightness icon**.
2. Press the **SELECT button**.
   The brightness setting options appear in the beltpack display screen.
3. Select the **LED brightness icon**.
4. Press the **SELECT button**.
   The brightness adjustment slider becomes active.
5. Adjust the **LED brightness**, as needed.
6. Press the **SELECT button** to save the modification.
7. Press and hold the **MENU button** to exit the menu.

#### 7.3.3.2 Front display brightness

The **Front Display Brightness** menu is used to adjust the brightness of the front display on the TR-1800 ROAMEO beltpack.

**Figure 7.12:** Front Display Brightness icon

Brightness ranges from 0% to 100%.

By default, Front Display brightness is set at 20%.

To **configure the front display brightness**, do the following:

1. Select the **Brightness icon**.
2. Press the **SELECT button**.
   The brightness setting options appear in the beltpack display screen.
3. Select the **Front Display icon**.
4. Press the **SELECT button**.
   The brightness adjustment slider becomes active.
5. Adjust the **front display brightness**, as needed.
6. Press the **SELECT button** to save the modification.
7. Press and hold the **MENU button** to exit the menu.

#### 7.3.3.3 Top display brightness

The **Top Display Brightness** menu is used to adjust the brightness of the top display on the TR-1800 ROAMEO beltpack.

**Figure 7.13:** Top Display Brightness icon

Brightness ranges from 0% to 100%.

By default, the Top Display brightness is set at 20%.

To **configure the top display brightness**, do the following:

1. Select the **Brightness icon**.
2. Press the **SELECT button**.
   The brightness setting options appear in the beltpack display screen.

3. Select the **Top Display Brightness icon**.
4. Press the **SELECT button**.
   The brightness adjustment slider becomes active.
5. Adjust the **Top Display Brightness**, as needed.
6. Press the **SELECT button** to save the modification.
7. Press and hold the **MENU button** to exit the menu.

### 7.3.3.4 LCD timeout

The **LCD Timeout** menu is used to set the amount of time, in seconds, the color front display is active before the screen goes blank.

**Figure 7.14:** LCD Timeout icon

The range for this field is 5 s - 180 s, and Inf. (infinite)

The default for this field is 30 s.

To **set the LCD Timeout**, do the following:

1. Select the **Brightness icon**.
2. Press the **SELECT button**.
   The brightness setting options appear in the beltpack display screen.
3. Select the **LCD Timeout icon**.
4. Press the **SELECT button**.
   The LCD timeout adjustment slider becomes active.
5. Adjust the **LCD timeout**, as needed.
6. Press the **SELECT button** to save the modification.
7. Press and hold the **MENU button** to exit the menu.

### 7.3.3.5 Call tally talk

The **Call Tally Talk** is used to indicate incoming calls with blinking key buttons and alpha assignments.

**Figure 7.15:** Call Tally Flash icon

Available options for this menu item are:

- **Off**
- **On** (default) - If On is selected, when a caller activates a call, a tally appears for 10 seconds on the receiving beltpack. If the call is answered before the minimum duration is met, the tally is cancelled.
- **Indefinite** - If indefinite is selected and a caller activates a call, the tally continues until the caller releases the key or the call is answered.

To **enable/disable call tally talk**, do the following:

1. Select the **Brightness icon**.
2. Press the **SELECT button**.
   The brightness setting options appear in the beltpack display screen.
3. Select the **Call Tally Talk icon**.
4. Press the **SELECT button**.
   The call tally talk enable/disable 2-position indicator becomes active.
5. Enable **call tally talk**.
   The 2-position indicator turns green.
   OR
   Disable **call tally talk**.
   The 2-position indicator returns to the original disabled blue.

6. Press the **SELECT button** to save the modification.
7. Press and hold the **MENU button** to exit the menu.

### 7.3.3.6 Screen flip

The **Screen Flip** menu item is used to flip the front display orientation vertically to accommodate for wearing the beltpack on a belt. This means the beltpack does not need to be removed to read the display.

**Figure 7.16:** Screen Flip icon

There are two ways to set the screen flip:

– On the front of the beltpack in the page change list
– In the brightness menu

To **flip the display screen from the front display**, do the following:

1. Scroll through the **pages** to the arrow icon.
   The page scroll icon starts to blink.
2. Press the **SELECT button**.
   The screen orientation flips vertically.

To **flip the screen from the beltpack menu**, do the following:

1. Select the **Brightness icon**.
2. Press the **SELECT button**.
   The brightness setting options appear in the beltpack display screen.
3. Select the **screen flip icon**.
4. Press the **SELECT button**.
   The screen flip enable/disable 2-position indicator becomes active.
5. Enable the **flip screen**.
   The 2-position indicator turns green.
   OR
   Disable the **flip screen**.
   The 2-position indicator returns to the original disabled blue.
6. Press the **SELECT button** to save the modification.
7. Press and hold the **MENU button** to exit the menu.
   The front display screen’s orientation is flipped.

### 7.3.3.7 Master talk switch

Use the **Master Talk Switch** menu to enable the master talk switch feature. When the master talk switch (volume encoder push button) is enabled, latched talk keys go into a ready state waiting for the switch to be pressed. When pressed, the latched talk keys become active. Then, when the switch is released, the latched talk keys go back to the ready state.

**Figure 7.17:** Master Switch icon

When the master talk switch menu item is enabled, the volume encoder knob on the top of the beltpack acts as the master talk switch. This means once the master talk switch is enabled, any time the knob is pressed, any latched on talk key turns active.

**Notice!**
When the Master Talk Switch is active, Talk and Listen keys function normally. Tapping a talk key turns the key on or off, regardless of the master talk key status. This means no keys are locked in the on or off position. No keys are permanently associated with the Master Talk switch.

To **enable/disable the master talk switch**, do the following:
1. Select the **Brightness icon**.
2. Press the **SELECT button**.
   The brightness setting options appear in the beltpack display screen.
3. Select the **master talk switch icon**.
4. Press the **SELECT button**.
   The call waiting enable/disable indicator becomes active.
5. Enable the **master talk switch**.
   If you select the first indicator, the master talk LED turns green and the talk key turns on until the key is released (momentary operation).
   OR
   If you select the second indicator, the master talk LED turns green and the talk key stays on (latching operation).
   OR
   Disable the **master talk switch**.
   The 2-position indicator returns to the original disabled blue.
6. Press the **SELECT button** to save the modification.
7. Press and hold the **MENU button** to exit the menu.

To **use the master talk switch feature**, do the following:
1. Latch the **talk keys** on.
   The latched-on talk keys are in a ready state and the Talk LED turns amber.
2. Press and hold down or latch the **master talk switch**.
   Any latched on talk keys become active and the Talk LED turns red.
3. Release the **master talk switch**.
   Any latched talk keys go back to the ready state and the Talk LED returns to amber.

### 7.3.3.8 Exclusive key

Use the **Exclusive Key** menu to select a talk/listen key combination to set as exclusive. Exclusive allows the user to set up keys that cause any other exclusive keys to turn off when activated. When the exclusive option is deactivated, the other exclusive key turns off and does not turn back on.

**Figure 7.18:** Exclusive key icon

To **create an exclusive key assignment**, do the following:
1. Select the **Brightness icon**.
2. Press the **SELECT button**.
   The brightness setting options appear in the beltpack display screen.
3. Using the UP and DOWN arrow buttons, select the **Exclusive key icon**.
   Exclusive Keys Tap Key appears in the panel display.
4. Tap any **key** to assign the exclusive key option.
   The key displays a red talk bar and a minus icon.

To **remove an exclusive key assignment**, do the following:

1. Select the **Brightness icon**.
2. Press the **SELECT button**.
   The brightness setting options appear in the beltpack display screen.
3. Using the UP and DOWN arrow buttons, select the **Exclusive key icon**.
   Exclusive Keys Tap Key appears in the panel display.
4. Tap each **red key** to remove the exclusive key option.
   The selected keys return to the unassigned state (red talk bar and minus disappear).

### 7.3.3.9 Dark mode dim switch

Use the **Dark Mode Dim Switch** menu item to activate this feature. When the beltpack is in dark mode activating this feature dimly lights the talk/listen keys that are active when any key is tapped on the top panel of a beltpack. Tapping any key again makes the key active or turns it off, depending on the current state. After 5 seconds, the dimly lit keys turns off again

**Figure 7.19:** Dark Mode Dim Switch icon

| | |
|---|---|
| Enabled |  |
| Disabled |  |

To **enable/disable the dark mode dim switch**, do the following:

1. Select the **Brightness icon**.
2. Press the **SELECT button**.
   The brightness setting options appear in the beltpack display screen.
3. Use the UP and DOWN arrow buttons to select the **Dark mode dim switch icon**.
   Exclusive Keys Tap Key appears in the panel display.
4. Tap the **SELECT** key
5. Use the UP and DOWN arrow buttons to **enable or disable this feature**.
6. Press the **SELECT button** to save the modification.
7. Press and hold the **MENU button** to exit the menu.

## 7.3.4 Alerts

Use the **Alerts** menu to enable or disable an audible alert that signals the user when certain triggers occur. Some of these icons display on the Home screen.


**Figure 7.20:** Alerts Page 1

Page 1 available menu items:

- Low Battery
- Call Waiting
- DECT Connection
- Matrix Connection


**Figure 7.21:** Alerts Page 2

Page 2 available menu items

- Dark Mode
- Boot Alert
- Button Clicks

### 7.3.4.1 Low battery alert

The **Low Battery** alert is used to enable or disable an audio alert when the TR-1800 ROAMEO beltpack has a low battery. The beltpack signals the user with an audio alert.

**Figure 7.22:** Low Battery icon

The alert heard is three (3) short bursts of tone, then a short pause, and then an additional three (3) short bursts of tone.

The audio alert is heard at the following times:

- On power up, when the battery is at 10% battery life or lower.
- Alarm sounds every 10 minutes when the battery percentage is lower than 10%
- Alarm sounds every 5 minutes when the battery percentage is lower the 5%, but higher than 2.5%
- Alarm sounds every 1 minute when the battery percentage is lower than 2.5%

The default setting for the low battery alert is enabled.

| | |
|---|---|
| Enabled |  |
| Disabled |  |

To **enable/disable the low battery alert**, do the following:

1. Select the **Alerts icon**.
2. Press the **SELECT button**.
   The alerts menu options appear in the beltpack display screen.
3. Select the **low battery icon**.
4. Press the **SELECT button**.
   The low battery enable/disable 2-position indicator becomes active.

5. Enable the **low battery alert**.
   The 2-position indicator turns green.
   OR
   Disable the **low battery alert**.
   The 2-position indicator turns blue.
6. Press the **SELECT button** to save the modification.
7. Press and hold the **MENU button** to exit the menu.

### 7.3.4.2 Call waiting alert

Use the **Call Waiting** alert to enable or disable the audio alert the user hears when an incoming CWW call comes in. The audible alert is four short tone bursts.

**Figure 7.23:** Call Waiting Alert icon

The default setting for the call-waiting alert is enabled.

| | |
|---|---|
| Enabled |  |
| Disabled |  |

To **enable/disable the call waiting alert**, do the following:

1. Select the **Alerts icon**.
2. Press the **SELECT button**.
   The alerts menu options appear in the beltpack display screen.
3. Select the **call waiting icon**.
4. Press the **SELECT button**.
   The call waiting enable/disable 2-position indicator becomes active.
5. Enable the **call waiting alert**.
   The 2-position indicator turns green.
   OR
   Disable the **call waiting alert**.
   The 2-position indicator returns to the original disabled blue.
6. Press the **SELECT button** to save the modification.
7. Press and hold the **MENU button** to exit the menu.

### 7.3.4.3 DECT connection alert

Use the **DECT Connection** alert to enable or disable an audio alert when the TR-1800 ROAMEO beltpack is out of RF range or the beltpack is on and no RF signal is available.

**Figure 7.24:** DECT Connection Alert icon

The alert heard is a short tone, repeating every three (3) seconds until the beltpack comes into RF coverage.

The default setting for the DECT connection alert is enabled.

| | |
|---|---|
| Enabled |  |
| Disabled |  |

To **enable/disable the DECT connection alert**, do the following:

1. Select the **Alerts icon**.

2. Press the **SELECT button**.
   The alerts menu options appear in the beltpack display screen.
3. Select the **DECT connection icon**.
4. Press the **SELECT button**.
   The DECT connection enable/disable 2-position indicator becomes active.
5. Enable the **DECT connection alert**.
   The 2-position indicator turns green.
   OR
   Disable the **DECT connection alert**.
   The 2-position indicator returns to the original disabled blue.
6. Press the **SELECT button** to save the modification.
7. Press and hold the **MENU button** to exit the menu.

### 7.3.4.4 Matrix connection alert

Use the **Matrix Connection** alert to enable or disable an audio alert when the TR-1800 ROAMEO beltpack has lost its connection to the Matrix or on power up when the AP has not made a connection to the Matrix.

**Figure 7.25:** Matrix Connection Alert icon

The audible alert is a short, high-frequency tone followed immediately by a lower frequency tone, repeating every three seconds until the beltpack connection is restored with the matrix.

The default setting for the matrix connection alert is enabled.

| | |
|---|---|
| Enabled |  |
| Disabled |  |

To **enable/disable the matrix connection alert**, do the following:

1. Select the **Alerts icon**.
2. Press the **SELECT button**.
   The alerts menu options appear in the beltpack display screen.
3. Select the **matrix connection icon**.
4. Press the **SELECT button**.
   The matrix connection enable/disable 2-position indicator becomes active.
5. Enable the **matrix connection alert**.
   The 2-position indicator turns green.
   OR
   Disable the **matrix connection alert**.
   The 2-position indicator returns to the original disabled blue.
6. Press the **SELECT button** to save the modification.
7. Press and hold the **MENU button** to exit the menu.

### 7.3.4.5 Dark mode boot alert

Use the **Dark Mode Boot** alert to enable or disable an audio alert when the TR-1800 ROAMEO beltpack, that is in dark mode, finishes booting and is ready to use or is about to shut off. When in Dark Mode, the beltpack button LEDs, the front panel color screen, and the CWW backlight turn off, so the beltpack is not a distraction in dark venues (for example,

a theater production). Even though the CWW top panel backlight is not on, the display shows it is in Dark Mode. In minimal ambient light, this message is seen, however, it may be more difficult with no light.

**Figure 7.26:** Dark Mode Boot Alert icon

When enabled,

– A short low to high two-tone pitch signals the TR-1800 ROAMEO beltpack has finished booting.
– A short high to low two-tone pitch signals the TR-1800 ROAMEO beltpack has shut down.

The default setting for the dark mode boot alert is enabled.

| | |
|---|---|
| Enabled |  |
| Disabled |  |

To **enable/disable the dark mode boot alert**, do the following:

1. Select the **Alerts icon**.
2. Press the **SELECT button**.
   The alerts menu options appear in the beltpack display screen.
3. Select the **dark mode boot icon**.
4. Press the **SELECT button**.
   The dark mode boot enable/disable 2-position indicator becomes active.
5. Enable the **dark mode boot alert**.
   The 2-position indicator turns green.
   OR
   Disable the **dark mode boot alert**.
   The 2-position indicator returns to the original disabled blue.
6. Press the **SELECT button** to save the modification.
7. Press and hold the **MENU button** to exit the menu.

### 7.3.4.6 Key clicks alert

Use the **Key Clicks** alert to enable or disable an audio feedback when a button is pressed or tapped on the TR-1800 ROAMEO beltpack. An audible click is heard whenever the MENU, SET, UP, and DOWN buttons are pressed or tapped.

**Figure 7.27:** Key Clicks Alert icon

The default setting for the key clicks alert is enabled.

| | |
|---|---|
| Enabled |  |
| Disabled |  |

To **enable/disable the key clicks alert**, do the following:

1. Select the **Alerts icon**.
2. Press the **SELECT button**.
   The alerts menu options appear in the beltpack display screen.
3. Select the **key clicks icon**.
4. Press the **SELECT button**.
   The key clicks enable/disable 2-position indicator becomes active.

5. Enable the **key clicks alert**.
   The 2-position indicator turns green.
   OR
   Disable the **key clicks alert**.
   The 2-position indicator returns to the original disabled blue.
6. Press the **SELECT button** to save the modification.
7. Press and hold the **MENU button** to exit the menu.

#### 7.3.4.7 Alerts levels

The **Alert Levels** menu is used to set the volume of the alert chirps heard in the headset when an alarm is triggered.
The volume ranges from 0% to 100%.
By default, this field is set to 50%.


To **set the alert level**, do the following:

1. Select the **Alerts icon**.
2. Press the **SELECT button**.
   The alerts menu options appear in the beltpack display screen.
3. Select the **Alert Levels icon**.
4. Press the **SELECT button**.
   The Alert Levels adjustment slider becomes active.
5. Adjust the **alert levels**, as needed.
6. Once finished, press the **SELECT button** to save the modification.
7. Press and hold the **MENU button** to exit the menu.

## 7.4 Key assignments

Use the **Key Assignment** menu to set the beltpack button assignments locally, without using the AZedit software.

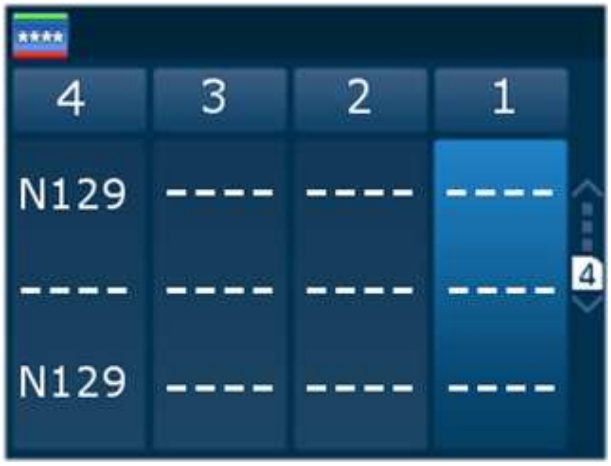



**Figure 7.28:** Key assignment screen

### 7.4.1 Assign a call assignment to a button on the beltpack

To **assign a call assignment to a button on the beltpack**, do the following:

1. On the beltpack, press the **MENU button**.
   The main menu appears.
2. Scroll to the **assignment icon**.

3. Press the **SELECT button**.
   The four button assignment columns appear.
4. Navigate to the **button column** to configure an assignment.
5. Press the **SELECT button**.
   A scroll list of assignment types appear.

**Notice!**
To clear an entry, select Clear Entry located at the bottom of the assignment type list.

6. Select the **assignment type** desired.
7. Press the **SELECT button**.
   The available alpha assignments appear. The assignment appears on the button in the front display screen
8. Select the **alpha assignment** desired.
9. Press the **SELECT button**.
   A list of talk/listen auto-functions appear. For more information, see *Intercom keys and displays, page 52*.
10. Select the **talk/listen option**.
11. Press the **SELECT button**.
    The new alpha settings of the four top panel buttons appear in the beltpack display screen.
12. Repeat **step 1 through step 11** to select alphas for the other locations or the Talk/Listen functions in the same location.

## 7.5 System

The **System** menu contains options to subscribe the beltpack, set language, site survey information, diagnostics information, update software, set the displayed alphas length, display software versions in the unit and a test menu used for manufacturing and service only.


**Figure 7.29:** System screen

### 7.5.1 System setup

Use the **System Setup** menu item to start the subscription process for a beltpack. This is done the first time the beltpack is brought up on a system, the CODEC of the system is changed, or the home access point of a beltpack is changed. For more information, see *Subscribe the TR-1800 and connect to the AP-1800, page 50*.

**Figure 7.30:** System Setup icon


**Figure 7.31:** System menu screen

## 7.5.2 Set language

Use the **Set Language** menu item to configure the language of the TR-1800 ROAMEO beltpack. There are ten different languages to available.

**Figure 7.32:** Set Language icon

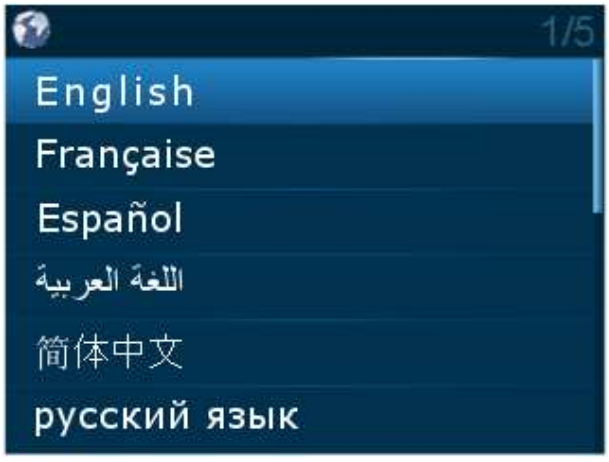



**Figure 7.33:** Available languages on the TR-1800

Available languages are:

- English
- French
- Spanish
- Arabic
- Mandarin
- Russian
- Portuguese
- German
- Italian
- Polish

To **change the display language on the beltpack**, do the following:

1. Select the **Settings icon**.

2. Press the **SELECT button**.
   The settings menu options appear in the beltpack display screen.
3. Select the **Set Language icon**.
4. Press the **SELECT button**.
   A scrollable list of available languages appears in the beltpack display screen.
5. Select the **language** desired.
6. Press the **SELECT button** to save the modification.
7. Press and hold the **MENU button** to exit the menu.

### 7.5.3 Site survey

Use the **Site Survey** menu item to display critical information pertaining to signal strength and packet transfer. For more information on how to perform a site survey, see *Site Survey, page 27*.
Additional advanced features are accessible from this screen. For more information, see *Site survey logging, page 130* and *Site survey roaming disable, page 130*.

**Figure 7.34:** Site Survey icon

To **open the site survey screen**, do the following:

1. Select the **Settings icon**.
2. Press the **SELECT button**.
   The settings menu options appear in the beltpack display screen.
3. Select the **Site Survey icon**.
4. Press the **SELECT button**.
   The Site Survey screen appears.


**Figure 7.35:** Site survey screen

**Carrier Field**

The **Carrier** field displays the RF Carrier the beltpack is currently using. European units and most countries around the world have 10 carriers available, while the US and Canada have five carriers available. For more information on frequency operation, see *Frequencies of operation, page 16*.

**Slot Field**

The **Slot** field displays the carrier slot the beltpack is assigned on the carrier. Each carrier has 24 slots available for transmitting packets. The first 12 slots are dedicated for access point to beltpack transmission while the second 12 slots are dedicated for beltpack to access point transmission. Narrowband configuration uses one slot for transmission and wideband uses two slots for transmission.

**AP ID Field**

The **AP ID** field displays the ID of the access point currently hosting the beltpack. Access points are assigned a unique number by the user when configuring the system. All access points in the system must have a unique AP ID.

**RSSI Meter Display**

The **RSSI Meter** display indicates the signal strength of the RF transmission. RSSI (Received Signal Strength Indicator) measures the power the beltpack is receiving from an access point.

RSSI ranges from 0 (no strength) to 216 (full strength).

**QF Meter Display**

The **QF Meter** display indicates the QF (Quality Factor). QF is a number based upon the amount of packets being received by the beltpack from the access point.

The QF meter ranges from 0 (no packets) to 10 (no missing packets).

## 7.5.4 Diagnostics

Use the **Diagnostics** screen to display useful information concerning the status of the beltpack.

**Figure 7.36:** Diagnostics icon

Including:

- RSSI
- QF
- RF Channel
- Slot of the access point to the beltpack DECT link
- CAP ID
- IP address of the beltpack's HOME access point
- valid zones of the beltpack
- radio system
- CODEC of the beltpack and access point and the PMID of the access point (The current AP number plus the order that the unit was originally subscribed by the beltpack).

In addition, enhanced diagnostics are available from this screen. Use the up and down arrow buttons to toggle between the Diagnostics screen and the Enhanced Diagnostics screen. For more information, see *Beltpack enhanced diagnostics, page 130*.

To **open the diagnostics screen**, do the following:

1. Select the **Settings icon**.
2. Press the **SELECT button**.
   The settings menu options appear in the beltpack display screen.
3. Select the **Diagnostics icon**.
4. Press the **SELECT button**.
   The Diagnostics screen appears

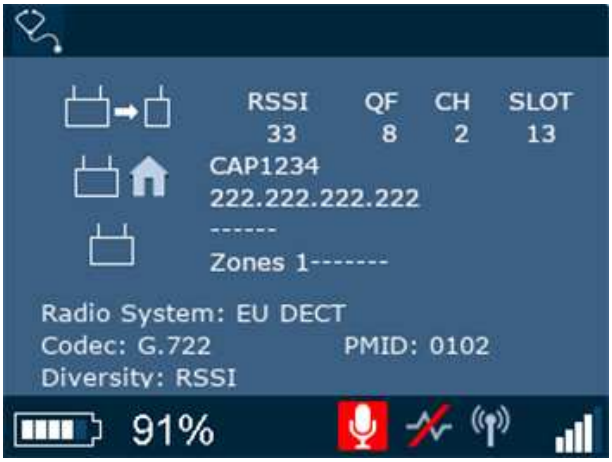



**Figure 7.37:** Diagnostics screen

**Access Point To Beltpack Icon**

The **Access Point to Beltpack** displays the connection information associated with the current access point to beltpack connection. Some of the information included is the RSSI, QF, the carrier and the slot assignment.

**Home Access Point Information**

The **Home Access Point Information** displays the access point's OMNEO ID (CAP6-01cXXX) and the IP Address it is assigned for the network.

**Zone Mask Information**

The **Zone Mask Information** displays zone setting information. The left two-digit number is the zone number of the beltpack. The right two numbers indicate the zone number of the access point.

During the subscription process, the right zone number always displays FF indicating the beltpack can subscribe to all zones. However, when the subscription is complete and the beltpack is rebooted, the beltpack can only connect to those access points which it has zone privileges.

**Radio System Field**

The **Radio System** field displays the DECT region of the system as set by the factory - EU DECT or US+ DECT are possible.

- EU DECT 10 RF Carrier Channels available
- US+ DECT 5 RF Carrier Channels available

**CODEC Display**

The **CODEC** display, located above the battery gauge, shows the CODEC currently used by the beltpack. The CODEC is set by the beltpack's HOME access point.

- G.722 Wideband audio CODEC
- G.722-EX Wideband audio CODEC with extra coding to make audio more robust in difficult RF environments.
- G.726 Narrowband audio CODEC
- G.726-EX Narrowband audio CODEC with extra coding to make audio more robust in difficult RF environments.

**PMID Field**

The **PMID** field is used to display the beltpack's home access point's AP ID and the order in which the beltpack was subscribed to the system. For example, in the PMID 000801, the 8 represents the beltpacks Home access point in Hex. The 01 indicates the beltpack is the second unit subscribed to the HOME access point. The first beltpack has the PMID 000800.

## 7.5.5 Software update

Use the **Software Update** menu to update software, fonts, and splash screens used for the beltpack. All updates are done via a USB flash drive connected to the beltpack.


**Figure 7.38:** Software Update icon

**IMPORTANT**:

- All files MUST be in the root directory of the USB flash drive to be detected by the beltpack.
- Only the first six file entries of the same file type in the root directory of the USB flash drive are shown on the beltpack screen.
- The USB flash drive must be FAT32 formatted.

There are four main areas of software to update in the beltpack.

**Application**

This is the main operating software of the beltpack. The version number always displays on the start-up splash screen.
This software file always end with a .bin extension.

**Unicode Fonts**

This file has all the character fonts the beltpack uses. This software file always ends with a .kpf extension.

**Splash Image**

This is the graphic file the beltpack uses for the splash screen. It is user changeable. Splash images must be in a PNM binary format of size 320 x 240 pixels. This software file always ends with a .pnm extension.

**DECT Module**

This is the software for the RF DECT module of the beltpack. This software file must always ends with a .dct extension.

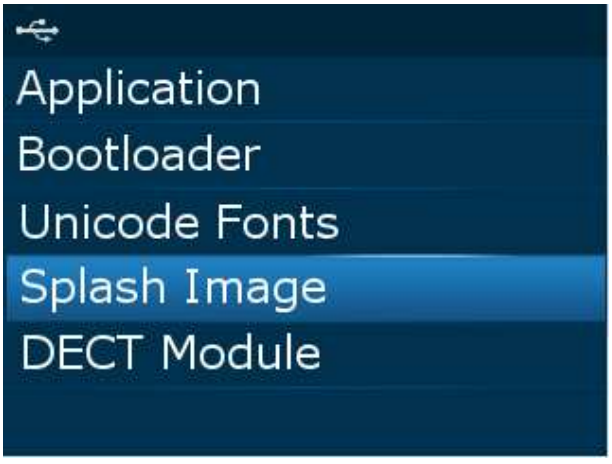



**Figure 7.39:** Software update menu

For more information, see

- *Update the firmware, page 122* on the TR-1800
- *Update the splash screen, page 122* on the TR-1800

To **open the software update screen**, do the following:

1. Select the **Settings icon**.
2. Press the **SELECT button**.
   The settings menu options appear in the beltpack display screen.
3. Select the **Software Update** icon.
4. Press the **SELECT button**.
   The Software screen appears listing the types of updates available.

## 7.5.6 Alpha size

Use the **Alpha Size** screen to select the size of the characters displayed in the beltpack.

**Figure 7.40:** Alpha Size icon

Available options are:

- 4 Character Alpha - displays the 4-character alpha assigned to the talk key.
- 4 Character Talk+Listen Alpha - displays the talk key 4-character alpha on the top and the listen key 4-character alpha on the bottom.
- 6 Character Alpha
- 8 Character Alpha
- 8U Character Unicode Alpha


**Figure 7.41:** Alpha size screen

To **change the alpha size**, do the following:

1. Select the **Settings icon**.
2. Press the **SELECT button**.
   The setting menu options appear in the front display screen.
3. Select the **Alpha Size icon**.
4. Press the **SELECT button**.
   A scrollable list of available sizes appear.
5. Select the **size** desired.
6. Press the **SELECT button**.
   The beltpack reboots and the alphas of the beltpack is at the selected size.

**Set Alpha length in AZedit**

To **set the alpha length in AZedit**, do the following:

1. On the Keypanel/Ports screen, click the **Edit button**.
   The Keypanel/Port Configuration window appears.
2. Click the **Setup tab**.

3. In the Type group drop down menu for Main Panel, select **TR-1800/X** (where X is the length of the alpha).

The number displayed after the TR-1800 defines the alpha length:
/4 = Four Character Alpha
/4, /4 = Four Character Alpha for Talk and Four Character Alpha for Listen
/6 = Six Character Alpha
/8 = Eight Character Alpha
/8U = Eight Character Unicode Alpha

### 7.5.7 Versions

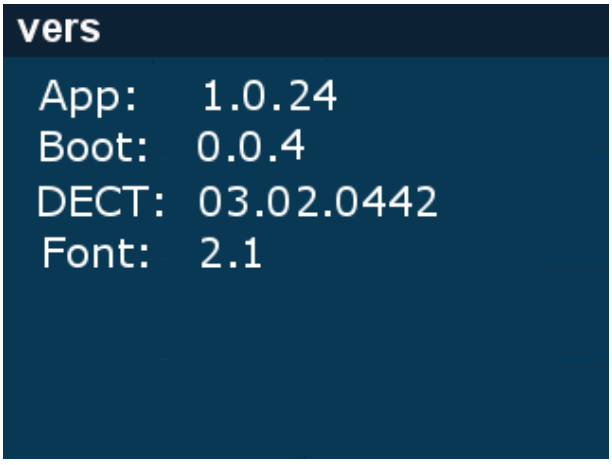
The **Versions** screen displays the current software versions in the beltpack.


**Figure 7.42:** Version icon

**App**: Application version
**Boot**: Bootloader version
**DECT**: DECT module version
**Font**: Unicode Font Version

To **open the versions screen**, do the following:

1. Select the **Settings icon**.
2. Press the **SELECT button**.
   The settings menu options appear in the beltpack display screen.
3. Select the **Vers icon**.
4. Press the **SELECT button**.
   The Versions screen appears




## 7.6 Icon help

Use the **Icon Help** menu as a reference to help define the icons associated with the different sections of the beltpack, such as Home Screen icons, Speaker Screen icons, etc.
For a complete description, see *Display icons, page 53* or *Menu structure - main menu access, page 67*.

**Home Screen Menu**
The **Home Screen** menu displays all the home screen icons shown on the home page and their description.

**Speaker Screen Menu**
The **Speaker Screen** menu displays all the speaker screen icons shown on the speaker pager and their description.

**Brightness Screen Menu**
The **Brightness Screen** menu displays all the brightness screen icons shown on the brightness page and their description.

**Alerts Screen Menu**
The **Alerts Screen** menu displays all the alerts screen icons shown on the alerts page and their description.

**Key Assignments Screen Menu**
The **Key Assignments Screen** menu displays all the key assignments screen icons shown on the key assignments page and their description.

**System Setup Screen Menu**
The **System Setup Screen** menu displays all the System Setup screen icons shown on the system setup page and their description.

## 7.7 Scroll list

**Scroll Lists** are groups of the same assignment types that have been enabled on a port to be seen by the beltpack user via the scroll lists. Using scroll lists gives the user the freedom of not having to assign a button on the beltpack to a button that is used.
Scroll Lists can be grouped into the following assignment types:
- Pt-to-Pt
- Party Line
- IFB
- Spcl List
- Sys Relay
- Camera ISO
- UPL
- IFSL

For a description of each of these assignments, see *Intercom keys and displays, page 52*.
To **access the scroll list**, do the following:
1. Press the **Main Menu button**.
   The Main Menu appears in the beltpack display screen.
2. Scroll to the **Scroll List icon**.

3. Press the **Select button**.
   A list of assignment types appear on the beltpack display screen.
4. Scroll to the **assignment type** desired.
5. Press the **Select button**.
   A list of available assignments appear in the beltpack display screen.

# 8 AP-1800 overview

## 8.1 Front panel description

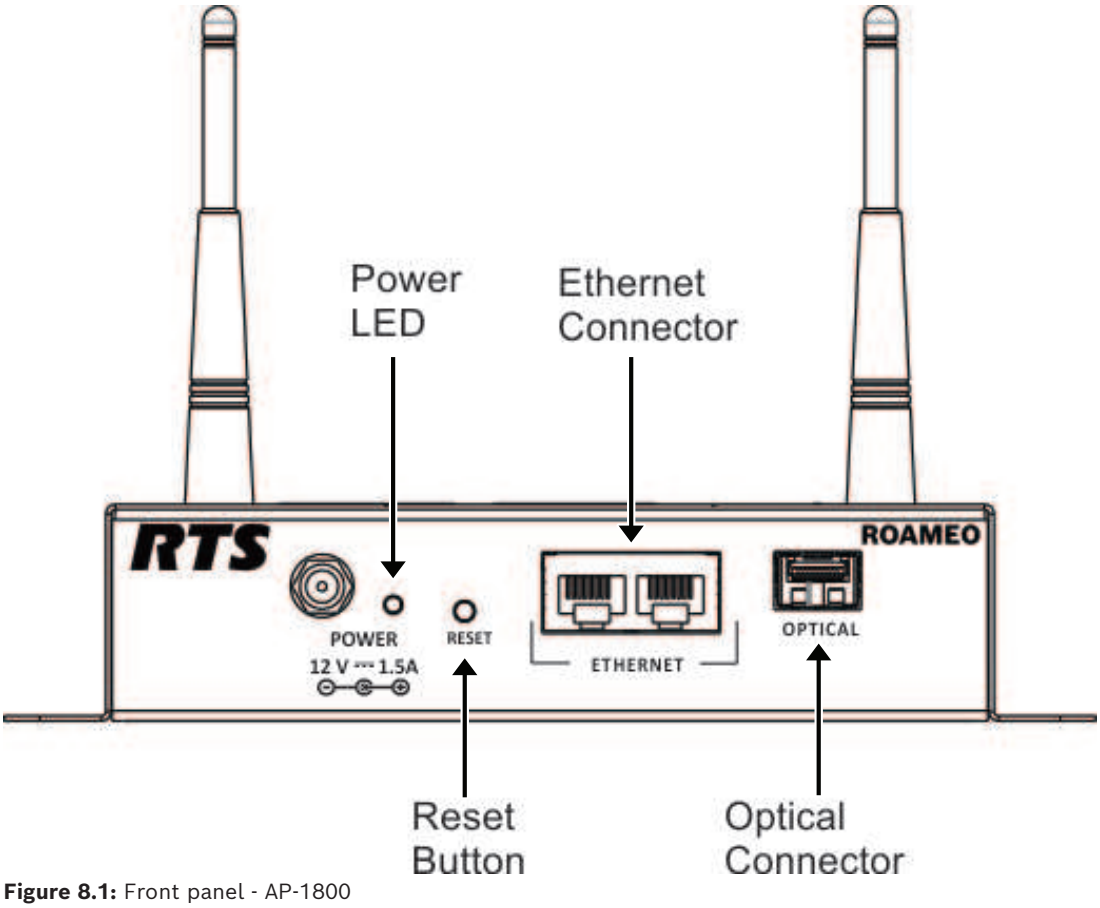



**Figure 8.1:** Front panel - AP-1800

**Power LED**

The **Power LED** is used to display the status of the AP-1800

- Solid Green - Power/Normal Operation
- Blinking Green - Normal Reset Mode
- Solid Orange - Booting
- Blinking Orange - Factory Reset Mode or unit's software is being updated
- Solid Red - Error
- Blinking Red - Factory Defaults are being restored

**Reset Button**

The **Reset** button is used to reset the unit or place the unit in test mode. Test mode sets the unit to the TBR-6 mode. This is for agency testing only.

There are two types of reset;

- Reset - resets the access point keeping all of the unit's current settings.
- Factory Default Reset - resets the access point to the factory settings

**Ethernet Connection**

The **Ethernet** connectors are used to connect the access point to the network switch for communication with the Matrix.

**Optical Connection**

The **Optical** connector is used to connect the access point to the matrix system via a fiber optic cable. The optical port accepts Small Form Factory Pluggable (SFP) transceiver modules.

## 8.2 Software requirements

**IPedit** is a Windows-based GUI (Graphical User Interface) application for configuring and displaying OMNEO devices, RVON devices, and AP-1800 ROAMEO devices connected to the Matrix system.
The following pages describe the fields most critical in AP-1800 ROAMEO Access Point Configuration. For more information about the IPedit software, see the IPedit Technical Manual.
The **Firmware Upload Tool** can download firmware to devices running older firmware, but requires these versions in order to detect automatically the devices and to view or modify the device configurations.

**Matrix**

- OMI - v6.1.10 and above
- ODIN - v1.0.0 and above
- OMS - v1.0.1 and above
- MCII-e - v3.4.0 and above

**RTS Software Suite**

- Use the latest software suite. Find it at www.rtsintercoms.com in the downloads library.

## 8.3 IPedit main screen

The **IPedit Main screen** is divided into three sections:

- Device Catalog
- Device Information
- Device Channel Information

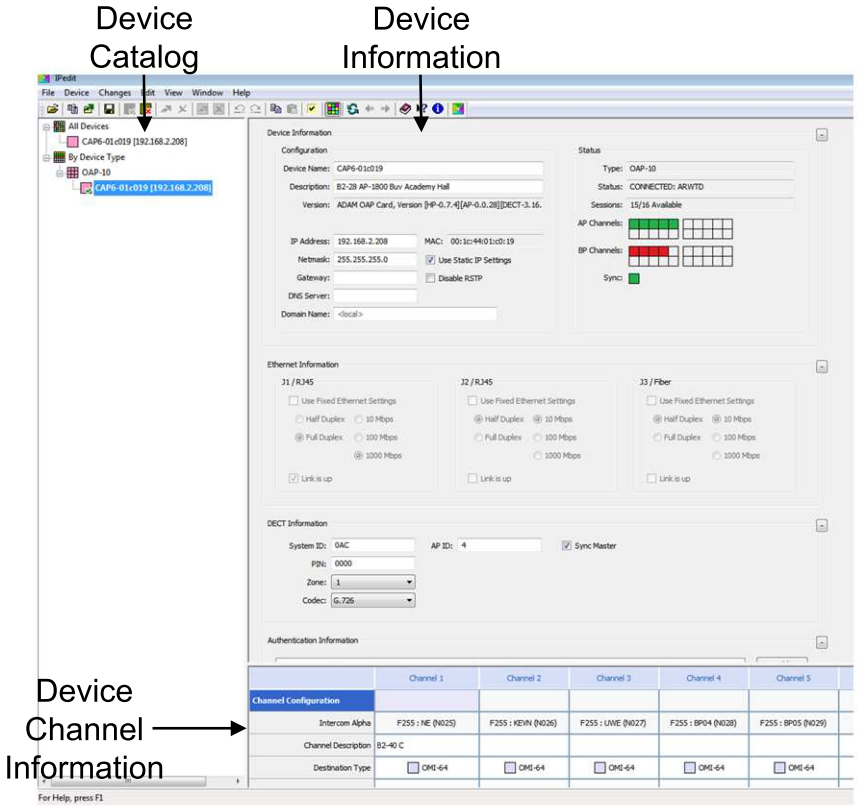



**Figure 8.2:** IPedit main screen

### 8.3.1 Device catalog

The **Device Catalog** lists all available devices in the Matrix system. From this pane, switching between devices is easy. Every device can be displayed and sorted by device type in this pane, making it easier to keep devices organized.

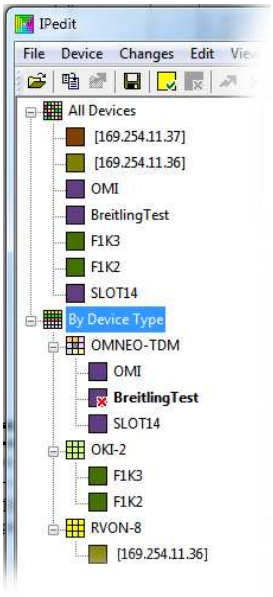



**Figure 8.3:** Device catalog

**Notice!**
In the Help menu there is an option called ROAMEO Diagnostics. Use this menu item to validate the ROAMEO system after it is set up. The diagnostics examine the ROAMEO system for duplicate AP IDs, duplicate BP IDs, APs that did not respond to an inquiry, etc.

### 8.3.2 Device information

Use the **Device Information** pane to display and configure device connection status, as well as DECT information for select ROAMEO devices.

**Notice!**
The user must have IPedit administrator rights to complete these instructions.

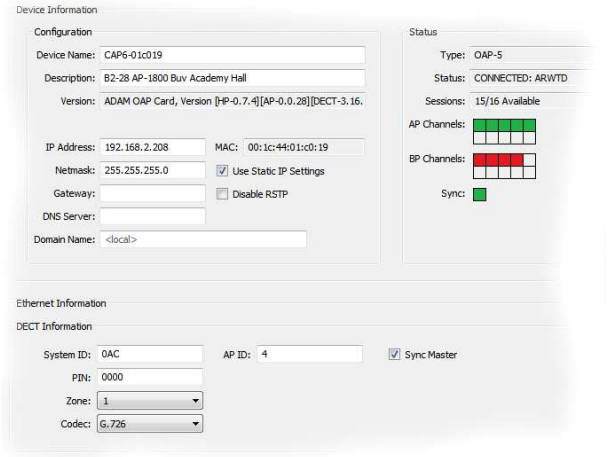



**Figure 8.4:** Device information

**Notice!**
The graphics displayed in these figures are for a ROAMEO device. When a different device is selected, different fields are displayed. For more information, see the IPedit Technical Manual.

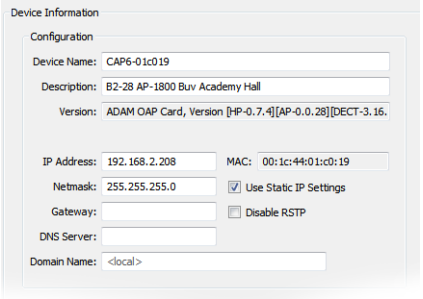



**Figure 8.5:** Device information group box

### Configuration Group Box

#### Device Name Field

Use the **Device Name** field to enter the name of the selected device. By default, the device's unique OMNEO ID populates this field.

#### Description Field

Use the **Description** field to enter a description of the selected device.

#### Version Field

The **Version** field displays the current firmware version of the selected device.
This field cannot be modified.

**Notice!**
Modifications to the IP Address, Netmask, Gateway Address, DNS Server, and Domain Name fields can only be done when the Use Static IP Settings check box is selected.

**IP Address Field**
Use the **IP Address** field to display the IP Address of the selected device. Only when Static IP Addressing is enabled can the IP Address of the selected device be modified.

**Netmask Field**
Use the **Netmask** field to display the Netmask address of the selected device.

**Gateway Address Field**
Use the **Gateway Address** field to display the gateway address of the selected device.

**DNS Server Field**
Use the **DNS Server** field to display the address of the DNS server used by the selected device, if applicable.

**Domain Name Field**
Use the **Domain Name** field to display the domain name of the domain the selected device is associated, if applicable.

**MAC Address Field**
The **MAC Address** field displays the unique MAC address of the device. A MAC address is an identifier given to hardware. No two (2) hardware devices may have the same MAC address. This field cannot be modified.

**Use Static IP Settings Check Box**
Use the **Use Static IP Settings** check box to enable static IP addressing. When selected, the IP Address, Netmask, and Gateway fields become editable.

**Notice!**
By default, ROAMEO devices use zero configuration, in which the device automatically determines a valid IP Address to use.

**Disable RSTP Check Box**
Use the **Disable RSTP** check box to indicate when the RSTP protocol is disabled on this device.
Disable RSTP is not selected, by default.

### Status Information Group Box

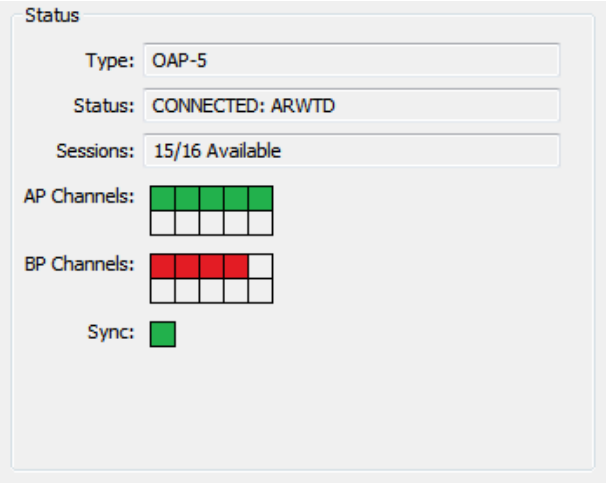



**Figure 8.6:** Status information

**Type Field**

The **Type** field displays the type of device.

The two ROAMEO are:

- OAP-5 - An OMNEO access point supporting up to five beltpacks (G.722 or G.722-EX CODEC)
- OAP-10 - An OMNEO access point supporting up to 10 beltpacks (G.726 or G.726-EX CODEC)

**Status Field**

The **Status** field displays the current status of the device and current access rights of the user.

**Sessions Field**

The **Sessions** field displays the number of IPedit sessions the device supports and how many are available (for example, 15/16 available).

**AP Channels Field**

The **AP Channels** field displays the Access Point OMNEO connection status and beltpack connection status.

- green - a valid OMNEO connection exists between the access point and the OMI card.
- red - disconnected or an invalid OMNEO connection exists between the access point and the OMI card.
- light green - a subscribed beltpack is connected to the access point.
- no color - the channel has not been configured or the subscribed beltpack for that channel is not powered on.

**Notice!**

An access point set up for the exclusive use of roaming beltpacks has all the channel fields blank.

**BP Channels Field**

The **BP Channels** field displays the connection status of the beltpack to the access point. The bottom row of status boxes is not used.

– green - the beltpack for that channel is communicating with the access point.
– red - the beltpack for that channel is not powered on
– no color - no beltpack DECT BPID was entered into the Channel Configuration area.

**Sync Display Box**

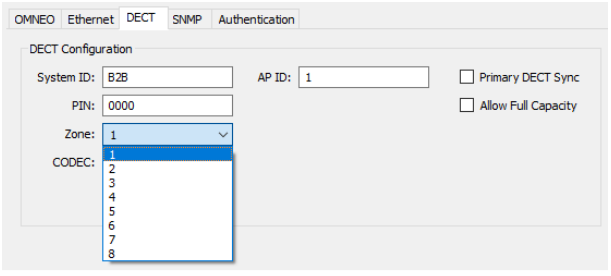
The **Sync** display box indicates whether the access point is or is not synced with the master access point.

– green - The access point is synchronized with the master sync access point or is the master sync access point.
– red - The access point is in standby mode and is not synchronized with the master sync access point. This is caused by having more than one access point in the system selected as a Primary DECT sync.
– no color - The access point is not synchronized with the master sync access point.

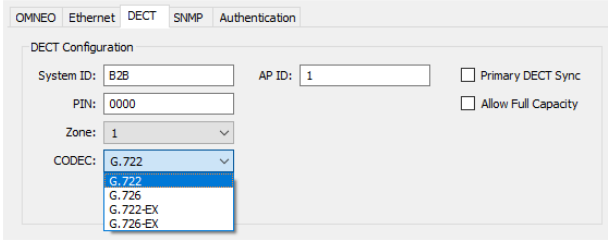
**Notice!**

There can only be one access point with the primary DECT sync active in a system. All access points in a system must have a green sync box or the system does not work correctly.

**DECT Information Group Box**




Zone Options




Codec Options

**Figure 8.7:** DECT information

**System ID Field**

Use the **System ID** field to enter the unique system identifier for the AP-1800.
The first time the beltpack is subscribed, the system ID is entered into the beltpack to gain access to the system. Once the beltpack is subscribed, it has access to that system at every power up thereafter.
Any combination of the following options are available: 1 - 9, 0, A, B, C, D, E, and F.
The system default is B2B.

**PIN Field**

Use the **PIN** field to enter the four-digit PIN (Personal Identification Number) for the access point. The PIN number acts as a level of security, allowing only beltpacks with the correct PIN number to subscribe to that access point.
The first time the beltpack is powered up, this number is entered into the beltpack to gain access to the HOME access point (see “First Time Operation - Beltpack” on page 64). Once the beltpack is subscribed, it has access to that system at every power up thereafter.

**Notice!**
If this PIN number is not entered correctly, the beltpack cannot access the HOME access point.

The range for this field is 0000 to 9999.
By default, the PIN is 0000.

**Zone Drop Down Menu**
Use the Zone drop down menu to assign a zone to an access point in the system. Zones are areas of coverage that beltpacks are allowed to access. An access point can be set to only one zone. Up to eight (8) zones can be configured for a single system.
The default zone is 1.

**CODEC Drop Down Menu**
Use the **CODEC** drop down menu to select the CODEC. There are four CODECs available, G.722, G.722-EX, G.726, or G.726-EX. While G.722 has a higher quality, it uses more network resources, consequently only allowing up to five beltpacks per access point. On the other hand, G.726 has slightly lower audio quality and does not use as many network resources, and can support up to 10 channels/beltpacks per access point. The EX versions of these CODECs are specialized to work better in high RF multi-path environments. These large environments with a lot of metal cause many reflections of RF signals. When planning the system, determine the type of audio needed for the environment, and configure the CODEC to use accordingly.

**Notice!**
When the CODEC changes for an access point, the access point resets. All beltpacks previously subscribed need to subscribe again to the access point.

The entire system must use the same CODEC to function.

Available options are:
G.722 or G.722-EX - Up to 5 beltpacks maximum per access point
G.726 or G.726-EX - Up to 10 beltpacks maximum per access point

**Notice!**
The maximum number of beltpacks for each CODEC does not leave a channel open for roaming beltpacks. It is recommended to leave one channel open on G.722 or G.722-EX and two channels open on G.726 or G.726-EX for the expressed purpose of allowing beltpacks to roam from access point to access point.

**AP ID Number Field**
Use the **AP ID Number** field to enter a unique ID for the access point. All access points in the system must have a unique ID.

The range for this field is 1 through 254.
The default for this field is 1.

**Primary DECT Sync Check Box**
Use the **Primary DECT Sync** check box to indicate which access point is designated as the DECT synchronization-timing master for the entire system. The access point with the primary DECT sync master designation sets all coordinated transmit and receive activity for the system.

**Notice!**
Only one access point in a system can be the active primary DECT sync master.

By default, the Primary DECT Sync check box is not selected.

**Allow Full Capacity Check Box**
Use the **Allow Full Capacity** check box to allow usage of all the channels in the access point's CODEC.
- Typically, channel configuration for G.722 & G.722-EX only allows 4 channels per access point; however, with this box selected, all 5 channels are allowed.
- Typically, channel configuration for G.726 & G.726-EX only allows 8 channels used per access point; however, with this check box selected all 10 channels are allowed.

**Notice!**
When all channels for an access point are used there are no channels left for roaming beltpacks.

### 8.3.2.1 Configuration of a Secondary Backup DECT Sync Master

You can choose a secondary DECT sync master as a backup for the primary DECT sync master by enabling the Primary DECT Sync check box on two devices within the same system. Only one DECT sync master is active for the system at a time. When more than one access point is enabled as Primary DECT Sync, the one with the lowest APID becomes the active sync master and displays a green box as its sync status. The access point with the higher APID goes into standby mode and displays a red box as its sync status. In standby mode, the AP does not allow DECT connections.
If the primary DECT sync goes offline, the secondary DECT sync becomes the active sync master. Once the primary DECT sync is online again, the primary DECT sync becomes active again and the secondary DECT sync returns to standby mode.

**Notice!**
When the secondary DECT sync becomes active, it provides the DECT sync for the system; however, it does not take over the registrations or home assignments from the primary DECT sync. For a backup DECT sync master configuration, we recommend not assigning beltpacks to either the primary or secondary DECT sync devices.

### 8.3.3 RSTP

**RSTP** (Rapid Spanning Tree Protocol) is a fault tolerant Ethernet protocol, which allows the system to be set up with multiple Ethernet connection paths to the same access points. This provides a redundant connection if one connection path fails. The RSTP connection paths prevent the possibility of packets getting into an infinite loop.

RSTP is an IEEE standardized network protocol (802.1w) ensuring a loop free topology for any Ethernet **LAN** (Local Area Network), it evolved from **STP** (Spanning Tree Protocol). OMNEO fully supports RSTP IEEE802.1w.

When using switches that support this technology, it is possible to create redundancy loops even with daisy-chained devices. It is needed to adjust the RSTP parameters of the switch to do this according to the following:

– Hello Time: 9 seconds
– Maximum Age: 22 seconds
– Forward Delay: 30 seconds

The major switch brands support this technology.

The root bridge of a spanning tree is automatically elected by means of the root priority. When all root priorities in a system are equal, the MAC Address of the system is used as a determiner. In general, OMNEO devices are not meant to become a root bridge, therefore by default, the root bridge priority advertised is a higher root bridge priority value (less important) than other network equipment. The OMNEO RSTP Root Bridge Priority is between 45056 and 61440 (default RSTP root priority is 32768) depending on the product.

When using RSTP care must be taken when designing the network. The maximum age parameter defines the maximum number of hops seen from the Root Bridge; the same spanning tree information is valid and can be used. Devices which are not in range of this specified maximum age are not part of the spanning tree and are not reachable in the network.

RSTP uses a mechanism to calculate a spanning tree in a redundant connected network, each network device searches for the shortest path to the root bridge, offers this path to other to other devices, and administers which path can be used as an alternative path. Ports are assigned this role.

If a root port fails, an alternate port is used as the new root port. If there is no alternate port available, a new spanning tree is calculated.

RSTP is useful within OMNEO when connecting OMNEO devices redundantly (for example in a daisy chain or when connecting OMNEO devices to different switches for a redundancy scheme to limit the audio loss to less than 100ms)

**Notice!**
If devices do not support RSTP, chains of device may not be connected redundantly. This means audio is lost for a longer duration of time if the link fails inside the daisy chain. When the link is restored, a loop is created for a few seconds. The loop created could flood the local network.

## 8.3.4 Device channel information

For more information on the Channel Status sections (below Channel Configuration), see the IPedit Technical manual.


**Figure 8.8:** Channel configuration

**Channel Configuration**

Use the **Channel Configuration** section to configure channel settings for each applicable device.

**Intercom Alpha Field**

The **Intercom Alpha** field displays the alpha (name) of the channel and the slot (in parentheses) set up in AZedit.

**Channel Description Field**

Use the **Channel Description** field to enter the channel description, if applicable. This field can contain up to 63 characters.

**Destination Type Drop Down Menu**

Use the **Destination Type** drop down menu to select the type of device to which the channel is connected.

**Destination Device Name Field (OMNEO devices and AP-1800 ROAMEO Access Point Only)**

The **Destination Device Name** field displays the name of the device to which data is transmitted.

**Destination IP Address Field**

Use the **Destination IP Address** field to enter the IP Address for the device at the other end of the connection (for example, the Matrix to which the AP-1800 is connected.

**Notice!**
This is an editable field. By changing the IP Address, the destination type changes if the destination device type can be determined.

**Destination Description Field**
The **Destination Description** field displays the destination channel's description, if applicable.
This field cannot be modified.

**Destination Channel Drop Down Menu**
Use the **Destination Channel** drop down menu to select the channel at the destination device to which the device is connected.
**TIP**: When <default> is selected, the channels match 1 to 1. For example, with all the channels selected, and by choosing <default>, Ch 1 matches to Ch 1, Ch 2 matches to Ch 2, and so on. This saves time by not having to manually assign each channel.

**Destination Channel Description Field**
The **Destination Channel Description** field displays the destination channel's description, if available.
This field cannot be modified.

**Receiver Latency Field**
The **Receiver Latency** field displays the current latency of the OMNEO packets to the access point from the Matrix.

**DECT BPID**
Use the **DECT BPID** field to enter the unique identifier for the beltpack. This identifier displays on the front panel. When this identifier is entered into IPedit, this establishes the beltpack's home access point. Once this home access point is established, and the AP OMNEO channel is linked to an OMI card, the alpha of that beltpack is established. This field is used to enter a 10-digit hexadecimal number that identifies the beltpack in the system.
The following format must be used: BP00:09:23:A2:28

**DECT Zone Selection Field**
Use the **DECT Zone** selection field to select the zones to which the beltpack has access. There are eight zones available. Zones provide a way to prioritize which beltpacks can roam or attach to which access points.
A beltpack must be a member of at least one zone and can be assigned up to as many as eight zones. Access points can be assigned to only one zone.

**Notice!**
Access to the Zone Selection field requires Administrator privileges.

To **select a zone**, do the following:

1. From the Channel column, select the **Zone** field.
2. Using the number keys on the keyboard, select the desired **zones** the beltpack can roam and access.

To **deselect a zone**, do the following:

- Using the number keys on the keyboard, select the **zone number** to deselect.

# 9 Troubleshooting

| Issue | Possible Cause | Solution |
|---|---|---|
| RF range of beltpacks is less than normal | Missing access point antenna(s). | Verify both antennas attached to the access point are tightly connected. For more information, see *Antenna connection and placement, page 36*. |
| | The access point antenna(s) are within 12 inches of a metal obstacle. | Move the access point so the antennas are away from metal and have the best visibility over the area of coverage. |
| | The access point antenna(s) are not in the same polarization as the beltpacks. | The normal polarization of the beltpack and the access point antennas is vertical. If the beltpack is on the waist of a user with the headset jacks pointing toward the ground, the access point antennas should be in a vertical orientation too. |
| | There is metal or other reflective tape wrapped around body of beltpack | The two antennas within a beltpack are located just below the plastic case between the DOWN button and the bottom of the beltpack and from the SELECT button to the bottom of the beltpack. The area around the lower half of the case must be kept clear of metal tape. |
| No DECT connection displayed on the beltpack | The access points are not powered up or have not yet finished powering up. | Verify all access points covering the area are powered up. All access points should have a green light next to the power jack. |
| | The beltpack is out of range of an access point. | Verify the RF coverage of an access point includes the immediate vicinity of the beltpack. Bring the beltpack closer to an access point. |

| Issue | Possible Cause | Solution |
|---|---|---|
| | The beltpack is not subscribed to the system. | Ensure the beltpack has a Home access point. Verify the access point is in the system where the beltpack's BP ID is entered into on of the channels of the access point. Also, verify the beltpack has an assigned path (OMNEO channel) to the matrix. Bring the beltpack within 40 feet (12 meters) and in the line-of-sight of an access point on the same system as the Home access point. Subscribe the beltpack. For more information, see *Subscribe the TR-1800 and connect to the AP-1800, page 50*. |
| | The Zone set up for the beltpack is not a valid zone for the access point covering the area. | Verify the beltpack's zone is set up on its Home access point (found in IPedit). Using IPedit, verify the access points to which the beltpack is connecting are in the same zone. |
| | The audio CODEC of the beltpack does not match the CODEC of the access point providing coverage for the area. | Verify the beltpack's Home access point CODEC is configured. Using IPedit, verify the access points that the beltpack is connecting to are using the same CODEC as the beltpack's Home access point. **NOTE**: All Aps on a system must be set to the same audio CODEC, either G.722, G.722-EX, G.726, or G.726-EX. When a change is made to the CODEC, the beltpack must be re-subscribed to access point in the system. |
| No matrix connection on the beltpack | The matrix is offline. | Ensure the matrix is on and operating. |

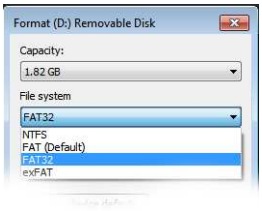
| Issue | Possible Cause | Solution |
|---|---|---|
| | The matrix has not fully booted. | Ensure the matrix is fully booted. This can take several minutes. |
| | Ethernet from the access point to the matrix is down. | Verify the access points are connected to the matrix. **NOTE**: Always have Ethernet switches active before booting the matrix. If the switches are not active, the DHCP server (if being used) may fault in assigning proper IP addresses because it cannot discover the entire network when it boots. |
| | The RF DECT link to the access point is down. | If the RF DECT link is down the matrix connection is also down. |
| Beltpack is having audio dropouts | Weak RF connection to the access point that covers this area. | – To improve RF coverage, access points may need to be moved or additional access points may need to be added.<br>– The DECT environment is limited to a set number for RF carriers as well as a set number of slots on each carrier. Other DECT devices, such as wirelss phones, other intercom systems, etc. can affect the RF bandwidth availability for the beltpack. Powering down extra devices can improve RF accessibility. |
| | DECT environment is saturated with DECT devices, not sufficient bandwidth for more DECT devices. | An access point set to G.722 or G.722-EX (wide band) supports up to 5 beltpacks maximum, while an access point set to G.726 or G.726-EX (narrowband) supports up to 10 beltpacks maximum. Depending on the number of beltpacks running versus the number of access points with |

| Issue | Possible Cause | Solution |
|---|---|---|
| | | open slots, additional access points may be needed. Power down other beltpacks in the area to test for system improvement. If improvement is seen, additional access points are needed in the area to provide more open slots for additional beltpacks. |
| | The DECT connection is dropping. | The access point RF coverage area may be poor. Perform a site survey to determine the coverage area strength. Relocating access point or adding access points to the coverage area may be needed to improve the coverage area. For more information, see *Perform a site survey, page 31*. |
| | Matrix connection is dropping | – If there is no DECT RF connection, the connection to the matrix cannot be established. Verify the DECT RF connection is good.<br>– An intermittent connection from the access poi8nt to the matrix may be the reason the matrix cannot establish a connection. Verify the matrix connection is good and is not intermittently rebooting. |
| | The overlap of access point is not adequate enough to provide error-free hand-offs. | – For an error-free hand-off between access points, the overlap coverage between access points must be good enough to allow error-free handshaking |

| Issue | Possible Cause | Solution |
|---|---|---|
| | | of the beltpack to the old access point and new access point.<br>– For consideration, Ethernet traffic on a shared network can cause bandwidth overloading. Take care to plan for bandwidth coverage for the number of beltpacks being used. |
| | Severe RF multipath in environment. This can happen in large indoor venues with lots of metal and RF is indicating strong signal strength. | Switch system to G.722-EX CODEC if using wideband audio or G.726-EX if using narrowband audio. These CODECs are specialized for use in harsh RF environments. |
| No audio from beltpack | The DECT connection is down | If the RF DECT connection is down, then no audio is sent to or from the beltpack.<br>See “No DECT connection displayed on beltpack” earlier in this table. |
| | The Matrix connection is down. | If the Matrix is down, then no audio is sent to or from the beltpack.<br>See “No matrix connection on beltpack” earlier in this table. |
| | The wrong headset is selected in the beltpack audio setup menu. | The beltpack has two headset options; the 5-pin XLR or 3.5mm stereo plug. The wrong type of headset can be configured on the beltpack. Verify the correct headset is configured.<br>For more information, see *Headset select, page 70*. |
| | The 3.5mm headset has a dynamic microphone element (expected is Electret only). | The 3.5mm headset is always supplied with a 5 Volt bias as the port always expected an Electret type microphone plugged into it. If a dynamic |

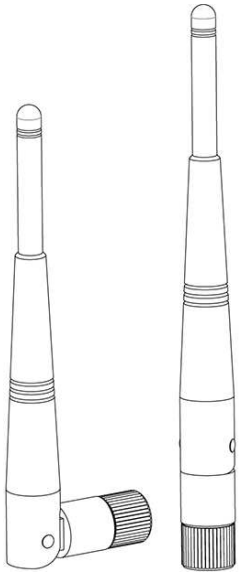
| Issue | Possible Cause | Solution |
|---|---|---|
| | | microphone is plugged in, the dynamic microphone may not work correctly. |
| | Microphone audio gain is set too low. | The beltpack may have the audio gain set to 0%. To check go to the main menu of the beltpack and select **Mic. Setup**. At the top of the menu is the microphone gain setting. Adjust up from 0% as needed (default 30%). |
| Unable to find the access points in IPedit | IPedit cannot detect the access point because the computer has an IP address not in the access point's network. | Configure the system to use a DHCP server. DHCP servers automatically assign unique IP addresses to devices in the system on a per use basis.<br>OR<br>If the system uses static addressing, configure the computer with and IP address within the system's network.<br>**NOTE**: There are a variety of network discovery tools available online to find the IP address on a network.<br>For more information, see *Prepare the hardware, page 27*. |
| | The access point is detected, but has not been added to the device catalog in IPedit. | Add the access point to the device catalog in IPedit.<br>For more information, see *Add the AP-1800 to IPedit, page 45*. |
| | The access point is off. | Verify the access point is powered on. The power indicator light displays green. |
| | The Ethernet network to the access point is down. | Verify the Ethernet connection is made and working from the network to the access point. The left LED on the access point, next to the RJ-45 port, blinks when active. |

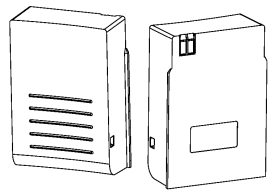
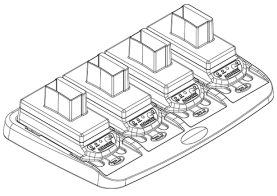
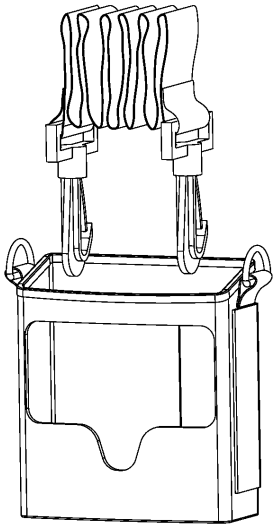
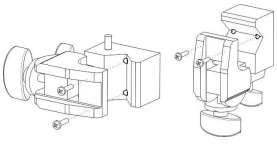
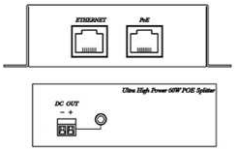
| Issue | Possible Cause | Solution |
|---|---|---|
| No lights or display shown on beltpack | The beltpack is set to Dark Mode. | Determine if dark mode is active on the beltpack. No lights are visible on the beltpack when dark mode is active, and the CWW display shows Dark Mode.<br>For more information, see *Dark mode, page 63*. |
| | The displays or top panel LEDs set to 0% brightness in beltpack menu. | – Adjust the Talk/Listen buttons from 0% to another brightness level, like 40%.<br>– Adjust the front display from 0% to another brightness level, 40%. Even at 0% the front display backlight is not off, it can been seen at low light levels<br>– Adjust the top display from 0% to another brightness level, 40%.<br>For more information, see *Talk/listen LED, page 73*, *Front display brightness, page 73*, or *Top display brightness, page 73*. |
| Cannot download the firmware update to the beltpack | The USB stick is not formatted for FAT32. | The USB flash drive must be formatted for a FAT32 file system.<br>To c**heck the formatting**, do the following:<br>1. Plug the flash drive into a computer.<br>2. Right click the drive. A flyout menu appears.<br>3. Verify the file system displays FAT32.<br>**NOTE**: If the USB is not FAT32 formatted, the flash drive needs to be reformatted to FAT32.<br>To **format a USB flash drive to FAT32**, do the following:<br>4. Plug the flash drive into a computer.<br>5. Open Windows Explorer. |

| Issue | Possible Cause | Solution |
|---|---|---|
| | | 6. Right click the flash drive.<br>A flyout menu appears.<br>7. Click Format.<br>The format window appears.<br>8. From the File System drop down menu, select FAT32.<br>  <br><br>**IMPORTANT**: All data currently on the drive will be erased when formatting it.<br>9. Click Start.<br>A progression bar starts showing the reformatting progress. |
| | Files to download are not in the root directory of the USB flash drive. | All files must be downloaded to the root directory of the USB flash drive.<br>**IMPORTANT**: They cannot be in folders, if they are, they will not be seen by the beltpack.<br>Six files of each file type supported can be stored in the root directory of the flash drive. |
| | The file is named the wrong file extension. | The beltpack only detects files with the proper extensions used on the beltpack.<br>These extension are:<br>Applications - .bin<br>Unicode Fonts - .kpf<br>Splash Image - .pnm<br>DECT - .dct |
| | USB flash drive is damaged or corrupted. | When a flash drive is damaged, its contents are not accessible. Replace the flash drive. |

| Issue | Possible Cause | Solution |
|---|---|---|
| Cannot download firmware to the access point | The computer where the FWUT (Firmware Update Tool) is located is not in the same network as the access points. | – If the matrix system containing the access points is configured for DHCP addressing, then the computer where the Firmware Upload Tool resides should also be configured for DHCP addressing.<br>If the matrix system containing the access points is configured with a static IP Address, the computer where the Firmware Upload Tool resides should be assigned an IP address within the matrix's network. |
| | Ethernet cable to access point is disconnected. | Check that the Ethernet cable to the AP is connected. There should be blinking activity on the left yellow LED on the AP's RJ-45 port to which the cable is connected. The AP should also display a green light near the power jack. |

## 9.1 Accessories and replacement parts

| | Name | Description | Model |
|---|---|---|---|
|  | Antenna | Dipole-type antenna with reverse polarity, SMA plug, and swivel base used for the AP-1800 access point. Includes antenna and support washer. | ANT-1800 |

| | Name | Description | Model |
|---|---|---|---|
|  | BP-240 Battery | 7.5V, Li-Ion battery for the TR-1800 beltpack | BP-240 |
|  | CHG-1800 LI4 4-Bay Charger | 4-bay changer to charge four BP-240 Lithium Ion batteries in parallel. The CHG-1800 LI4 replaces the CHG-240. | CHG-1800 LI4 |
|  | TR-1800 Holster | Hands-free carrying holster. Includes removable shoulder strap and clear window to view front display. | TR-1800 Holster |
|  | AP-1800 Mounting Clamp | Heavy duty, metal adjustable clamp. Allows easy attachment to poles, rails microphone stands, etc. | AP1800 MT BRKT |
|  | PoE (Power over Ethernet) Kit | Allows the user to power one access point via an Ethernet cable with power sourced from the user's PoE, PoE+, or PoE++ capable Ethernet switch. Kit contains a regulated PoE and PoE+ compatible splitter, a 61 cm (2-foot) Ethernet cable, and a 61 cm (39 in.) power cable for the access point. | POE SPLITTER 12V 60W |

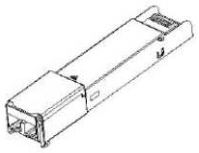
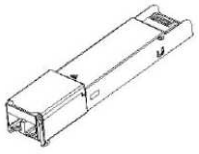
| | Name | Description | Model |
|---|---|---|---|
|  | SM SFP Optical Module | Single Mode (MM) Small Form Factor Pluggable (SFP) optical transceiver module. A 1000Base-LX Ethernet module with up to 10km range on 9/125 µm Single Mode Fiber (SMF) | OM-SM-FIBER |
|  | MM SFP Optical Module | Multi Mode (SM) Small Form Factor Pluggable (SFP) optical transceiver module. A 1000Base-SX Ethernet module with up to 500m range on 50/125 µm Multi Mode Fiber (MMF) | OM-MM-FIBER |

**Table 9.5:** Accessories and Replacement Parts

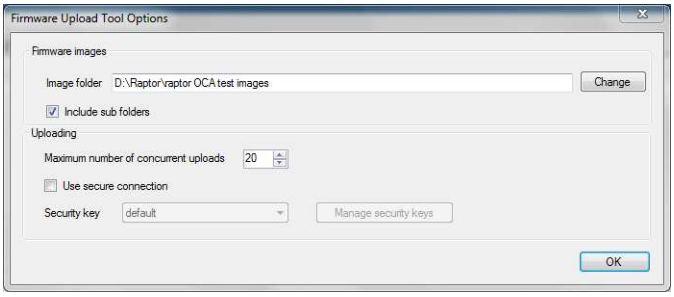
# 10 Maintenance

## 10.1 AP-1800

### 10.1.1 Update firmware

To **update the Access Point firmware**, do the following:

1. Open the **Firmware Upload Tool**.
2. From the File menu, select **Options**.




3. Click the **Change button**.
   A network folder appears.
4. Navigate to the **folder** holding the AP-1800 firmware.
5. Click **OK**.
   The network folder window closes.
6. Click **OK**.
   The Option window closes.
7. Click the **OAP tab**.
   A list of OAP devices appears in the main window.
8. Select the **AP-1800 device** to upload the new firmware.
9. Click the **Upload button**.
   The Select Firmware for Upload window appears.
10. Select the **firmware image** desired.
11. Click the **Start button**.
    The upload begins showing a progression status bar.

Once the upload is done, Finished appears in the Status column.

**Notice!**
Never disconnect the access point from the network during the update. Once the Firmware Update Tool displays the firmware update is finished, it may be several minutes before the access point is available for use.

### 10.1.2 Create a system

#### 10.1.2.1 Single access point

**Notice!**
You must have administrator rights for this procedure.

To **create a single access point system**, do the following:

1. Configure the **Access Point to the OMI, OMS, or ODIN**, see *Connect the access point to the intercom, page 43*.
2. Using IP edit, configure the **System ID, PIN number, etc**, see *Assign the TR-1800 to an AP-1800 channel, page 30*.

3. Set the **access point** to be a Sync Master.

#### 10.1.2.2 Multiple access points

To **create a system of multiple access points**, do the following:

1. Configure each Access Point to the **same OMI, OMS, or ODIN**; see *Connect the access point to the intercom, page 43*.
2. Using IPedit configure each **access point** to have the same System ID, see *Configure the AP-1800 in IPedit, page 45*.
3. Set **one access point** as the Sync Master.
4. If applicable, assign **different zones** to the different access points

### 10.1.3 Replace existing access point

**Notice!**
You must have administrator rights for this procedure.

To **replace an existing access point**, do the following:

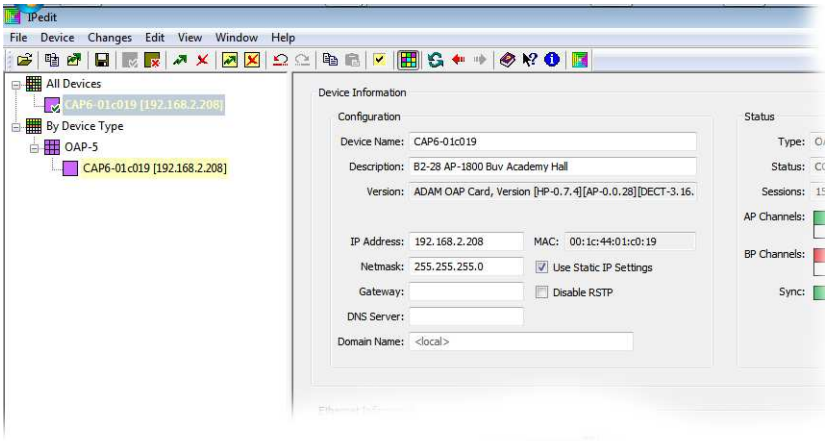
1. Configure the **new AP with OMI card, OMS, or ODIN with no backup**.
   OR
   Load **configuration from IPedit** when the backup AP is available.
2. Configure the **CODEC**
3. Reboot/Send **Changes**
4. Configure the **Sys ID, AP ID**, and **PIN** for the new access point to match the access point you want to replace.
5. If applicable, configure the **Primary DECT Sync check box** to match the access point you want to replace.
6. Configure the **Channels**.
7. Reboot/Send **Changes**.

### 10.1.4 Change the IP address of the home access point

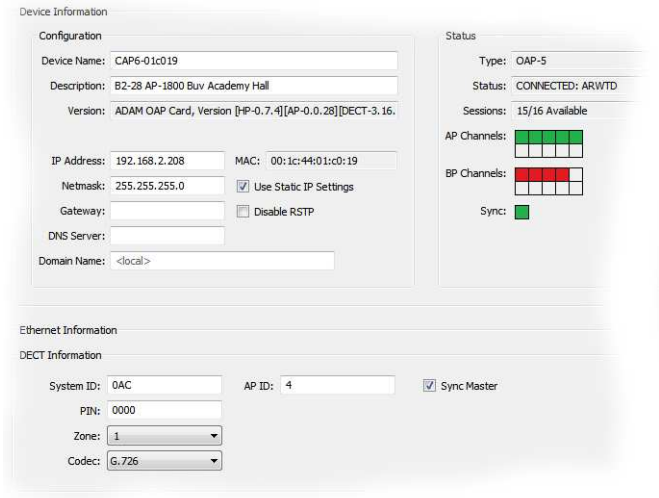
**Notice!**
Use these instructions with static IP Address systems only.

To **change the IP Address of the home access point**, do the following:

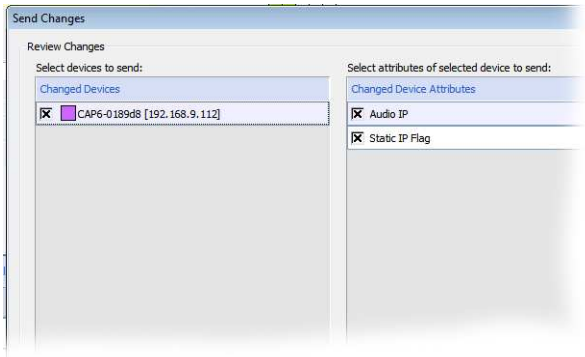
1. Select the **Access Point** to change the IP Address.
   The Device Information panel populates with the access points configuration information.



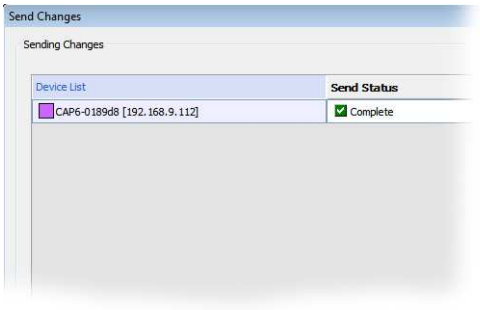

2. In the IP Address field, change the **IP Address**.
   The IP Address field turns yellow.




3. Press **Enter**.
4. Click the **Send All Changes icon** to send the changes to the matrix.
   The Send Changes window appears.




5. Verify the **changes** are correct.
6. Click **Send**.
   The Send Status column displays complete.




7. Click **Done**.
   The Send Changes window closes and the Access Point automatically resets. If the connection cannot reestablish communications, reboot the AP-1800.

**Notice!**
Each beltpack connected to the Access Point must re-subscribe to the system before it can connect to the access point.

### 10.1.5 Add an access point to the system

To **add an access point to the system**, do the following:

1. Configure each **access point** to the OMI, OMS, or ODIN.
2. Using IPedit, configure the **access point** to have the same System ID, the same CODEC as the system, and pick a unique AP ID.

**Notice!**
The Primary DECT Sync check box is not selected if another access point is assigned as the primary DECT sync for the system.

3. If applicable, set up the **channel configuration settings** (only necessary if a beltpack is going to use the access point as HOME).
4. If applicable, assign a **zone**.
5. Send **Changes**.
6. If applicable, **subscribe** a beltpack.

### 10.1.6 Reboot the access point

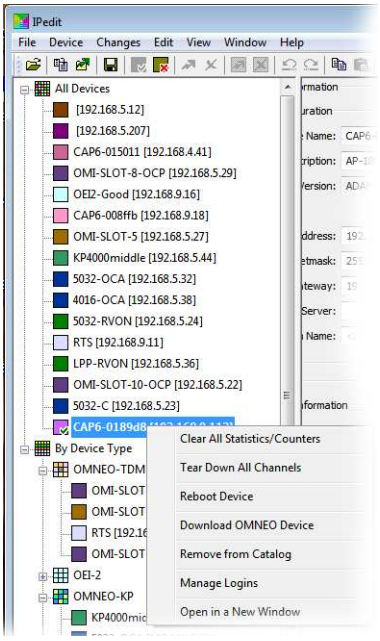
To **reboot the Access Point**, do the following:

1. Unplug the **power cord from the AP-1800**.
   The AP-1800 turns off.


2. Plug the **power cord into the device**.
   The AP-1800 turns on and runs through its LED cycle.

To **reboot the AP-1800 from IPedit**, do the following:

1. Right-click the **access point** to reboot.
   A popup menu appears.




2. From the popup menu, select **Reboot Device**.
   The device reboots.

## 10.2 AP-1800 reset

### 10.2.1 Factory default reset

Use the **Factory Default Reset** to set the access point to the factory defaults.

To **perform a factory default reset**, do the following:

1. Press and hold the **reset button** for 10 seconds.
   The LED starts blinking orange, indicating the device is in factory reset mode.

**Notice!**

The unit aborts the reset, if the reset button is not pressed for any three second gap.


2. Release the **reset button**.
3. Press and hold the **reset button for another 10 seconds** to confirm the factory default reset.
   LED starts blinking red, indicating the defaults being restored.
4. Release the **reset button**.
   The unit resets and powers up with the factory defaults.

### 10.2.2 Normal reset

A **Normal Reset** reboots the access point without making any changes to the configurations.
To **perform a normal reset**, do the following:

1. Press and hold the **reset button for three seconds**.
   The LED starts blinking green, indicating normal reset mode.
2. Release the **reset button** to reset.
   The access point resets.

### 10.2.3 TBR-6 Test mode

**Notice!**
TBR-6 Test Mode is for agency testing only.

To **enter test mode**, do the following:

1. Press and hold the **reset button for 20 seconds**.
   The LED starts to flash green, then flashes orange, and then a fast blinking orange to indicate the unit is in Test Mode. This occurs within the 20 seconds the reset button is held.

2. Release the **reset button and within 3 seconds press and release it again**.
   The LED repeats a red blinking sequence to indicate the unit is running in the TBR-6 test mode.

**Notice!**
To get the access point out of TBR-6 test mode, cycle the power to the device. The access point reboots into normal mode.

## 10.3 TR-1800

### 10.3.1 Update the firmware

If problems are encountered, see Cannot download the firmware update to the beltpack in *Troubleshooting, page 105*.

To **update the TR-1800 ROAMEO beltpack firmware**, do the following:

1. Press the **MENU button**.
   The HOME screen appears.
2. Press the **MENU button again**.
   The MENU icons appear in the beltpack display screen.
3. Navigate to the **Settings icon**.
4. Press the **SELECT button**.
   The Settings submenu icons appear in the beltpack display screen.
5. Navigate to the **Update icon**.
6. Press the **SELECT button**.
   Application, Unicode Fonts, Splash Image, and DECT module appear in the beltpack display screen.
7. Navigate to the **firmware item** to be updated.
8. Press the **SELECT button**.
   The message Plug in the USB Stick appears in the beltpack display screen.
9. Plug the **approved USB** into the bottom panel USB connector. See Figure 2.1 on page 12.
   A list of current firmware appears in the beltpack display screen.
10. Select the **firmware** to upload.
11. Press the **SELECT button**.
    An updating message and a progression bar appear on the beltpack display screen.
12. Remove the **USB stick**.

### 10.3.2 Add a TR-1800 to the system

If problems are encountered, see "Cannot download the firmware update to the beltpack" in *Troubleshooting, page 105*.

To **add a beltpack to the system**, do the following:

1. Find the **Home access point** for the beltpack.
2. Add **BPID** to the specific channel assigned to connect the beltpack.
3. Send **Changes**.
4. Subscribe the **beltpack** to the system. See *Subscribe the TR-1800 and connect to the AP-1800, page 50*.

### 10.3.3 Update the splash screen

To **update the TR-1800 ROAMEO beltpack splash**, do the following:

1. Press the **MENU button**.
   The startup screen appears.

2. Press the **MENU button again**.
   The MENU icons appear in the beltpack display screen.
3. Navigate to the **Settings icon**.
4. Press the **SELECT button**.
   The Settings submenu icons appear in the beltpack display screen.
5. Navigate to the **Update icon**.
6. Press the **SELECT button**.
   Application, Bootloader, Unicode Fonts, Splash Image, and DECT module appear in the beltpack display screen.
7. Navigate to **Splash Image**.
8. Press the **SELECT button**.
   The message Plug in the USB Stick appears in the beltpack display screen.
9. Plug the **approved USB** into the bottom panel USB connector. See Figure 2.1 on page 12.
   A list of splash screen images appear on the beltpack display screen.
10. Select the **splash image** to upload.
11. Press the **SELECT button**.
    The message Splash Update Uploading and a progression bar appear on the beltpack display screen.
12. Remove the **USB stick**.
13. Cycle the **power** on the beltpack to see the splash screen changes.

**Notice!**
Once the splash update completes, the beltpack reboots itself.

## 10.4 TR-1800 reset

### 10.4.1 Factory reset

**Factory Reset** sets the beltpack back to factory defaults as well as resetting the subscription record. The beltpack needs to resubscribe to its home AP if a factory reset is done.

**Notice!**
After a factory reset, the beltpack still has a subscription to its current Home AP until the beltpack is rebooted.

To **perform a Factory Reset**, do the following:

1. Press and hold the **MENU + SELECT + UP + DOWN buttons** simultaneously.
   A reset arrow pop-up window appears in the front display screen.
2. Continue pressing the **MENU + SELECT + UP + DOWN** buttons until the reset arrow pop-up window disappears.
3. Release the **buttons**.
   All beltpack parameters reset.

### 10.4.2 Settings reset

**Settings Reset** puts the beltpack back to factory defaults, but the subscription record stays intact.

To **perform a Settings Reset**, do the following:

1. Press and hold the **MENU button** as the unit is booted.

2. Once the Home screen appears, release the **MENU button**.
   The beltpack boots to the home screen. All parameters, except subscription are reset.

# 11 Technical data

## 11.1 TR-1800

**General**

| | TR-1800 Beltpack |
|---|---|
| Audio Modes | G.722 or G.722-EX wideband mode<br>G.726 or G.726-EX narrowband mode |
| Frequency Response (G.722/G.722-EX) (Hz-kHz) | 165 Hz - 7.0 kHz |
| Frequency Response (G.726/G.726-EX) (Hz-kHz) | 255 Hz - 3.6 kHz |
| Front Backlit Display | Color, 320 x 240 pixel, QVGA LCD |
| Top Backlit Display | Black and White, 128 x 32 pixel LCD |
| Removable Battery Pack | Li-Ion pack, 7.5 VDC, 2300 mAhr |
| Typical Battery Life | 17 hours |

**Environmental**

| | TR-1800 Beltpack |
|---|---|
| Operating temperature (°F) | 32 °F – 122 °F |
| Operating temperature (°C) | 0 °C – 50 °C |
| Storage temperature (°F) | -4 °F – 158 °F |
| Storage temperature (°C) | -20 °C – 70 °C |
| Dimensions (H x W x D) (in) | 4.93 in x 4 in x 2.31 in |
| Dimensions (H x W x D) (mm) | 125.10 mm x 101.60 mm x 58.70 mm |
| Weight (lb) | 0.77 lb |
| Weight (g) | 350 g |

**Controls**

| | TR-1800 Beltpack |
|---|---|
| Level Controls | Top-mounted rotary encoder<br>Individual listen adjustment |
| Talk/Listen Control | 4x Talk and 4x Listen buttons (top panel) |
| Number of assignment pages | 4 |
| Call Waiting Control | Replay and Clear button |
| Menu Settings Control | Menu, Set, Up, and Down buttons |

**Connections**

| | TR-1800 Beltpack |
|---|---|
| Headset Connectors | XLR-5F<br>3.5mm |

| | **TR-1800 Beltpack** |
|---|---|
| Headphone impedance (XLR and 3.5mm) | 51 - 2000 Ω |
| Microphone Type (XLR jack) | Dynamic or Electret auto-detect |
| Microphone Type (3.5mm jack) | Electret only (+5 V bias always supplied) |
| In-beltpack charging jack | Accepts 2.5 x 5.5 mm charging plug, positive center |
| In-beltpack charging voltage/current | 12 VDC @ 400 mA |
| Auxiliary audio input jack | 3.5mm for MP3 type audio input<br>Only fed to local headset |
| Firmware update jack | USB Type A |

**RF Communications**

| | **TR-1800 Beltpack** |
|---|---|
| Transmitter (RF) frequency range (MHz) | 1,920 MHz – 1,930 MHz (NA = North American)<br>1880 - 1900 MHz (EU = Europe, Asia, and Australia) |
| Communication Protocol | DECT |
| Carrier Frequency Selection | Automatic via DCS (Dynamic Channel Selection) |
| Modulation | GFSK |

**Power**

| | **TR-1800 Beltpack** |
|---|---|
| Maximum output power (mW) | 100 mW (NA)<br>200 mW (EU) |
| Average Power NA (G.722/G.722-EX wideband) | 8 mW |
| Average Power NA (G.726/G.726-EX narrowband) | 4 mW |
| Average Power EU (G.722/G.722-EX wideband) | 17 mW |
| Average Power EU (G.726/G.726-EX narrowband) | 8 mW |

**Certifications**

RoHS, FCC part 15D, FCC part 15B, FCC/IC Class B device, IC RSS-213, IC ICES-003, EN 301 406, EN 301 489-6, EN 60950-1, RCM, Singapore, Mexico, CE, UKCA

## 11.2 TR-1800 Beltpack Case

Includes a removable and adjustable shoulder strap.

| | TR-1800 HOLSTER Nylon Holster with Lanyard |
|---|---|
| Color | Black |
| Dimensions (H x W x D) (in) | 4.50 in x 4 in x 1.50 in |
| Dimensions (H x W x D) (mm) | 144.3 mm x 101.6 mm x 38.1 mm |

## 11.3 AP-1800

**General**

| | AP-1800 Access point |
|---|---|
| Audio Modes | G.722 or G.722-EX wideband<br>G.726 or G.726-EX narrowband |
| Max. beltpacks per AP-1800 (G.722 or G.722-EX) | 5 |
| Max. beltpacks per AP-1800 (G.726 or G.726-EX) | 10 |
| Ethernet type | 100BASE-T or GigE |
| Protocols / standards | OMNEO |
| Ethernet cabling required | UTP CAT-5e or better |
| Input voltage (VAC) to power supply | 100 VAC - 240 VAC |
| Input Power frequency to power supply | 50 Hz; 60 Hz |
| Output current (A) of power supply | 1.50 A |
| Input current (A) to power supply | 0.60 A |
| Input voltage (VDC) to access point | 12 VDC, positive center |

**Environmental**

| | AP-1800 Access point |
|---|---|
| Dimensions (H x W x D) (in) | 5.17 in x 7.67 in x 1.52 in |
| Dimensions (H x W x D) (mm) | 131.30 mm x 194.70 mm x 38.60 mm |
| Operating temperature (°F) | 32 °F – 122 °F |
| Operating temperature (°C) | 0 °C – 50 °C |
| Storage temperature (°F) | -4 °F – 158 °F |
| Storage temperature (°C) | -20 °C – 70 °C |
| Weight (lb) | 0.9920 lb |
| Weight (g) | 450 g |

**Connections**

| | AP-1800 Access point |
|---|---|
| Ethernet connectors | 2 x Standard RJ-45 jacks |

| | **AP-1800 Access point** |
|---|---|
| Optical connector | Accepts small form factor pluggable SMP modules |
| RF connectors | Reverse-SMA-F |

**RF Communications**

| | **AP-1800 Access point** |
|---|---|
| Receiver (RF) frequency range (MHz) | 1,920 MHz – 1,930 MHz (NA - North America)<br>1,880 - 1,900 mHz (EU - Europe, Asia, Australia) |
| Communication protocol | DECT |
| Carrier frequency selection | Automatic via DCS (Dynamic Channel Selection) |
| Modulation | GFSK |

**Power**

| | **AP-1800 Access point** |
|---|---|
| Maximum output power (mW) | 100 mW (NA)<br>200 mW (EU) |
| Average power, load dependent (G.722 or G.722-EX, wideband | 8-42 mW (NA) |
| | 17-83 mW (EU) |
| Average power, load dependent (G.726 or G.726-EX, narrowband | 8-83 mW (NA) |
| | 4-42 mW (EU) |

**Antenna - Electrical**

| | **AP-1800 Access point** |
|---|---|
| Frequency | 1850-1990 MHz |
| Gain | 3 dBi |
| Horizontal beam width | 360° |
| Impedance | 50 Ω |
| Max. Power | 50 W |
| VSWR | <2:1 |
| Polarization | Linear - along the length of the antenna |

**Antenna - Mechanical**

| | **AP-1800 Access point** |
|---|---|
| Weight | 0.77 oz (22 g) |
| Length | 5.2 Inch (133 mm) |

| | AP-1800 Access point |
|---|---|
| Max. Diameter | 0.52 Inch (13.2 mm) |
| Finish | Matte black |
| Connector | Reverse Polarity SMA Plug |
| Operating temperature | -40 °F to 131 °F (-40 °C to 55 °C) |

**AP-1800 Certifications**

RoHS, FCC Part 15D, FCC Part 15B, FCC/IC Class B device, IC RSS-213, IC ICES-003, EN 301 406, EN 301 489-6, EN 60950-1, RCM, Singapore, Mexico, CE, UKCA

# 12 Beltpack enhanced diagnostics

Beginning in ROAMEO release v8.5.0, the BP includes enhanced diagnostic features to assist with setup and installation of new systems and also help identify issues with existing installations. This document describes those new features and shows some examples.
For more detailed information on how to perform a Site Survey and installation of a new system, please refer to the ROAMEO user manual Chapter 4: Site Survey and Chapter 5: Installation.

## 12.1 Site survey logging

Logging of site survey information can be enabled while the Site Survey screen is active and then exported to a USB flash drive. Logging stops when you leave the Site Survey screen.

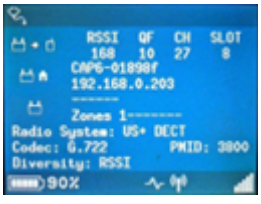
| | | | |
|---|---|---|---|
| Enable Site Survey Logging |  | ▸ Tap the UP button to begin logging.<br>A red dot appears in the lower-left corner of the Site Survey screen. |  |
| Extract Log to USB |  | ▸ Tap the DOWN button to stop logging and extract the data to a USB flash drive.<br>The screen prompts to insert a USB flash drive and download the file. |  |

## 12.2 Site survey roaming disable

Sometimes it is useful to disable roaming to perform a site survey on an existing installation with multiple APs to identify overlapping coverage areas and determine end of coverage without roaming to another AP. The ability to disable roaming is available when the Site Survey screen is active.

| | | | |
|---|---|---|---|
| Enable/Disable Roaming |  | ▸ Press and hold the SELECT button for 3 seconds.<br>A roaming disabled icon appears in the lower-right corner of the Site Survey screen.<br>Roaming is enabled after exiting the Site Survey screen. |  |

## 12.3 Enhanced diagnostics screen

| | | | |
|---|---|---|---|
| Display Enhanced Diagnostics |  <br>or<br>  | ▸ Tap the UP or DOWN buttons to toggle between the primary diagnostics screen and the enhanced diagnostics screen. |  |

| | | | |
|---|---|---|---|
| | | |  |

**Current Connection Information**

The current connection information for the BP is displayed across the top:

| | | |
|---|---|---|
|  | DECT Connection Status | |
| |  | DECT 2-way communication is established between BP and AP |
| |  | DECT connection |
| |  | No DECT connection |
| APID | Access point identifier | |
| CH/SLOT | CH = Current DECT RF channel<br>SLOT = Current DECT timeslot on the RF channel | |
| RSSI | Radio Signal Strength Indicator:<br>71-216 = Strong (Green)<br>48-70 = Marginal (Yellow)<br>0-47 = Weak (Red) | |
| QF | Quality Factor:<br>7-10 = Strong (Green)<br>5-6 = Marginal (Yellow)<br>0-4 = Weak (Red) | |

**Prohibited List**

When the BP is scanning for APs to roam, the prohibited is populated with APs that were detected by the BP, but the BP was unable to roam or connect to. APIDs are color coded based on the reason. The RSSI value of the detected AP is also displayed if it is available. The following color codes are used for an APID in the prohibited list:

| | |
|---|---|
| RED | AP detected with the wrong configuration (i.e., CODEC, zone). |
| ORANGE | AP detected, but is busy or full.<br>– When “Allow Full Capacity” is unselected in IPedit (default), an AP becomes full when 4 G.722 (or 8 G.726) beltpacks are connected. This is the recommended setting for reserving timeslots to automatically adjust and optimize performance when interference is detected. |

| | |
|---|---|
| | – When “Allow Full Capacity” is selected in IPedit, an AP becomes full when 5 G.722 (or 10 G.726) beltpacks are connected. This setting does not reserve timeslots to automatically adjust and optimize performance with interference. |
| BLUE | AP detected, but at the moment the RSSI is not better by enough for roaming compared to the current AP. |
| GRAY | AP detected, but the quality is not good enough for roaming. |
| BLACK | Other various reasons. |
| DARK GRAY | AP is not detected (inactive). The AP eventually times out and is removed from the list. |
| N/A | BP is not roaming or there are no APs detected. |

**Roaming State**

A single digit is displayed to indicate the roaming state of the BP.

| **Roaming States** | | |
|---|---|---|
| 0 | Stopped | Roaming is inactive (i.e., the BP is disconnected). |
| 1 | Stay | The BP has strong signal strength and stays connected to the current AP. |
| 2 | Scanning | The BP is scanning for alternative APs to roam. |
| 3 | Pending | The BP is in process of roaming to another AP. |
| 4 | Suspended | Roaming is temporarily disabled. |

**Pause/Resume**

You can pause the Enhanced Diagnostics screen to halt the display in a busy environment.

| | | | |
|---|---|---|---|
| Pause/Resume |  | ▸ Tap the SELECT button momentarily to toggle the pause function on or off. A pause icon appears in the upper-right corner of the Enhanced Diagnostics screen when the screen is paused. |   |

**Roaming Disable**

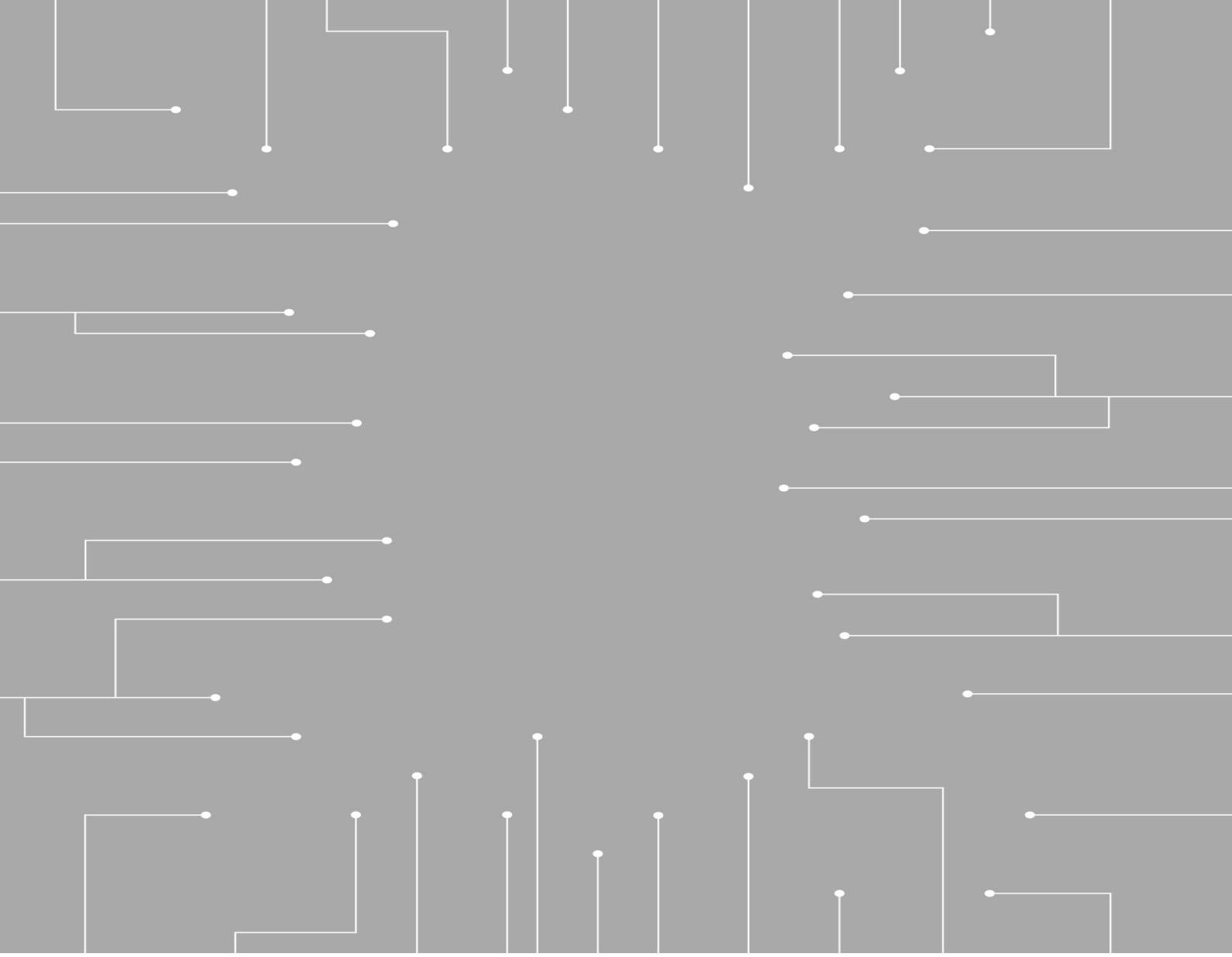
You can disable roaming from the Enhanced Diagnostics screen.

| | | | |
|---|---|---|---|
| Enable/Disable Roaming |  | ▸ Press and hold the SELECT button for 3 seconds.<br>A roaming disabled icon appears in the lower-right corner of the Enhanced Diagnostics screen when roaming is disabled.<br>Roaming is enabled upon exit of the Enhanced Diagnostics screen. |  |

## 12.4 Enhanced Diagnostics screen examples

| | |
|---|---|
| **Example, BP with Strong Connection to the Current AP**<br>In this example, the BP has a strong connection to the current AP01 (RSSI=144) so it is not searching for alternative APs for roaming.<br>The “Prohibited” list is empty (N/A).<br>The roaming state is “1” indicating the BP will stay on the current AP. |  |
| **Example, BP Is Roaming, but No Better Choices**<br>In this example, the BP is moving away from the current AP01 (RSSI=115). The BP has identified 3 other APs in the environment AP04 (RSSI=104), AP05 (RSSI=72), and AP06 (RSSI=80).<br>However, at this moment, roaming is not possible because the RSSI values are not better by enough compared to the current RSSI for roaming (color=BLUE).<br>APs displayed in BLUE are valid APs for roaming. As the RSSI values are continuously updated, those APs are re-evaluated until a roam is possible.<br>The roaming state is “2” indicating the BP is scanning. |  |
| **Example, BP Cannot Roam**<br>In this example, the BP is placed physically very close to AP02 (RSSI=144) and AP03 (RSSI=216). Both APs have significantly higher RSSI than the current AP01 (RSSI=112). |  |

| | |
|---|---|
| However, roaming is not possible because AP02 is configured with an invalid zone (color= RED) and AP03 is busy/full (color= ORANGE) because it already has the maximum number of beltpacks allowed.<br>The roaming state is “2” indicating the BP is scanning. | |
| **Example, BP Is Disconnected, Cannot Connect**<br>In this example, the DECT Sync Master (AP02) has been turned off and no backup DECT Sync Master is configured. The BP was booted, but could not establish a connection.<br>The BP has detected several APs (AP01, AP03, AP04, AP05, and AP06) as busy/full (color= ORANGE) because those APs have not yet synchronized to the DECT Sync Master. RSSI values are not available in the disconnected state, so they appear as dashes.<br>The roaming state is “0” indicating the BP has stopped roaming. |  |



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