User Guide

HelixNet Digital Partyline 4.2 User Guide

Part Number: 399G229 Rev C

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Clear-Com
AN HME COMPANY

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1 Introduction

This guide is intended to help you install, configure, and use the **HelixNet Partyline™** system.

HelixNet Partyline is a digital intercom system designed to combine the simplicity and ease of use of an analog partyline system with the quality and deployment flexibility of Ethernet networks.

1.1 Simple installation

User stations can be added to the system without configuration

- Simple and fast global web browser or front panel configuration
- All partyline channels are available on every cable
- Easy integration with other 2-wire or 4-wire systems
- Standard Infrastructure:
  - Ethernet networks – PoE powered user stations
  - XLR Cables – daisy changing and passively splitting
  - Digital distribution for low noise floor

Note: *Cabling for a HelixNet system should always be screened.*

1.2 System scalability

HelixNet Partyline is easily expanded by adding additional HMS-4Xs (up to a maximum of 6) or LQ devices (up to 3 in a Link-Group).

- 12 or 24 channels per system with optional feature license
- 64 Endpoints (user stations and ports) per HelixNet system
- LQ devices can be mixed in a HelixNet Link-Group for audio port expansion as well as the optionally licensed Agent-IC mobile app and SIP/VoIP clients.
- Expansion option to enable talk and listen on more than four Channels.
- A choice of beltpacks and the option of wall/desktop Remote Stations that connect to a system that contains a Main Station

1.3 Important Safety instructions

HelixNet digital Partyline uses cable infrastructure to transport audio and data over a range of frequencies. The maximum frequency used for transmission is approximately 25MHz. Depending

on the amount of audio and data transmitted, HelixNet digital Partyline can work with as much as 90dB signal attenuation. However, the receivers are very sensitive and are susceptible to crosstalk between cables.

Therefore it is important to maintain cable shield integrity through all connectors, splitter boxes and patch panels.

Read these instructions.

Keep these instructions.

Heed all warnings.

Follow all instructions.

Do **not** use this apparatus near water.

Clean only with dry cloth.

Do **not** block any ventilation openings. Install in accordance with the manufacturer's instructions.

Do **not** install near any heat sources such as radiators, heat registers, stoves, or other apparatus (including amplifiers) that produce heat.

Do **not** defeat the safety purpose of the polarized or grounding-type plug. A polarized 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.

Protect the power cord from being walked on or pinched particularly at plugs, convenience receptacles, and the point where they exit from the apparatus.

Only use attachments/accessories specified by the manufacturer.

Use only with the cart, stand, tripod, bracket, or table specified by the manufacturer, or sold with the apparatus. When a cart is used, use caution when moving the cart/apparatus combination to avoid injury from tip-over.

Unplug this apparatus during lightning storms or when unused for long periods of time.

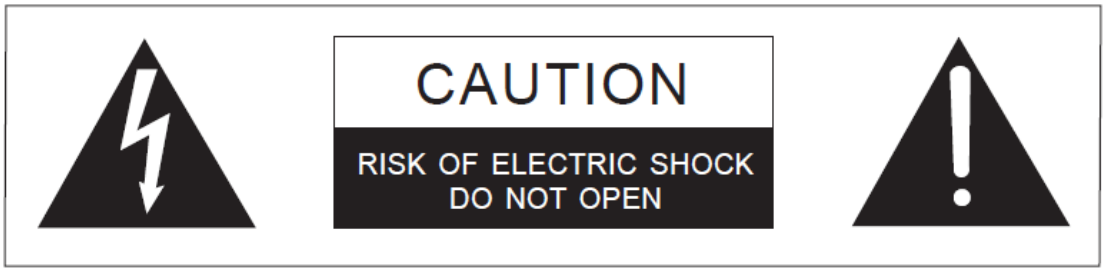
Refer all servicing to qualified service personnel. Servicing is required when the apparatus has been damaged in any way, such as power-cord supply or plug is damaged, liquid has been spilled or objects have fallen into the apparatus, the apparatus has been exposed to rain or moisture, does not operate normally, or has been dropped.

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

1.3.1 Safety symbols

Familiarize yourself with the safety symbols in the diagram below.

These symbols are displayed on the apparatus and warn you of the potential danger of electric shock if the system is used improperly.



This symbol alerts you to the presence of uninsulated dangerous voltage within the product's enclosure that might be of sufficient magnitude to constitute a risk of electric shock. Do not open the product's case.

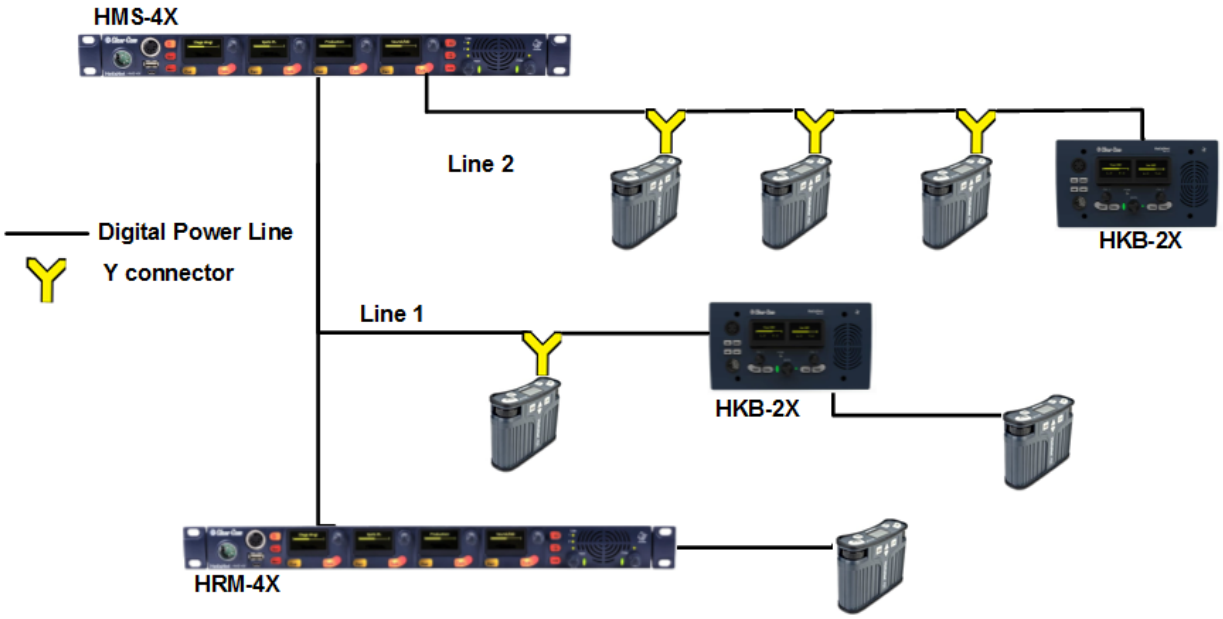
This symbol informs you that important operating and maintenance instructions are included in the literature accompanying this product.

***Note**: For compliance purposes see Compliance.*

1.4 Methods of connection: system overview

HelixNet devices can be connected in several different ways. A combination of these methods can be used.

1.4.1 Connecting by cable (Powerline)



In this scenario devices are connected by cable in either a daisy chain or home run fashion. Power and data are passed down this connection in what is known as a powerline.

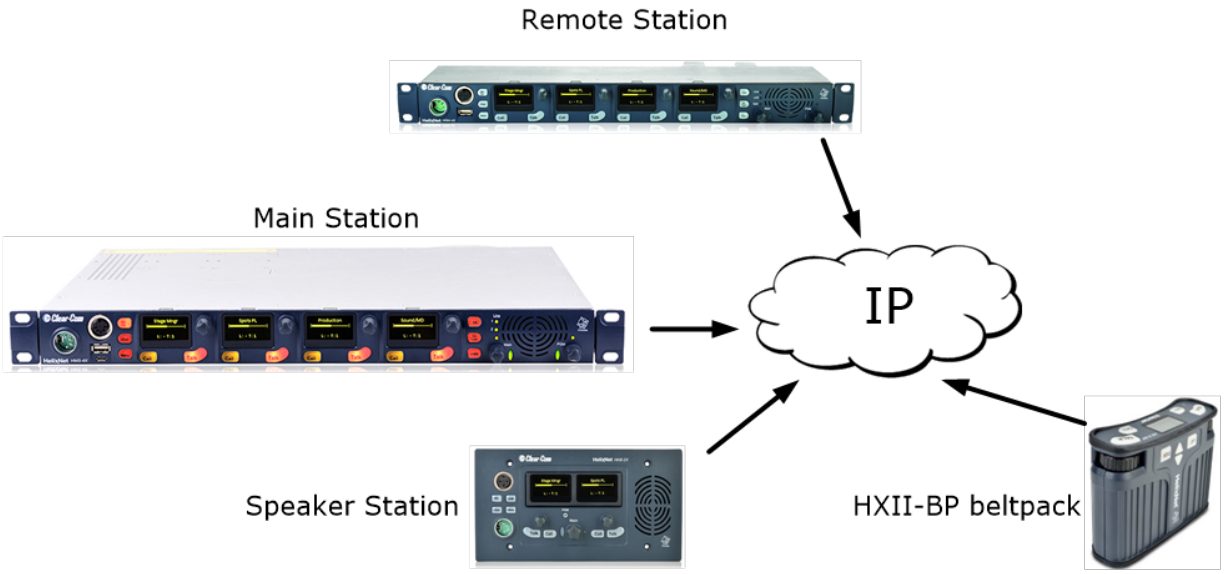
See Linking Remote Stations and Speaker Stations for detail on different types of device layout (topologies).

Up to 20 beltpacks can be connected to one Main Station, and Remote and Speaker Stations can be included in the powerline.

However, including Remote and Speaker Stations in the powerline will affect the amount of devices that can be connected, as Main and Remote Stations draw more power than beltpacks.

You can find the URL to an online powerline/distance calculator at the beginning of Installing HelixNet Partyline

1.4.2 Pairing by LAN

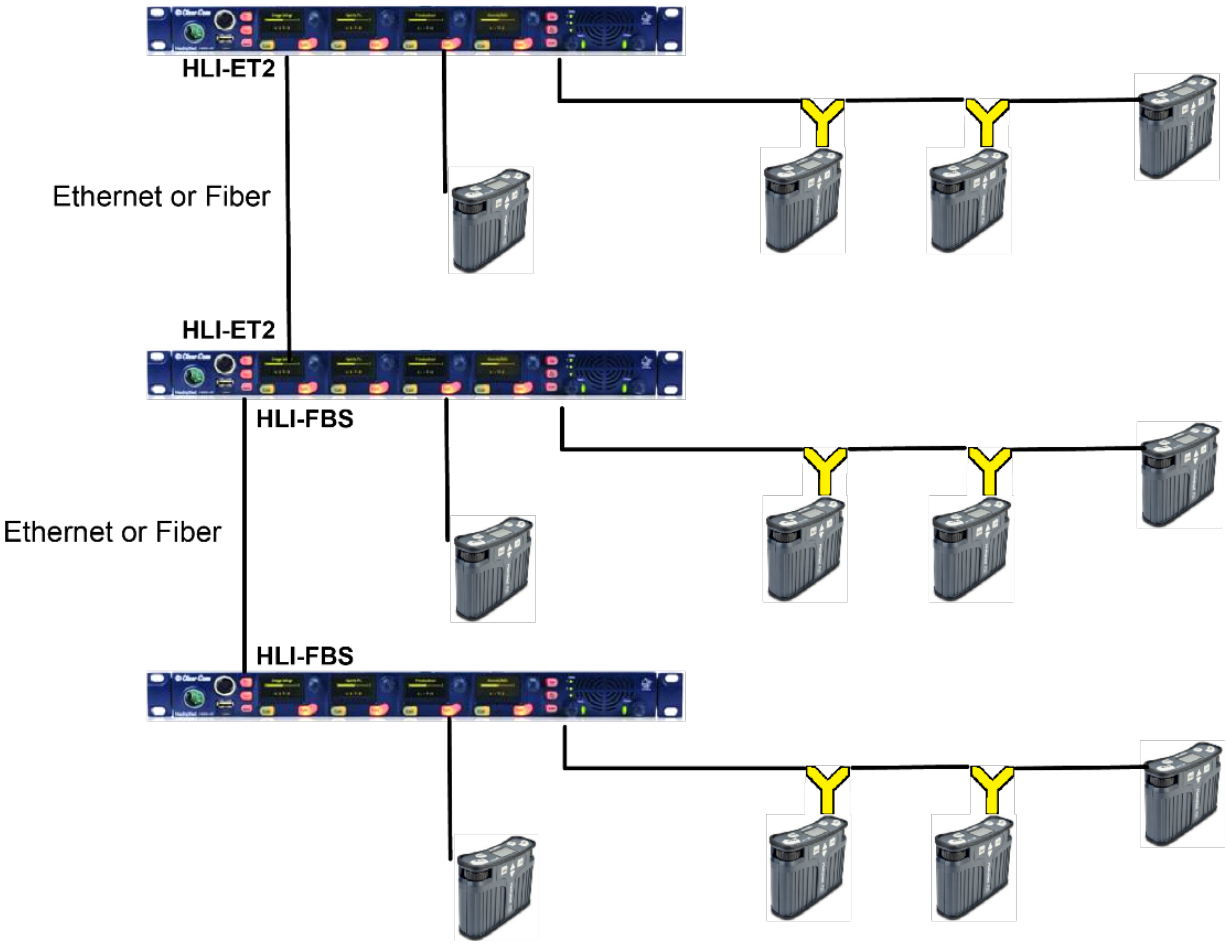


When pairing by LAN, devices are connected to the same network by Ethernet cable (RJ45) and then paired from the device menus.

See Ethernet point-to-point link for more detail.

***Note**: Pairing by LAN offers better latency than connecting with cable.*

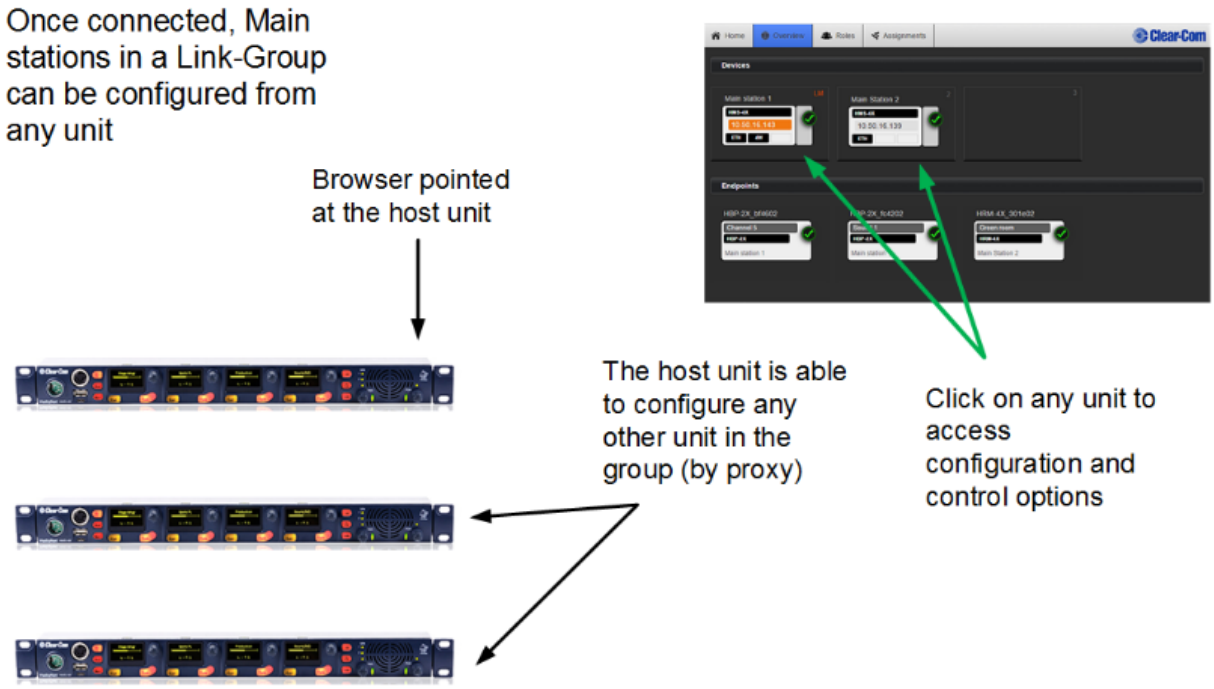
1.4.3 Connecting more than one Main Station (Linking)



Up to six Main Stations can be linked. In earlier versions of HelixNet (2.0 and below) linking Main Stations was a way of expanding the Channel capacity of your system (4 Channels on each Main Station). In HelixNet 3.0 and later, this is no longer necessary as each Main Station already has 12 Channels, with the option of licensing another 12 (24 Channels in total). A system, regardless of the number of linked HMS units, will have 12 Channels by default with the potential of increasing that number to 24 with the purchase of a license for each HMS within the Link-Group.

Linking Main Stations in HelixNet has the following benefits:

- More beltpack connections (20 per Main Station)
- System distribution as far as your LAN allows.
- The ability to configure all devices from an Internet browser using the CCM (Core Configuration Manager).
- Using a role-based setup.
- Expanding a Main Station from four keys to 24 key using the expansion key mode.



Main Stations can be linked using different methods:

By Ethernet and RJ45 cable in your LAN. See Linking Main Stations (cabling and linking from device menus).

By fiber cabling between units.

1.4.4 Key Expansion Groups (Main Stations and Remote Stations)

HRM/HMS Expanding over IP:

- All devices in the Expansion Group use the headset/ microphone/loudspeaker of a "Host" HRM or HMS
- Some menus disappear from the "Expanded" HRM/HMS devices (e.g. microphone, headset, display settings).

Devices can be set up as a key Expansion Group to allow convenient control of audio from one device, and to increase the "key" capacity so that a user can view and control more than 4 keys (up to 24 with 5 expansion panels).

See Setting up a key Expansion Group for detail.

1.5 System Resource

A HelixNet system/Link Group will support up to 64 endpoints.

Endpoints consume system resources depending on the number of audio paths the endpoint contains and may include: user stations, assigned interface ports, program audio inputs, LQ, Agent-IC and SIP accounts.

Exceeding the system endpoint limits will cause a sluggish system response.

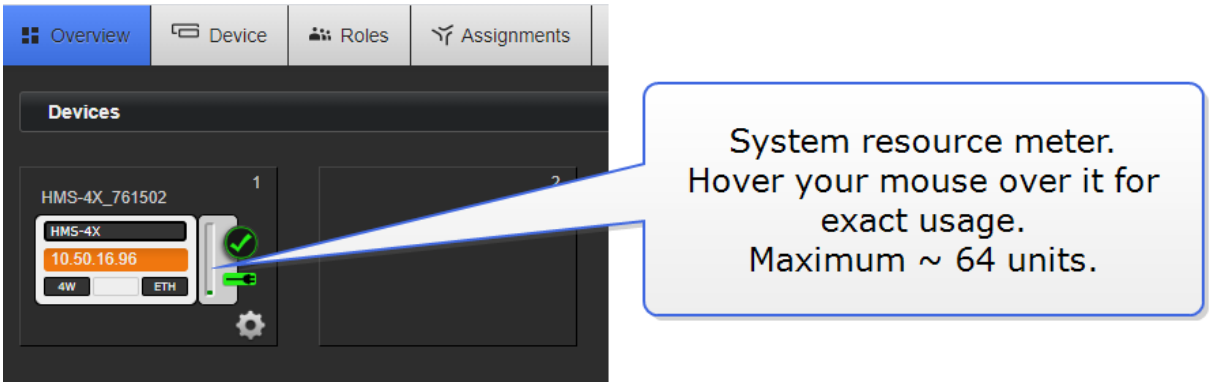
1.5.1 Conserving system resource

In larger systems it is recommended to balance the loading of endpoints on the HMS-4X Main Stations in the Link Group. LQ interface ports and LQ Agent-IC, IVC and SIP accounts load the resources of the system's Link Master.

HRM-4X Remote Stations include multiple audio interfaces which can be assigned to the system's channels. When assigned to channels, these use resources. The Remote Station allows you to disable the unit's program audio input as well as to configure the stage announce output for local use. In this way you can conserve system resources in larger systems.

1.5.2 System resource meter

There is a resource meter on the main station device icon. This is found in the **Overview** page of the CCM. Hover your mouse over this icon to see how many system resource units are in use.



System Resource Units (up to 70)		
Color Indication	**Units**	
Green	≤ 59	Within system limits
Amber	60 - 63	Approaching limits
Red	≥ 64	Exceeding limits

1.6 Further Information

For the latest information about HelixNet Partyline, including software updates, see:

helixnet-digital-network-partyline

For information about **Clear-Com accessories**, including headsets and gooseneck microphones, see:

http://www.clearcom.com/product/headsets-accessories

2 Panels and Interfaces

2.1 Main Station/Remote Station: Front panel

Key to Main Station/Remote Station: Front panel

Feature	Description
A	**Ear for rack mounting Main Station/Remote Station.**
B	**Headset socket (4-pin XLR–M)** Pin / Function: 1 – Mic ground 2 – Mic + 3 – Earphone ground 4 – Earphone
C	**Gooseneck microphone socket** (3-pin female Tuchel connector)
D	**Mic control [MIC ON]**. Press to activate mic audio.

Key to Main Station/Remote Station: Front panel	
	**Headset key [HSET].** Press to activate the headset mic. When the headset is connected, the gooseneck microphone is disconnected. Audio output to the loudspeaker is diverted to the headphones.
	**Menu**. Press to display the Main Station menus in the display screens [**G**]. Use the rotary control for each display screen to scroll and select menu items. See Main Station/Remote Channel keyset
	**Channel keyset**. There is a keyset (set of controls) addressable to any of the available Channels. See Main Station/Remote Channel keyset
	**Stage Announce [SA].** Press to talk to connected Public Address (PA) / Stage Announce (SA) system, See HMS-4X Main Station: rear panel SA mutes any active Talk key on the station, and transmits audio from either headset or gooseneck microphone to the SA Output port on the rear of the unit. If the SA is assigned to a Channel, then any talker within the Channel has their audio routed to the associated SA Port. When the SA is pressed, Mic select [MIC ON] is also lit bright red, indicating that mic audio is active. See Using the SA [Stage Announce] key
	**Master Station** **LEDs for lines 1 and 2 (digital Partylines). The LEDs indicate the status of the intercom circuit powering. When an LED is lit:** • Green, the line is functioning. • Amber, the line is busy. • Red, there is an error or fault on the line. **Remote Station** **LEDs for line status and LAN status**. The LEDs indicate the status of the intercom circuit powering. When an LED is lit: Green, the line is functioning. Amber, the line is busy. Red, there is an error or fault on the line. If there is a fault on a powerline output, the Line STATUS indicator will turn off and

Key to Main Station/Remote Station: Front panel	
	the red FAULT indicator will flash. Possible causes of a fault include overvoltage, overcurrent, short circuit to ground or severe brown-outs.
	**Loudspeaker**. When a headset is connected [**B**] and selected [**E**], loudspeaker output is diverted to the headphones.
	**Program feed audio level rotary control [Program]**. • To increase the volume of the program feed to the loudspeaker / headphones, turn clockwise (up to 360°). • To decrease the volume, turn anticlockwise (up to 360°). As you increase or decrease the volume, the level control LEDs pass through a range of indicator colors:

LED color	Volume level
Green	Low
Amber / Green	Low / Medium
Amber	Medium
Red / Amber	Medium / High
Red	High

• To mute or unmute the program audio, push the rotary control.

Upper and lower volume limits can be set in the HMS Role settings in the CCM under **Roles > Main Station (HMS) > select role > Station > Program Volume Limits**.

	**Loudspeaker / Headphone audio level rotary control [Main]**. To increase the volume to the loudspeaker / headphones, turn clockwise (up to 360°). To decrease the volume, turn anticlockwise (up to 360°). Push to mute or unmute. As you increase or decrease the volume, the level control LEDs pass through a range of indicator colors. Upper and lower volume limits can be set in the HMS Role settings in the CCM under **Roles > Main Station (HMS) > select role > Station > Main Volume Limits**.

Key to Main Station/Remote Station: Front panel	
	**Main Station:** **Remote Mic Kill [RMK]**. Press to: • Unlatch all latched talk keys for either all displayed Channels or all Channels within the system (configurable within the Role) **Remote Station:** **Option [OPT]** – Can be configured as an RMK button, see Using the RMK [Remote Mic Kill] key.
	All Talk. Press to talk to all Channels (intercom devices and systems) connected to the Main Station.
	USB 2.0 (Micro-AB) connector ***Note**: This connector is not present on the Remote Station.*
	USB 2.0 (Standard-A) connector.

***Note**: The Main Station/Remote Station does not have a power switch, button or key. The system powers up when you connect the power supply. Power up time depends on the amount of equipment connected.*

2.2 Main Station/Remote Channel Keyset and Display

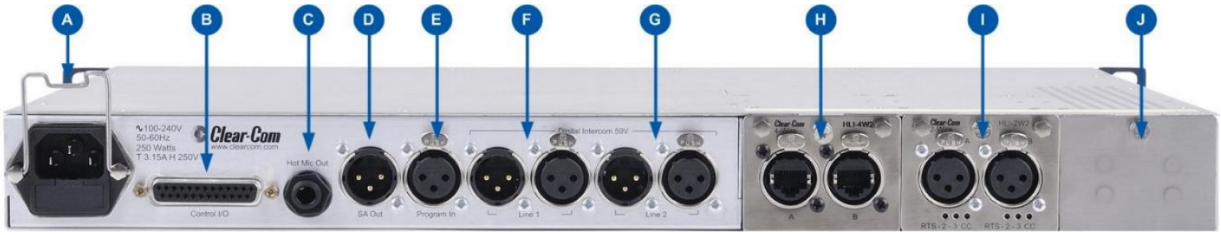
Key to Main Station/Remote Station front panel: Channel keyset	
Feature	**Description**
	**Display screen**. There are multiple screensaver options. If the Rotary controls are touched, this screen also displays the sound level on the Channel (controlled by the rotary) and the system information icons. See the next table for an explanation of system information icons. In **Menu** mode, the display screens display the four levels of menu. The menu hierarchy proceeds left to right: • The top level menu is presented in the first screen (furthest left on the front panel). • The lowest level menu is presented in the fourth screen (furthest right on the front panel). If the display is in Menu mode, the display screen times out of Menu mode and displays the Channel label if no key is pressed for 20 seconds. For more information about Menu mode, see Using the Menus
	**Rotary control**. Turn to increase or decrease the listen volume level for the Channel. Also, push the control to mute or unmute audio level. In Menu mode, use the control to scroll menu items. To select menu items, press the control.
	**Talk key**. Press to talk on the Channel and to all nodes (intercom devices and systems) listening into the Channel.
	**Call key**. Press to send a call signal to all nodes (intercom devices and systems) listening into the Channel.

Note: *If the Main Station/Remote Station remains inactive for 10 minutes, the display screens enter screensaver mode, see Setting the screensaver*

	Main Station/Remote Station display icons and indicators	
Name	**Icon**	**Description**
Channel label		A descriptive name for the Channel. The maximum length is 10 characters.
Channel listen volume level		The volume of the Channel audio.
Link with another HMS		Appears on the Main Station when linking is enabled.
Not linked		Appears on the Main Station when a connection to another Main Station is lost.
Paired		Appears on the Remote Station and Speaker Station when it is connected properly over LAN.
Not paired		Flashes on the Remote Station and Speaker Station when the connection is not configured properly.
Signal strength		Appears on the Remote Station, Speaker Station and beltpack. One to five bars indicate the strength of the signal from the Main Station.
Locked	Locked	Appears on the beltpack when you try to access the menu while the menu has been locked at the Main Station.
Mute		Appears on the Main Station, Remote Station and Speaker Station when the rotary control for any Channel on the Main/Remote Station is pressed.
Opto (GPI)		Appears on the Main Station and Remote Station close to the Call or Talk button if it is associated with an Opto.
Relay (GPO)/Logic Output Option		Appears on the Main Station and Remote Station close to the Call or Talk button if it is associated with a Relay (Logic Output Option).
Program	PGM	Appears on the Main Station, Remote Station, Speaker Station and beltpack when a program input is assigned to a Channel.
IFB	IFB	Appears on the Main Station, Remote Station, Speaker

	Main Station/Remote Station display icons and indicators	
		Station and beltpack when a program input is assigned to a Channel and IFB is enabled.
2W/4W	2W/4W	Appears on the Main Station, Remote Station and Speaker Station when a 2W/4W input is assigned to a Channel.
Limiter	LIM	Appears on the Main Station, Remote Station, Speaker Station and beltpack when the headset limiter is enabled.
Expansion		Appears on the Main Station and Remote Station when the device is part of an Expansion Group.
Warning		Appears on the Main Station, Remote Station, Speaker Station and beltpack when something is wrong. Warning messages can be accessed in the Diagnostic menu.

2.3 HMS-4X Main Station: Rear Panel



Key to Main Station: rear panel	
Feature	**Description**
A	**Power supply with metal cable clip**. The power supply operates at 100 - 240 VAC / 50-60Hz / 250 watts / T 3.15A H 250 V.
B	**Control I/O** (25 way female D-type). Use to connect up to 4 relay control outputs and 4 optically isolated control inputs, see Configuring the Control I/O)

Key to Main Station: rear panel

Pin	Function	Pin	Function
Pin 1	Relay 1 NC	Pin 14	Relay 1 Pole
Pin 2	Relay 1-NO	Pin 15	Relay 2 NC
Pin 3	Relay2-Pole	Pin 16	Relay 2-NO
Pin 4	Relay 3 NC	Pin 17	Relay 3 Pole
Pin 5	Relay 3-NO	Pin 18	Relay 4 NC
Pin 6	Relay4-Pole	Pin 19	Relay 4-NO
Pin 7		Pin 20	+5V
Pin 8	GND	Pin 21	+5V
Pin 9	GND	Pin 22	Opto 1-
Pin 10	Opto 1+	Pin 23	Opto 2-
Pin 11	Opto 2+	Pin 24	Opto 3-
Pin 12	Opto 3+	Pin 25	Opto 4-
Pin 13	Opto 4+		

Hot Mic output. This connection is a 1/4-in (0.64 cm) phone jack. It provides an output signal from the selected headset or panel microphone. The Hot Mic output is always live. Audio from the mic is routed through the Hot Mic output even if the mic is inactive (off).

Pin	Function
Tip	Mic
Ring	IFB mute signal
Sleeve	Ground

SA [Stage Announce] line out (3-pin male XLR).

Key to Main Station: rear panel

Pin	Function
Pin 1	Ground
Pin 2	Positive
Pin 3	Negative

Program Input (3-pin female XLR).

Pin	Function
Pin 1	Ground
Pin 2	Positive
Pin 3	Negative

Line 1 (digital Partyline). (3-pin male and female XLR connectors).

Pin	Function
Pin 1	Ground
Pin 2	+30V DC and Audio
Pin 3	-30V DC and Audio

Line 2 (digital Partyline). (3-pin male and female XLR connectors).

Pin	Function
Pin 1	Ground
Pin 2	+30V DC and Audio
Pin 3	-30V DC and Audio

Key to Main Station: rear panel	
	Slots for optional interface modules. H – Slot 1 I – Slot 2 J – Slot 3 For more information, see HMS-4X Main Station rear panel: Interface modules

Warning: Only connect power supply to earthed supply sockets. Ensure that the power supply is routed to avoid sharp bends, hot surfaces, pinches and abrasion.
For more safety guidance, see the Safety Instructions at the front of this guide.

Note: *The HMS-4X Main Station does not have a power switch, button or key. The system powers up when you connect the power supply.*

2.3.1 HMS-4X Main Station Rear Panel: Interface Modules

Up to three Interface modules (of the same or different types) can be fitted to the extension bay of the Main Station. When looking at the rear of the Main Station, expansion slot 1 is the left-hand slot, expansion slot 2 is the middle slot, and expansion slot 3 is the right-hand slot.

Warning: The interface modules are NOT hot pluggable. Ensure that the Main Station is powered down before inserting or removing modules.

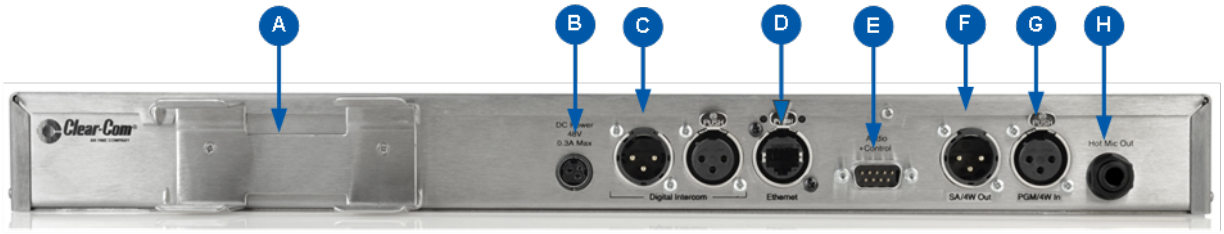
<table>
<tr><th>Interface module</th><th>Description</th></tr>
<tr><td>Two-wire interface module (HLI-2W2)
  </td><td>This is a two Channel, 2-wire device that enables interoperability with, CellCom® / FreeSpeak®, and HME DX systems, as well as both Clear-Com and RTS analog Partyline systems.
Note: This module requires a powered analog Partyline.
The module provides two analog Partyline connectors (3 pin female XLR connectors) with the following pin out:
<table>
<tr><th>Pin</th><th>Function</th></tr>
<tr><td>1</td><td>Ground</td></tr>
<tr><td>2</td><td>Power [Option for RTS mode: power and audio]</td></tr>
<tr><td>3</td><td>Audio</td></tr>
</table>
Use HelixNet Main Station menus to set the module for either RTS or Clear-Com systems. If RTS mode is selected, you can set either:
• Pin 2 for power to mixed audio Channel (1 – 24)
• Pin 3 for power to mixed audio Channel (1 – 24)
• Select either pin and assign required Channel to it.</td></tr>
<tr><td>Four-wire interface module (HLI-4W2)
  </td><td>This is a two Channel, 4-wire device that enables interoperability with the Eclipse® digital matrix system and other four-wire audio sources such as telephone hybrids, AB-120/-100, PA (Public Address) / SA (Stage Announce) systems. The module also enables HelixNet-to-HelixNet connections using four-wire audio ports. Two four-wire connectors (etherCON type RJ45 socket) are provided with the following pin out:
<table>
<tr><th>Pin</th><th>Function</th></tr>
<tr><td>1</td><td>RS-422 data TX+</td></tr>
<tr><td>2</td><td>RS-422 data TX-</td></tr>
<tr><td>3</td><td>Audio send +</td></tr>
<tr><td>4</td><td>Audio receive +</td></tr>
<tr><td>5</td><td>Audio receive -</td></tr>
</table></td></tr>
</table>

<table>
<tr><th>Interface module</th><th>Description</th></tr>
<tr><td></td><td>
<table>
<tr><th>Pin</th><th>Function</th></tr>
<tr><td>6</td><td>Audio send -</td></tr>
<tr><td>7</td><td>RS-422 data RX+</td></tr>
<tr><td>8</td><td>RS-422 data RX-</td></tr>
</table>
</td></tr>
<tr><td>Ethernet interface module (HLI-ET2)
 
</td><td>Enables linking of Main Stations, and connection of Remote Stations, Speaker Stations and the HXII-BP beltpack via LAN. Contains Two 10/100 Mbps RJ45 etherCON ports.
An LED on the right-hand side above the connector flashes green when there is network activity.
<table>
<tr><th>Pin</th><th>Name</th><th>Function</th></tr>
<tr><td>1</td><td>TX+</td><td>Transmit Data+</td></tr>
<tr><td>2</td><td>TX-</td><td>Transmit Data-</td></tr>
<tr><td>3</td><td>RX+</td><td>Receive Data+</td></tr>
<tr><td>4</td><td>n/c</td><td>Not connected</td></tr>
<tr><td>5</td><td>n/c</td><td>Not connected</td></tr>
<tr><td>6</td><td>RX-</td><td>Receive Data-</td></tr>
<tr><td>7</td><td>n/c</td><td>Not connected</td></tr>
<tr><td>8</td><td>n/c</td><td>Not connected</td></tr>
</table>

Warning: Both ports are configured to bridge traffic from one port to the other in order to work in a daisy-chained configuration. Spanning Tree Protocol is not enabled on these ports, therefore do not connect them both to the same network.</td></tr>
<tr><td>Fiber interface module (HLI-FBS)</td><td>Enables linking of Main Stations. Contains two SFP cage slots. The module is supplied with one transceiver fitted.
Any 100BASE-X SFP can be connected.
An LED at the side of each connector flashes green when there is</td></tr>
</table>

Interface module	Description
	network activity. **Warning**: Both ports are configured to bridge traffic from one port to the other in order to work in a daisy-chained configuration. Spanning Tree Protocol is not enabled on these ports, therefore do not connect them both to the same network.

2.4 Remote Station rear panel



Key to Remote Station: rear panel

Feature	Description
A	**PSU holder for a separate external AC-DC power supply. The external PSU provides the 48V required and at its input takes 100-240V, 50-60Hz.**
B	**Power supply**. The power input connector is a low voltage DC connection. It is 48VDC at a max power of 12.95W.
C	**Line 1 (digital Partyline). (3-pin male and female XLR connectors).**

Pin	Function
Pin 1	Ground
Pin 2	+30V DC and Audio
Pin 3	-30V DC and Audio

Key to Remote Station: rear panel

D

Ethernet/Power Over Ethernet (RJ45 connector)

An LED on the left-hand side of the connector illuminates when the link is working.

An LED on the right-hand side of the connector flashes green when there is network activity.

Pin	Name	Function
1	TX+	Transmit Data+
2	TX-	Transmit Data-
3	RX+	Receive Data+
4	n/c	Not connected
5	n/c	Not connected
6	RX-	Receive Data-
7	n/c	Not connected
8	n/c	Not connected

When connected over PoE, the Remote Station draws 13 Watts from the PoE switch.

E

Control input/output (DB9 connector)

Pin	Function
Pin 1	Audio out +
Pin 2	Audio in +
Pin 3	GND
Pin 4	Relay NC
Pin 5	Relay NO
Pin 6	Audio out -
Pin 7	Audio in -
Pin 8	Opto
Pin 9	Relay pole

Key to Remote Station: rear panel	
	The audio connections in this connector are wired directly to the SA and program connectors. Only one or the other can be used at one time.

SA [Stage Announce] line out (3-pin female XLR).

Pin	Function
Pin 1	Ground
Pin 2	Positive
Pin 3	Negative

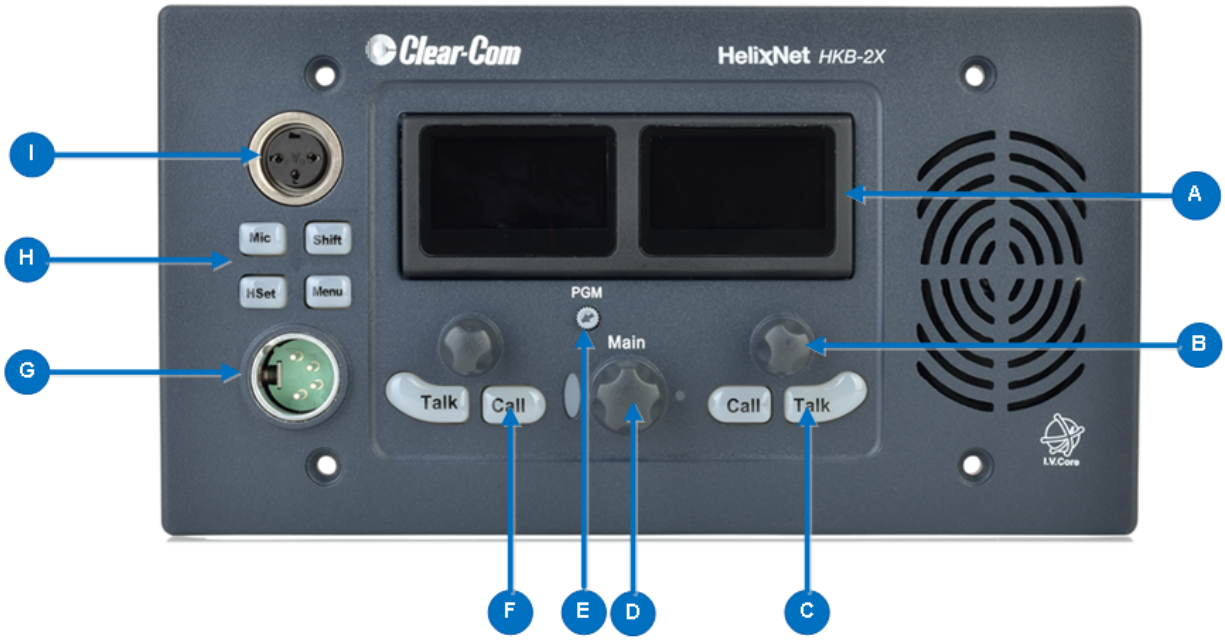
Program Input (3-pin m XLR).

Pin	Function
Pin 1	Ground
Pin 2	Positive
Pin 3	Negative

Hot Mic output. This connection is a 1/4-in (0.64 cm) phone jack. It provides an output signal from the selected headset or panel microphone. The Hot Mic output is always live. Audio from the mic is routed through the Hot Mic output even if the mic is inactive (off).

Pin	Function
Tip	Mic
Ring	IFB mute signal
Sleeve	Ground

2.5 Speaker Station

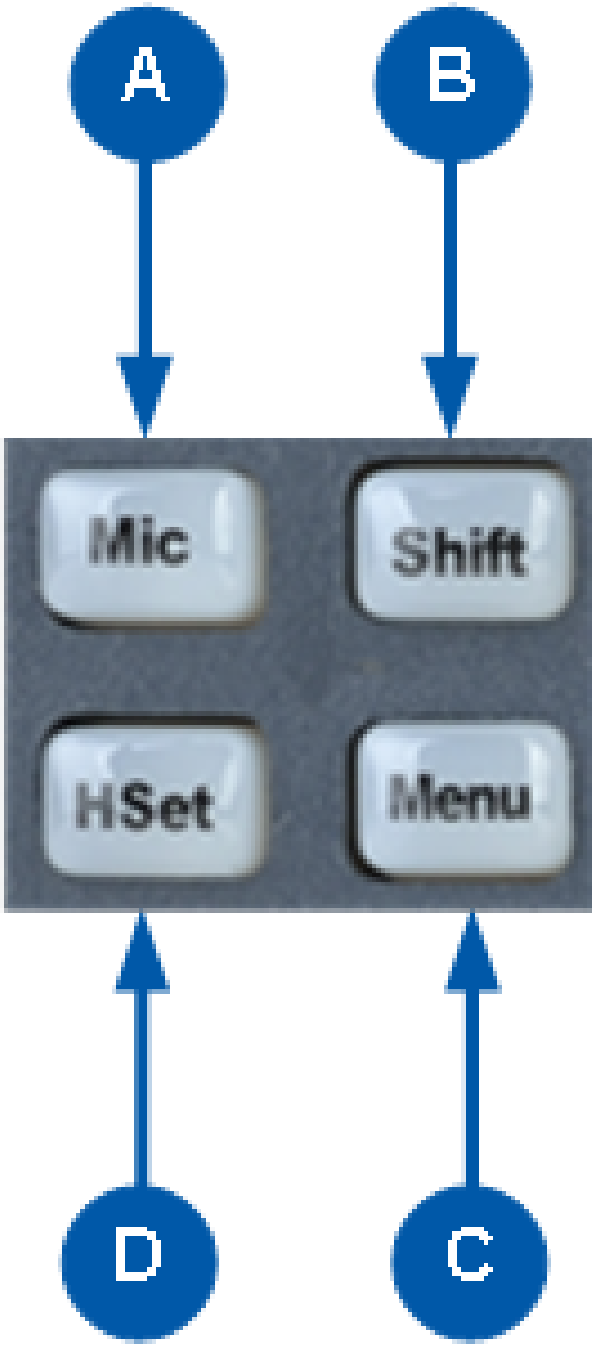


Key to Speaker Station front panel	
Feature	**Description**
A	**Tilt adjustable display screen**. The following default information is displayed: • The Channel label. • The Channel listen (volume) level. For a full description of the display screen information, see (link…) In Menu mode, the display screens display the two levels of menu. The menu hierarchy proceeds left to right: • The top level menu is presented in the first screen (furthest left on the front panel). • The lower level menu is presented in the second screen. If the display is in Menu mode, the display screen times out of Menu mode and displays the Channel label if no key is pressed for 20 seconds. For more information about Menu mode, see Using the Menus
B	**Rotary control.** Turn to increase or decrease the listen volume level for the Channel. Also, push the control to mute or unmute audio level. In Menu mode, use the control to scroll menu items. To select menu items, press the control.

Key to Speaker Station front panel	
C	**Talk key.** Press to talk on the Channel and to all nodes (intercom devices and systems) listening into the Channel.
D	**Loudspeaker / Headphone audio level rotary control [Main]**. To increase the volume to the loudspeaker / headphones, turn clockwise (up to 360°). To decrease the volume, turn counter clockwise (up to 360°). As you increase or decrease the volume, the level control LEDs pass through a range of indicator colors. For more information, see (link…)
E	**Program feed audio level Trim Pot control [PGM].** To increase the volume of the program feed to the loudspeaker / headphones, turn clockwise (up to 360°). To decrease the volume, turn counter clockwise (up to 360°). To mute or unmue the Channel audio, push the control.
F	**Call key.** Press to send a call signal to all Keysets assigned to the same Channel. There are two Call keys on the beltpack, one for each of the displayed Channels.
G	**Headset socket (4-pin XLR–M)**
H	**Headset/microphone key set. There is a keyset (set of controls) to control the headset/microphone inputs and menu options.** See (link…)
I	**Gooseneck microphone connector** (3-pin female Tuchel connector)

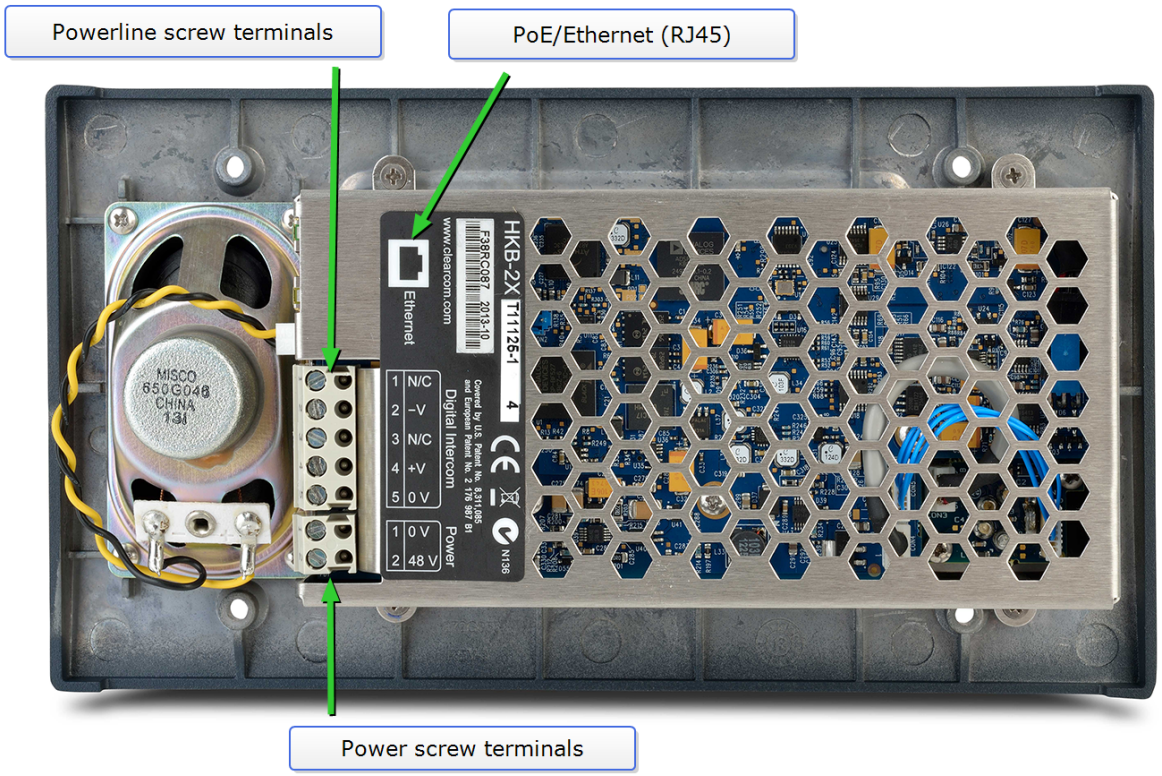
Pin	Function
1	Mic ground
2	Mic positive
3	Earphone ground
4	Earphone positive

2.5.1 Speaker Station Front Panel Function Buttons



Key to Speaker Station front panel function buttons	
Feature	**Description**
A	**Mic control [MIC ON].** Press to activate mic audio.
B	**Shift key**. Press to display two alternative Channels on the Speaker Station displays.
C	**Menu**. Press to display the Speaker Station menus in the display screens. Use the rotary control for each display screen to scroll and select menu items.
D	**Headset key [HSET]. Press to activate the headset mic. When the headset is connected, the gooseneck microphone is disconnected. Audio output to the loudspeaker is diverted to the headphones.**

2.5.2 Speaker Station Rear Panel



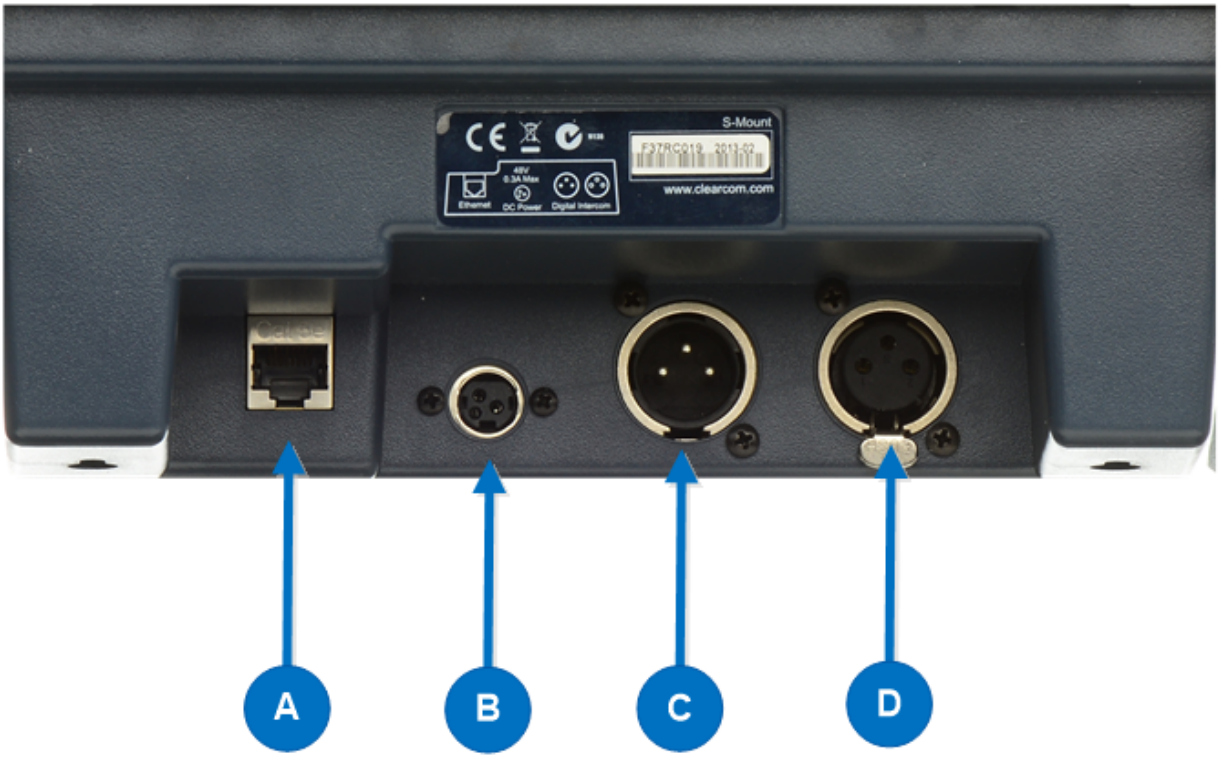
Speaker Station rear connectors	
Digital Intercom	
1	Not connected
2	-30V DC
3	Not connected
4	+30V DC
5	Ground
Power	
1	Ground
2	48V DC

For power draw, see the **Specifications** section in this manual.

2.5.3 S-Mount Rear Panel

The S-Mount is an optional unit that allows you to mount the Speaker Station on a desk or wall.

Note: *There are cables pre-installed in the S-Mount that connect to the Speaker Station terminals.*



Key to S-Mount rear panel keyset

Feature	Description
A	**Ethernet/Power over Ethernet connection (RJ45).**

Pin	Name	Function
1	TX+	Transmit Data+
2	TX-	Transmit Data-
3	RX+	Receive Data+
4	n/c	Not connected
5	n/c	Not connected
6	RX-	Receive Data-
7	n/c	Not connected
8	n/c	Not connected

B **Power connection.**

The power input connector is a low voltage DC connection. It is 48VDC at a max power of 12.95W.

C **Line 1 Digital Partyline**. (3-pin male XLR connector).

Pin	Function
Pin 1	Ground
Pin 2	+30V DC and Audio
Pin 3	-30V DC and Audio

Table 1-26 Line 1 pinout

D **Line 2 Digital Partyline.** (3-pin female XLR connector).

Pin	Function
Pin 1	Ground
Pin 2	+30V DC and Audio
Pin 3	-30V DC and Audio

2.6 HBP-2X Beltpack

For information about the HXII-BP-X4 Beltpack, see HXII-BP-X4 Beltpack

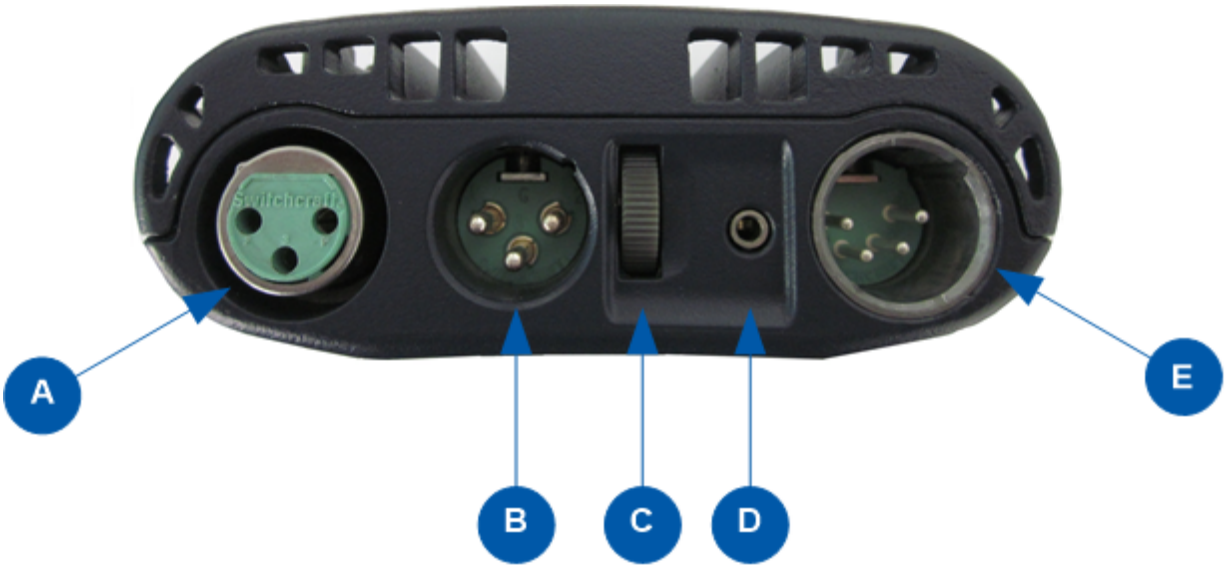
2.6.1 HBP-2X User Controls (Front and Side View)

Note: *The beltpack has two Keysets, each containing one Call button (E) and one Talk button (F).*

Key to HBP-2X user controls (front and side view)	
Feature	**Description**
A	**Menu key**. Press firmly to enter Menu mode (see also **D**,**E**). To exit Menu mode, press the Menu key again. The display screen times out of Menu mode and displays the Channel label(s) if no key is pressed for 20 seconds.
B	**USB 2.0 (Micro-AB) connector**. Used for the USB light flasher feature. See Call a beltpack using the USB flasher feature

Key to HBP-2X user controls (front and side view)	
	**Casing**. Metal casing for robust use. For information about the beltclip, beltloops, and feet, see HBP-2X beltclip, beltloops and feet
Keyset	
	**Rotary control**. Turn to increase and decrease the listen volume level for the Channel. In Menu mode, you can turn either of the side-mounted rotary controls to scroll menu items. To select (enter) items, press the right-hand Call key (see **E**).
	**Call key**. Press to send a call signal to all Keysets assigned to the same Channel. There are two Call keys on the beltpack, one for each of the supported Channels. In Menu mode, press the right-hand Call key to select (enter) menu items (see also **A**, **D**). Use the left-hand Call key to go back one menu level.
	**Talk key**. Press to talk to all nodes (intercom devices and systems) listening into the Channel. There are two Talk keys on the beltpack, one for each of the supported Channels.
	**Display screen**. When the beltpack is not in Menu mode, the labels and volume level for each of the two Channels supported by the beltpack are displayed on screen. For a full description of the display screen information, see Main Station Remote.
	Note: *The beltpack has two Keysets, each containing one Call button (E) and one Talk button (F).*

2.6.2 HBP-2X Connectors and Controls (Rear View)



Key to HBP-2X Beltpack (Rear view)

Feature	Description
A	**Line (Digital Partyline)** (3-pin female XLR connector).

Pin	Function
1	Ground
2	+30V DC and Audio
3	-30V DC and Audio

Feature	Description
B	**Line (Digital Partyline)** (3-pin male XLR connector). Pass-through for daisy chain connection, see diagram in Topologies.

Pin	Function
1	Ground
2	+30V DC and Audio
3	-30V DC and Audio

Key to HBP-2X Beltpack (Rear view)	
C	**Program feed (volume) control wheel**. Turn to increase or decrease the overall listen volume level of the program feed. To assign programs to a Channel, see Assigning the Program Listen to a Channel and Editing the Program Input.
D	**2.5 mm TRS headset input.**

	Function
Tip	Earphone Positive
Ring	Mic Positive
Sleeve	Ground

E

Headset connector (4-pin male or 5-pin female XLR connector).

Pin	Function
1	Mic ground
2	Mic positive
3	Earphone ground
4	Earphone positive
Pin	Function
1	Mic ground
2	Mic positive
3	Earphone ground
4	Earphone left
5	Earphone right

2.6.3 HBP-2X Beltclip, Beltloops and Feet (Base View)

Key to HBP-2X Beltpack (Base view)	
Feature	**Description**
A	**Beltclip**. The beltclip is secured to the unit with three screws, and may be removed, according to your requirements.
B	**Feet (positions only)**. The beltpack can also be placed on a level surface (once the beltclip has been removed). To give the beltpack more grip on the surface, attach the four rubber feet supplied with the beltpack.

Key to HBP-2X Beltpack (Base view)	
C	**Beltloops (one either side)**. Use to thread through a belt or strap for securing the beltpack to a belt or a fixed position.

2.7 HXII-BP-X4 Beltpack

For information about the HBP-2X Beltpack, see HBP-2X Beltpack.

2.7.1 HXII-BP-X4 Beltpack User Controls (Top View)

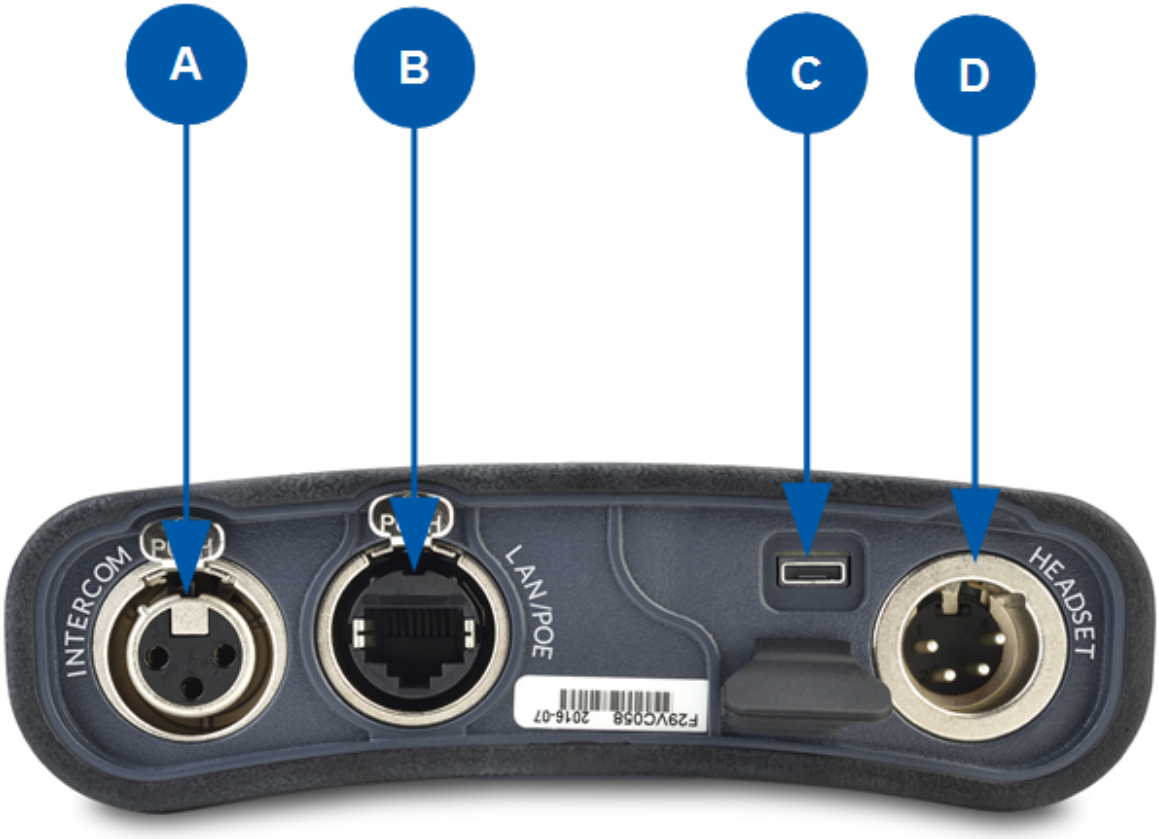
***Note**: The beltpack has two Keysets, each containing one Call button (C and D) and one Talk button (A and B).*

Key to HXII-BP-X4 user controls (top view)	
Feature	**Description**
 	**Talk keys**. Press to talk to all nodes (intercom devices and systems) listening into the Channel. There are two Talk keys on the beltpack, one for each of the supported Channels.
	**Call keys.** Press to send a call signal to all Keysets assigned to the same Channel. There are two Call keys on the beltpack, one for each of the supported Channels. In **Menu** mode, press the right-hand Call key to select (enter) menu items. Use the left-hand Call key to go back one menu level.
	

2.7.2 HXII-BP-X4 Beltpack Connectors and Controls (Front View)

Key to HXII-BP-X4 user controls (front view)	
Feature	**Description**
	**Channel volume control.** Turn to increase and decrease the listen volume level for the Channel. In Menu mode, you can turn either of the side-mounted rotary controls to scroll menu items. To select (enter) items, press the right-hand Call key.
	In Menu mode, you can turn either of the side-mounted rotary controls to scroll menu items. To select (enter) items, press the right-hand Call key. These controls also adjust binaural audio volume in beltpacks with 5-pin headset connectors.
	**Menu key.** Press firmly to enter **Menu** mode. To exit **Menu** mode, press the **Menu** key again. The display screen times out of **Menu** mode and displays the Channel label(s) if no key is pressed for 20 seconds.
	**Program feed volume controls.** Use the up and down arrow buttons to increase or decrease the overall listen volume level of the program feed. To assign programs to a Channel, see Assigning the Program Listen to a Channel and Editing the Program Input
	**OPT Programmable function key. This button selects the binaural audio volume adjustment screen on beltpacks with a 5-pin headset connector.**

2.7.3 HXII-BP-X4 Beltpack (Base View)



Key to HXII-BP-X4 user controls (base view)

Feature	Description
	**Line (Digital Partyline)** (3-pin female XLR connector).

Pin	Function
1	Ground
2	+30V DC and Audio
3	-30V DC and Audio

etherCon connector. Used for Power over Ethernet (PoE).

Pin	Name	Function
1	TX+	Transmit Data+
2	TX-	Transmit Data-
3	RX+	Receive Data+
4	n/c	Not connected
5	n/c	Not connected
6	RX-	Receive Data-
7	n/c	Not connected
8	n/c	Not connected

When using PoE, the beltpack draws 4 Watts from the PoW switch.

Key to HXII-BP-X4 user controls (base view)	
	**USB 2.0 (Micro-AB) connector**. Used for the USB light flasher feature. See Call a beltpack using the USB flasher feature

Headset connector (4-pin male or 5-pin female XLR connector).

Pin	Function
1	Mic ground
2	Mic positive
3	Earphone ground
4	Earphone positive

Pin	Function
1	Mic ground
2	Mic positive
3	Earphone ground
4	Earphone left
5	Earphone right

2.7.4 HXII-BP-X4 Beltpack (Beltloops and Clip)

Key to HXII-BP-X4 beltloops and clip	
Feature	**Description**
A	**Beltloops.** Use to thread through a belt or strap for securing the beltpack to a belt or a fixed position. You can also extend the beltloops to allow you to mount the beltpack on a flat surface.
B	**Beltclip.** Use to fasten to a belt or similar structurer. The beltclip also has three holes for wall mounting.

3 Installing HelixNet Partyline

This section describes how to install your HelixNet Partyline system. It also provides basic guidance on planning your installation.

For related information, see Cabling reference and the Online Powerline cable distance calculator at:

https://clearcom.com/DownloadCenter/technicaldocs/HelixNetCablingCalculator/index.html#/

Tip: For guidance on connecting HelixNet Partyline to other systems, using the optional interface modules, see Connecting to Other Intercom Systems.

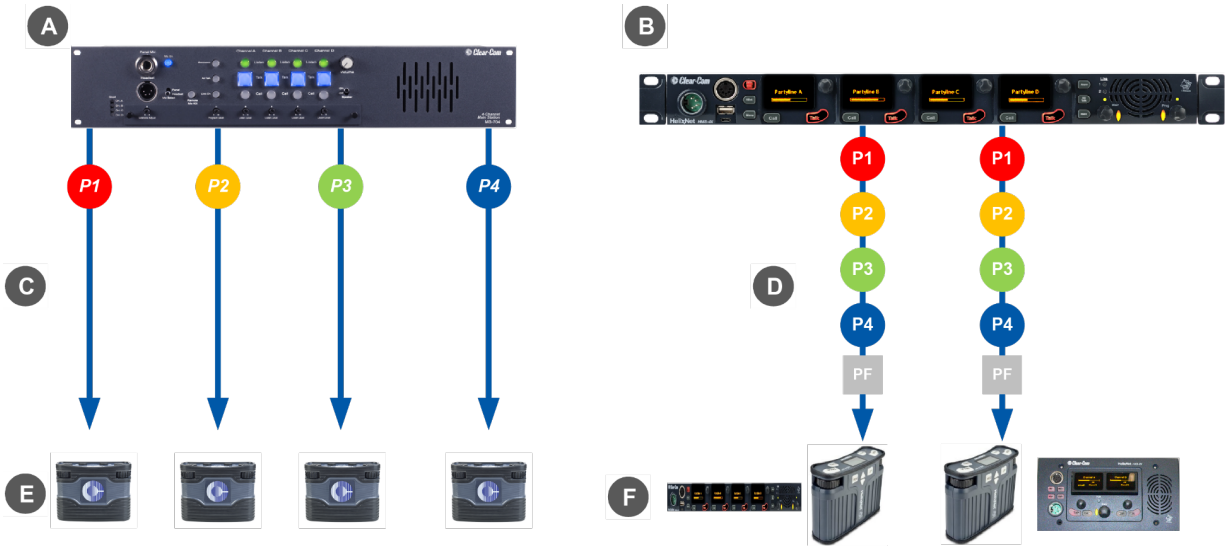
- Do **not** plug any non-approved equipment into HelixNet Partyline.

  HelixNet Partyline operates at different voltage levels than analog two-wire Partyline systems. Do **not** plug any analog two-wire Partyline equipment into the HelixNet Partyline ports, as this may cause damage.

  For more safety instructions, see Important Safety Instructions

3.1 Planning your HelixNet Partyline installation

3.1.1 Comparing digital with analog cabling



***Note**: The program is always a participant within a Channel and cannot exist outside of a Channel.*

Key to analog and digital cabling comparison diagram	
Feature	Description

Key to analog and digital cabling comparison diagram

Example 4-Channel analog Main Station (MS-704 shown).

HMS-4X Main Station (digital Main Station).

Partyline Channel 1

Partyline Channel 2

Partyline Channel 3

Partyline Channel 4

Program Feed

***Note**: The program is always a participant within a Channel and cannot exist outside of a Channel.*

In a traditional analog Partyline system, one cable is dedicated to each Partyline Channel. This can make it more difficult to build redundancy or spare capacity into the installation (owing to the number of connectors / cables dedicated to the delivery of Channels).

In the HelixNet system, one cable can carry multiple Channels. Because one cable can carry all Channels, the second connector for each line can either be used for redundancy (flybacks) or for future extensions / changes to the cabling topology (layout).

Example analog Partyline devices including RS-701 beltpacks. Analog beltpacks must be re-cabled to use alternative Channels, requiring the physical re-location of cabling for new configurations.

To aid switching, Clear-Com sells additional switching equipment (the SB-704 and RCS-2700 devices). The RS-702 (6-pin XLR) beltpack requires the YC-36 splitter / combiner to combine 2 Channels into a 6-pin configuration, and multi-conductor cables.

The RS-703 (3-pin XLR) beltpack requires a TWC-701 device to combine 2 Clear-

Key to analog and digital cabling comparison diagram

Com Channels in a single twisted pair.

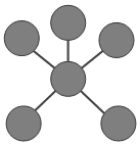
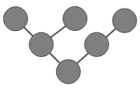
Example digital Partyline devices including beltpacks. Digital beltpacks can support any of the Partyline Channels (plus Program Feed) whenever they are physically located on the system.

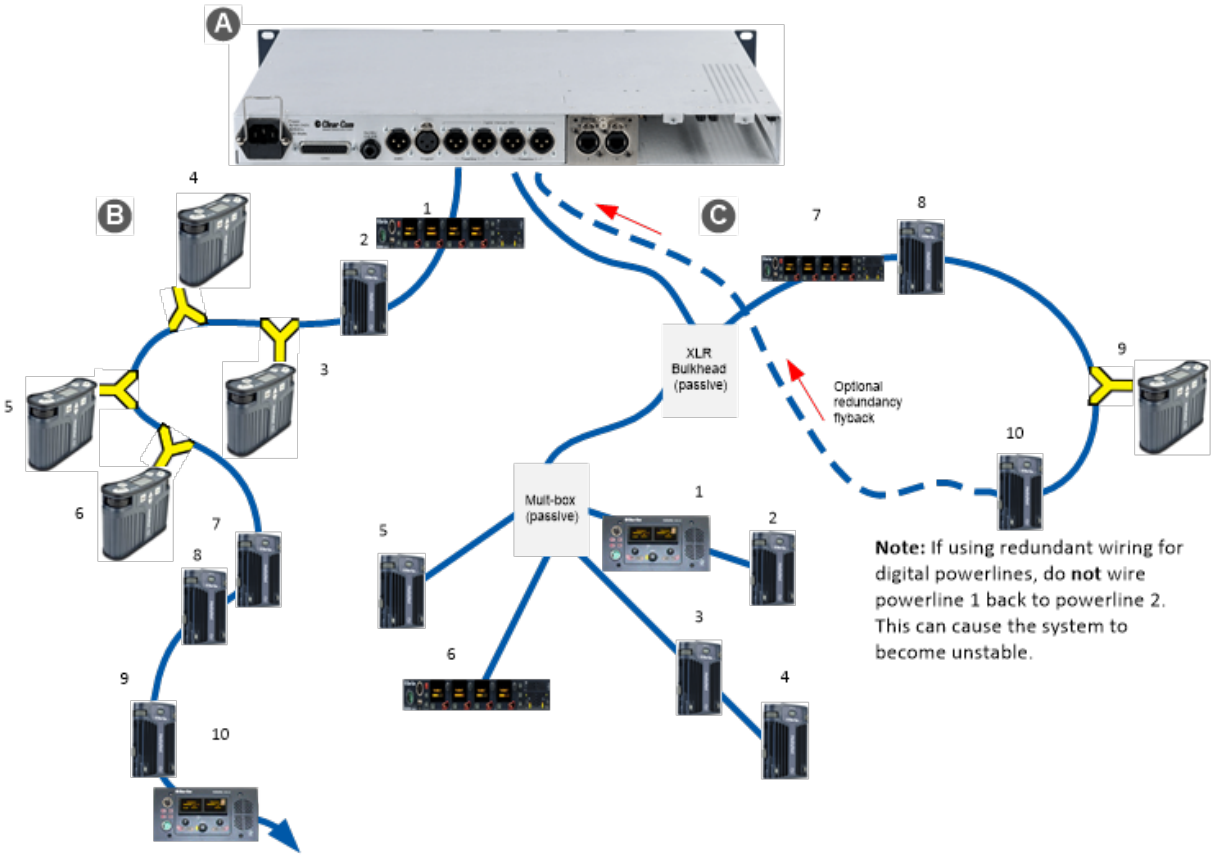
New configurations of beltpacks and Channels can be deployed without the physical relocation of assets.

Note: *The capabilities of different cable types may impact how far away beltpacks can be placed from the Main Station, and the topologies you use. For more information about cabling, see Cabling reference.*

3.1.2 Topologies

HelixNet Partyline can be deployed using a wide range of topologies, both complex and straightforward. The following table describes three standard types of topology:

Topology	Description
Daisy-chain 	In a daisy-chain topology, the Main Station is connected to the first unit. The units are then connected in a series, using the pass-through connector on the back / rear of the device to pass on the connection. No termination is required. HXII-BP-X4 beltpacks require a passive Y splitter for daisy chaining. Daisy-chains can be either linear or loop back to the Main Station to form a ring for redundancy.
Star 	In a star topology, the Main Station is connected to a passive (Y) splitter such as an XLR Bulkhead or Mult-box. The units are then connected to the splitter point-to-point.
Tree 	A tree topology is a more complex version of the star topology, using serially connected passive (Y) splitters. The units are connected to each splitter point-to-point (forming a branch of the tree).



Key to example system topologies (layouts) diagram

Feature	Description
A	HMS-4X Main Station (digital Main Station) (rear panel). There are two lines (digital Partylines) on the Main Station, each of which can support up to 10 digital beltpacks. There are two connectors (3-pin XLR, male and female) for each line.
B	Daisy chained beltpacks. To create a 'daisy chain' of connected beltpacks: Connect the first beltpack to the Main Station, using either of the 3-pin XLR connectors (female or male) on the base of the beltpack. Pass on the connection to the second beltpack, using the remaining connector as the pass through. Repeat for all beltpacks (up to 10) in the chain. No cable termination is required. ***Note**: For the HXII-BP-X4 beltpacks, you must use a passive Y splitter.* You can locally power an HRM or HKB within a daisy chain. This prevents the normal draw off the powerline by the locally powered device.

Key to example system topologies (layouts) diagram

The second layout uses an XLR Bulkhead and a Mult-box (passive (Y) splitters) to combine:

A daisy chain (with optional redundancy flyback).

Point-to-point connected beltpacks (using the Mult-box).

The XLR Bulkhead and splitters should be screened.

The complexity and variety of layouts does not restrict physical access to Channels.

Because HelixNet Partyline is a digital system, the HelixNet Stations can access any of the available Channels (plus a Program Feed), however they are connected to the Main Station, see diagram in Comparing digital with analog cabling.

3.2 Installing the Main Station/Remote Station

The Main Station/Remote Station is a **19" 1RU-height** device that you can install to either:

A standard 19" rack.

A shelf, cabinet or other flat surface.

3.2.1 Main Station Power Up

There is no power switch, button or key on the Main Station. To power up the unit:

1. Connect the power cord to the power supply connector on the Main Station.

   ***Note**: The Main Station has a cable retaining clip to secure the power cord. The retaining clip is detached for shipping and must be refitted.*

   Note**: For the location of the power supply connector, see A in **HMS-4X Main Station: Rear Panel on page 23

2. Connect the power cord to the power source. The unit requires an input voltage between 100 - 240 VAC / 50-60Hz/ 250 watts / T 3.15A H 250 V.

Only connect power supply to earthed supply sockets. Ensure that the power supply is routed to avoid sharp bends, hot surfaces, pinches and abrasion.

For safety guidance, see the Safety Instructions at the front of this guide.

3.2.2 Remote Station Power Up

The Remote Station is powered by an external power source. This can be:

An external power supply (supplied)

Power over Ethernet (PoE)

***Note**: To use PoE, you must connect a third-party PoE switch between the Remote Station and the Main Station.*

From the Main Station digital power line.

3.3 Installing the Speaker Station

The Speaker Station can be installed either:

- Mounted in an S-Mount bracket for desktop use
- Mounted in an S-Mount bracket for installation on a wall
- Mounted inside a NEMA standard 4-gang wall box.

***Note**: The S-Mount bracket is an optional item ordered separately.*

3.3.1 Speaker Station in an S-Mount Bracket

You can adjust the S-Mount bracket by pressing one of the release buttons on either side of the bracket. You can adjust the bracket in 10-degree steps from 80 degrees to horizontal. Indicators are present beside the release buttons that show the adjustment steps.

To install the Speaker Station (already fitted inside the S-Mount):

1. Connect a powerline XLR-3 port on the Speaker Station to a powerline XLR-3 port on a Main Station.

   Or

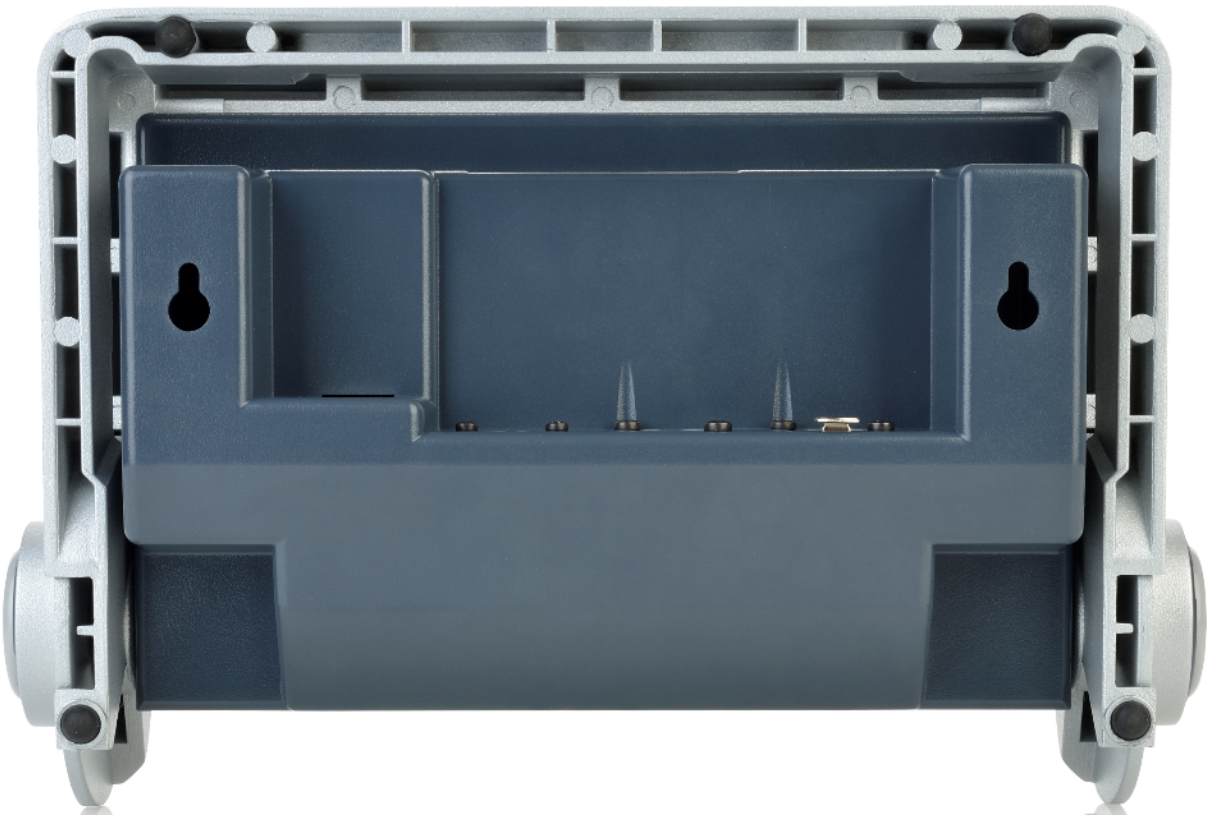
   Connect via Ethernet on the Speaker Station to an IP network which the HMS-4X (HLI-ET2) is also connected to.

2. Connect a headset or microphone to the Speaker Station.
3. Connect power supply to the DC power port on the Speaker Station. (Not necessary if using Powerline or PoE.)

3.3.2 Speaker Station in an S-Mount Bracket Wall Installation

When the Speaker Station is fully closed, you can mount it on a wall using the rear keyholes:

1. Space the wall screws to match the distance between the rear keyholes. See the diagram below.
2. If necessary, remove the Speaker Station from the S-Mount bracket.
3. Hang the S-Mount bracket on the wall screws.
4. Tighten the wall screws.
5. Install the Speaker Station.



3.3.3 Speaker Station Mounted Inside a NEMA Standard 4-Gang Wall Box

To connect the Speaker Station:

1. Connect the Digital Intercom screw terminals on the Speaker Station to a powerline XLR-3 port on an HMS-4X.

   Or

   Connect the Ethernet port on the Speaker Station to either the IP network in which the HMS resides or directly to one of the Ethernet ports on the HMS.

2. Connect a headset or microphone to the Speaker Station.
3. If required, remove the connector from the optional power supply and connect the power supply to the Power screw terminals on the Speaker Station.

3.4 Installing the HBP-2X Beltpacks

The HBP-2X Beltpack is a device that you can:

- Wear at your belt using the beltclip.
- Install to a shelf or other flat surface.
- Attach to a pole or other fixed upright position.

For more information, see HBP-2X beltclip, beltloops and feet (base view).

3.4.1 Power Up

The HBP-2X Beltpack is powered from the standard mic cable that connects the device with the HMS-4X Main Station (see below).

3.4.2 Connecting the HBP-2X Beltpack to the Main Station

To connect the HBP-2X Beltpack to the Main Station:

1. There are two powerline connections on the Main Station which can each support up to 10 digital HBP-2X Beltpacks. There are two connectors (3-pin XLR, male and female) for each line.

   Connect the cable to the selected connector on the Main Station.

   ***Note**: For the location of Lines 1 and 2 (the powerlines) on the Main Station, see F & G in diagram in HMS-4X Main Station: rear panel.*

2. Connect the cable to the beltpack, using one of the two 3-pin XLR connectors (male and female) on the base / rear of the beltpack.

For examples of topologies see Topologies.

3.5 Installing the HXII-BP-X4 Beltpacks

The HXII-BP-X4 Beltpack is a device that you can:

Wear at your belt using the beltclip.

Install to a shelf or other flat surface.

Mount on a table or other flat surface.

For more information, see HXII-BP-X4 Beltpack (beltloops and clip).

3.5.1 Power Up

The HXII-BP-X4 Beltpack is powered from:

The standard microphone cable that connects the device with the HMS-4X Main Station (see below).

Power over Ethernet (PoE) using a cat5, 5e or 6 cable.

Notes: *To use PoE, you must connect a third-party PoE switch between the Main Station and the HXII-BP-X4 Beltpack.*

You can power the HXII-BP-X4 over both microphone cable and PoE. In this case, the PoE takes priority. After the beltpack boots up, you cannot switch between PoE and powerline (microphone cable) mode.

3.5.2 Connecting the HXII-BP-X4 Beltpack over Powerline to the Main Station

To connect the HXII-BP-X4 Beltpack to the Main Station:

1. There are two powerline connections on the Main Station which can each support up to 10 digital HXII-BP-X4 Beltpacks. There are two connectors (3-pin XLR, male and female) for each line.

   Connect the cable to the selected connector on the Main Station.

   Note: *For the location of Lines 1 and 2 (the powerlines) on the Main Station, see* ***F, G*** *in diagram in (HMS-4X Main Station: rear panel.*

2. Connect the cable to the beltpack, using the 3-pin XLR connector on the base / rear of the beltpack.

For examples of topologies, see Topologies

3.5.3 Powering the HXII-BP-X4 using PoE

To connect the HXII-BP-X4 to the Main Station for PoE:

1. Connect the Main Station to a network switch using the HLI-ET2 Ethernet interface module.

2. Connect the HXII-BP-X4 Beltpack to the PoE switch on the same network as the Main Station.

   ***Note**: The beltpack must be paired to the Main Station.*

   Important: When using an IEEE-802.3af compliant PoE switch, be sure to note the switch's power budget. Each HXII-BP-X4 requires 4 Watts of power. Do not exceed the power budget of the switch when attaching HXII-BP-X4 beltpacks.

3.6 HelixNet Infrastructure

This section contains guidelines for using HelixNet infrastructure components including cables, connectors, splitter boxes and patch panels. HelixNet digital Partyline uses cable infrastructure to transport audio and data over a range of frequencies. The maximum frequency used for transmission is approximately 25MHz. Depending on the amount of audio and data transmitted, HelixNet digital Partyline can work with as much as 90dB signal attenuation. However, the receivers are very sensitive and are susceptible to crosstalk between cables.

Therefore it is important to maintain cable shield integrity through all connectors, splitter boxes and patch panels.

The symptoms of crosstalk are:

- Main Station front panel LINE LED indicator turns amber or red
- Beltpacks, Remote Stations and Speaker Stations take longer than usual to boot and connect.
- Beltpack, Remote Station and Speaker Station front panel signal strength indicators show lower than usual signal strength (zero or one bar).
- Main Station diagnostics screen (**Diagnostics->Powerlines**) indicates collisions or errors on the line.

3.6.1 Cables and Connectors

Clear-Com recommends the following shielded cables:

Microphone cables

Belden 9207 and 9463F with the two main conductors connected to XLR pin 2 and 3 and the drain wire to pin 1.

Cat cables

Belden 1351A or 1533P with the following connections at the XLR connector:

Cat5/5e/6	XLR
White/Orange	1
Orange	1
White/Green	3
Blue	2
White/Blue	3
Green	2
White/Brown	3
Brown	2
Shield/Drain	1

It is important to connect the cable shield or drain wire to the XLR pin 1 to maintain the shield integrity throughout the cable and connector.

Note: *The total amount of cable deployed for a digital intercom line contributes to the total capacitance of the line, even though some cables might not have a beltpack connected at the other end. The more capacitance there is, the more attenuation there will be. Clear-Com recommends that you use the minimum amount of cable. For example, daisy-chain or split a cable at the far end, close to the beltpacks, rather than make two home runs to a central patch panel.*

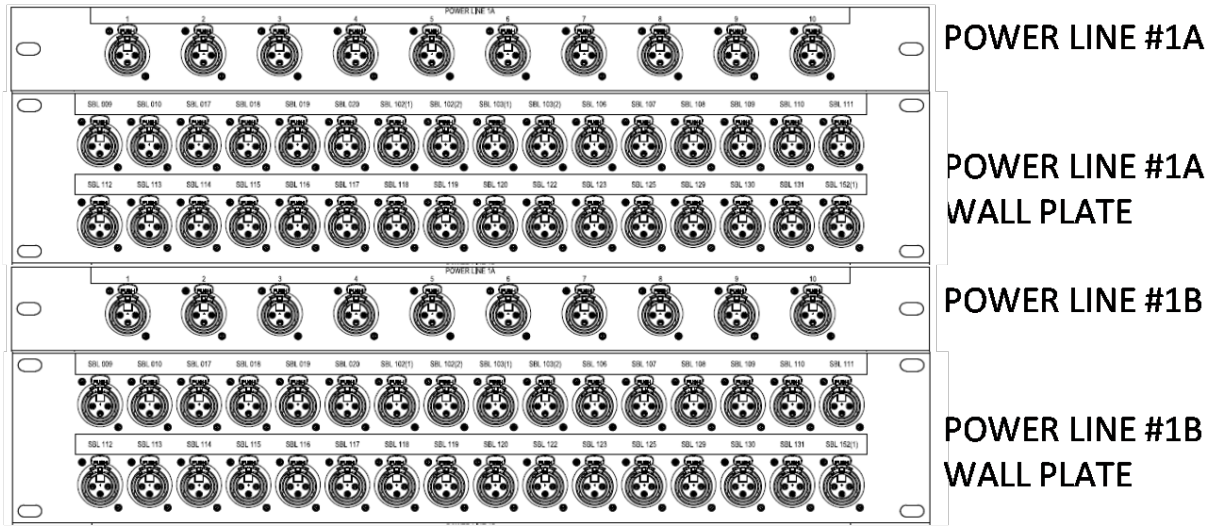
3.6.2 Patch Panels

Clear-Com recommends XLR patch panels. These should be made of 3 pin XLR feed-through adapters (for example, Neutrik NA3MDF) that maintain shield integrity from the back to the front. These adapters also enable easier rewiring of the back or the front of the panel.

3.6.3 Splitter Boxes

Ensure that you split the digital intercom lines within a shielded enclosure. For example, a 1RU shielded chassis, such as Middle Atlantic CH1, and daisy-chained XLR connectors (for example, Neutrik NC3MD or NC3FD).

To prevent crosstalk between lines, ensure that each shielded splitter box contains only one digital intercom line. If you have to split more than one digital intercom line, use multiple shielded enclosures.



For more information on cabling see Cable connections.

3.7 Converting Analogue Partylines to HelixNet

Many Partyline installations use daisy-chained power terminal blocks to passively split analog Partylines. This way of splitting works relatively well for one HelixNet Main Station. But because the cable shielding through those blocks is not maintained, it makes the communication much more sensitive to interference.

Also, crosstalk occurs if two or more Main Stations use terminal blocks that are close to each other.

To maintain shield integrity, Clear-Com recommends that you:

Place existing terminal blocks in shielded and grounded enclosures

Or

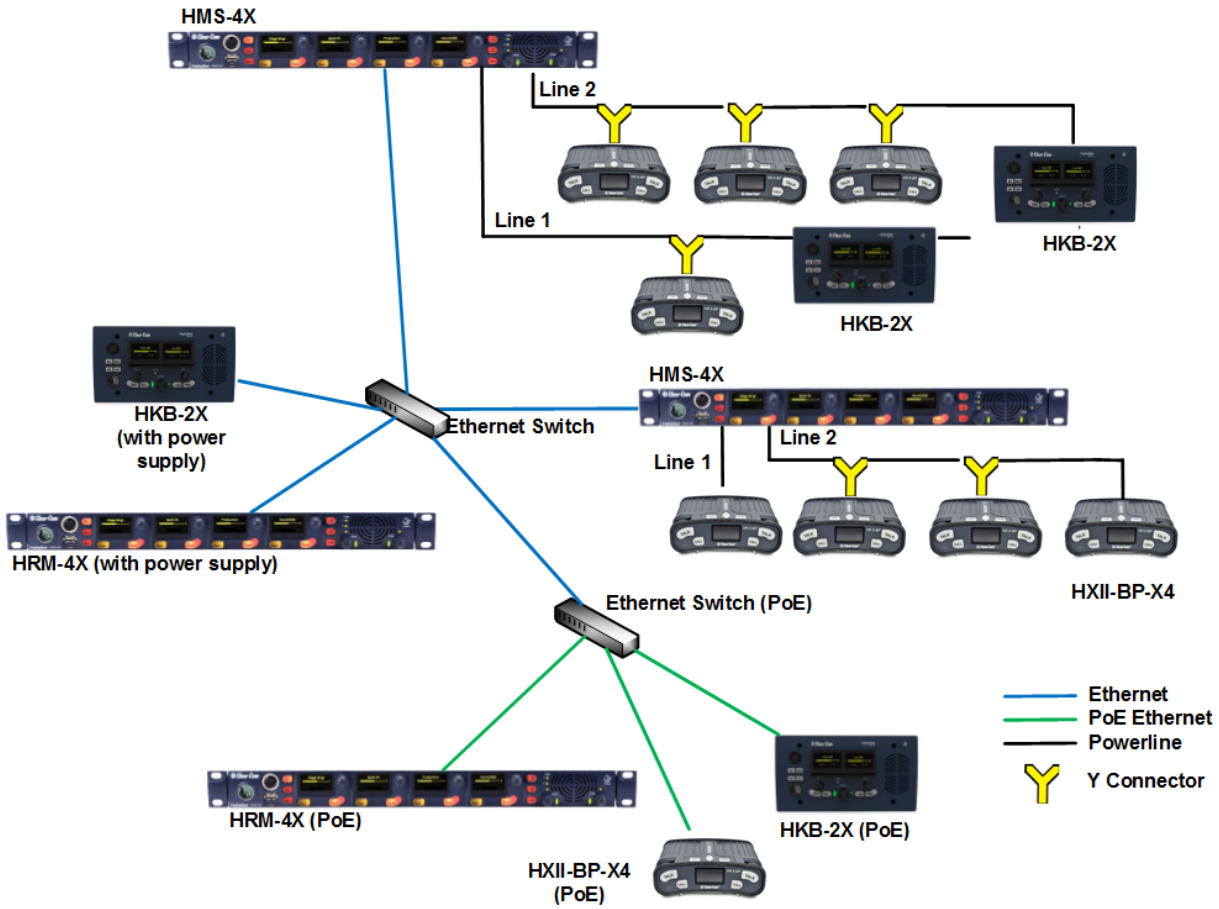
Replace the terminal blocks with shielded and grounded XLR splitter boxes and XLR patch panels.

4 IP Network Structure

Connecting into an existing IP network requires planning with your IT department in order to plan the IP addressing scheme. By default, HelixNet Main Station uses automatic IP addressing (DHCP) enabled. In order for that to work properly in an existing IP network there must be a DHCP server handing out IP addresses. If no DHCP server is found, a Main Station will revert to an unused link-local address in the 169.254.0.0/16 block. (See Link Local Environments for more information).

Through the Networking menu on the devices, you can disable DHCP and set static IP addresses.

For HelixNet 3.0 and above, it is not necessary for Main Stations or Remote Stations to be on the same Subnet, the devices will link across your LAN.



4.1 Multiple Groups in the Same IP Network

You can link six Main Stations together to form a Link Group. You must select one of the Main Stations to be a Link Master. You can have multiple groups in the same network by having multiple Link-Masters. Each Link-Master heads a group of Main Stations, and does not interfere with other groups.

Specification	Value
Latency on Powerline	40-80ms (Depends on cable type and length, and how many devices are connected. The greater the number of devices, the greater the latency).
Latency over IP Network	30ms + Network Latency (Main Station to Main Station).
Bandwidth used	300 kbps per active Talker, for a maximum of one talker per device in the system. Each Beltpack and Speaker Station counts as one device. Each Main Station and Remote Station counts as two devices. Each HLI-2W2 or HLI-4W2 counts as two devices.
IP version	IPv4

4.2 Link Local Environments

4.2.1 What is link-local?

A link-local address is an IP address within the local segment of any network. Routers do not pass information to these as link-local addresses are not guaranteed to be unique beyond a single network segment. When first connected to a network, your HelixNet device will attempt to get an IP address via Dynamic Host Configuration Protocol (DHCP). If no DHCP server is available, the unit will automatically enter link-local IP mode. A link-local IP address will take the form: 169.254.xxx.xxx.

4.2.2 Working with a Device in Link-Local Mode

Devices will revert to link-local mode if they are configured to DHCP and fail to find a DHCP address on the network or device they are attempting to connect to. Any DHCP enabled device connected directly to a device in link-local mode using a standard Ethernet cable will enter link-local mode automatically.

The HelixNet units will operate in link-local mode, but for optimum performance it is recommended that they are used with either static or DHCP network settings. In link-local, the address will change each time the device reboots resulting in potential loss of connection to endpoints.

Note: *The easiest way to take a HelixNet device out of link-local mode is to allocate a new IP address to the unit from the device front menus. Please ensure with your network administrator that there will be no IP clashes with this address.*

4.2.3 Change the IP Address of a HelixNet Device from the Front Menu Screens

To change a unit's IP address, you must first disable DHCP. Press the **Menu** button on front of device to enter **Menu mode**.

1. To enable or disable DHCP
    a. In **Menu mode**, select **Networking**.

    Note: *The Networking menu only appears if an Ethernet or Fiber interface module is detected.*

    b. From the second menu, select **Preferences**.
    c. From the third menu, select **DHCP**.
    d. From the fourth display screen, select one of the following:
        - Disabled
        - Enabled (default)
2. To edit the IP address
    a. In **Menu mode**, select **Networking**.

    Note: *The Networking menu only appears if an Ethernet or Fiber interface module is detected.*

    b. From the second menu, select **Preferences**.
    c. From the third menu, select **IP Address**.
    d. From the fourth display screen, edit the IPv4 address.

    Note: *The HelixNet system uses 10.0.0.x and 172.23.x.x IP address ranges internally between the Main Station and the Beltpacks, and therefore will not allow setting the external IP address to anything in that range.*

    Note: *If you change the IP address (either manually or through DHCP), the link between stations will be broken and you have to reboot the Main Station to link again. The following message will appear as a banner (inverted text) at the bottom across the four displays on the Main Station*
    IP address | changed, | reboot | to link
    If that message appears, pressing the Menu key will bring you directly to:
    Administration->Reset->Reboot->Reboot Now

4.2.4 Accessing the Core Configuration Manager (CCM) of a HelixNet unit in link-local mode

As an alternative to configuring your device from the front menu screens you can use the browser based CCM.

To access the CCM of a HelixNet unit in link-local, you must connect to it from a computer that is also in link-local mode.

A computer can be put into link-local mode by ensuring it is in DHCP mode and connecting it to a unit that is already in link-local mode with a standard Ethernet cable. The computer will look for a dynamically generated IP address (DHCP), and when it does not find one will enter link-local mode automatically.

Once the computer is connected to the HelixNet device and in link-local mode, you can connect to your unit by opening a browser window on the computer and inputting the unit's IP address (from the front panel display) into the address field. This takes you to the Core Configuration Manager where you can configure the device as usual. See Core Configuration Manager (CCM) for more detail.

Note: *The units will operate in link-local, but for optimum performance it is recommended that they are used with either static or DHCP network settings.*

For the CCM password see **CCM Password on page 152**

5 Configuring and managing the Main Station from front menus

This section describes how to configure the settings and manage the Main Station using **Menu mode**. It also shows you how to monitor and diagnose performance issues, using the **Diagnostics** menus.

Tip: For a quick reference to the Main Station menus, see Menu maps.

5.1 Using the Menus

To place the Main Station in **Menu mode**, press the **Menu key** to the left of the first display screen.

In Menu mode, the display screens display the four levels of menu. The menu hierarchy proceeds left to right:

The **top level** menu is presented in the first screen.

The **lowest level** menu is presented in the fourth screen (furthest right on the front panel).

***Note**: If Menu mode is **locked**, you must unlock the menus from CCM before you can enter the menu. See Administration.*

5.1.1 Configuring Settings

To configure settings:

1. For each menu, turn the **rotary control** clockwise to scroll down the menu items. Turn counter clockwise to scroll up the menu items.

   Off-screen menu items are indicated by arrows at the top and/or bottom of the screen.

   Selected menu items (which create your path through the four menus) are highlighted in solid yellow.

   The fourth menu displays the settings that relate to your previous menu choices (system features or functionality).

   The **current setting** is indicated by a dotted box around the menu item

2. When you have selected a setting by rotating the right hand rotary control, push that rotary control to enable the setting on the Main Station.

5.1.2 Exiting Menu Mode

To exit menu mode press the menu key.

***Note**: If no key is pressed for 20 seconds, the menu will time out and display screens will revert to their normal mode of operation.*

5.2 Configuring the Audio settings

5.2.1 Audio settings for the headset

To configure the audio settings for the headset:

1. In **Menu mode**, select **Audio Settings** and then **Headset**.
2. To adjust the level of sidetone on the headset:

   In the third menu, select **Sidetone Gain**.

   a. In the fourth menu, select one of the following:

      - 0dB
      - - 6dB
      - - 12dB (default)
      - - 18dB

   b. To enable (confirm) the selected setting, press the **rotary control**.
3. To limit the audio level delivered to the headphones (or to disable headphone limiting):

   a. In the third menu, select **Headphone Limit**.

   b. In the fourth menu, select one of the following:

      - Off
      - +6dB
      - 0dB (default)
      - - 6dB

   c. To confirm the selected setting, press the **rotary control**.

   ***Note:** When Headphone Limit is set to anything but Off, a LIM indication will be shown on the leftmost display.*
4. To set the **Headphone Gain**:

   a. In the third menu, select **Headphone Gain**.

   b. In the fourth menu, select one of the following:

- OdB (default)
- +3dB
- +6dB
- +9dB
- +12dB

c. To confirm the selected setting, press the **rotary control**.

5. To set (or disable) sidetone tracking on the headset:
   a. In the third menu, select **Sidetone Control**.
   b. In the fourth menu, select one of the following:
      - **Tracking** - The sidetone volume will follow (track) the Main volume level.
      - **Non-Tracking -** The sidetone volume is set to use the selected level.
      - **Disabled -** Sidetone is disabled.

      Note: *The default is* ***Tracking****.*

   c. To confirm the selected setting, press the **rotary control**.
6. To select the type of microphone on the headset:
   a. In the third menu, select **HS Mic Type**.

      Note: HS = Headset.

   b. In the fourth menu, select either of the following types of microphone:
      - Electret (-15dB)
      - Dynamic (0dB) (default)
      - Dynamic (low)

   c. To confirm the selected setting, press the **rotary control**.

5.2.2 Audio Settings for the Microphone

To configure the audio settings for the microphone:

1. In Menu mode, select **Audio Settings** and then **Microphone**.
2. To select the Headroom:
   a. From the third menu, select **Headroom**.

b. From the fourth menu, select one of the following:

- Normal (default)
- High - Reduces the analog input gain and increases the digital gain accordingly. That reduces digital clipping at the A/D converter but increases the noise floor. This setting is intended for use in environments with very high background noise.

3. To enable or disable the Contour Filter:

a. From the third menu, select **Contour Filter**

b. From the fourth menu, select one of the following:

- **Enabled -** The Contour filter is a Clear-Com algorithm enhancing speech intelligibility, especially when whispering or talking at a low volume.
- **Disabled**

Note: *The default is* ***Disabled****.*

5.2.3 Audio Settings for the Program Input

To configure the label (name) for the Program Input (Program Feed) gain:

1. In **Menu mode**, select **Audio Settings** and then **Program Input**.
2. From the third menu, select **Label**.
3. From the fourth menu, select the existing label by scrolling to it and pushing the rotary controller. Edit the label by rotating the controller to scroll through letters and digits and pushing to select a letter/digit.
4. When you have done, scroll to **Save** and push the rotary controller. To exit without saving changes, go back to the third screen.

To configure the audio setting for the Program Input (Program Feed) gain:

1. In **Menu mode**, select **Audio Settings** and then **Program Input**.
2. From the third menu, select **Gain**.
3. From the fourth menu, select one of the following:

- + 12dB
- + 6dB
- 0dB (default)

- - 6dB
- - 12dB

4. To confirm the selected setting, press the **rotary contro**l.
5. The action trigger activates a relay when receiving a call or activating a talk on a Partyline Channel. You can enable or disable the action trigger. To configure the audio setting for the action trigger:
   a. In **Menu mode**, select **Audio Settings** and then **Program Input**.
   b. From the third menu, select **Action Trigger**.
   c. From the fourth menu, select one of the following:
      - Enabled (default)
      - Disabled
   d. To confirm the selected setting, press the **rotary control**.

   Note: *You can also configure the action trigger using Menu Mode > Modules Settings.*

To select the VOX:

1. From the third menu, select **VOX**.
2. From the fourth menu, select one of the following:
   - Enabled
   - Disabled (default)
3. To confirm the selected setting, press the **rotary control.**

To select the VOX Off Delay:

1. From the third menu, select **VOX Off Delay**.
2. From the fourth menus, select one of the following:
   - .5 sec (default)
   - 1 sec
   - 2 sec
   - 3 sec
   - 4 sec

3. To confirm the selected setting, press the **rotary control**.

5.2.4 Audio Settings for Program IFB [Interruptible Foldback]

IFB allows you to temporarily interrupt the continuous program listen (program feed) and speak to the Channels connected to the program listen. This applies to a Channel to which the Program Input is assigned. If any participant within the Channel talks, the program is dimmed. See also Assigning the Program Listen to a Channel.

To configure the audio settings for Program IFB [Interruptible Foldback]:

1. In **Menu mode**, select **Audio Settings** and then **Program IFB**.
2. From the third menu, select **IFB Dim Level**.

   Note: *The IFB Dim Level determines the amount that the volume level of the Program Level is reduced by when it is interrupted by the IFB.*

3. From the fourth menu (fourth display screen), select one of the following:
   - IFB Disabled (default)
   - - 6dB
   - -12dB
   - -18dB
   - -24dB
   - Full Cut
4. To confirm the selected setting, press the **rotary control**.

5.2.5 Audio Settings for the SA [Stage Announce] Output

To configure the audio settings for the SA [Stage Announce] Output:

1. In **Menu mode**, select **Audio Settings** and then **SA Output**.
2. From the third menu, select **Gain**.
3. From the fourth menu, select one of the following:
   - + 12dB
   - + 6dB
   - 0dB (default)

- - 6dB
- - 12dB

4. To confirm the selected setting, press the **rotary control**.

5.2.6 Audio Settings for the Hot Mic Output

To configure the audio settings for the Hot Mic Output:

1. In **Menu mode**, select **Audio Settings** and then **Hot Mic Output**.
2. From the third menu, select **Gain**.
3. From the fourth menu, select one of the following:
   - + 12dB
   - + 6dB
   - 0dB (default)
   - - 6dB
   - -12dB
4. To confirm the selected setting, press the **rotary control**.

5.2.7 Audio Settings for the Front Panel

To configure the audio settings for the Front Panel:

1. In **Menu mode**, select **Audio Settings** and then **Front Panel**.
2. From the third menu, select **Loudspeaker Dim**.
3. From the fourth menu, select one of the following:
   - 0 dB
   - -3 dB
   - -6 dB (default)
   - -12 dB
   - -24 dB
4. To confirm the selected setting, press the **rotary control**.

5.3 Selecting Station Settings

5.3.1 Setting Keyset Assignments

To set the **Keyset Assignments**:

1. In Menu mode, select Station Settings and then **Keyset Assign**.
2. From the third menu, select required **Keyset** (1 – 4).
3. From the fourth menu, select a Channel (1 – 24) to assign to the Keyset.
4. Repeat this procedure for the remaining Keysets.
5. To confirm the selected setting, press the **rotary control**.

5.3.2 Setting Key Latching

To enable or disable front panel keys for latching:

1. In **Menu mode**, select **Station Settings** and then **Keysets**.
2. From the third menu, select either:

Key(s)	Description
Talk #1	Talk keys for the available Channels.
Talk #2	
Talk #3	
Talk #4	
SA Out key	Key used to talk to a connected public address or Stage Announce (SA) system.

Note: *The All Talk and* ***RMK (Remote Mic Kill)*** *key are also displayed in the list. Those keys* ***cannot*** *be latched. To find out how to configure the RMK and All Talk keys, see* *Setting the All Talk key*

Note*: The All Talk key allows you to talk to all Channels at once with the push of a button. Select* ***All Channels*** *to talk to all 12 (or 24 according to license) Channels on your system. Select* ***Visible Channels*** *to talk to the Channels visible on your four device Keyset screens.*

3. In **menu** mode select **Station Settings** and then **Keysets**.
4. From the third menu, select **All Talk**.
5. From the fourth menu, select **All Channels** or **Visible Channels**.
6. To confirm the selected setting, press the **rotary control**.

5.3.3 Setting the All Talk Key

The **All Talk** key allows you to talk to all Channels at once with the push of a button. Select **All Channels** to talk to all 12 (or 24 according to license) Channels on your system. Select **Visible Channels** to talk to the Channels visible on your four device Keyset screens.

1. In **menu** mode select **Station Settings** and then **Keysets**.
2. From the third menu, select **All Talk**.
3. From the fourth menu, select **All Channels** or **Visible Channels.**
4. To confirm the selected setting, press the **rotary control**.

5.3.4 Setting the RMK (Remote Mic Kill) Key

The RMK (Remote Mic Kill) key is used to:

Deselect any latched keyset Talk routes.

Turn off any latched Talk on connected analog Partyline equipment.

To enable or disable the RMK (Remote Mic Kill) key:

1. In **Menu mode**, select **Station Settings** and then **Keysets**.
2. From the third menu, select **RMK.**

Note: *Talk Latch and the **SA Output Key** are also listed in this menu. See link...*

3. From the fourth menu, select **either** of the following:
   - All Channels (12 or 24 according to license)
   - Visible Channels (default)
   - Disabled
4. To confirm the selected setting, press the **rotary control**.

5.3.5 Setting Display Screen Brightness

By default, the display screens are set for medium brightness. To set the brightness of the display screens:

1. In **Menu mode**, select **Station Settings** and then **Display**.
2. From the third menu, select **OLED Brightness**.
3. From the fourth menu, select one of the following brightness settings:

- High
- Medium (default)
- Low

4. To confirm the selected setting, press the **rotary control**.

5.3.6 Setting Key Brightness

By default, the front panel keys are set to **High / Low**. To set the brightness of all front panel keys:

1. In **Menu mode**, select **Station Settings** and then **Display**.
2. From the third menu, select **Key Brightness**.
3. From the fourth menu, select one of the following brightness settings:

Key(s)	Description
High / Low	The default setting. Keys are lit bright when active and lit dim when inactive.
High / Off	Keys are lit bright when active and are unlit when inactive.
Low / Off	Keys are lit dim when active and are unlit when inactive.
Off / Off	Keys are unlit, whether or not they are active or inactive.

4. To confirm the selected setting, press the **rotary control**.

5.3.7 Setting the Screensaver

The screensaver features the Channel label and is enabled by default. The display screens enter screensaver mode when the Main Station has been inactive for 10 minutes.

Tip: To exit screensaver mode, press any key on the front.

To enable or disable the screensaver:

1. In **Menu mode**, select **Station Settings** and then **Display**.
2. From the third menu, select **Screensaver**.
3. From the fourth menu, select:
   - **Channel Name** (default)
   - Hostname

- Role Name
- Blank
- Disabled

4. To confirm the selected setting, press the **rotary control**.

5.4.1 Editing the Channel label

The maximum length for a Channel label is **12 characters**. To edit the Channel label:

Note: *Channel labels will be dictated by the Link Master when Main Stations are linked.*

1. In **Menu mode**, select **Channels** and then the name of the Channel you want to edit.
2. From the third menu, select **Label**.
3. Select **Clear** and press the rotary control to clear the Channel label.
4. In the fourth menu, the following prompt is displayed above the Channel label:

   [**Press to edit**]

   Press the **rotary control**.

5. The first letter of the Channel label is shown as selected. The following prompt is displayed above the Channel label:

   [Scroll / Press to Select]

   Scroll to the character you want to edit by turning the **rotary control**. To begin editing, press the **rotary control**.

6. The character you have selected for editing is shown in a box with a dotted border.

   To display alternative characters in the box, turn the rotary control. The range of available characters comprises the following:

Characters	Description / range
Numbers (numeric)	0 to 9
Letters	Capital letters = A to Z Small letters = a to z
Symbols	# & * ( ) - _ = + / ! @ : Note: You can also select a space.

   To select a character, press the **rotary control**.

7. When you have selected a replacement character, scroll to the next character you want to edit. When you have finished editing the Channel label, scroll to **Save** (displayed beneath the Channel label).

   To save the Channel label, press the **rotary control**.

5.4.2 Assigning the Program Listen to a Channel

To assign (or unassign) the Program Listen (Program Feed) to a Channel:

1. In **Menu mode**, select **Channels** and then the name of the Channel.
2. From the third menu, select **Program Listen.**
3. From the fourth menu, select either None, or choose from the list of available programs.

   Note: *The default is None.*

4. To confirm the selected setting, press the rotary control.

Tip: When you assign the Program Listen to a Channel, PGM is displayed on the display screen (under the listen level bar, to the left) for that Channel.

5.4.3 Assigning a GPO relay to a Channel

You can assign a relay that is triggered on receiving a call or detecting a talk on a Partyline Channel. To assign (or unassign) a relay:

1. In **Menu mode**, select **Channels** and then the name of the Channel.
2. From the third menu, select **GPO on Talk** or **GPO on Call**.
3. From the fourth menu, select either **None**, or choose from the list of available relays.

   Note: *The default is **None**.*

4. To confirm the selected setting, press the **rotary control**.

Note: *An ActionTrigger initiated by a Program Audio Input VOX can on only be assigned to a GPO on the same device.*

5.5 Configuring the Control I/O

The Control I/O connector (25 way female D-type) on the rear panel allows you to connect up to 4 relay outputs or 4 opto inputs and control them through the Main Station keysets:

I/O type	Description
Opto inputs	Opto inputs enable you to connect a foot switch or other control device and use it to trigger Call or Talk functions. There is also an option to open the mic. You can use this option to talk, hands-free to one or more pre-latched channels.
Relay outputs	Relay outputs enable you to use Call or Talk keys to trigger any external device that accepts a standard contact closure (such as a theater curtain or an On Air light, or the beltpack USB flasher).

5.5.1 Configuring Opto Inputs

To configure the Control I/O for Opto inputs:

1. In **Menu mode**, select **Control I/O**.
2. From the second menu, select **Inputs**.
3. From the third menu, select one of the following:
   - Opto 1
   - Opto 2
   - Opto 3
   - Opto 4
4. From the fourth menu (fourth display screen), select one of the following:
   - None
   - Call Key 1
   - Talk Key 1
   - Call Key 2
   - Talk Key 2
   - Call Key 3
   - Talk Key 3
   - Call Key 4

- Talk Key 4
- Mic

5. To confirm the selected setting, press the **rotary control**.

5.5.2 Configuring Relay Outputs

To configure the Control I/O for Relay outputs:

1. In **Menu mode**, select **Control I/O**.
2. From the second menu, select **Outputs**.
3. From the third menu, select one of the four available Relay outputs:
   - Relay 1
   - Relay 2
   - Relay 3
   - Relay 4
4. From the fourth menu, select one of the following:
   - None (default)
   - Call Key 1
   - Talk Key 1
   - Call Key 2
   - Talk Key 2
   - Call Key 3
   - Talk Key 3
   - Call Key 4
   - Talk Key 4
   - SA Key

   Note: *The number of the key relates to the keyset to which it belongs (for example, Call Key 1 is the Call key for the first keyset / display screen).*
5. To confirm the selected setting, press the **rotary control**.

5.6 Configuring Module Settings

Up to three optional interface modules can be fitted to the expansion bay of the HMS-4X Main Station.

Warning: *The interface modules are not hot pluggable. Ensure that the Main Station is powered down before inserting or removing modules.*

The **Menu mode** > **Module Settings** are used to set up the interface modules.

Tip: For more detailed information about interface modules, including pin out information, see HMS-4X Main Station rear panel: Interface modules

5.6.1 Configuring a Four-Wire Interface Module

The following procedure shows you how to configure the Module Settings for a **Four-wire interface module**.

To configure the Module Settings for a four-wire interface module:

1. In **Menu mode**, select **Module Settings**.
2. From the second menu, select one of the two available ports on the two-wire interface module:
   a. Slot 2/Port A 4W
   b. Slot 2/Port B 4W

   Note: *In this example, the four-wire module has been fitted to slot 2 in the expansion bay. The expansion bay contains three slots.*

   4W = four-wire.
3. To associate any available Channel with the selected port, or to disable Channels associations:
   a. From the third menu, select **Channel Assign**.
   b. From the fourth menu, select one of the following:
      - Disabled (default)
      - Channel 1.
      - Channel 2.
      - Channel 3.
      - Channel 4.

- …

c. To confirm the selected setting, press the **rotary control.**

4. The Program Output allows a program feed associated with the Channel assigned to the four wire port to either be delivered to that 4 wire port alongside the other Channel audio or not. To set the Program Output:

   a. From the third menu, select **Program Output**.

   b. From the fourth menu, select one of the following:

      - Unmute
      - Mute (default)

5. To confirm the selected setting, press the **rotary control**.

6. To set the input level for the four-wire port:

   a. From the third menu (third display screen), select **Input Gain**.

   b. From the fourth menu (fourth display screen), select one of the following:

      - +12dB
      - + 6dB.
      - 0dB (default)
      - -6dB.
      - -12dB

   c. To confirm the selected setting, press the **rotary control**.

7. To set the output level for the four-wire port:

   a. From the third menu, select **Output Gain**.

   b. From the fourth menu, select one of the following:

      - +12dB
      - + 6dB.
      - 0dB (default)
      - -6dB.
      - -12dB

8. To confirm the selected setting, press the **rotary control**.
9. To set the **action trigger** for the **Program Output**:
    a. From the third menu, select **GPO**.
    b. From the fourth menu, select one of the following:
        - Enabled
        - Disabled
10. If you are setting up a continuous audio (program) feed using the four-wire interface module, then you may want to enable the **VOX functionality**. To help reduce redundant noise, the VOX functionality automatically deactivates and activates the continuous audio feed, at an automatically determined volume threshold.

    Note: *If you assign a program and a four-wire interface to the same Channel, VOX is automatically enabled.*

To enable or disable VOX:

a. From the third menu, select **VOX**.
b. From the fourth menu, select one of the following:
    - Enabled.
    - Disabled (default)
c. To confirm the selected setting, press the **rotary control**.

11. The **VOX Delay OFF** setting determines the length of time to wait before deactivating the incoming audio. To set the VOX Delay OFF setting:
    a. From the third menu, select **VOX Delay OFF**.
    b. From the fourth menu, select one of the following:
        - .5 sec (default)
        - 1 sec
        - 2 sec
        - 3 sec
        - 4 sec
    c. To confirm the selected setting, press the **rotary control**.

5.6.2 Configuring a Two-Wire Interface Module

The following procedure shows you how to configure the Module Settings for a Two-wire interface module.

***Note**: The Two-wire interface module must receive power from the Partyline.*

To configure the Module Settings for a Two-wire interface module:

1. In **Menu mode**, select **Module Settings**.
2. From the second menu, select one of the two available ports on the two-wire interface module:

   Slot 1/Port A 2W

   Slot 1/Port B 2W

   ***Note**: In this example, the two-wire module has been fitted to slot 1 in the expansion bay. The expansion bay contains three slots.*

   2W = Two-wire.

   a. To associate any available Channel (or to disable Channels associations) with the selected port:
   From the third menu (third display screen), select **Channel Assign**.

   b. From the fourth menu, select one of the following:

      - Disabled (default)
      - Channel 1
      - Channel 2
      - Channel 3
      - Channel 4
      - ...

   c. To confirm the selected setting, press the rotary control.

3. The Program Output allows a program feed associated with the Channel assigned to the four wire port to either be delivered to that 4 wire port alongside the other Channel audio or not. To set the Program Output:

   a. From the third menu, select Program Output.

   b. From the fourth menu, select one of the following:

- Unmute
- Mute (default)

4. To confirm the selected setting, press the **rotary control.**
5. **Auto-nulling** helps to reduce echo while talking on a two-wire audio system. To start Auto-nulling on the selected port:
   a. From the third menu, select **Auto-Nulling**.
   b. From the fourth menu, select **Start**.

   ***Note**: Auto-nulling is only applicable to two-wire audio. All Talk routes/keys must be disabled before Auto-nulling can commence. If an echo persists, ensure all Talk routes are disabled and re-null the system.*

6. The Two-wire interface module is set for Clear-Com systems by default. However, you can also set the two-wire ports for use with RTS analog Partyline systems. If you are connecting to an **RTS** system, you also have a choice of two different pinouts:

RTS pinout option	Description
RTS Audio Pin 2	Pin 2 is used for both power and audio.
RTS Audio Pin 3	Pin 3 is used for audio (Pin 2 is used for power only).

   ***Note**: For detailed pinout information, see HMS-4X Main Station rear panel: Interface modules..*

To configure the port for either Clear-Com or RTS systems:

a. From the third menu, select **Mode**.
b. From the fourth menu, select one of the following:
   - Clear-Com
   - RTS Audio Pin 2
   - RTS Audio Pin 3

c. To confirm the selected setting, press the **rotary control**.

7. To set the **Input Gain**:
   a. From the third menu, select Input Gain.
   b. From the fourth menu, select one of the following:

- +3 dB
- +2 dB
- +1 dB
- 0 dB (default)
- -1 dB
- -2 dB
- -3 dB

8. To set the **Output Gain**:
   a. From the third menu, select Output Gain.
   b. From the fourth menu, select one of the following:
      - +3 dB
      - +2 dB
      - +1 dB
      - 0 dB (default)
      - -1 dB
      - -2 dB
      - -3 dB
9. To set the **action trigger** for the **Program Output**:
   a. From the third menu, select **GPO**.
   b. From the fourth menu, select one of the following:
      - Enabled
      - Disabled
10. Enabling **RMK** [**Remote Mic Kill**] **Input** allows an external 2-wire analogue partyline device such as the main (base) station (MS-702) to send an RMK signal to the digital HelixNet devices attached to the same HelixNet channel.

    Note: *If this is enabled and the analog Partyline system is powered down, it will be interpreted by the HelixNet Main Station as an RMK input and all talk routes will be switched off.*

    To enable RMK Input:

a. From the third menu (third display screen), select RMK Input.

b. From the fourth menu (fourth display screen), select one of the following:

- Enabled
- Disabled (default)

c. To confirm the selected setting, press the rotary control.

11. Enabling **RMK [Remote Mic Kill] Output** allows you to send an RMK signal from the HelixNet Main Station to any connected analog 2-wire partyline system.

    To enable RMK Output:

    a. From the third menu, select RMK Output.

    b. From the fourth menu, select one of the following:

    - Enabled
    - Disabled (default)

    To confirm the selected setting, press the **rotary control**.

12. If you are setting up a continuous audio (program) feed using the two-wire interface module, then you may want to enable the VOX functionality. To help reduce redundant noise, the VOX functionality automatically deactivates and activates the continuous audio feed, at an automatically determined volume threshold.

    Note: *If you assign a program and a two-wire interface to the same Channel, VOX is automatically enabled.*

    To enable or disable VOX:

    a. From the third menu, select **VOX**.

    b. From the fourth menu, select one of the following:

    - Enabled
    - Disabled (default)

    c. To confirm the selected setting, press the **rotary control**.

13. The **VOX Delay OFF** setting determines the length of time to wait before deactivating the incoming audio. To set the VOX Delay OFF setting:

a. From the third menu, select **VOX Delay OFF**.

b. From the fourth menu, select one of the following:

- .5 sec (default)
- 1 sec
- 2 sec
- 3 sec
- 4 sec

c. To confirm the selected setting, press the rotary control.

5.6.3 Configuring an Ethernet or Fiber interface module

The following procedure shows you how to configure the Module Settings for an **Ethernet interface module**.

To configure the Module Settings for an Ethernet interface module:

1. To view status information about Main Stations:

   a. In **Menu mode,** select **Networking.**

***Note**: The Networking menu only appears if at least one Ethernet or Fiber interface module is detected.*

   b. From the second menu, select **Stations**. A list of station IDs is given for each Main Station in the network. Each station ID in the list is preceded by the letter M- for the Link-Master station itself and S- for all Link-Member (S stands for Slave).

   c. From the third menu select the required station ID.

   d. From the fourth menu you can view the following:

   - **Status** – Enabled or Disabled
   - **IP – The IP address.**

2. To edit or change the **Hostname** for your device:

   a. In **Menu mode**, select **Networking**.

   b. From the second menu, select **Preferences**

   c. From the third menu, select **Hostname**

   d. From the fourth menu, select the name by pushing and turning the **Rotary controller**.

e. Edit the name by turning the controller to select a letter or number and pushing to select it. Then turn to scroll through letters. Push to commit.

f. When you have done, scroll to **SAVE** and push to commit.

3. To enable or disable DHCP:

a. In **Menu mode**, select **Networking**.

***Note**: The Networking menu only appears if an Ethernet or Fiber interface module is detected.*

b. From the second menu, select **Preferences**.

c. From the third menu, select **DHCP**.

d. From the fourth display screen, select one of the following:

- Disabled
- Enabled (default)

4. To edit the IP address:

a. In **Menu mode**, select **Networking**.

***Note**: The Networking menu only appears if an Ethernet or Fiber interface module is detected.*

b. From the second menu, select **Preferences**.

c. From the third menu, select **IP Address**.

d. From the fourth display screen, edit the IPv4 address.

***Note**: You can only edit the IPv4 address if DHCP is disabled.*

***Note**: The HelixNet system uses 10.0.0.x and 172.23.x.x IP address ranges internally between the Main Station and the Beltpacks, and therefore will not allow setting the external IP address to anything in that range.*

***Note**: If you change the IP address (either manually or through DHCP), the link between stations will be broken and you have to reboot the Main Station to link again. The following message will appear as a banner (inverted text) at the bottom across the four displays on the Main Station*
IP address | changed, | reboot | to link
If that message appears, pressing the Menu key will bring you directly to: Administration->Reset->Reboot->Reboot Now

5. To edit the Gateway:

a. In **Menu** mode, select **Networking**.

***Note**: The Networking menu only appears if an Ethernet or Fiber interface module is detected.*

b. From the second menu, select **Preferences**.

c. From the third menu, select **Gateway**.

d. From the fourth display screen, edit the gateway.

Note: *You can only edit the gateway if DHCP is disabled.*

6. To edit the Subnet Mask:

a. In **Menu mode**, select **Networking**.

Note*: The Networking menu only appears if an Ethernet or Fiber interface module is detected.*

b. From the second menu, select **Preferences**.

c. From the third menu, select **Subnet Mask**.

d. From the fourth display screen, edit the Subnet Mask.

Note*: You can only edit the Subnet Mask if DHCP is disabled.*

7. To enable or disable linking:

a. In **Menu mode**, select **Networking**.

Note*: The Networking menu only appears if an Ethernet or Fiber interface module is detected.*

b. From the second menu, select **Linking**.

c. From the third menu, select **Link Mode**.

d. From the fourth display screen, select one of the following:

- Disabled (default)
- Master
- Member

5. If Member is selected, the menu asks you to pick a Link-Master to connect to in the Networking>Link To Master menu. It can be done by picking from a hostname list or by entering an IP address.

5.6.4 Setting up a Key Expansion Group

HelixNet units can be expanded and stacked to allow for visual monitoring and easy control of multiple Channels. Up to five devices (HMS-4X, HRM-4X) can be stacked in an Expansion Group, allowing for convenient observation and control of up to 24 Keysets. This gets rid of the need for multiple key presses and microphones. When using this type of connectivity, the Expanded panels act as slaves to the Host panel.

HRM/HMS Expanding over IP:

- All devices in the Expansion Group use the headset/ microphone/loudspeaker of a "Host" HRM or HMS
- Some menus disappear from the "Expanded" HRM/HMS devices (e.g. microphone, headset, display settings).

To set up an Expansion Group, once the devices have been connected to the same LAN by Ethernet cable, you will need to identify a Host device. This is done from the front panel menu of the device under **Station Settings**. Then designate the panel(s) to be stacked as Expansion Panel(s).

Once this set up is established, you will be able to control all Channels from the Host panel.

Volume and buttons are synched.

Unused buttons on Expanded panel are disabled: **HSet, Mic On**, **SA**, **All Talk**, **OPT**, **Main**, **PGM**.

Restrictions:

Devices can only connect as an Expansion Group over LAN, not when connected over digital Partyline.

HMS-4X or HRM-4X can act as Host Panel.

HMS-4X can only act as a key Expansion Panel to another HMS-4X.

HRM-4X can act as a Key Panel to an HMS-4X and an HRM-4X.

If an HRM-4X is already Paired to an HMS-4X, it will only see Host Panels that are part of the same group.

If an HRM-4X is not Paired yet to an HMS-4X, it will see all Host Panels in the subnet and will automatically Pair at the same time if a Host Panel is selected.

An Expansion Group must be set up from the device menus, and cannot be set up from the CCM.

To set up a key Expansion Group (example set-up)

Designate the expansion Host unit:

1. On the Host device, press the **MENU** button to enter menu mode.

***Note**: For each menu, turn the **rotary control** clockwise to scroll down the menu items. Turn counter clockwise to scroll up the menu items.*

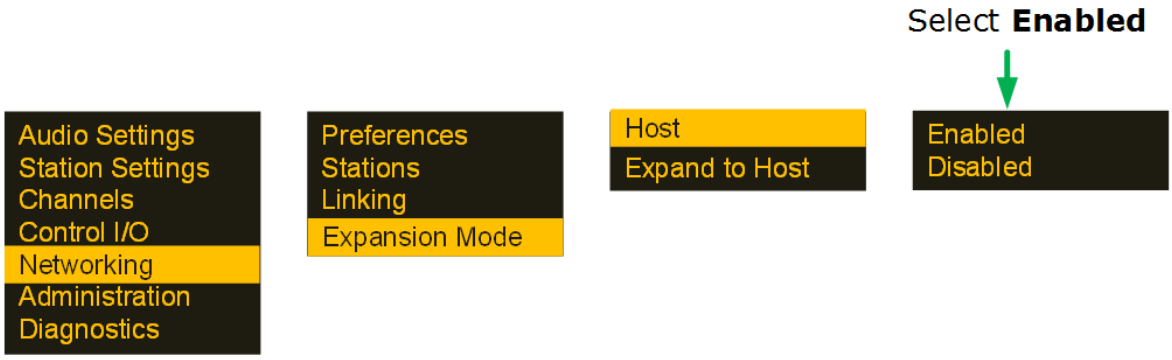
Off-screen menu items are indicated by arrows at the top and/or bottom of the screen.

***Selected menu items** (which create your path through the four menus) are highlighted in solid yellow.*

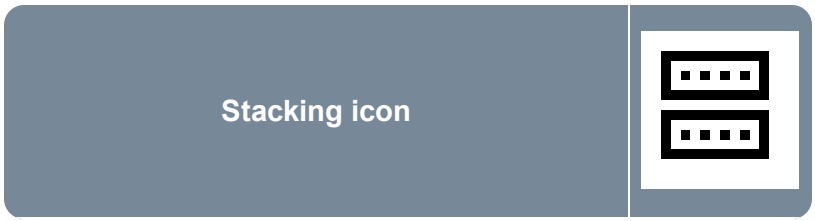
*The **current setting** is indicated by a dotted box around the menu item*

*When you have selected a setting by rotating the right hand rotary control, press that **rotary control** to enable the setting on the Main Station.*

2. Navigate to **Menu > Networking > Expansion Mode**. Select **Host**.
3. From the 4th screen on the device select **Enabled**. The device will then be open for expansion.



***Note**: On both Host and Expansion panels a "stacking" icon will flash until connection is established.*



Designate the Expansion panel and link it to the host:

4. From the front panel menus of the panel you wish to expand from the host, navigate to **Menu > Networking > Expansion Mode > Expand To Host**.
5. Select the required host panel using the rotary controllers, which, providing the devices are on the same network, will be visible in the 4th screen.

6. The stacking icon will flash in the screen until connection is established. Once the connection is established, the icon will show solid.

5.6.5 Viewing the Module Settings: Version Information

The software (firmware) for the ports on the interface module must match that on the HelixNet Main Station itself.

Note: *Ethernet and fiber option modules do not contain software.*

To check the software version for the Main Station and each port on the interface module:

1. In Menu mode, select Administration > Software > Current.
2. In the fourth menu, use the rotary control to scroll the displayed software versions.
3. The software versions for each port are listed under Snx, where n indicates the slot number, and x indicates port A or port B.

The software versions for the two processors in the Main Station (Main Station and IV-Router) are listed under MS and IVR respectively.

5.7 Administration

5.7.1 In **Menu mode** > **Administration**, you can:

- Update and view the current software (firmware)
- Upgrade and view the current licence (how many channels are available)
- Reset the Main Station and audio configuration
- Reboot the Main Station
- Get system logs for diagnostic purposes

- See the CCM login credentials (including password). This option is only available if you have either not changed the CCM password or reset the main station to factory default settings
- Save/restore audio configuration

5.7.2 Viewing the Current Versions of the Software

To view the current versions of the software on the Main Station, see Viewing the Module Settings: Version information.

5.7.3 Updating the Software

Any beltpacks, Remote Stations and Speaker Stations that are connected to the Main Station are automatically updated. The units remain non-functional for approximately 5 minutes while they are updated.

To update the software:

1. After downloading the software update, copy the update to a USB memory stick.

   ***Note**: If you are updating from HelixNet 3.0 to HelixNet 3.1 or later, you must update the .ccb file before you update the .ubifs file.*

2. Insert the memory stick into the USB 2.0 (A) connector. See table in Main Station/Remote Station: Front panel
3. In **Menu mode**, select **Administration** and then **Software**.
4. From the third menu, select **Update**.
5. The fourth menu displays the new software version information on the USB memory stick. To start updating the Main Station with the new software, press the rotary control.

The process of updating the software takes several minutes. Please wait while all connected devices are updated. The following system messages are displayed during the process:

Loading image

Erasing flash

Writing to flash

Verifying flash

Successful

***Note**: Do not remove the USB memory stick from the Main Station until the software update is completed, including the update to any connected devices.*

*Do **not** turn off the power to the Main Station during the software (firmware) update. Turning off the power can damage the device.*

***Note**: The Main Station resets automatically. You are not required to restart the Main Station. To check that the software upgrade was performed successfully, see Viewing the current versions of the software.*

5.7.4 Upgrading the License on the HelixNet Main Station

The Main Station arrives with a license for 12 Channels. In order to upgrade to 24 Channels you need to obtain a License code from your Clear-Com dealer. Your dealer will need the system id of your device, available from the front menu screens.

1. In **Menu mode**, select **Administration** and then **License**.
2. From the third menu, select **Current**.
3. In the fourth menu, the top item is the system ID. Give this to your dealer to obtain a license to upgrade.
4. When you have the license code, input it into this screen. The Rotary controller can be used to scroll to the input code section, and then used to enter the code. Push to select a digit or letter. Scroll to the required letter. Push to commit information.

5.7.5 Resetting the Main Station

To reset the Main Station to its default (factory mode) settings:

1. In **Menu mode**, select **Administration** and then **Reset**.
2. The third menu displays a selected menu item: **Reset to Default**.
3. In the fourth menu, select between:
   - Reset HMS
   - Reset Endpoints
   - Reset CCM pass
   - Reset Roles/Channels
   - Factory Default

Type of reset	Result of reset
Reset HMS	Reset Main Station, including Roles to factory defaults. This option will not reeset the CCM password to the factory default setting.
Reset Endpoints	Reset the local configuration for all connected endponts; beltpacks, remote stations and speaker stations (Roles are not reset).
Reset CCM Pass	This option is only available when the CCM password has been changed. You can use this setting to reset the password to the default setting (unique password).
Reset Roles	Reset the Role and Channel assignments of the HMS. This option is also available in the CCM.
Factory Default	Resets everything on the HMS and connected endpoints.

***Note**: **Reset HMS** and **Factory Default** will erase any Role configurations you have made. Please save Role configurations before doing this.*

5.7.6 Manually Rebooting the Main Station

To manually reboot the Main Station:

1. In **Menu mode**, select **Administration** and then **Reset**.
2. The third menu select **Reboot**.
3. In the fourth menu, select **Reboot Now**.

When the **rotary control** is pressed, the display changes to **Rebooting …** for 2 seconds, and then the Main Station reboots.

5.7.7 Saving and Restoring the Software Settings

Use this option to save your configuration to a USB stick or restore a previously saved file:

1. Insert a memory stick into the USB 2.0 (A) connector. See table in Main Station/Remote Station: Front panel
2. In **Menu mode**, select **Administration** and then **Settings**.

3. To save, in the third menu, select **Save All**. Once you select **Save** you should not remove the USB stick right away. Depending on the USB stick it might take up to 5 seconds to complete.
4. To restore all HMS settings, in the third menu, select **Restore all**.
   a. In the fourth menu, select a file from USB.
   b. This restores the Helixnet Base, the Role and the Channel settings from the USB stick to your system.
5. To restore Roles and Channel names only, in the third menu, select **Restore Role/Ch**.
   a. In the fourth menu, select a file from USB.
   b. This restores Role and Channel settings from the USB to your system. Network settings are NOT restored.

Type of Save	Result
Save All	Saves your whole configuration; Main Station, Remote Stations, Speaker Stations, Roles/Channel names to the USB for future use. This option also saves 2-wire and 4-wire port settings and assignment.
Restore All	Restores all settings from the file stored on the USB.
Restore Role/Ch	Restores Channel names and Role configuration only from the file stored on the USB. **Network settings (including Linking and Expansion) are NOT saved.**

5.8 Diagnostics

The **Diagnostics** menus help you to monitor the performance of the Main Station and diagnose possible system issues.

If the warning icon shows up in the Main display, warning message will show up here in the Diagnostics menu.

5.8.1 Viewing hardware Information

To view information about the hardware (PCBs) on the Main Station:

1. In **Menu mode**, select **Diagnostics** and then **Hardware**.
2. From the third menu, select one of the following:

- Main PCB
- Slot 1 PCB
- Slot 2 PCB
- Slot 3 PCB

***Note**: **Slot 1**, **Slot 2** and **Slot 3** refer to the interface module slots in the Main Station extension bay. When looking at the rear of the module, **slot 1** is the left-hand slot, **slot 2** is the middle slot, and **slot 3** is the right-hand slot.*

The fourth menu displays the **Part number**, **Revision** and **Serial numbers** for the PCB. The format is similar to the following:

Part **xxxxxx**
Revision: **x**
Serial: **x**

Where **x** is a numerical value.

5.8.2 Viewing temperature Information

To view the temperature of the Main Station:

1. In **Menu mode**, select **Diagnostics** and then **Hardware**.
2. From the third menu, select one of the following temperature sensors:
   - Sensor 1
   - Sensor 2
   - Sensor 3

   The fourth menu displays the temperature, for example:

   +30°C

   Environmental note:
   The recommended operating temperature range for the HelixNet HMS-4X Main Station is **0 to +40°C**. The storage temperature range for the Main Station is **-30 to +70°C**.

   For more environmental information, see Installing HelixNet Partyline.

5.8.3 Viewing Powerline Information and Status

There are two digital Partylines (**Line 1** and **Line 2**) on the HMS-4X Main Station. Line 1 and Line 2 are also referred to as **powerlines**.

Each line can support up to 10 beltpacks, Remote Stations or Speaker Stations.

***Note**: See also F, G and I in Main Station/Remote Station: Front panel-.*

To view line information and status:

1. In **Menu mode**, select **Diagnostics** and then **Powerlines**.
2. From the third menu, select one of the following:
   - Powerline 1 (refers to Line 1)
   - Powerline 2 (refers to Line 2)
3. The fourth menu displays the status and other measures / information for the powerline. The status of the powerline is either **OK** [operating normally], **Busy** or **Error**.

   For more details of the information displayed, see (link...)

   ***Note**: Powerline status is also indicated by the powerline LEDS on the front panel.*

   Green LED = OK

   Amber LED = Busy

   Red LED = Error

For more information about powerline diagnostics, see Troubleshooting.

5.8.4 Viewing Keysets Information

To view information about the keysets:

1. In **Menu mode**, select **Diagnostics** and then **Keysets**.
2. From the third menu (third display screen), select a keyset from 1 to 4.
3. The fourth menu (fourth display screen) displays the following status information:
   - **Name –** The Channel name
   - **Talkers –** The number of talkers on the Partyline
   - **Main Stations –** The number of Main Stations listening
   - **Beltpacks –** The number of beltpacks listening on the Partyline
   - **Remote –** The number of Remote Stations listening
   - **Speaker –** The number of Speaker Stations listening
   - **2-Wire –** The number of 2-wire ports listening
   - **4-Wire –** The number of 4-wire ports listening

6 Configuring and Managing the Remote Station from Front Menus

This section describes how to configure the settings and manage the Remote Station using **Menu mode**. It also shows you how to monitor and diagnose performance issues, using the **Diagnostics** menus.

Tip: For a quick reference to the Remote Station menus, see Menu maps

For general information about using the menus and configuring settings, see Using the Menus.

Notes: *Some of the configuration information for the Remote Station is the same as for the Main Station. In these case, you are referred to the relevant sections of Configuring and managing the Main Station from front menus.*

If Menu mode is locked, you must unlock the menus from the CCM before you can enter the menu. See Administration.

6.1 Configuring the audio settings

6.1.1 Audio settings for the headset

To configure the audio settings for the headset, see Audio settings for the headset.

Note: *This does not apply to the Remote Station in expansion mode.*

6.1.2 Audio Settings for the Microphone

To configure the audio settings for the microphone, see Audio settings for the microphone.

Note: *This does not apply to the Remote Station in expansion panel mode.*

6.1.3 Settings for Program/Audio in

Program/audio in can be disabled on a HelixNet Remote station if you wish to conserve system resources on a large system. When disabled, program/audio will not be available to the remote station.

To configure the audio settings for the program/audio in:

1. In **Menu mode**, select **Audio Settings** and then **PGM/Audio In**.
2. To disable/enable program audio:
    a. From the third menu, select **Mode**.
    b. From the fourth menu, scroll to **Disabled** and select it by pushing the rotary controller
    c. To re-enable program/audio, scroll to **Enabled** and select it by pushing the rotary controller.

3. To edit the label for this input:
    a. From the third menu, select **Label**.
    b. From the fourth menu, select the existing label by scrolling to it and pushing the rotary controller. Edit the label by rotating the controller to scroll through letters and digits and pushing to select a letter/digit.
    c. When you have done, scroll to **Save** and push the rotary controller. To exit without saving changes, go back to the third screen.

3. To select the gain:
    a. From the third menu, select **Gain**.
    b. From the fourth menu, select one of the following:
        - + 12dB
        - + 6dB
        - 0dB (default)
        - - 6dB
        - - 12dB
    c. To confirm the selected setting, press the **rotary control**.

4. To select the IFB dim level:
    a. From the third menu, select **IFB Dim Level**.

    Note: *The IFB Dim Level determines the volume level the Program Level is reduced to when it is interrupted by the IFB.*

    b. From the fourth menu, select one of the following:
        - IFB Disabled (default)
        - - 6dB
        - -12dB
        - -18dB
        - -24dB
        - Full Cut
    c. To confirm the selected setting, press the **rotary control**.

5. The action trigger activates a relay when receiving audio in above the VOX level on a Partyline Channel. You can enable or disable the action trigger.
   a. In Menu mode, select **Audio Settings** and then **Program Input**.
   b. From the third menu, select **Action Trigger**.
   c. From the fourth menu, select one of the following:
      - Enabled (default)
      - Disabled
   d. To confirm the selected setting, press the **rotary control**.

   Note: *You can also configure the action trigger using* ***Menu Mode > Modules Settings.***

6. To select the VOX:
   a. From the third menu, select **VOX**.
   b. From the fourth menu, select one of the following:
      - Enabled
      - Disabled (default)
   c. To confirm the selected setting, press the **rotary control**.

7. To select the VOX Off Delay:
   a. From the third menu, select **VOX Off Delay.**
   b. From the fourth menus, select one of the following:
      - .5 sec (default)
      - 1 sec
      - 2 sec
      - 3 sec
      - 4 sec
   c. To confirm the selected setting, press the **rotary control.**

6.1.4 Audio Settings for the SA (Stage Announce) Output/4-Wire Out

On remote stations, SA can be disabled from channel assignment. Once SA is assigned to a channel it becomes a resource consuming output. Not putting SA into channels will conserve system resources.

To configure the settings for the SA output:

1. In **Menu mode**, select **Audio Settings** and then **SA/Audio out**.
2. To select the mode:
   a. From the third menu, select Mode.
   b. From the fourth menu, select one of the following:
      - Channel Assigned (default). When this option is selected, SA will be available to channels.
      - SA. When this option is selected, SA will only be available to the SA output on the rear of the remote station.
   c. To confirm the selected setting, press the **rotary control**.
3. To select the gain:
   a. From the third menu, select **Gain**.
   b. From the fourth menu, select one of the following:
      - +12dB
      - +6dB
      - 0dB (default)
      - -6dB
      - -12dB
   c. To confirm the selected setting, press the **rotary control**.
4. The Program Output setting enables the program to be delivered to this output if it is assigned to a Channel that also has another program feed assigned. To select the program output:
   a. From the third menu, select **Program Output**.
   b. From the fourth menu, select one of the following:
      - Unmute (default)
      - Mute
      - [SA Mode]
   c. To confirm the selected setting, press the **rotary control**.

5. To associate any available Channel (or to disable Channels associations) with the selected port:
   a. From the third menu, select **Channel Assign**.
   b. From the fourth menu, select one of the following:
      - Disabled (default)
      - Channel 1
      - Channel 2
      - Channel 3
      - Channel 4
      - …
   c. To confirm the selected setting, press the **rotary control**.

6.1.5 Audio Settings for Hot Mic Output

To configure the audio settings for the Hot Mic Output, see Audio settings for the Hot Mic Output.

Note: *This does not apply to the Remote Station in expansion mode.*

6.1.6 Audio Settings for the Front Panel

To configure the audio settings for the Front Panel, see Audio settings for the Front Panel.

Note: *This does not apply to the Remote Station in expansion panel mode.*

6.2 Selecting Station Settings

6.2.1 Setting Preferences

To set the **Preferences**:

1. In **Menu mode**, select **Station Settings** and then **Preferences**.
2. You will see **Roles** in the third screen.
3. From the fourth screen, select the required Role. Select **Local config** if you do not wish to use a Role.

6.2.2 Setting Keyset Assignments

To configure the Keyset Assignments settings, see Audio settings for the headset.

6.2.3 Setting Key Latching

To configure the key latching settings, see Setting key latching.

6.2.4 Settings the RMK (Remote Mic Kill) Key

To configure the RMK settings, see Setting the RMK (Remote Mic Kill) key.

Note: *This does not apply to the Remote Station in expansion panel mode.*

6.2.5 Setting Display Screen Brightness

To configure the display screen brightness, see Setting display screen brightness.

6.2.6 Setting Key Brightness

To configure the key brightness settings, see Setting key brightness.

6.2.7 Setting the Screensaver

To configure the screensaver settings, see Setting the screensaver.

6.3 Configuring the Channel settings

6.3.1 Editing the Channel label

To edit the Channel label, see Editing the Channel label.

6.3.2 Assigning the Program Listen to a Channel

To assign the program listen to a Channel, see Assigning the Program Listen to a Channel.

6.3.3 Assigning a GPO Relay to a Channel

You can assign a relay that is triggered on receiving a call or detecting a talk on a Partyline Channel. See Assigning a GPO relay to a Channel.

6.4 Configuring the Control I/O

The Control I/O connector on the rear panel allows you to connect one relay output or one opto input and control them through the Remote Station keysets:

I/O type	Description
Opto inputs	Opto inputs enable you to connect a foot switch or other control device and use it to trigger Call or Talk functions. Selecting the 'mic' option here allows the user to utilize a footswitch to enable talking to the pre-latched channels on the user station - hands free.
Relay outputs	Relay outputs enable you to use Call or Talk keys to trigger any external device that accepts a standard contact closure (such as a theater curtain or an On Air light).

6.4.1 Configuring Opto Inputs

To configure the Control I/O for the Opto input:

1. In **Menu mode**, select **Control I/O**.
2. From the second menu, select **Inputs**.
3. From the third menu, select **Opto 1**
4. From the fourth menu, select one of the following:
   - None (default)
   - Call Key 1
   - Talk Key 1
   - Call Key 2
   - Talk Key 2
   - Call Key 3
   - Talk Key 3
   - Call Key 4
   - Talk Key 4
   - Mic

   Note: *The number of the key relates to the keyset to which it belongs (for example, Call Key 1 is the Call key for the first keyset / display screen).*
5. To confirm the selected setting, press the **rotary control**.

6.4.2 Configuring the Relay Output

To configure the Control I/O for the Relay output:

1. In **Menu mode**, select **Control I/O**.
2. From the second menu, select **Outputs**.
3. From the third menu, select **Relay 1**
4. From the fourth menu, select one of the following:
   - None (default)
   - Call Key 1

- Talk Key 1
- Call Key 2
- Talk Key 2
- Call Key 3
- Talk Key 3
- Call Key 4
- Talk Key 4
- SA Key

  Note: *The number of the key relates to the keyset to which it belongs (for example, Call Key 1 is the Call key for the first keyset / display screen).*

5. To confirm the selected setting, press the **rotary control**.

6.5 Connecting the Remote Station to a Main Station using LAN

To connect the Remote Station to a Main Station:

1. Ensure that the Remote Station is physically connected to the Main Station.
2. In **Menu mode**, select **Networking, and then Pair to Station.**
3. From the third menu, select the **Station ID** to connect to.

To set the preferences:

1. In **Menu mode**, select **Networking, and then Preferences.**

   From the third menu, select DHCP.

   a. Select one of the following:

   - Enabled (default)
   - Disabled

2. From the third menu, select **IP Address**, and enter the correct IP address.
3. From the third menu, select **Gateway**, and enter the correct gateway address.
4. From the third menu, select **Subnet Mask**, and enter the correct subnet mask.

6.6 Networking

In **Menu mode > Networking**, you can:

- See networking settings including Hostname, DHCP, IP address, subnet mask and gateway.
- Pair to a Main Station.
- Set the expansion mode for your device.

6.6.1 Viewing Network Preferences

To view network preferences:

1. In **Menu** mode, select **Networking > Preferences**

   You can view the following:

   - Hostname
   - DHCP enabled or disabled
   - IP address
   - Subnet Mask
   - Gateway

6.6.2 Pairing to a Main Station

To pair to a Main Station:

1. In **Menu** mode, select **Networking > Pair to Station**.
2. Select **By Name** or **By Address**.

6.6.3 Using Expansion Mode

To enable your Remote Station as a host in expansion mode, or to expand to another device:

1. In **Menu** mode, select **Networking > Expansion Mode**.
2. Select **Host** or **Expand to Host**.

6.7 Administration

In **Menu mode > Administration**, you can:

- View the current versions of the software for the system.
- Update the software (firmware).
- Reset the Remote Station to the default (factory mode) settings.

- Manually reboot the Remote Station.
- Save and Restore the software settings.

6.7.1 Viewing the Current Versions of the Software

To view the current versions of the software on the Remote Station:

1. In **Menu mode**, select **Administration** and then **Software**.
2. From the third menu, select **Current**.
3. In the fourth menu, use the **rotary control** to scroll the displayed software versions. The software versions for the HelixNet system and Remote Station are shown.

6.7.2 Updating the Software

Software can be updated from a Main Station or locally in the USB connector on the front of a Remote Station. Updating from the Main Station is recommended when possible.

To update the software:

1. After downloading the software update, copy the update to a USB memory stick.
2. Insert the memory stick into the USB connector.
3. In **Menu mode**, select **Administration** and then **Software**.
4. From the third menu, select **Update**.
5. The fourth menu displays the new software version information on the USB memory stick. To start updating the Main Station with the new software, press the rotary control.

The process of updating the software takes several minutes. The following system messages are displayed during the process:

Loading image

Erasing flash

Writing to flash

Verifying flash

Successful

Do **not** turn off the power to the Remote Station during the software (firmware) update. Turning off the power can damage the device.

Notes: *Do not remove the USB memory stick from the Main Station or Remote Station until the software update is completed.*

Do **not** turn off the power to the Remote Station during the software (firmware) update. Turning off the power can damage the device.

*The Remote Station resets **automatically**. You are **not** required to restart the Remote Station. To check that the software upgrade was performed successfully, see Viewing the current versions of the software.*

6.7.3 Resetting the Remote Station to Default Settings

To reset the Remote Station to its default (factory mode) settings:

1. In **Menu mode**, select **Administration** and then **Reset**.
2. The third menu displays a selected menu item: **Reset to Default**.
3. In the fourth menu, select **Reset Now**.

6.7.4 Manually Rebooting the Remote Station

To manually reboot the Remote Station:

1. In **Menu mode**, select **Administration** and then **Reset**.
2. The third menu select **Reboot**.
3. In the fourth menu, select **Reboot Now**.

When the **rotary control** is pressed, the display changes to **Rebooting** … for 2 seconds, and then the Remote Station reboots.

6.7.5 Saving and Restoring the Software Settings

To save or restore the software settings:

1. In **Menu mode**, select **Administration** and then **Settings**.
2. To save, in the third menu, select **Save**. Once you select **Save** you should not remove the USB stick right away. Depending on the USB stick it might take up to 5 seconds to complete.
   a. In the fourth menu, select either saving to a USB stick or saving locally.
3. To restore, in the third menu, select **Restore**.
   a. In the fourth menu, select either restoring from a USB stick or restoring from a list of files.

6.8 Diagnostics

The **Diagnostics** menus help you to monitor the performance of the Remote Station and diagnose possible system issues.

6.8.1 Viewing Powerline Information and Status

To view line information and status:

1. In **Menu mode**, select **Diagnostics** and then **Powerlines**.
2. From the third menu, select Powerline 1.
3. The fourth menu displays the status and other measures / information for the powerline. The status of the powerline is either **OK** [operating normally], **Busy** or **Error**.

   For more details of the information displayed, see Menu maps.

   ***Note**: Powerline status is also indicated by the powerline LEDS on the front panel.*

   Green LED = **OK**

   Amber LED = **Busy**

   Red LED = **Error**

For more information about powerline diagnostics, see Troubleshooting.

6.8.2 Viewing Network Information

To view network status information:

1. In **Menu mode**, select **Diagnostics** and then **Network**.
2. To view status information about the powerline:
   a. From the third menu, select **Powerline**.
   b. On the fourth menu, the IP address is given.
3. To view status information about the Ethernet:
   a. From the third menu, select **Ethernet**.
   b. On the fourth menu, the IP address is given.

6.8.3 Viewing Keyset Information

To view information about the keysets:

1. In **Menu mode**, select **Diagnostics** and then **Keysets**.
2. From the third menu, select a keyset from 1 to 4.
3. The fourth menu displays the following status information:

- **Name** – The Channel name
- **Talkers** – The number of talkers on the Partyline
- **Main Stations** – The number of Main Stations listening
- **Beltpacks** – The number of beltpacks listening on the Partyline
- **Remote** – The number of Remote Stations listening
- **Speaker** – The number of Speaker Stations listening
- **2-Wire** – The number of 2-wire ports listening
- **4-Wire** – The number of 4-wire ports listening

6.9 Setting up a Key Expansion Group

See Setting up a key Expansion Group.

7 Configuring and managing the Speaker Station from front menus

This section describes how to configure the settings and manage the Speaker Station using **Menu mode**. It also shows you how to monitor and diagnose performance issues, using the **Diagnostics** menus.

Tip: For a quick reference to the Speaker Station menus, see Menu maps.

For general information about using the menus and configuring settings, see Using the Menus.

There is a next and a back activated by pressing the rotary encoders (right one for next, left one for back). There are two levels of the menu, one on the left screen and one on the right. Next and back shifts the menu by one level down or up.

7.1 Using the Menus

To place the Speaker Station in **Menu mode**, press the **Menu key**. The Speaker Station menus appear in the display screens.

***Notes**: The **Speaker Station** menu comes up in the **Roles** menu by default.*

If Menu mode is **locked**, you must unlock the menus from CCM before you can enter the menu. See Administration.

7.1.1 Configuring Settings

To configure settings:

1. For each menu, turn the **rotary control** to scroll the menu items. Turn the rotary control:
   - Counter-clockwise to scroll up the menu items.
   - Clockwise to scroll down the menu items.

To return to the previous level of menu, press the **left-hand rotary key**.

To go to the next level of menu, press the **right-hand rotary key.**

Selected menu items are highlighted in solid yellow.

2. When you have selected a setting, press the **right-hand rotary key** to enable the setting on the Speaker Station.

7.1.2 Exiting Menu Mode

To exit **Menu mode** do either of the following:

Press the **Menu** key.

Wait until Menu mode times out. If you fail to press any key on the Speaker Station for 20 seconds, the display screen reverts to showing the standard Channel information.

7.2 Configuring the Audio settings

7.2.1 Audio settings for the headset

To configure the audio settings for the headset, see Audio settings for the headset.

7.2.2 Audio Settings for the Microphone

To configure the audio settings for the microphone, see Audio settings for the microphone.

7.2.3 Audio Settings for the Front Panel

To configure the audio settings for the front panel, see Audio settings for the Front Panel.

7.3 Station Settings

7.3.1 Setting Keyset Assignments

To configure the Keyset Assignments settings, see Setting Keyset Assignments.

7.3.2 Setting key latching

To configure key latching, see Setting key latching.

You can also configure key latching so that the Talk keys automatically unlatch whenever the Shift key is pressed. To do so:

1. In Menu mode, select **Station Settings** and then **Keysets**.
2. From the third menu, select **Unlatch on Shift**.
3. From the fourth menu select:
   - Enabled (default)
   - Disabled

7.3.3 Setting display screen brightness

To configure display screen brightness, see Setting display screen brightness.

7.3.4 Setting key brightness

To configure key brightness, see Setting key brightness.

7.3.5 Setting the screensaver

To configure the screensaver, see Setting the screensaver.

7.4 Connecting the Speaker Station to a Main Station

To connect the Speaker Station to a Main Station, see Connecting the Remote.

7.5 Networking

In **Menu mode > Networking**, you can:

- See networking settings including DHCP, IP address, subnet mask and gateway.
- Pair to a Main Station.

7.5.1 Viewing Network Preferences

To view network preferences:

1. In **Menu** mode, select **Networking > Preferences**

You can view the following:

- DHCP enabled or disabled
- IP address
- Subnet Mask
- Gateway

7.5.2 Pairing to a Main Station

To pair to a Main Station:

1. In **Menu** mode, select **Networking > Pair to Station**.
2. Select **By Name** or **By IP Address**.

7.6 Administration

7.6.1 Viewing the current versions of the software

To view the current version of the software, see Viewing the current versions of the software.

7.6.2 Updating the Software

To update the software, see Updating the software.

***Note**: You can only update the Speaker Station software from the Main Station.*

7.6.3 Resetting the Speaker Station to Default (Factory Mode) settings.

To reset the Speaker Station to its default (factory mode) settings see:

1. In **Menu mode**, select **Administration** and then **Reset**.
2. The third menu displays a selected menu item: **Reset to Default**.
3. In the fourth menu, select **Reset Now**.

7.7 Diagnostics

7.7.1 Viewing network information

To view network information, see Viewing network information.

7.7.2 Viewing Keysets Information

To view key sets information, see Viewing keyset information.

8 Configuring and managing the beltpacks from front menus

This section describes how to configure the settings and manage the beltpacks using **Menu mode**. It also shows you how to monitor and diagnose performance issues, using the **Diagnostics** menus.

Tip: For a quick reference to the Main Station menus, see Menu maps.

8.1 Using the Menus

To place the beltpack in **Menu mode**, press the **Menu key** on the top of the beltpack.

Notes *The **Beltpack** menu shows the **Roles** menu by default.*

:

*If Menu mode is **locked** on the beltpack, you must unlock the menus from CCM before you can enter the menu. See Administration.*

To enter the menu mode from the Roles screen, press the left hand Call button.

8.1.1 Configuring settings

To configure settings:

1. For each menu, turn either of the side-mounted **rotary controls** to scroll the menu items. Turn the rotary control:
   - Counter-clockwise to scroll up the menu items.
   - Clockwise to scroll down the menu items.

Off-screen menu items are indicated with arrows at the top and / or bottom of the display screen.

Back (with an arrow pointing **left**) indicates a previous level of menu.

To return to the previous level of menu, press the **left-hand Call key**.

An arrow pointing **right** indicates another level of menu under that menu item.

To go to the next level of menu, press the **right-hand Call key**.

Selected menu items are highlighted in solid yellow.

2. The final level of menu (the second or third display screen) displays the settings that relate to your previous menu choices (system features or functionality).

The **current setting** is indicated by a dotted box around the menu item

When you have selected a setting, press the **right-hand Call key** to enable the setting on the Main Station.

8.1.2 Exiting Menu mode

To exit **Menu mode** on the beltpack, do either of the following:

Press the Menu key.

Wait until Menu mode times out. If you fail to press any key on the beltpack for 20 seconds, the display screen reverts to showing the standard Channel information.

8.2 Configuring the Role Settings

To configure the Role settings for the headset

1. In **Menu mode** press the left-hand Call Key and then select **Roles**.
2. Select the required Role.
3. To confirm the selected setting, press the **right-hand Call key**.
4. The beltpack applies the setting and reverts to the standard display screen.

8.2.1 Viewing Hostname

The hostname (the unique name given to any device on a network) of your beltpack can be seen in the Roles section of the menu.

To view the hostname for your beltpack:

1. In **Menu mode** press the left-hand Call Key and then select **Roles**.
2. The device's hostname can be seen at the top of the list of available Roles.

Note: *You cannot change the hostname from this screen. The hostname for beltpacks must be changed from the browser-based Core configuration Manager (the CCM). From the* ***Overview*** *page of the CCM, click on any device image to access configuration details for that device's hostname.*

8.3 Configuring the Audio Settings

To configure the audio settings for the headset:

1. In **Menu mode** press the left-hand Call Key and then select **Audio Settings.**
2. To adjust sidetone gain on the headset:
   a. Select Sidetone Gain.
   b. Select one of the following:

- 0dB
- - 6dB
- -12dB (default)
- -18dB

c. To confirm the selected setting, press the **right-hand Call key**.

Go back to the previous menu level by pressing the **left-hand Call key**.

3. To limit the maximum audio level that can be delivered to the headphones:
   a. Select Headphone Limit.
   b. Select one of the following:
      - Off
      - +6dB
      - 0dB (default)
      - - 6dB
   c. To confirm the selected setting, press the **right-hand Call key**.

   ***Note**: When Headphone Limit is set to anything except **Off**, a LIM indication will show up at the top right of the display.*

Go back to the previous menu level by pressing the **left-hand Call key**.

4. Sidetone tracking means that the sidetone level varies according to the main volume level. To set (or disable) sidetone tracking on the headset:
   a. Select Sidetone Control.
   b. Select one of the following:
      - Tracking (default)
      - Non-Tracking
      - Disabled
   c. To confirm the selected setting, press the **right-hand Call key**.

Go back to the previous menu level by pressing the **left-hand Call key**.

5. To set the type of mic on the headset:
   a. Select **HS Mic Type**.

b. Select either of the following types of mic.

- Electret (-15 dB)
- Dynamic (0 dB) (default)
- Dynamic (low). This setting corresponds to -10 dB gain on HBP-2X and -15 dB gain on HXII-BP-X4.

***Note**: In electret mode, phantom power is provided for an electret mic. In dynamic mode, no phantom power is provided. Mic input levels are also adjusted between the different modes to suit the different mic types.*

c. To confirm the selected setting, press the **right-hand Call key**.

8.4 Audio Settings for the Microphone

To configure the audio settings for the microphone:

1. In Menu mode, select **Audio Settings**.

   ***Note**: The Headroom setting is only available on the HBP-2X Beltpack*

2. To select the Headroom:
   a. From the third menu, select **Headroom**.
   b. From the fourth menu, select one of the following:
      - Normal (default)
      - High
3. To enable or disable the Contour Filter:
   a. From the third menu, select **Contour Filter**
   b. From the fourth menu, select one of the following:
      - Enabled
      - Disabled (default)

8.5 Configuring the beltpack Settings

In **Menu mode > Beltpack Settings**, you can:

- Assign Channels to the left and right beltpack keysets (set of controls).
- Enable (or disable) **Talk key** latching.

- Enable (or disable) beltpack vibration when a call signal is received.
- Enable (or disable) the USB flasher mode for the beltpack.
- **Tip:** For a quick reference to the keysets on the beltpack, see HBP-2X user controls (front and side view) or HXII-BP-X4 Beltpack user controls (top view).

8.5.1 Assigning Channels

You can assign any two available Channels to the beltpack (including the same Channel to both keysets).

To assign a Channel:

1. In Beltpack Settings select Left Channel or Right Channel.
2. Select one of the available Channels (or none):
3. To confirm the selected setting, press the **right-hand Call key.**

8.5.2 Setting Talk Key Latching

To enable (or disable) **Talk key** latching:

1. In Beltpack Settings select Right Talk Latch or Left Talk Latch
2. Select one of the following:
   - Latching (default)
   - Non-Latching
   - Disabled

   ***Note**: The setting applies to both Channels on the beltpack.*
3. To confirm the selected setting, press the **right-hand Call key**.

8.5.3 Setting USB Flasher Mode

To enable (or disable) **USB Flasher** mode

1. In Beltpack Settings select either Left Keyset or Right Keyset
2. Select USB Flasher
3. Select one of the following:
   - Disabled (default)
   - Blinking

- Solid

4. To confirm the selected setting, press the **right-hand Call key**.

8.5.4 Setting the Beltpack to Vibrate When Called

To enable (or disable) vibration when a **Call signal** is received:

1. In Beltpack Settings select Vibrate on Call.
2. Select one of the following:
   - On
   - Off (default)
3. To confirm the selected setting, press the **right-hand Call key**.

8.6 Configuring the Display Settings

In **Menu mode > Display Settings**, you can:

- Set the brightness of the display screen.
- Set the brightness of the **Talk** and **Call** keys.
- Enable (or disable) the screensaver.
- Rotate the display.

8.6.1 Setting Display Screen Brightness

By default, the display screen is set to **medium** brightness. To set the brightness of the display screen:

1. In **Menu mode**, press the left-hand Call Key and then select **Display Settings**.
2. Select OLED Brightness.
3. Select one of the following:
   - High
   - Medium (default)
   - Low
4. To confirm the selected setting, press the **right-hand Call key**.

8.6.2 Setting the Brightness of the Talk and Call Keys

By default, the **Talk** and **Call keys** are lit when **active (on)** and dim when **inactive (off) (High / Low).**

To set the brightness of the Talk and Call keys:

1. In **Menu mode**, press the left-hand Call Key and then select **Display Settings**.
2. Select Key Brightness.
3. Select one of the following brightness settings:

Key(s)	Description
High / Low (default)	Keys are brightly lit when active (on) and dim when inactive (off).
High / Off	Keys are lit when active (on) and are unlit when inactive (off).
Low / Off	Keys are lit dim when active (on) and are unlit when inactive (off).
Off / Off	Keys are unlit, whether or not they are active (on) or inactive (off).

4. To confirm the selected setting, press the **right-hand Call key.**

8.6.3 Set Rotate Display

You can set the beltpack display to rotate according to its physical position.

1. In **Menu mode**, press the left-hand Call Key and then select **Display Settings**.
2. Select **Rotate Display**.
3. Select one of the following:
   - Enabled
   - Disabled (default)

8.6.4 Setting the Screensaver

The screensaver is displayed on screen after 10 minutes of inactivity on the beltpack. To enable (or disable) the screensaver:

1. In **Menu mode**, press the left-hand Call Key and then select **Display Settings**.
2. Select **Screensaver**.
3. Select one of the following:

- Channel Name (default)
- Hostname
- Role Name
- Blank
- Disabled

4. To confirm the selected setting, press the **right-hand Call key.**

8.7 Network - Powerline

***Note**: This section applies only to the HBP-2X Beltpack and the HXII-BP-X4 when powered by powerline.*

In **Menu mode > Network**, you can view the IP address of the beltpack:

1. In **Menu mode**, press the left-hand Call Key and then select **Network**.

8.8 Network - Ethernet

***Note**: This section applies only to the HXII-BP-X4 when powered over Ethernet.*

In **Menu mode > Networking**, you can:

- See networking settings including DHCP, IP address, subnet mask and gateway.
- Pair to a Main Station.

8.8.1 Viewing Network Preferences

To view network preferences:

1. In **Menu** mode, select **Networking > Preferences**

   You can view the following:

- DHCP enabled or disabled
- IP address
- Subnet Mask
- Gateway

8.8.2 Pairing to a Main Station

To pair to a Main Station:

1. In **Menu** mode, select **Networking > Pair to Station**.

   Select **By Name** or **By IP Address**.

8.9 Administration

In **Menu mode** > **Administration**, you can:

- View the current version of the software on the beltpack.
- Reset the beltpack to default (factory mode) settings.
- The beltpacks receive updated (default) Channel label information. Other local beltpack settings will not be reset if the Main Station is reset to default settings.

8.9.1 To View the Current Version of the Software on the Beltpack:

1. In **Menu mode**, press the left-hand Call Key and then select **Administration**.
2. Select **Software Version**.
3. The current version of the software is displayed. The software version information will appear similar to the following example:

   npl-x.x.xx.xxxx, uboot

   Where x is a numerical value.

8.9.2 Resetting the Beltpack to Default (Factory Mode) Settings

To reset the beltpack to default (factory mode) settings:

1. In **Menu mode**, press the left-hand Call Key and then select Administration.
2. Select **Reset to Default**.
3. **Reset Now** is displayed (shown as selected). To reset the beltpack, press the **right-hand Call key**.

   ***Note**: Resetting the beltpack to default (factory mode) settings will delete any IP settings, and remove the pairing with the Main Station.*

8.10 Diagnostics

The **Diagnostics** menus help you to monitor the performance of the beltpack and diagnose possible system issues.

8.10.1 Viewing Information About the Hardware (Main PCB) on the Beltpack

To view information about the **Part, Revision** and **Serial number** of the main PCB on the beltpack:

1. In **Menu mode**, press the left-hand Call Key and then select **Diagnostics**.
2. Select **Hardware > Main PCB**.

   The **Part, Revision** and **Serial number** for the PCB are displayed. The format is similar to the following:

   Part xxxxxxx
   Revision: x
   Serial: x

   Where x is a numerical value.

8.10.2 Viewing Powerline Information and Status

To view powerline information and status:

1. In **Menu mode**, press the left-hand Call Key and then select **Diagnostics**.
2. Select **Powerline**.

   The status and other powerline information are displayed. For more information, see Menu maps.

9 Using the Main Station/Remote Station

This section describes how to use the Main Station/Remote Station, after your HelixNet Partyline system has been installed and configured.

For more information about integrating and using HelixNet Partyline with your existing intercom infrastructure, see Installing HelixNet Partyline.

Tip: For a quick reference to the functionality of the HMS-4X Main Station, the optional interface modules and the beltpacks, see Panels and Interfaces.

9.1 Using the Gooseneck Mic, Loudspeaker and Headset

To use a **gooseneck mic** to talk to connected intercom users, devices (including beltpacks) and systems:

1. Connect the gooseneck mic, using the gooseneck mic connector (3-pin female Tuchel connector) on the left of the front panel.

   ***Note**: For the location of the gooseneck mic connector, see C in Main Station/Remote Station: Front .*

2. To talk to other intercom users and devices:

   a. Press the appropriate **Talk key**

   When the mic (gooseneck or headset) is live, the **Mic On key** is activated automatically.

   b. Speak into the mic.

Use the front panel **loudspeaker** to listen to connected intercom users, devices and the Program Feed.

To adjust the volume level:

3. Adjust the volume of all incoming audio by turning the loudspeaker rotary control **[Main]**, located to the left of the loudspeaker.

   Adjust the volume of the Program Feed in **relation to** the overall volume level by turning the auxiliary loudspeaker rotary control [**Prog**], located to the right of the loudspeaker. The **Prog** volume control is subordinate to the **Main** volume control.

   To increase the volume level, turn the **rotary control(s)** clockwise. To decrease the volume level, turn the **rotary control(s)** counter-clockwise.

***Note**: When you connect a headset, incoming audio is routed to the headset instead of the loudspeaker.*

***Note:** You can mute the speaker by pressing the rotary control.*

As you increase or decrease the volume, the level control LEDs pass through a range of indicator colors:

LED color	Volume level
Green	Low
Amber/Green	Low/Medium
Amber	Medium
Red/Amber	Medium/High
Red	High

To use a **headset** to talk and listen to connected intercom users, devices and systems:

1. Connect the headset, using the headset connector (4-pin XLR–M) on the far left of the front panel.

   The **Headset key** is automatically activated. Incoming audio is routed to the headset instead of the loudspeaker.

   ***Note:** For the location of the headset connector and the headset key, see B & E in Main Station/Remote Station: Front.*

   To configure audio settings for the headset, see Audio settings for the headset.

2. To talk to other intercom users and devices:

   a. Press the appropriate **Talk key**.

   When the microphone (gooseneck or headset) is live, the **Mic On key** is activated automatically.

   b. Speak into the microphone.

3. To adjust the volume level of incoming audio to the headset..

   a. Adjust the volume of all incoming audio by turning the loudspeaker rotary control **[Main]**. The control is located to the left of the loudspeaker.

   a. Adjust the volume of the Program Feed in **relation to** the overall volume level by turning the auxiliary loudspeaker rotary control [**Prog**. The control is located to the right of the loudspeaker.

The **Prog** volume control is subordinate to the **Main** volume control.

9.1.1 Switching between the headset mic and the gooseneck mic

When both a Headset microphone and a gooseneck microphone are connected, press the **Headset key** to activate the headset mic.

Press the **Headset key** again to switch to the gooseneck mic (and deactivate the headset mic).

Tip: To find out more about Clear-Com accessories, including headsets and gooseneck microphones, see http://www.clearcom.com/product/accessories.

9.2 Entering and Exiting Menu Mode

9.2.1 Use **Menu mode** to:

Configure the settings for the Main/Remote Station, including Channel and audio settings.

Administrate the system, monitor system performance and diagnose system issues.

Perform software updates.

In **Menu mode**, the display screens display the four levels of menu. The menu hierarchy proceeds left to right:

The **top level** menu is presented in the first screen (furthest left on the front panel).

The **lowest level** menu is presented in the fourth screen (furthest right on the front panel).

To place the Main/Remote Station in **Menu mode**, press the **Menu key** to the left of the first (left) display screen. To exit Menu mode, do either of the following:

Press the **Menu key** again.

Wait until Menu mode times out. If you fail to press any key on the front panel for 20 seconds, the display screens revert to showing the standard Channel information, see (link…)

9.3 Using the Channel Keysets

A keyset (set of controls) is located next to each of the four display screens. In operating mode, each keyset is dedicated to the control of one of the four assigned intercom Channels. For details of the standard on screen information for each Channel, see table in Main Station/Remote Channel keyset and display.

Note: *To change (edit) the Channel label (name), see Editing the Channel label.*

The display screens enters screensaver mode (if enabled) if the Main/Remote Station remains inactive for 10 minutes. Press any key to leave screensaver mode.

To send a **call signal** to all the connected devices on that Channel, press the **Call key**.

To **talk** to the all the devices on that Channel:

1. Press the **Talk key**. When the gooseneck or headset mic is live, the Mic **On key** is activated automatically.

2. Speak into the headset or gooseneck mic (see also (link…)

To **adjust the volume** of incoming audio per channel, turn the rotary control. Turn the rotary control clockwise to increase the volume, and counter-clockwise to decrease volume. The current volume level is shown on screen.

To **mute** incoming audio per channel, press the **rotary control**. The display screen displays the muted volume bar.

To **unmute** incoming audio (restoring the audio to its previous volume level), press the **rotary control** again.

***Note**: In **Menu mode**, the **rotary control** for each Channel keyset is used to scroll and select menu items. For more information, see Editing the Channel label.*

9.4 Using the All Talk Key

To talk to all connected intercom users, devices and systems, **excluding** the SA (Stage Announce) facility:

1. Press the **All Talk key** to the right of the fourth (last) display screen.

   Talk keys for all Channels are activated automatically.

   When the mic (gooseneck or headset) is live, the **Mic On key** is also activated automatically.

2. Speak into the headset or gooseneck mic - see also Using the gooseneck mic, loudspeaker and headset.

***Note:** **All Channels** will enable you to talk to 12 (or 24, according to license) Channels. **Visible Channels** will enable you to talk to the four visible Channels.*

9.5 Using the SA [Stage Announce] key

Use the **SA [Stage Announce] key** to speak to an attached SA or Public Address system (sometimes simply a loudspeaker within the studio, theater or event area).To make a studio / public announcement:

1. Press the **SA key** to the right of the fourth (last) display screen.

   When the mic (gooseneck or headset) is live, the **Mic On key** is also activated automatically.

2. Speak into the headset or gooseneck mic - see also Using the gooseneck mic, loudspeaker and headset.

9.6 Using the RMK [Remote Mic Kill] Key

Use the RMK [Remote Mic Kill] key to:

Send a message to all connected HelixNet Partyline devices to deselect any latched (active) **Talk keys**.

Turn off any latched **Talk keys** on connected analog Partyline beltpacks and stations.

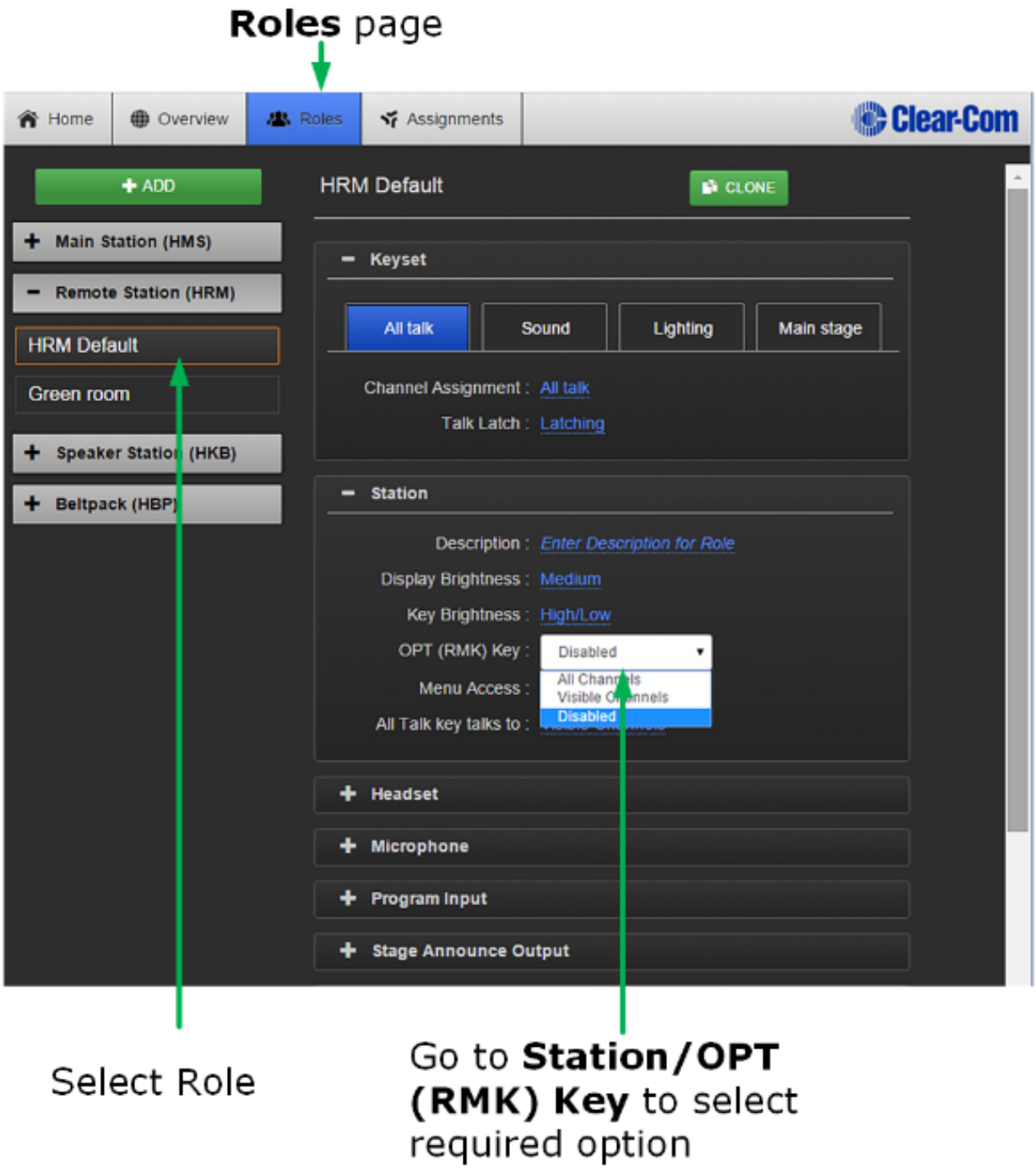
Note: *The OPT key can be used in HelixNet 3.0 and above. The Remote Station must have a Role selected to use this function. To enable the key, navigate to the **Roles** page in the CCM, the browser-based configuration tool served by your device.*

To enable the OPT (RMK) key on a Remote Station:

1. Input the IP address of your device into the URL field on a browser. The IP address is found in the 4th screen on the front of your device**: MENU > Networking > Preferences > IP address**.

2. This takes you to the Overview page in the Core Configuration Manager (CCM). Navigate to **Roles > Remote Station > Role > Station > OPT (RMK) Key** in the CCM and select the option by clicking on it.

For CCM username and password see CCM password.



3. Select required option: **All Channels** to activate RMK on 12 or 24 Channels, **Visible Channels** to activate RMK on the Channels visible on your device only, or **Disabled** (default setting).

Enabling this option in the CCM takes effect immediately on your system, provided the Role is selected on your device. For more information on Roles see (link...)

Note: ***All Channels*** *will turn off Talk keys on 12 (or 24 according to license) Channels.* ***Visible Channels*** *will turn of Talk keys on the four Channels you can see on the front of the*

device.

9.7 Line 1 and 2 LEDs

***Note**: This section only applies to the HelixNet Main Station.*

The beltpacks, Remote Stations and Speaker Stations are connected by one of the two lines to the Main Station.

The color of the **Line 1 and Line 2 LEDs** to the left of the front panel loudspeaker indicate the service status of each powerline:

Green LED = **OK**

Amber LED = **Busy**

Red LED = **Error**

For more information:

About the service status of Lines 1 and 2, see Viewing powerline information and status.

About monitoring system performance and diagnosing system issues on the Main Station, see Diagnostics.

9.8 Line and LAN LEDs

***Note:** This section only applies to the HelixNet Remote Station and Speaker Station.*

The Remote Station has a line LED that indicates the status of a powerline connection to the Main Station. The LAN LED indicates the status of the Ethernet connection, if present.

The color of the **Line and LAN LEDs** to the left of the front panel loudspeaker indicate the service status:

Green LED = **OK**

Amber LED = **Busy**

Red LED = **Error**

10 Using the Speaker Station

This section describes how to use the Speaker Station, after your HelixNet Partyline system has been installed and configured.

For more information about integrating and using HelixNet Partyline with your existing intercom infrastructure, see Installing HelixNet Partyline.

10.1 Using the gooseneck mic, loudspeaker and headset

To use a **gooseneck mic** to talk to connected intercom users, devices (including beltpacks) and systems:

1. Connect the gooseneck mic, using the gooseneck mic connector (3-pin female Tuchel connector) on the left of the front panel.

   ***Note**: For the location of the gooseneck mic connector, see Speaker Station.*

2. To talk to other intercom users and devices:

   a. Press the **Talk Key**.

      When the mic (gooseneck or headset) is live, the **Mic** key is activated automatically.

   b. Speak into the microphone.

   Use the front panel **loudspeaker** to listen to connected intercom users, devices and the Program Feed.

To adjust the volume level:

3. Adjust the volume of all incoming audio by turning the loudspeaker rotary control [**Main**], located in the center of the panel.

   To increase the volume level, turn the **rotary control(s)** clockwise. To decrease the volume level, turn the **rotary control(s)** counter-clockwise.

   ***Note**: When you connect a headset, incoming audio is routed to the headset instead of the loudspeaker.*

   ***Note:** You can mute the speaker by pressing the rotary control.*

   As you increase or decrease the volume, the level control LED passes through a range of indicator colors.

LED color	Volume level
Green	Low
Amber/Green	Low/Medium
Amber	Medium
Red/Amber	Medium/High
Red	High

To use a **headset** to talk and listen to connected intercom users, devices and systems:

1. Connect the headset, using the headset connector (4-pin XLR–M) on the far left of the front panel.

   The **Headset key** is automatically activated. Incoming audio is routed to the headset instead of the loudspeaker.

   Note: *For the location of the headset connector and the headset key, see Speaker Station.*

   To configure audio settings for the headset, see Audio settings for the headset.

2. To talk to other intercom users and devices:

   a. Press the appropriate **Talk key**.

   When the microphone (gooseneck or headset) is live, the **Mic key** is activated automatically.

   b. Speak into the microphone.

3. To adjust the volume level of incoming audio to the headset:

   a. Adjust the volume of all incoming audio by turning the loudspeaker rotary control **[Main]**. The control is located to the left of the loudspeaker.

   b. Adjust the volume of the Program Feed using the **PGM** Trim Pot.

10.1.1 Switching Between the Headset Mic and the Gooseneck Mic

When both a Headset microphone and a gooseneck microphone are connected, press the Headset key to activate the headset microphone, and press the **Mic** key to activate the microphone.

Tip: To find out more about Clear-Com accessories, including headsets and gooseneck microphones, see http://www.clearcom.com/product/accessories.

10.2 Entering and exiting Menu Mode

Use **Menu mode** to:

Configure the settings for the Speaker Station, including Channel and audio settings.

Administrate the system, monitor system performance and diagnose system issues.

In **Menu mode**, the display screens show two out of four levels of menu. The menu hierarchy proceeds left to right:

The **top level** menu is presented in the first screen (left on the front panel).

The **second level** menu is presented in the second screen (right on the front panel).

Note: *Press the right-hand rotary control to shift to the next menu level.*

To place the Speaker Station in **Menu mode**, press the **Menu key** to the left of the first (left) display screen. To exit Menu mode, do either of the following:

Press the **Menu key** again.

Wait until Menu mode times out. If you fail to press any key on the front panel for 20 seconds, the display screens revert to showing the standard Channel information:

- Channel label (name).
- Listen (volume) level.

Tip: For more detailed information about using the Speaker Station menus, see Configuring and managing the Main Station from device menus.

This section describes how to use the Speaker Station, after your HelixNet Partyline system has been installed and configured.

For more information about integrating and using HelixNet Partyline with your existing intercom infrastructure, see Installing HelixNet Partyline.

Tip: For a quick reference to the functionality of the Speaker Station, the optional interface modules and the , see Panels and Interfaces.

10.3 Using the Channel Keysets

A keyset (set of controls) is located next to each of the two display screens. In operating mode, each keyset is dedicated to the control of one of the four assigned intercom Channels. You can also use the shift key to switch to the other channels configured on keysets 3-4. For details of the standard on screen information for each Channel, see Speaker Station front panel function buttons.

Note: *To change (edit) the Channel label (name), see Configuring the Channel settings.The display screens enters screensaver mode (if enabled) if the Main Station remains inactive for 10 minutes. Press any key to leave screensaver mode.*

To send a **call signal** to all the connected devices on that Channel, press the **Call key**.

To **talk** to all the devices on that Channel:

1. Press the **Talk key**. When the gooseneck or headset mic is live, the **Mic On** key is activated automatically.
2. Speak into the headset or gooseneck mic - see also Using the gooseneck mic, loudspeaker and headset.

To **adjust the volume** of incoming audio, turn the **rotary control**. Turn the rotary control clockwise to increase the volume, and counter-clockwise to decrease volume. The current volume level is shown on screen.

To **mute** incoming audio, press the **rotary control**. The display screen displays the muted volume bar.

To **unmute** incoming audio (restoring the audio to its previous volume level), press the **rotary control** again.

Note: *In **Menu mode**, the **rotary control** for each Channel keyset is used to scroll and select menu items. For more information, see* Using the Menus.

10.4 Using the speaker station with push-to-talk (PTT) actions

The HKB Station is available in a special configuration with a 7-pin XLR headset connector. This is used with two assignable GPI/Push-to-talk (PTT) controls that enable you to configure various buttons press actions from a switch wired to the GPI/PTT.

More than one button press can be configured on each GPI/PTT. There are three configurable actions available: PPT1, PPT2 and PTT 1 & 2 (both buttons pushed at the same time).

The four local talk and call keys, the headset (**Hset**) key and the microphone (**Mic**) key can be assigned to any GPI/PTT.

The GPI/PTTs can be configured from the CCM or from the front panel menu system.

For CCM configuration see **Editing the Logic Input Options (HKB-4X-7X Stations only) on page 183**

Please contact your Clear-Com representative for further information about availability of the HKB-2X-X7.

11 Using the HBP-2X Beltpack

This section describes how to use the **HBP-2X Beltpack**, after your HelixNet Partyline system has been installed and configured.

For more information about integrating and using HelixNet Partyline with your existing intercom infrastructure, see Connecting to other Intercom Systems.

Tip: For a quick reference to the functionality of the HBP-2X Beltpack, the HMS-4X Main Station, and the optional interface modules, see Panels and Interfaces.

11.1 Using the Beltpack Keysets

The HBP-2X Beltpack supports two Partyline Channels, with a separate keyset (set of controls) dedicated to the control of each Channel:

The **left-hand keyset** controls the first (top) Channel displayed on screen.

The **right-hand keyset** controls the second (bottom) Channel displayed on screen.

For details of the standard on screen information for each Channel, see Main Station/Remote Channel keyset and display.

***Note**: For more information about using the beltpack in Menu mode, see Configuring and managing the beltpacks from front menus.*

The display screens enter screensaver mode (if enabled) if the beltpack remains inactive for a period of time. Press any key to exit screensaver mode.

To send a **call signal** to all the connected devices (beltpacks and Main Station) on that Channel, press the **Call key**.

To **talk** to all the devices connected to the Channel:

1. Connect a headset, using the 4-pin XLR–M connector on the base / rear of the beltpack.

   Note: .

   ***Note**: For the location of the headset connector and the headset key, see E in HBP-2X connectors and controls (rear view).*

2. Press the **Talk key**.
3. Speak into the headset mic.

To adjust the volume of incoming audio for a Channel, turn the appropriate side-mounted **rotary control**.

Turn the rotary control clockwise to increase the volume, and counter-clockwise to decrease volume. The current volume level for the Channel is shown on screen.

11.2 Entering and Exiting Menu Mode

Use **Menu mode** to:

Configure the settings for the Beltpack, including Channel and audio settings.

Monitor beltpack performance and diagnose issues.

To enter Menu mode, press the **Menu key**. To exit Menu mode, press the Menu key again.

For more information about using Menu mode on the beltpack, see Configuring and managing the beltpacks from front menus. For information on changing the beltpack IP address, see Change the IP address of a HelixNet device from the front menu screens.

11.3 Adjusting the Program Feed Volume Level

To adjust the listen level (volume) of the **Program Feed** to the beltpack, turn the rear / base rotary control.

Turn upwards to increase the listen level (volume), and downwards to decrease the listen level (volume).

While the listen level is adjusted, the listen level for the Program Feed replaces the standard Channel information on screen.

The Main Station is used to assign the **Program Feed** to Channels. For more information, see Assigning the Program Listen to a Channel.

12 Using the HXII-BP-X4 Beltpack

This section describes how to use the **HXII-BP-X4** Beltpack, after your HelixNet Partyline system has been installed and configured.

For more information about integrating and using HelixNet Partyline with your existing intercom infrastructure, see Connecting to other Intercom Systems.

Tip: For a quick reference to the functionality of the HXII-BP-X4 Beltpack, the HMS-4X Main Station, and the optional interface modules, see Panels and Interfaces.

12.1 Using the Beltpack Keysets

The HXII-BP-X4 Beltpack supports two Partyline Channels, with a separate keyset (set of controls) dedicated to the control of each Channel:

The **left-hand keyset** controls the first (top) Channel displayed on screen.

The **right-hand keyset** controls the second (bottom) Channel displayed on screen.

For details of the standard on screen information for each Channel, see Main Station/Remote Channel keyset and display.

Note: *For more information about using the beltpack in Menu mode, see Configuring and managing the beltpacks from front menus*

The display screens enter screensaver mode (if enabled) if the beltpack remains inactive for a period of time. Press any key to exit screensaver mode.

To send a **call signal** to all the connected devices (beltpacks and Main Station) on that Channel, press the **Call key**.

To **talk** to all the devices connected to the Channel:

1. Connect a headset, using the 4-pin XLR–M connector on the base / rear of the beltpack.

   Note: *For the location of the headset connector and the headset key, see D in HXII-BP-X4 Beltpack (base view).*

2. Press the **Talk key**.
3. Speak into the headset mic.

To adjust the volume of incoming audio for a Channel, turn the appropriate side-mounted **rotary control**.

Turn the rotary control clockwise to increase the volume, and counter-clockwise to decrease volume. The current volume level for the Channel is shown on screen.

12.2 Entering and Exiting Menu Mode

Use **Menu mode** to:

Configure the settings for the Beltpack, including Channel and audio settings.

Monitor beltpack performance and diagnose issues.

To enter Menu mode, press the **Menu key**. To exit Menu mode, press the Menu key again.

For more information about using Menu mode on the beltpack, see Configuring and managing the beltpacks from front menus.

For information on changing the beltpack IP address, see Change the IP address of a HelixNet device from the front menu screens

12.3 Adjusting the Program Feed Volume Level

To adjust the listen level (volume) of the **Program Feed** to the beltpack, use the up and down controls on the front of the beltpack. See HXII BP X4 Beltpack.

Use the up arrow control to increase the listen level (volume), and use the down arrow control to decrease the listen level (volume).

While the listen level is adjusted, the listen level for the Program Feed replaces the standard Channel information on screen.

The Main Station is used to assign the **Program Feed** to Channels. For more information, see Assigning the Program Listen to a Channel.

12.4 Binaural Audio

The HXII-BP-X5 beltpack with 5-pin headset connector has a binaural audio adjustment for the left and right earphone. This means that you can separately adjust the audio volume level in the left and right earphone. To adjust the left or right hand earphone volume:

1. Press the **OPT** button on the beltpack.
2. Use the left and right rotary controllers to balance the volume of the left and right channels respectively. Turn the rotary control clockwise to balance the volume to the right ear, and counter-clockwise to balance the volume to the left ear. The current balance level for each Channel is shown on screen.

13 Roles

13.1 Roles overview

A Role is a pre-set configuration that includes Channel assignment, audio settings, IFBs, relays etc. Each HelixNet device has a default Role that can be used as it is or modified to fit requirements. Each Role can be given a name (a label) that corresponds to a common user workflow, such as producer, director, A1, etc.

When adding new Roles, you will modify an existing template, using either the default Role for that device, or another Role that you have already made. Default Roles can be modified but not deleted or loaded to devices, you will always work with a copy. Default Roles can be returned to factory settings if required.

To use Roles, you must have HelixNet 3.0 or above installed on your Main Stations.

Roles are created and edited in the Core Configuration Manager (CCM) and are a feature of HelixNet 3.0 and above. Once created in the **Roles** page, a Role will be available for selection from any device which is connected to your HelixNet system. Roles can be configured for:

Main Stations

Remote Stations

Speaker Stations

Beltpacks.

Roles can be created, cloned, edited and deleted in the Roles page.

Each device has a set of configuration options relevant to that unit. Configurable details include keysets, audio settings, program feeds and relays.

Note: *A Role can be selected by many devices.*

Roles can be created in the CCM at any time, but to use the Roles, devices must be connected to your system (for more information, see Linking Main Stations (cabling and linking from device menus).

To create and use Roles

1. Open the CCM by typing the Main Station's IP into the URL field of a browser.
2. For username and password see: CCM password.
3. Go to the **Roles** page in the CCM by clicking on the Roles button in the top navigation bar.
4. Add or clone a Role or Roles.
5. Configure Role parameters (you can use editable default settings).
6. Select a Role from the device panel menus and load that Role to the device.

Once a role has been selected on a device, this role will persist over power cycles until a new role is selected or the device is returned to factory settings.

Each device has the ability to operate a configuration local to that device (local config), or a selected role that can be pre-configured in the CCM.

If a Role is edited in the device menus rather than the CCM, these changes will be reflected in the CCM. The latest configuration change, whether this is made in the CCM or from the device will dominate, neither interface has precedence.

Roles contain	Roles do NOT contain
Audio settings	Network settings (IP address, DHCP etc.)
Keyset Assignment	Pairing information (HKB and HRM over IP)
Station settings	Linking information (Link Master/Link Member)
Program feed assignment	Expansion information (Host/Expanded panel)
GPIO configuration	2W/4W module assignment

13.2 Example Roles Set Up

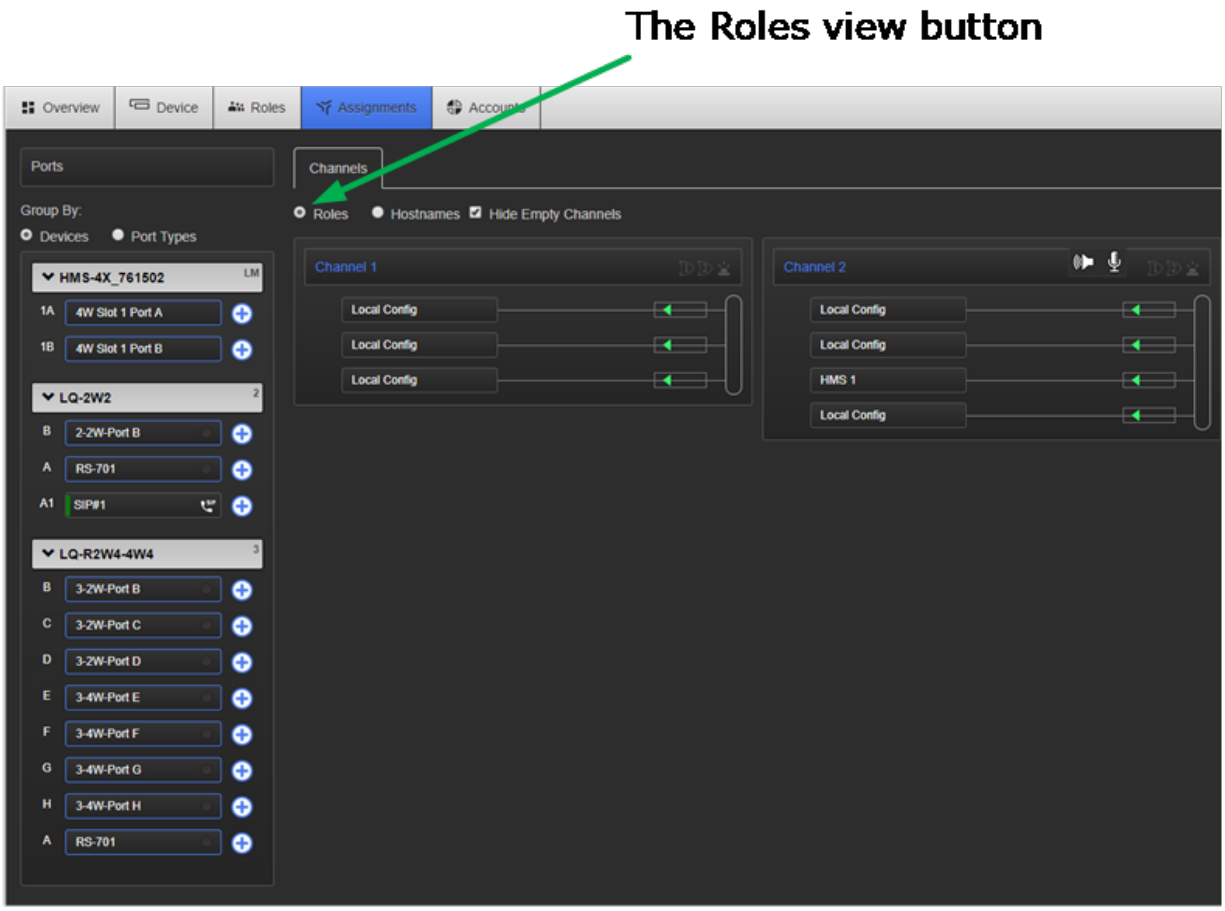
The following tables give an example of how roles could be set up in a working scenario.

Device type	Device hostname	Roles available for selection	Role selected by device
Main Station	main_station_1	Local config	Director 1
		Director 1	
		Director 2	
		Sound booth	
	main_station_2	Local config	Sound booth
		Director 1	
		Director 2	
		Sound booth	

Device type	Device hostname	Roles available for selection	Role selected by device
Remote Station	remote_station_1	Local config	Green room
		Green room	

Device type	Device hostname	Roles available for selection	Role selected by device
Speaker Station	speaker_station_1	Local config	Local config
		None configured	

Device type	Device hostname	Roles available for selection	Role selected by device
Belt pack	HBP-2X xxxxxxxxx	Local config	Lighting 1
		Lighting 1	
		Lighting 2	
		Sound 1	
		Sound 2	
	HXII-BP-X4 xxxxxxxxx	Local config	Lighting 1
		Lighting 1	
		Lighting 2	
		Sound 1	
		Sound 2	



Live Roles are visible in the Assignments page

Note: *A Role can be selected by many devices*

For more detail on setting up Roles see Using the CCM to configure Roles.

Note: *Program input feeds are an exception in this screen, they will always be associated with a device rather than a Role.*

13.3 Device Default Roles

Each device type has a default configuration which can be edited and/or cloned, but not deleted. When creating new Roles you will always use an existing Role as a template. The default Role is editable, so you can create Roles based on a default Role edited to reflect your system requirements.

If you edit the default Role of any device, this configuration will persist until the device is returned to factory settings in the General > Maintenance page of the CCM.

13.4 To Select a Role for a Device

Select a role for a device from the display panels on that device. Go to **Menu > Station Settings > Preferences > Roles** to select a role.

1. On the device, press the **MENU** button to enter menu mode.
2. For each menu, turn the **rotary control** clockwise to scroll down the menu items. Turn counter clockwise to scroll up the menu items.

   Off-screen menu items are indicated by arrows at the top and/or bottom of the screen.

   Selected menu items (which create your path through the four menus) are highlighted in solid yellow.

   The **current setting** is indicated by a dotted box around the menu item
3. When you have selected a setting by rotating the right-hand rotary control, press that **rotary control** to enable the setting on the Main Station.

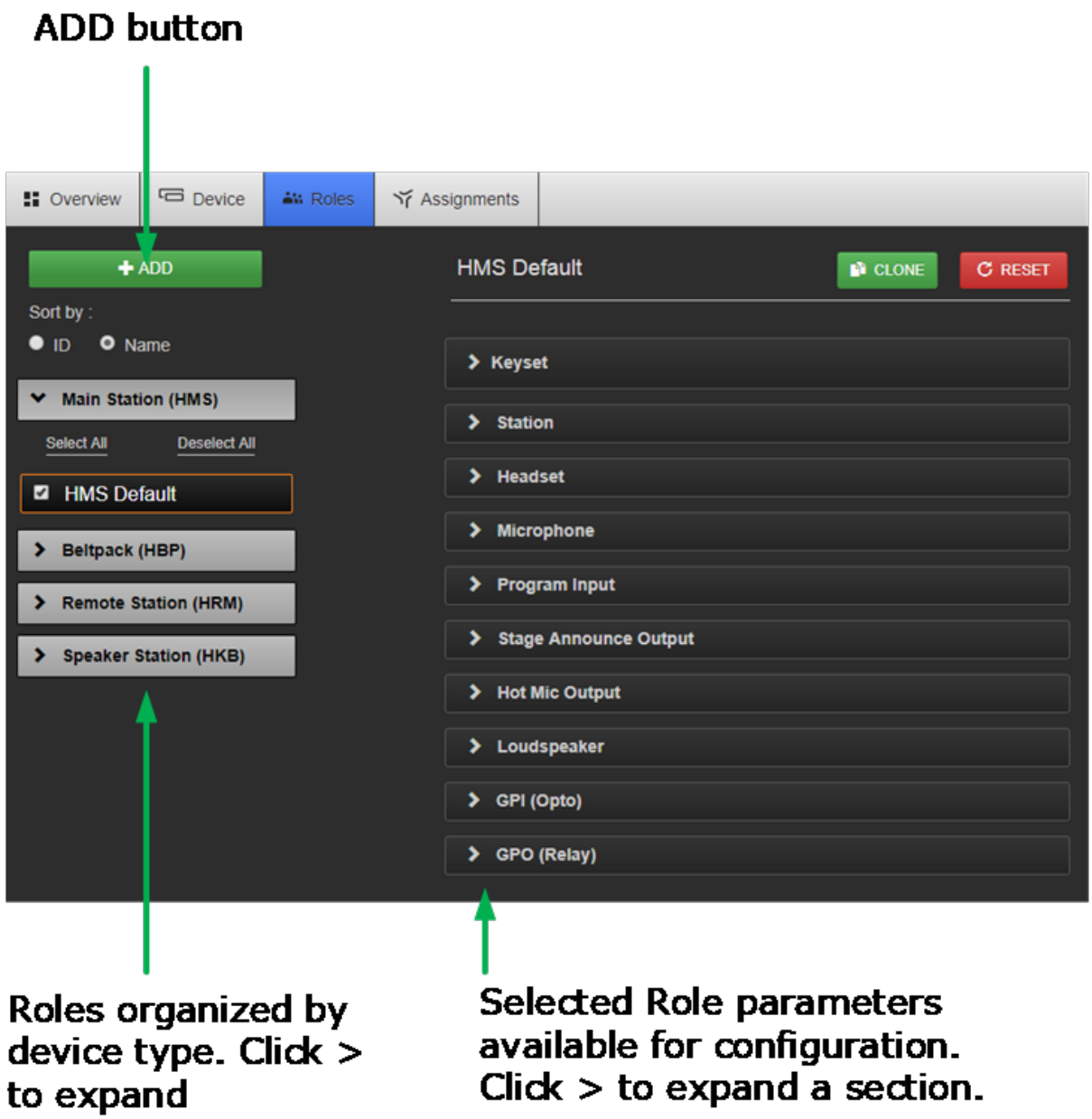
Beltpacks will display a Role selection screen when first powered up. Simply select the required Role.

For more information, see Using the Menus.

13.5 Creating and Editing Roles in the CCM

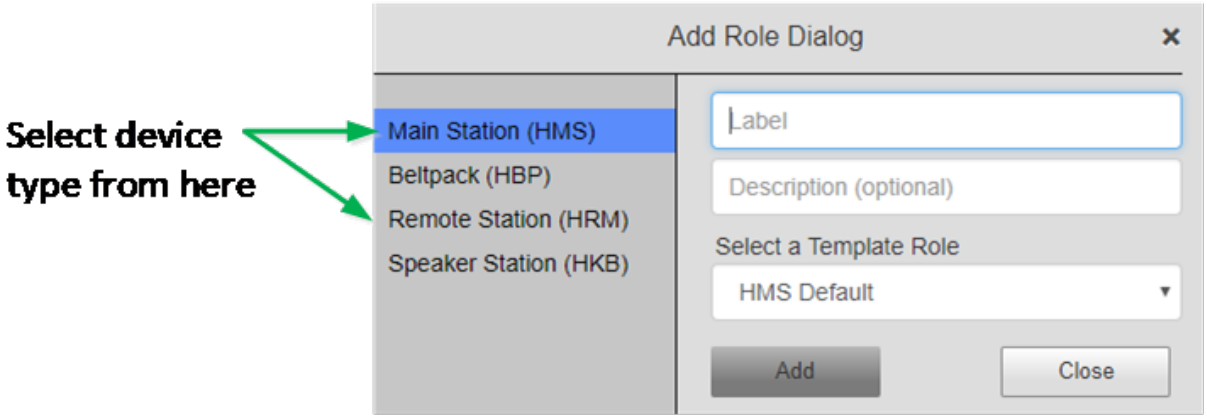
Use the **ADD** button to create a new role with a new label based on a default template. This is the easiest way to create roles quickly with different labels, for example Camera, Sound, Production and so on.

Use the **CLONE** button to copy an existing Role. This is the easiest way to create copies of Roles with the same label (appended by one), for example Camera1, Camera2, Camera3 and so on.



1. Navigate to the **Roles** page in the CCM. When creating Roles you will always use an existing Role as a template.
2. Click **ADD**.

   An overlay screen will appear on the page.
3. From the left of the screen, select the HelixNet device type you require. Give the device a name in the **Label** field. Select a template Role from the drop-down box.



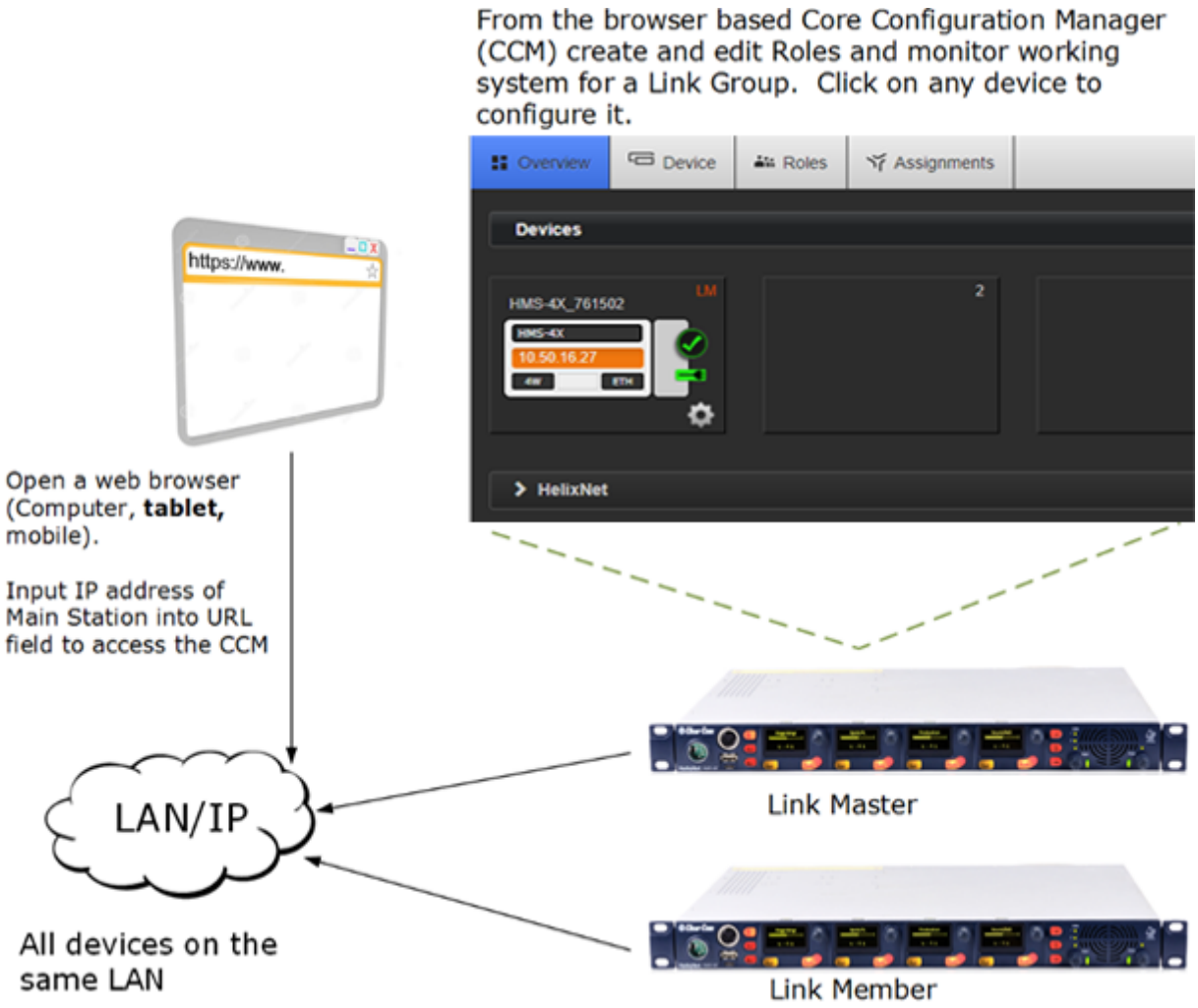
4. Click **Add**. This creates a new role which you will see on the left side of the page under device type.
5. To edit a Role, click on it on the left side of the page so it has an orange highlight. Then access configuration parameters on the center right of the page.

   ***Note**: Roles can be deleted in this page. You cannot delete the default Role*

13.6 Roles (System Limits)

A HelixNet Link Group has a hard limit of 100 Roles. This includes default Roles.

14 Core Configuration Manager (CCM)



You can configure and control HelixNet units from the web-based Core Configuration Manager. This includes:

Linking Main Stations

Configuring of audio and signalization routing throughout the HelixNet Link-Group:

- Creating configuration Roles for HelixNet devices (Main Stations, Remote Stations, Speaker Stations and beltpacks)
- Assigning Roles to devices
- Saving and changing configuration Roles for devices

System monitoring and control. The CCM provides a real-time visual representation of your working intercom system on the Assignments page.

Access to device control menus can be restricted from the CCM.

Upgrading units.

***Note**: You can also configure and control HelixNet units using the front panel menu interfaces on each unit. See:*

Configuring and managing the Main Station from front menus

Configuring and managing the Remote Station from front menus

Configuring and managing the Speaker Station from front menus

Configuring and managing the beltpacks from front menus

Using the HBP-2X Beltpack

Using the HXII-BP-X4 Beltpack

***Note:** Some functionality (for example, creating Roles) is only available from the CCM.*

14.1 Access the CCM

To access the Core Configuration Manager (CCM), enter the IP address of the HelixNet Main Station, as displayed on the front panel, into the URL field of your browser. If the unit is reachable over your network, this will take you to the **Overview** page of the CCM that is served by the unit.

14.1.1 CCM Password

CCM username: **admin**

CCM password:

The default unique password is based on the device serial number. To find the default password navigate to**: Front panel menu>Administration>CCM Access>Default password [unique password].**

The default password is available in the front panel menu of the device UNTIL you change it in the CCM. If you change the password it is no longer available in the front panel menus. If you lose the password you need to reset it from the front panel menu in order to gain access to the CCM.

Change the CCM password from the default setting:

In the CCM, navigate to: **Device>General>Change password.**

Reset the CCM password from the front panel menus

Press the menu button on the main station. Navigate to: **Administration>CCM Access>Reset CCM Password.**

Once you have reset the password, it is available for you to view in the front panel menu.

14.2 Minimum Requirements for the CCM

The CCM is supported on the latest versions of all major web browsers including Google Chrome, Safari, Firefox, Internet Explorer.

Note: *Any IP connectivity in HelixNet requires an Ethernet module in the Main Station.*

14.3 Overview Page

All devices connected to your system appear in this screen

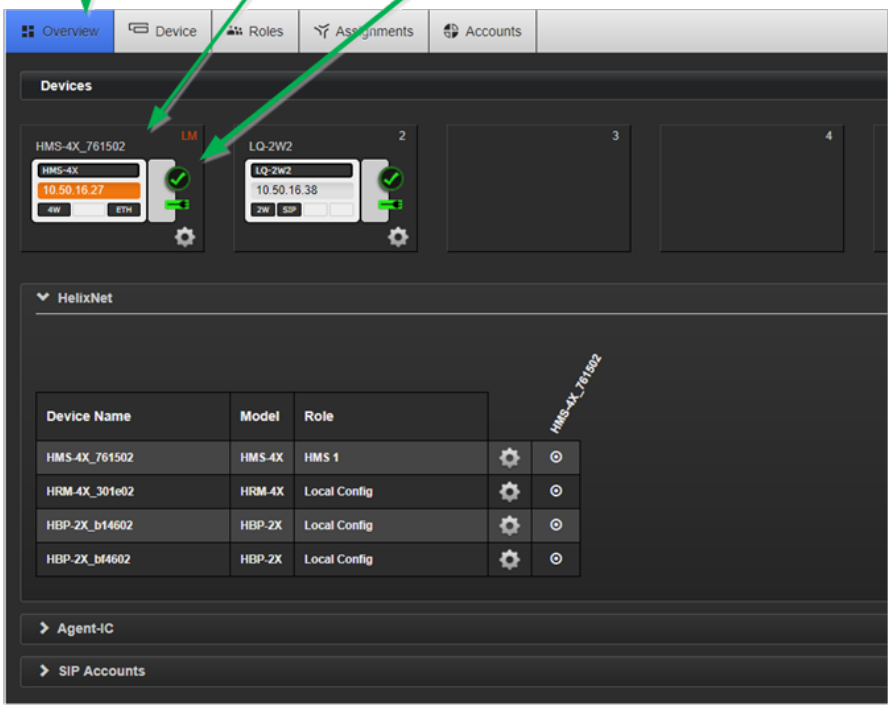
Overview button

Link-Master

Host device (orange highlight)

Note: The orange highlight shows which device the browser is currently connected to. This is the host device.

Note: A maximum of six Main Stations can be linked.



Note*: There is a navigation bar at the top of the page:* ***Overview, Device, Roles Assignments and Accounts.***

As HelixNet Main Stations are added to the group, they appear in this screen. To access the configuration and control options for any one of the units in the group, click on the device within the **Overview** page. Linked units can be configured either from the host device, or by proxy from this screen.

In this page, **Devices**, in the upper part of the screen represents the linked Main Stations. Endpoints, in the lower part of the screen, are the devices which are paired or powerlined to the Main Stations. For example, these could be Remote Stations, Speaker Stations and Beltpacks. In this screen, clicking on a Main Station image will offer comprehensive configuration options. Clicking on an Endpoint allows you to change its name or Role and to reboot or reset to default.

There is also a troubleshooting option. Click on device images to explore configuration options available for different devices on this page.

There is a system resource meter on the Main Station device icon.

***Note**: The **Home** button takes you to the **General** page of the Main Station your browser is connected to (the host device) which has an orange highlight.*

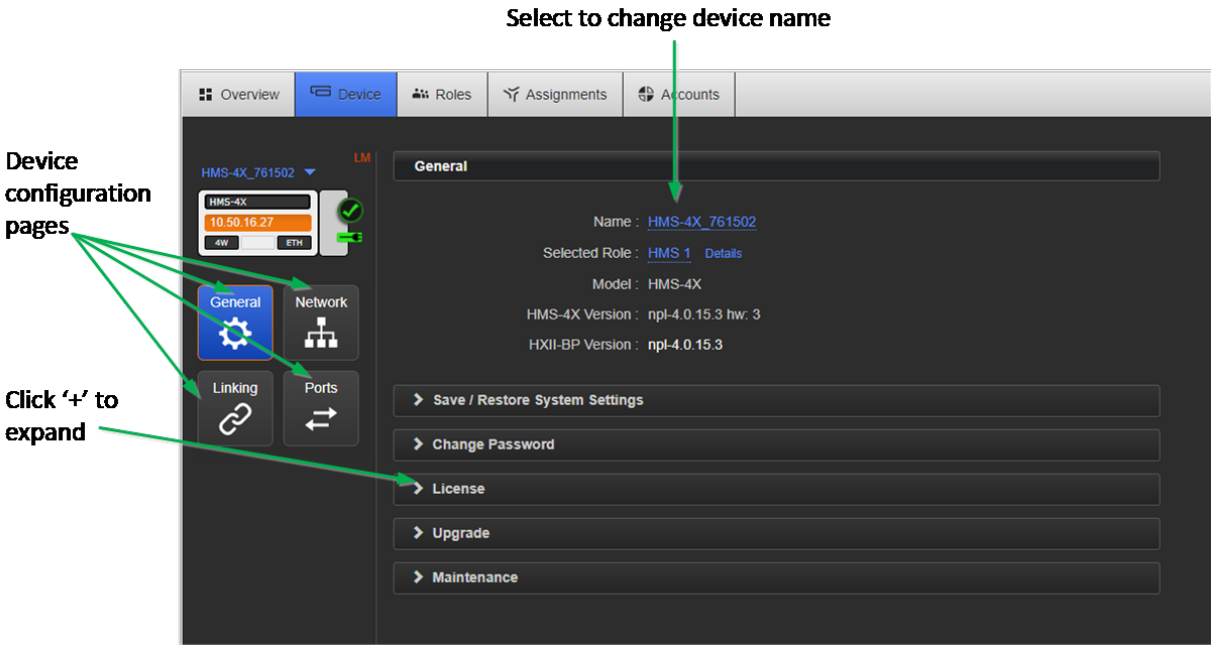
Main Station device image shows:
Hostname
Model
IP address (orange highlight if this is the device your browser is pointing to, the host device)
Modules installed on Main Station
System resource meter

Endpoint device image shows:
Hostname
Selected Role
Model
Main Station the device is connected to.

14.4 Device Page

From the Device page of a Main Station, you can access general functions relating to the device your browser is pointing to (the host device) and also link devices.

There are four buttons in the left margin, below the device image; **General, Linking, Network** and **Ports**. Click on a button to access a configuration page.



14.5 General Page

14.5.1 Changing a device hostname from the Device page

To change a device name, click on the existing name and enter a new one. Either press the <ENTER> key or click the blue check mark to apply changes.

When using hostnames, it is advisable to follow the usual conventions for giving labels to devices used in electronic communication. For instance; do not use spaces, do not rely on case sensitivity, and make the name meaningful in a way appropriate to the context. This field can be up to 14 characters.

14.5.2 License

Your HelixNet Main Station arrives with a license for 12 Channels. To increase capacity to 24 Channels, please contact your Clear-Com dealer. You will need to provide your system ID, listed in this section of the CCM. When you receive a license code from them, input it here to increase available Channels. Each linked device must be licensed from the home page of the host device, units cannot be licensed by proxy.

In a Link Group, each device must be licensed. If one unit has only 12 Channels and the rest have 24, the whole group will use only 12 Channels by default.

The device system ID can also be found in the device menus screens (**Administration/License/Current**).

14.5.3 Upgrade (Firmware)

***Note**: HelixNet linking must be reconfigured after an upgrade from a previous HelixNet version.*

To upgrade your device, you must import the upgrade file provided by Clear-Com. You will do this on this page. A linked HelixNet Main Station must be upgraded from the host device (the device that the browser is currently addressing). The units cannot be upgraded by proxy.

Upgrading to HelixNet 3.1 or later requires the following upgrade files:

A .cbb file that covers HMS-4X and all other HelixNet devices except for the HXII-BP.

A ubifs.gz that covers the HXII-BP.

Note: *When upgrading your Main Station, any units connected to it (Remote Stations, Speaker Stations and beltpacks) will also be upgraded. Please make sure you wait until total upgrade is complete. Only the Computer to HelixNet Main Station transfer is shown in this screen. Please check progress of additional devices on the device menu screens. Connectivity during upgrade will be sluggish.* ***DO NOT POWER CYCLE the device during upgrade****.*

Note: *All devices in a Link-Group MUST be running the same version of the software.*

Note: *As part of your system housekeeping, you MUST make a new configuration backup file when you upgrade your system. The old configuration file will not work on the upgraded system.*

1. Navigate to **Home > General** in the CCM.
2. Expand the **Upgrade** option (click on '+').
3. Click **Select File** and navigate to the upgrade file (.gz extension). Select the upgrade file to upload it.
4. When the upgrade file is loaded, **Upgrade** will light up. When this happens, click on it to upgrade. When the upgrade is finished, the unit will reboot by itself.

14.5.4 Change Password

Change the password to the Core Configuration Manager local to that device.

14.5.5 Maintenance

Reset the unit to factory settings, or reboot the system.

Note*: In this context,* ***Reset to Default*** *will erase all Role and Channel information. Channels will return to Channel 'n' where 'n' is 1 to 24. Roles will revert to factory default settings*

To reset Hostname, network, linking, pairing and expansion settings use the device front panel menus. See Resetting the Main Station to default (factory mode) settings.

Note*: If the device is a Link-Master it will also erase the Roles of any linked devices.*

Please be sure to save any Role configurations you wish to keep before using Reset to Default.

Support Info provides a 'snapshot' of the device's operational information for troubleshooting purposes. A file containing **Support Info** can be sent to Clear-Com engineers or help desk to aid diagnosis of problems.

14.5.6 Synchronize Timestamps

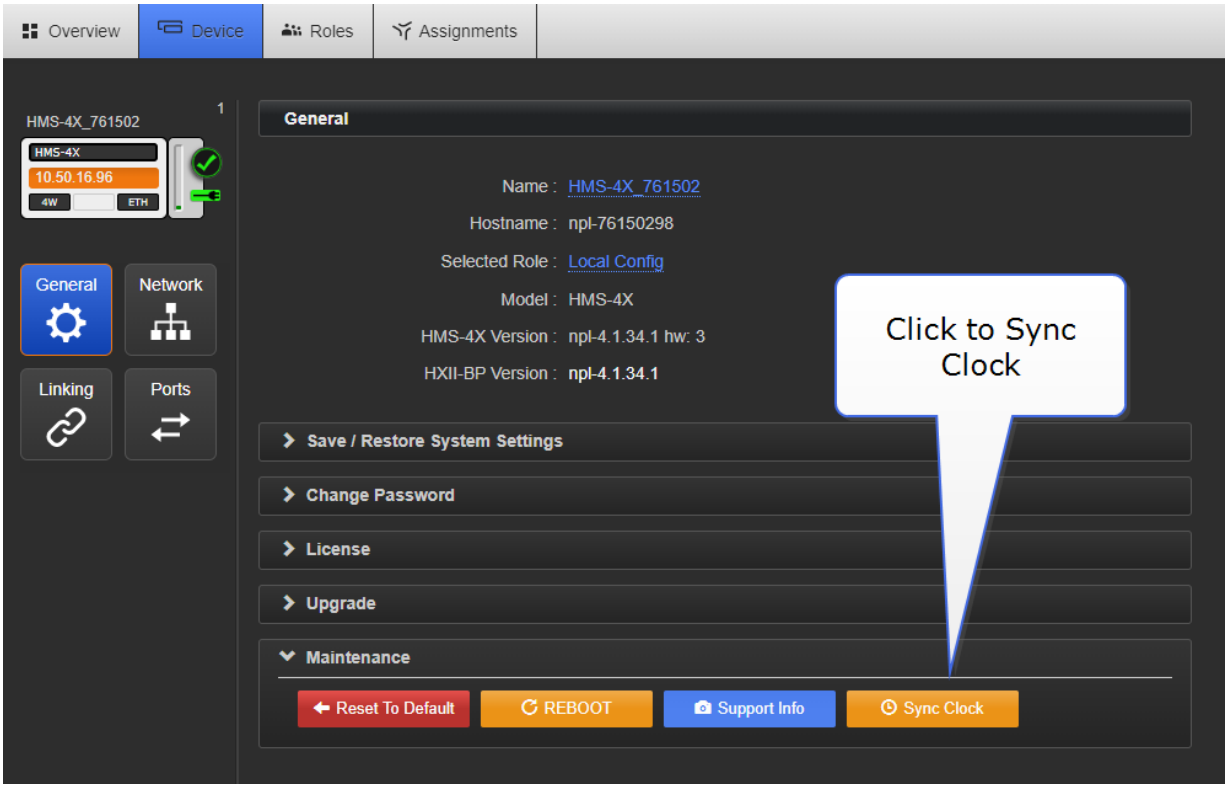
The **Sync Time** feature synchronizes the time clock on the Main Station with the clock on the computer. This time is retained by the Main Station, synchronized, and distributed to all the endpoints supported by the Main Station.

Note: *Clear-Com recommends that you sync time before taking support information.*

Note: *Expected system battery life: 10 years.*

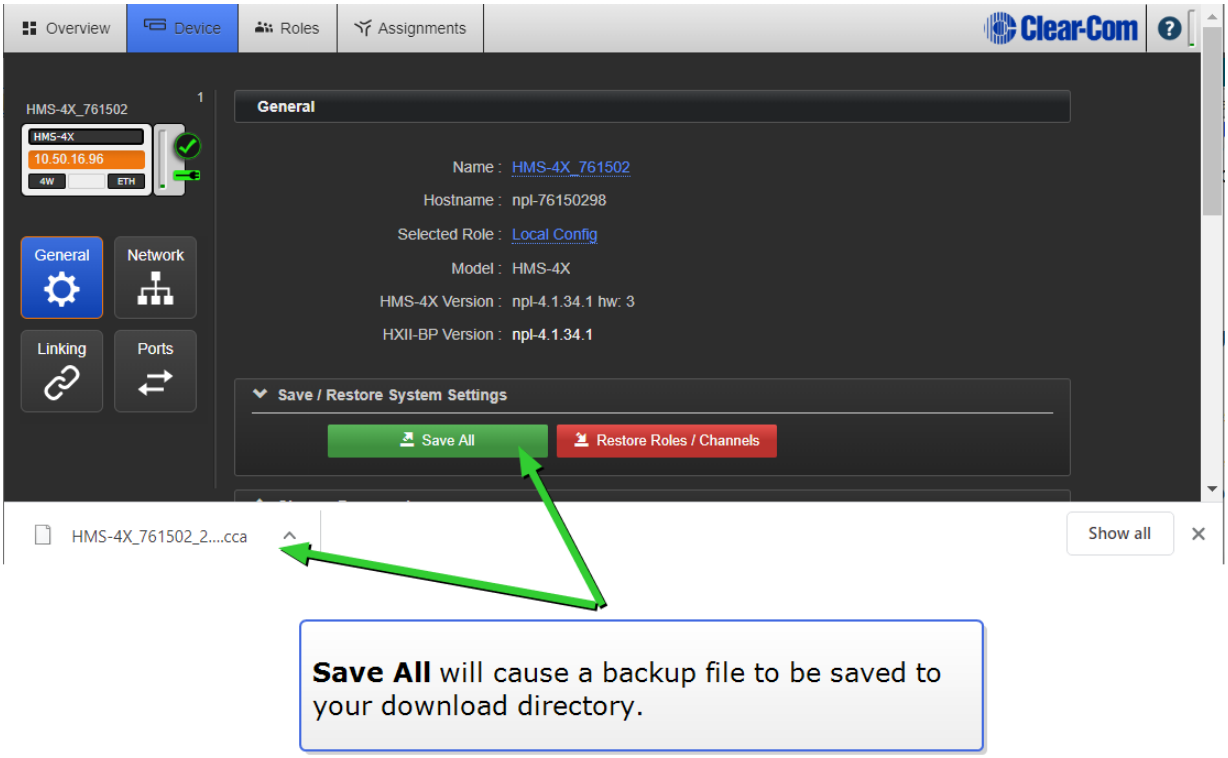
Sync timestamps from the Core Configuration Manager (CCM)

In the CCM navigate to: **Device > General > Maintenance > Sync Clock**.



14.6 Save/Restore System Settings

This is where you will save your configuration to an external storage device. Clicking the green **Save All** button will cause a backup file to be saved to the download directory. From there it can be renamed and saved as required.



When restoring configuration from an external file, clicking on the red **Restore Channels / Roles** button will allow you to navigate to the location of the saved file. The file has a .cca extension. Select the file to restore it. If the restore is successful you will see a 'successfully restored' message.

Save All Saves your whole configuration; Main Station, Remote Stations, Speaker Stations, roles/Channel names to the USB for future use. This option also saves 2-wire and 4-wire port settings and assignment. **Network settings (including Linking and Expansion) are NOT saved.**

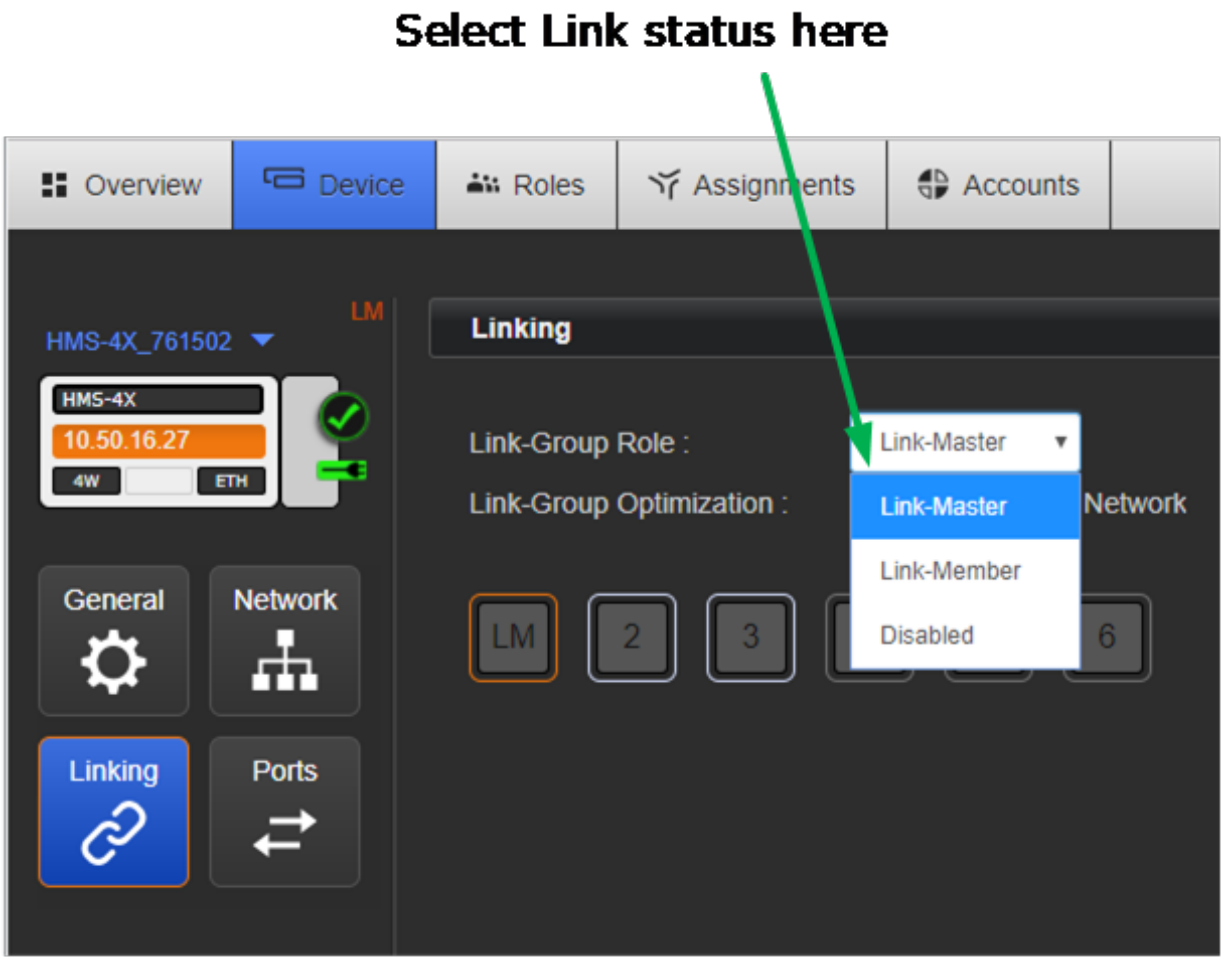
Restore Roles / Channels will restore Channel names and role configuration only.

To **Restore All** you must use the Main Station front panel menus. See **Saving and Restoring the Software Settings on page 98**for details.

14.7 Linking Page

This is where the linking mode of the HelixNet Main Station is set to either Link-Master or, if connecting to a Link-Group, Link-Member. When linking a Link-Member to a Link-Master you will provide the device with the Link-Master IP or Hostname in this page. If you wish to re-configure a Link-Group, you will change the link status of the device in this page, which will have the effect of removing it from the group.

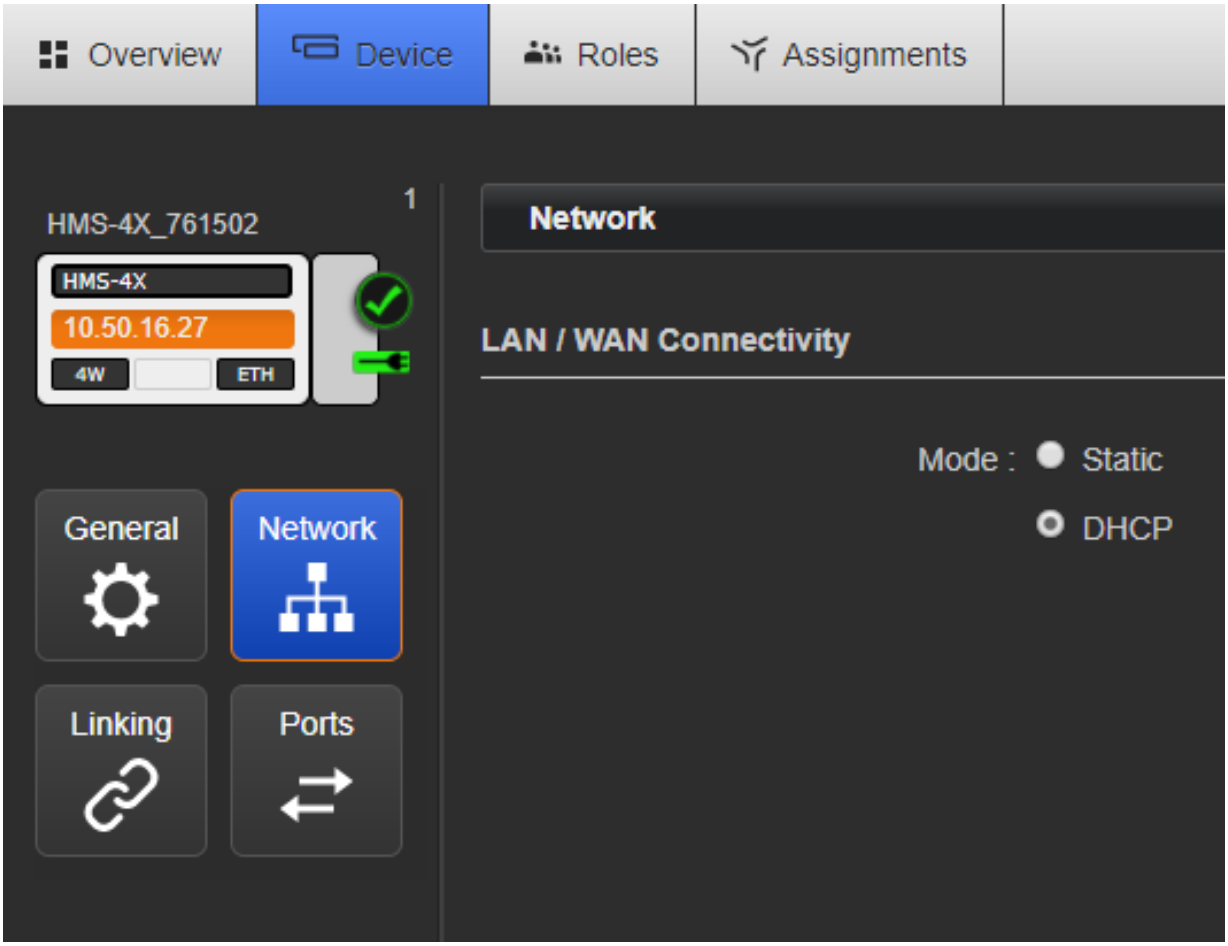
***Note**: A device's Hostname is available in the General page of the CCM*



For more information about Linking see Linking in the Core Configuration Manager (CCM).

14.8 Network Page

This is where you configure LAN/WAN connectivity mode. Choose between static and DHCP.



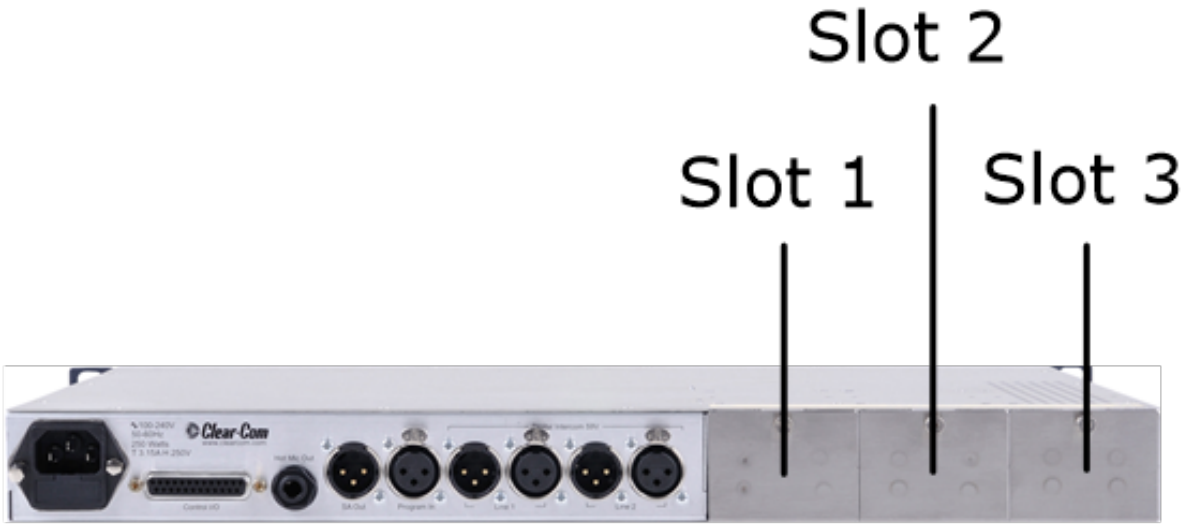
***Note**: The HelixNet units will operate in link-local mode, but for optimum performance it is recommended that they are used with either static or DHCP network settings. In link-local, the address will change each time the device reboots resulting in potential loss of connection to endpoints*

For more information, see Network Structure.

14.9 Ports Page

This is where the audio ports settings are configured.

14.9.1 Editing Module Slots 1–3



Module slots 1 – 3 in the CCM correspond to the modules installed on the back of your Main Station. If module configuration in the CCM does not match what is on the device, a warning message will be given in the CCM.

For each module, chose between 3 types:

- None/Ethernet/Fiber
- 2-wire
- 4-wire

None/Ethernet/Fiber

There are no configuration options associated with this module type.

2-wire

For each XLR port (A & B) configure the following to connect 2 audio Channels to analogue Partylines:

Setting	Options
Label	Use to give the port a meaningful name
Channel Assignment	Choose one from total Channels (12 or 24 depending on license)
Program Output	Mute (default) Unmute
Mode	Clear-Com (default)

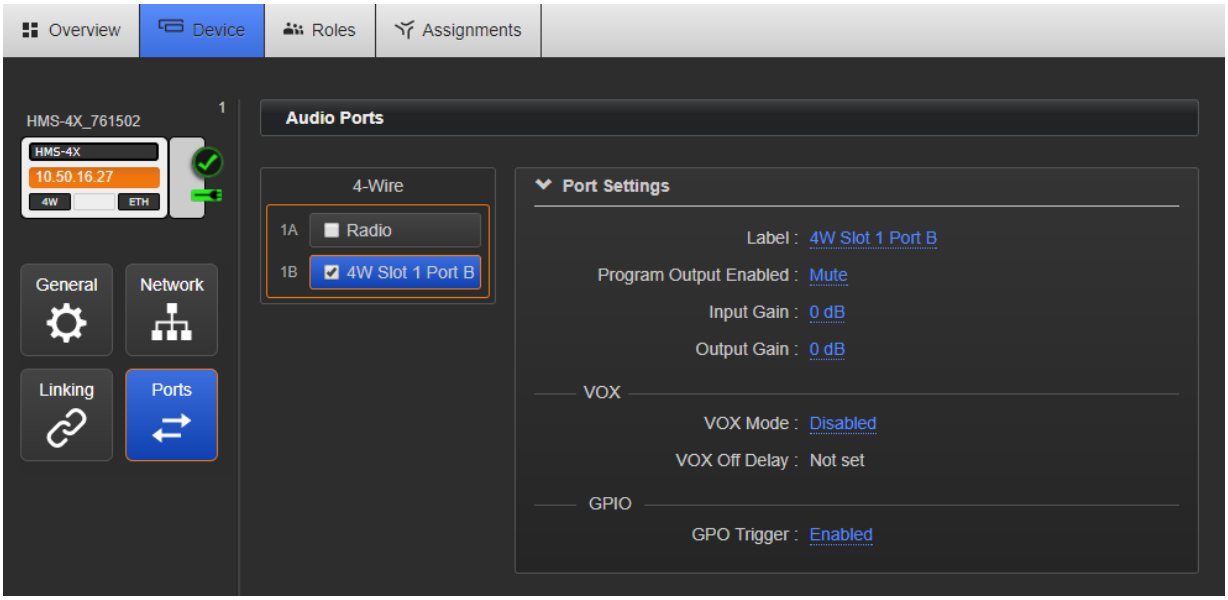
Setting	Options
	RTS 2-pin RTS 3-pin
Input Gain	-3 dB – 3 dB (default = 0)
Output Gain	-3 dB – 3 dB (default = 0)
RMK Input	Enabled (default) Disabled
RMK Output	Enabled (default) Disabled
VOX	Enabled (default) Disabled
VOX Off Delay	0.5 s (default) – 4.0 s
Action Trigger	Enabled (default) Disabled
Auto-Nulling	Start or Stop

4-wire

For each RJ45 port (A & B) configure the following to connect two Channels to an Eclipse Matrix or any 4-Wire device.

Setting	Options
Label	Use to give the port a meaningful name
Channel Assignment	Choose one from total Channels (12 or 24 depending on license)
Program Output	Mute (default) Unmute
Input Gain	-3 dB – 3 dB (default = 0)
Output Gain	-3 dB – 3 dB (default = 0)

Setting	Options
VOX	Enabled Disabled (default)
VOX Off Delay	0.5 s (default) – 4.0 s
Action Trigger	Enabled Disabled (default)



14.10 Roles Page

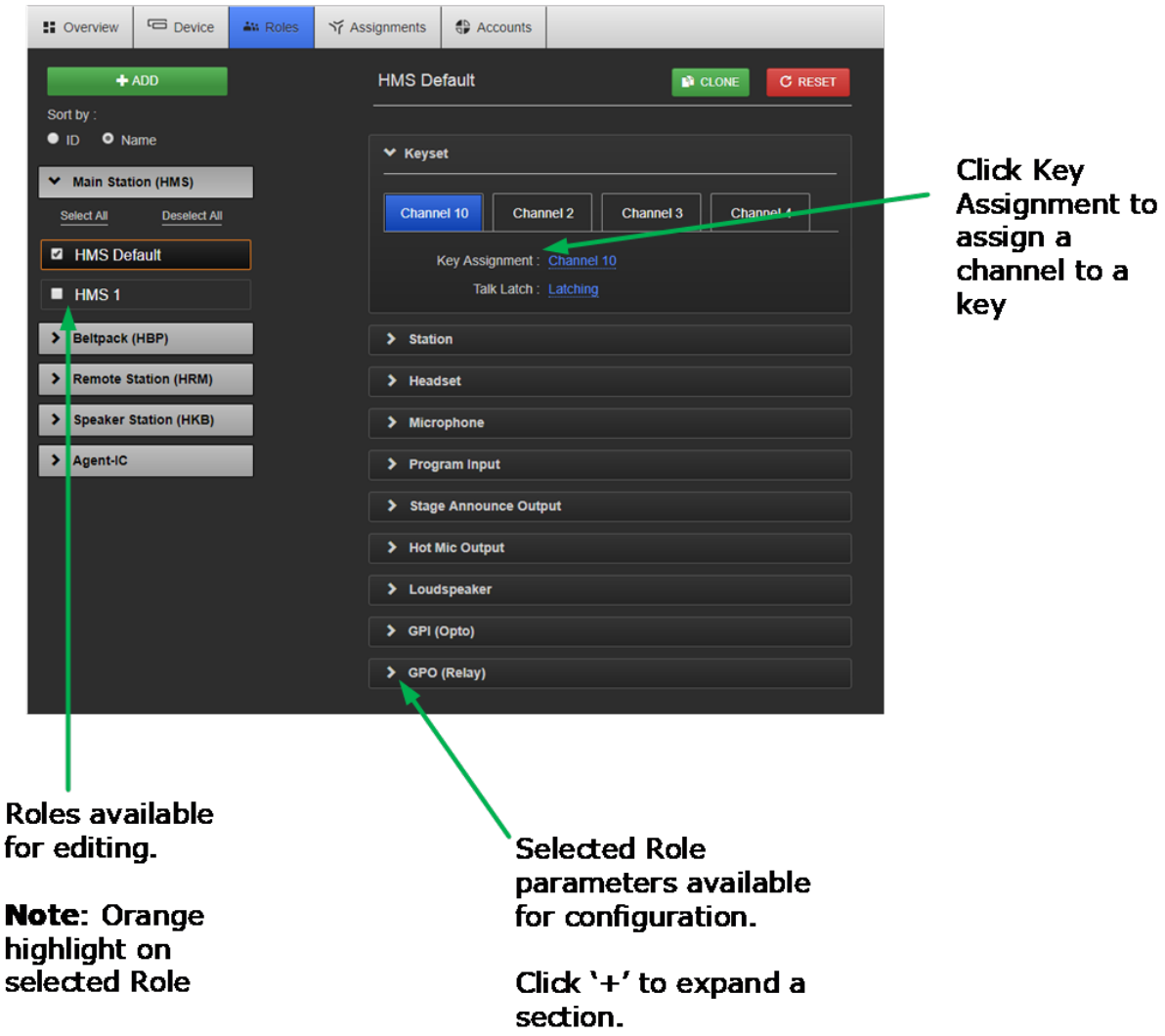
To access the **Roles** page, select **Roles** from the top navigation bar. On this page you will create, delete, clone and edit Roles.

Roles available for editing, cloning and configuration are in the left margin of the page. Role parameters available for configuration are on the right of the page.

To create a Role , click the device type you require on the left hand side of the page (Main Station, Remote Station, Speaker Station or beltpack), choose a template (in the first instance this will be the Default role for that device) and click 'ADD'.

To edit a Role click on the required Role in the left of the page. When it is selected for editing, it will have an orange highlight.

***Note**: Changes made to Roles here are live.*



14.10.1 Audio Assignment

In HelixNet 3.0 or later, audio assignment is achieved in the **Roles** page. You will assign audio to a Channel on a **Keyset**. For a description of a Keyset (available on the front panel of all devices) see Main Station Remote. A Main Station, a Remote Station and a Speaker Station have 4 Keysets on each device. Beltpacks have two Keysets on each device (beltpacks can also have many Channels stacked on one key).

14.11 Assignments Page

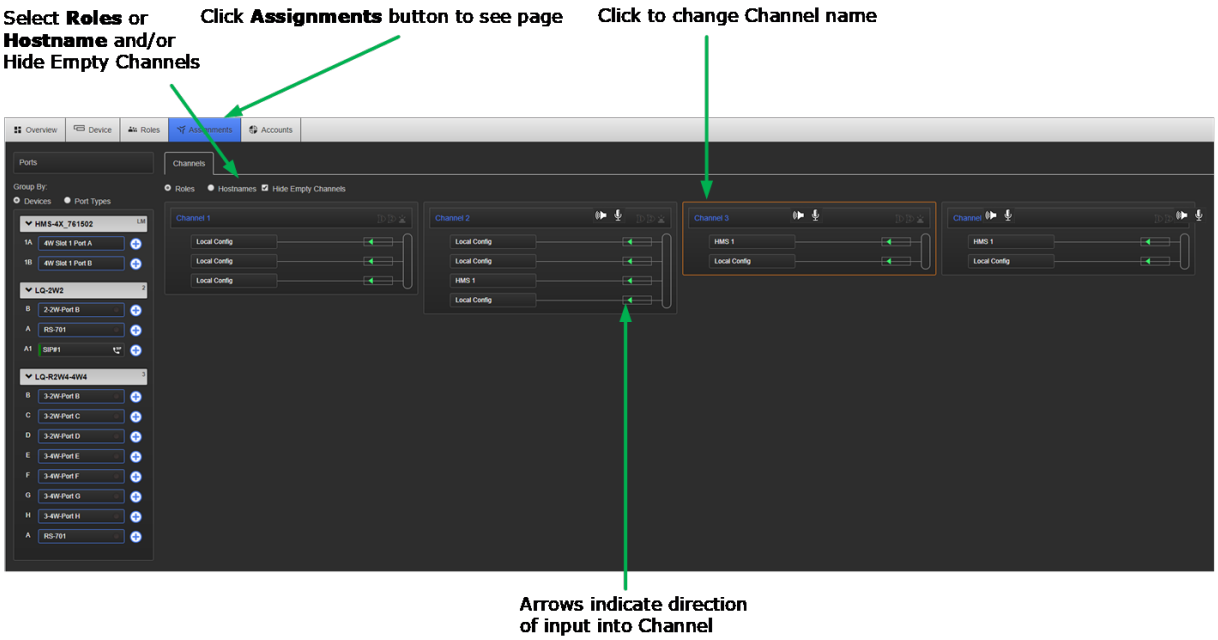
The Assignments page has three main functions in HelixNet 4.0. From this page in the CCM you can:

Change Channel names

See a real-time, visual representation of devices and Roles in use. Any changes to the configuration are reflected immediately in this page and the working system.

Add or remove Helixnet ports and LQ ports in and out of Helixnet channels.

This page toggles between **Hostname** view and **Roles** view.



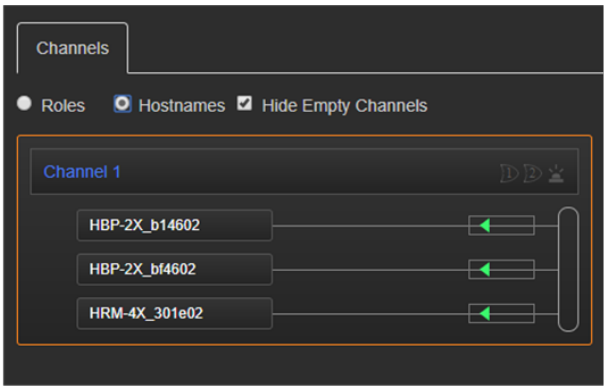
14.11.1 Hostname View

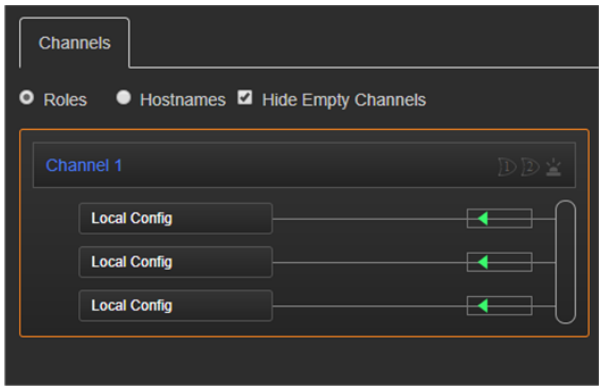
A Hostname is the name given to a physical device in the system, and is the label used for network communication. Main Station Hostnames can be changed in the Home page of the CCM. See Device page. Other device Hostnames (Endpoints) can be changed from the **Overview** page. Click on any device image to select it.

Program inputs, 2W ports, 4W ports and SA Audio Output are displayed with a default label that can be changed from the **Roles** Page.

14.11.2 Roles View

Roles view indicates the configuration details of Roles selected on devices. Roles view changes as different configurations are selected and loaded. Program inputs, 2W ports, 4W ports and SA Audio Output are displayed with a default label that can be changed from the Roles Page.





Hostnames

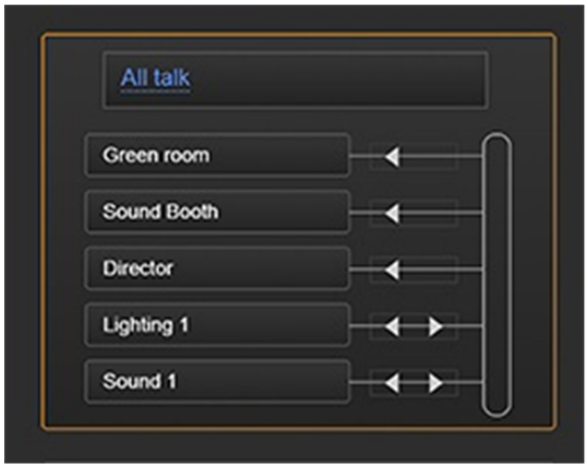
This view shows devices that have a button to the "All Talk" Channel

Roles

This view shows active Roles (Role configurations loaded onto the devices shown on the left) which include the "All Talk" Channel

14.11.3 Channels

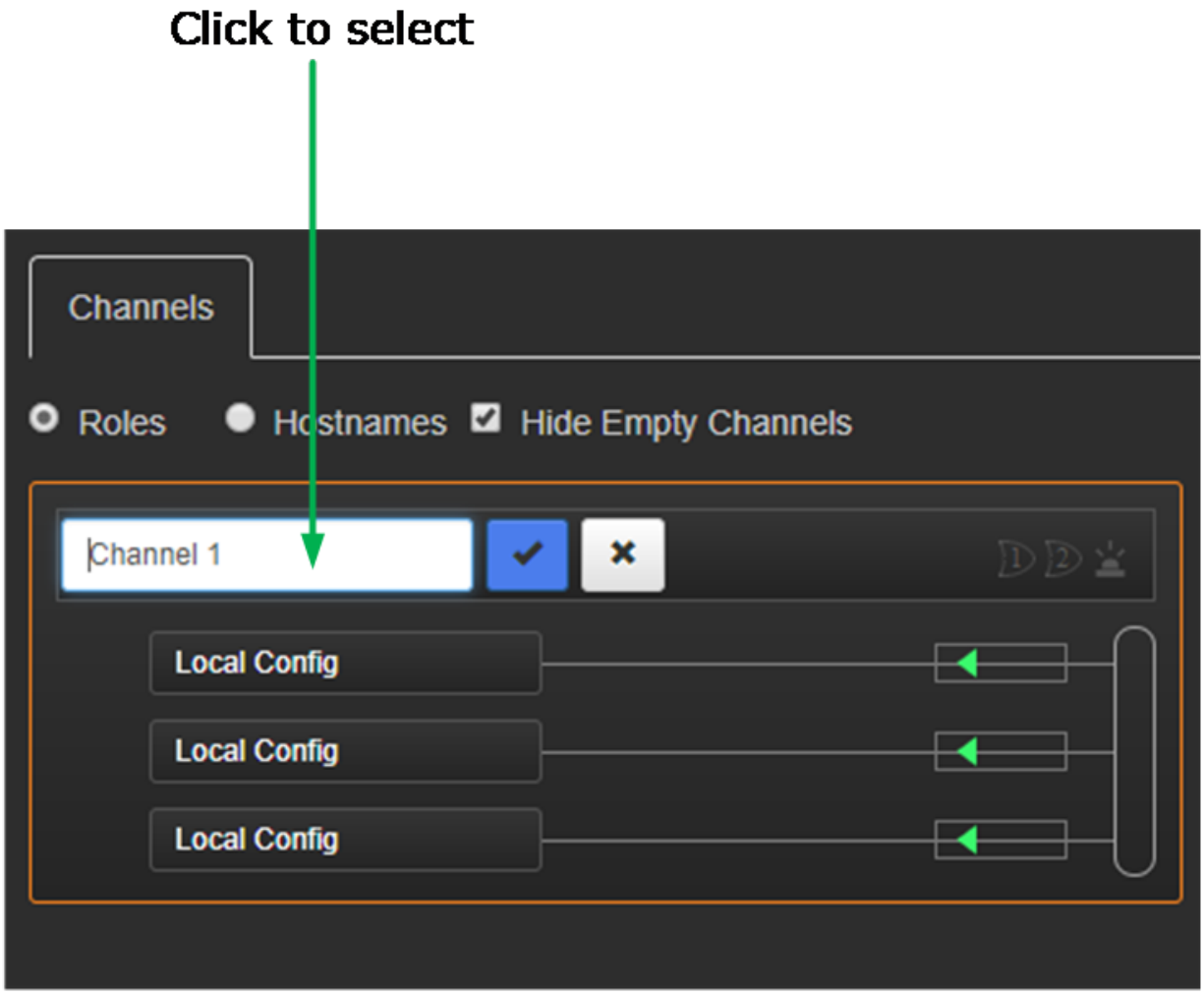
Any audio routed through the HelixNet system is contained within a Channel. Channels operate as virtual Partylines; audio sources assigned to a Channel will be able to talk and listen to all other sources assigned to the same Channel. You can use the + button to add ports to a channel.



- Devices with a key to the Channel labeled "All Talk" can communicate with each other.
- 2-wire and 4-wire ports can be mixed in one Channel.
- No limit to the number of devices with a key to a Channel. Multiple audio sources will not affect audio quality or latency.

14.11.4 To Rename a Channel

1. In the **Assignments** page, click on the blue Channel name to select it



2. Enter the new name.
3. Click the blue check mark or <Enter> to submit change.

15 Using the CCM to configure Roles

15.1 Editing Main Station roles

You can edit any Main Station Role including default Roles in the CCM.

15.2 Editing the Keyset

HelixNet user stations have have two or four Keysets, which can be assigned to a Channel. The Keyset contains the user controls for the assigned Channel. You can configure:

Key Assignment: which Channel is assigned to the Keyset

Talk Latch :set the behavior of the talk key to be; latching, non-latching, permanently latched, disabled

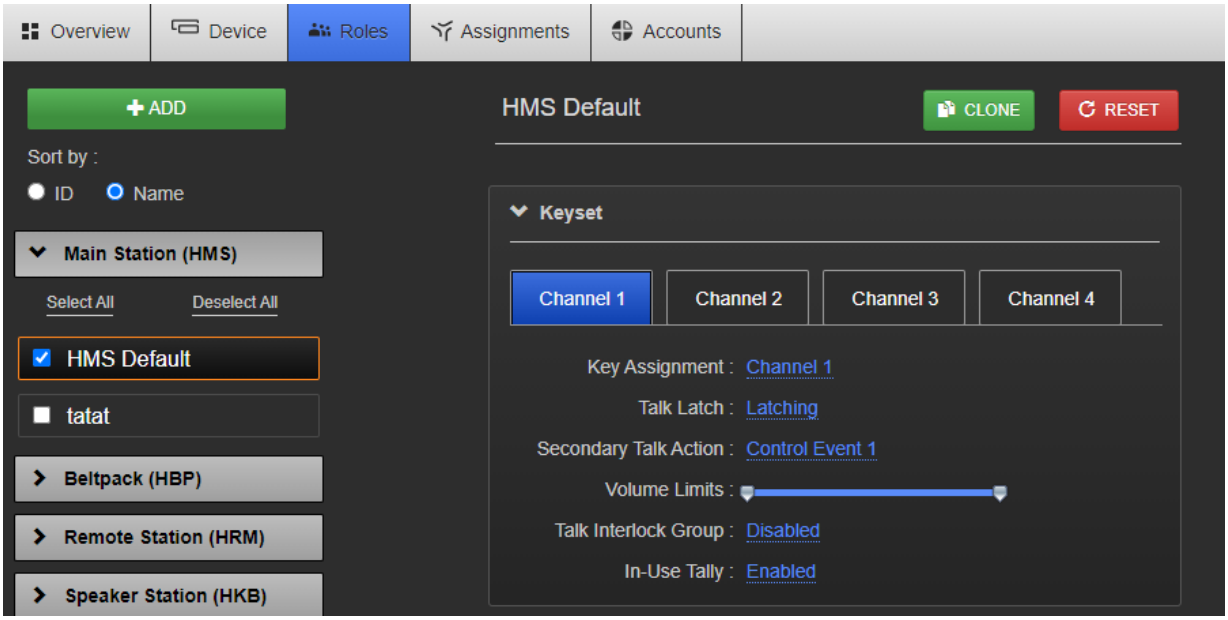
Secondary talk action: an action triggered when a talk key is pressed. Commonly used to send a call signal.

Volume limits: prevent the intercom user from setting the volume either too low to hear, or too high (causes an accoustic problem).

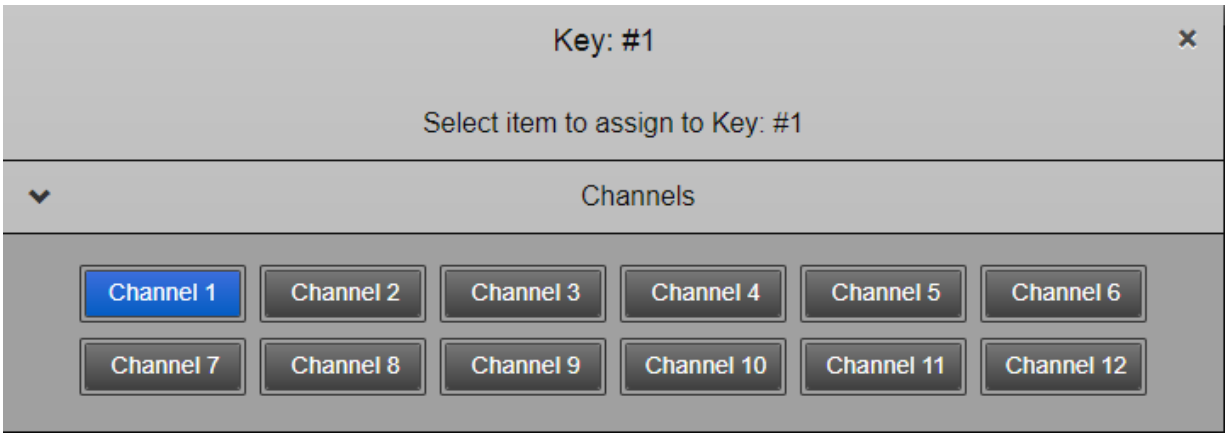
Talk Interlock Group: a group of keys in which only one talk key can be pressed at any one time.

In -Use Tally: shows a visual indication whenever someone talks on a channel.

1. From the drop-down list of Roles, select the Role you wish to edit.
2. Select **Keyset**.



3. Select the Keyset you wish to edit.
4. To assign a different Channel to the key, click **Key Assignment**.



5. Select the Channel you require. A Channel is highlighted blue when it is selected. This selection toggles on and off.
6. To configure Talk key operation, click **Talk Key**, and select **Latching** (default), **Non-Latching, Disabled or Permanent Latch**.

   Permanent Latch is used to ensure that a key is always latched. The latch will persist over power-cycles and Remote Mic Kill (RMK). Permanent Latch is most commonly used with an HS6 handset or headsets that use an inline switch.
7. Repeat the above steps for each Keyset.

15.2.1 Secondary Talk Action

Talk action setting	Result
Unassigned	No action
Call	A call signal is sent to the Channel
Control Event 1	Control Events are only for use in HelixNet systems that are linked with LQ. A Control Event will send a control signal to any LQ GPIO or IVC port that is in the same Channel as the key that sends the Control Event. See **Networked Control Events** in the *LQ Series User Guide* for more information. Control Events are commonly used to open a talk route to a two-way radio.

Talk action setting	Result
Control Event 2	

15.2.2 Talk Interlock Group

An Interlock group allows you to create a group of keys on your intercom station where only one talk key in the group can be active at any one time. This feature can be used when a speaker needs to move quickly between different audio channels with the assurance that only one Channel is active at any given time.

For example:

A stage manager has 4 keys set up as an Interlock group: Production, Lighting, Audio, Front of House. He has a permanent latch configured on the Production Channel and uses a footswitch connected to the Station's GPI to control the Mic button. When he presses the key for Front of House, the Production key will unlatch and he will not talk to that Channel. When he releases the Front of House key, the Production permanent latch will resume.

Interlock groups can be applied selectively to Keysets: Main Stations, Remote Stations (including expansion panels), desktop units and beltpacks. One interlock group per intercom station.

Interlock groups can be set up either in the CCM or in the front panel menus.

Note: *When a permanent latch is included in a talk interlock group, the talk key will temporarily over-ride the permanent latch. Do not put more than one permanent latch key in the same talk interlock group .*

How to set up an interlock group (CCM)

For each key you wish to include in the interlock group, set the **Talk Interlock Group** option to **Enabled**.

15.3 Editing the Station

1. From the top left of the **Roles** screen, select **Main Station (HMS).**
2. From the drop-down list of roles, select the role you wish to edit.
3. Select **Station**.

You can configure the following:

Setting	Options
Description	Enter station description
Display Brightness	Low Medium (default) High
Key Brightness	High/Low. The default setting. Keys are lit bright when active and lit dim when inactive. High/Off. Keys are lit bright when active and are unlit when inactive. Low/Off. Keys are lit dim when active and are unlit when inactive. Off/Off. Keys are unlit, whether or not they are active or inactive.
Screensaver	Channel Name (default) Hostname Role Name Blank Disabled
RMK Key (Remote Microphone Kill)	Visible Channels(default)/All Channels/Disabled “Visible Channels” will select Channels visible on device Keysets. “All Channels” will select all Channels available on the device; 12 or 24.
All Talk key talks to	Visible Channels(default)/All Channels “Visible Channels” will talk to Channels visible on device Keysets. “All Channels” will talk to all Channels available on the device (12 or 24 depending on your license).
Main Volume Limits	Use this control to set volume limits for the main volume (the volume controlled by the rotary control (L) next to the loudspeaker on the front of the main station). Set a lower limit to prevent the station user from muting or turning the volume down so low it cannot be heard, or so high that it causes disruption.

Setting	Options
Program Volume Limits	Use this control to set volume limits for the program audio.
Menu Access	Enabled (default) Disabled
Headset Latch	See table below

The headset **(Hset**) button (E) is on the front of the intercom station. It is normally used to toggle audio between the headset and the gooseneck microphone.

Headset Latch setting	Behavior
Toggle (default setting)	Pressing the headset **(Hset**) button will toggle between the headset and the gooseneck microphones. Headset detection logic is active on this setting and the Station will switch to a headset when a working headset is connected.
Permanent	This setting permanently enables the headset button and ensures that the headset audio is permanently on and the gooseneck microphone is disabled. This setting will override the headset detection logic so headset audio stays on if the user unplugs the headset.
Disabled	The headset button is permanently disabled and cannot be activated by the intercom station user. The gooseneck microphone will be active at all times.
Non-Latching	The headset button can be activated by the intercom user pressing the button but it cannot be latched.

4.. For each setting, select the option you require.

15.4 Editing the Headset

1. From the top left of the **Roles** screen, select **Main Station (HMS).**

2. From the drop-down list of roles, select the role you wish to edit.
3. Select **Headset**.

You can configure the following:

Setting	Options
Sidetone Gain	Adjust slider control from -18dB to 0dB (Default -12dB)
Headphone Gain	0db (default) to 12dB
Headphone Limit	Off +6dB 0dB (default) -6dB
Sidetone Control	Tracking (default) Non-Tracking Disabled
HS Mic Type	Electret(-15dB) Dynamic (0dB) (default) Dynamic (low)

4. For each setting, select the option you require.

15.5 Editing the Microphone

1. From the top left of the **Roles** screen, select **Main Station (HMS).**
2. From the drop-down list of roles, select the role you wish to edit.
3. Select **Microphone**.

You can configure the following:

Setting	Options
Headroom	Normal (default) High
Contour Filter	Enabled Disabled (default)

4. For each setting, select the option you require.

15.6 Editing the Program Input

1. From the top left of the **Roles** screen, select **Main Station (HMS).**
2. From the drop-down list of roles, select the role you wish to edit.
3. Select **Program Input**.

You can configure the following:

Setting	Options
Label	Use to give the program input a meaningful name
Gain	Adjust slider control from -12dB to 12dB (Default 0dB)
VOX	Disabled (Default)/Enabled
VOX Off Delay	0.5s (Default) – 4 s
IFB Dim Level	IFB Disabled -6 dB -12 dB -18 dB -24 dB Full Cut
Channel Assignment	Select a Channel from the list of Channels.
Action trigger	Enabled/Disabled (Default)

4. For each setting, select the option you require.

***Note**: When assigning a program input to a Channel in the CCM, the system assumes that program input is associated with a device. This will be reflected in the **Assignments** page in the CCM, where a program input is assigned to a Channel, the device hostname rather and the Role name will be visible in **Roles** view*

***Note**: When controlling an IFB dim level on a Program Input you must edit the Role for the device the Program Input comes in on. For instance, if the Program Input is attached to the Main Station, you will edit the Role for that Main Station and this will control the dim level on Remotes, Speaker Stations and beltpacks connected to the Main Station*

15.7 Editing the Stage Announce Output

1. From the top left of the **Roles** screen, select **Main Station (HMS).**
2. From the drop-down list of roles, select the role you wish to edit.
3. Select **Stage Announce Output**.

You can configure the following:

Setting	Options
Label	Give the output port a meaningful name
Gain	Adjust slider control from -12dB to 12dB (Default 0dB)
Mode	Channel Assign/SA. Selecting SA means that the audio feed is only available to the SA output port on the rear of the Remote Station and is not available to place in channels. This option is selected if you are trying to conserve system resources, as the audio feed, once placed in a channel, will consume resources.
SA Button	Latching/Non-Latching (default)

4. For each setting, select the option you require.

15.8 Editing the Hot Mic Output

1. From the top left of the **Roles** screen, select **Main Station (HMS).**
2. From the drop-down list of roles, select the role you wish to edit.
3. Select **Hot Mic Output**.

You can configure the following:

Setting	Options
Gain	Adjust slider control from -12dB to 12dB (Default 0dB)

4. For each setting, select the option you require.

15.9 Editing the Loudspeaker

1. From the top left of the **Roles** screen, select **Main Station (HMS).**

2. From the drop-down list of roles, select the role you wish to edit.
3. Select **Loudspeaker**.

You can configure the following:

Setting	Options
Dim	0 dB (default)
	-3 dB
	-6 dB
	-12 dB
	-24 dB

4. For each setting, select the option you require.

15.9.1 Loudspeaker Mute

The loudspeaker mute option controls how the loudspeaker rotary control (L) on the front of the intercom station on can transition between the muted and unmuted states. The available settings are as follows:

Setting	Result
Toggle w. Headset Control (Default)	The user can toggle the loudspeaker between the muted and unmuted state. Headset detection will mute when the headset is inserted or unmute the loudspeaker when the headset is removed.
Muted	The loudspeaker is always muted. Pressing the button and headset detection do not affect the muted state.
Toggle	The user can toggle the loudspeaker between the muted and unmuted state. Headset detection will mute the loudspeaker when the headset is inserted but will not unmute when headset is removed.
Unmuted w. Headset Control	The loudspeaker is unmuted while there is no headset. When a headset is inserted, the loudspeaker is mute. The user cannot control the mute state using the

Setting	Result
	button in any of the cases.
Unmuted	The loudspeaker is always unmuted. Pressing the button and headset detection do not affect the unmuted state.

15.10 Logic Input/Output Options

Logic Input/Outputs allow control from/to external GPIO style switches.

15.10.1 Logic Input Options

Logic Inputs are available on HMS-4X, HRM-4X and HKB-2X-X7.

Logic Input Options allow certain system functions to be remotely controlled by an external contact input (GPI).

A common use of the Logic Input Option is to assign a footswitch to the microphone on a station. This allows a user to latch certain talk keys On and then enable all with a single Logic Input, hands-free.

Assign a GPI switch (example: a footswitch) to one or more of the following buttons;

- Talk
- Call
- Mic
- Headset

Logic Inputs follow the latch configuration of the button and can be assigned to multiple buttons. They will change the current state (for example, if it is **On** then the switch will make it go **Off**).

15.10.2 Logic Output Options

Logic Outputs are available on HMS-4X and HRM-4X.

Logic Output Options allow assignment of sytem key presses or events to trigger a function on a system connected to the relay (GPI). For example, to key two-way radios.

System key presses on **Talk**, **Call** and **SA** buttons can be assigned to GPO/Relay.

Logic Output options can also be assigned to individual Channel Events:

- Talk Event (when a user is talking on the channel)
- Call Event (when a call signal is active on the channel).

- A Talk/Call Event is only generated in a channel if the Action Trigger on the port is set to:
- **VOX** (Program Audio)
- **Call/VOX** (2/4 Wire)

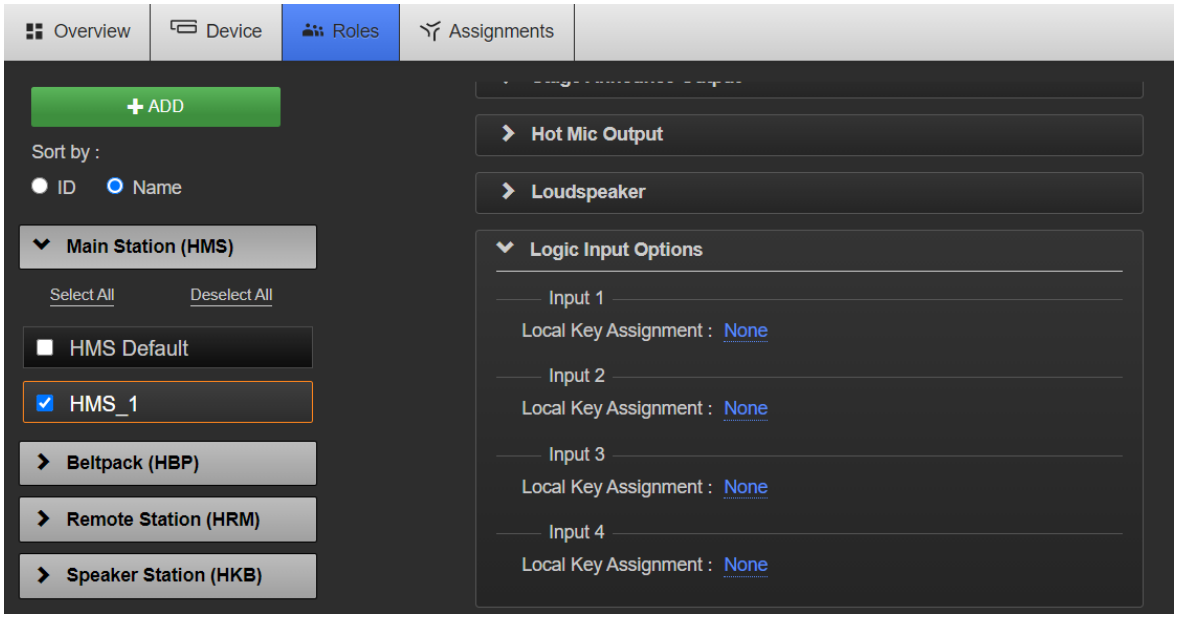
o

A Talk Event also requires that the VOX is enabled on the input port.

Note: *Talk Action Trigger initiated by a Program Audio Input VOX can on only be assigned to a Logic Output Option local to the device.*

15.10.3 Editing the Logic Input Options

1. From the top left of the **Roles** screen, select **Main Station (HMS).**
2. From the drop-down list of roles, select the role you wish to edit.
3. Select **Logic Input Options**.

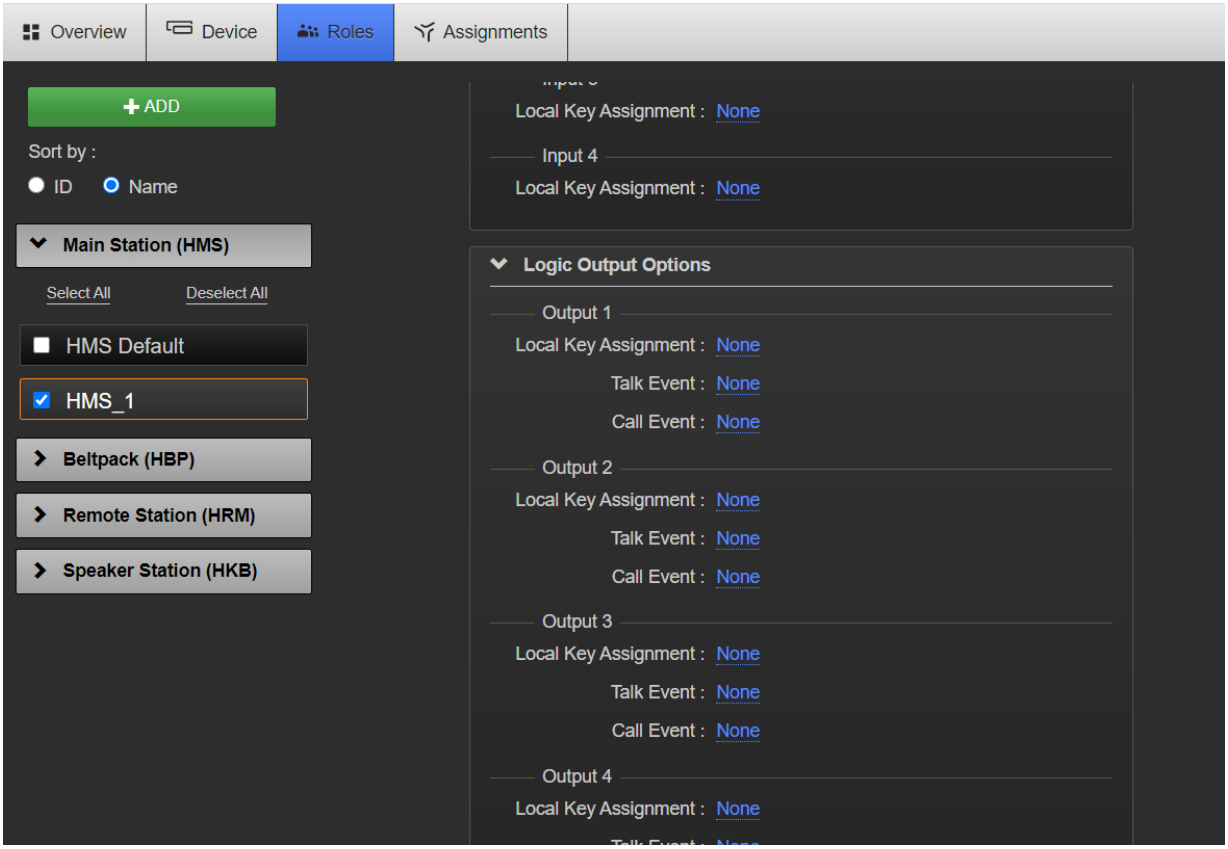


4. For each Logic Input Option, select the local keyset (1 – 4) and you wish to activate (Talk or Call). If you wish to open the microphone, select **Mic**.

15.10.4 Editing the Logic Output Option

1. From the top left of the **Roles** screen, select **Main Station (HMS)**.

2. From the drop-down list of roles, select the role you wish to edit.
3. Select **Logic Output Options**.



4. For each GPO, select the signal(s) that you wish to trigger the external appliance, **Local Key Assignment, Detection of Talk** from any device and/or **Detection of Call** from any device.
5. Select the Channel you require then click **Done**.

15.11 Editing Remote Station roles

15.11.1 Editing the Keyset

See Editing the keyset.

15.11.2 Editing the Station

1. From the drop-down list of roles, select the role you wish to edit.
2. Select **Station**.

You can configure the following:

Setting	Options
Description	Enter station description
Display Brightness	Low Medium (default) High
Key Brightness	High/Low. The default setting. Keys are lit bright when active and lit dim when inactive. High/Off. Keys are lit bright when active and are unlit when inactive. Low/Off. Keys are lit dim when active and are unlit when inactive. Off/Off. Keys are unlit, whether or not they are active or inactive.
Screensaver	Channel Name (default) Hostname Role Name Blank Disabled
OPT (RMK) Key	Disabled (Default)/All Channels/Visible Channels. This option allows you to enable RMK on remote stations. See
Menu Access	Enabled (default) Disabled
All Talk key talks to:	Visible Channels (Default)/All Channels

3. For each setting, select the option you require.

***Note**: Each device has the capacity for either 12 or 24 Channels (depending on license). These will all be enabled if you choose 'All Channels'. "Visible Channels" enables only those Channels selected and visible on device Keysets*

Editing the Headset

See Editing the headset.

Editing the Microphone

See Editing the microphone.

Editing the Program Input/Audio In

Program Audio on the Remote Station	
PGM Enabled	Enabled/Disabled. If Disabled, the program feed is not available to the Remote Station. This option is used if you wish to conserve system resources. A program feed, once placed in a channel, becomes a resource consuming output.
Channel Assignment	Select a Channel from the list of Channels. This option is only available if the program feed is enabled on the Remote Station (PGM Enabled).

See Editing the program input/audio

Editing the Stage Announce Output/Audio Out

See Editing the stage announce output/audio out.

Editing the Hot Mic Output

See Editing the hot mic output

Editing the Loudspeaker

See Editing the loudspeaker

Editing the Logic Input Options

See Editing the Logic Input Options

15.12 Editing Speaker Station roles

15.12.1 Editing the Keyset

See Editing the keyset

15.12.2 Editing the Station

1. From the drop-down list of roles, select the role you wish to edit.
2. Select **Station**.

You can configure the following:

Setting	Options
Description	Enter station description
Display Brightness	Low Medium (default) High
Key Brightness	High/Low. The default setting. Keys are lit bright when active and lit dim when inactive. High/Off. Keys are lit bright when active and are unlit when inactive. Low/Off. Keys are lit dim when active and are unlit when inactive. Off/Off. Keys are unlit, whether or not they are active or inactive.
Screensaver	Channel Name (default) Hostname Role Name Blank Disabled
Shift Page	Auto Shift Toggle Disabled See table below for details
Menu Access	Enabled (default) Disabled
Unlatch on Shift	Enabled (default) Disabled

3. For each setting, select the option you require.

Shift Pages Key

The intercom speaker station has two display screens with a keyset (set of controls) located next to each screen. Each keyset is dedicated to the control of one of the intercom channels. You can use the **Shift** button on the front of the station to switch the Keysets between 1-2 and 3-4.

You can configure the behavior of the shift pages key to best suit your use of the station.

Shift Option	Behavior
Auto Shift	The user can toggle between the 2 pages using the shift button. Keysets will automatically shift if a call is received on the lower page.
Toggle	The user can toggle between the 2 pages using the shift button.
Disabled	The shift button is disabled, the first 2 Keysets are fixed. Channels may be assigned to the second page but it will be impossible to adjust their respective volumes, see call indications or press the talk key.

Editing the Headset

See Editing the Headset.

Editing the Microphone

See Editing the Microphone.

Editing the Loudspeaker

See Editing the Loudspeaker.

Editing the Logic Input Options (HKB-4X-7X Stations only)

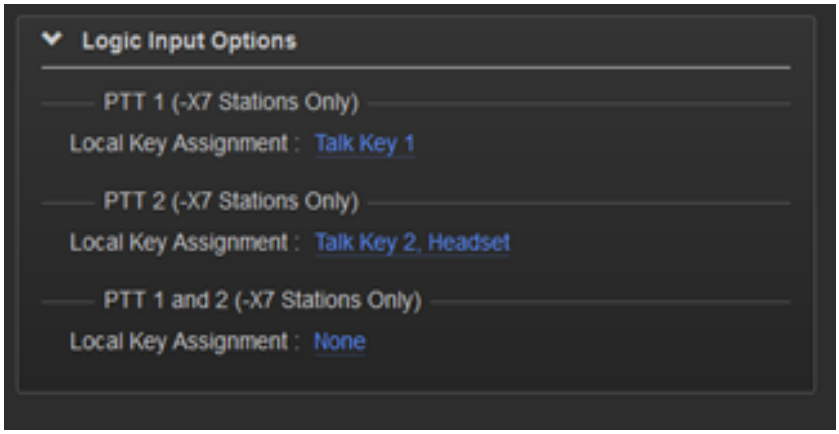
The HKB Station is available in a special configuration with a 7-pin XLR headset connector. This is used with two assignable GPI/Push-to-talk (PTT) buttons that enable you to configure various buttons press actions from a switch wired to the GPI/PTT.

More than one button press can be configured on each GPI/PTT. There are three configurable actions available: PPT1, PPT2 and PTT 1 & 2 (both buttons pushed at the same time).

The four local talk and call keys, the headset (**Hset**) key and the microphone (**Mic**) key can be assigned to any GPI/PTT.

The GPI/PTTs can be setup in the CCM or from the front panel menu system.

To configure Logic Input Options in the CCM navigate to: **Roles > Speaker Station > Select Role > Logic Input Options**.



After clicking on a blue label, a selection dialog box will open to allow the assignment selection:

Note: *The keys in this screen toggle on and off on a mouse click.*

Please contact your Clear-Com representative for further information about availability of the HKB-2X-X7.

15.13 Editing the beltpack roles

15.13.1 Editing the Keyset

Each beltpack has two keysets, one for each selected Channel. The keyset is used to control the Channel. You can configure:

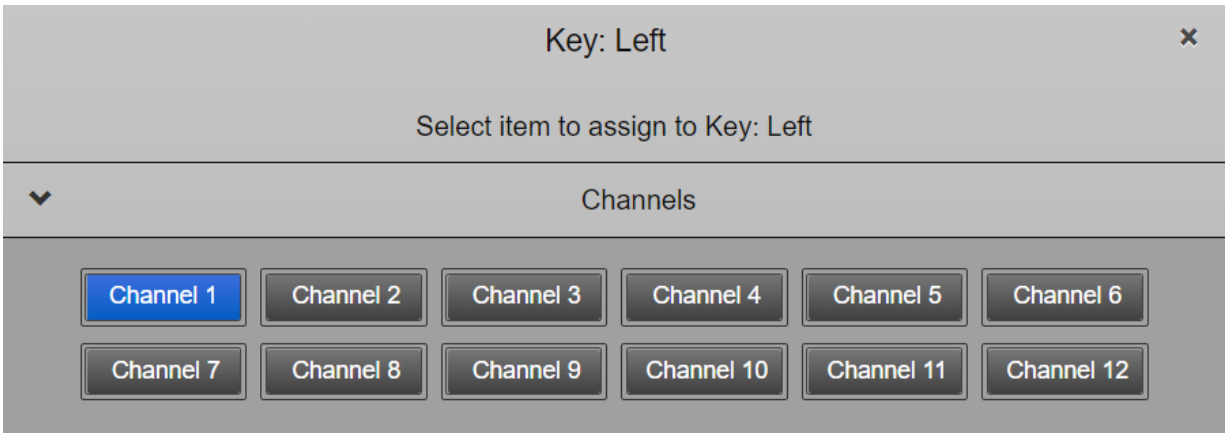
Whether the talk keys are stacked

Which Channel is assigned to the keyset

If the Talk key on the keyset is latching or non-latching

1. From the top left of the **Roles** screen, select **Beltpack (HBP)**.
2. From the drop-down list of roles, select the role you wish to edit.
3. Select **Keyset**.
4. Select the key you wish to edit.

5. To set a key as stacked, select the **Stacked Key** checkbox. For detail on setting stacked keys see Configure a stacked key on a beltpack using the CCM.
6. To assign a different Channel to the key, click **Key Assignment**.



7. Select the Channel you require. It will highlight in blue when selected. This selection toggles off and on on a mouse click.
8. To configure Talk key operation, click **Talk Key**, and select **Latching** (default), **Non-Latching or Disabled**.
9. Repeat the above steps for each keyset.
10. Set **USB Flasher Mode** (default **Disabled**). For more detail on USB flasher functionality see Call a beltpack using the USB flasher feature

15.13.2 Editing the General Settings

1. From the drop-down list of roles, select the role you wish to edit.
2. Select **Station**.

You can configure the following:

Setting	Options
Description	Enter station description
Display Brightness	Low Medium (default) High
Key Brightness	High/Low. The default setting. Keys are lit bright when active and lit dim when inactive.

Setting	Options
	High/Off. Keys are lit bright when active and are unlit when inactive. Low/Off. Keys are lit dim when active and are unlit when inactive. Off/Off. Keys are unlit, whether or not they are active or inactive.
Vibrate on Call	Enabled Disabled (default)
Rotate Display	Enabled Disabled (default)
Screensaver	Channel Name (default) Hostname Role Name Blank Disabled
Menu Access	Enabled (default) Disabled

3. For each setting, select the option you require.

Editing the Headset

See Editing the headset.

Editing the Microphone

See Editing the microphone.

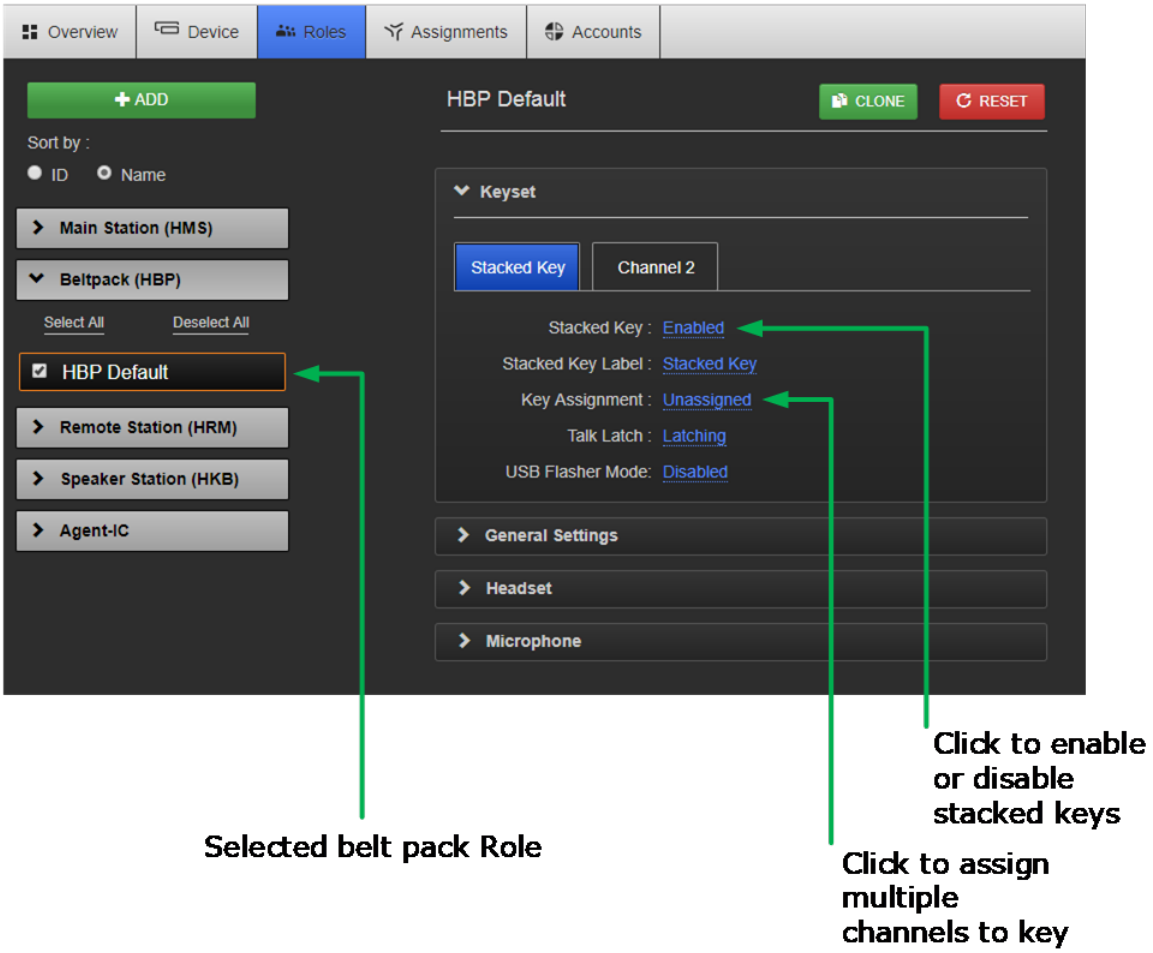
15.14 Configure a Stacked Key on a Beltpack using the CCM

You can configure stacked keys on a beltpack, putting two or more Channels on the same key. This enables the beltpack user to talk and listen to two groups simultaneously. Pressing the Talk or Call button on the beltpack will initiate a talk or call to all the Channels on the stacked key. If any Channel user activates a call to the beltpack, the Call label will flash and vibrate if enabled.

Beltpack stacked keys can only be configured through the Core Configuration Manager (CCM).

To configure a stacked key on a beltpack:

1. Navigate to **Roles >Beltpack (HBP) > Role > Keysets** and select the Channel Tab you wish to stack a key on.
2. Click the **Stacked Key** checkbox. This automatically unassigns any Channels already on this Keyset.
3. Click **Key Assignment**
4. Select all the Channels you wish to assign to the Keyset. Click **Done**. The Channels will be stacked on the Keyset.
5. Set the **Talk Key** as required.

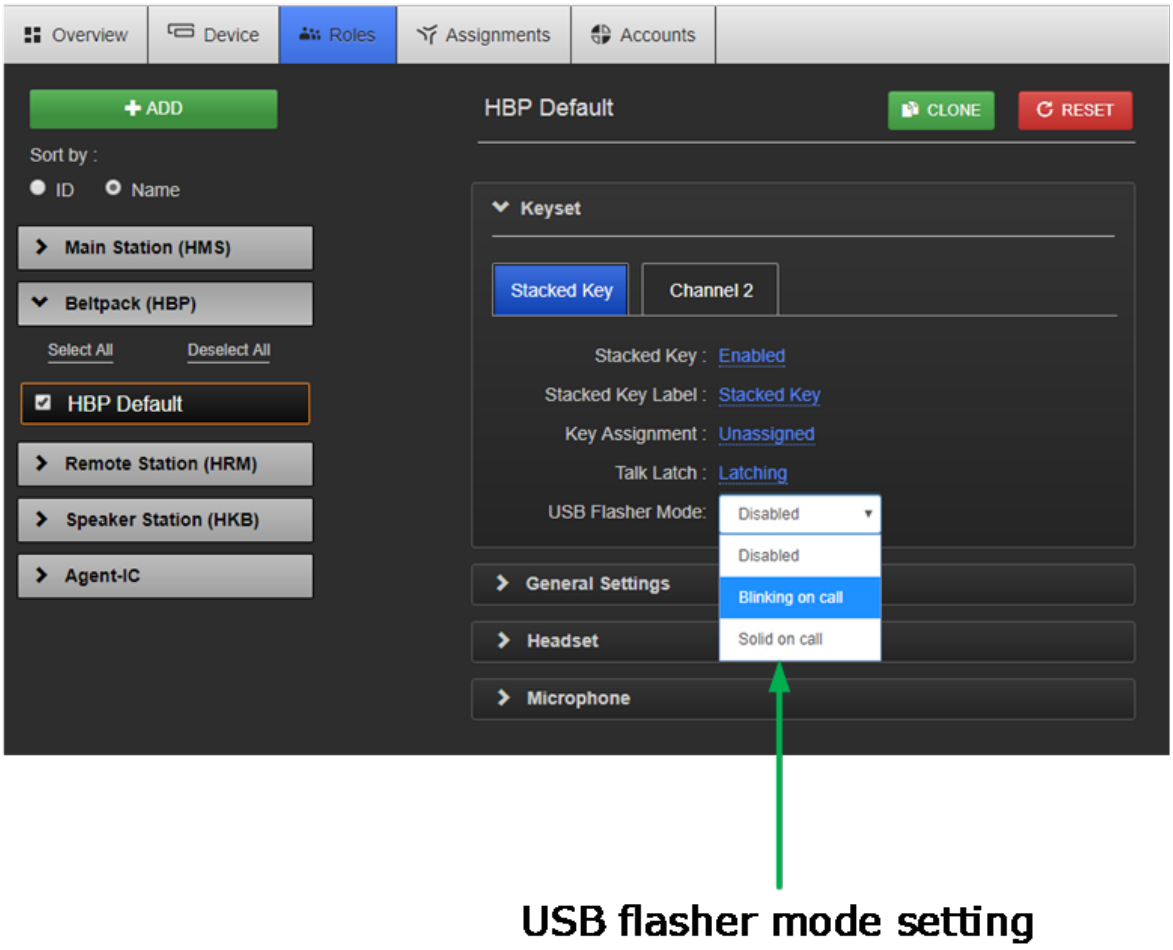


15.15 Call a Beltpack Using the USB Flasher Feature

To use this feature you will need a USB-powered light and a micro-to-type A USB adapter.

1. Set the USB flasher functionality in the beltpack Role.

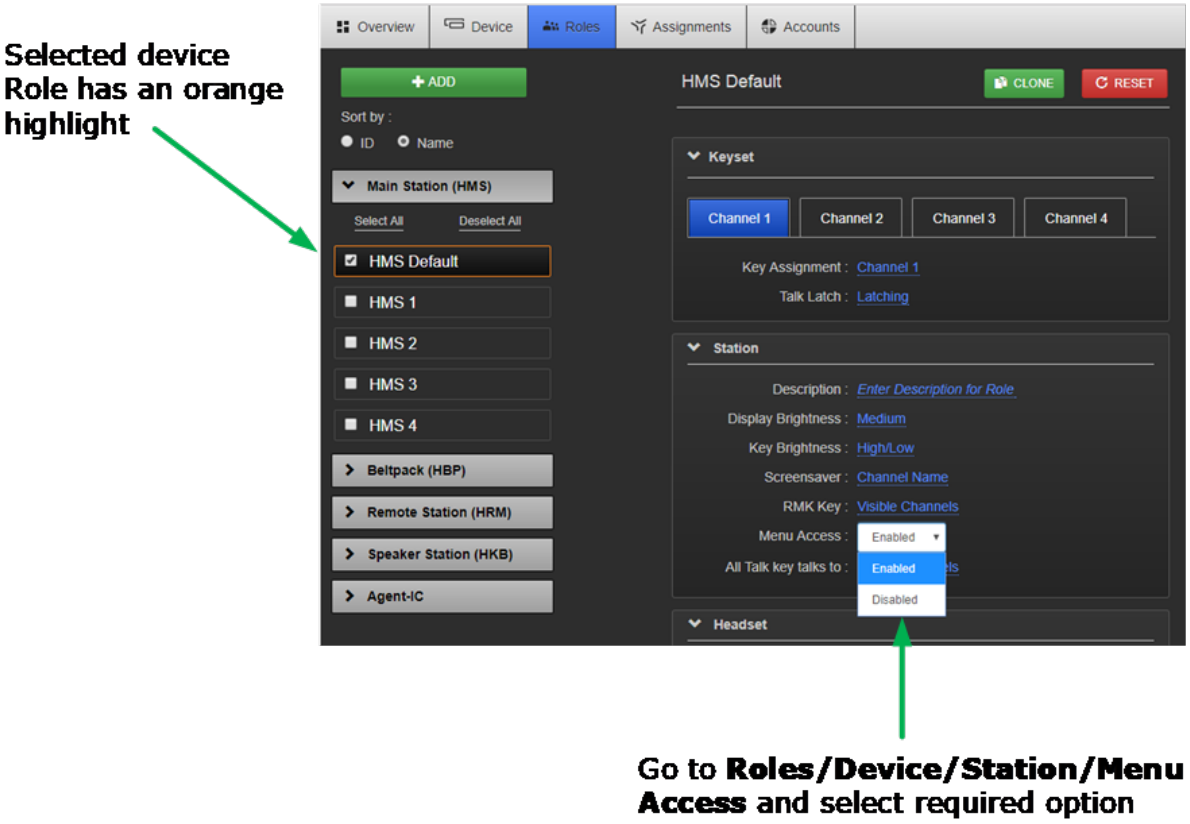
2. Call the beltpack and see the light flashing.



15.16 Disable Menu Access on any Device from the CCM

You can disable menu access to any device, from a Main Station to a Beltpack, in the **Roles** page.

1. Navigate to **Roles > Device > Role > Station > Menu Access**
2. Select required access mode. <Enter> to select option.


Selected device Role has an orange highlight
Overview
Device
Roles
Assignments
Accounts
ADD
Sort by :
ID
Name
Main Station (HMS)
Select All
Deselect All
HMS Default
HMS 1
HMS 2
HMS 3
HMS 4
Beltpack (HBP)
Remote Station (HRM)
Speaker Station (HKB)
Agent-IC
HMS Default
CLONE
RESET
Keyset
Channel 1
Channel 2
Channel 3
Channel 4
Key Assignment : Channel 1
Talk Latch : Latching
Station
Description : Enter Description for Role
Display Brightness : Medium
Key Brightness : High/Low
Screensaver : Channel Name
RMK Key : Visible Channels
Menu Access : Enabled
All Talk key talks to :
Enabled
Disabled
Headset
Go to Roles/Device/Station/Menu Access and select required option

16 Linking in the Core Configuration Manager (CCM)

Main Stations can be linked from the CCM. Each Main Station has 12 Channels with the option of licensing 12 more (24 in total). When linking Main Stations, Channels with the same number are merged together into one Channel. Linking Main Stations will also have the effect of increasing your I/O and device module options (more beltpacks and a larger area covered).

***Note**: Linked Main Stations should have the same amount of licensed Channels. If you link a 24 Channel device to a 12 Channel device the system will default to 12 Channels only. To buy a license for more Channels see License.*

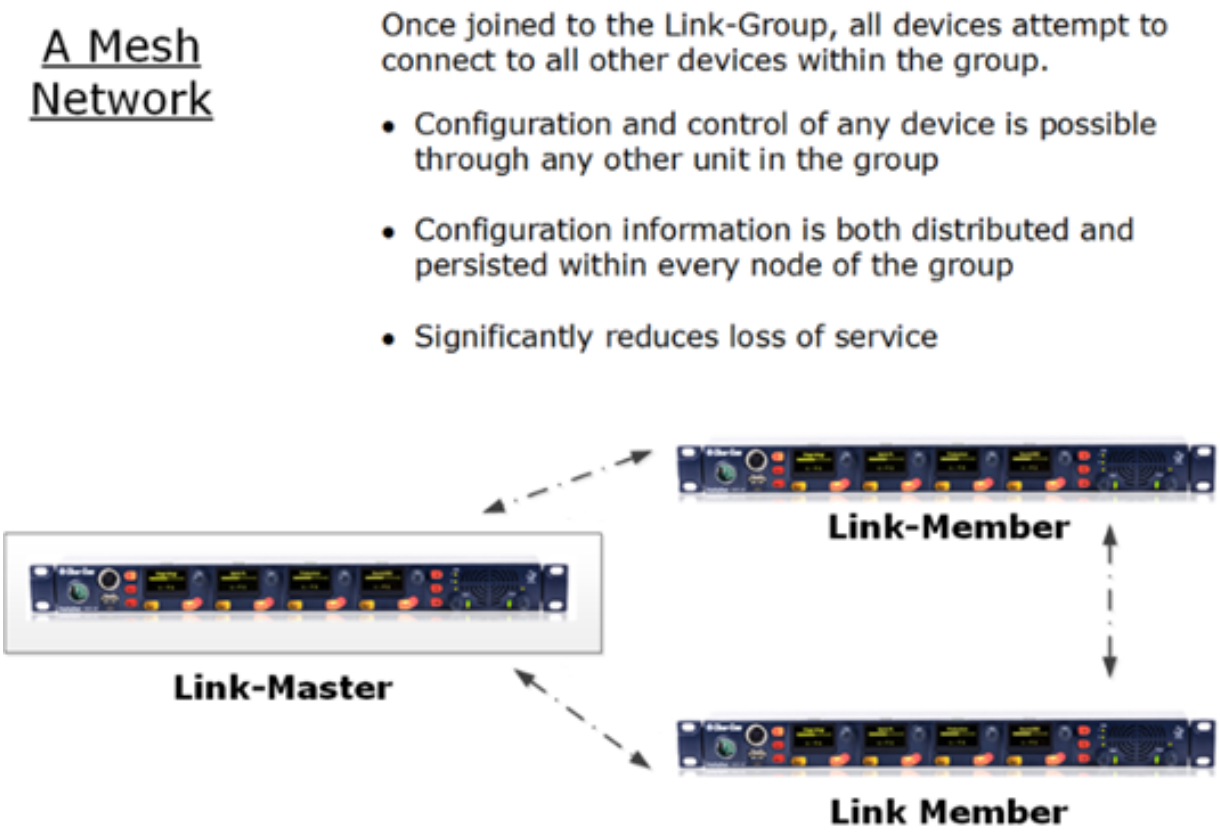
Main Stations can still be linked from the device menus. See Linking Main Stations (cabling and linking from device menus)

16.1 A HelixNet Link-Group Overview

A HelixNet Link-Group can contain up to six Main Stations.

A Link-Group must have one device designated as Link-Master.

The Link-Group performs a “best effort” approach to creating a mesh network between all the devices within the group.



16.1.1 The Link-Master

The Link-Master designation serves three main purposes:

1. It facilitates Link-Group membership.
2. It is the owner of configured Role information, meaning that Roles will only persist (be maintained consistently) if the Link-Master is operational.
3. It is responsible for the synchronization and distribution of both configuration (Roles) and device availability status throughout the Link-Group.

***Notes**: Clear-Com recommends that the IP address of the Link-Master is allocated statically. When allocated by DHCP, the IP address can change. If this happens the Link-Members will no longer be able to reach the Link-Master device, and Role information may not be persisted.*

*Any device can be set to Link-Master or Link-Member. The default setting for HelixNet linking mode is **Link Disabled**.*

Linked Main Stations need 2–5 Mbps of bandwidth

16.1.2 The Link-Members

HelixNet devices that are not identified as master will have the designation of Link-Member. Joining a device to a Link-Group requires that device to be set to Link-Member which will prompt the user to enter the IP address of the Link-Master.

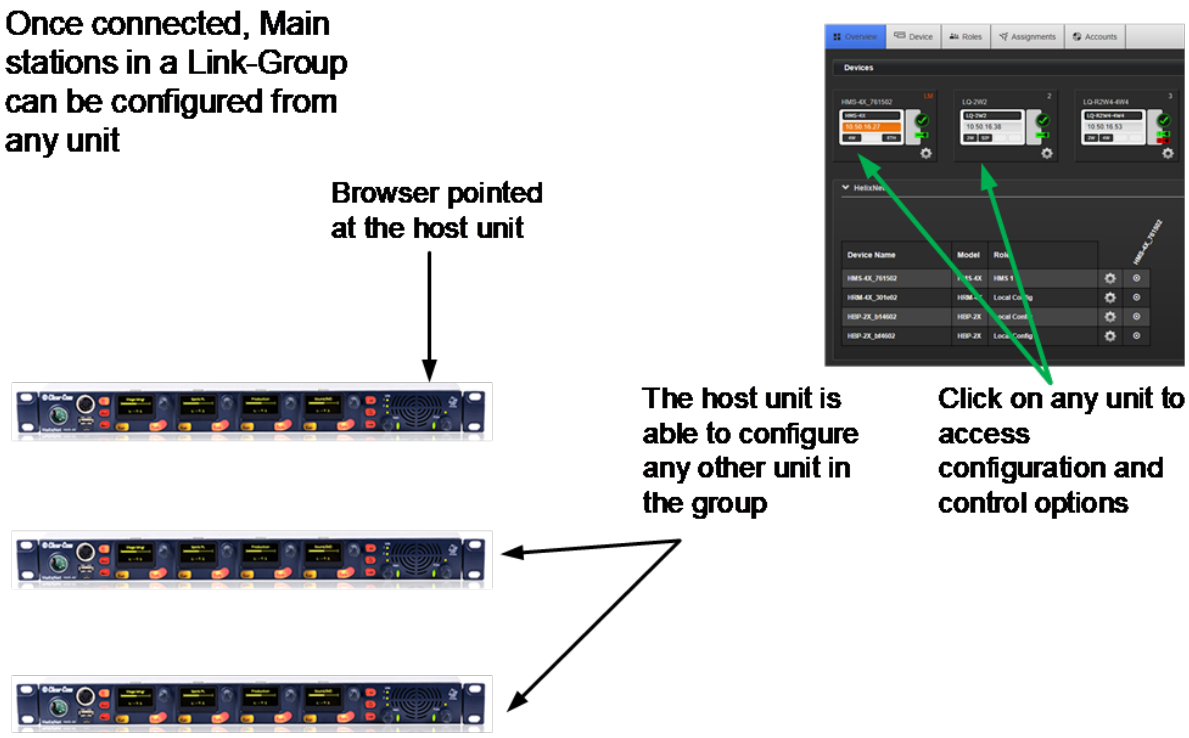
16.2 Device Configuration in the CCM

***Note**: Any IP connectivity requires an Ethernet or Fiber module fitted to the Main Station.*

Once the units have joined a Link-Group, the devices can be configured either directly or by proxy. The host device is the unit which a browser is currently directed to.

The **Home** button will always take you to the host device's configuration page.

Proxy configuration can be accomplished by clicking on any device within the **Overview** page.



***Note**: The host device will always have an orange highlight in the CCM.*

16.3 Linking Main Stations in the CCM

Main Stations to be linked in the CCM should first be connected by LAN to the same network and able to see each other.

In order to create a Link-Group in the CCM, you must designate one unit as Link-Master. The other units are designated Link-Member and are joined to the Master via the Master's IP address. This is achieved in the **Linking** page of each unit.

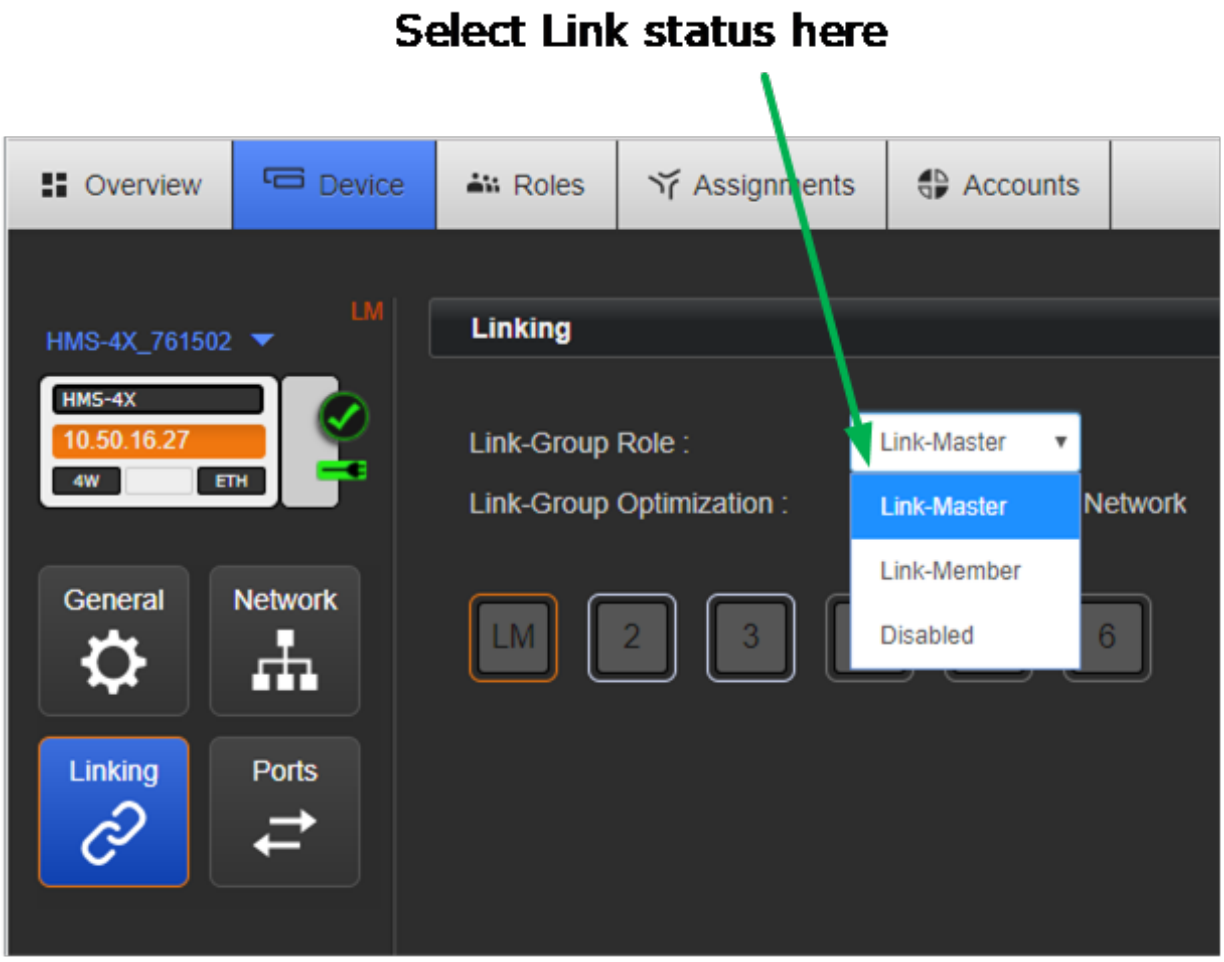
1. From a browser, access the CCM of HelixNet Main Station #1 by typing its IP address into the URL field.

***Note**: The unit's IP address can be found in the device's display screens: **Menu > Networking > Preferences > IP address**. For username and password see CCM password.*

***Note**: The Link-Master IP must be statically allocated to prevent loss of service.*

2. Navigate to **Home > Linking** in the CCM. From the drop-down box select **Link-Master** and click **Apply Changes**. This designates this unit as Link-Master.

***Note**: The default linking mode is: **Link Disabled**. When a device has been designated either Link Master or Link Member it will be looking for a pairing and a link icon will flash in the device screens. **Linking Disabled** prevents this.*

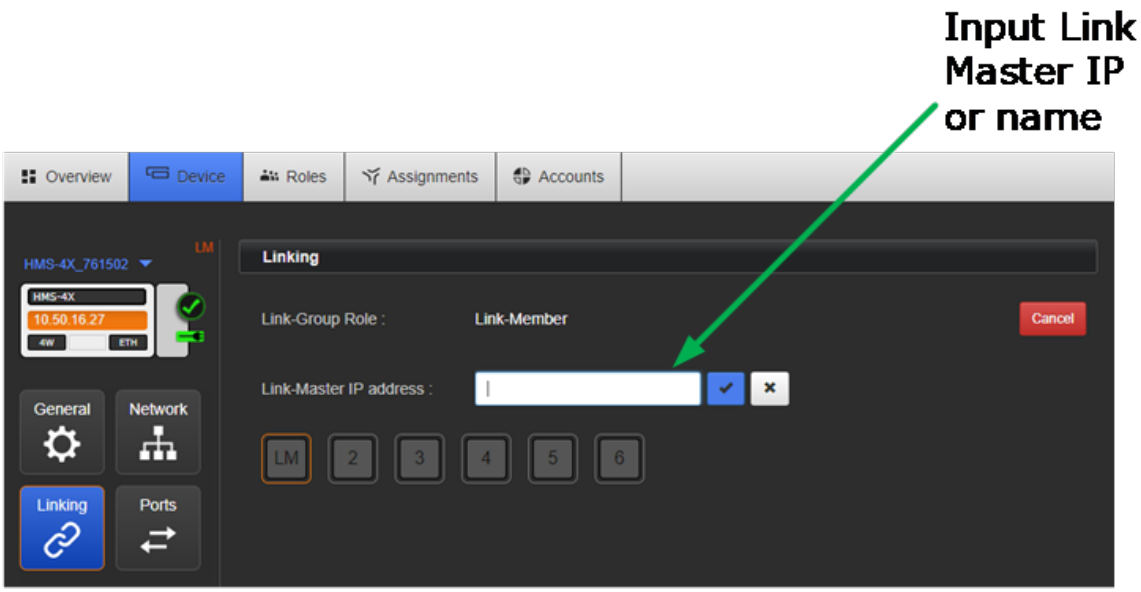


3. From a new browser window, access the CCM of device #2 by typing the unit's IP address into the URL field.

   You will have to enter the username and password for the device.

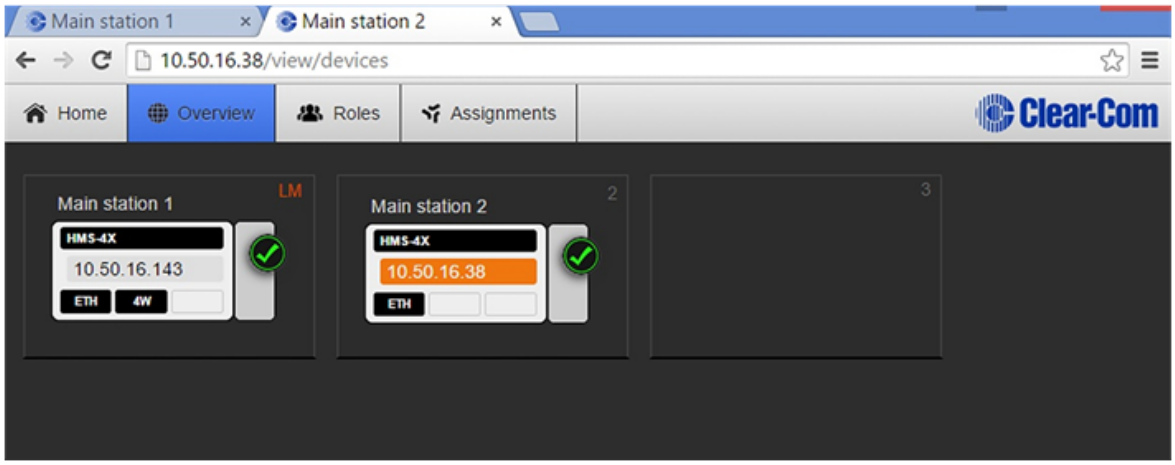
   Navigate to **Home > Linking** and select Link-Member from the drop down box.

4. You will be prompted for the IP address (or hostname) of the Link-Master. Within the Master IP address field, enter the IP address of device #1. Click on blue check mark or <ENTER> key to submit.



Either accept the default **Link Group Member ID** (orange highlight) or select a new one by clicking on it. Click **Apply Changes**. This links this device to the Link Master.

5. Navigate to the **Overview** page (top navigation bar). Both HelixNet devices are now displayed on this page.



6. Repeat steps 3) to 6) for a third device if required.

17 Linking Main Stations (Cabling and Linking from Device Menus)

This section describes how to link Main Stations using the device menus rather than the Core Configuration Manager. You can connect Main Stations directly using Ethernet or Fiber, or connect them over a LAN via Ethernet.

Up to six Main Stations can be linked.

Main Station linking is achieved using interface modules fitted to the extension bay of the Main Station. There are two modules:

Ethernet interface module (HLI-ET2). This module provides an Ethernet connection between Main Stations.

Fiber interface module (HLI-FBS). This module provides a Fiber connection between Main Stations.

Each Main Station has 12 Channels, and can connect up to 20 beltpacks.

Note: *If you change the network topology between any two stations, you must reboot the stations*

Warning: Both ports are configured to bridge traffic from one port to the other in order to work in daisy-chain. Spanning Tree Protocol is not enabled on those ports, therefore do not connect them both to the same network.

17.1 Linking Scenarios

Main Stations are connected together using CAT, CAT5e or CAT6 shielded cable. They can also be connected using fiber. There are various topologies that you can create. Some of these are illustrated below.

17.1.1 Linking Two Main Stations over LAN

1. Insert an HLI-ET2 Ethernet interface module in each station. Use any of the three slots available.

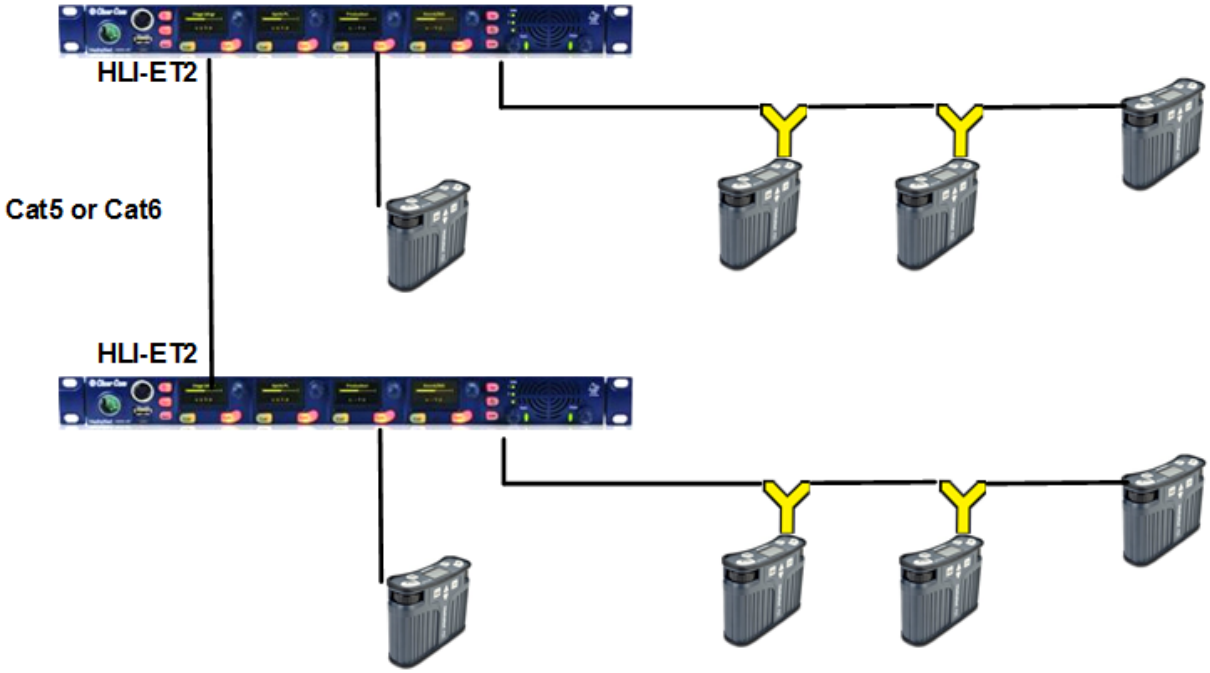
   Note: *Ensure that the Main Station is powered down before inserting modules.*

2. Connect a regular Ethernet cable (for example, CAT5, CAT5e, CAT6, CAT6e) from one HLI-ET2 port on one station to one HLI-ET2 port on the other station.
3. Power up both stations. Verify that the green LED on each HLI-ET2 port is flashing.
4. On one HMS go to **Networking->Linking->Link Mode** menu and select **Master**.

5. On the other HMS go to Networking->Linking->Link Mode and select **Member**. Then in **Networking->Link to Master** select the Master HMS you identified in the previous step.

   ***Note**: In HelixNet 3.0 or later each Main Station has 12 Channels. Linking Main Stations will have the effect of giving you more I/O and module options.*

Notes	
In HelixNet 3.0 or later each Main Station has 12 Channels. Linking Main Stations will have the effect of giving you more I/O and module options.	
You should see a Link icon on the Main Station display:	



17.1.2 Linking Two Main Stations with Fiber

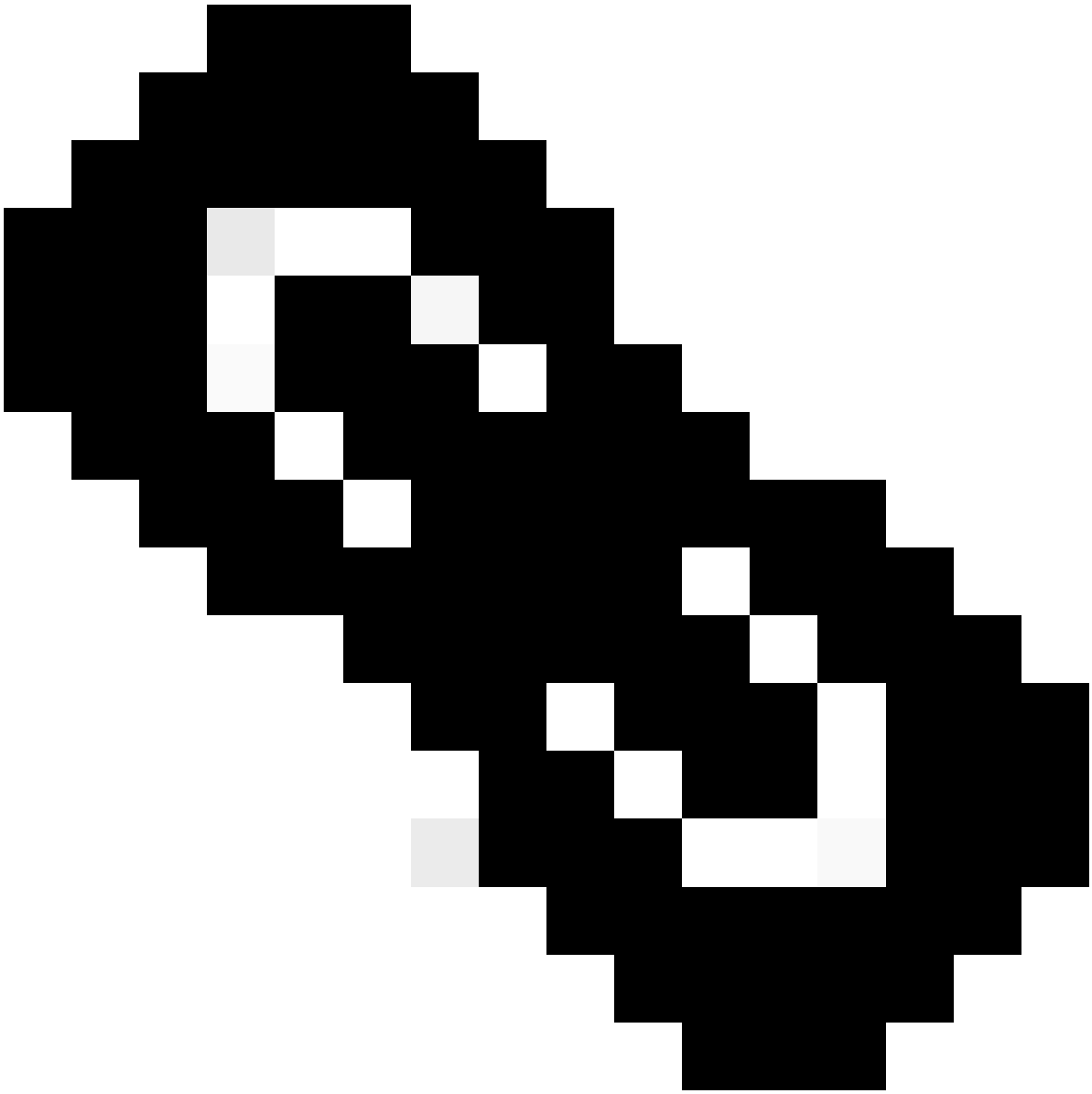
1. Insert an HLI-FBS Fiber interface module in each station. Use any of the three slots available.

   ***Note**: Ensure that the Main Station is powered down before inserting modules.*

2. Ensure that an SFP Transceiver is connected into one HLI-FBS module port on each station.
3. Connect Two Fibers from one HLI-FBS port on one station to one HLI-FBS port on the other station. If using Duplex LC/SC connectors, make sure that Tx on one goes to Rx on the other.
4. Power up both stations. Verify that the green LED on each HLI- FBS port is flashing.
5. On one HMS go to **Networking->Linking->Link Mode** menu and select **Master**.

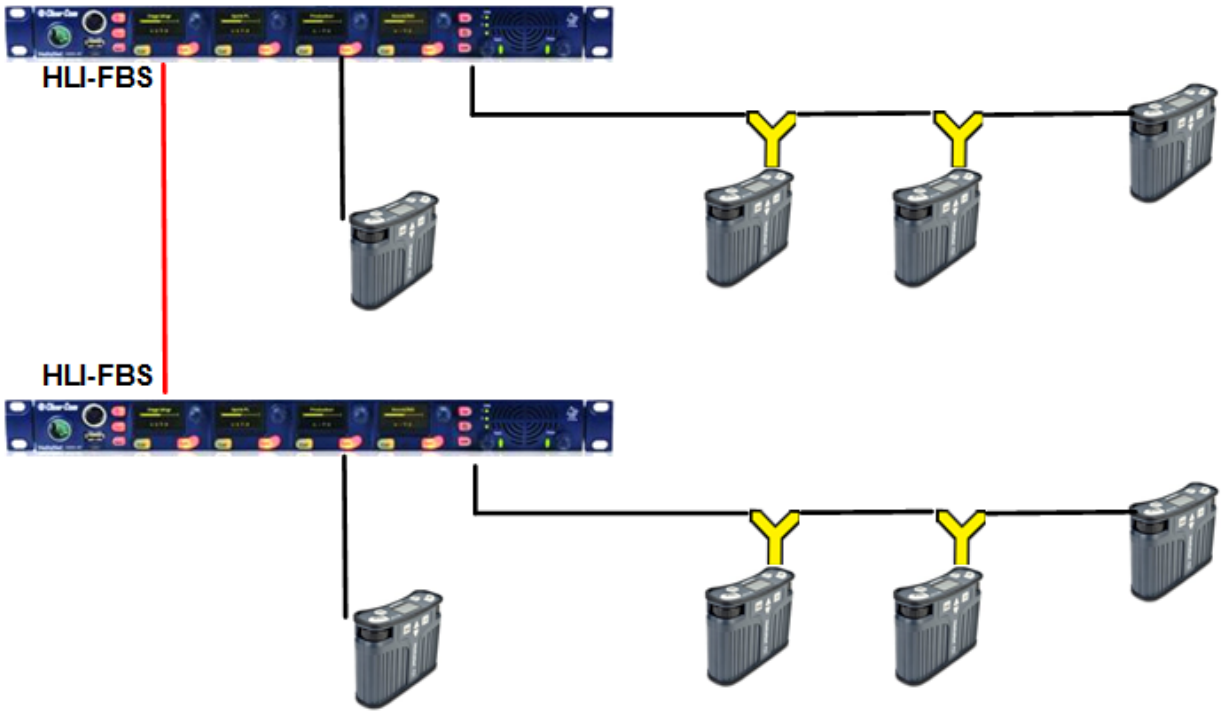
6. On the other HMS go to **Networking->Linking->Link Mode** and select **Member**. Then in **Networking->Link to Master** select the Master HMS you identified in the previous step.

   ***Note**: You should see a Link icon*



on the Main Station display.

***Note**: In HelixNet 3.0 each Main Station has 12 Channels. Linking Main Stations in 3.0 will have the effect of giving you more I/O and module options*

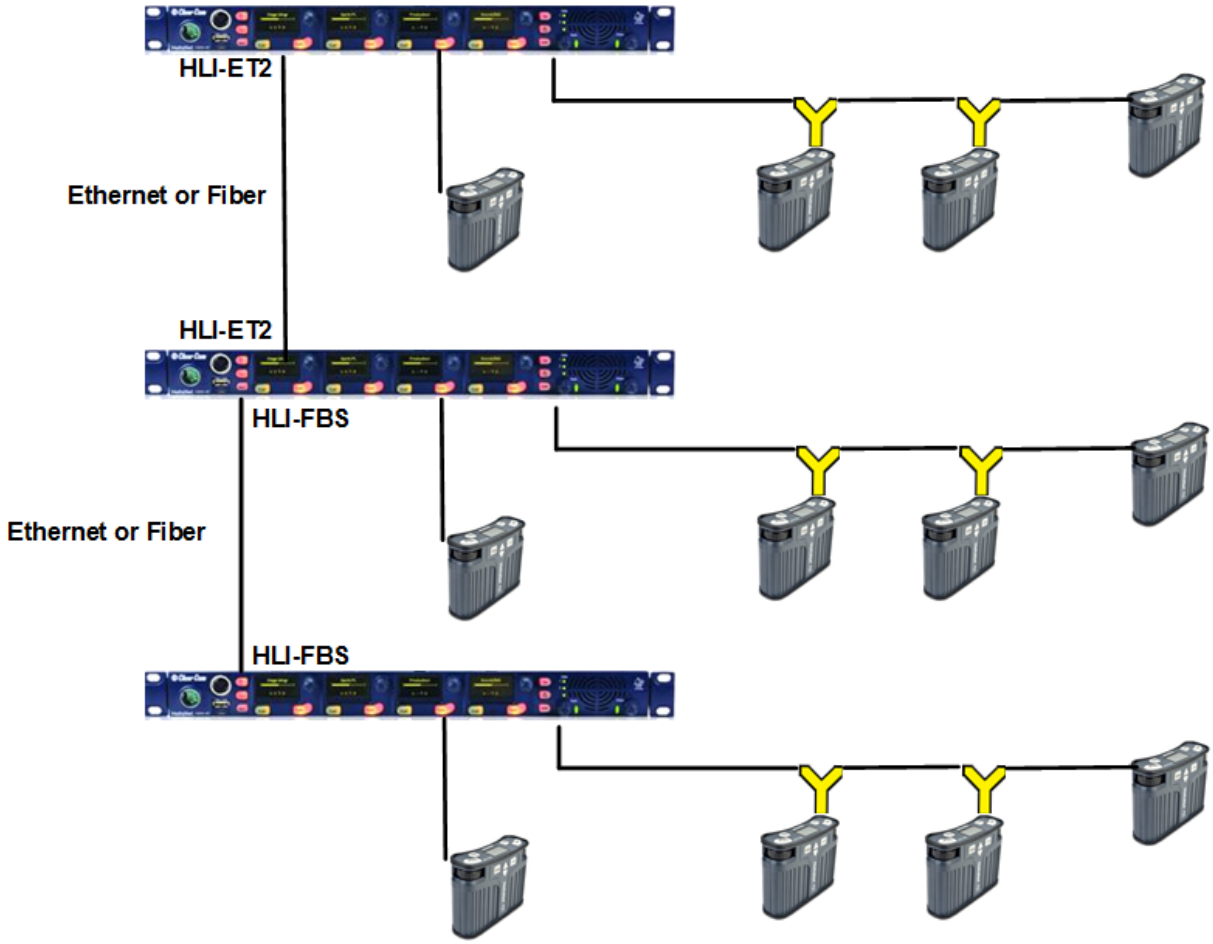


17.1.3 Linking Main Stations in a Daisy Chain

You can daisy chain stations following all the instructions of the previous sections using the second port on one of the HLI-ET2 or HLI-FBS module to connect to a third station. Then enable linking on the third station. The advantage of daisy chain is that it does not require any additional equipment for interconnection. The disadvantage is that if you disconnect or power down a station in the middle it will break the chain and prevent audio from prevent audio from passing between the units either side of the break.

You can also mix Ethernet and Fiber in the chain using an additional slot in a station in the middle of the chain.

Alternatively, you can save a slot by using an HLI-FBS module in the middle station, populating one port with a fiber SFP transceiver and one port with a 10/100Base-T electrical SFP transceiver.



17.1.4 Resource Sharing Between Linked Stations

When Channels are linked, Channels of the same number (1–24) will merge their audio together. This means that any audio available on separate Main Stations will be heard in the Channel of the same number on a linked Main Station.

If linked Main Stations do not have the same number of licensed Channels (12 or 24), all devices will default to 12 Channels.

18 Pairing Remote Stations, Speaker Stations and HXII-BP-X4 Beltpacks to the Main Station

This section describes how to pair Remote and Speaker Stations to Main Stations. You can connect Remote and Speaker Stations on one of the Digital Intercom Lines, point-to-point to a Main Station Ethernet interface module (HLI-ET2) or over an IP network.

Linking to a Main Station over an IP network requires an Ethernet interface module fitted to the extension bay of the Main Station (HLI-ET2).

***Note**: If the IP address on a Remote Station or Speaker Station changes, you must either reboot the Remote Station or disable and then re-enable the DHCP on the Remote Station.*

Warning: Digital intercom lines and the Ethernet connections are mutually exclusive on Remote and Speaker Stations. If both are connected it will be detected as a fault, communication over both ports will stop and both status LEDs will blink RED. This requires a reboot of the station using **Administration > Reset > Reboot**

Warning: When changing the connection from digital intercom line to Ethernet or vice-versa, you must disconnect one cable and then wait until the unit has detected a loss of connection before connecting the other cable. Otherwise, they will briefly be detected as both connected.

Warning: When changing the power connections to a Remote Station, a network storm error message may appear. If so, disconnect the power cable, and reboot the Remote Station.

18.1 Pairing Scenarios

There are various topologies that you can create. Some of these are illustrated below.

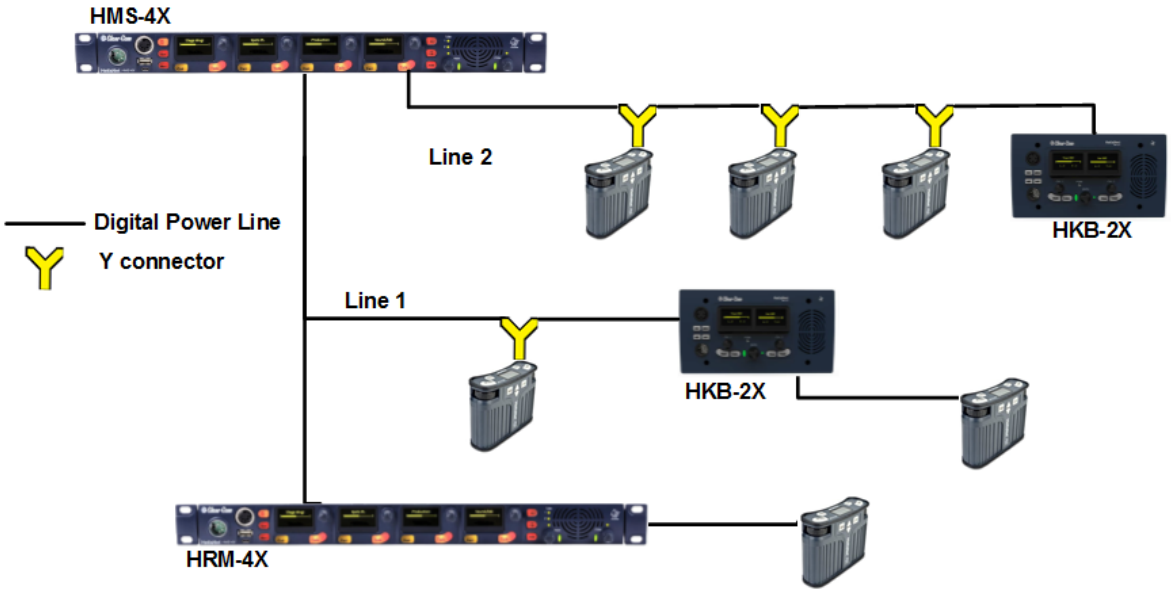
18.1.1 Digital Partyline Intercom

Remote and Speaker Stations have Digital Intercom 3-pin XLR connectors (female and male) and can connect to Main Stations along with beltpacks.

***Menu**: A Remote or a Speaker Station draws current equivalent to three beltpacks when the loudspeaker is in use. If the Remote or Speaker Station is locally powered using a power supply, it does not draw current from the digital intercom line.*

1. Connect an XLR cable from a Main Station to the Remote or Speaker Station.
2. Power up the Main Station and verify that the Line 1 and Line 2 status LED are green on Main Station.

3. On a Remote Station you can verify that the Line status LED is steady green.



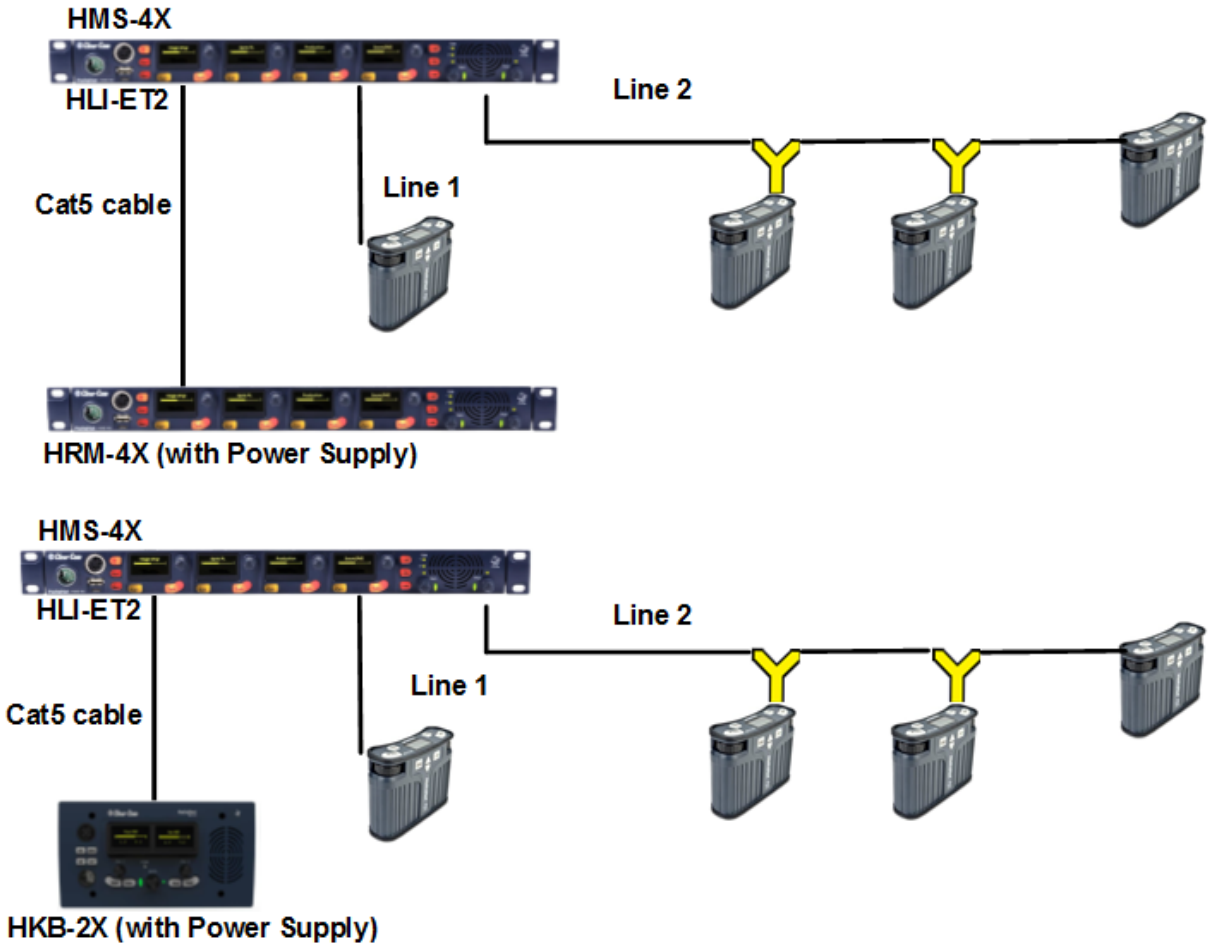
18.1.2 Ethernet Point-to-Point Link

Remote Stations, Speaker Stations and HXII-BP-X4 beltpacks have RJ45 Ethernet connectors and can connect to Main Stations over Ethernet.

1. Insert an HLI-ET2 Ethernet interface module in the Main Station. Use any of the three slots available.

   ***Note**: Ensure that the Main Station is powered down before inserting modules.*

2. Connect a regular Ethernet cable (for example, CAT5, CAT5e, CAT6, CAT6e) from one HLI-ET2 port on one station to the Remote or Speaker Station.
3. Connect an external AC/DC power adapter to the Remote or Speaker Station
4. Power up both Stations. Verify that the green LEDs on the HLI-ET2 port and on the Remote or Speaker Station are on.
5. Go to **Networking->Pair to Station->By Name** on the Remote or Speaker Station. You should see one entry indicating that the Remote or Speaker Station has properly detected the Main Station. Select this entry.
6. Go to **Station Settings->Keyset Assign** and assign Channels to any keyset, or use the CCM to create Roles.



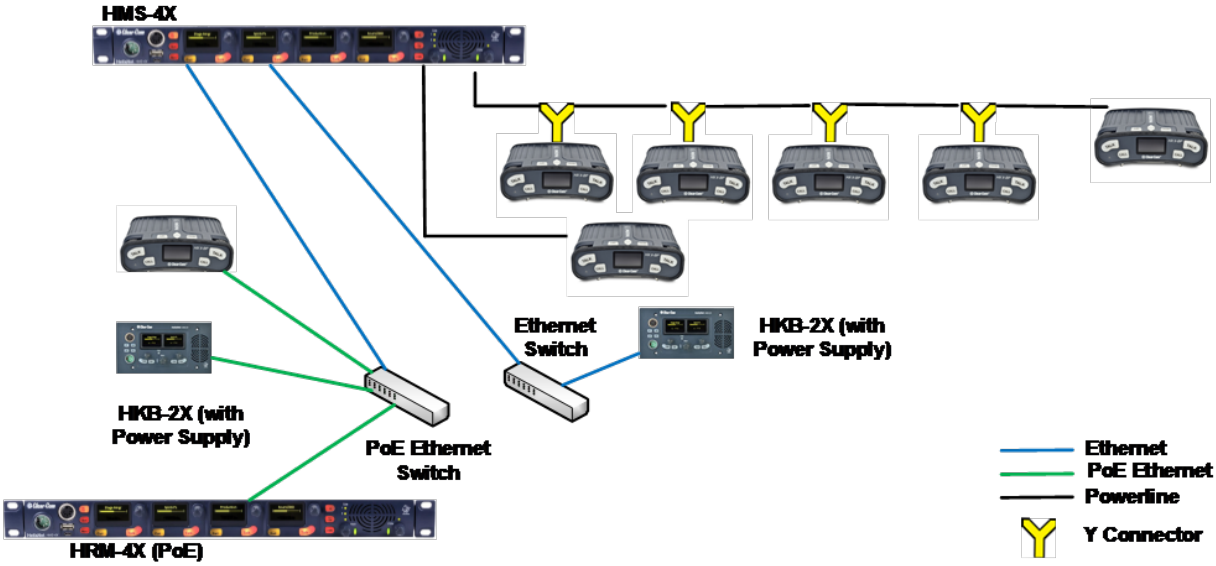
18.1.3 Local IP Network

1. Insert an HLI-ET2 Ethernet interface module into the Main Station. Use any of the three slots available.

   ***Note**: Ensure that the Main Station is powered down before inserting modules.*

2. Connect a regular Ethernet cable (for example, CAT5, CAT5e, CAT6, CAT6e) from one HLI-ET2 port to an Ethernet Switch and connect Remote or Speaker Stations to Ethernet Switch as well.
3. Connect an external AC/DC power adapter to the Remote or Speaker Station or connect them on a Power over Ethernet (PoE) port on the Ethernet Switch.
4. Power up all Stations. Verify that the green LED on the HLI-ET2 port and on the Remote or Speaker Station is on.
5. Go to **Networking->Pair to Station->By Name** on each Remote and Speaker Station. You should see one entry indicating that the Remote or Speaker Station has properly detected the Main Station. Select this entry.

6. Go to **Station Settings->Keyset Assign** and assign Channels to any keyset, or use the CCM to create Roles.



18.1.4 Remote IP Network

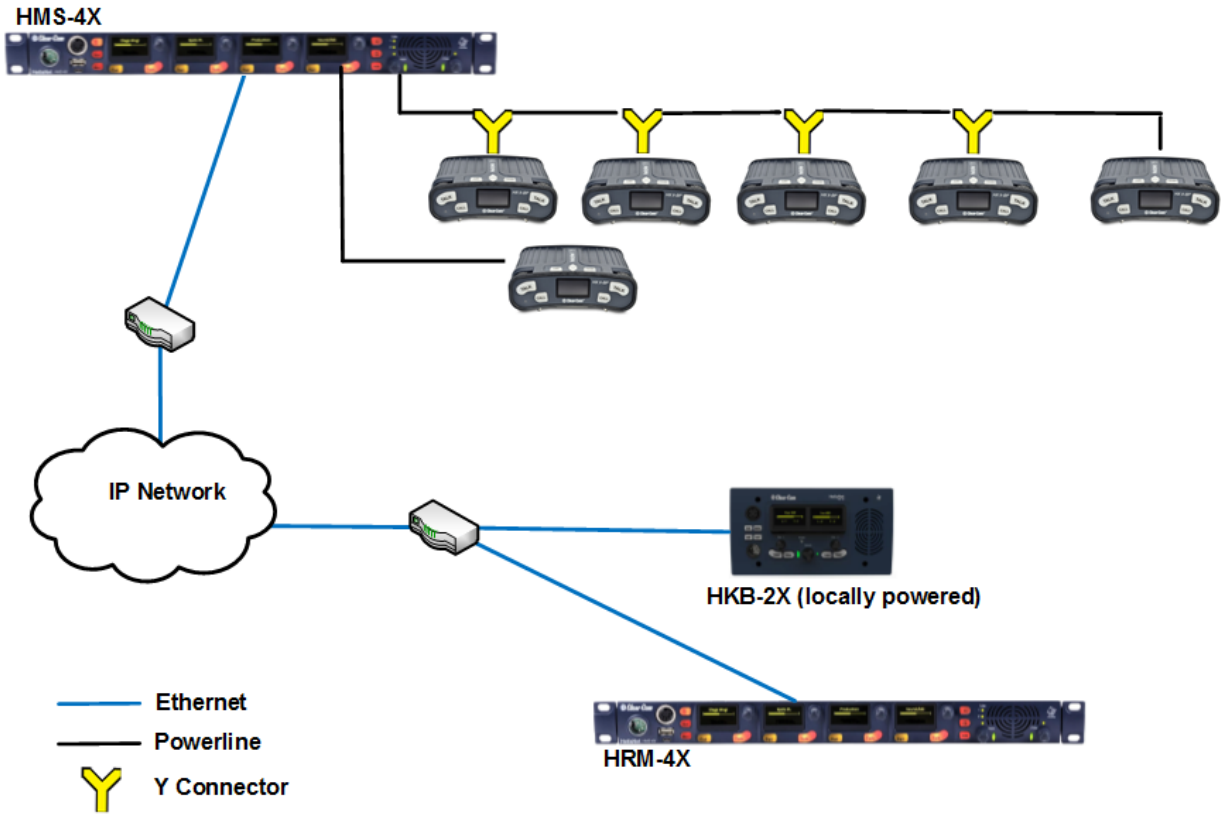
Remote and Speaker Stations can connect to a Main Station that is not within the same network Broadcast Domain.

1. Insert an HLI-ET2 Ethernet interface module in the Main Station. Use any of the three slots available.

   ***Note**: Ensure that the Main Station is powered down before inserting modules.*

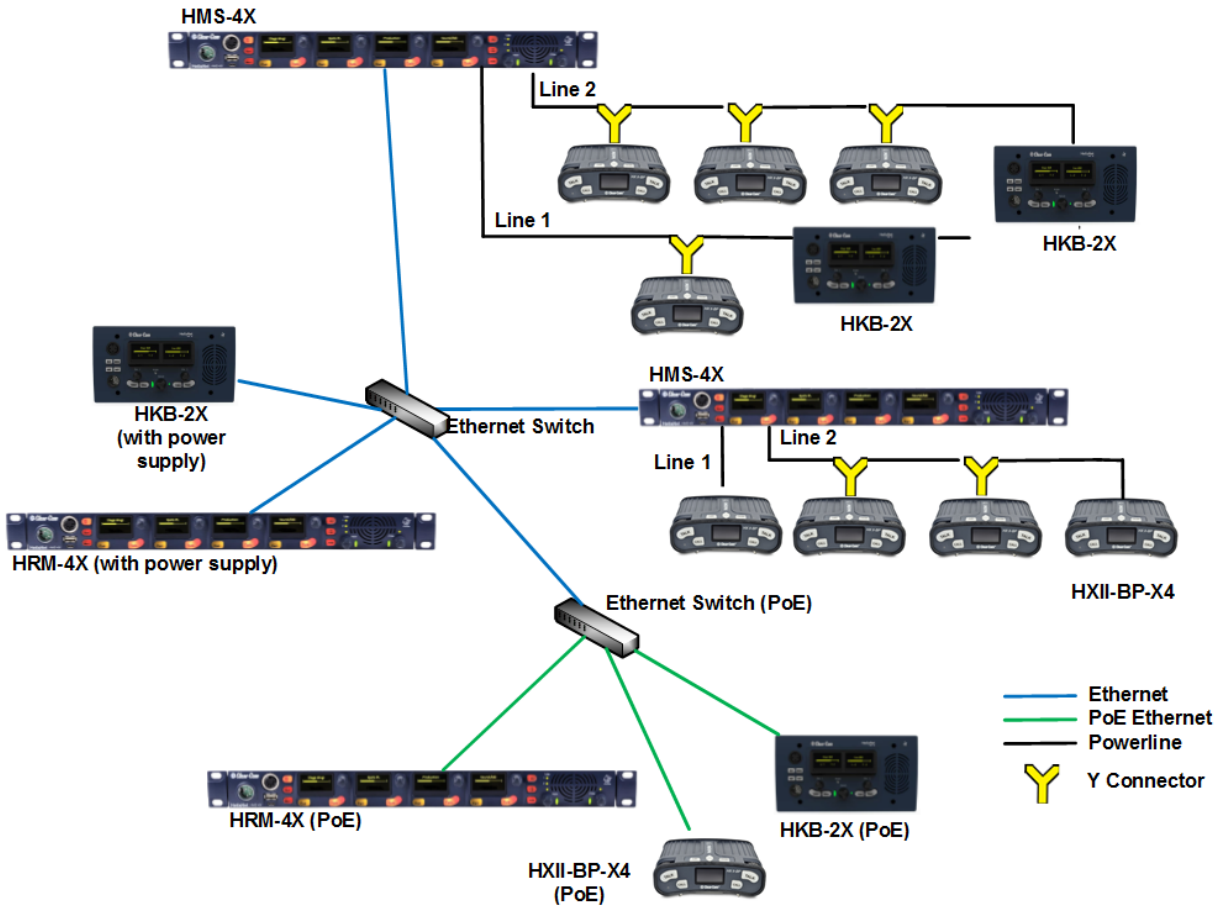
2. Connect a regular Ethernet cable (for example, CAT5, CAT5e, CAT6, CAT6e) from one HLI-ET2 port to a Router/Gateway. Make sure you know the Gateway IP address for that first subnet.
3. Connect Remote or Speaker Stations to a Router/Gateway. Make sure you know the Gateway IP address for that second subnet.
4. Connect an external AC/DC power adapter to the Remote or Speaker Station or connect them on a Power over Ethernet (PoE) port on the Ethernet Switch.
5. Power up all Stations. Verify that the green LED on the HLI-ET2 port and on the Remote or Speaker Station is on.
6. On the Main Station, go to **Networking->Preferences->IP Address** and note the IP address of the Main Station. Make sure that **Networking->Preferences->Gateway and Networking->Preferences->Subnet** match that of your local subnet, including the Gateway setting.

7. On each Remote and Speaker Station make sure that all **Networking > Preferences** match that of your remote subnet, including the Gateway setting.
8. On each Remote and Speaker Station go to **Networking->Link to Station->By Address** and enter the IP address of the Main Station.
9. Go to **Station Settings->Keyset Assign** and assign Channels to any keyset, or use the CCM to create Roles.



18.1.5 Mixed Linking

Here is one example of how all the previous linking could be mixed with Main Station Linking.



18.2 Networking Specifications

Specification	Value
Latency on Powerline	40-80ms (depends on the distance and the number of Devices (HBP, HRM, HKB) on the line. More distance or more Devices means more latency)
Latency over IP Network	30ms + Network Latency
Bandwidth used	HRM-4X: 600 kbps to the Main Station, 2.5 Mbps from the Main Station. HKB-2X: 300 kbps to the Main Station, 1.5 Mbps from the Main Station.
IPv4	UDP Port 6001 (Digital Intercom) UDP Port 5353 (mDNS) TCP Port 6001 (Digital Intercom) TCP Port 655 (HMS linking)

Specification	Value
	TCP Port 80 (HTML, CCM, Expansion)

19 Connecting to other Intercom Systems

This section provides basic guidance on connecting your HelixNet Partyline system to a range of other intercom systems, including:

- Two-wire cabled Partyline systems (RTS and Clear-Com Encore®).
- Four-wire wireless systems (FreeSpeak II the DX210).
- Digital matrix systems (Eclipse® MVX four-wire).
- Two-way radio systems.
- Linking to LQ devices.

The HMX-4X Main Station is connected to these systems using the optional Two-wire and Four-wire interface modules.

19.1 Connecting LQ to HelixNet

19.1.1 About LQ™

LQ™ linking facilitates interfacing to any 2-wire partyline, 4-wire and 4-wire+GPIO endpoints either local or remote over any IP network.

The product line provides a unique combination of low latency with exceptional audio quality and an intuitive, easy to use design.

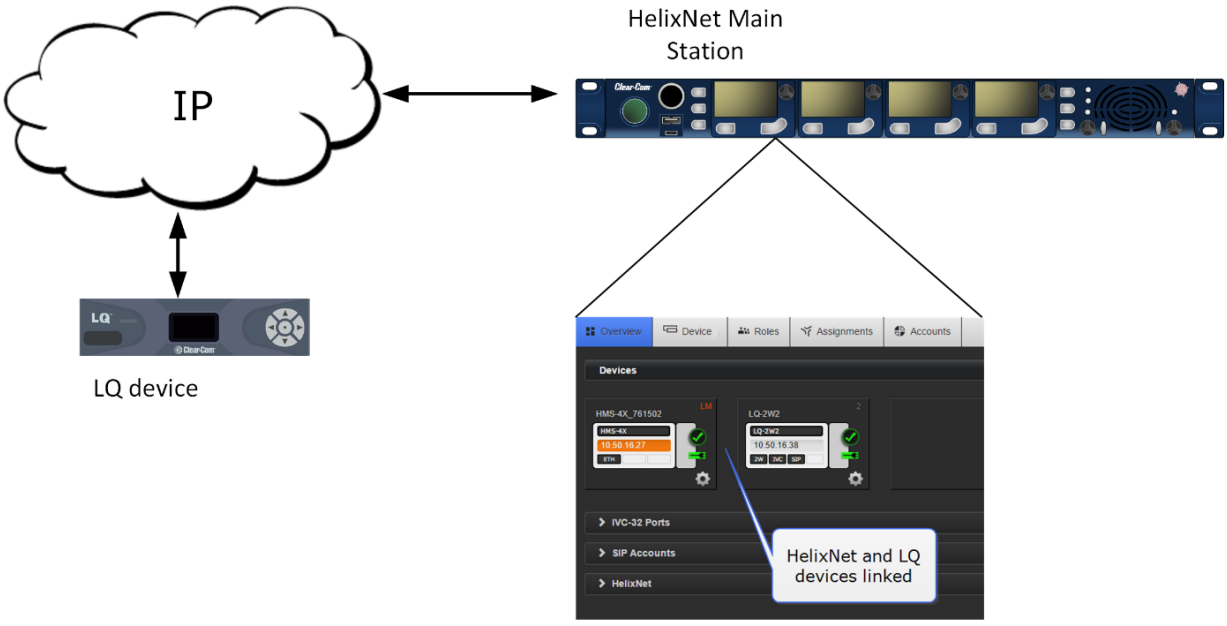
19.2 LQ to HelixNet connectivity

Linking one or more LQ units to a HelixNet Main Station (HMS) in a Link-Group is a way of greatly increasing the number of I/O interfaces available in your HelixNet intercom system.

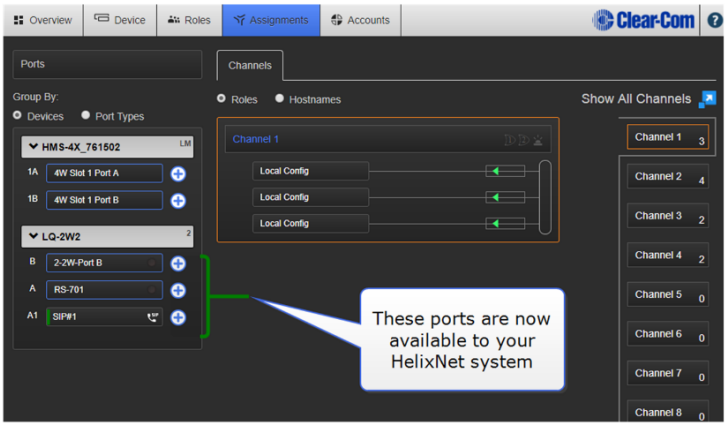
Linking HelixNet and LQ also brings Agent-IC, SIP and Eclipse (IVC) connectivity into your HelixNet system.

19.2.1 HelixNet/LQ Link-Group

Once an LQ unit is linked to an HMS in a Link-Group, all ports on the LQ unit are visible in the CCM and available to be placed in a HelixNet Channel. Once a port is in a Channel, audio from that port can be routed anywhere within the system.



Core Configuration Manager (CCM): **Overview** page



CCM: **Assignments** page

Connecting an HMS and an LQ unit also brings the possibility of Agent-IC, SIP and IVC connectivity into your HelixNet intercom system (according to license for Agent-IC and SIP).

Notes *A HelixNet/LQ Link-Group supports up to 5 linked Main Stations and up to 5 linked LQ units to a Link Master (to a maximum of 6 devices in total).*

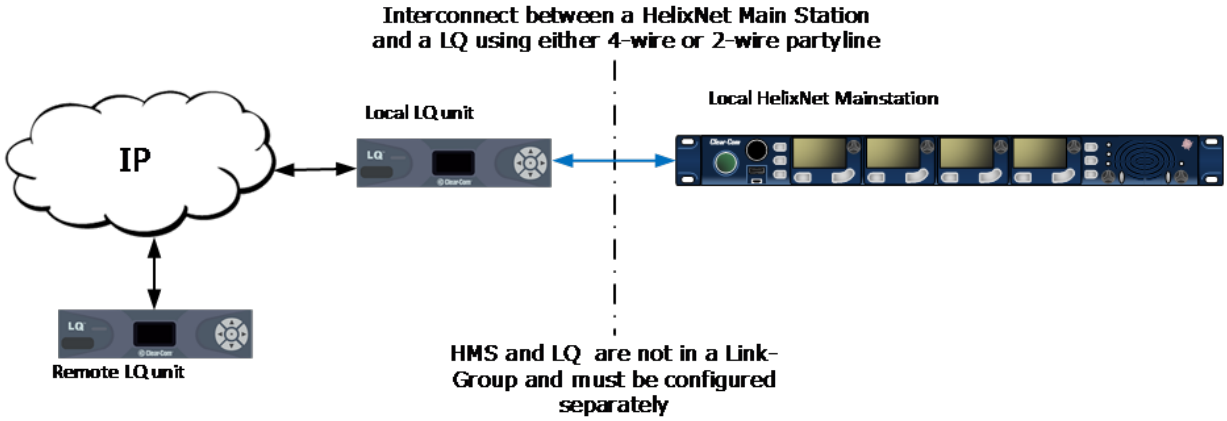
The HMS must always be the Link-Master in a HelixNet/LQ Link-Group.

The following limitations are imposed when LQ devices are linked to a HelixNet Link-Group:

- Creation or use of Direct Connections
- Interconnection of Clear-Com panels over 4-wire
- No SIP hang up capability through the HMS Front panel

19.2.2 Connecting HelixNet and LQ Using an Analog Connection

Interconnecting HelixNet and LQ equipment using either 4-wire or 2-wire interfaces is possible and only serves as a means of transporting one channel of audio along with call signalization per connection.



For more information, see Program a HelixNet/LQ Link-Group.

19.2.3 Programming a HelixNet/LQ Link-Group

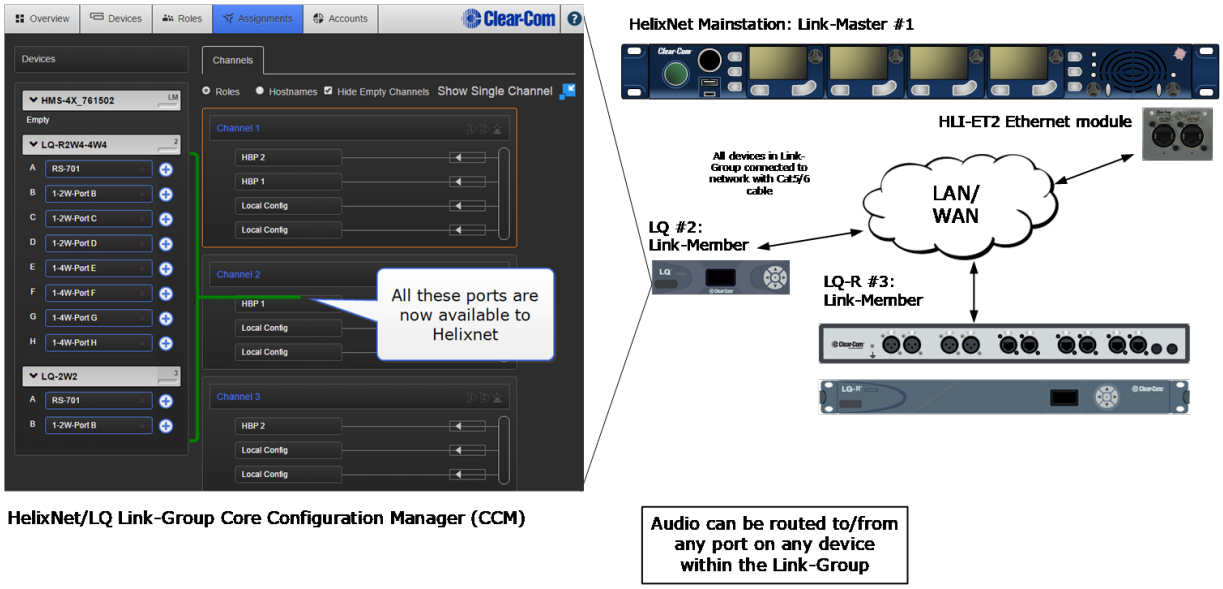
The HelixNet Main Station that has been designated as the Link-Master must be reachable on an IP network by all other Link-Members.

***Note**: The HLI-ET2 module must be fitted to the HelixNet Main Station for IP connectivity*

To access the Core configuration manager (CCM), input the IP address of each device into the address field of a browser. Enter the default login credentials: admin, admin.

Once LQ and HelixNet devices have been joined to a Link-Group, they can be monitored and configured from any device within that group.

An LQ/HelixNet Link-Group supports up to 3 linked HelixNet Main Stations and up to 3 linked LQ units (a maximum of 6 devices in total).

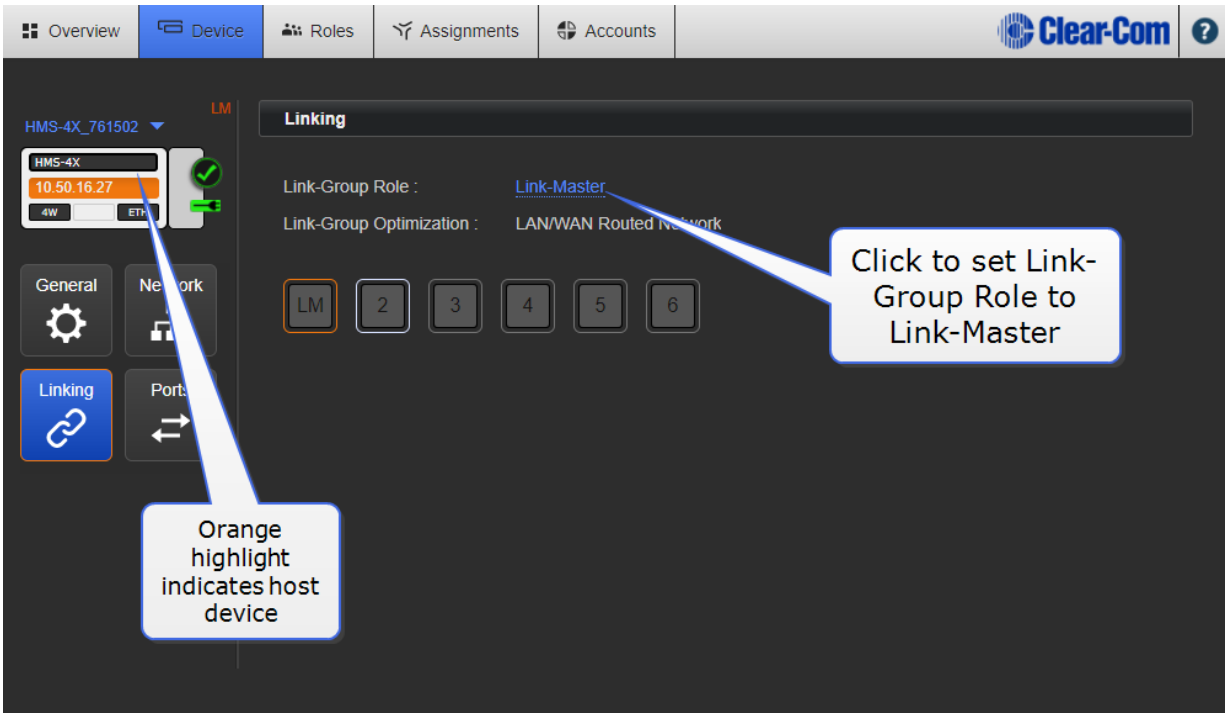


19.2.4 Creating a HelixNet/LQ Link-Group

1. To access the HelixNet Core Configuration Manager, enter the IP address of the HelixNet Main Station, as displayed on the front panel, into the address field of your browser. If the unit is reachable over your network, this will take you to the **Overview** page of the CCM that is served by the unit.

   ***Note**: For CCM username and password see CCM password.*

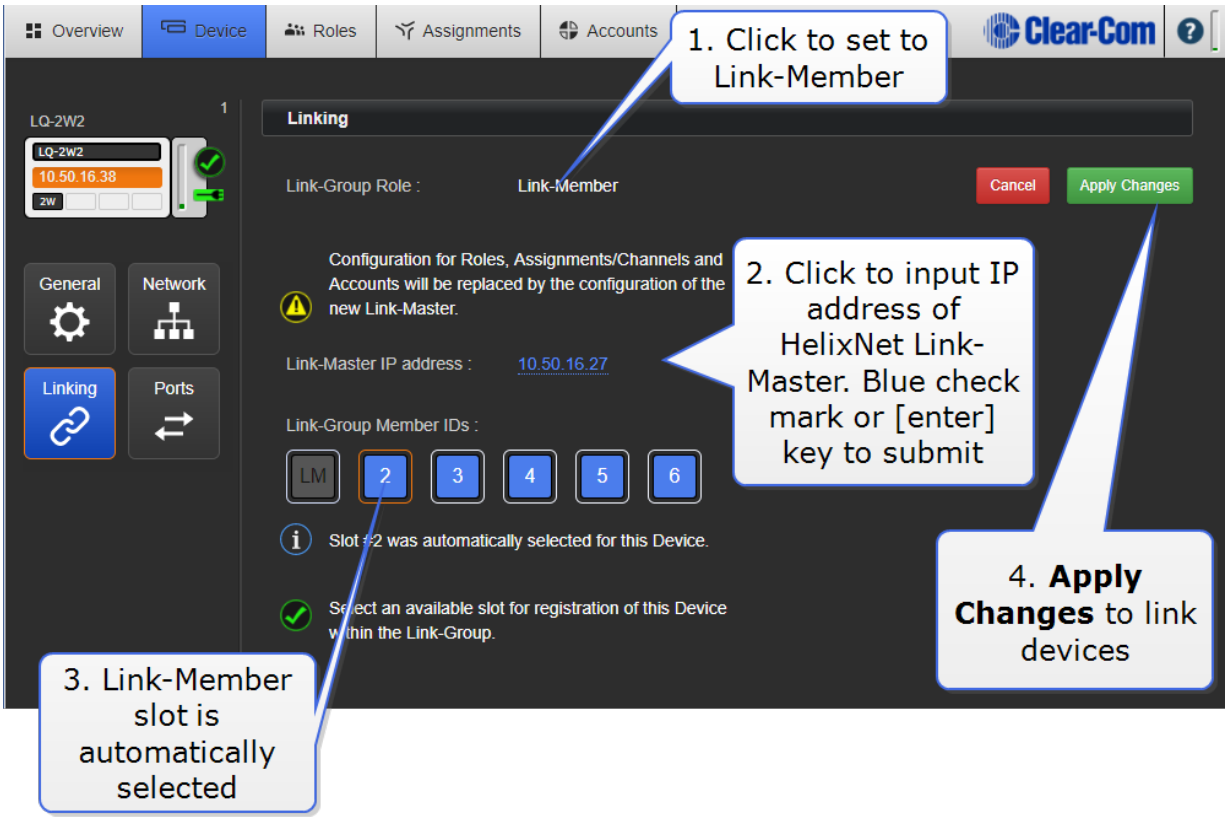
2. Ensure the HelixNet device is set to Link-Master in the CCM of the Main Station. Navigate to **Device/Linking/Link-Group Role**.



***Note**: Default Link-Group Role for an HMS is **Disabled**.*

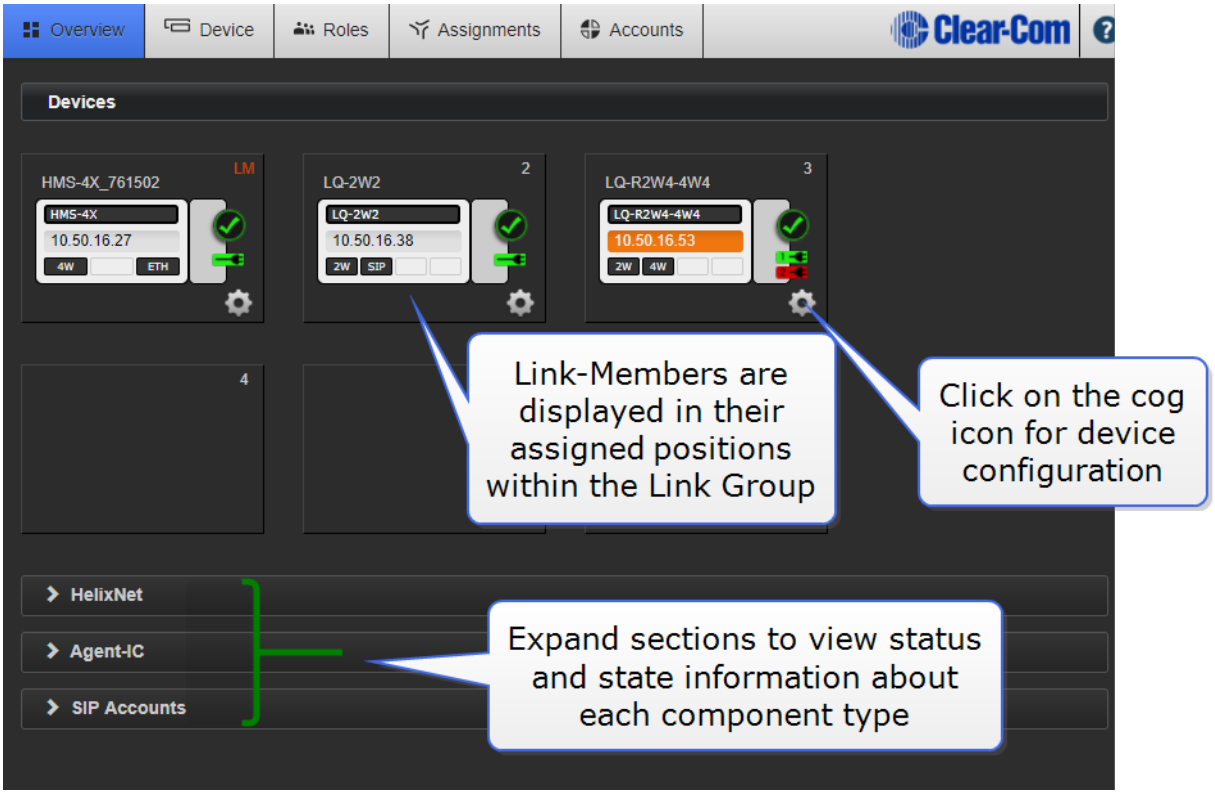
***Note**: The host device is the device your browser is currently pointing to.*

3. To access the LQ CCM, enter the IP address of the LQ device, as displayed on the front panel, into the address field of your browser. If the unit is reachable over your network, this will take you to the **Overview** page of the CCM that is served by the unit.
4. Set Link-Group Role of LQ unit to **Link-Member**. Navigate to **Device/Linking/Link-Group Role**.
5. Enter the Link-Master IP address.

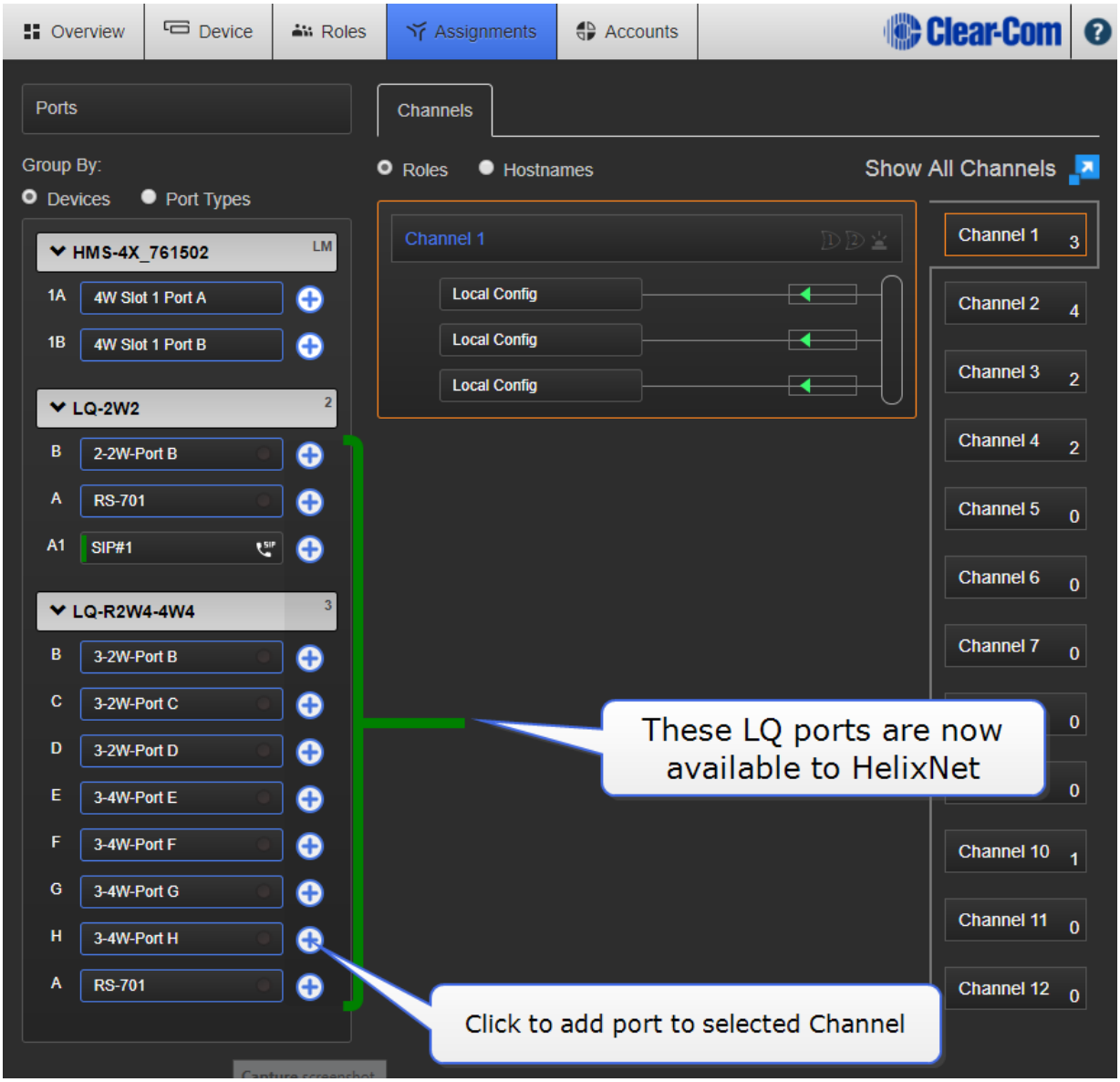


6. For each device to be added to the Link-Group, input the device IP into the browser's address field to access the CCM, designate the device as Link-Member and give it the Link-Master IP address (this links the device to the group).

***Note**: Once you have linked the members to the master, all devices in the Link-Group will be visible in the Overview page of the CCM.*



7. Navigate to the Assignments page to create, configure and view how audio is routed throughout the system. All ports on the LQ units will now be visible and available for assignment into one or more channels.



19.3 Connecting HelixNet Partyline to Encore®

19.3.1 About Encore

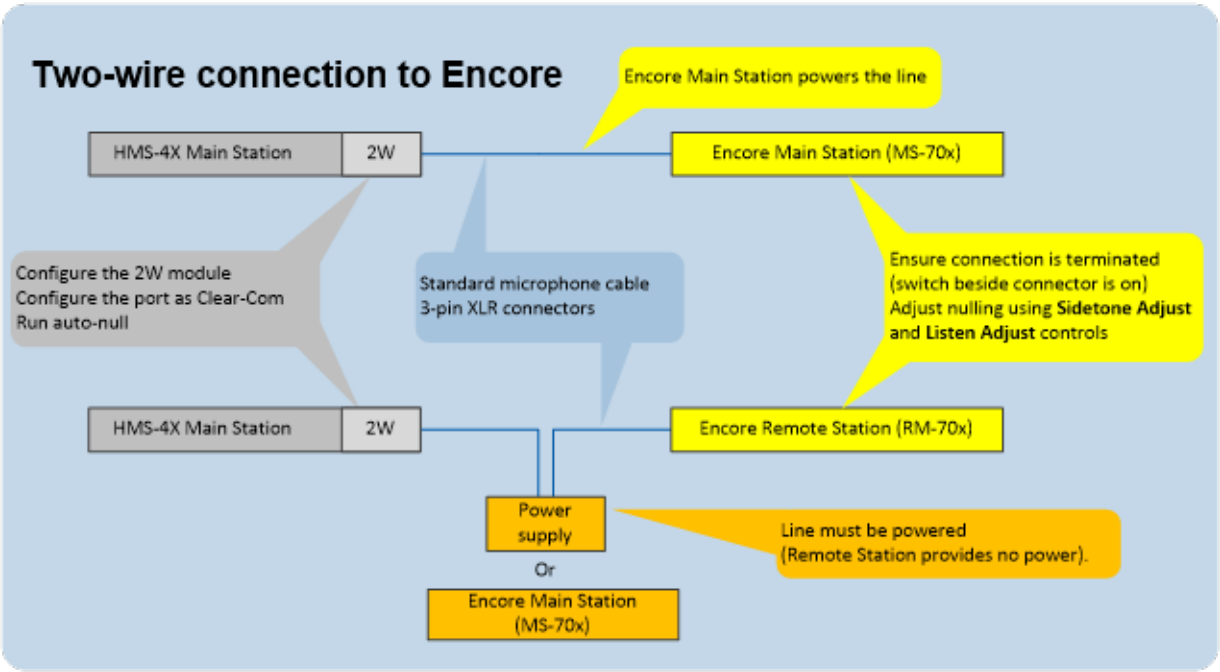
Encore is the plug-and-play analog two-wire Partyline system from Clear-Com.

Clear-Com Encore is widely used in theaters, schools, local broadcast stations, churches and other small to mid-size live productions.

Two and four Channel versions of the Encore Main Stations and Remote Stations are available.

Tip: For more information about Encore, see your **Encore documentation** or visit the **Analog Partyline Intercom** pages on the Clear-Com website:
http://www.clearcom.com/product/Partyline

19.3.2 Quick Reference: Connecting to Encore



19.3.3 Connecting to an Encore Main Station

Notes: *The following procedure assumes that a two-wire interface module has been fitted to the HMS-4X Main Station. For more information about interface modules, see HMS-4X Main Station rear panel: Interface modules*

A HelixNet system with HLI-2W2 must be able to receive power from an analog Partyline

To connect your HelixNet Partyline system to an Encore Main Station (for example, the four Channel **MS-704**):

1. On the HMS-4X Main Station, configure the **Module Settings** for the two-wire interface module (**Menu mode > Module Settings**). For the full procedure, see Configuring a Two-wire interface module

   Note: *Check that the two-wire module is configured for **Clear-Com systems** (the default) and run the **Auto-null**. Auto-nulling helps to reduce echo while talking on a two-wire audio system. You must run auto-null every time you change the cabling.*

2. Physically connect the HMS-4X Main Station to the Encore Main Station, using the 3-pin XLR connectors:

   - On the HMS-4X Main Station two-wire interface module.
   - On the back panel (rear) of the Encore Main Station.

There are four Channels (A, B, C and D), comprising two 3-pin XLR connectors, on the MS-704.

Connect to the selected Channel using standard microphone cabling.

***Note**: The Two-wire module will not function without an attached power supply on the analog side of the interface.*

Ensure that the connection is terminated (using the termination switch beside the connectors). The default position for the switch is on.

To adjust nulling on a Channel on the Encore Main Station (MS-704):

1. Turn the screwdriver-adjustable **Sidetone Adjust** control (just below the headset connector) to the appropriate level.
2. Turn the screwdriver-adjustable **Listen level** control (the null control, located just below the Channel **Talk** button and **Call** LED) for the Channel to the appropriate level.

   Tip: If the headset microphone is being used, hum or gently scratch the mic for a continuous signal source to null on. If a good null is not attainable, switch the **Long / Short DIP switch** for the Channel to its opposite setting. Use the setting that produces the best audio quality.

   To optimize audio quality, you may also want to adjust the **Audio Settings** on the HMS-4X Main Station. For more information, see Configuring the Audio Settings.

   Tip: The amount of null that is required changes when you add or remove devices, or alter the length of the cabling. For optimum performance, Clear-Com recommends that you adjust the nulling every time you make a change to the system configuration.

   ***Note**: Ensure that all Talk keys/routes are disabled before auto-nulling commences.*

19.3.4 Connecting to Encore Remote Stations

Connecting to an Encore Remote Station (for example, the RM-704) is similar to connecting to an Encore Main Station (see Quick reference: Connecting to Encore)

You will require a **separate power supply**, for example, the PS-702 (two Channel) or PS-704 (four Channel) power supply, to power the Remote Station which is unpowered and any connected wired beltpacks.

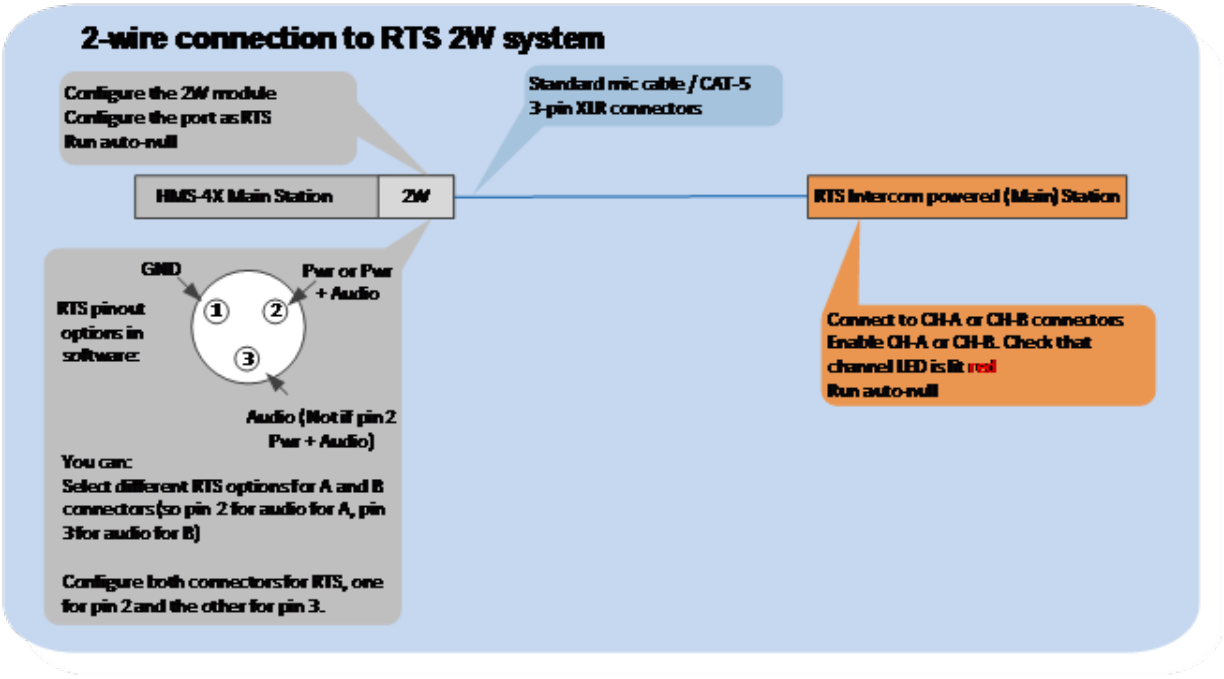
19.4 Connecting HelixNet Partyline to RTS (Telex) two-wire systems

19.4.1 About RTS two-wire systems

HelixNet Partyline is also designed for interoperability with RTS (Telex) TW (two-wire) analog Partyline systems from Telex.

RTS two-wire systems include fully programmable intercom (main) stations, remote Speaker Stations, two-wire beltpacks, and two-wire power supplies.

19.4.2 Quick Reference: Two-Wire Connection to RTS 2W system



19.4.3 Connecting to an RTS (Telex) Intercom Station

To connect your HelixNet Partyline system to an RTS intercom station (in this case, the 2 Channel MCE325 user station):

1. On the HMS-4X Main Station, configure the **Module Settings** for the two-wire interface module.

   For the full procedure, see Configuring a Two-wire interface module.

   Ensure that you:

- **Configure port(s) for RTS systems**. You can select from two different pinouts when connecting to an RTS two-wire system:

RTS pinout option	Description
RTS Audio Pin 2	Pin 2 is used for both power and audio.
RTS Audio Pin 3	Pin 3 is used for audio (Pin 2 is used for power only).

- **Run auto-null**. Auto-nulling helps to reduce echo while talking on a two-wire audio system. You must run auto-null every time you change the cabling.

2. Physically connect the HMS-4X Main Station to the RTS intercom station (MCE325). The two Channels of RTS TW intercom must be split prior to connection with either of the Two-wire module ports. RTS Audio Pin 2 carries the power that is required for the Two-wire module.

   Powering the connection:

   You must power the connection between the systems using either a dedicated power supply or an RTS power supply.

   Connecting to the MCE325 device:

   There are three 3-pin XLR connectors on the rear panel of the MCE325 device. In two-wire mode:

   - The left and right-hand connectors are used for intercom Channels 1 and 2 input/ output.
   - The center connector is used for Channels 3 and 4 input / output.
   - Connect to the selected Channel using standard microphone cabling.

   ***Note**: The MCE325 is designed for use with intercom lines with a 200-Ohm line terminating impedance. A 200 Ohm termination plug is connected to the center 3-pin XLR connector to prevent Channels 3 and 4 from oscillating when the MCE325 is in two-Channel mode.*

3. On the RTS device (in this case, the MCE325), adjust the nulling (if necessary) on the Channel to which the HMS-4X Main Station is connected.

   Nulling helps to reduce echo while talking on a two-wire audio system. A **sidetone nulling trimmer** (control) is provided for each of the four Channels on the device.

   To adjust a sidetone nulling trimmer:

   a. Turn the speaker switch on (even if an external speaker is not connected). This turns off the internal sidetone trimmer, which controls the sidetone level in headsets.

   b. Turn on the microphone. Activate the relevant **Talk** button and speak into the microphone.

   c. To minimize echo, adjust the **sidetone nulling trimmer** (located under the **CH1** and **CH2** rotary controls).

***Note**: The default setting for each trimmer is for maximum nulling of the microphone signal when a 200-ohm resistance terminates the Channel. However, you may have to adjust the nulling according to the system configuration.*

19.5 Four-Wire Connection to FreeSpeak II Base II

FreeSpeak II is a five-channel, full-duplex wireless intercom solution (1.9 GHz & 2.4 GHz), ideal for large-scale, complex designs or specialized applications.

To connect your HelixNet Partyline system to a FreeSpeak II Base II, using a four-wire connection:

1. From the FS II Base II Station Core Configuration Module (CCM), select **Home > Ports > to panel**.
2. Connect the HMS-4X Main Station and the FreeSpeak II Base II, **using four-wire straight CAT5 cabling**.
3. Adjust the audio levels as required.

19.6 Connecting HelixNet Partyline to the DX210/DX410

19.6.1 About the DX210

The Clear-Com HME DX210 is a 2 Channel wireless intercom system. The base station (Main Station) supports up to 15 beltpacks or all-in-one headsets (headsets operating as beltpacks).

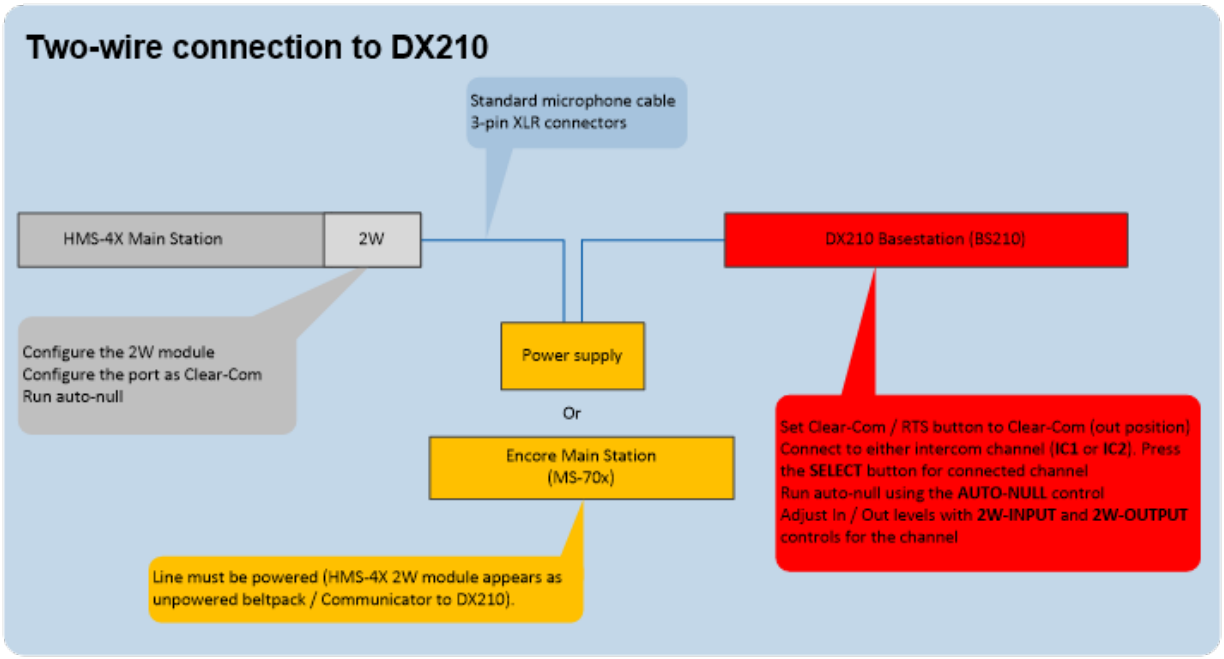
The DX210 supports Clear-Com and RTS cabled two-wire intercom systems, and also has four-wire and auxiliary audio connections.

The DX210 operates in the license-free 2.4GHz band, and has provisions for spectrum-friendly co-existence with other devices in the same band.

***Note**: Settings for the DX210 and the DX410 are the same.*

Tip: For more information about the DX210, see your DX210 documentation or visit the wireless intercom pages on the Clear-Com website: http://www.clearcom.com/product/wireless

19.6.2 Quick Reference: Two-Wire Connection to DX210



19.6.3 Two-Wire Connection to the DX210

To connect your HelixNet Party-line system to the DX210 base station (Main Station), using a two-wire connection:

1. On the HMS-4X Main Station, configure the **Module Settings** for the Two-wire interface module. For the procedure, see Configuring a Two-wire interface module

   ***Note**: Check that the two-wire module is configured for **Clear-Com systems** (the default) and run **Auto-null**. Auto-nulling helps to reduce echo while talking on a two-wire audio system. You must run auto-null every time you change the cabling.*

2. On the rear panel of the DX210 base station, ensure that the **Clear-Com / RTS** button is set to **Clear-Com** mode (the **out position**).

3. Physically connect the HMS-4X Main Station to one of the two intercom Channels on the DX210 base station (Main Station).

   Powering the connection:

   You must power the connection between the systems using either a dedicated power supply (such as the PK-7, PS-702, or PS-704), or a powered Encore Main Station (such as the MS-702 or MS-704).

   Tip: For more information about the dedicated power supply devices (PK-7 or PS-70x devices) from Clear-Com, see

http://www.clearcom.com/product/Partyline/power-supplies

Tip: For more information about the dedicated power supply devices (PK-7 or PS-70x devices) from Clear-Com, see http://www.clearcom.com/product/Partyline/power-supplies

Connecting the systems:

Use standard microphone cable to connect the two systems. 3-pin XLR connectors are located:

- On the HMS-4X Main Station two-wire interface module.
- On the back panel (rear) of the DX210 base station.

Two 3-pin XLR connectors (one male, one female) are provided for each of the two intercom Channels (**IC1** and **IC2**) on the base station.

4. On the front panel of the DX210 base station, press the **SELECT** button for the connected intercom Channel (either **IC1** or **IC2**).

   The **2-W** (two-wire) LED next to the **SELECT** button is lit green.

   ***Note**: If power is **not** detected at the connector, the **2-W** LED is lit red. No audio can be transmitted between the systems. When the HMS-4X Main Station is powered, power is supplied to the connection and the **2-W** LED is lit green.*

5. Apply auto-nulling to the connected Channel (either IC1 or IC2) on the DX210 base station. Auto-nulling helps to reduce echo while talking on a two-wire audio system. To apply auto-nulling:

   a. Insert a pen or similar pointed object into the **AUTO-NULL** hole on the front panel.

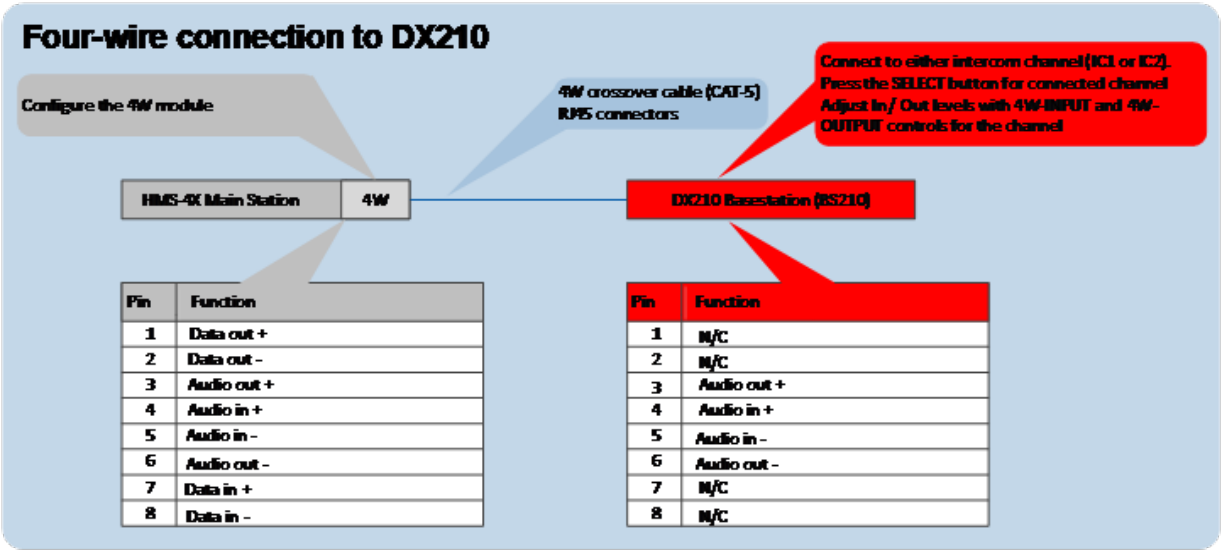
   b. Press and hold **AUTO-NULL** for 2 seconds.

   ***Note**: Before applying auto-nulling, ensure that there are no open microphones on the wired intercom. If users are wearing headsets, you must notify them of the audio-sweep that precedes the application of auto-nulling.*

1. Adjust the two-wire intercom receive and send levels (in / out levels), using the **2-W INPUT** and **2-W OUTPUT** controls for the connected Channel (IC1 or IC2) on the DX210 base station front panel. For more information, see your **DX210 documentation**.

   Tip: To optimize audio quality, you may also want to adjust the **Audio Settings** on the HMS-4X Main Station. For more information, see Configuring the Audio Settings.

19.6.4 Quick Reference: Four-Wire Connection to DX210



19.6.5 Four-wire Connection to the DX

To connect your HelixNet Partyline system with a DX base station, using a four-wire connection:

1. On the HMS-4X Main Station, configure the **Module Settings** for the Four-wire interface module. See Configuring a Four-wire interface module.

2. Connect the HMS-4X Main Station and the DX base station, using four-wire crossover CAT5 cabling.

   ***Note**: For pinout information for the two systems, see the **quick reference diagram** in Configuring the Audio Settings.*

   RJ45 connectors are located:

   - On the HMS-4X Main Station Four-wire interface module.
   - On the back panel (rear) of the DX base station.

     There is an RJ45 (four-wire) connector for each of the intercom Channels on the DX base station (**IC1** and **IC2**). Connect the systems with a four-wire crossover CAT5 cable.

3. Adjust the **In/Out** volume levels, using the DX front panel display. For more information, see your **DX documentation**.

   Tip: To optimize audio quality, you may also want to adjust the **Audio Settings** on the HMS-4X Main Station. For more information, see Configuring the Audio settings.

19.7 Connecting HelixNet Partyline to Eclipse®

19.7.1 About Eclipse

Eclipse is the digital matrix system from Clear-Com. A wide choice of system frames, system cards and modules enables the unification of multiple intercom systems (digital, analog, wired and wireless) in a single intercoms infrastructure.

Eclipse is configured, managed and maintained using the intuitive Eclipse Configuration Software (EHX). The Production Maestro® software provides a centralized routing tool, to assist with four-wire configurations. Logic Maestro is a graphical programming tool for EHX, simplifying the design and programming of complex logical functions.

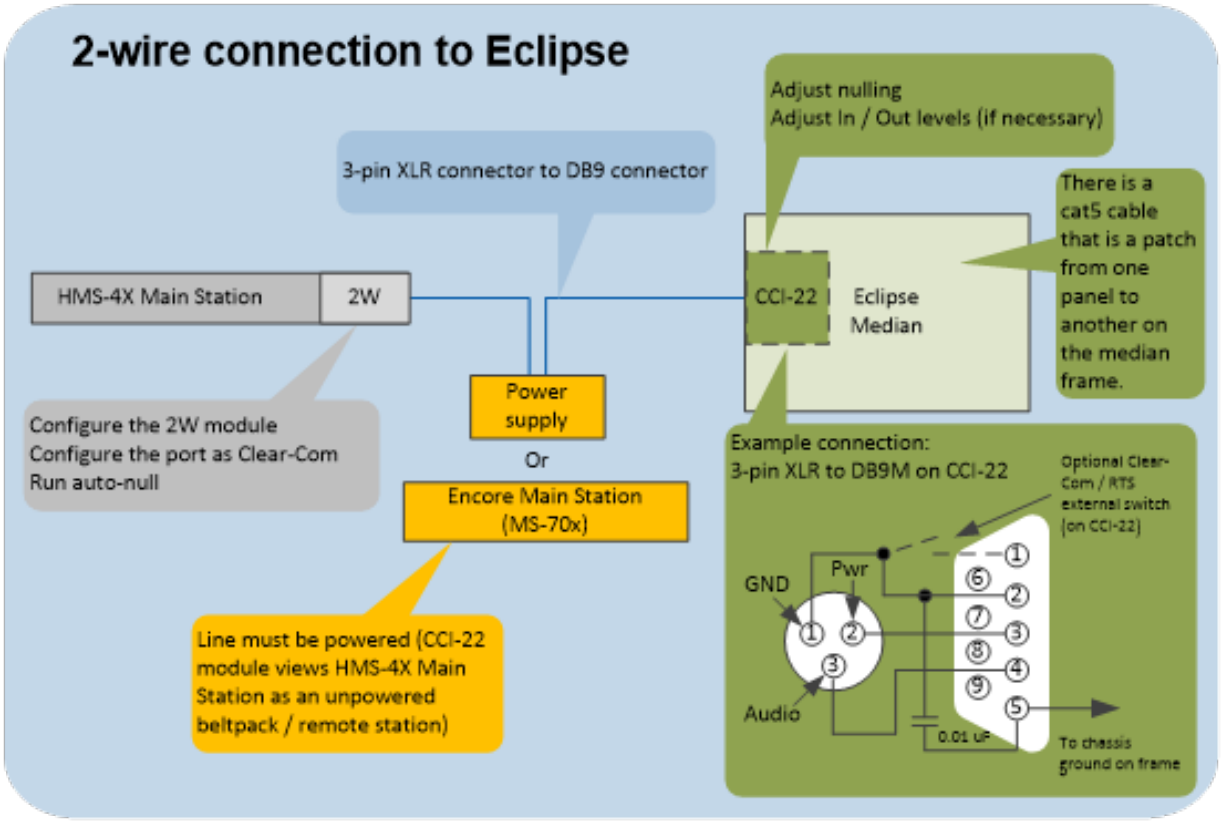
The following procedures reference the following Eclipse devices:

The Eclipse or Eclipse-HX system frame. For example, the Eclipse Median is a 6RU frame that houses 2 CPU and 7 matrix slots with 8 built-in interface module slots.

The CCI-22 interface module. The CCI-22 is the two-wire party-line interface (Clear-Com and / or RTS) to Eclipse. EHX views a direct, four-wire HelixNet Party-line connection with the system frame as a 'virtual' CCI-22 connection.

Tip: For more information about Eclipse, see your Eclipse / EHX documentation or visit the digital matrix pages on the Clear-Com website: http://www.clearcom.com/product/digital-matrix.

19.7.2 Quick Reference: Two-Wire Connection to Eclipse



19.7.3 Two-Wire Connection to an Eclipse or Eclipse-HX System Frame

To connect your HelixNet Partyline system to an Eclipse or Eclipse-HX System, using a two-wire connection:

1. On the HMS-4X Main Station, configure the **Module Settings** for the Two-wire interface module. For the procedure, see Configuring a Two-wire interface module.

   ***Note**: Check that the two-wire module is configured for **Clear-Com systems** (the default) and run **Auto-null**. Auto-nulling helps to reduce echo while talking on a two-wire audio system. You must run auto-null every time you change the cabling.*

2. Physically connect the HMS-4X Main Station (HLI-2W2) to the CCI-22 dual-Channel party-line interface module.

   The CCI-22 may be fitted:

   - Directly to an Eclipse or Eclipse-HX System.
   - An interface frame (such as the IMF-3 or IMF-102), connected to the Eclipse matrix.

Tip: For more information about installing and using the CCI-22, see the CCI-22 Manual, or go to: http://www.clearcom.com/product/digital-matrix/interface-modules/cci-22

Powering the connection:

You must power the connection between the HMS-4X Main Station (HLI-2W2) and the CCI-22 using either a dedicated power supply (such as the PK-7, PS-702, or PS-704), or a powered Encore Main Station (such as the MS-702 or MS-704).

Tip: For more information about the PK-7 or PS-70x power supply devices from Clear-Com, see http://www.clearcom.com/product/Partyline/power-supplies

Connecting the systems:

There are two parallel DB-9M Interface I/O connectors on the CCI-22. The two-wire module on the HMS-4X Main Station features two 3-pin XLR connectors. For more information about wiring the connection, see:

- **Quick Reference: Two-Wire Connection to Eclipse on page 223**
- The CCI-22 Manual.

3. Apply nulling to the connected Channel on the CCI-22. To null the Channel:
   a. Insert the accessory earphone into the front-panel **Test** jack. A test tone, for all frequencies, is produced every 0.5s.
   b. While listening to the test tone, adjust the **R** (Resistance) control until the tone is at a minimum.
   c. Repeat Step b. for the **L** (Inductance) and **C** (Capacitance) controls. These controls compensate for each component of the line's impedance, providing the best possible null.

   Because the **R, L** and **C** controls interact, you may have to adjust these controls several times to minimize the test tone / achieve a deep null.

   Note: *The null circuit on the CCI-22 is effective on line lengths between 0 - 4000 feet (1200m) with impedances in the range of 120 to 350 ohms. Nulling can reduce local audio in the received signal by < 30 dB over the 200 Hz - 8 kHz frequency range.*

Tip: For more information on the CCI-22 nulling circuit, see the **CCI-22 Manual.**

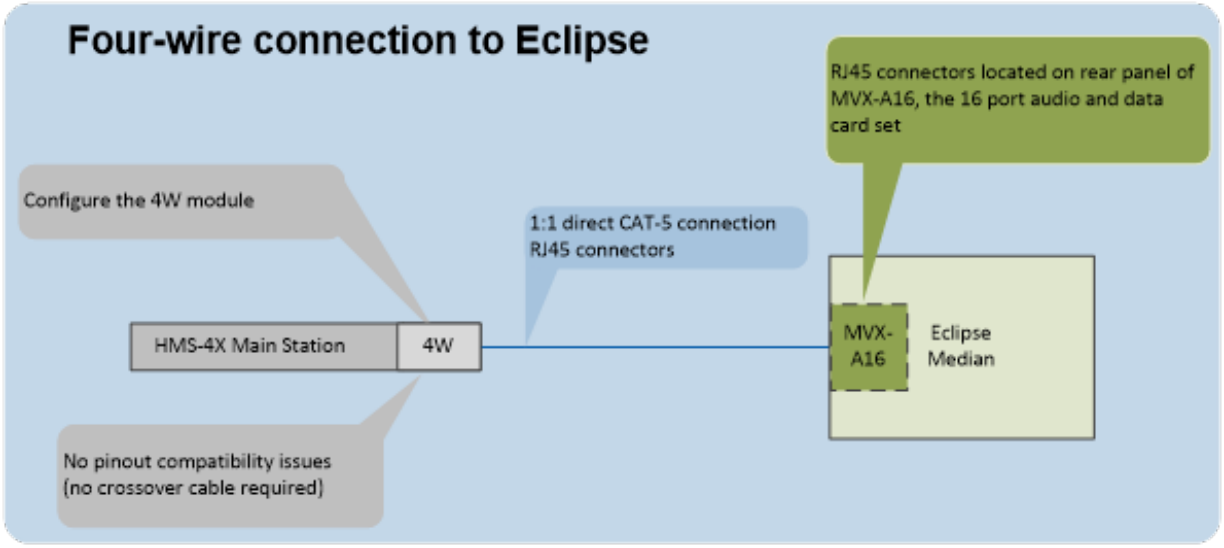
4. If necessary, adjust the **In/Out** level controls on the CCI-22 (**Send** and **Recv**, located on the front panel next to the **R, L** and **C** nulling controls).

   Note: The **Send** level control affects the level of the audio signals from the

   Eclipse Matrix to the external party-line, and the **Recv** control affects the level of the audio from the party-line into the matrix. The Send and Receive controls have a range of ± 13 dB.

Tip: For more information about managing the HelixNet to Eclipse connection in EHX, see your EHX documentation (including **Help**).

19.7.4 Quick Reference: Four-Wire Connection to Eclipse



19.7.5 Four-Wire Connection to Eclipse

To connect your HelixNet Partyline system to an Eclipse or Eclipse-HX System, using a four-wire connection:

1. On the HMS-4X Main Station, configure the **Module Settings** for the four-wire interface module. For the procedure, see **Configuring a Four-wire interface module.**
2. Connect the HMS-4X Main Station directly to the MVX-A16 card (the 16 port audio and data card set) with **standard** CAT5 cable.

   ***Note**: For pinout information for the two systems, see the **quick reference diagram** in Four-wire connection to Eclipse.*

   RJ45 connectors are located:

   - On the HMS-4X Main Station four-wire interface module.
   - On the rear panel of the MVX-A16 card.

Tip: To optimize audio quality, you may want to adjust the **Audio Settings** on the HMS-4X Main Station. For more information, see Configuring the Audio settings.

Tip: For more information about managing the HelixNet to Eclipse connection in EHX, see your EHX documentation (including EHX Help.)

19.8 Connecting HelixNet Partyline to Two-Way Radio Systems

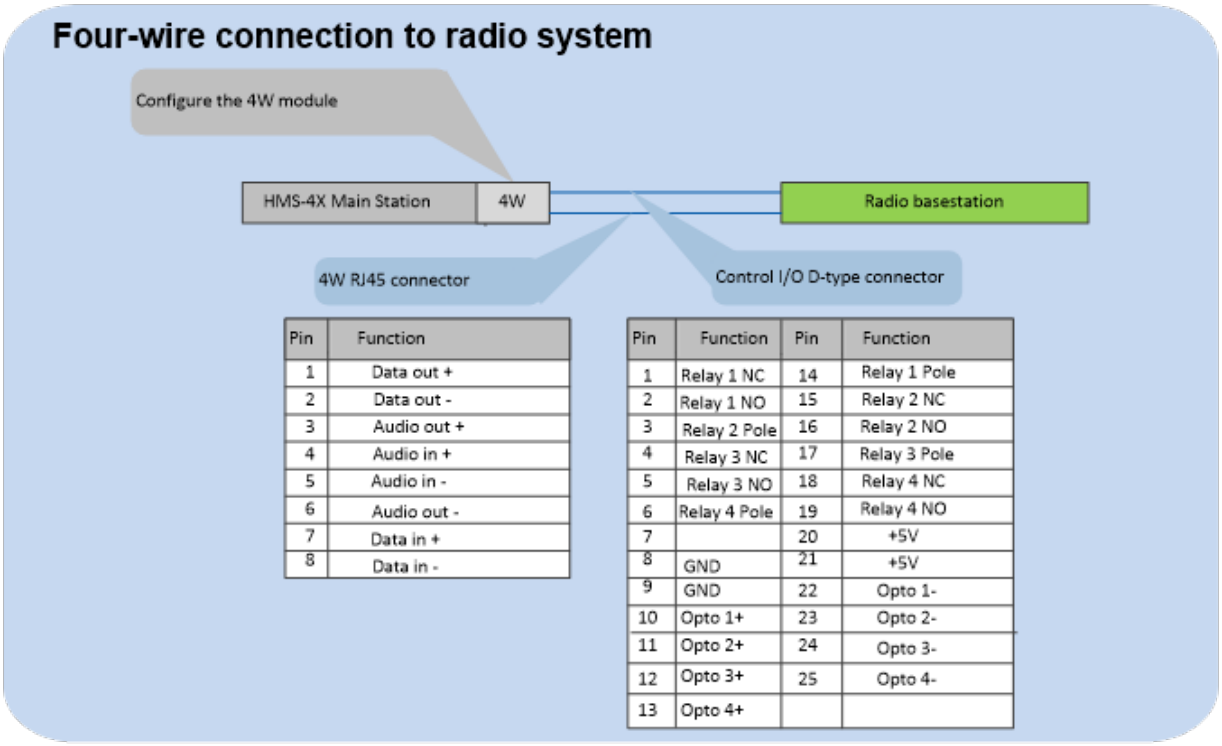
Two-way radio systems (also known as walkie-talkies) are widely used for wireless communication where quick deployment is a required.

HelixNet can interface to a two-way radio system audio along with transmit key control.

The following examples show how you can setup HelixNet to activate a relay on a Main Station or a Remote Station every time someone activates a Talk key on the selected Partyline Channel.

***Note**: HelixNet provides and expects 4W audio at line level (0dBu).*

19.8.1 Quick Reference: Four-Wire and Control Connection to Radio System



Pin	Function
1	Data out +
2	Data out -
3	Audio out +
4	Audio in +
5	Audio in -
6	Audio out -
7	Data in +
8	Data in -

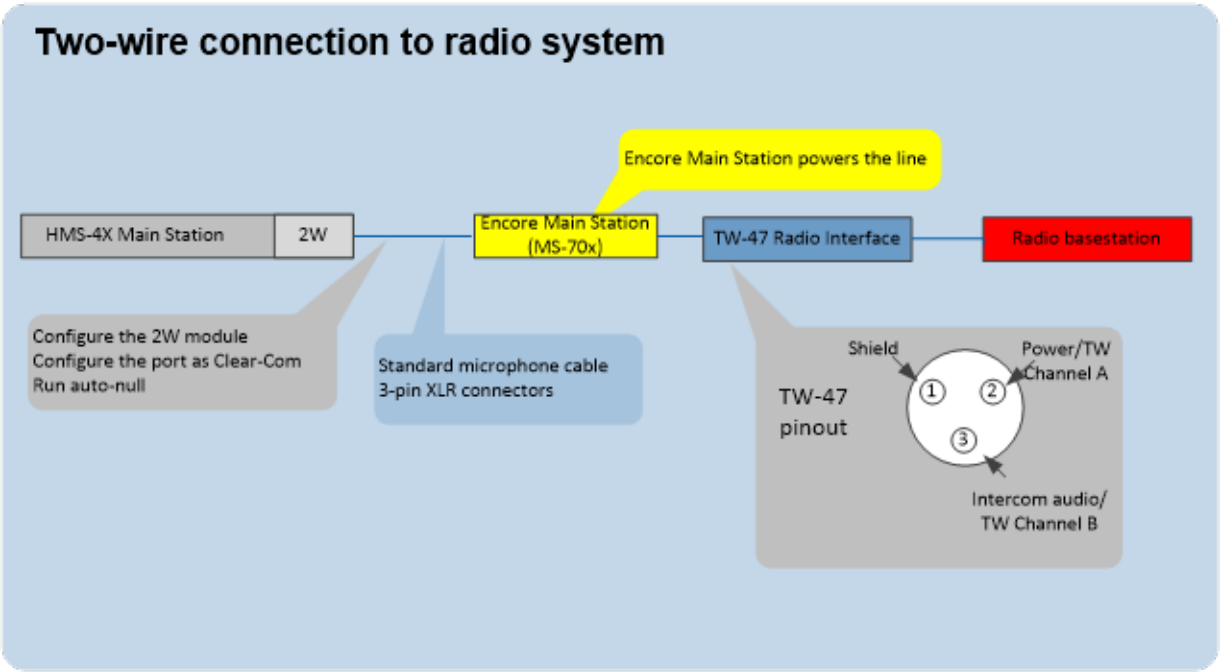
Pin	Function	Pin	Function
1	Relay 1 NC	14	Relay 1 Pole
2	Relay 1 NO	15	Relay 2 NC
3	Relay 2 Pole	16	Relay 2 NO
4	Relay 3 NC	17	Relay 3 Pole
5	Relay 3 NO	18	Relay 4 NC
6	Relay 4 Pole	19	Relay 4 NO
7		20	+5V
8	GND	21	+5V
9	GND	22	Opto 1-
10	Opto 1+	23	Opto 2-
11	Opto 2+	24	Opto 3-
12	Opto 3+	25	Opto 4-
13	Opto 4+		

19.8.2 Four-Wire and Control Connection to Radio System

To connect the HelixNet Partyline to a radio system using four-wire:

1. In the **Modules Settings** menu, select **Slot n/Port A/B 4W > Channel Assign > Channel #** to assign the 4W port to a **Channel,** for example Channel A.
2. In the **Modules Settings** menu, select **Slot n/Port A/B 4W > Action Trigger > Disable** to set **Action Trigger** to **Disable** for that 4W port.
3. In the **Channels** menu, select **Channel # > GPO on Talk > Relay #** to select a Relay.
4. Connect the 4W audio and the configured Relay to the radio base station.

19.8.3 Quick Reference: Two-Wire and Control Connection to Radio System



19.8.4 Two-Wire and Control Connection to Radio System

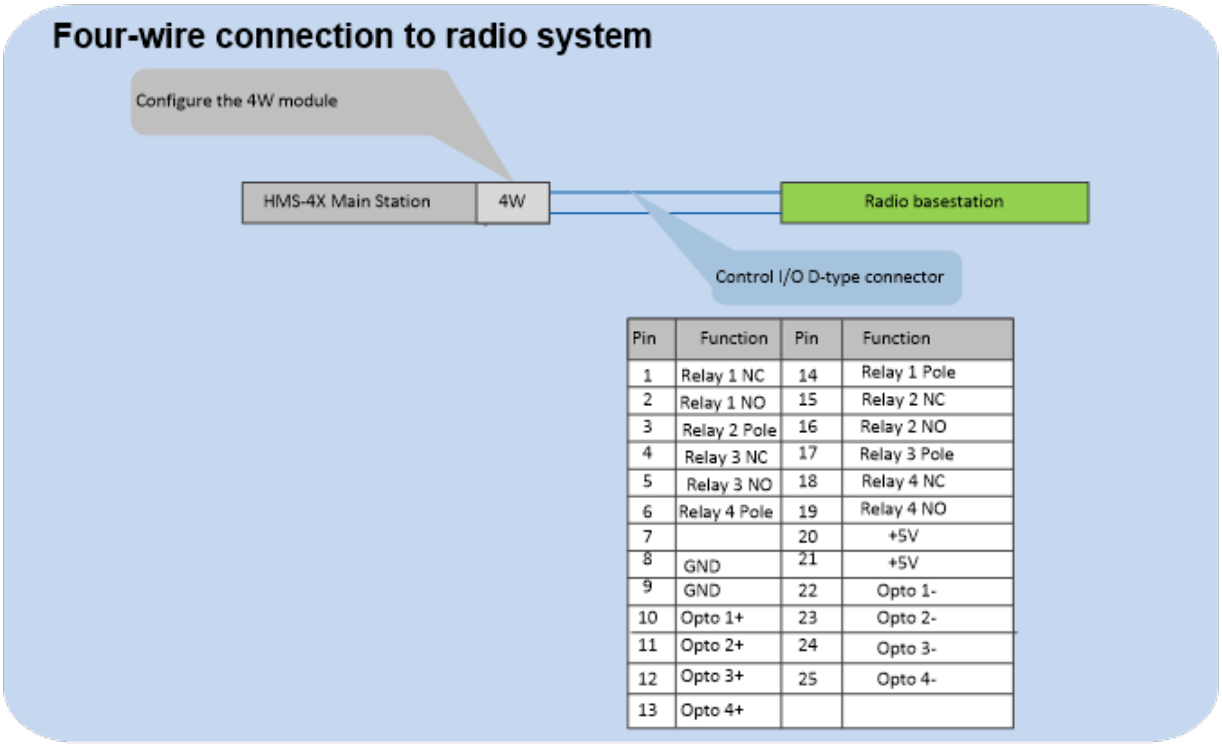
The two-wire connection uses a TW-47 radio interface. Because this has no power supply, you must use an Encore Main Station to supply power. You can also use an alternative source of power, such as a PK-7, PS-702 or PS-704.

The diagram in Quick reference: two-wire and control connection to radio system shows a system using an Encore Main Station.

To connect the HelixNet Partyline to a radio system using two-wire:

1. Connect the HelixNet Partyline to the Encore Main Station. For details, see Connecting to an Encore Main Station.
2. In the **Modules Settings** menu, select **Slot n/Port A/B 2W > Channel Assign > Channel #** to assign the 2W port to a **Channel,** for example Channel A.
3. Connect the Encore Main Station to the TW-47 radio interface.
4. Connect the TW-47 radio interface to the radio base station.
5. To trigger the PTT on the radio base, press the CALL button on the HelixNet channel.

19.8.5 Quick Reference: Remote Station Connection to Radio System



Pin	Function	Pin	Function
1	Relay 1 NC	14	Relay 1 Pole
2	Relay 1 NO	15	Relay 2 NC
3	Relay 2 Pole	16	Relay 2 NO
4	Relay 3 NC	17	Relay 3 Pole
5	Relay 3 NO	18	Relay 4 NC
6	Relay 4 Pole	19	Relay 4 NO
7		20	+5V
8	GND	21	+5V
9	GND	22	Opto 1-
10	Opto 1+	23	Opto 2-
11	Opto 2+	24	Opto 3-
12	Opto 3+	25	Opto 4-
13	Opto 4+		

To connect the HelixNet Remote Station to a radio system using four-wire:

1. In the **Audio Settings** menu, select **PGM/Audio In > Action Trigger > Disable**.
2. In the **Audio Settings** menu, select **SA/Audio Out Mode > Channel Assign**.
3. Assign the SA/Audio Out to a Channel.
4. In the **Channel** configuration select the Remote Station Program under the Program Listen menu.
5. In the **Channels** menu, select **Channel # > GPO on Talk > Relay 1**.
6. Connect the audio and the Relay to the radio base station.

20 System Specifications

20.1 Main Station (HMS-4X)

Connectors

Specification	Description / value
2 x Intercom Powerline Outputs	Four 3-pin XLR. Two male and two female.
Headset	4-pin XLR–M
USB	USB Type A and Micro-AB
Program	3-pin XLR–F
SA (Stage Announce)	3-pin XLR–M
Hot Mic / IFB Interface	1/4 in. (0.64 cm) phone jack
GPIO	25-way D-type female

20.1.1 Headphone Amplifier

Specification	Description / value
Load impedance	32Ω
Output level	+12dBu before clipping
Sidetone	-12dB (selectable)
The following specified for a route from a 4-wire input @ 0dBu in	
Max gain	0dB
Frequency response	40Hz - 10kHz ± 3dB
Distortion	<0.1% THD @ 1kHz
Noise	<-65dBu
Headphone limiter	0dBu (selectable)

20.1.2 Microphone Pre-Amplifier

Specification	Description / value
Headset Mic impedance:	200Ω (Dynamic)
Headset Mic Voltage	1.7V (Electret selectable)
Limiter	+23dB
The following specified for a route to 4-wire output @ 0dBu out	
Mic gain	60dB (dynamic) 45dB (electret)
Frequency response	300Hz – 10kHz ± -3dB (contoured for intelligibility)
Distortion	<0.2% THD @ 1kHz
Noise-	<-55dBu dynamic, <-65dBu electret

20.1.3 Loudspeaker Amplifier

Specification	Description / value
Load impedance	8Ω
Output level	+18dBu before clipping
Max gain	18dB
The following specified for a route from a 4-wire input @ 0dBu in	
Frequency response	200Hz - 10kHz ± 3dB
Distortion	<1% THD @ 1 kHz
Noise	<-50dBu

20.1.4 Program Audio Line Input

Specification	Description / value
Maximum level before clipping	18dBu
Nominal input level	0dBu (selectable)
Input impedance	>= 10KΩ
Routed to a 4-wire output @ 0dBu	

Specification	Description / value
Frequency response	20Hz - 10kHz ± 3dB
Distortion	<0.2% THD @ 1kHz
Noise	<-65dBu

20.1.5 Stage Announce Outputs

Specification	Description / value
Maximum level before clipping	18dBu
Nominal output level	0dBu (selectable)
Output impedance	<= 100Ω
The following specified for a route from a dynamic headset	
Frequency response	300Hz – 12kHz ± 3dB
Distortion	<0.1% THD @ 1kHz
Noise	<-55dBu

20.1.6 Hot Mic Output

Specification	Description / value
Maximum level before clipping	12dBu
Nominal output level	0dBu (selectable)
Output impedance	<= 100Ω
The following specified for a route from a dynamic headset	
Frequency response	300Hz - 12kHz ± 2dB
Distortion	<0.2% THD @ 1kHz
Noise	<-55dBu

20.1.7 Ethernet

Specification	Description / value
Fast Ethernet standard	100BaseT only, Auto MDIX

20.1.8 Mains Power

Specification	Description / value
Input voltage range	100 – 240VAC
Input frequency range	50 – 60Hz
Input power	<=250W
Input power connector	IEC-C14
Practical power range	• Power (normal): 80 - 250W • BTU (normal):275 - 850 BTU/hr • Dependent on hosted modules and connected beltpacks

20.1.9 Environmental

Specification	Description / value
Temperature	0˚C - 40˚C (32˚F - 104˚F)
Humidity	0 - 90% relative humidity

20.1.10 Dimensions and Weight

Specification	Description / value
Dimensions	19in W x 1.75in H x 13in D (483 mm x 44 mm x 330 mm)
Weight	5.83lbs. (2.65kg)

20.2 Two-Wire Module (HLI-2W2)

20.2.1 Connectors

Specification	Description / value
Intercom line	(2) 3-Pin XLR-F

20.2.2 Dimensions and Weight

Specification	Description / value
Dimensions	7.5 in. H x 2.2 in. W x 1.5 in. D (179 x 57 x39 mm)
Weight	13oz. (0.35kg)

20.2.3 Partyline (HLI-2W2)

Specification	Description / Value
Compatibility: Clear-Com, RTS configurable with Call and Remote Mic Kill	
Termination	External system
Nulling	R-L-C hybrid, user initiated auto-calibration with echo cancellation
Power	25mA from external system
Voltage	20-30V DC (max)
Maximum level before clipping	6dBu
Nominal input level	-18dBu (C-C), -12dBu (RTS)
Input impedance	≥10KΩ bridging
Route to 4-wire at 0dBu in	
Frequency response	100Hz - 10kHz±3dB
Distortion	<0.2% THD @ 1kHz
Noise	≤55dBu

20.2.4 Power Requirements (External)

Specification	Description / value
Per Channel	0.025mA/Channel
DC Voltage range	20 – 30Volts

20.2.5 Environmental

Specification	Description / value
Temperature	0˚C - 40˚C (32˚F - 104˚F)
Humidity	0 - 90% relative humidity

20.3 Four-Wire Module (HLI-4W2)

20.3.1 20.3.1 Connectors

Specification	Description / value
Intercom line	(2) RJ45 (etherCON)
Cable distance	< 1 km using Cat 5e/6/24AWG

20.3.2 Dimensions and Weight

Specification	Description / value
Dimensions	7.5 in. H x 2.2 in. W x 1.5 in. D (179 x 57 x39 mm)
Weight	13oz. (0.35kg)

20.3.3 Environmental

Specification	Description / value
Temperature	0˚C - 40˚C (32˚F - 104˚F)
Humidity	0 - 90% relative humidity

20.4 Fiber interface module (HLI-FBS)

20.4.1 Connectors (HLI-FBS)

Specification	Description / Value
2 x 100Mb SPF Ethernet Connections for use with:	
HLI-SMFO single-mode transceiver (1 included)	
HLI-MMFO multi-mode transceiver	

20.4.2 Dimensions and Weight (HLI-FBS)

Specification	Description / Value
Dimensions	2.2 x 7.4 x 1.5 inches (57 x 187 x 39mm) (HxWxD)
Weight	13oz (0.35kg)

20.5 Remote Station (HRM-4X)

20.5.1 20.4.1 Connectors

Specification	Description / value
Intercom Powerline Outputs	Two 3-pin XLR. One male and one female.
Headset	4-pin XLR–M
Gooseneck mic	3-pin Tuchel
USB	USB Type A
Program	3-pin XLR–F
SA (Stage Announce)	3-pin XLR–M
Hot Mic / IFB Interface	1/4 in. (0.64 cm) phone jack
Control and audio input/output	9-pin D-type
DC power	3-pin KPJX-PM-3-S

20.5.2 Microphone Pre-Amplifier

Specification	Description / value
Headset Mic impedance:	200Ω (Dynamic)
Headset Mic Voltage	1.7V (Electret selectable)
Limiter	+23dB
Routed to 4-wire output @ 0dBu out	
Mic gain	60dB (dynamic) 45dB (electret)

Specification	Description / value
Frequency response	300Hz – 10kHz + / -3dB (contoured for intelligibility)
Distortion	<0.2% THD @ 1 kHz
Noise-	<-55dBu dynamic, <-65dBu electret

20.5.3 Headphone Amplifier

Specification	Description / value
Load impedance	32Ω
Output level	+12dBu before clipping
Sidetone	-12dB (selectable)
Routed from a 4-wire input @ 0dBu in	
Max gain	0dB
Frequency response	180Hz - 10kHz ±3dB
Distortion	<0.1% THD @ 1 kHz
Noise	<-65dBu
Headphone limiter	0dBu (selectable)

20.5.4 Loudspeaker Amplifier

Specification	Description / value
Load impedance	8Ω
Output level	+18dBu before clipping
Max gain	18dB
Routed from a 4-wire input @ 0dBu in:	
Frequency response	200Hz - 10kHz ±3dB
Distortion	<0.1% THD @ 1 kHz
Noise	<-50dBu

20.5.5 Program Line Input

Specification	Description / value
Maximum level before clipping	18dBu
Nominal input level	0dBu(selectable)
Input impedance	>= 10 KΩ
Routed to 4-wire output @ 0dBu out	
Frequency response	20Hz - 10kHz ±3dB
Distortion	<0.2% THD @ 1kHz
Noise	<-65dBu

20.5.6 Four-wire module outputs

Specification	Description / value
Maximum level before clipping	18dBu
Nominal input level	0dBu(selectable)
Input impedance	<= 100Ω

20.5.7 Stage Announce Output

Specification	Description / value
Maximum level before clipping	18dBu
Nominal output level	0dBu(selectable)
Output impedance	<= 100Ω
Routed from a dynamic headset:	
Frequency response	300Hz – 12kHz ±3dB
Distortion	<0.1% THD @ 1kHz
Noise	<-55dBu

20.5.8 20.4.8 Hot Mic Output

Specification	Description / value
Maximum level before clipping	+12dBu
Nominal output level	0dBu(selectable)
Output impedance	<= 100Ω
Routed from a dynamic headset:	
Frequency response	300Hz - 12kHz ±2dB
Distortion	<0.2% THD @ 1 kHz
Noise	<-55dBu

20.5.9 Power

Specification	Description / value
Voltage	48V DC
Current (Max)	0.3A
Power (Max)	14.4W
BTU (Max)	49BTU/hr
Unit powered via Powerline	
Input voltage	±29.5V DC
Input current (speaker off)	0.3A
Input current (Max)	0.5A
Powerline utilization	
HRM (local power) =	1 beltpack

Specification	Description / value
HRM (speaker off) =	2 beltpacks
HRM (speaker on) =	3 beltpacks
Note the maximum Powerline capacity of the HMS-4x. Use the *HelixNet Cable Calculator* available from the Clear-Com website to validate load and cable distance.	
AC adapter - inline	
Input Voltage range	100 – 240VAC
Input frequency range	50 – 60Hz
Input power connector	IEC-C14
Output voltage	48V DC
Output power (Max)	15W
Output power connector	KPPX-3-P
Input power	<=250W
PoE - Power over Ethernet	
Device class	IEEE 802.3af-2003 - Class 0
PSE	15.4W DC max @ Power Source Req.
PD	12.95W DC max @ Powered Device Draw

20.5.10 Environmental

Specification	Description / value
Temperature	0˚C - 40˚C (32˚F - 104˚F)
Humidity	0 - 90% relative humidity

20.5.11 Dimensions and Weight

Specification	Description / value
Dimensions	19 in. W x 1.75 in. H x 6.4 in. D (483 mm x 44 mm x 165 mm)
Weight	4 lbs. (1.8 kg)

20.6 Speaker Station (HKB-2X)

Channels: System provides 12 or 24 intercom channels. Four channels can be assigned to station keysets. System Program Audio can be associated with any channel with independent endpoint level control.

20.6.1 20.5.1 Connectors

Specification	Description / value
Powerline	Powerline, Terminal Block 5 pole, 5mm pitch
Ethernet/PoE	RJ45
Headset	4-pin XLR–M
Gooseneck mic	3-pin Tuchel
Input power connector	Terminal Block 2 Pole, 5mm

20.6.2 Microphone Pre-Amplifier

Specification	Description / value
Headset Mic impedance:	200Ω (Dynamic)
Headset Mic Voltage	1.7V (Electret selectable)
Limiter	+23dB
Routed to 4-wire output @ 0dBu out:	
Mic gain	60dB (dynamic) 45dB (electret)
Frequency response	300Hz – 10kHz + / -3dB (contoured for intelligibility)

Specification	Description / value
Distortion	<0.1% THD @ 1kHz
Noise-	<-55dBu dynamic, <-65dBu electret
Headphone limiter	0dB (selectable)

20.6.3 Headphone Amplifier

Specification	Description / value
Load impedance	>32Ω
Output level	+12dBu before clipping
Sidetone	-12dB (selectable)
Routed from a 4-wire input @0dBu in:	
Max gain	0dB
Frequency response	40Hz - 10kHz ±3dB
Distortion	<0.1% THD @ 1 kHz
Noise	<-65dBu (@ max gain)
Headphone limiter	-0dBu (selectable)

20.6.4 Power (HKB-2X)

Specification	Description / value
Voltage	48V DC
Current (Max)	0.3A
BTU (Max)	49BTU/hr
Input power connector	Terminal Block 2 Pole, 5mm
Powerline	

Specification	Description / value
Input Voltage	±29.5V DC
Input current (speaker off)	0.3A
Input current (Max)	0.5A
Powerline utilization	
HKB (local power) =	1 beltpack
HKB (speaker off) =	2 beltpacks
HKB (speaker on) =	3 beltpacks
Note the maximum Powerline capacity of the HMS-4X. Use the *HelixNet Cable Calculator* available from the Clear-Com website to validate load and cable distance.	
AC adapter - wall (not included)	
Input Voltage range	100 - 240V AC
Input frequency range	50 - 60Hz
Input power connector	Universal
Output Voltage	48V DC
Output power (Max)	15W
Output power connector	KPPX-3-P
PoE - Power over Ethernet	
Device class	IEEE 802.3af-2003 – Class 0
PSE	15.4 W DC max @ Power Source Req.
PD	12.95 W DC max @ Powered Device Draw Environmental

20.6.5 Environmental

Specification	Description / value
Temperature	0˚C - 45˚C (32˚F - 113˚F)
Humidity	0 - 90% relative humidity

20.6.6 Dimensions and Weight HKB

Specification	Description / value
Weight	18.8 oz (0.53 kg)
Dimensions	4.5 x 8.2 x 2.4 in (114 x 209 x 61 mm) HxWxD

20.7 Beltpack (HBP-2X)

20.7.1 20.6.1 Connectors

Specification	Description / value
Intercom line	Two 3-pin XLR. One male and one female.
Headset	4-pin XLR–M and 2.5mm TRS jack
USB	Micro-AB

20.7.2 Microphone Pre-Amplifier

Specification	Description / value
Headset Mic impedance:	200Ω (Dynamic)
Headset Mic Voltage	1.7V (Electret selectable)
The following specified for a route to 4-wire output @ 0dBu out:	
Mic gain	60dB (dynamic) 45dB (electret)
Frequency response	300Hz – 10kHz + / -3dB (contoured for intelligibility)
Noise-	<-55dBu dynamic, <-65dBu electret

20.7.3 Headphone Amplifier

Specification	Description / value
Load impedance	>32 Ω
Output level	+12dBu before clipping
Sidetone	-12dB (selectable)
The following specified for a route from a 4-wire input @0dBu in:	
Max gain	0dB

Specification	Description / value
Frequency response	40Hz - 10kHz ±3dB
Noise	<-65dBu (@ max gain)
Headphone limiter	-0dBu (selectable)

20.7.4 Power Requirements HBP-2X Beltpack

Specification	Description / Value
Power requirement	4W
DC Voltage range	3- - 60V

20.7.5 Environmental

Specification	Description / value
Temperature	0˚C - 40˚C (32˚F - 104˚F)
Humidity	0 - 90% relative humidity

20.8 Beltpack (HXII-BP-X4)

20.8.1 20.7.1 Connectors

Specification	Description / value
XLR Powerline	3-pin XLR (female).
LAN/PoE	RJ45 etherCON
Headset	4-pin XLR–M
USB	Micro-AB

20.8.2 Microphone Pre-Amplifier

Specification	Description / value
Headset Mic impedance:	200Ω (Dynamic)
Headset Mic Voltage	1.7V (Electret selectable)
Routed to 4-wire output @ 0dBu out:	

Specification	Description / value
Mic gain	60dB (dynamic) 45dB (electret)
Frequency response	300Hz – 10kHz + / -3dB (contoured for intelligibility)
Distortion	<0.2% THD @ 1kHz
Noise-	<-55dBu dynamic, <-65dBu electret

20.8.3 Headphone Amplifier

Specification	Description / value
Load impedance	>32Ω
Output level	+12dBu before clipping
Sidetone	-12dB (selectable)
Routed from a 4-wire input @0dBu in:	
Max gain	0dB
Frequency response	40Hz - 10kHz ±3dB
Noise	<-65dBu (@ max gain)
Headphone limiter	-0dBu (selectable)

20.8.4 Power Requirements (HXII-BP)

Specification	Description / value
Voltage	48V DC
Current (Max)	0.09A
Power (Max)	4W
BTU (Max)	13BTU/hr
Unit powered by Powerline	
Input Voltage	±29.5V DC
Input Current (Max)	0.13A
Powerline utilization	

Specification	Description / value
HXII-BP =	1 beltpack
Note the maximum Powerline capacity of the HMS-4X. Use the *HelixNet Cable Calculator* available from the Clear-Com website to validate load and cable distance.	
Unit powered by Power over Ethernet (PoE)	
Class of device	IEEE 802.3af-2003 - Class 1
PSE	4.0W DC max @Power Source Req
PD	3.84 DC max @ Powered Device Draw

20.8.5 Environmental

Specification	Description / value
Temperature	0˚C - 40˚C (32˚F - 104˚F)
Humidity	0 - 90% relative humidity

20.9 Network (Ethernet)

20.9.1 Network Protocols (HelixNet v.4)

Specification	Description / value
Ethernet IPv4	Unicast audio and control
mDNS (multicast domain name system)	Multicast device discovery
Layer 3 (OSI model)	Routable with mDNS function limitations
WavPac	Audio codec

20.9.2 Network Ports (HelixNet v.4)

	Description / Value
Unicast	• Port 80 TCP – web interface, system management, expansion • Port 655 TCP – Link Group audio/database • Port 6001 TCP - System management • Port 6001 UDP – Audio Streams
Multicast	• Port 5353 UDP – mDNS, names, discovery, linking, expansion. Optional for device names and linking. Mandatory for HRM expansion

20.9.3 Network Parameters (HelixNet v.4)

	Description / Value
Link Group endpoint support	64 endpoints are made up of : user stations, active Interface ports, program audio inputs and LQ accounts
Bandwidth	• 300 kbps each audio input linking between HMS/LQ (Link Group audio sent dynamically between members) • 300-600 (max) kbps from each audio input to HMS • 1200-2400 (max) kbps from HMS to each endpoint
Network jitter tolerance	<= 128ms jitter buffer per audio stream received, automatically adjusted to network performance
QoS tags	DSCP=46, High Priority/Expedited Forwarding (EF)
Default link-local IP address range	169.254.0.0/16
Reserved IP ranges	• 10.0.0.0/8 for endpoints • 172.23.0.0/16 for Link Group

20.9.4 Recommended Ethernet Switch Features (HelixNet v.4)

Required switch features
Managed Ethernet Switch – Layer 3
100/1000Base-T ports for endpoints
1000Base IP Trunks between switches

Required switch features
QoS Configuration
Energy Efficient Ethernet bypass option
IGMP Snooping bypass option

20.10 Roles (System Limits)

A HelixNet Link Group has a hard limit of 100 Roles. This includes default Roles.

21 Glossary

Channel	Any audio routed through the HelixNet system must be configured into a Channel. Channels operate as virtual Partylines, which means that audio sources assigned to a Channel will be able to talk and listen to all other sources assigned to that Channel. In order for an audio source on one device to talk to an audio source on another device, the two Keysets must be brought together into one Channel. Many audio sources in one Channel will not have a negative effect on audio quality or latency.
Daisy-chaining	Devices are daisy-chained when they are linked together by cable in a line, as in a daisy chain. Other linking topologies are available, such as a star or tree. In HelixNet, it is possible to daisy chain Remote Stations, Speaker Stations and beltpacks to the Main Station using a powerline that transmits both data and power. However, the number and type of devices linked will have an effect on the powerline. 10 beltpacks can be linked (powerlined), but if a Remote Station is added into the line, the total number of devices possible in the chain will go down due to the higher power requirement of the Remote station. See Pairing Remote Stations, Speaker Stations and HXII-BP-X4 beltpacks to the Main Station. You can find the URL to a powerline/distance calculator at the beginning of Installing HelixNet Partyline.
Expansion Group	In an Expansion Group, Main Stations and Remote Stations (up to 3) are linked over IP in a host/slave relationship. This means that the audio on all of the stations is controlled from the host station, using one headset and speaker, creating a convenient and easy to use set-up. Expansion Groups must be established from the front panel menus on the device(s).
KeySet	A Keyset is a HelixNet unit that consists of an audio source or Channel and a set of controls associated with that Channel. The associated controls are: a menu screen, a rotary control, a Talk button and a Call button. Main Stations and Remote Stations have 4 Keysets, which can be seen on the front panel of the device. Speaker Stations also have 4 Keysets, though only 2 are visible on the device, the 4 Keysets operate in a split screen. Beltpacks have 2 Keysets. See Main Station/Remote Channel keyset and display.

Linking/ Link Group	Only Main Stations can be linked. Linking Main Stations in HelixNet allows more beltpacks to be used and increases intercom range as far as your LAN will allow. The linked Main Stations create a mesh connectivity, which ensures robust audio transmission. When Linking Main Stations in HelixNet 3.0 and above, Channels with the same number (1 – 24) are merged. Devices can be linked either from the unit front menus or from the browser based Core Configuration Manager (CCM). When linked in the CCM, devices and Roles can be configured by proxy from any Main Station in the Link Group. See Linking in the Core Configuration Managerand Linking Main Stations for more information.
Pairing	Remote Stations, Speaker Stations and HXII-BP-X4 beltpacks are connected to the Main Station over LAN/IP. This allows Main Station Channels to be available to a remote connection, either an HRM (Remote Station) or an HKB (Speaker Station). Pairing over IP will provide better latency than connecting with a powerline. See Ethernet point-to-point link.
Role	A Role is a pre-set configuration that includes Channel assignment, audio settings, IFBs, relays etc. Each HelixNet device has a default Role that can be used as it is or modified to fit requirements. Each Role can be given a name (a label) that corresponds to a common user workflow, such as producer, director, A1, etc. When adding new Roles, you will modify an existing template, using either the default Role for that device, or another Role that you have already made. Default Roles can be modified but not deleted or loaded to devices, you will always work with a copy. Default Roles can be returned to factory settings if required. To use Roles, you must have HelixNet 3.0 or above installed on your Main Stations. See Roles for more information.

22 HMS-4X Main Station Menu Map

Menu 1 (First) >	Menu 2 >	Menu 3 >	Menu 4 (Last)
Audio Settings	Headset	Sidetone Gain	Range: 0dB to -18dB Default: -12db
		Headphone Limit	Range: +6dB to -6dB Default: 0db
		Sidetone Control	Tracking Non-Tracking Disabled Default: Tracking
		HS Mic Type	Electret Dynamic (0 dB) Dynamic (low) Default: Dynamic (0 dB)
	Microphone	Headroom	Normal High Default: Normal
		Contour Filter	Enabled Disabled Default: Disabled

Menu 1 (First) >	Menu 2 >	Menu 3 >	Menu 4 (Last)
	Program Input	Label	12 characters
		Gain	Range: +12dB to -12dB Default: 0db
		Action Trigger	Enabled Disabled Default: Enabled
		VOX	Enabled Disabled Default: Disabled
		VOX Off Delay	Range: 0.5 – 4 sec Default: 0.5 sec
	Program IFB	IFB Dim Level	IFB Disabled + Range: -6dB - -24dB + Full Cut
	SA Output	Gain	Range: +12dB to -12dB Default: 0db
	Hot Mic Output		
	Front Panel	Loudspkr Dim	Range: 0dB to -24dB Default: 0dB
		Loudspkr Mute	Toggle w. HS Ctrl (Default) Muted Toggle Unmute w HS Ctrl Unmuted

Menu 1 (First) >	Menu 2 >	Menu 3 >	Menu 4 (Last)
Station Settings	Preferences	Roles	Select Role or Local Config

Menu 1 (First) >	Menu 2 >	Menu 3 >	Menu 4 (Last)
			Station ID Alphanumeric entry
	Keyset Assign	Keyset 1 – 4	None Channel 1 – 12 (or 24)
	Keysets	Talk #1 Latch	Latching Non-Latching Permanent Disabled Default: Latching
		Talk #2 Latch	
		Talk #3 Latch	
		Talk #4 Latch	
		Secondary Talk Action #1	Unassigned (Default) Call Control Event #1 Control Event #2
		Secondary Talk Action #2	
		Secondary Talk Action #3	
		Secondary Talk Action #4	
		SA Output Key	Latching Non-Latching Default: Non-latching
		All Talk	Toggle All Channels/Visible Channels Default All Channels
		RMK	Disabled All Channels Visible Channels

Menu 1 (First) >	Menu 2 >	Menu 3 >	Menu 4 (Last)
			Default: Enabled All Channels
		Interlock	Talk #1 Talk #2 Talk #3 Talk #4 * indicates that this key is in an interlock group
	Display	OLED Brightness	High Medium Low Default: Medium
		Key Brightness	High / Low High / Off Low / Off Off / Off Default: High / Low
		Screensaver	Enabled Disabled Default: Enabled
	Headset Button (**HSet**)	Latch Mode	Toggle (Default) Permanent Disabled Non-Latching
Channels	Channel 1 Channel 2 Channel 3 Channel 4 […]	Label	Press to Edit Max. length for labels = 12 characters
		Program Listen	None List of programs Default: None

Menu 1 (First) >	Menu 2 >	Menu 3 >	Menu 4 (Last)
		GPO on Talk	Default: None Relay 1 - 4
		GPO on Call	Default: None Relay 1 - 4
Logic I/O Opt	Inputs	Opto 1	None Call Key 1 Talk Key 1 Call Key 2 Talk Key 2 Call Key 3 Talk Key 3 Call Key 4 Talk Key 4 Mic HSet Default: None
		Opto 2	
		Opto 3	
		Opto 4	
	Outputs	Relay 1	
		Relay 2	
		Relay 3	
		Relay 4	
Module Settings	Slot n /Port A/B 4W	Channel Assign	Disabled Channel A Channel B Channel C Channel D Up to the maximum number of licensed channels. Default: Disabled
		Program Output	Unmute Mute Default: Mute
		Action Trigger	Enabled Disabled Default: Enabled
		Input Gain	Range: +12dB to -12dB Default: 0db
		Output Gain	

Menu 1 (First) >	Menu 2 >	Menu 3 >	Menu 4 (Last)
		VOX	Enabled Disabled Default: Disabled
		VOX Off Delay	Range: [0].5 – 4 secs Default: [0].5 secs
	Slot n /Port A/B 2W	Channel Assign	Disabled Channel A Channel B Channel C Channel D Up to the maximum number of licensed channels. Default: Disabled
		Program Output	Unmute Mute Default: Unmute
		Auto-Nulling	Start
		Mode	Clear-Com RTS Audio Pin 2 RTS Audio Pin 3 Default: Clear-Com
		Action Trigger	Enabled Disabled Default: Enabled
		Input Gain	Range: -3dB to +3dB Default: 0db
		Output Gain	
		RMK Input	Enabled Disabled Default: Enabled
		RMK Output	
		VOX	Enabled

Menu 1 (First) >	Menu 2 >	Menu 3 >	Menu 4 (Last)
			Disabled Default: Disabled
		VOX Off Delay	Range: [0].5 – 4 secs Default: [0].5 secs
Network	Stations	Preferences	Hostname (12 chars) DHCP enabled/disabled IP address (enter IP address) Subnet mask Gateway
		[Station IDs}	(info only) Hostname Linked status IP address
	Linking	Link mode	Disabled Link Master Link Member
	Link to Master	By name By IP address	
	Expansion Mode	Host Expand to host	Enabled Disabled (default)
Administration	Software	Current	MS Version IVR Version Snx Version where n is slot number and x is the port
		Update	None or version list
	Beltpacks	Menu Lock	Unlock All Lock All

Menu 1 (First) >	Menu 2 >	Menu 3 >	Menu 4 (Last)
	Reset	Reset to Default	Reset HMS Reset Endpoints Reset CCM Pass Reset Roles/Chan Factory Default
		Reboot	Reboot Now
	Settings	Save all	USB drive or file list
		Restore all	SB drive or file list
		Restore Role/Ch	USB drive or file list

Menu 1 (First) >	Menu 2 >	Menu 3 >	Menu 4 (Last)
Diagnostics	Hardware	Main PCB	Part: [Part_Number] Revision: [Revision] Serial number: [Serial number]

Menu 1 (First) >	Menu 2 >	Menu 3 >	Menu 4 (Last)
		Slot 1 PCB	
		Slot 2 PCB	
		Slot 3 PCB	
	Temperature	Sensor 1	Temperature in °C. Note: Single fan on if any sensor > 60°C.
		Sensor 2	Double fan on if any sensor > 65°C. Double fan off if < 55°C / single fan off if < 50°C.

Menu 1 (First) >	Menu 2 >	Menu 3 >	Menu 4 (Last)
		Sensor 3	
	Powerlines	Powerline 1 Powerline 2	Status: [OK or BUSY (according to responses to MME requests)]. DMC: [MAC of powerline modem] HMC: [MAC of local blackfin processor] Beltpacks: [# of beltpacks detected by powerline modem] Collision rate: [Percentage (0% when operating normally)] Error rate: [Percentage (0% when operating normally)] Volts: [Voltage]
	Keysets	Keyset 1 Keyset 2 Keyset 3 Keyset 4	Name: Channel name Talkers: Number of talkers on Partyline Devices: Number of beltpacks listening on Partyline Main Stations: Number of Main Stations listening 2-Wire: Number of 2-Wire ports listening 4-Wire: Number of 4-Wire ports listening

22.1 HRS-4X Remote Station Menu Map

Menu 1 (First) >	Menu 2 >	Menu 3 >	Menu 4 (Last)
Audio Settings	Headset	Sidetone Gain	Range: 0dB to -18dB Default: -12db
		Headphone Limit	Off + Range: +6dB to -6dB Default: 0db
		Sidetone Control	Tracking Non-Tracking Disabled Default: Tracking
		HS Mic Type	Electret Dynamic (0 dB) Dynamic (low) Default: Dynamic (0 dB)
	Microphone	Headroom	Normal High Default: Normal
		Contour Filter	Enabled Disabled Default: Disabled
	Program Input	Mode	Enabled/Disabled
		Gain	Range: +12dB to -12dB Default: 0db
		IFB Dim Level	Range: --6dB to -24dB Default: Off
		Action Trigger	Enabled Disabled Default: Enabled
		VOX	Enabled Disabled

Menu 1 (First) >	Menu 2 >	Menu 3 >	Menu 4 (Last)
			Default: Disabled
		VOX Off Delay	Range: 0.5 - 4sec Default: 0.5sec
	SA Output	Mode	Channel Assigned SA Default: Channel Assigned
		Gain	Range: +12 to -12dB Default: 0dB
		Program Output	Unmute Mute Default: Mute
		Channel Assign	Disabled Channel A Channel B Channel C Channel D Up to the maximum number of licensed channels. Default: Disabled
	Hot Mic Output	Gain	Range: +12 to -12dB Default: 0dB
	Front Panel	Loudspeaker Dim	Range: 0dB to -24dB Default: -6dB
Station Settings	Preferences	Roles	Default: HRM – [unique ID Select Role or Local Config]
	Keyset Assign	Keyset 1 – 4	Channel 1 – 12 (or 24)

Menu 1 (First) >	Menu 2 >	Menu 3 >	Menu 4 (Last)
	Keysets	Talk 1 - 4	Latching Non-Latching Permanent Disabled Default: Latching
		All Talk	All Channels Visible Channels
		SA Output Key	Latching Non-Latching Default: Non-latching
		RMK	Enabled Disabled Default: Enabled
	Display	OLED Brightness	High Medium Low Default: Medium
		Key Brightness	High / Low High / Off Low / Off Off / Off Default: High / Low
		Screensaver	Enabled Disabled Default: Enabled
Channels	Channel 1 Channel 2 Channel 3 Channel 4 […]	Label	Press to Edit Max. length for labels = 12 characters
		Program Listen	None List of programs Default: None

Menu 1 (First) >	Menu 2 >	Menu 3 >	Menu 4 (Last)
		GPO on Talk	Default: None Relay 1 - 4
		GPO on Call	Default: None Relay 1 - 4
Control I/O	Inputs	Opto 1	None Call Key 1 Talk Key 1 Call Key 2 Talk Key 2 Call Key 3 Talk Key 3 Call Key 4 Talk Key 4 Default: None
	Outputs	Relay 1	
Network	Preferences	Hostname (12 char) DHCP enabled/disabled IP address (enter if required) Subnet mask Gateway	
	Pair to Station	By Name By Address	Enabled Disabled Default: Enabled
	Expansion mode	Host (enabled/disabled) Expand to host (none/hostname)	
Administration	Software	Current	HelixNet System Version Remote Station Version

Menu 1 (First) >	Menu 2 >	Menu 3 >	Menu 4 (Last)
		Update	None or version list
	Reset	Reset to Default	Reset Now
		Reboot	Reboot Now
	Settings	Save	USB drive or local
		Restore local	USB drive or file list

Menu 1 (First) >	Menu 2 >	Menu 3 >	Menu 4 (Last)
Diagnostics	Main PCB		
	Powerlines	Powerline 1	Status: [status] DMC: {MAC] HMC: [MAC] MMC: [MAC] Rx rate: [Mbps] Tx rate: [Mbps]
	Network	Status	IP Address
		IP Address	
		IP Mask	
		Mac	
	Keysets	Keyset 1 Keyset 2 Keyset 3 Keyset 4	Name: Channel name Talkers: Number of talkers on Partyline Devices: Number of beltpacks listening on Partyline Main Stations: Number of Main Stations listening 2-Wire: Number of 2-Wire ports listening 4-Wire: Number of 4-Wire ports listening

22.2 HKB-2X Speaker Station Menu Map

Menu 1 (First) >	Menu 2 >	Menu 3 >	Menu 4 (Last)
Roles	Select Role or Local Config.		
Audio Settings	Headset	Sidetone Gain	Range: 0dB to -18dB Default: -12db
		Headphone Limit	Off + Range: +6dB to -6dB Default: 0dB
		Headphone Gain	0 to +12dB Default: 0dB
		Sidetone Control	Tracking Non-Tracking Disabled Default: Tracking
		HS Mic Type	Electret (-15dB) Dynamic (0 dB) Dynamic (low) Default: Dynamic (0 dB)
	Microphone	Contour Filter	Enabled Disabled Default: Disabled
	Front Panel	Loudspkr Dim	Range: 0dB to --24dB Default: 0db
		Loudspker Mute	Toggle w HS Ctrl (Default) Muted Toggle Unmute w HS Ctrl Unmuted
Station Settings	Keyset Assign	Keyset 1 – 4	Channel 1 – 12 (or 24 depending on license)
	Keysets	Talk 1 - 4	Latching

Menu 1 (First) >	Menu 2 >	Menu 3 >	Menu 4 (Last)
			Non-Latching Permanent Disabled Default: Latching
		Secondary Talk Action 1 - 4	Unassigned (Default) Call Control Event 1 Control Event 2
		Shift Page	Auto Shift (Default) Toggle Disabled
		Interlock	Talk #1 Talk #2 Talk #3 Talk #4 * indicates that this key is in a keygroup
	Display	OLED Brightness	High Medium Low Default: Medium
		Key Brightness	High / Low High / Off Low / Off Off / Off Default: High / Low
		Screensaver	Enabled Disabled Default: Enabled
	Headset button	Latch Mode	Toggle (Default)

Menu 1 (First) >	Menu 2 >	Menu 3 >	Menu 4 (Last)
			Permanent Disabled Non-Latching
Network	Pair to Station	By Name By Address	Separate IP address: xx.xx.xx.xx where x is a numeric value
	Preferences	DHCP	Enabled Disabled Default: Enabled
		IP Address	IP address: xx.xx.xx.xx where x is a numeric value
		Gateway	IP address: xx.xx.xx.xx where x is a numeric value
		Subnet Mask	IP address: xx.xx.xx.xx where x is a numeric value
Administration	Software	Current	HelixNet Speaker Station
	Reset	Reset to Default	Reset Now
		Reboot	Reboot Now
Diagnostics	Powerlines	Powerline 1	Status: [OK or BUSY (according to responses to MME requests)]. DMC:[MAC of powerline modem] HMC: [MAC of local blackfin processor Rx rate:[Mbps] Tx rate:[Mbps] Status:[status] IP Addr [IP Address] IP Mask [Subnet Mask] MAC:[MAC Address]

Menu 1 (First) >	Menu 2 >	Menu 3 >	Menu 4 (Last)
	Networking	Ethernet	
	Keysets	Keyset 1 Keyset 2 Keyset 3 Keyset 4	Name: Channel name Talkers: Number of talkers on Partyline Devices: Number of beltpacks listening on Partyline Main Stations: Number of Main Stations listening 2-Wire: Number of 2-Wire ports listening 4-Wire: Number of 4-Wire ports listening
	Hardware		

22.3 HBP-2X and HXII-BP-X4 Beltpack Menu Map

Menu 1 (First) >	Menu 2 >	Menu 3 (Last)
Roles	Select Role or Local Config	
Audio Settings	Sidetone Gain	Range: 0dB to -18dB Default: -12dB
	Headphone Limit	Off + Range: +6 to -12dB Default: 0dB
	Headphone Gain	0 - 12dB (increments of 3 dB) Default : 0dB
	Sidetone Control	Tracking Non-tracking Disabled

Menu 1 (First) >	Menu 2 >	Menu 3 (Last)
		Default: Tracking
	HS Mic Type	Electret (-15dB) Dynamic (0dB) Dynamic (-10dB) for HBP-2X Dynamic (low) for HXII-BP-X4 Default: Dynamic (0dB) Note: Electret = 35dB fixed gain, non-user adjustable. Dynamic = 50dB fixed gain, non-user adjustable.
	Headroom (only for HBP-2X)	Normal High Default: Normal
	Contour Filter	Enabled Disabled Default: Disabled
Beltpack Settings	Left Keyset Right Keyset: the same as Left Keyset	Channel assign (1 – 24) Talk (latch/non latch/disabled) Default: Latch Secondary Talk Action (unassigned/call/control event 1/control event 2) USB flasher (disabled/blinking/solid) Default: disabled
	Vibrate on Call	On/Off Default: Off
Display Settings	OLED Brightness	High Medium Low

Menu 1 (First) >	Menu 2 >	Menu 3 (Last)
		Default: Medium
	Key Brightness	High / Low High / Off Low / Off Off / Off Default: High / Low
	Rotate Display	Enabled Disabled Default: Disabled
	Screensaver	Channel Hostname Role (default) Blank Disabled
Network (HXII-BP-X4 powered over Ethernet only)	Pair to Station	By Name By Address
Administration	Software Version	npl-1.0.x, uboot
	Software Update	npl-1.0.x
	Reset to Default	Reset Now
Diagnostics	Hardware Important Note: There are 4 levels of Menu for Hardware	Main PCB Part: [Part_Number] Revision: [Revision] Serial number: [Serial number]
	Powerline Note: Line (Partyline) that connects beltpack to the	Status: [OK or BUSY (according to responses to MME requests)]. DMC:[MAC of powerline modem] HMC: [MAC of local blackfin

Menu 1 (First) >	Menu 2 >	Menu 3 (Last)
	network (and which also powers the beltpack).	processor] MMC: [MAC of the Main Station powerline modem, to which the beltpack is connected] Rx rate: Range: 140 – 150 Mbps Tx rate: Range: 140 – 150 Mbps Volts:
	Networking (HBP-2X and HXII-BP-X4 over Ethernet and Powerline)	Ethernet Connection Type: Ethernet or Powerline IP address

Menu 1 (First) >	Menu 2 >	Menu 3 (Last)	
		DHCP (Ethernet only)	
		IP address	
		Gateway	
		Subnet mask	
		Mac address	
		IVP Router	(Ethernet only)
		Keysets 1 & 2	Name: Channel name Talkers: Number of talkers on Partyline Beltpacks: Number of beltpacks listening on Partyline Main Stations: Number of Main Stations listening 2-Wire: Number of 2-Wire ports listening 4-Wire: Number of 4-Wire ports listening

23 Cabling reference

You can connect beltpacks using:

- A wide range of standard microphone (intercom) cable types (16 AWG – 26 AWG).
- CAT5, CAT5e and CAT6 cable types.

XLR cable	CAT5/6 cable
Pin 1	Pin 1 and Pin 2 and shield/drain wire
Pin 2	Pin 4, Pin 6 and Pin 8
Pin 3	Pin 3, Pin 5 and Pin 7

Clear-Com recommends the following cable types:

Belden 9207 for fixed installation

Belden 9463F for portable installations

***Note**: Cat 5 screen should be connected to chassis at one end of cable only.*

You can also mix CAT cables and microphone cables when connecting to the HMS-4X Main Station. For example, you might use CAT cables to trunk long distances, and flexible microphone cables to connect beltpacks to bulkheads.

***Note**: The cabling information provided in this guide is for guidance only. For in-depth, tailored advice on cabling, Clear-Com recommends that you contact your Clear-Com representative.*

23.1 Interoperability

The optional interface modules (two-wire, four-wire, 10/100BaseT Ethernet and Fiber Channel) for the HMS-4X Main Station enable interoperability with your existing communications infrastructure.

You can connect the HMS-4X Main Station to:

Two-wire intercom systems and devices (including Encore and RTS) using standard microphone cable (16 AWG – 26 AWG).

Four-wire intercom systems and devices (including Eclipse) using Ethernet (CAT) cable.

Tip: For more information about integrating HelixNet Partyline into your existing communications infrastructure, see Connecting to Other Intercom Systems

23.2 Clear-Com EthernetCable Recommendations

Cable recommendations	
Category (Cat)	Higher Cat numbers will support a higher bandwidth. Therefore, by using a higher Cat number you are future proofing you system to some extent. Example: • Cat 5 : up to 1 GB • Cat 6: up to 10 GB • Use Cat 5e or higher.
American Wire Gauge (AWG)	The lower the AWG number, the less temperature rise there wil be in the cable when using PoE. This is particularly important for bundles. Local building regulations may rule out the use of 26 AWG or higher, depending on the installation. Check with your local building regulations. Use AWG 24 or lower.
Shielded Twisted Pair (STP) or Foiled Twisted Pair (FTP)	Using shielded cable means less problems with interference from other sources. This means that your network will be more robust if you use shielded cables.

***Note**: Overall recommendation: Use Cat 6a, 23 AWG STP cable.*

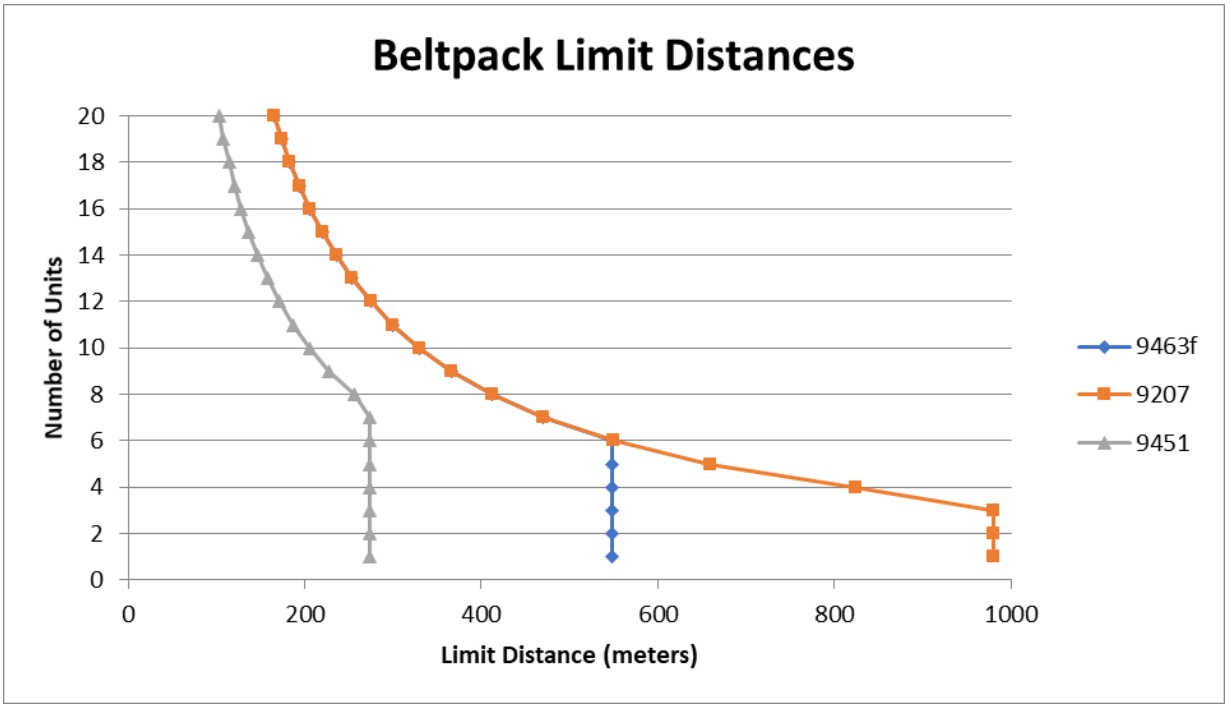
23.3 Clear-Com Microphone Cable Recommendations (Capacitance Versus Distance)

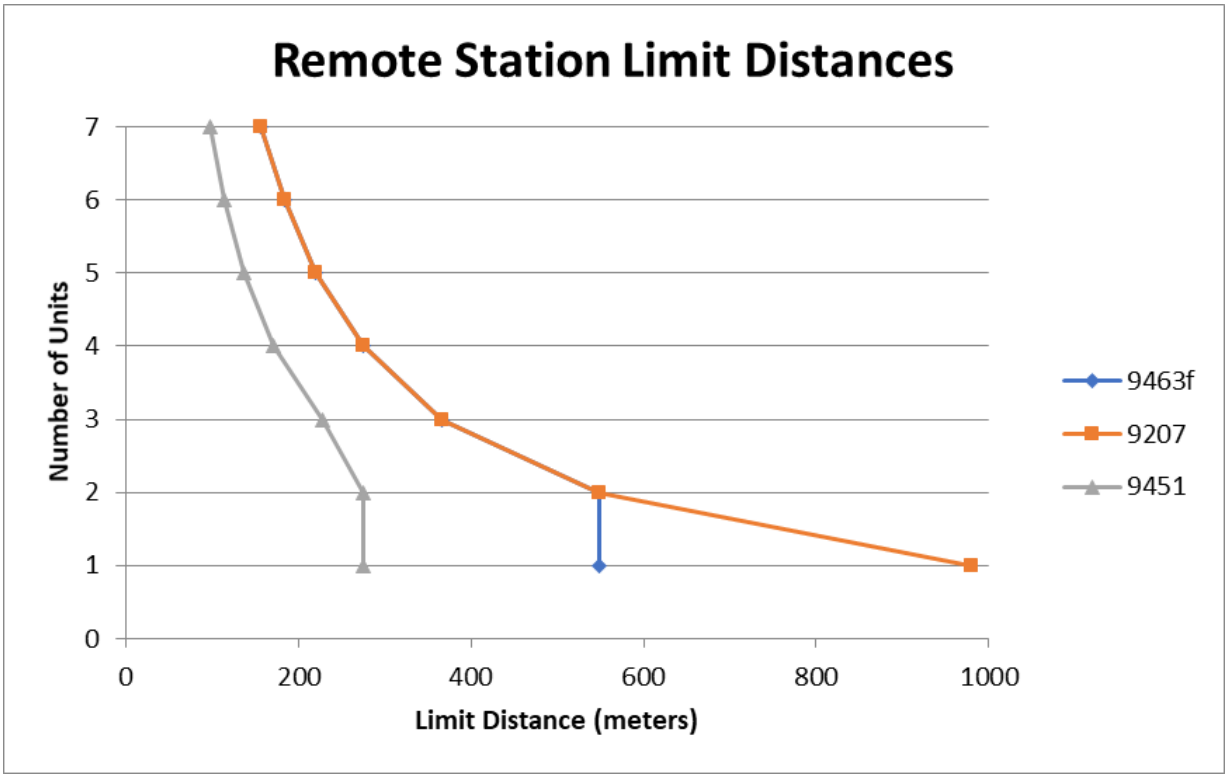
Standard microphone cables impose distance limitations at their upper limits due to cable capacitance.

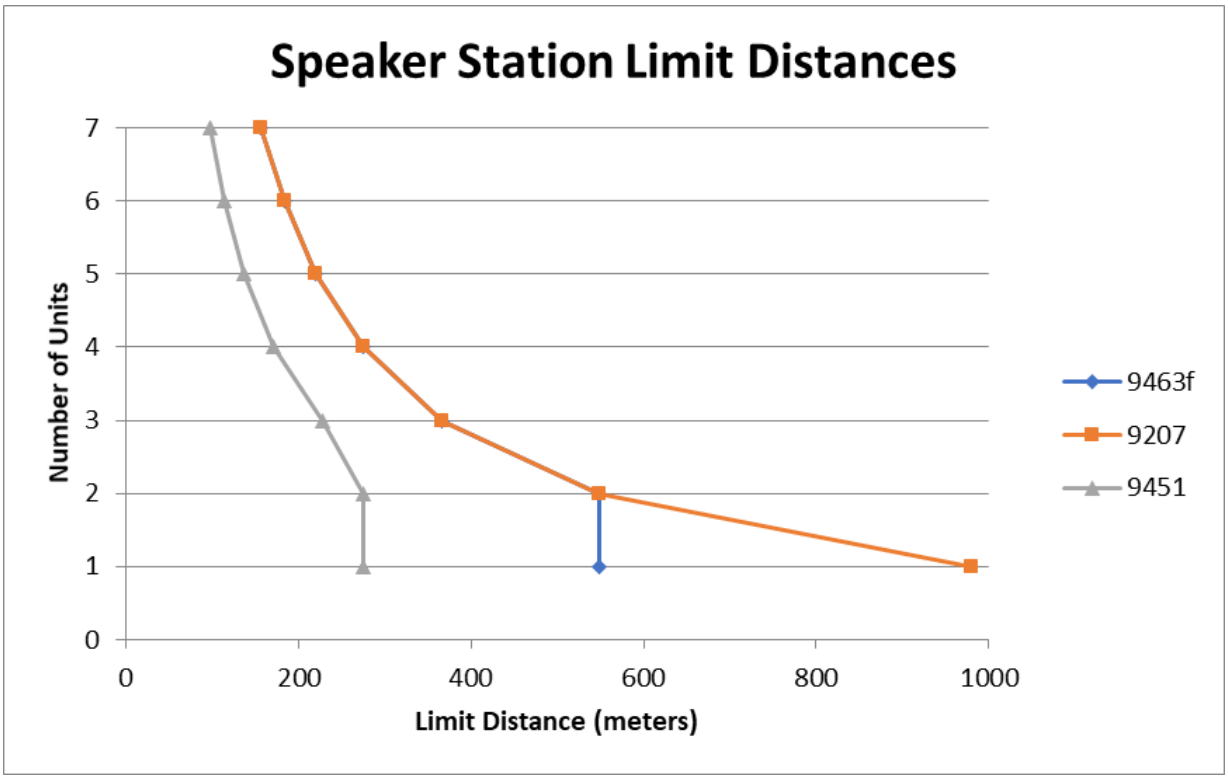
If your priority is audio quality, experiment with attaching one or two fewer devices to each line. Your choice of topology (daisy chain, star or tree) may also impact audio quality over distance.

Manufacturer	Cable type	Gauge (AWG)	Style	Attenuation / 100m
Belden	9463f	20	Std	16 dB
Belden	9207	20	Std	9 dB
Belden	1533P	24	Cat5e	11 dB

23.3.1 Quick reference: Cable capacity versus distance







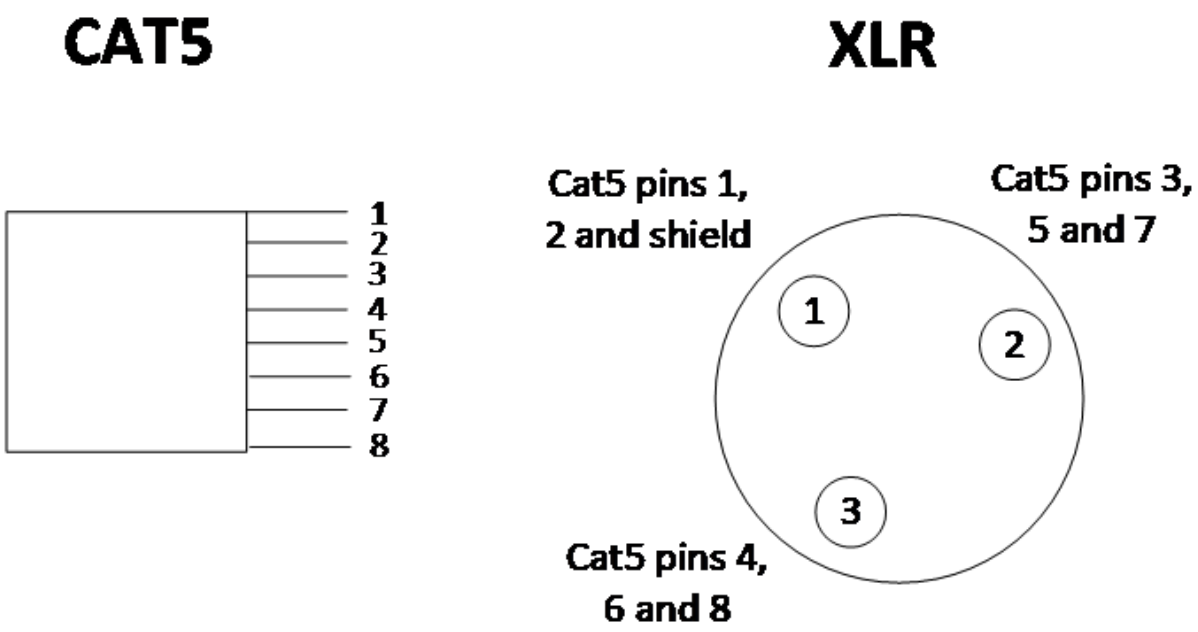
***Note**: The above graphs are intended as a general guide only. Actual cable performance may vary, depending on the conditions and complexity of the installation.*

23.4 Cable Connections

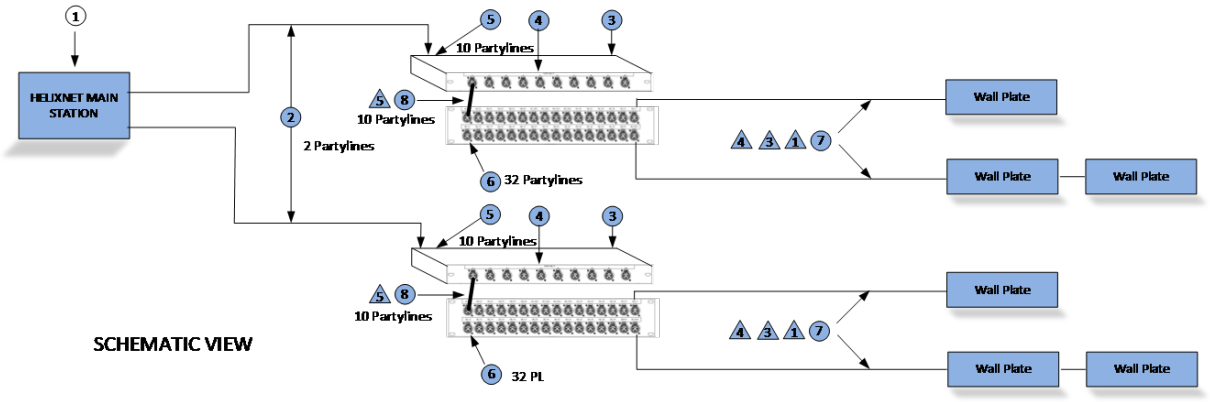
The diagrams on the following pages reference the following labels and notes.

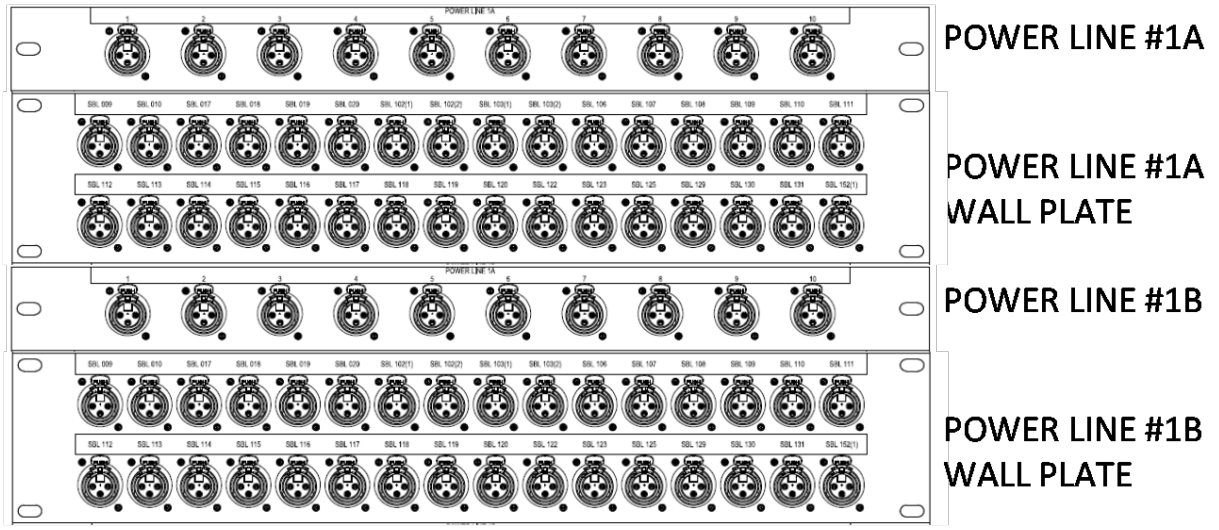
Label	Manufacturer	Part Number	Description
1	Clear-Com	HMS-4X	HelixNet Main Station
2	Belden	8760,9207 Or 9463F	18 or 20 AWG twisted pair cable terminated with 3-pin XLR
3	Middle Atlantic (or equivalent)	CH-1	1 RU shielded chassis
4	Neutrik (or equivalent)	NC3FD-L-B-1	3 pole female chassis mount
5	Neutrik (or equivalent)	NC3MD-L-B-1	3 pole male chassis mount
6	Neutrik (or equivalent)	NA3MDF	3 PIN XLR M-F FEED THRU ADAPTER
7	Belden (or existing cabling)	1351A or 1533P	24 AWG, shielded cat 6 cabling
8	Belden	8760,9207 or 9463F	XLR3 M-F patch cord
9	Belden	8760,9207 or 9463F	18 or 20 AWG twisted pair cable

Label	Note
	Wire in accordance with **Table 245**
	Equipment rack, breakout box chassis and patch panel must be connected to safety earth
	Connect up to 32 wall plate locations to patch panel with individual CAT 5 cables
	If multiple wall plates are co-located at a remote location, daisy chain their wiring at the remote location and connect a single CAT 5 cable from the remote location back to the patch panel
	Use short length, high quality XLR patch cords with shielded connectors
	Do not patch between separate power lines
	Assemble item 6 to panel with male connectors to front



RJ-45	XLR
1 white/orange	1
2 Orange	1
3 White/green	3
4 Blue	2
5 White/blue	3
6 Green	2
7 White/brown	3
8 Brown	2


HELIXNET MAIN STATION
10 Partylines
10 Partylines
2 Partylines
32 Partylines
Wall Plate
Wall Plate
Wall Plate
10 Partylines
10 Partylines
32 PL
Wall Plate
Wall Plate
Wall Plate
SCHEMATIC VIEW


POWER LINE #1A
POWER LINE #1A WALL PLATE
POWER LINE #1B
POWER LINE #1B WALL PLATE

24 Troubleshooting

Issue	Solution
Why are the Talk keys flashing periodically?	Flashing Talk keys may indicate a fault in the cable. Check the cable for short-circuit conditions and replace if necessary.
The Call functionality on my analog beltpack is no longer working.	HelixNet Partyline operates at different voltage levels than analog two-wire Partyline systems. The analog beltpack may have been damaged if it was connected to a HelixNet Main Station Partyline port. Contact Clear-Com for repair options.
I cannot pass audio to wired / wireless intercom equipment over the Two-wire module.	Two-wire option modules require an external power supply. See Connecting to Other Intercom Systems
Why do I hear an echo when interfacing via a two-wire audio port?	Run auto-nulling. Ensure that all unused Talk keys in the system are unlatched.
Echo occurs even after Two wire module has been auto-nulled.	Check to ensure all open Talk keys are not latched and re-null.
There is no audio or only partial audio (send or receive, but not both) between other audio systems / sources connected over four-wire.	Check the cable used to connect the equipment. HelixNet to Eclipse four-wire connections only require a standard CAT cable, whereas other four-wire connections (to Tempest™, CellCom / FreeSpeak, and other systems) require an audio crossover cable. See: HMS 4X Main Station Connecting to Other Intercom Systems
Line 1 (or Line 2) LED is blinking red.	There is a short-circuit somewhere on that Powerline. Unplug everything from that Powerline and add cables and Beltpacks one at a time until you find the short-circuit.
Line 1 (or Line 2) LED is steady red and one or more Beltpack has no bars showing up for signal strength.	There are digital errors or there is cross-talk on that Powerline. Look at the Diagnostics->Powerlines->Powerline 1(or 2) page. If the number of Beltpacks showing there is greater than what you physically connected to that Powerline, cross-

Issue	Solution
	talk is happening between the Powerlines. Make sure you are using properly shielded Mic cables or Cat cables. If the number of Beltpacks showing there does match what you physically connected to that Powerline and errors or high collision rate is displayed, verify that you don't exceed the number of Beltpacks per Powerline or distance as per the Cable capacity versus distance table. High collision rate means communication issues on the powerline. Possible causes are: • Unshielded or bad cables • Powerline 1 looped back into Powerline 2 (or from one HMS to another) • Cables too long • Too many cables in the infrastructure (even unconnected strand count) • Too many devices on the Powerline • Faulty device
I inserted my USB drive with a ccb file on it and the Administration->Software->Update menu shows "None".	Make sure that your USB drive is formatted with at least one partition. Make sure your .ccb file is in the root directory of the first partition on your USB drive. If not, you can run diskpart on Windows Vista and later versions of Windows to create a partition.
I upgraded to 1.1 but I cannot see the Networking menu.	Make sure you properly inserted an Ethernet or Fiber module in one of the option module slots. You can verify that they are detected by looking at the Modules Settings menu.

Issue	Solution
I powered up two Main Stations and they are not showing up in the Networking > Stations list.	Make sure your Ethernet of Fiber cable is properly connected to a router, a switch or another Main Station. There is a green LED beside each Ethernet and Fiber port to indicate that the connection is fine. Look at each station IP address and Subnet Mask under Networking > Preferences and make sure that they are part of the same subnet. Also make sure that their IP address is different from any other device on your IP network.
My connection to the CCM is intermittent.	This is generally caused by more than one device using the same IP address. Check with your network administrator that there is no IP clash.
My device has gone into link-local mode. (IP address = 169.254.XX.XX)	If your device is set to Dynamic Host Configuration Protocol (DHCP) and there is no DHCP available on the network, it is connected to it will revert to link-local automatically. You need to allocate a static IP address to this device. See **Troubleshooting on page 285** for more information.

25 Compliance

Manufacturer

HM Electronics Inc.
Carlsbad
California
US

FCC notice

This device complies with Part 15 of the FCC rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) This device must accept any interference received, including interference that may cause undesired operation.

Note: This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communication. Operation of this equipment in a residential area is likely to cause harmful interference, in which case the user will be required to correct the interference at his own expense.

Changes or modifications not expressly approved by Clear-Com, LLC, an HM Electronics, Inc. company could void the user's authority to operate this equipment.

Industry Canada Compliance Statement

This Class[A] digital device complies with Canadian ICES-003.

Avis de conformité à la réglementation d'Industrie Canada

Cet appareil numérique de la class[A] est conforme à la norme NMB-003 du Canada.

Korean notice

A급 기기 (업무용 방송통신기자재)

이 기기는 업무용(A급)으로 전자파적합기기로

서 판매자 또는 사용자는 이 점을 주의하시기

바라며, 가정외의 지역에서 사용하는 것을 목

적으로 합니다.

The HMS-4X, HRM-4X, HBP-2X, HXII-BP-X4, HBP-2XS, HLI-2W2 and HLI-4W2 products comply with the following specifications:

EN55022 and EN5032	Emissions
EN55024	Immunity

Electromagnetic Compatibility Directive 20014/30/EU

Low Voltage Directive 2014/35/EU

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.

The HMS-4X, HLI-2W2 and HLI-4W2 products comply with the following specifications:

UL 60065-7

CAN/CSA-C22.2 No.60065-3

IEC 60065-7

Waste Electrical And Electronic Equipment (WEEE)

The European Union (EU) WEEE Directive (2002/96/EC) places an obligation on producers (manufacturers, distributors and/or retailers) to take-back electronic products at the end of their useful life. The WEEE Directive covers most Clear-Com products being sold into the EU as of August 13, 2005. Manufacturers, distributors and retailers are obliged to finance the costs of recovery from municipal collection points, reuse, and recycling of specified percentages per the WEEE requirements.

Instructions for Disposal of WEEE by Users in the European Union

The symbol shown below is on the product or on its packaging which indicates that this product was put on the market after August 13, 2005 and must not be disposed of with other waste. Instead, it is the user's responsibility to dispose of the user's waste equipment by handing it over to a designated collection point for the recycling of WEEE. The separate collection and recycling of waste equipment at the time of disposal will help to conserve natural resources and ensure that it is recycled in a manner that protects human health and the environment. For more information about where you can drop off your waste equipment for recycling, please contact your local authority, your household waste disposal service or the seller from whom you purchased the product.