

## 14 FAQs

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### 14.1 What does a solid red light on the front panel keypad indicate?

A solid red light on the keypad shows that the unit has lost its IP connection to the Link-Master.

- 1) Make sure that the Link-Master's IP address is reachable from the network point where the Link-Member is connected.

### 14.2 What does a flashing red light on the front panel keypad indicate?

A flashing red light shows that there is an ID conflict within the LQ-Group, meaning that two LQ units are trying to connect to a Link-Group using the same link ID.

To resolve this you will need to undo the unit's link to the Link-Master and then re-apply the linking process to an available ID:

- 1) Within a Web-browser, enter the IP address of the LQ device which is showing the flashing red LED. This takes you to the Core Configuration Manager (CCM) for that unit.
- 2) Navigate to the device's **Linking** page (**Home > Linking**).
- 3) Click the **Change Role to Link-Master** button and click **Apply Changes**.
- 4) Now reconfigure the link and the link ID. To do this, click the **Change Role to Link-Member** button, and enter the Link-Master IP. Click the blue check mark or <Enter>.
- 5) Select an available ID slot (available IDs will be highlighted in blue) and click **Apply Changes**.

### 14.3 What does a persistent flashing green light (more than 2 minutes) on the front panel keypad indicate?

The devices boot automatically when power is supplied and show a flashing green light on the front panel keypad while the system is booting.

If the device is booting (the flashing green light does not turn into a solid green light) for more than 2 minutes, and the display screen does not move beyond the Clear-Com splash screen, the most likely explanation is that the unit does not have enough power. This can happen if too many LQ devices are drawing power from the same PoE switch or network.

Please check the power supply provided by PoE to see if this is the case and consider using the supplied power connector cable to power the devices.

## 14.4 How do I update the software in the LQ units?

Connect a Web-browser to the LQ unit and navigate to the **Upgrade** section within the device configuration page (**Home > General**).

For more detailed information see **13. Upgrading your device**.

## 14.5 How do I eliminate choppy audio being received by another LQ unit?

Choppy audio is usually the result of a port that has a Network Quality setting that is too high for the IP network. The following two approaches will help resolve this issue:

### 14.5.1 Reduce the Network Quality setting on the transmitting LQ unit's port

- 1) Within a Web-browser, enter the IP address of the LQ device which is transmitting the audio to the receiving unit. This takes you to the Core Configuration Manager (CCM) for that unit.
- 2) Navigate to the LQ unit's audio interface configuration page (**Home > 2-Wire/4-Wire**).
- 3) Click on the **Network Quality** setting for the appropriate port.
- 4) Choose a lower network quality setting and click on the blue check mark to apply the setting.
- 5) Repeat step 4 until the choppy audio is minimized.

### 14.5.2 Reduce the Network Quality setting on the receiving LQ unit's port

To modify network quality on the receiving LQ unit's port use the following steps:

- 1) Within a Web-browser, enter the IP address of the LQ device which is experiencing choppy audio. This takes you to the Core Configuration Manager (CCM) for that unit.
- 2) Navigate to the unit's audio interface configuration page (**Home > 2-Wire/4-Wire**).
- 3) Click on **Network Quality** for the appropriate port.
- 4) Choose a lower Network Quality setting and click on the blue check mark to apply the setting.
- 5) Repeat step 4 until the choppy audio is minimized.

**Note:** The jitter buffer setting is designed to buffer audio received to prevent loss if there is network jitter. Please be aware that the jitter buffer selection will directly affect the latency. This is because the lower number in the jitter range represents the amount of time the LQ unit will buffer audio before delivering it to the port. A bigger jitter buffer setting will increase latency in milliseconds.

The **Custom** option within the **Network Quality** setting allows adjustment of the jitter buffer setting independent of other settings.

## 14.6 How do I set the system up if I have to cross one or more firewalls?

As a minimum requirement for connectivity, the Link-Master must be reachable by all other Link-Members in the Link-Group. To achieve this, port-forwarding rules need to be created within the firewall which the Link-Master is behind. The ports that need to be forwarded are as follows:

- 1) **80:TCP**. This is used for both link initiation and Web management.
- 2) **655:TCP/UDP**. This is used for the transmission of all audio and data (call-signaling) between Link-Group members.

To set up a Link-Group with devices behind one or more firewalls, please observe the following **example** configuration:

Assume the following IP addresses and port-forwarding rules:

- **173.194.121.48** (external IP address)
- **192.168.1.100** (Link-Master network address)
- **6300** (arbitrary port chosen for port 80, the management port-forward rule)
- **6301** (arbitrary port chosen for port 655, the audio/data port-forwarding rule)

- 1) Within the firewall, create a port-forward rule that forwards any **TCP** requests received on **173.194.121.48:6300** to **192.168.1.100:80**.
- 2) Within the firewall, create a port-forward rule that forwards any **TCP/UDP** requests received on **173.194.121.48:6301** to **192.168.1.100:655**.
- 3) Within the Link-Master's **Network** configuration page, configure the external IP and audio/data port:



- 4) Within the remote unit's **Linking** configuration page, configure the Link-Master's external IP and management port:



- 5) Repeat step 4 for each LQ unit to be part of the group.

- 6) For every Link-Member within the Link-Group that can be made externally reachable, navigate to the device's **Network** configuration page and configure the external IP and audio/data port as in step 3 (optional).

These configuration steps will ensure basic connectivity within the Link-Group. For more detailed information see **7. Internet Connectivity**.

## 14.7 Why does the Link-Master need to have a static IP address?

The Link-Master needs to be statically addressed in order to prevent its IP address from changing. A changed IP address will result in loss of connectivity with the rest of the Link-Group.

**Note:** Another alternative is to maintain DHCP addressing but use the Address Reservation feature available in most managed routers. This will instruct the router to allocate a specific DHCP address to an LQ device identified by its MAC address. The unit's MAC address can be retrieved through the LQ's front panel menu.

## 14.8 What are the consequences if connection to the Link-Master is lost?

- Loss of audio. When connecting over the Internet, it is usually the case that the Link-Master is the only device that is reachable by the other units in the group. If this is the case, all audio will be routed through the Link-Master, creating the possibility of a single point of failure. To prevent this, be sure to facilitate connectivity between the LQ units in the group through port-forwarding, described in **7. Internet Connectivity**.
- Prevents the ability for any of the LQ units to modify the name of any of the static channel names.
- Prevents the distribution of device configuration changes throughout the Link-Group resulting in the possibility of having an inconsistent view of that configuration information depending on the perspective from which the device information is retrieved.

## 14.9 Does the LQ-4W2 pass call-signaling?

Yes, but only call-signaling originating from Clear-Com equipment.

## 14.10 Connectivity, including Web access to my LQ unit is intermittent, even though I am accessing it from within the same LAN.

The most probable cause for this is that an IP conflict exists. In this case, the IP address used by the LQ unit is already in use by another device within your LAN. The quickest and easiest way to check if this is the problem is to change the LQ unit's IP address to an address that is known to be available and observe if connectivity to the unit is once again consistent.

## 15 Technical specifications

### 15.1.1 Audio

Audio			
2-wire LQ		4-wire LQ	
Frequency response	50-10 kHz	Frequency response	100-12 kHz
Codec	OPUS	Codec	OPUS
Input/output gain	-3 to +3 dB	Input/output gain	-12 to +12 dB
Maximum input Clear-Com	0dBu (nominal -18dBu)	Input impedance	100K transformer isolated
Maximum input RTS	+6dBu (nominal -12 dBu)	Output impedance	120R transformer isolated
Termination	200R selectable	Maximum output	+18dBu (nominal 0dBu)
On-Noise	<-70dBu	Noise	<-75dBu
Off-Noise	<-85dBu		
Call drive voltage Call sense voltage Clear-Com	>11V <4V	Call drive and sense	Clear-Com
Call drive voltage Call sense voltage RTS	-7dBu 20kHz -32dBu 20kHz		
RMK (Remote microphone kill)	Clear-Com and RTS		

### 15.1.2 Pin-outs 2-wire

Pin	Clear-Com	RTS
Pin 1	Ground	Ground
Pin 2	DC power (30V)	DC power (30V) Duplex audio 1
Pin 3	Duplex audio	Duplex audio 2

### 15.1.3 Pin-outs 4-wire

Pin	To panel	To matrix
Pin 1	RS-422 input + (into matrix)	RS-422 output + (from panel)
Pin 2	RS-422 input – (into matrix)	RS-422 output - (from panel)
Pin 3	Audio input + (into matrix)	Audio output + (from panel)
Pin 4	Audio output + (from matrix)	Audio input + (into panel)
Pin 5	Audio output – (from matrix)	Audio input – (into panel)
Pin 6	Audio input – (into matrix)	Audio output – (from panel)
Pin 7	RS-422 output + (from matrix)	RS-422 input + (into panel)
Pin 8	RS-422 output – (from matrix)	RS-422 input – (into panel)

### 15.1.4 Partyline output current (2-wire)

Line voltage (selectable)	
PoE	26V 70mA max
DC power connector	26V 150mA max

### 15.1.5 Network quality settings

**Note:** Default option is in bold.

Bitrates	32, 48, <b>64</b> , 128 kbps
Packet size	5, <b>10</b> , 20, 40ms
Jitter buffer	40 - 100ms, 20 – 60ms, <b>5 – 60ms</b> , 0 – 60ms

### 15.1.6 Connectors

2-wire	4-wire
2 x etherCON (female) : network 2 x 3 pin XLR-F: audio	4 x etherCON (female): 2 for network, 2 for audio