

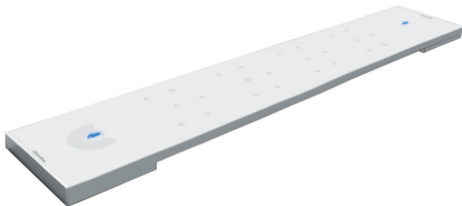
# ClearOne®

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## **Beamforming Microphone Array 2**

Group Microphone for Professional Conferencing

Quick-Start Guide



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### IMPORTANT SAFETY INSTRUCTIONS

1. Read these instructions.
2. Keep these instructions.
3. Heed all warnings.
4. Follow all instructions.
5. Do not use this apparatus near water.
6. Clean only with dry cloth.
7. Do not block any ventilation openings. Install in accordance with the manufacturer's instructions.
8. Do not install near any heat sources such as radiators, heat registers, stoves, or other apparatus (including amplifiers) that produce heat.
9. Do not defeat the safety purpose of the polarized or grounding-type plug. A polarized plug has two blades with one wider than the other. A grounding type plug has two blades and a third grounding prong. The wide blade or the third prong are provided for your safety. If the provided plug does not fit into your outlet, consult an electrician for replacement of the obsolete outlet.
10. Protect the power cord from being walked on or pinched particularly at plugs, convenience receptacles, and the point where they exit from the apparatus.
11. Only use attachments/accessories specified by the manufacturer.
12. 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.
13. Unplug this apparatus during lightning storms or when unused for long periods of time.
14. Refer all servicing to qualified service personnel. Servicing is required when the apparatus has been damaged in any way, such as power-supply cord 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.



## BEAMFORMING MICROPHONE ARRAY 2

### THE BEAMFORMING MICROPHONE ARRAY 2

The Beamforming Microphone Array 2 (BFM2) is a 2nd generation Beamforming Microphone Array product featuring 24 microphones, and beamforming and adaptive steering technology designed specifically for the CONVERGE® Pro 2 (CP2) products: 128, 128D, 128T, 128TD, 128V, 128VD, 120, 48T, and 48V. The BFM2 connects with the CONVERGE Pro 2 through a Peripheral Link (P-Link) port with either Regular (200 ft.) or Long Distance (650 ft.) P-Link cables. Three arrays are supported per CP2 via either Regular or Long Distance P-Link, and up to 6 BFM2s can be daisy-chained in one Regular P-Link chain with a stack of two CP2 mixers. Power to the BFM2 is supplied through a Power-Over-Ethernet (PoE) or P-Link connection from CP2.

The BFM2 is supported by ceiling-mounted, wall-mounted or tabletop assembly.

**IMPORTANT:** The BFM2 only can be used with CP2 systems. It is not compatible with CONVERGE Pro or first generation Beamforming Microphone Array systems.

The latest version of the CP2 firmware can be found on the ClearOne website at:

[http://www.clearone.com/resources#professional\\_audio](http://www.clearone.com/resources#professional_audio)

The latest version of the BFM2 firmware and the Beamforming Microphone Array 2 Installation Guide can be found on the ClearOne website at:

[http://www.clearone.com/resources#professional\\_microphones](http://www.clearone.com/resources#professional_microphones)

### QUICK-START OVERVIEW

Installing and using the BFM2 in your CP2 site is subject to the following parameters:

1. The BFM2 can only be used with CP2 systems.
2. You must have a CP2 128, 128D, 128T, 128TD, 128V, 128VD, 120, 48T and/or 48V mixer in the site. The BFM2 will not work with standalone 012, 128SR, or 128SRD units.
3. Connect up to 3 BFM2s (current) per CP2 unit, and up to 6 BFM2s per Regular P-Link chain with 2 CP2 unit stack. More CONVERGE Pro units may be added to increase the number of BFM2s per site.

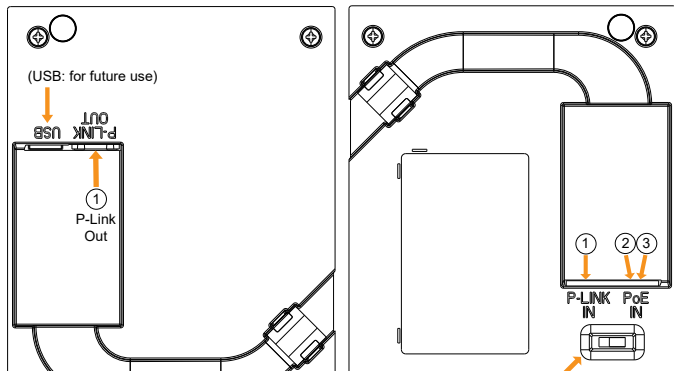
### Quick Start Procedures

These steps must be done in the following order to use the BFM2 in your CONVERGE Pro 2 Site:

1. Update the CONVERGE Pro 2 firmware to the latest version using CONVERGE Pro 2 CONSOLE software.
2. Connect the BFM2 to the updated CONVERGE Pro 2 via the P-Link bus.
3. Update the BFM2 firmware using CONVERGE Pro 2 CONSOLE. (The BFM2 firmware can not be upgraded directly without an updated CONVERGE Pro 2.)
4. Test the BFM2.
5. Mount the BFM2.

## CONNECTING THE BFM2

Connect the BFM2 units to the CP2 unit via P-Link connections using CAT6-24AWG solid conductor RJ45 cables.



The BFM2 must be powered by an external PoE source that supports Mode B type power delivery. (A PoE Network Switch generally will not work for this.) A PoE injector can either be connected to P-Link PoE port on the rack-mounted CP2 unit, or it can be connected directly to the BFM2's PoE In port.

When the PoE injector is connected to the CP2 unit's P-Link PoE port, the CP2 unit's P-Link Out port will provide both power and data communications to the BFM2. If the PoE injector is connected directly to the BFM2

## QUICK-START GUIDE

PoE In port, a second cable must be connected from the CP2 unit's P-Link Out port to the BMF2 P-Link In port. (Note that the CP2 unit itself does not provide PoE power without an external PoE injector.)

ClearOne PoE power supply part number 910-3200-202 is recommended, and will power up to three P-Link devices. Part number 910-001-004 will power a single P-Link device. Some third-party PoE injectors will work, but not all. Mode B PoE injectors that meet the PoE IEEE 802.3at specification should power three devices, PoE IEEE 802.3at injectors should be able to power one device.

See also this app note:

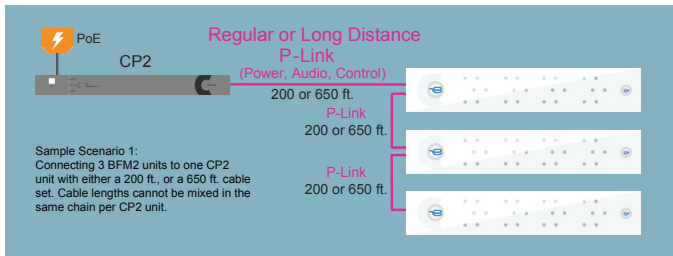
[http://www.clearone.com/uploads/resource/AppNote\\_PoE\\_and\\_CONVERGE\\_Pro\\_2\\_P-link\\_Peripheral\\_Products\\_NTS-0053-001\\_Rev1.0.pdf](http://www.clearone.com/uploads/resource/AppNote_PoE_and_CONVERGE_Pro_2_P-link_Peripheral_Products_NTS-0053-001_Rev1.0.pdf)

The power-source-selection switch should be set towards PoE if the BFM2 is powered by PoE, or set towards P-Link if powered by P-Link.

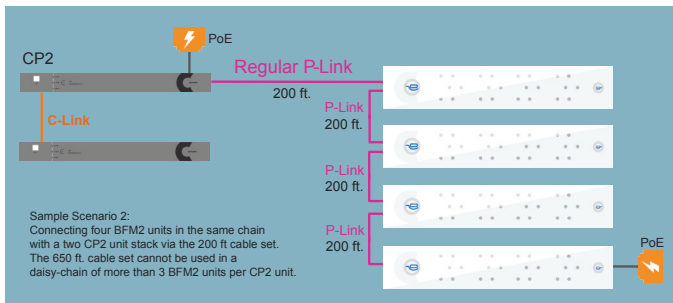
# BEAMFORMING MICROPHONE ARRAY

## Daisychain Examples

**Example 1** shows a basic daisychain of three BFM2 arrays to a single CONVERGE Pro 2 unit:



**Example 2** illustrates a daisychain of four BFM2 arrays to two CONVERGE Pro 2 units:





### UPDATE BFM2 FIRMWARE

1. Connect the P-Link cable between the CP2 units and the BFM2s.
2. Connect the CP2 units with CONVERGE Pro 2 CONSOLE.
3. Open the Firmware Loader screen.
4. Browse for the bf2\_mic.mdo file.
5. Download the BFM2 firmware.
6. The BFM2(s) will default and reboot after the download of firmware.
7. Units are fully upgraded. (All BFM2 units connected via the P-Link on the site are simultaneously updated.)
8. Restore the saved site file to the system using CONVERGE Pro 2 CONSOLE.

### TEST THE BFM2

The BFM2 must be added to the site using the CONVERGE Pro 2 CONSOLE software. This software also provides the capability of configuring the beams (enable/disable) and other characteristics available in Configuration mode. Refer to the online help available with the CONVERGE Pro 2 CONSOLE software.

### VOLUME & MUTE

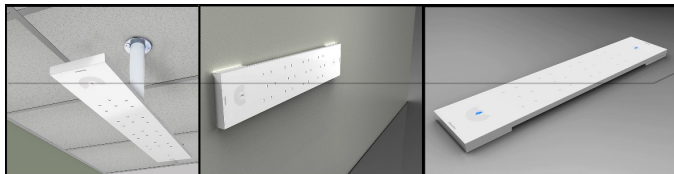
These controls are available through the controller configured for your CONVERGE Pro 2 site.

## MICROPHONE ARRAY LED INDICATORS

The illuminated microphone indicators at the ends of the BFM2 show blue/red when the microphone array is active/muted. You can set the indicators to remain off by using CONVERGE Pro 2 CONSOLE to change Unit Properties for the BFM2. See the help file for more details.

## MOUNT THE BFM2

The array can be ceiling-mounted in either a suspended or solid ceiling, or on a wall-mount assembly with the PoE or P-Link wiring passing through the mounting assembly and plugging into the BFM2 unit.



Tabletop use is also supported with PoE or P-Link cables attached under the unit.

**NOTE: 1st Gen BFM mounting kits are compatible with 2nd Gen BFM2 unit and vice versa.**

Detailed instructions are included in the BFM2 Installation Guide available on the ClearOne website:

[http://www.clearone.com/resources#professional\\_microphones](http://www.clearone.com/resources#professional_microphones)

## COMPLIANCE

Details on compliance can be found on the ClearOne website under “Resource Library”.

## Part Numbers

Item	White color SKU	Black color SKU
Beamforming Microphone Array 2	910-3200-201	910-3200-201-B
BMF2 Ceiling Mount kit with 12" Suspension Column	910-3200-203-12	910-3200-203-12-B
BMF2 Ceiling Mount kit with 24" Suspension Column	910-3200-203-24	910-3200-203-24-B
BMF2 Ceiling Mount kit with 36" Suspension Column	910-3200-203-36	910-3200-203-36-B
BMF2 Ceiling Mount kit with 48" Suspension Column	910-3200-203-48	910-3200-203-48-B
BMF2 Ceiling Mount kit without Suspension Column	910-3200-203	910-3200-203-B
BFM Ceiling Mount kit with 12" suspension column	910-001-005-12	910-001-005-12-B
BFM Ceiling Mount kit with 24" suspension column	910-001-005-24	910-001-005-24-B
BFM Ceiling Mount kit with 36" suspension column	910-001-005-36	n/a
BFM Ceiling Mount kit with 48" suspension column	910-001-005-48	n/a
BFM Wall Mount	910-001-006	910-001-006-B
PoE Power Supply Kit	910-3200-202	
50 Ft RJ45 CAT6 Cable	910-3200-204-50	
100 Ft RJ45 CAT6 Cable	910-3200-204-100	
150 Ft RJ45 CAT6 Cable	910-3200-204-150	
200 Ft RJ45 CAT6 Cable	910-3200-204-200	

# BEAMFORMING MICROPHONE ARRAY

## Supported CONVERGE Pro 2

Item	Part No.
CONVERGE Pro 2 128	910-3200-001
CONVERGE Pro 2 128D	910-3200-001-D
CONVERGE Pro 2 128T	910-3200-002
CONVERGE Pro 2 128TD	910-3200-002-D
CONVERGE Pro 2 128V	910-3200-003
CONVERGE Pro 2 128VD	910-3200-003-D
CONVERGE Pro 2 48T	910-3200-005
CONVERGE Pro 2 48V	910-3200-006
CONVERGE Pro 2 120	910-3200-004

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