ClearOne®

APPLICATION TECH NOTE

LONG DISTANCE P-LINK MODE

OVERVIEW

This document describes information related to enabling and operating in Long Distance P-Link Mode. The Long Distance P-Link allows P-Link connections of up to 650 feet (198 meters) in distance with a single cable. This is more than triple the distance of a regular P-Link. Long Distance P-Link carries power, audio and control like the regular P-Link, but is limited to connections between CONVERGE® Pro 2 (CP2) and Beamforming Microphone 2 Array (BFM2) units, and BFM2 to BFM2 units.

Long Distance P-Link Mode is available at no cost to both existing and new customers with CP2 and BFM2 units.
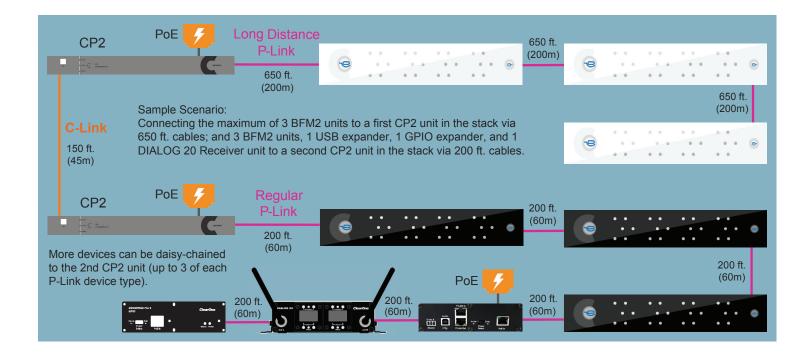
SUPPORT

CONVERGE Pro 2

Long Distance P-Link Mode is an option for all CP2 AEC products:

1. 48T
2. 48V
3. 128
4. 128D
5. 128T
6. 128TD
7. 128V
8. 128VD
9. 120

Peripheral SKUs

The Long Distance P-Link supports only the BFM2 peripheral SKU, which restricts the use of other peripheral devices in the same chain. It is an optimal solution for BFM2 only P-Link chains that require more than 200 feet (60 meters) of distance between BFM2 units, eliminating the need to use other peripheral devices as distance extenders in a P-Link chain. Like regular P-Link, Long Distance P-Link allows up to three (3) BFM2 units in a single P-Link chain.

» NOTE: A different mode can be employed in each P-Link chain of an individual CP2 unit in a stack.

Sample Scenario:
Connecting the maximum of 3 BFM2 units to a first CP2 unit in the stack via 650 ft. cables; and 3 BFM2 units, 1 USB expander, 1 GPIO expander, and 1 DIALOG 20 Receiver unit to a second CP2 unit in the stack via 200 ft. cables.

More devices can be daisy-chained to the 2nd CP2 unit (up to 3 of each P-Link device type).

USING LONG DISTANCE P-LINK

No hardware changes are required to CP2 and BFM2 hardware.

Requirements

The only requirements to start using Long Distance P-Link are:

- CONSOLE® software
- Firmware upgrades
- CAT6, 550 MHz, 23 AWG, solid conductor cable. Do not use Copper Clad Aluminum (CCA).

Latest versions of both software and firmware available in the ClearOne Resource Library:

http://www.clearone.com/resources#professional_audio

Upgrade BFM2 units to firmware v1.0.3.12 (or newer) using a regular P-Link cable (less than 200 feet/60 meters). Long Distance Mode has been added to firmware v1.0.3.12. Older firmware cannot be used with the long P-Link cables (up to 650 feet/198 meters). Newly purchased BFM2 units may have older firmware and need to be upgraded before using long P-Link cables.

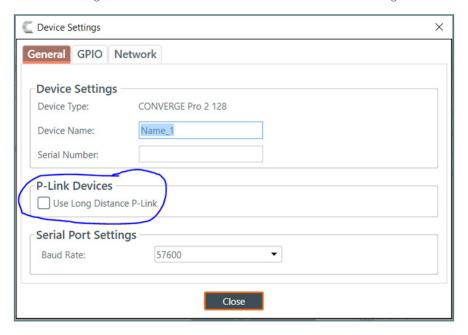Upgrade CP2 units to firmware 5.0.13.0 (or newer).

Setup

Units that have not been loaded with a configuration (at default) will operate in normal distance P-Link mode. If your beamformers are connected with a long cable (>200 feet/60 meters) then they will not be discovered by the CP2 unit until a configuration has been loaded that enables the Long Distance mode. For this reason you will need to load two configuration files one after the other. The first load will set the long distance mode but does not contain Beamformers. The second load will keep the long distance mode and also contains beamformers. Once Long Distance mode has been set you will only need to load modified configurations only once. If you default the units back to factory default then you will need to do the two configuration load as described.

1. Connect Beamformers to CP2 with short P-Link cables (<200 feet/60 meters)
2. Upgrade CP2 to v5.0.13.0 or newer (may require a power cycle or reset after upgrade has completed)
3. Upgrade Beamformers to v1.0.3.12 or newer (may require a power cycle or reset after upgrade has completed)
4. Load a configuration file with Long Distance P-Link mode enabled but with all Beamformers removed. (system may reset)
5. Connect Beamformers to CP2 with long P-Link cables (<650 feet/198 meters).
6. Disconnect Console and then reconnect. At this point you should see the Beamfomers.
7. Load your configuraion file with Long Distance P-Link mode enabled and with all the Beamformers.

For offline configuration, follow the same steps. They will create both configuration files in offline mode and then once they are at the site they will follow the same steps as outlined.

The Long Distance P-Link Mode setting can be found under the General tab in the Device Settings window.

APPLICATIONS

Scenarios

There are many scenarios in which you may choose to use a Long Distance P-Link.

Some examples:

- Sites where BFM2 units need to be mounted more than 200 feet (60 meters) from the CP2 and/or other BFM2 units, and....
  - » with no other devices in between the CP2 and/or BFM2 units,
  - » and using a single cable between each CP2 and/or BFM2 unit.
- Sites where only BFM2 units are needed; no other peripheral devices are needed.
- Sites where one CP2 unit is used for multiple rooms, such as...
  - » when one CP2 unit is used for up to 3 rooms, with more than 200 feet (60 meters) of distance in between devices,
  - » or if BFM2 units in different rooms need to be daisy-chained.

Environment

Classrooms, Conference Rooms, Corporate, Prisons

REGULAR P-LINK VS LONG DISTANCE P-LINK COMPARISON CHART

S. No.	Feature	Regular P-Link	Long Distance P-Link
1	Applicable to all CP2 units	YES	NO (only supports CP2 AEC units)
2	Applicable to all peripheral units (BFM2, DIALOG 20 Receiver, USB Expander, GPIO Expander)	YES	NO (only supports BFM2)
3	Same CP2 and BFM2 hardware (no hardware changes, only software and firmware upgrades)	YES	YES
4	Applicable to already sold and installed units	YES	YES
5	Maximum distance between units	200 feet (~60 meters)	650 feet (~200 meters)
6	Carries power, audio, control	YES	YES
7	Maximum number of peripheral devices in one P-Link chain	12 (3 each: BFM2, DIALOG 20, USB Expander, GPIO Expander)	3 (3 BFM2 only)
8	Cable specification	CAT5e/CAT6, 24 AWG, solid conductor cable. Do not use Copper Clad Aluminum (CCA).	CAT6, 550 MHz, 23 AWG, solid conductor cable. Do not use Copper Clad Aluminum (CCA).
9	PoE Power Injector spec	56V, Mode B, Midspan – For 3 BFM2 units 48V, Mode B, Midspan – For 1 BFM2 unit	56V, Mode B, Midspan – For 3 BFM2 units 48V, Mode B, Midspan – For 1 BFM2 unit
10	No extra cost, free to upgrade	YES	YES