

HMS-4X Main Station

Digital Partyline Solutions

Linking
People
Together



HMS-4X

Key Features and Benefits

HelixNet System Operation

- 6 HMS/LQ devices can link over LAN and WAN
- Supports up to 64 endpoints on HelixNet system
- 12 partyline channels. Expandable to 24 channels via optional license

Main Station

- Easy to use CCM browser configuration tool
- Fast front panel control and configuration
- Plug-and-go installation with hardwire auto-discovery
- Central upgrades automatically managed from main station

User Station

- Headset or hands-free support with speaker and mic
- (4) Keysets freely assignable to channels
- All Talk, Stage Announce, RMK and Program Audio level controls

Connectivity

- (2) Powerlines for distribution of Ethernet to HelixNet user stations via XLR cables
- (3) Expansion slots for HLI modules: Ethernet, fiber, 2-wire and 4-wire ports
- (1) Program Audio input and Stage Announce output
- (4) Contact closure inputs and outputs

LQ Integration Options

- LQ linking for high density 2-wire, 4-wire and GPIO expansion
- Agent-IC natively integrated via optionally licensed LQ
- SIP/VoIP integrated via optionally licensed LQ

HelixNet is a fully networked partyline intercom, supporting up to 24 channels and independent program audio over XLR, LAN or WAN.

Description

HelixNet's HMS-4X main station is a combination of a system master and an intercom user station with XLR Powerline connections to user stations. HMS-4X hosts up to 3 HLI interface modules for external connectivity, including Ethernet and Fiber slot.

System Architecture

HMS-4X manages all endpoint connections and Ethernet routing of incoming audio to all listening user stations, where the audio is locally mixed. HelixNet's 12 channels of partyline intercom and program audio are available at any HelixNet user station or interface port regardless of where they connect to the system. Optional license expands the HMS-4X to support 24 channels.

Main Station

HMS-4X features two XLR Powerlines each capable of supporting 10 user stations. Powerline allows digital connection using standard XLR cables and supports various cabling topologies and passive splitting, conceptionally similar to analog partyline cabling. HMS-4X concurrently supports endpoint connectivity over mix of Powerline and Ethernet with the optional HLI-ET2 Ethernet module. HelixNet supports up to 64 user stations or interface port endpoints. User stations may be added and removed dynamically without configuration and assigned to any channel without restrictions. HMS-4X hosts firmware for endpoints and automatically matches versions upon endpoint connection.

Linking

Up to 5 HMS-4X main stations can be linked to the master HMS-4X over Ethernet networks or fiber for a total of 6 linked HMS-4X. Link Group of multiple HMS-4X seamlessly forms a distributed HelixNet system, allowing local connectivity of HLI interface modules and XLR Powerlines to user stations.

User Station and System Configuration

HMS-4X front panel provides four keysets assignable to any intercom channel. The user station is provisioned with a headset connection, gooseneck mic connector and a loudspeaker in addition to All Call, Stage Announce, Remote Mic Kill and Program Audio level controls. Expansion mode allows up to 6 other HMS or HRM user stations to be combined, each station having up to 24 channels.

The keysets include unique waterfall menu allowing tactile system management. Browser-based Core Configuration Manager (CCM) allows networked system management using the optional HLI-ET2 Ethernet module.

HLI Interface Modules

HMS-4X can host three HLI interface modules for external analog audio and intercom connectivity, Ethernet linking and system control. HLI-modules include: HLI-ET2 network interface for system control, HMS-4X and LQ linking and user station connectivity. HLI-FBS 100Mb SFP fiber network module. HLI-4W2 dual 4-wire analog line-level interfaces. HLI-2W2 dual 2-wire interface for analog partyline cabling.

LQ integration

Clear-Com's LQ series of IP interfaces can be added to HelixNet Link Groups. Up to 3 LQ devices may be linked to a HelixNet system for a maximum total of 6 combined HMS and LQ in Link Group. LQ provides the system with 2-wire, 4-wire and GPIO interfaces in addition to Eclipse HX E-IPA/IVC linking, optionally licensed Agent-IC mobile apps and SIP/VoIP telephone clients.

Technical Specifications

Linking

HMS is required as HelixNet Master.
Link Group may include 5 additional HMS Members, including up to 3 LQ devices for a maximum of 6 HMS/LQ in Link Group. HMS link using HLI-ET2 or HLI-FBS modules over LAN/WAN connections. Link Group supports up to 64 endpoints (station/port).

Channels

12 or 24 intercom channels.
Assignable to any station or port.

Connectors

XLR Powerline: (2) Powerline, each with 3 pin XLR-M/F
Headset: 4-pin XLR-M
USB: Type A & Micro AB
Program: 3-pin XLR-F
SA (Stage Announce): 3-pin XLR-M
Hot Mic/IFB Interface: 1/4" (6.35 mm) jack
GPIO: 25 pin D-type female (4 GPI, 4 GPO, 5V)

Microphone Pre-amplifier

Headset Mic Impedance: 200Ω (Dynamic)
Headset Mic Voltage: 1.7V (Electret selectable)
Limiter: +23dB

Route to 4-wire output at 0dBu:
Mic Gain: 60dB (Dynamic), 45dB (Electret)
Frequency Response: 200Hz - 10 kHz ±3dB
Distortion: <0.2% THD @ 1kHz
Noise: <-55dBu (Dynamic), <-65dBu (Electret)

Headphone Amplifier

Load Impedance: >32Ω
Output Level: +12dBu before clipping
Sidetone: -12dBu (selectable)

Route from a 4-wire input at 0dBu:
Max Gain: 0dB
Frequency Response: 40Hz - 10kHz ±3dB
Distortion: <0.1% THD @ 1kHz
Noise: <-65dBu
Headphone Limiter: 0dBu (selectable)

Loudspeaker Amplifier

Load Impedance: 8Ω
Output Level: +18dBu before clipping

Route from a 4-wire input at 0dBu:
Max Gain: 18dB
Frequency Response: 200Hz - 10kHz ±3dB
Distortion: <0.1% THD @ 1kHz
Noise: <-50dBu

Program Line Input

Maximum Level Before Clipping: +18dBu
Nominal Input Level: 0dBu (selectable)
Input Impedance: ≥ 10KΩ

Route to 4-wire output at 0dBu:
Frequency Response: 20Hz - 10kHz ±3dB
Distortion: <0.2% THD @ 1kHz
Noise: <-65dBu

Stage Announce Input

Maximum Level Before Clipping: +18dBu
Nominal Output Level: 0dBu (selectable)
Output Impedance: ≤ 100Ω

Route from a dynamic headset:
Frequency Response: 300Hz - 12kHz ±3dB
Distortion: <0.1% THD @ 1kHz
Noise: <-55dBu

Hot Mic Input

Maximum Level Before Clipping: +12dBu
Nominal Output Level: 0dBu (selectable)
Output Impedance: ≤ 100Ω

Route from a dynamic headset:
Frequency Response: 300Hz - 12kHz ±3dB
Distortion: <0.2% THD @ 1kHz
Noise: <-55dBu

Powerline

Two independent network Powerlines Supply power and data to up to 10 beltpack endpoints each

Main Power

Input Frequency Range: 50 - 60Hz
Input Power: ≤ 250VAC
Power Connector: IEC-C14

Environmental

32° - +104°F (0 - +40°C)
90% relative humidity

Dimensions

1.75 x 19 x 13 in (HxWxD)
(44 x 483 x 320 mm)

Weight

5.83 lbs. (2.65 kg)

Network Specifications

Network Protocols

Ethernet IPv4 - Unicast Audio and Control
mDNS - Multicast Device Discovery
Layer 3 - Routable with mDNS function limitations
WavPack - Audio Codec

Network Ports

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

Network Parameters

Link Group endpoint support: 64 (station / port)

Bandwidth:

300 kbps each audio input linking between HMS/LQ
Link Group audio sent as needed between members
300-600 (max) kbps from each audio input to HMS
1200-2400 (max) kbps from HMS to each endpoint

QoS tags:

DSCP=46, High Priority/Expedited Forwarding (EF)

Link-Local Default IP address range: 169.254.0.0/16

System reserved IP ranges:

10.0.0.0/8 for endpoints
172.23.0.0/16 for Link Group

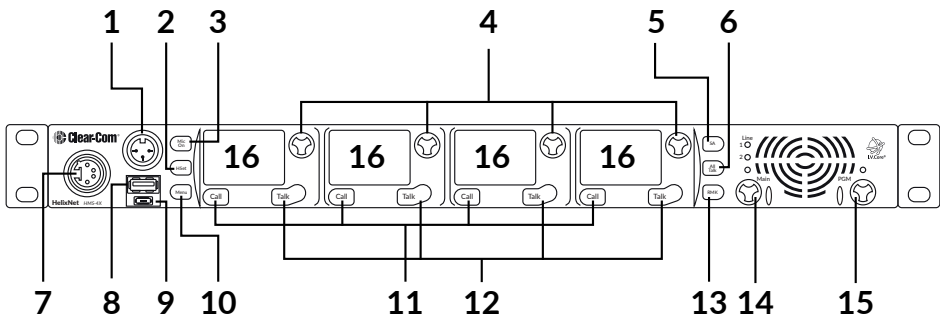
Recommended Ethernet Switches:

Managed Ethernet Switch - Layer 3
100/1000Base-T ports for endpoints
1000Base IP Trunks between switches
QoS configuration
Energy Efficient Ethernet bypass option
IGMP Snooping bypass option

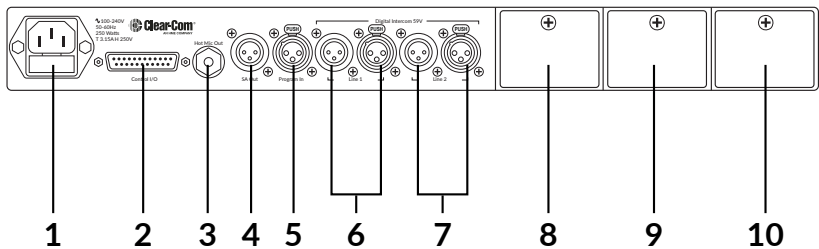
HMS-4X Main Station

Digital Partyline Solutions

HMS-4X Front Panel



HMS-4X Back Panel



Legend

Front

1. Microphone Connector
2. Headset Mic Key
3. Mic Key
4. Rotary Level/Menu Key
5. Stage Announce
6. All Talk
7. Headset Connector
8. USB 2.0 Connector
9. Micro USB 2.0 Connector
10. Menu Key
11. Call Key
12. Talk Key
13. Remote Mic Kill
14. Speaker/Headphone Volume Control
15. Program Volume Control
16. Menu Keyset Display

Back

1. Universal Power Socket (fused)
2. GPIO DB25, Control Inputs and Outputs
3. Hot Mic Output - 1/4" TRS
4. Stage Announce Line Out
5. Program Input
6. XLR Powerline 1
7. XLR Powerline 2
8. Option Module Slot 1
9. Option Module Slot 2
10. Option Module Slot 3

Order Code

HMS-4X

Optional Interface Modules and SFPs (Sold Separately):

- HLI-2W2: 2-wire module
- HLI-4W2: 4-wire module
- HLI-ET2: Ethernet module
- HLI-FBS: Fiber module
- HLI-MMFO: Single-mode SFP
- HLI-SMFO: Multi-mode SFP