

Bolero

Release Notes

Release 3.3.1
Rev 1.0

Important Information

Please note the following

Upgrading From Earlier Versions

The Network Space configuration and the antenna configuration is preserved when updating from version 1.0.x/1.1.x/1.2.x/2.0.x/2.1.x/2.2.x/3.0.x/3.1.x/3.2.x/3.3.0. Configurations saved with one of these older versions can be loaded in version 3.3.1.

Updating From Version 1.x.x

If you plan to use Standalone/Link Mode with Link Power, you should update the system from version 1.x.x while the antennas are powered via XLR. Before an antenna can be powered via Link Power or deliver power over the links after an update, it must be powered by XLR for at least a couple of minutes (to complete the update of the remote power controller firmware).

Updating From Version 1.0.x

Bolero antennas running version 1.0.x have to be updated twice to this version. After a successful update you will see the package version 3.3.1 in the "Current Firmware" column of the Firmware Manager.

Downgrading From This Version

When downgrading to a previous version, the Network Space, antenna configurations, and the IP address settings will be lost. Saved configurations of this version cannot be loaded on previous versions. Note that you cannot downgrade from this version to a version earlier than 3.0.0 (1.x.x, 2.x.x) directly, you have to downgrade to 3.0.0 first and then downgrade to 1.x.x/2.x.x in a second step. Note that after a downgrade, any downgraded chargers won't be accessible in the Web Interface any more.



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1 New Features

1.1 New Features in Release 3.3.1

1.1.1 New Antenna Hardware Support

This firmware version supports a new antenna hardware revision (Main PCBA 6.0.0) as well as all older antenna hardware (G1 and G2).

Antenna hardware produced from the second quarter of 2025 will not be compatible with old firmware versions, it requires firmware version 3.3.1 or higher!

1.1.2 NSA-002A Output Audio Channel Gain

The range of the output audio channel gain setting on NSA-002A IO Devices was increased, the gain can now be adjusted from -60dB to +12dB.

1.1.3 Show Radio Region on Antenna Display

The DECT radio region of an antenna is now shown in the Off-Screen on the antenna display.

1.1.4 Web Interface Improvements

Some minor bugs were solved, translations updated, improvements made and some new features were implemented in the Web Interface. These are the most important changes:

- **Show Radio Region:** The DECT radio region of the Network Space is shown in the bottom left corner of the Network Devices screen.
- **Scanner/Monitoring Views:** The observed device can be quickly changed now by selecting a different antenna with enabled Radio Scanner or a different Beltpack with enabled Beltpack Monitoring directly without closing the view.

1.2 New Features in Release 3.3.0

1.2.1 Beltpack Priorities

Beltpacks can now be prioritized in the whole Network Space by giving them a default priority. Furthermore, each Beltpack can have special priorities on individual Bolero antennas. These priorities can be configured in the Beltpack and Profile configuration views as well as in the antenna configuration view.

Higher priority Beltpacks will forcefully disconnect lower priority Beltpacks if there is no free space on an antenna, thus helping higher priority Beltpacks to maintain a connection to the network in peak load situations.

Beltpack Priorities can be enabled and disabled for the whole Network Space in the Network Space settings view in the Web Interface. Note that the maximum number of Beltpacks on 2G4 antennas is reduced from 8 to 7 when the Beltpack Priority is enabled.

Note that a Beltpack Priority license (part of the Pro 2 license bundle) is needed to use Beltpack priorities, see 4.3 for details.

1.2.2 Individual Radio Power Settings

In addition to setting the network-wide default radio power for DECT and 2G4 antennas in the Network Space settings, the radio power of individual antennas can now be changed separately in the antenna configuration view.

With this feature it becomes possible to install multiple antennas with reduced radio power close together to cover areas with a high Beltpack density (e.g. in a central control area or in the cafeteria) while having antennas with high radio power in less denser areas covering a larger range (e.g. along a race track), all in the same Network Space.

Note that an Individual Radio Power license (part of the Pro 2 license bundle) is needed to use individual radio power settings, see 4.3 for details.

1.2.3 PunQtum Support

PunQtum Q210 P / Q210 PW Speaker Stations can now be used to integrate a PunQtum system into a Standalone mode Bolero Network Space similar to NSA-002A devices. Up to six bidirectional audio connections as well as six input and six output controls can be shared between the PunQtum system and the Bolero Network Space.

The Bolero Audio Channel and Trigger setup of an integrated PunQtum system is derived automatically from the System Interconnection Patch settings of the running PunQtum configuration when the PunQtum Speaker Station connects to a Bolero antenna for the first time. No manual Trigger or Audio Channel creation is necessary on Bolero side.

Once the Audio Channels and Triggers are automatically created, they can be configured and used with intercom functions the same way as NSA-002A Audio Channels and other Triggers, e.g. by configuring an On-VOX "Talk - Always Listen" function with a Bolero Partyline as destination on a PunQtum Partyline channel to merge both Partylines into one.

As with the NSA-002A devices, no IP configuration is necessary to connect a PunQtum Q210 P Speaker Station to a Bolero antenna as long as both are in the same local Ethernet network. A maximum of two devices (e.g. one NSA-002A and one PunQtum Q210 P Speaker Station) can be connected to a single Bolero antenna at the same time. More Bolero antennas allow for more devices being connected simultaneously.

See 4.1.5 for further information on integrating IO Devices into a Bolero Standalone Network Space.

Note that a PunQtum license is needed to integrate a PunQtum system into Bolero, see 4.3 for details.

1.2.4 Pair Two Bluetooth Headsets

Two Bluetooth headsets can now be paired to a single Beltpack. Only one of the two can be actively connected at any point in time, but if the connected headset disconnects (e.g. because the headset battery ran out), the second paired headset will connect automatically if it is turned on.

1.2.5 Mute Microphone Key Function

The new Mute Microphone key function allows the Beltpack user to mute the Beltpack microphone (headset, internal or Bluetooth) temporarily without changing the activated intercom functions, also known as "cough button". This function is available in Standalone mode only at this time.

1.2.6 Beltpack Automatic Switch-Off Timer

A new Beltpack switch-off timer can be configured in the Beltpack and/or Profile configuration views in the Web interface. This timer will only become active when the Beltpack is not connected to an antenna. It will automatically turn off the Beltpack to prevent the battery from being drained if the Beltpack user forgot to turn off the Beltpack manually. The default timeout is 60 minutes.

1.2.7 Sidetone Volume Rotary Option

The sidetone volume can now be selected on a rotary in the Beltpack or Profile Rotaries configuration instead of the main volume, similar to specific key volumes, Bluetooth volume or Line Input volume.

1.2.8 PTP TimeTransmitter Priority 1 Setting

The PTP TimeTransmitter Priority 1 setting of a Bolero antenna can now be changed the same way as the PTP TimeTransmitter Priority 2 setting which was also accessible in previous versions. The default value is 128.

Caution: Changing the PTP TimeTransmitter Priority 1 is not necessary and not recommended under most circumstances, the default value is sufficient for most applications. The PTP TimeTransmitter Priority 2 setting should be used to determine the PTP TimeTransmitter in a usual Bolero Network Space. Only specialized setups containing e.g. an external PTP Grandmaster may require the PTP TimeTransmitter Priority 1 to be changed.

1.2.9 Web Interface Improvements

Some minor bugs were solved, translations updated, improvements made and some new features were implemented in the Web Interface. These are the most important changes:

- **Beltpack Signal Strength:** The current Beltpack signal strength is shown in the Beltpack list, with the same icon as in the top right corner of the Beltpack screen.
- **Direct Edit Microphone Level:** The headset or internal microphone level can now be adjusted directly in the Beltpack list. An icon shows which microphone is currently active.
- **Charger Status View:** Some new information was added to the Charger status view, including the battery serial number, firmware version and current state (e.g. charging, updating, etc.) of all Beltpacks in the Charger.
- **Verify Admin Pin:** When changing the admin pin or creating a new Network Space, the new admin pin now has to be verified by entering it twice. This will prevent locking oneself out of the Network Space in case of a typo in the admin pin.

2 Fixed Bugs

2.1 Fixed Bugs in Release 3.3.1

2.1.1 OpenSSH Server Vulnerability

A vulnerability (CVE-2024-6387, a.k.a. "regreSSHion") was discovered in the OpenSSH library used by Bolero antennas in previous releases. The library was updated to the newest version which contains a fix for the vulnerability.

2.1.2 Bluetooth Headset Issues

Some Bluetooth headset connect/re-connect issues, especially with Apple Airpod Pro Gen2 headphones and a very rare reboot of the Beltpack when entering the Bluetooth menu were fixed in this release.

2.1.3 Mic Open Status LED

In the previous release 3.3.0 the orange status LED indicating an open microphone on a Beltpack was not shown for Always-On / On-Incoming Talk / On-Notification and Trigger functions. This was corrected in this release.

2.1.4 Unexpected Multicast Join Source Address

In DHCP mode a Bolero antenna sometimes failed to update the source IP address in multicast join requests, resulting in multicast join requests using an outdated ZeroConf IP address instead.

In this release the source IP address is always updated when it changes due to DHCP and the multicast groups are automatically re-joined immediately with the new source IP address.

2.1.5 Disconnected Charger Beltpack Name Changes

In some cases, a Charger previously connected to a Bolero Standalone Network Space but currently disconnected could lead to unintended Beltpack name changes when the Beltpack was placed in the Charger. An old, outdated Beltpack name was sometimes set on the Beltpack, but later corrected automatically when the Beltpack connected to an antenna.

This behavior was fixed, a rebooted Charger without a connection to the rest of the Network Space (and thus without a Charger License) will not change the Beltpack name any more.

2.2 Fixed Bugs in Release 3.3.0

2.2.1 Failed Beltpack Update Recovery

When a Beltpack update in a Charger failed due to e.g. power loss or removing the Beltpack from the Charger during the update, the previous release 3.2.0-19 was not able to recover the partially updated Beltpack. The reason was a timing issue in the Charger ↔ Beltpack communication. The workaround was to downgrade the Charger and Beltpack to 3.0.2-35 and afterwards repeat the update to 3.2.0-19.

In this release the Charger is again able to recover a failed Beltpack update automatically by simply retrying the update.

2.2.2 Missing 'IO Device Disconnected' Event

The 'IO Device Disconnected' event was sometimes missing when an IO Device (NSA-002A) was physically separated from the Network Space, e.g. by disconnecting the network cable. The missing event is now issued in all cases in the current release.

2.2.3 Artist 1024 Trunked IFB Initialization Issue Handling

A Beltpack configured on an Artist 1024 port with a CallToIFB configured on a key could fail its initialization from time to time if the IFB in question was a trunked IFB (i.e. located in a different Artist ring) and not online at the time the Beltpack tried to connect to the Artist. This issue was fixed in this version, the Beltpack will now finish connecting to the Artist even if the IFB is not online at that time.

2.2.4 Web Interface Performance in Large Network Spaces

The Web Interface Performance was improved for this version to prevent occasional sluggish behavior when operating larger Network Spaces (more than 50 Antennas / more than 100 Beltpacks).

2.2.5 Loading a Version 2.x.x Net Config with IO Device

Loading and converting an old Net Config created with release versions 2.x.x failed in previous versions 3.0.x, 3.1.x and 3.2.x if the Net Config contained an IO Device configuration. This conversion error was fixed in this version, all 2.x.x configurations can now be loaded normally.

3 Known Issues/Limitations

3.1 PTP TimeTransmitter Restrictions (Integrated/Artist Mode)

In order to guarantee excellent radio performance, the Bolero system needs a very accurate synchronization source, which can be provided by any Bolero antenna acting as PTP Grandmaster. Alternatively, an external 3rd Party Grandmaster can be used. The Artist AES67-108 Client Card, although capable to act as a PTP TimeTransmitter, cannot be used to provide the reference clock for a Bolero system. The Bolero antennas have a better clock class than the Artist AES67-108 Client Cards and thus have higher priority.

If you change the Bolero Network Space PTP mode to TimeReceiver Only, please make sure that the PTP mode on all Artist AES67-108 Client Cards in the same Ethernet Network are also set to TimeReceiver Only and that an appropriate PTP Grandmaster is available.

4 Further Information

4.1 Standalone Mode

In addition to the Integrated/Artist system mode (the only mode in versions 1.x), a Bolero system can also be used without an Artist mainframe in Standalone/Link or Standalone/AES67 mode. All control functions and audio mixing are done by the antennas of the Bolero system when operating in Standalone mode. All settings are configured using the Web Interface. A set of Beltpack key functions is available (see 4.1.3), furthermore Always-On, Trigger, On-Talk, On-Notification/Beep and On-VOX functions (see 4.1.4) and IO Devices (see 4.1.5) are supported.

The following sections describe some aspects of the Bolero Standalone modes in more detail.

An existing Bolero Network Space can be switched to Standalone/Link mode, Standalone/AES67 mode or back to Integrated/Artist mode in the Web Interface Net Settings view or via the antenna display. The system mode can also be selected while creating the Network Space.

Note that a Standalone license has to be available on at least one antenna in the Network Space to use the Standalone/Link or Standalone/AES67 mode. If the only antenna with a Standalone license in a running system fails, the rest of the Network Space will still function until all antennas are turned off or rebooted simultaneously.

New license files obtained from Riedel can be installed using the License Manager view in the Web Interface.

Also note that antenna hardware version G2 (Rev. 11.xx) is required to use the Standalone mode. DECT antennas with older hardware versions (G1 / Rev. 10.xx) do not support this feature.

Regardless of the system mode, the antennas forming a Bolero Network Space communicate over IP among each other, so the IP settings on all antennas have to match (i.e. the same Control Multicast IP Address, all DHCP or all Static in the same net range, etc). Otherwise the Bolero Network Space will not be operational (the antennas won't "see" each other). The IP settings can be changed via the Web Interface or on the antenna display.

4.1.1 Topology

Standalone/Link mode and Standalone/AES67 mode offer the same features, the only difference is the nature and topology of the antenna connections. While Standalone/Link mode uses a configuration-free, redundant, proprietary ring topology with optional power distribution, Standalone/AES67 mode relies on standard Gigabit Ethernet connections and switches between the antennas.

4.1.1.1 Standalone/Link Mode Topology In Standalone/Link Mode all antennas of a Network Space have to be connected via the Link 1 and Link 2 plugs in a ring topology (connect Link 1 to Link 2 of the next antenna). Such a ring is redundant, the system will still work if the ring is opened at one arbitrary point (daisy-chain topology).

A PC to access the Web Interface can be connected to any antenna in the ring (directly or via an existing Ethernet infrastructure). IO Devices (e.g. NSA-002A, PunQtum Q210 P Speaker Station) can also be directly connected to some antennas in the ring. Otherwise the AES67 / Config ports are not used in Standalone/Link mode.

To synchronize IO Devices connected to the AES67 / Config port, PTP is enabled on each antenna. The PTP domain can be changed in the Net Settings view, Hybrid or TimeReceiver Only PTP modes are not available in Standalone/Link mode.

By using a BL-EPS-1005-00 power supply for an antenna in Standalone/Link Mode, it is possible to use Link Power to supply up to two additional antennas on each link of the antenna, i.e. a total of 5 antennas can be powered by a single BL-EPS-1005-00 PSU (2-1-2 configuration).

Although a maximum cable length of 300m between two antennas is allowed for normal communication, for the Link Power feature to work, the cable between two antennas is restricted to a maximum impedance of 17Ω. The current impedance of each Link can be monitored in the antenna information view in the Web Interface. Use better or shorter cabling and/or fewer connectors to reduce impedance.

Multiple antenna power options (XLR, PoE+, Link 1 Power, Link 2 Power) can be used together to facilitate redundancy. Switching from a failed power source to a different one happens automatically and without interrupting antenna operation.

4.1.1.2 Standalone/AES67 Mode Topology In Standalone/AES67 Mode all antennas of a Network Space have to be connected via Ethernet (min. 1Gbit/s) to one or more Ethernet switches using the AES67 / Config plug (like in Integrated/Artist Mode).

A PC to access the Web Interface or IO Devices (e.g. NSA-002A, PunQtum Q210 P Speaker Station) can be connected to the same Ethernet infrastructure the antennas are using. No IP configuration is needed for NSA-002A devices or PunQtum Q210 P Speaker Stations, the devices and antennas use automatic ZeroConf addresses to communicate. The Link 1 and Link 2 ports are not used in Standalone/AES67 mode.

PTP is used to synchronize all antennas and IO Devices, the PTP settings (domain, mode, ...) can be changed in the Net Settings view.

4.1.2 Partylines

As opposed to Point-to-Point communication, Partylines can be used to let multiple Beltpacks (and/or Audio Channels) communicate in a group. Up to twelve separate Partylines can be configured in a Bolero Network Space, each of which can be individually named. With an Extended Partylines license present in the Network Space the total number of Partylines can be increased to thirty-two.

Usage Examples (see 4.1.3 for details on key functions):

To let a Beltpack join a Partyline, just configure a "Talk - Always Listen" key with the Partyline as destination (this will make the Beltpack automatically listen to the Partyline).

An output Audio Channel can be used to forward all conversations on a Partyline to an external audio device (e.g. a speaker) by configuring an Always-On Listen function with the Partyline as destination on the Audio Channel.

By configuring a Trigger Talk function with the Partyline as destination on an input Audio Channel, this Audio Channel will forward the incoming audio to the Partyline when the selected Trigger is active (similar to pressing a Talk key on a Beltpack).

A 4-Wire Audio Channel with a "Talk - Always Listen" Always-On function with a Partyline as destination can be used to integrate an external analog party line into Bolero. A 4-Wire Audio Channel will not loop audio from its input to its output. An Input Trigger activated Notification/Beep function with the Partyline as destination can bring an external "Light Call" to the Bolero Beltpacks. A Set Trigger function configured in the On-Notification/Beep function section of the 4-Wire Audio Channel can be used to activate an Output Trigger (GPO pin) when the Notification/Beep was initiated by a Bolero Beltpack.

4.1.3 Key Functions

The following key functions are available in Standalone mode:

Function	Destination	Notes
None	-	does nothing
Talk	Beltpack, Partyline, Audio Channel (Output, 4-Wire)	Beltpack talks to the destination when the key is active
Talk - Always Listen	Partyline	Beltpack talks to the Partyline when the key is active; always listens to the Partyline
Talk & Listen	Partyline	Beltpack talks and listens to the Partyline only when the key is active
Listen	Beltpack, Partyline, Audio Channel (Input, 4-Wire)	Destination microphone is forced open and the Beltpack listens to the destination when the key is active; can only be configured in the Web Interface
Monitor	Beltpack, Partyline, Audio Channel (Input, 4-Wire)	Beltpack listens to the destination when the key is active and the destination speaks to someone; can only be configured in the Web Interface
Monitor Select	-	Press and hold this key, then press a Talk key to start or stop monitoring the Talk key destination (Beltpack, Partyline, Audio Channel); can only be configured in the Web Interface
Notification/Beep Select	-	Press and hold this key, then press a Talk key to initiate a Notification/Beep indication on the Talk key destination (Beltpack, Partyline, Audio Channel)
Reply	automatic	Beltpack talks to the source of the most recent incoming call (Beltpack, Partyline or Audio Channel) when the key is active
Menu Shortcut	menu entry	Jump to a specific entry in the Beltpack menu when pressing the key (e.g. Walk Test Pro, Lock Keys, etc.); same as a Quick Menu entry
Toggle Setting	specific setting	Toggle a specific setting when pressing the key (e.g. Speaker On/Off)
Monitor Trigger	Trigger (Input, Output, Virtual)	Show the state of the Trigger on the Beltpack screen (active: thick white line, inactive: thin gray line)
Set Trigger	Trigger (Output, Virtual)	Trigger is active as long as the key is active; Trigger may be active even if the key is released when there is another source activating the Trigger (other key, etc.)
Volume Increase	volume selection	Increase the selected volume(s); same as turning a rotary to the right
Volume Decrease	volume selection	Decrease the selected volume(s); same as turning a rotary to the left
Mute Microphone	-	Mute the microphone as long as the key is active; a.k.a. "cough button"

Talk, Talk - Always Listen, Talk & Listen, Listen and Monitor functions have an additional Priority setting (Standard, High, Low).

High Priority means that all **other** audio signals to the sink are dimmed when the high priority function is active.

Low Priority means that **this** audio signal is dimmed if the sink receives any other (standard or high priority) active audio signal.

How much the signals are dimmed can be adjusted in the Audio Settings for each Beltpack or Audio Channel ("Priority Dim" setting). Note that "sink" is the destination in case of a Talk, Talk - Always Listen or Talk & Listen function and the own Beltpack / Audio Channel in case of a Listen or Monitor function. The listening part of a Talk - Always Listen or Talk & Listen function always has standard priority.

4.1.4 Always-On / Trigger / On-Talk / On-Notification/Beep / On-VOX Functions

Different types of additional functions can be configured for Beltpacks and Audio Channels (note that all these functions can only be active if the Beltpack is connected or the Audio Channel itself is active):

- **Always-On:** Activated whenever and as long as the Beltpack is connected or the Audio Channel is active
- **Trigger:** Activated whenever and as long as the selected Trigger is in state "high"
- **On-Talk:** Activated whenever and as long as someone is talking to the Beltpack or Audio Channel (output and 4-Wire channels only)
- **On-Notification/Beep:** Activated whenever and as long as someone is "beeping" the Beltpack or Audio Channel (output and 4-Wire channels only)
- **On-VOX:** Activated whenever and as long as the VOX is active (e.g. somebody is talking into the microphone) on the Beltpack or Audio Channel (input and 4-Wire channels only)

A maximum of 5 functions per function type can be defined for each Beltpack or Audio Channel.

The available functions are a subset of the key functions (see 4.1.3) and operate accordingly.

4.1.5 IO Devices

Using IO Devices, analog audio channels or PunQtum partylines as well as GPIs, GPOs and other control signals can be integrated into a Bolero Network Space.

An IO Device configuration can be created via the Web Interface IO Devices tab anytime, without real hardware having to be present. This configuration can then be assigned to an online device later.

Depending on the settings in the configuration (user defined in the Bolero Web Interface in case of the NSA-002A or automatically taken over from the PunQtum system in case of the PunQtum Q210 P Speaker Station), Audio Channels (see 4.1.6) and Triggers (see 4.1.7) are automatically created.

Note that a maximum of two IO Devices (NSA-002As and/or PunQtum Q210 P Speaker Stations) can be connected to each antenna (e.g. by daisy-chaining the second NSA-002A to the first NSA-002A or via normal Ethernet network infrastructure).

Also note that a maximum of 128 audio sources are allowed per Bolero Network space in Standalone mode. This is a combination of connected Beltpacks (max. 100) and active input or 4-Wire Audio Channels. The number and type of used Audio Channels on each IO Device can be changed in the IO Device edit view (for NSA-002As) or via the System Interconnection Patch settings in the PunQtum Q-Tool software (for PunQtum systems).

4.1.5.1 NSA-002A The NSA-002A is an interface device allowing to integrate six analog input and six analog output audio channels as well as three GPIs and three GPOs into a Standalone Bolero Network Space.

To connect an NSA-002A device to the Bolero system, power it up, make sure Bolero mode is active (top LED is blue) and connect it directly to the AES67 / Config port of an antenna (Standalone/Link mode) or to the used Ethernet infrastructure (Standalone/AES67 mode). No IP configuration is necessary. The NSA-002A will show up in the IO Device tab of the Bolero Web Interface and can then be assigned to an existing or a new IO Device configuration.

4.1.5.2 PunQtum Q210 P / Q210 PW Speaker Station A PunQtum Speaker Station allows to integrate a PunQtum system into a Standalone mode Bolero Network Space. Up to six bidirectional audio connections as well as six input and six output controls can be shared between the PunQtum system and the Bolero Network Space.

The Bolero Audio Channel and Trigger setup of an integrated PunQtum system is derived automatically from the System Interconnection Patch settings of the running PunQtum configuration when the PunQtum Speaker Station connects to a Bolero antenna for the first time. No manual Trigger or Audio Channel creation is necessary on Bolero side.

Once the Audio Channels and Triggers are automatically created, they can be configured and used with intercom functions the same way as NSA-002A Audio Channels and other Triggers, e.g. by configuring an On-VOX "Talk - Always Listen" function with a Bolero Partyline as destination on a PunQtum Partyline channel to merge both Partylines into one. Note that some Audio Channel settings (mute, gain, etc.) might be different or not available on PunQtum audio channels compared to NSA-002A audio channels.

As with the NSA-002A devices, no IP configuration is necessary to connect a PunQtum Speaker Station to a Bolero antenna as long as both are in the same local Ethernet network. The System Interconnect feature has to be turned on in the PunQtum

system and a System Interconnection Patch has to be configured and selected on the PunQtum Speaker Station, then it will show up in the IO Device tab of the Bolero Web Interface and can then be assigned to an existing or a new IO Device configuration.

Note that a PunQtum license is needed to integrate a PunQtum system into Bolero, see 4.3 for details.

4.1.6 Audio Channels

Audio Channels are automatically created by turning them on in the IO Device configuration or by connecting a PunQtum Q210 P Speaker Station. There are three types of Audio Channels: Input, Output and 4-Wire. A 4-Wire channel acts as audio source and audio sink simultaneously (similar to a Beltpack). Furthermore, the audio coming in via the 4-Wire channel is never looped out through the same 4-Wire channel (e.g. if talking and listening to a Partyline, "mix-minus").

Audio Channels are only active when the corresponding IO Device Configuration is assigned to a real IO Device hardware and this hardware is present and connected (the dot in the Locate column of the IO Device Configuration table in the Web Interface is green). The channel type icon in the Audio Channels table will be green or greyed out accordingly.

If an Audio Channel is removed by turning it off in the IO Device configuration (or removing it in the PunQtum System Interconnection Patch), it is also automatically removed from all assigned keys, Always-On functions, etc; i.e. it is not existing any more (e.g. a Talk key to this Audio Channel will have no function after the channel was removed).

On the other hand, by disabling an Audio Channel in the edit Audio Channel view it is just prevented to become active, but all references to this Audio Channel are kept intact (e.g. a Talk key to this Audio Channel will not change, but the Beltpack user will get a "Not available" message when pressing it).

Some settings can be configured on all Audio Channels (e.g. name, enable), some settings are channel type (NSA-002A or PunQtum) or direction (input or output) specific: Input gain, input mute, VOX (Input and 4-Wire Audio Channels); output gain, output mute, priority dim (Output and 4-Wire Audio Channels).

4.1.7 Triggers

There are three types of Triggers:

- **Input Triggers** are assigned to a GPI input pin or a PunQtum Control and always show the state of the pin / the PunQtum Control
- **Output Triggers** are assigned to a GPO output pin or a PunQtum Control; the pin / the Control is driven according to the Trigger state
- **Virtual Triggers** are not assigned to any physical pin or external Control but otherwise can be used like Output Triggers

Input and Output Triggers are automatically created by turning them on in the IO Device configuration or PunQtum System Interconnection Patch. Virtual Triggers can be created and removed via the Trigger table action menu.

Output and Virtual Triggers can be changed by the Set Trigger key function (or Always-On- / Trigger- / On-Talk- / On-Notification/Beep- / On-VOX-functions).

Triggers can be used to activate functions on Beltpacks or Audio Channels, activate GPO output pins, monitor GPI input pins or activate and monitor external PunQtum Control signals.

Note that once a Trigger is configured, it can be set and read in the entire Network Space. It is not limited to the IO Device where the associated physical pin is located.

When Input or Output Triggers are configured in the NSA-002A IO Device configuration, the relationship between the Trigger (logical state) and the physical pin (physical state) can be defined by changing the Pin Mode. The following Pin Modes are available:

- **Normal:** Momentary action, logical state and pin state are equal
- **Latching:** Activation on first rising edge, release on second falling edge
- **Toggle:** Activation on first rising edge, release on second rising edge.
- **Auto:** Short (< 500 ms) high states act like Latching, longer ones like Normal mode (for e.g. speak while holding)

Furthermore, all the available modes can be inverted ("Invert Pin").

Note: See the IO Device configuration help in the Web Interface for more details.

4.2 Used IP Multicast Groups

In addition to the configured Beltpack audio multicast groups, Bolero uses the following multicast groups for normal operation:

Type	Address	Ports	Notes
Antenna Configuration / Discovery	239.202.29.2	30301 30304 30312	Changeable in Network Settings
Beltpack Discovery	239.202.29.3	30321	Integrated/Artist mode only
PTP	224.0.1.129 224.0.0.107	319 320	
Update	230.4.4.1 230.5.5.1	1044	
Topology Change	224.0.0.38	40000 40001	
Loop Detection	239.192.29.10	30181	
ZeroConf mDNS Discovery (Bonjour)	224.0.0.251	5353	

Not all multicast groups are used all the time, e.g. the update multicast groups are only in use during firmware updates.

4.3 Licenses

Optional Bolero features can be activated by installing a license on an antenna in the Network Space. The following licensed features are available in this version:

Feature	Description	License Bundle
Standalone Mode	Use Bolero Standalone/AES67 and Standalone/Link system modes to allow Bolero intercom operation without any Artist frames.	Standalone
Extended Partylines	Allows up to 32 Partylines in Standalone mode instead of the standard 12.	Pro 1
Advanced Monitoring	Enables the DECT Scanner and Beltpack Monitoring features.	Pro 1
Custom Audio Filters	Custom audio filters can be created in the WebUI and used on all Beltpacks.	Pro 1
Charger Monitoring	Chargers can be added to a Network Space and provide additional status data about the inserted Beltpacks. The Charger behavior can be customized.	Pro 1
Beltpack Priority	Beltpacks can be prioritized in the Network Space and/or on individual Bolero antennas. Higher priority Beltpacks will forcefully disconnect lower priority Beltpacks if there is no free space on an antenna (see 1.2.1).	Pro 2
Individual Radio Power	The radio power of each Bolero antenna can be configured individually, i.e. differently than the rest of the Network Space (see 1.2.2).	Pro 2
PunQtum Support	PunQtum systems can be integrated into Bolero as IO Devices (similar to NSA-002As). A configured PunQtum Speaker Station is required to create the connection (see 4.1.5).	PunQtum

The previous Extended Partyline and Advanced Monitoring licenses are discontinued. Note that existing Extended Partyline and Advanced Monitoring licenses will be converted to Pro 1 licenses automatically, so the existing functionality will be kept and additionally all Pro 1 features like Custom Audio Filters and Charger Monitoring are available as well.

4.4 Versions & Compatibility

Please note that all antennas used in the same Network Space have to run the same version of the Bolero software. If software versions differ, the devices cannot communicate correctly and thus cannot work together. It is recommended to always use the latest firmware version.

Devices with different versions will be shown as incompatible in the Web Interface. Clicking the IP address of an incompatible device opens the Web interface on the device, allowing it to be updated to the same version as the rest of the net.

Please note that all BPs have to use the matching Beltpack software version included in the update package, otherwise they will not be able to connect to the Bolero antennas.

Package Version: 3.3.1-16

Beltpack Version: 3.3.1-16 (internal: V08.56.00)

Required Artist AES67-108 Card Version: Release 8.2 (element 8.2.CA1) or higher

Required Artist 1024 UIC Card Version: Release 8.2 (element 8.2.U1) or higher

Required NSA-002A Versions: 1.2.0-2ea62f6#68 or higher (NSA-002A G1), 2.0.9-8e2b4b7#64 or higher (NSA-002A G2)

Required PunQtum Q210 P Version: 2.01.0004 or higher

Required PunQtum Q210 PW Version: 2.01.0040 or higher

Note: Standalone/Link Mode requires hardware version G2 (Rev. 11.xx). Antennas with older hardware versions (G1 / Rev. 10.xx) do not support this feature.

Note: Since version 3.1.1 the firmware supports a new Beltpack hardware revision containing a different Beltpack display driver chip, as well as all older Beltpack hardware. The new Beltpack hardware that is in production since mid-2022 is not compatible with older firmware versions, it requires firmware version 3.1.1 or higher!

4.5 Charger & Beltpack USB Update

Chargers can be updated using the Web Interface Firmware Manager or by using a USB stick.

To update a Bolero charger, copy the update package (bolero_vX.X.X-XX.package) to the root directory of a USB stick (FAT32 only, other file systems like NTFS or exFAT are not supported) and plug it into one of the front USB ports on the charger. The charger will automatically update and reboot afterwards.

Note: Please make sure that there is only one update package file (bolero_vX.X.X-XX.package) on the USB stick!

Furthermore, all Beltpacks placed in the charger will be updated (if they are running a different firmware version), as long as the USB stick is inserted.

Chargers with the Automatic Beltpack Update setting enabled in the charger configuration in the Web Interface will automatically update all Beltpacks to the same version the charger is using, even without an inserted USB stick. Beltpacks already running the correct version are skipped automatically.

Progress and status information regarding these updates can be viewed on the displays of the inserted Beltpacks. The simultaneous update of five Beltpacks in the charger takes approximately 40 minutes.

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