FieldLink

Product Manual

COMREX

ABOUT COMREX

Comrex has been building reliable, high-quality broadcast equipment since 1961. Our products are used daily in every part of the world by networks, stations and program producers.

Every product we manufacture has been carefully designed to function flawlessly, under the harshest conditions, over many years of use. Each unit we ship has been individually and thoroughly tested.

Comrex stands behind its products. We promise that if you call us for technical assistance, you will talk directly with someone who knows about the equipment and will do everything possible to help you.

You can contact Comrex by phone at 978-784-1776. Our toll-free number in North America is 1-800-237-1776. Product information along with engineering notes and user reports are available on our website www.comrex.com. Our email address is info@comrex.com.

WARRANTY AND DISCLAIMER

All equipment manufactured by Comrex Corporation is warranted by Comrex against defects in material and workmanship for one year from the date of original purchase, as verified by the return of the Warranty Registration Card. During the warranty period, we will repair or, at our option, replace at no charge a product that proves to be defective, provided you obtain return authorization from Comrex and return the product, shipping prepaid, to Comrex Corporation, 19 Pine Road, Devens, MA 01434 USA. For return authorization, contact Comrex at 978-784-1776 or fax 978-784-1717.

This Warranty does not apply if the product has been damaged by accident or misuse or as the result of service or modification performed by anyone other than Comrex Corporation.

With the exception of the warranties set forth above, Comrex Corporation makes no other warranties, expressed or implied or statutory, including but not limited to warranties of merchantability and fitness for a particular purpose, which are hereby expressly disclaimed. In no event shall Comrex Corporation have any liability for indirect, consequential or punitive damages resulting from the use of this product.

I. INTRODUCTION

Comrex FieldLink is a hardware device designed for the pressbox at sports venues. The main function of FieldLink is to provide a simple and effective way to deliver “sideliner” or other commentary from the playing field back up to a pressbox wirelessly. FieldLink requires the use of the Comrex FieldTap app for Android or iOS on a mobile phone for the contributor.

Traditionally, sideliner audio contribution is handled via an array of wireless microphone equipment, along with wireless IFB gear for foldback. This gear can be complex and expensive, and often frequency coordination is a challenge at the venue. FieldLink makes things simpler by using a wireless Access Point for the link between the pressbox and the sideline. The contributor will use their mobile phone to send and receive high-quality audio up to the pressbox. This makes for a cost effective solution with a minimum of gear.

FieldLink delivers the sideliner audio on a pro-grade XLR connector, adjustable for mic or line level to add to the main pressbox mixer. It accepts a line-level mix-minus signal to deliver back to the sideliner.

APPLICATIONS

There are two ways to connect FieldLink to a wireless network:

Direct AP mode

In the simplest setup, FieldLink is connected via an Ethernet cable to its own wireless AP (Access Point) as shown in *Figure 1* below. FieldLink is designed specifically to work best with our approved companion AP, but will work with most available APs.

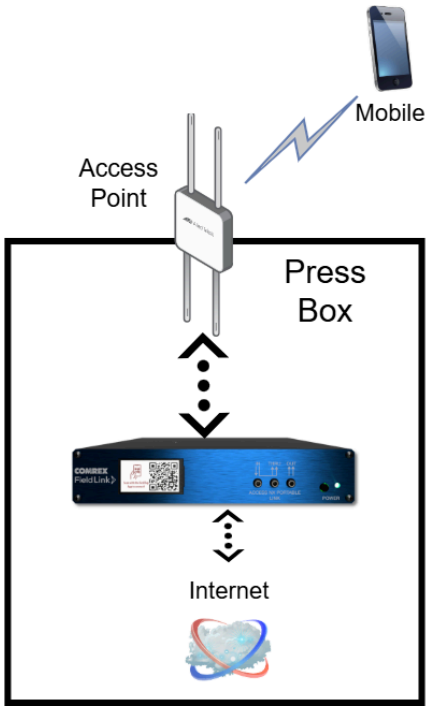


Figure 1 - Direct AP Mode

In this setup, the AP is connected to the “AP” port on FieldLink directly, with no switches or routers in between. FieldLink will power most wireless APs via PoE (Power over Ethernet) when attached to the “AP” Ethernet port.

LAN Mode

In venues that already have wireless Internet available, FieldLink can attach to the Local LAN via the “LAN” port on the rear panel as shown in *Figure 2* below. As long as your network doesn’t enforce “client isolation” (i.e. the network allows clients on the same LAN to connect to each other) the sideline reporter can use the existing wireless network to connect to FieldLink.

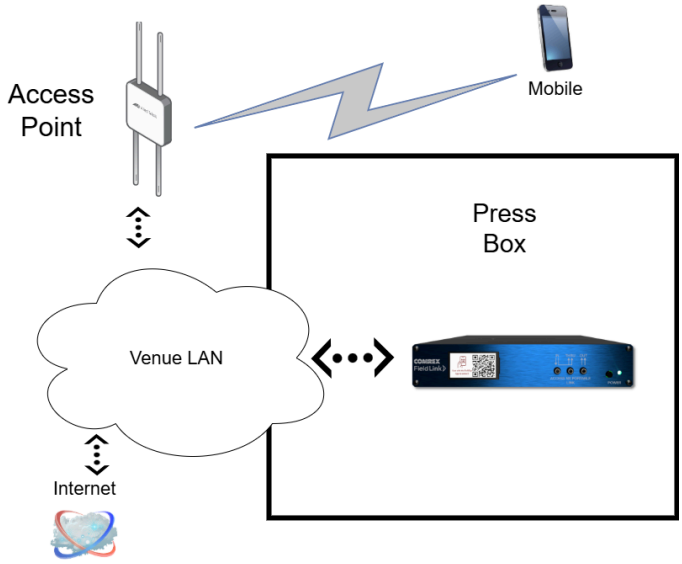


Figure 2 - LAN Mode

This mode will require some network configuration steps that are not required in “Direct AP” mode.

Studio Codec Function

In addition to the main FieldLink function as outlined here, FieldLink has one option that is licensable. It can perform the duty of a pressbox-to-studio codec alongside delivering the sideliner audio. As shown in *Figure 3* below, this function is totally independent of the wireless pressbox function, and no audio is mixed internally between these sections.

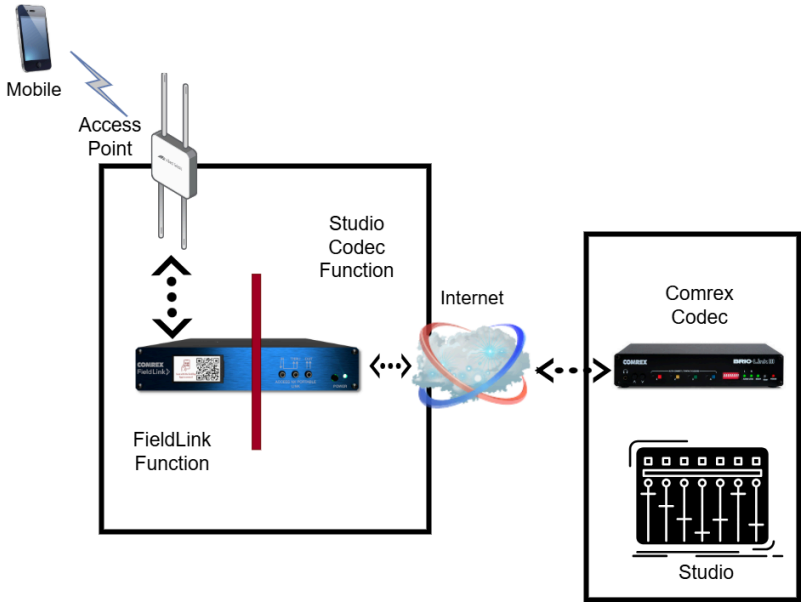


Figure 3 - Studio Codec Function

The studio codec function has a reduced feature set compared to the Comrex BRIC-Link codec family. Namely, it uses only a single mono encoder (Opus). But it does support the Switchboard and CrossLock functions of other Comrex codecs, enhancing ease-of-use and reliability.

Companion Codec Mixing

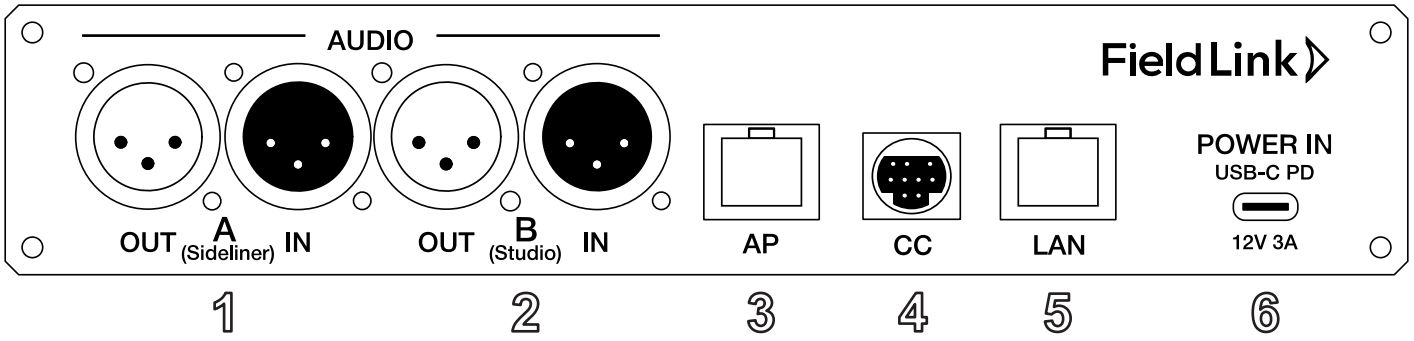
For users of the Comrex NX Portable codec (which has mixing and headphone capability built in), FieldLink has special audio connectors on the front panel to provide easy interconnection. This audio flow is depicted in *Figure 4*.

Figure 4 - Companion Codec Mixing

The NX Portable codec has a special audio configuration mode to work best with FieldLink, generating a special mix-minus bus to feed the NX Portable at the proper level without sacrificing any of the NX Portable's mic and headphone channels.

II. DIAGRAMS

REAR PANEL DIAGRAM



1. **Audio I/O port A (Sideliner)** - These balanced XLR audio connectors are for receiving audio from the sideliner(s) using the FieldTap app, and for sending mix-minus audio back to the sideliner(s).

2. **Audio I/O port B (Studio)** - If FieldLink is licensed for the "Studio Codec" function, these balanced XLR ports will be used to send and receive audio between the pressbox and the studio.

3. **AP port** - This is a 1000 Mbps Ethernet port designed to be connected directly to a wireless Access Point. It has the capability to deliver power to an AP via the PoE (Power-over-Ethernet) protocol. It also provides a DHCP server in order to associate wireless users. For this reason, the AP port should never be connected to a LAN, otherwise DHCP conflicts will arise.

4. **Contact Closures** - This 9 pin mini-DIN port allows for sending and receiving up to four discrete contact closures. Most of these closures are unused in Fieldlink mode. Only CC output #3 (DTMF Received from user) and CC output #4 (call active) are used.

5. **LAN port** - This is a 1000 Mbps Ethernet port designed for connection to a local LAN.
   In the case of "Direct AP" mode, use of this port is optional, since the Access Point will be connected to the AP port. If desired, this port can be connected to a LAN capable of providing Internet to sideliners.
   In the case of LAN mode, this Ethernet port will be the only one connected.

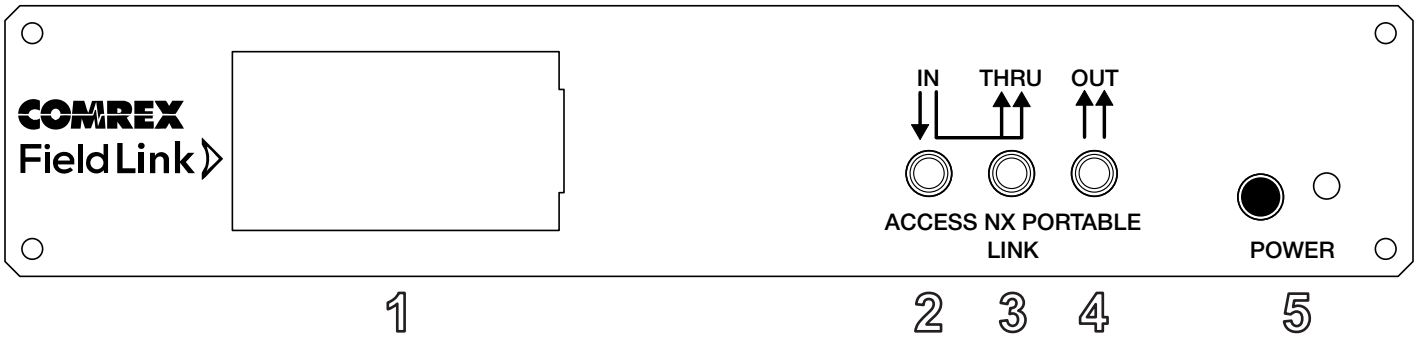
6. **Power** - This is a USB-C connector that conforms to the USB-PD specification. Attach the supplied power adapter here. This port is for power only; no data connection is available. Most laptop and charger adapters will work here if they meet the following criteria:

   a) USB-PD style supply with USB-C connector

   b) Capable of supplying 12VDC (not all are)

   c) Capable of supplying 3A at 12VDC

FRONT PANEL DIAGRAM



1. **Touch driven LCD display** - Allows the user to see various FieldLink status information, and to do simple configuration options.

2. **Input from NX Portable** - This jack is designed to connect directly to the Comrex Access NX Portable output “stereo line output” jack. The NX portable has a special mode that will provide mix-minus audio to this port to be sent to the sideliner(s).

3. **NX Portable line out Loop-through jack** - Used in situations where both the NX Portable mix-minus and the NX Portable program output are desired. When the NX Portable is configured for “FieldLink output mode”,mix minus (for sideliners) will be delivered on the NX left channel out, while the selected audio will be delivered on right channel out. This port provides a connection to “tap” only the right output to deliver to a PA, recorder, or any other input that requires a program feed.

4. **Output to NX portable** - This jack is designed to be connected directly to the NX portable line input. It will deliver the sideliner(s) feed at the proper level.

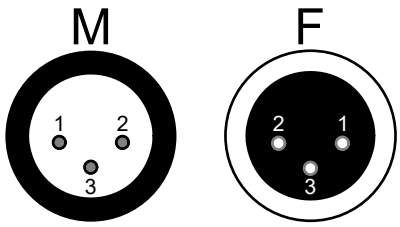
5. **Power Button/Indicator** - Holding this button for two seconds will power the FieldLink on or off. The corresponding LED indicates powered-on status when lit green.

CONNECTOR PINOUTS AND LEVELS

Audio

ALL XLR CONNECTORS ON THE REAR PANEL ARE WIRED AS SHOWN BELOW

Pin 1 -	Ground
Pin 2 -	Audio +
Pin 3 -	Audio -

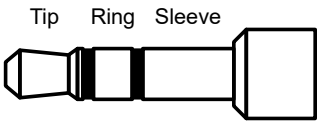


For connection to unbalanced sources or sinks, connect *Pin 1* and *Pin 3* together (Ground) and connect *Pin 2* to Audio +.
Note: Balanced audio is recommended, especially when using the PoE function; unbalanced audio can result in higher noise levels when using the product.

XLR connector levels are all nominal 0dBu with full scale at +20dBu. The Channel A (sideliner) output audio level may be configured for -30dBu nominal and -10dBu full scale to be compatible with mic level inputs.

ALL 3.5MM FRONT PANEL JACKS ARE UNBALANCED TRS CONNECTORS AND ARE WIRED AS SHOWN BELOW

Tip -	Audio L Channel +
Ring -	Audio R Channel +
Sleeve -	Ground

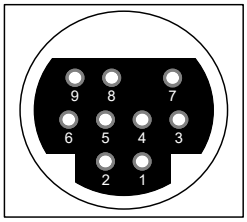


TRS connectors are all -10dBv nominal level with+10dBv full scale.

Contact Closure

THE CONTACT CLOSURE PORT IS WIRED AS SHOWN BELOW

Pin 1	Output #1
Pin 2	Output #2
Pin 3	Output #3
Pin 4	Output #4
Pin 5	Input #1
Pin 6	Input #2
Pin 7	Input #3
Pin 8	Input #4
Pin 9	Ground



Contact closures are available via the 9-pin mini-DIN connector on the rear panel of the FieldLink. Inputs are triggered by shorting the respective input to **Pin 9 (ground)**. Outputs consist of an open collector circuit which, when inactive, will offer a high-impedance path to **Pin 9** and, when active, will offer a low impedance path to **Pin 9**. These outputs are capable of sinking up to 200mA at a voltage up to 12V.

III. INSTALLATION

AT MINIMUM, FIELDLINK WILL REQUIRE:

- *One Ethernet connection to a wireless Access Point or LAN*
- *One audio input to deliver to wireless users*
- *One audio output to deliver to the pressbox*
- *Connection to AC power using a compatible USB-C power adapter*

NETWORK CONNECTIONS

Before attaching an Ethernet cable to one of the available ports on the rear of the FieldLink (as shown in *Figure 5*), you must decide if you will be using **Direct AP mode**—with FieldLink connected to its own wireless AP (Access Point)—or **LAN mode**—with FieldLink attached to an available Local LAN. Direct AP mode is the recommended setup.

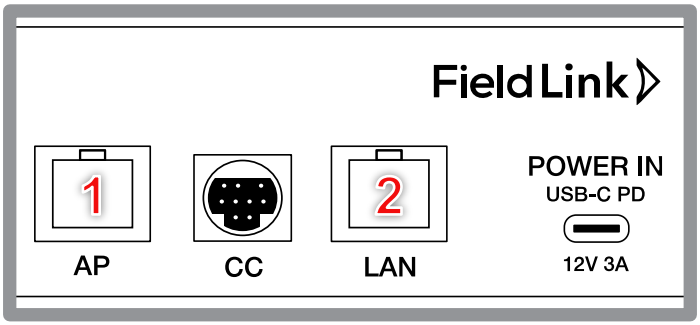


FIGURE 5 - ETHERNET PORTS

DIRECT AP MODE

Attach an Ethernet cable to the port labeled "**AP**" (**1** in *Figure 5*), and attach the other end to the Comrex-provided Access Point (or one you provide). There are a few notes about this port:

1. The Port will provide power to the Access Point via the Power-over-Ethernet (PoE) protocol. If your AP does not support PoE, the PoE function will be disabled automatically.

2. The AP port has an active DHCP server enabled. This allows for wireless users to connect easily. **Do not connect the AP port to your local LAN. The DHCP server may interfere with other users on your LAN.**

While using AP mode, you may also connect the second Ethernet port (LAN) to a local network that provides Internet Access. This will allow wireless users to use the Internet while connected to the AP private network (if Gateway mode is enabled).

LAN MODE

Attach an Ethernet cable from your LAN to the "**LAN**" port (**2** in *Figure 5*). The FieldLink will function like any other device on your network, and can be addressed via its IP address assigned by the network.

AUDIO CONNECTIONS

Audio can flow in several ways depending on licensing options and availability of a companion codec. The most basic setup utilizes the XLR “In” and “Out” ports labeled “A (Sideliner)” to send audio to and from the sideline users who connect to the FieldLink using the **Comrex FieldTap** smartphone app.

Balanced audio I/O configuration is recommended for FieldLink XLR ports, especially when using the PoE function. Unbalanced audio can result in higher noise levels when using the product.

With the purchase of an optional **Studio Codec License**, the XLR “In” and “Out” ports labeled “B (Studio)” can deliver audio to and from a remote studio by connecting to a Comrex *ACCESS* or *BRIC-Link* codec.

A companion **ACCESS NX Portable** codec can be used in the pressbox to enable an alternate audio flow, using the three 3.5mm TRS ports on the front panel of the FieldLink instead of the sideliner XLRs on the rear panel.

XLR Ports

Figure 6 shows the available **XLR ports** on the rear panel of the FieldLink.

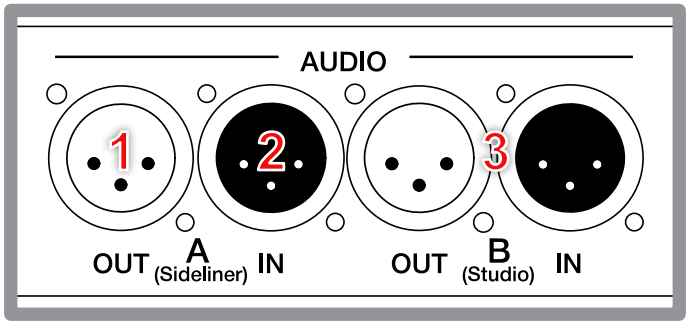


Figure 6 - XLR Ports

Output Audio A (Sideliner) - This audio port (**1** in *Figure 6*) connects to a local mixer input. It contains the sum of all wireless users. The level may be adjusted from line to mic level via the menu.

Input Audio A (Sideliner) - Connect an audio feed to be delivered to the wireless users here (**2** in *Figure 6*). This feed must be a “*mix-minus*”, meaning it must ***not*** be the main program audio (including the wireless contributors). Your local mixer needs to supply a mix-minus bus, or you can create your own using an aux bus on the mixer.

Input/Output Audio B (Studio) - Unused in "FieldLink" mode, these connections (**3** in *Figure 6*) are only used for studio connections (if upgraded for that function).

3.5mm TRS Ports

If the pressbox is using a companion ACCESS NX Portable codec, there are three **TRS connections** on the front panel of the FieldLink for audio I/O as shown in *Figure 7* and described below. In this case the Channel A XLRs can be left unconnected.

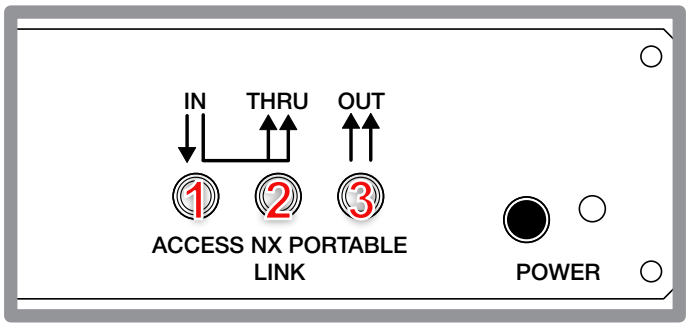


Figure 7 - TRS Ports

In (**1** in *Figure 7*) - Connect a 3.5mm TRS cable from the NX Portable "Line Level Out" to this input. For best results, configure the NX Portable output for "FieldLink mode" when using this port. In FieldLink compatible mode, the function of the NX Portable output changes significantly. It will split the left (tip) and right (ring) audio outputs and deliver a different feed to each side, as noted below:

Tip - A special mix-minus bus delivering the NX Portable program audio minus the FieldLink audio. The FieldLink will use this feed as the "send" channel to wireless users.

Ring - Whatever audio is programmed to be delivered by the NX Portable selection menu will be delivered here.

Thru (**2** in *Figure 7*) - This port simply bridges the right (ring) channel input to both Left (tip) and Right (ring) output. This port can be used to drive a recorder, PA, or anything else that requires a full program feed.

Out (**3** in *Figure 7*) - This port delivers the wireless users' audio to the NX Portable "Line Level In" port at the correct level.

CONTACT CLOSURES

The **Contact Closure** port (shown in *Figure 8*) has limited capability with regard to the Sideliner function in FieldLink. When any FieldTap user sends any touch tone (DTMF) signal, the CC output #3 will close temporarily. CC output #4 will be open when no FieldTap callers are connected, and will close when any FieldTap connection is made. These can be used to trigger an external alert or tally light. Refer to "Connector Pinouts and Levels" on page 12 for more in-depth wiring details.

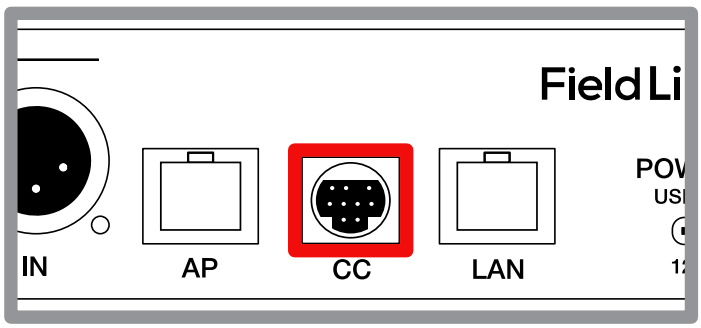


Figure 8 - Contact Closure Port

POWER

This **USB-C connector** (shown in *Figure 9*) is for the included power supply. It requires a 12VDC and 3A and conforms to the USB-C PE power delivery standard. Be sure that any supply used meets this specification (especially the ability to deliver 12V, as not all do). If using a power supply that has multiple USB ports, be sure to only use one of them unless it can supply the full 45W to both ports simultaneously (most will split the output to 22W + 22W, or something similar).

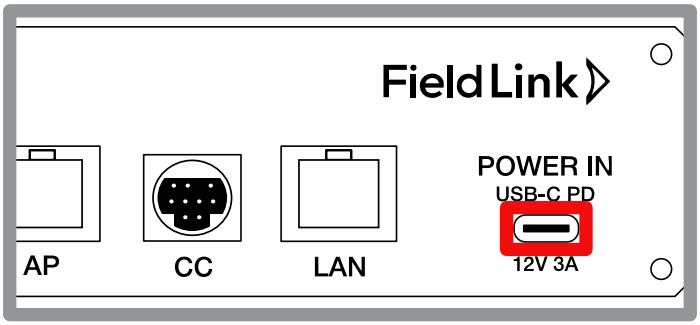


FIGURE 9 - POWER PORT

IV. USING THE COMREX-APPROVED ACCESS POINT

FieldLink firmware includes features to ease setup and operation when using the Comrex-provided wireless Access Point (AP). This section will describe the installation and configuration of a Comrex-approved AP.

INSTALLATION AND AUTHENTICATION

When connected to the "AP" Ethernet port on the rear panel of the FieldLink, the AP will be powered via the PoE standard (Power over Ethernet). On connection, FieldLink will automatically search for the Access Point and attempt login. If the Access point was purchased from Comrex along with the FieldLink, the admin password for the AP will be programmed into FieldLink at the factory. This password will be valid unless changed manually on the AP (via the AP web interface) or if the FieldLink has been factory reset. If the FieldLink detects a Comrex-approved AP but can't log in, the wireless icon on the dashboard display will glow red. It will also let the user know with a pop-up message as seen in *Figure 10* below.

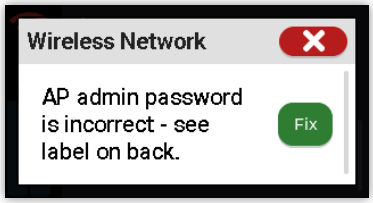


FIGURE 10 - INCORRECT ADMIN PASSWORD

Pressing the "fix" button here (or the wireless icon when red) will take you to the config page for the AP admin password as shown in *Figure 11* below.

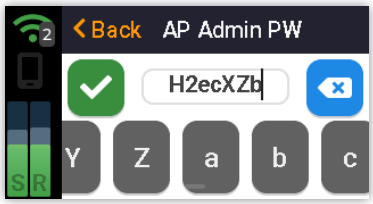


FIGURE 11 - CONFIGURING ADMIN PASSWORD

To enter or change the AP Admin Password, scroll over the linear keyboard to find the appropriate uppercase, lower case, or numeric key for each entry. **Note: A long press on the character key is required to enter it into this field.** There's also a backspace and enter key (check mark key and X key).

The FieldLink will automatically "provision" the AP, and the light on the front panel will turn blue to indicate provisioning. At this point the AP/FieldLink combo is ready to accept calls from FieldTap users.

ACCEPTING CALLS

Calls are made to FieldLink by wireless users via the **FieldTap** smartphone app, which is described in a later section. However, mobile phones must be associated with the AP before using the FieldTap application to establish a call. This can be done automatically or manually. Either way, press the wireless icon on the upper left of the front panel display to get to the Wireless Info page as shown in *Figure 12*.

FIGURE 12 - WIRELESS INFO

The SSID of the AP will automatically be programmed to unique value in the following format:

FieldLink <MAC address of Ethernet port>

The default Wireless Security Key assigned to the AP will be a random sequence of three dictionary words, and may be viewed and changed as outlined in the Configuration section.

Using the information on the Wireless Info page, wireless contributors can associate their mobile devices with the FieldLink's AP in one of two ways:

1. FieldLink will present a QR code on the display. Use the phone's camera to scan this code and associate automatically with the AP's Wi-Fi signal.

2. Or use the SSID and key info on the front panel display to manually associate with the AP using the phone's "settings" menu.

Once the phone is associated with the AP, open the FieldTap application and choose the contact labeled "Comrex FieldLink". At this point, you can press "Connect" to make an audio connection to the FieldLink as shown in *Figure 13*.

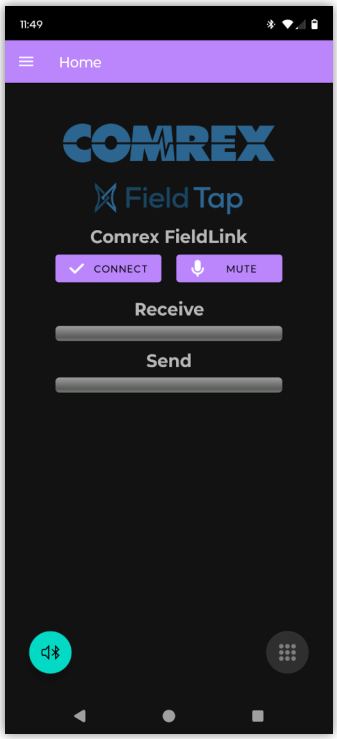


FIGURE 13 - FIELDTAP CONNECTION

Please see "Using FieldTap with FieldLink" on page 46 for more information on the use and configuration of FieldTap.

V. USING OTHER ACCESS POINTS

Although Comrex recommends using the approved Access Point (AP) which is available pre-configured from our factory, FieldLink will work with most APs. However, automatic configuration will not be available. This section will describe the general process for installing and configuring other wireless APs.

Note: Comrex cannot guarantee compatibility for non-recommended APs and may limit support for a particular model if issues persist.

CONFIGURATION

Before attaching the AP to FieldLink, it will need to be configured using another device, typically as described in the user manual for that brand. Navigate to the user interface for the AP and follow the steps below:

1. Name and configure an SSID and Wireless Security Key on the AP.

2. Make sure the AP is set to be a DHCP client (no static IP address).

Then attach the AP to the Ethernet port on the rear panel of the FieldLink labeled “AP”. If the AP supports Power over Ethernet (PoE), the FieldLink should power it.

OPERATION

Calls are made to FieldLink by wireless users via the **FieldTap** smartphone app, which is described in a later section. However, mobile phones must be associated with the AP before using FieldTap to establish a call. For APs not recommended by Comrex, this association must be done manually, using the SSID and Wireless Security Key configured in the steps above.

Note: The wireless Icon on the FieldLink’s front panel display will flash (indicating no admin connection to the AP), and no wireless status info will be available, but the system should function otherwise.

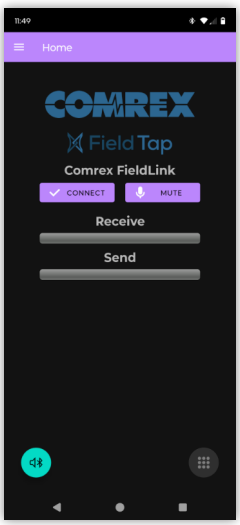


FIGURE 14 - FIELDTAP CONNECTION

Once the phone is associated with the AP, open the FieldTap application and choose the contact labeled “Comrex FieldLink”. At this point, you can press “Connect” to make an audio connection to the FieldLink as shown in *Figure 14*.

Please see “Using FieldTap with FieldLink” on page 46 for more information on the use and configuration of FieldTap.

VI. USING FIELDLINK IN LAN MODE

For venues that already have wireless access points deployed as part of a Local Area Network (LAN), you can set FieldLink to use **LAN mode**. In this mode, FieldLink will be attached to your local LAN like any computer via the Ethernet port labeled “LAN” on the rear panel.

Note: Do not connect the AP port to your local LAN. The DHCP server may interfere with other users on your LAN.

CONSIDERATIONS

It’s important to note that LAN mode will not work on all local networks. Your LAN must not enforce “client isolation”. This means that devices on the LAN must be allowed to connect directly to each other via IP. If your LAN is primarily designed to provide Internet connections to wireless users, client isolation may be enforced. Contact the IT administrator for your LAN before attempting connection in LAN mode.

In LAN mode, you’ll need to know the IP address of the FieldLink in order to make connections from FieldTap. By default, the LAN port is set as a DHCP client, so the network should automatically assign a dynamic IP address. If your FieldLink is intended to be in LAN mode long term, it’s best to set it for a static IP address so the address won’t change over time. Contact your IT administrator for available static addresses, and see “Network Locations” on page 40 for instructions on how to set the LAN port to static.

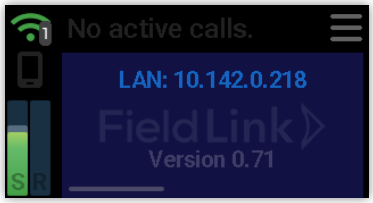


FIGURE 15 - LAN IP ADDRESS

Either way, the IP address assigned to the FieldLink will appear on the front panel display as shown in *Figure 15*.

CALLING FIELDLINK ON LAN

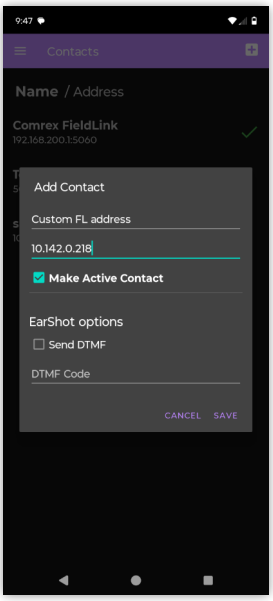


FIGURE 16 - CALLING VIA IP ADDRESS

Calls are made to FieldLink by wireless users via the **FieldTap** smartphone app, which is described in a later section. In LAN mode mobile phones must be associated with the Wi-Fi network that connects to your LAN before using FieldTap to establish a call.

You may then create a new Contact on the FieldTap app using a name and the IP address of the FieldLink as shown in *Figure 16*. Connections from FieldTap will thereafter be possible using the new Contact entry.

Please see “Using FieldTap with FieldLink” on page 46 for more information on the use and configuration of FieldTap.

VII. OPERATION & STATUS VIA FRONT PANEL DISPLAY

Since calls to FieldLink are initiated from the **FieldTap** app, most operational concerns are on the mobile phone end of the call. But the FieldLink front panel display provides some useful status information about the wireless network, and the incoming callers. This section of the manual will explain the status info found on the front panel display and will describe how to open additional display pages using the touch-enabled LCD.

DASHBOARD

The main display after bootup is the dashboard screen as pictured below in *Figure 17*.

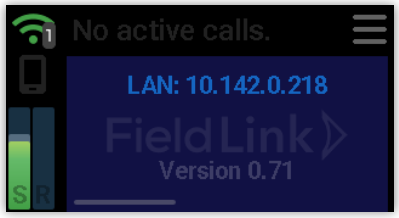


FIGURE 17 - DASHBOARD

The **Dashboard** screen displays the following information:

1. IP address of the FieldLink on the LAN port (if connected).
2. Status of Access Point- If this icon is flashing, the FieldLink does not have admin connectivity to the AP (This is the default state when using a non-Comrex supplied AP). The number over the icon shows how many phones are associated with the AP. If this icon is pressed, it will take the user directly to the wireless status info display
3. Level meters for *send* and *receive* audio. The receive audio meter shows the summation of FieldTap user's audio
4. Menu Icon- press to gain access to more advanced status and config menus.
5. Firmware version of the FieldLink.

Swiping on this display will show QR codes for easy access to the FieldTap app on the Apple App Store and the Google Play Store.

CALL STATUS

Once a call is connected, this display will change to a call status screen as shown in *Figure 18*.

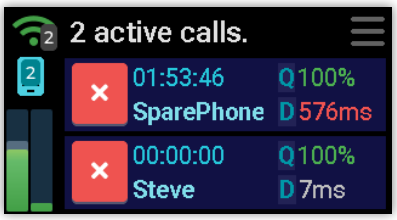


FIGURE 18 - ACTIVE CALLS

The **Active Calls** screen will show the name of each caller as entered into the FieldTap app, and will allow manual disconnection of each call by pressing the red "X" button to the left of the intended call (very brief 'taps' will not drop the call). The display will also show an estimate of the connection quality and delay of each caller.

If any FieldTap user initiates a touch tone (**DTMF**) from the app during a call, the information will be displayed here for a short time (as shown in *Figure 19* below). This can be used to gain the attention of the staff in the pressbox without having their audio "potted up".

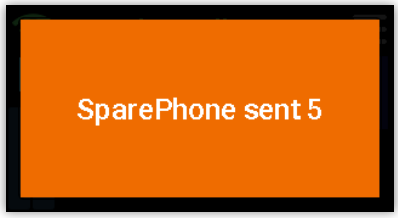


Figure 19 - DTMF Message

Wireless Info

From the *Dashboard* screen, pressing the wireless icon in the top left will open the **Wireless Info** screen, as shown in *Figure 20* below. The information in this section is only valid if using the Comrex-approved Access Point, and if the FieldLink is properly connected to the AP.

Figure 20 - Wireless Info

The **Wireless Info** screen will show the SSID and AP Security Key to allow phones to associate with the installed Access Point, along with a QR code for a phone's camera app to do this automatically. Swiping down on this screen will show more information about the AP (as shown in *Figure 21* below). This includes the channel number for each of the Wi-Fi bands, along with whether the channels have been manually or automatically chosen.

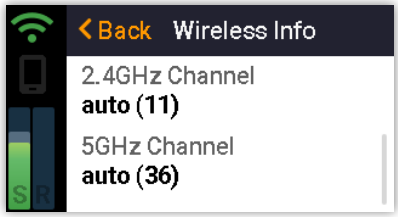


Figure 21 - Additional Wireless Details

Audio Meters

From the dashboard screen, pressing the level meters on the lower left side will open the larger meter display, as seen in *Figure 22* below.

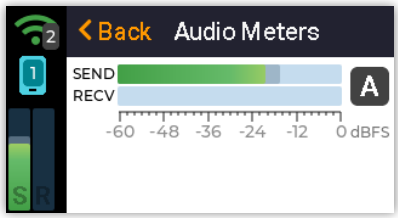


Figure 22 - Audio Meters

FieldTap Install Links

Swiping **Left** on the dashboard screen (as shown in *Figure 23*) will display a helpful QR code which Android users can scan with their smartphone's camera app to download the **FieldTap** App. Swiping left again from there will display a similar QR code for iOS users.

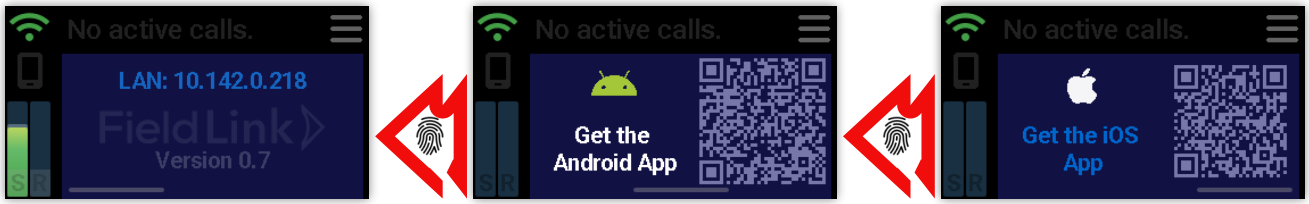


Figure 23 - QR Codes for FieldTap

VIII. CONFIGURATION VIA FRONT PANEL DISPLAY

Since calls to FieldLink are initiated from the **FieldTap** app, most operational concerns are on the mobile phone end of the call. But the FieldLink front panel display allows users in the pressbox to configure audio, network and system settings. This section of the manual will describe these configuration options available via the touch-enabled LCD.

A NOTE ABOUT PASSWORDS

Before getting started, it is worth noting that FieldLink has three interfaces that require password access. These three passwords are different by default, and should remain that way for security purposes. This section will also cover how to view and change all three of these passwords:

1. **Access Point Admin Password** - If using the Comrex-supplied AP, this is the password that is required for FieldLink (or any other device), to provision your AP over the "AP" port. If it changes or is programmed incorrectly, FieldLink will still allow calls, but won't be able to show wireless status. On Comrex-supplied APs, this password is located on a sticker on the back of the AP. If using a non-Comrex supplied AP or if using LAN mode, this password is not relevant. See page 28 for details regarding the AP Admin Password.

2. **Access Point Security Key** - This is the password used to allow phones to associate with the AP's wireless signal. If using the Comrex-supplied AP, this is shown in the *Wireless Info* display. The default key after a system reset is random and is shown on the Wireless Info display. See page 27 for details regarding the AP Security Key.

3. **Remote Password** - This is the password that is used to gain access to the FieldLink's optional web-based interface. Unlike the other two passwords, this one is configured in the *System Settings* menu, as described on page 29. There are a few special notes about this password:

   a) The password is set to a random value at the factory, and this value is displayed in the *System Settings* menu.

   b) After a factory reset, FieldLink will choose a new random password and display it in *System Settings*.

   c) If the password is manually changed, it will no longer be displayed in the *System Settings* menu. If the password is lost, use the "Remote Password" screen in *System Settings* to reset the password to default; or alternately, you may perform a factory reset to erase and display a new random default password.

MAIN MENU

FieldLink settings are accessed via the three-line "Hamburger Menu" button (three horizontal lines) on the upper right of the dashboard display (as shown in *Figure 24*).

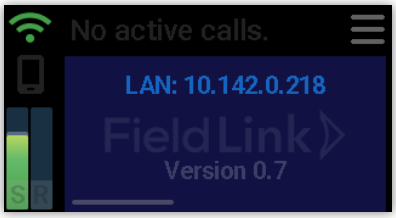


FIGURE 24 - DASHBOARD

Tapping the menu icon opens the Main Menu (as shown in *Figure 25*), which can be scrolled down to see the complete list of options, including **Audio Settings**, **Wireless Network**, **LAN Port**, and **System Settings.** Tap any of these options to open the corresponding menu.

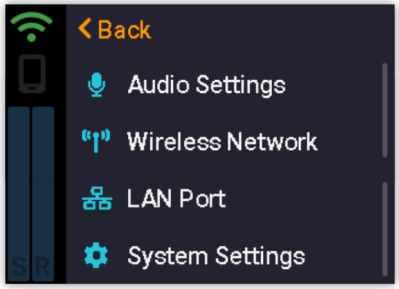


FIGURE 25 - MAIN MENU

AUDIO SETTINGS

The first main menu option is **Audio Settings** and offers three selections: **Audio Meters**, **Loopback Test** and **Output Level** (as seen in *Figure 26*).

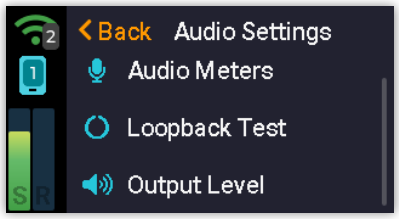


FIGURE 26 - AUDIO SETTINGS

The first option, “Audio Meters”, opens the full-screen audio meters page (as shown in *Figure 27*), which is also accessible by tapping the smaller audio meters on the left side of the Dashboard screen.

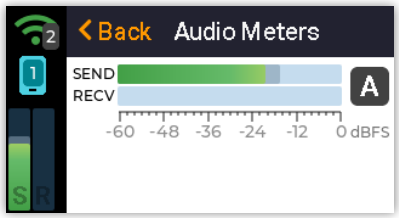


FIGURE 27 - AUDIO METERS

The second option is for a diagnostic test that will connect the internal encoder and decoder together, in a “Loopback” configuration. Tapping this option will display a “Connect” button (as shown in *Figure 28*), along with a warning that current caller audio will be disabled during the loopback test. Upon connection, a new “active call” will initialize, and any audio presented to the audio input will be presented at the audio output. To end the loopback test, press the red “X” button next to its entry on the dashboard (very brief ‘taps’ will not disconnect).

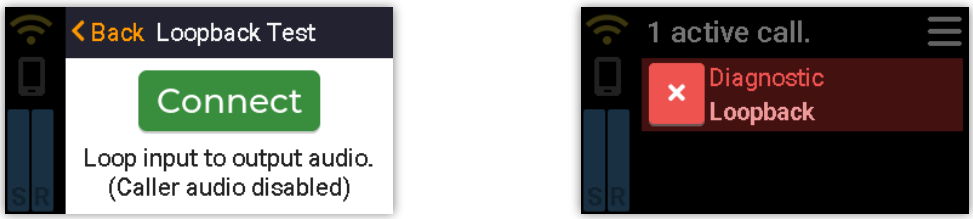


FIGURE 28 - LOOPBACK TEST

The Output Level selection allows for a change to the XLR output level for situations where there is no line level input available on the pressbox mixer. A toggle switch appears, as seen in *Figure 29*, which cuts the A output level to mic level when enabled.

FIGURE 29 - AUDIO OUT LEVEL

WIRELESS NETWORK

The second main menu option is **Wireless Network**, and is only useful when using the Comrex-supplied AP (Access Point) in **Direct AP** mode as described in "Using the Comrex-Approved Access Point" on page 17. If using the FieldLink in **LAN mode**, or using a non-Comrex supplied AP, this menu is not relevant.

There are five options available in the Wireless Network settings menu: **Wireless Info**, **Active Clients**, **AP Security Key**, **AP Gateway Mode** and **AP Admin Password** (as shown in *Figure 30*). You must scroll down on the touch display to see the last two.

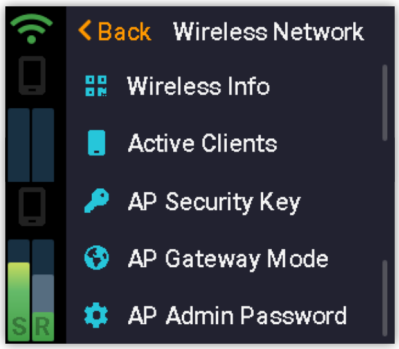


FIGURE 30 - WIRELESS NETWORK

The first option, "Wireless Info", opens the **Wireless Info** status page (as shown in *Figure 31*), which is also accessible by tapping the wireless signal icon on the upper left side of the Dashboard screen. It provides the AP SSID name, the AP password, and a QR code to allow FieldTap users to scan via their camera app.

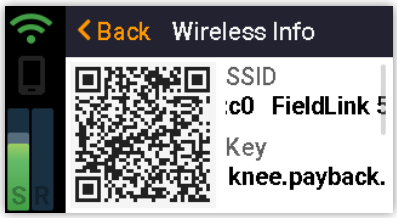


FIGURE 31 - WIRELESS INFO

Swiping down on the Wireless Info display will display AP channel selection information (as shown in *Figure 32*).

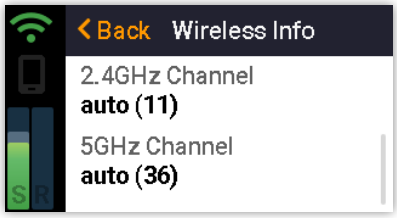


FIGURE 32 - ADDITIONAL WIRELESS DETAILS

The second Wireless Network option, “Active Clients”, provides more specific details about any phones that are associated with the AP (as shown in *Figure 33*), including signal strength as received by the AP, and confirmation of which band each client is using.

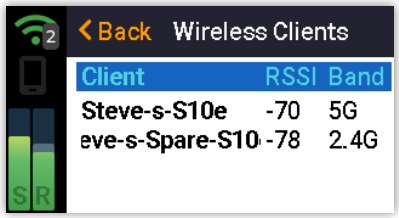


FIGURE 33 - WIRELESS CLIENTS

The third option under Wireless Settings is for the “AP Security Key”, and is pictured below in *Figure 34*. This is the password used by phones to associate with the AP. The default password is a random three word sequence generated by the FieldLink. If you’d like to change this password to a new randomly generated value, press the blue “recycle” button until an acceptable password sequence appears and press the check mark to save it. The new security key will be displayed on the Wireless Info screen and encoded into the QR code visible on the *Wireless Info* page. Press the green check mark to save this setting after a change.

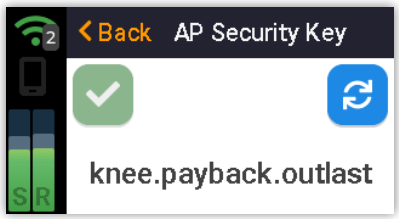


FIGURE 34 - AP SECURITY KEY

The next option in the Wireless Settings menu is “AP Gateway” mode (pictured below in *Figure 35*). This selection is only relevant in **Direct AP** mode if the LAN Ethernet port is also populated with an Internet-connected LAN.

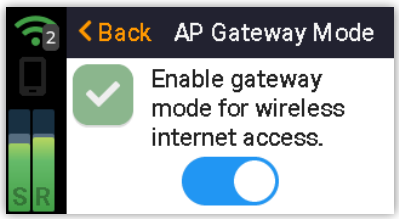


FIGURE 35 - AP GATEWAY MODE

The wireless network generated by the AP is private, and has no default connection to the Internet at large. When gateway mode is enabled (using the toggle switch on this page), FieldLink will “bridge” or share the Internet connection (if attached to the LAN port) with wireless users. As an example, a sideline reporter will be able to check scores online without changing the Wi-Fi network on their phone. Press the green check mark to save this setting after a change.

The last option in the Wireless Network menu is “AP Admin Password” (as shown in *Figure 36*). This is the config password required for FieldLink to control the Comrex-supplied AP.

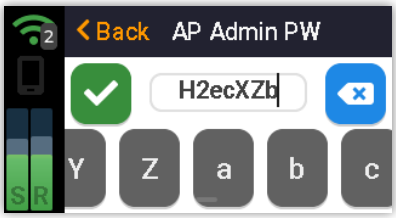


FIGURE 36 - AP ADMIN PW

Often, the AP Admin Password is programmed from the factory with the “mated” AP credentials and will not need to be changed. If the FieldLink is factory reset, or if you obtained the approved AP from some other source, this entry will need to be programmed before any other Wireless Network option will work. On Comrex-approved APs, the default admin password is located on a sticker on the rear of the AP. If it is changed manually from default on the AP (e.g. via the AP’s web interface), it will need to be changed here also. To enter or change the AP Admin Password, scroll over the linear keyboard to find the appropriate uppercase, lower case, or numeric key for each entry.

Note: A long press on the character key is required to enter it into this field. There’s also a backspace (‘x’ arrow key) and enter key (check mark).

Once the AP admin password is correct, FieldLink will sync with the AP and provide other status and config options. If the password is incorrect, you will be notified via a pop-up (as shown in *Figure 37* below), and the wireless icon will turn red.

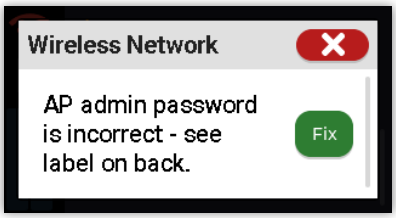


FIGURE 37 - INCORRECT ADMIN PASSWORD

LAN PORT

The third main menu option is **LAN Port**. Selecting this option displays the IP information about the network connected to the Ethernet port labeled “LAN” on the rear panel of the FieldLink (as shown in *Figure 38* below).

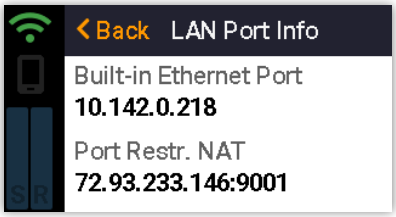


FIGURE 38 - LAN PORT INFO

The top IP address listed is the local LAN address (if attached). If using **LAN mode**, this is the address you will program into the FieldTap app to make connections.

The information on the bottom contains the public IP address and information about the type of NAT router detected on this LAN. This information is usually only relevant for peer-to-peer connections using the Studio Codec Upgrade.

The LAN settings can be changed to manual static values, as well as having VLANs and static routes enabled, but this can only be done via the web-based user interface. See that section for more details.

System Settings

The last option in the main menu is **System Settings** (as shown in *Figure 39*). Here are three selections: **Remote Password**, **About this FieldLink**, and **Reboot Device**.

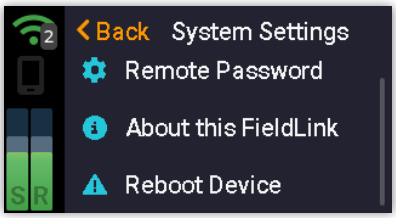


Figure 39 - System Settings

The *Remote Password* is required to access the web-based user interface on FieldLink. It's also required to use the Comrex Device Manager upgrade utility. Selecting this option will display the "Remote Password" screen (as shown in *Figure 40* below), which contains the current password, a *reset to default* button and a *generate new password* button.

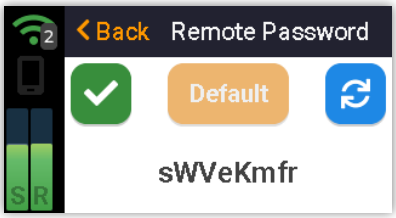


Figure 40 - Remote Password

When FieldLink comes from the factory, it is assigned a random remote password that is shown on this display. This password will remain the same until a factory reset, when a new random password will be chosen and displayed here. You can press the blue "recycle" button to scroll through other random options, and save that password using the green "check mark" button. This will display the saved password on one final warning screen, as shown in *Figure 41*. Be sure to record this password before tapping the red "X" button. You can also change this password to a custom value, but only via the web-based interface. See that section for details.

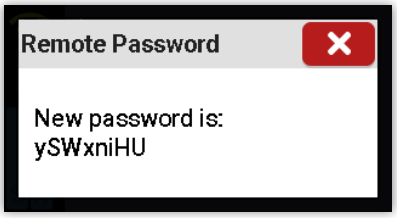


Figure 41 - Changed Password

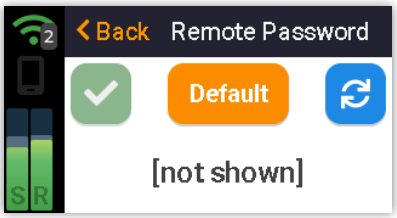


Figure 42 - Password Not Shown

Note: Once the remote password is changed from default (either with the recycle button or via the web interface), it will no longer be displayed on the "Remote Password" screen (as shown in *Figure 42* below). If you don't wish for the password to be displayed (due to security concerns), change it to a new value via the "recycle" and "save" (check mark) buttons. Be sure to record the new password while it is displayed, as it won't appear again.

If you've lost the changed remote password, you can press the "recycle" button again (followed by the check mark) to set a new random password, or press the "Default" button (followed by the check mark) to set the unit back to the default

value, which will then be displayed whenever you enter the *Remote Password* menu. Note: a unique default password is randomly generated each time the unit is factory reset, and this will remain the default until the next factory reset.)

The second option in System Settings is "About this FieldLink". This will display the current firmware version along with a unique Node ID number (as seen in *Figure 43*), which may be required for optional feature upgrades.

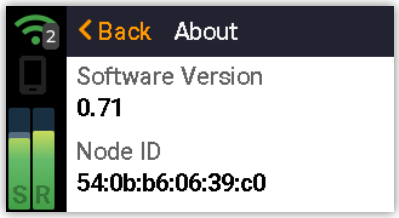


FIGURE 43 - ABOUT

The third option in System Settings is Reboot Device, which allows you to do a soft reboot or a factory reset to the Fieldlink hardware. The first option is to reboot, as shown in *Figure 44*. A long press is required.

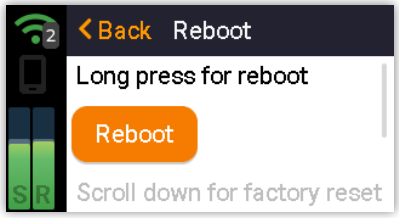


FIGURE 44 - REBOOT

Scrolling down on this screen will offer the factory reset option (as seen in *Figure 45*), which also requires a long press.

FIGURE 45 - FACTORY RESET

Note: When factory reset, the FieldLink will choose a new random default Remote Password, a new random default Wireless Security Key (both of which will be available via the display), and will forget the previously programmed AP Admin password (if using the Comrex-approved AP in "Direct AP mode") and will need to be reprogrammed manually.

IX. CONFIGURATION VIA WEB USER INTERFACE

Besides the front panel display interface, FieldLink has an additional way to deliver status data and allow for more in-depth configuration. It will serve a graphical user interface as a web page ("web gui") to the connection on the LAN port which can be seen by any standard web browser. This section of the manual will explain how to find or set the FieldLink's local IP address, as well as describe the layout and configuration options of the **Web User Interface**.

LOGGING IN

To load the FieldLink's web user interface, simply navigate a web browser to the **LAN IP Address** of the FieldLink and log in using the **Remote Password**. The LAN IP address (if LAN is present) will show on the front panel dashboard display of FieldLink, as shown in *Figure 46*.

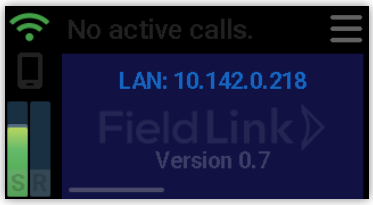


FIGURE 46 - DASHBOARD

With a computer or phone on the same LAN, enter the IP address into the browser search field. The FieldLink should respond with its login page, as seen in *Figure 47*.

Note: This page is delivered via the HTTP protocol, so browsers may deliver security warnings when the page is accessed. The web server does not support HTTPS.

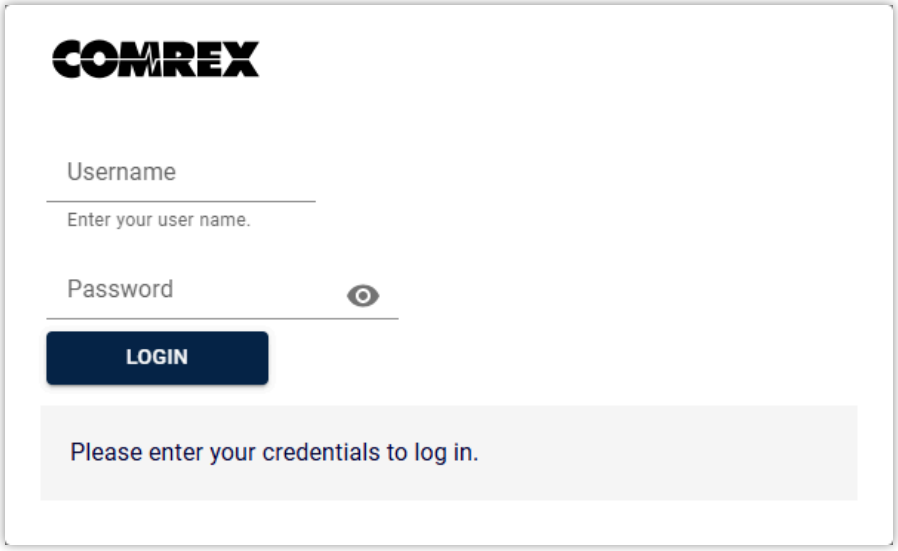


FIGURE 47 - LOGIN SCREEN

The login page will ask for a user name and a password (this refers to the **Remote Password**). The username can be anything, but the remote password is a random text sequence generated by the FieldLink (or programmed previously via the web interface). If the password has not been customized, it can be found on the front panel display by tapping the three-line "Hamburger Menu" button on the dashboard, then selecting "System Settings" followed by "Remote Password" (as shown in *Figure 48*).

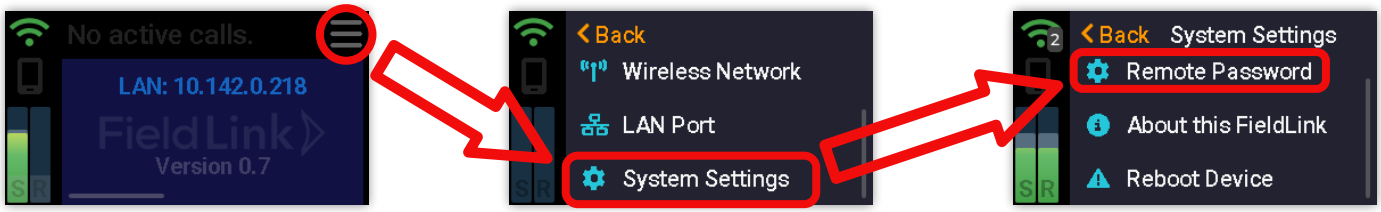


FIGURE 48 - REMOTE PASSWORD LOCATION

This will open the *Remote Password* screen, which differs depending on the FieldLink's current password configuration:

If the password has not been changed from default, it will be displayed as shown in *Figure 49*.

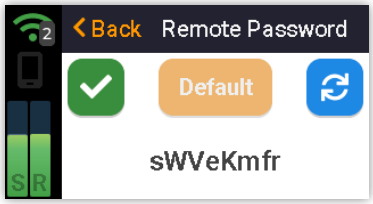


FIGURE 49 - DEFAULT PASSWORD

If the password was customized previously, it will not be shown as a security measure (as seen in *Figure 50*). If that password is lost, pressing the "Default" button here will reset the password back to the current default, which will be shown here as mentioned above. Alternately, pressing the blue "recycle" button will generate a new random password which will not be shown here. Either way, be sure to press the green "check mark" button to save the new password after recording it.

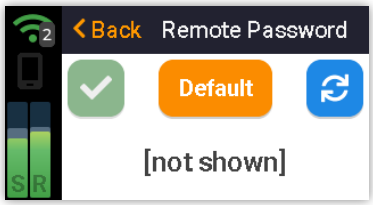


FIGURE 50 - NON-DEFAULT PASSWORD

Note: performing a factory reset will generate a new default password, which will be shown on this "Remote Password" screen.

WEB USER INTERFACE LAYOUT

THERE ARE THREE MAIN PARTS TO THE WEB USER INTERFACE SCREEN (AS ANNOTATED IN *FIGURE 51*)

1. **Main Information Banner** - This blue banner shows the *Product Type, Unit Name* and *Current Firmware* on the left side. The *Meters* on the right side display audio levels for active connections to the FieldLink. This banner and the "Configuration Tabs" below will remain on screen as you navigate the interface.

   a) **Menu Button** - The far-left side of the information banner contains a three-line "Hamburger menu" button which provides quick access to a list of maintenance functions including firmware updates, remote reboot, and the ability to view and apply optional firmware license upgrades.

2. **Configuration Tabs** - These tabs control which function of the interface you want to use, and consist of *Connections*, *Performance*, *System Settings* and *Network Manager*. They are described in detail in this section. Selecting one of these tabs determines what is displayed below in the "Content Panel" below.

3. **Content Panel** - The primary focus of the web user interface. The working contents of the currently chosen tab will appear here, underneath the tabs. This is where you will control connections, modify settings, monitor performance, etc.

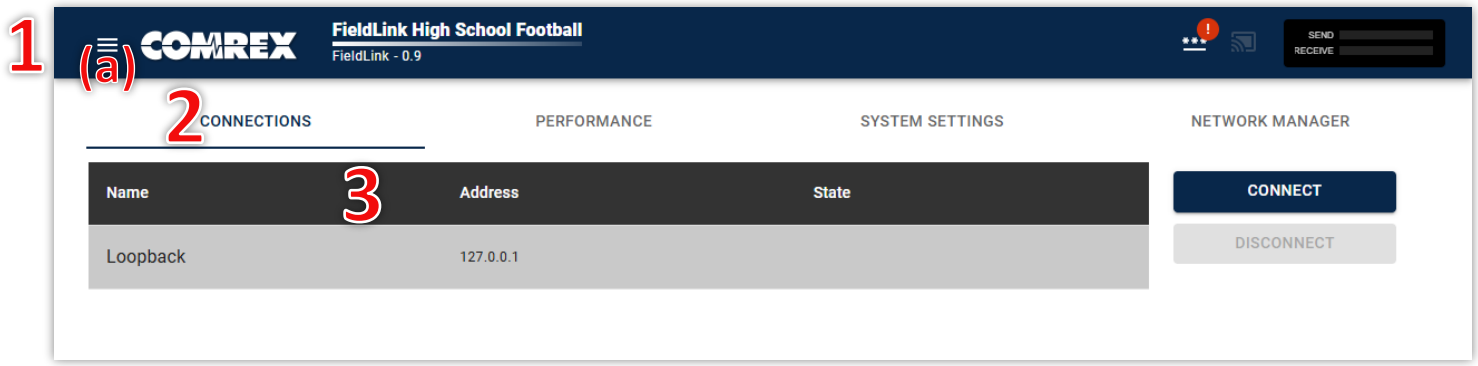


FIGURE 51 - WEB USER INTERFACE

Clicking the three-line **Menu** button will pull out the menu 'drawer' from the left side of the screen (as shown in *Figure 52*).

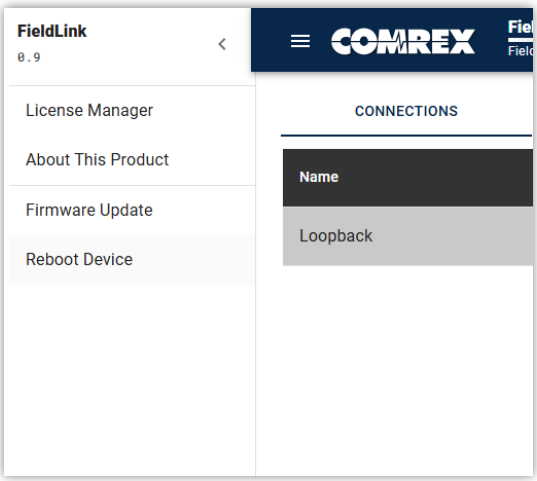


FIGURE 52 - MENU DRAWER

Note: The web user interface is highly adaptable in terms of screen size. If a web browser ever lacks the space for any of the **Configuration Tabs**, they will be 'tucked' into the menu drawer, and only the currently active tab will be shown in its usual location. This is most noticeable when using the web interface via a smartphone in vertical orientation (as shown in *Figure 53*). In this case, simply tap the three-line menu button to show any 'tucked-away' tabs.

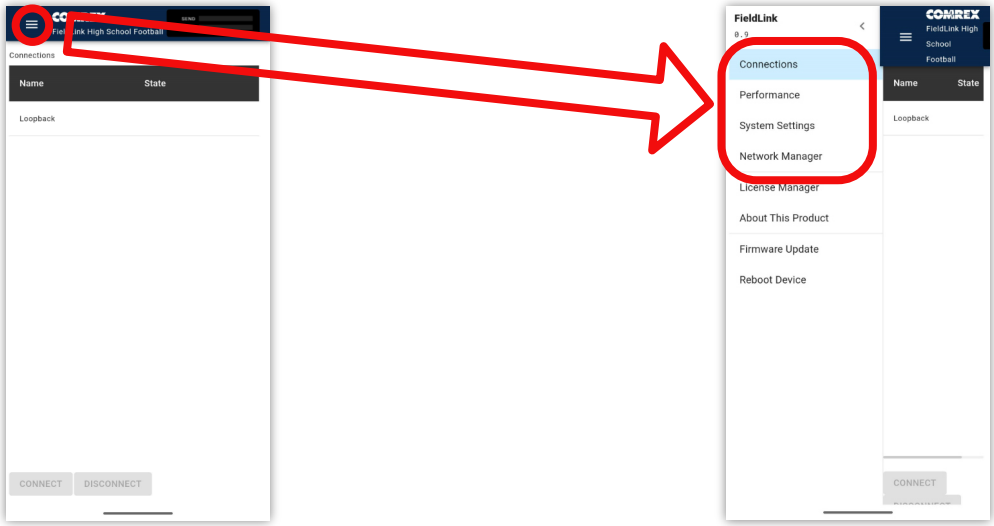


FIGURE 53 - TUCKED-AWAY TABS

CONNECTIONS TAB

The **Connections Tab** is the first window in the user interface. This allows for monitoring device connectivity and controlling connections. This tab displays the *names* and *IP addresses* of all active callers. As seen in *Figure 54*, active connections will also display *status* information. This information is only available during an active connection. (Note: the "Name" of each caller refers to the "Caller name" configured by each caller in the FieldTap app. This can be left blank, in which case no name will appear on the incoming connection here in the web interface.)

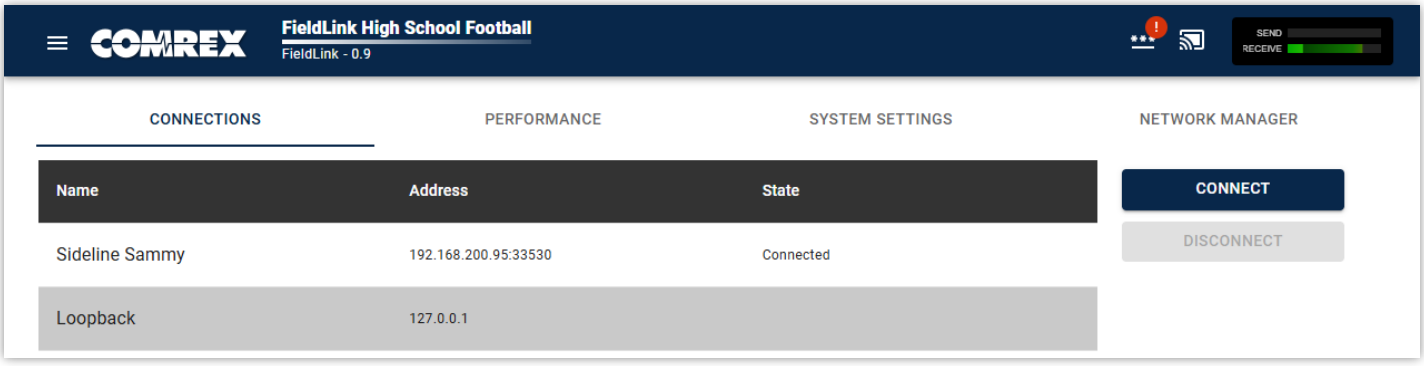


FIGURE 54 - CONNECTIONS TAB

To end an active call, select the intended connection and click "Disconnect" on the right side of the screen. By default, a **Loopback** connection appears on the list, which is a diagnostic mode that connects the internal encoder and decoder together. Audio applied to the input jacks will be delivered to the output jacks. Other than loopback, outgoing connections aren't supported in "FieldLink mode".

PERFORMANCE TAB

The **Performance Tab** includes information on data transmission and reception rates from FieldLink to active calls. This allows for real-time monitoring of network quality during calls. Two headers are listed on this page (“Active Connections” and “Codec Channel”) and clicking each one will drop down more information, as shown in *Figure 55*.

FIGURE 55 - PERFORMANCE TAB

ACTIVE CONNECTIONS

Clicking the header “Active Connection” will show a basic chart of real-time codec receive performance. The first table, as shown in *Figure 56*, will give numeric statistics for the current active connection. Each wireless caller will have its own table as well as its own set of real-time graphs depicting “Delay & Jitter” (on the left) as well as “Data Loss & Correction” (on the right).

Remote Unit	Duration	RX Rate	RX Overhead	RX Delay	TX Rate	TX Overhead	TX Delay	Frame Loss	Remote Loss
Sideline Sammy	00:11:25	14.3kbps	15.9kbps (52%)	46ms	64.2kbps	16kbps (19%)	29ms	0%	0%

FIGURE 56 - ACTIVE CONNECTIONS TABLE

Delay & Jitter - The upper-left graph represents the work of the *Jitter Buffer Manager*. The area of most interest is the light blue area (seen in *Figure 57*), which illustrates a spread of jitter values (referenced to the current play out pointer) over the last second. If this area covers a large span, the relative jitter is high. If the light blue section of the graph is small or invisible over a time period, less jitter is present. Based on the historical value of this jitter figure, the buffer manager will expand or contract the receive buffer (lengthening or shortening overall delay). The time interval over which this measurement is assessed is called the "jitter window". The work of the *Jitter Buffer Manager* is shown by the yellow line, which is the target buffer delay that the system is trying to achieve, based on measurements calculated over the jitter window.

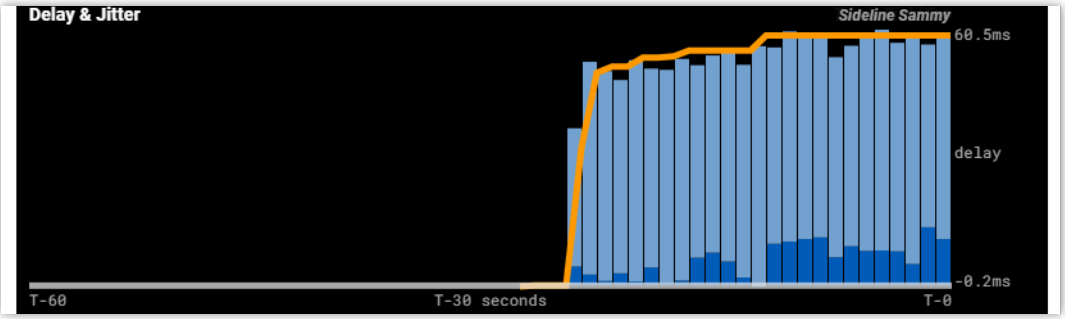


FIGURE 57 - DELAY & JITTER

Data Loss & Correction - The upper-right graph (seen in *Figure 58*) shows a real-time and historical representation of frame loss. If the decoder does not receive packets in time, the chart will show a red bar indicating the percentage of lost packets over a one-second interval.

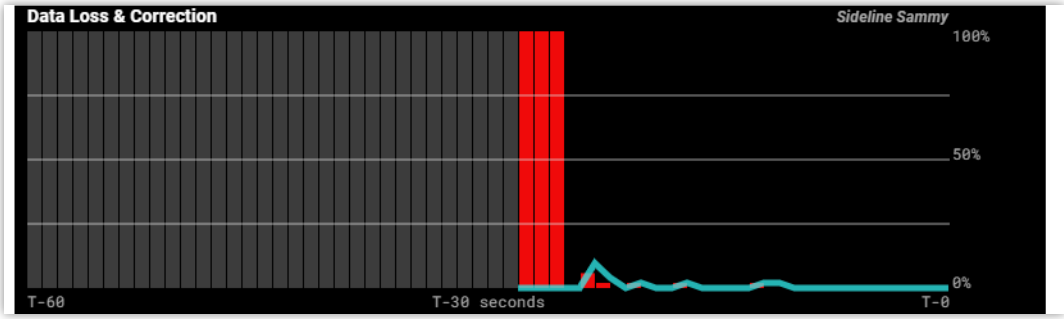


FIGURE 58 - DATA LOSS & CORRECTION

Codec Channel - The lower graphs deliver information on the FieldLink's total receive rate and transmit rate (*Figure 59*), including information for multiple connections when applicable. When multiple calls are active, this will show an aggregate rate of all incoming connections.

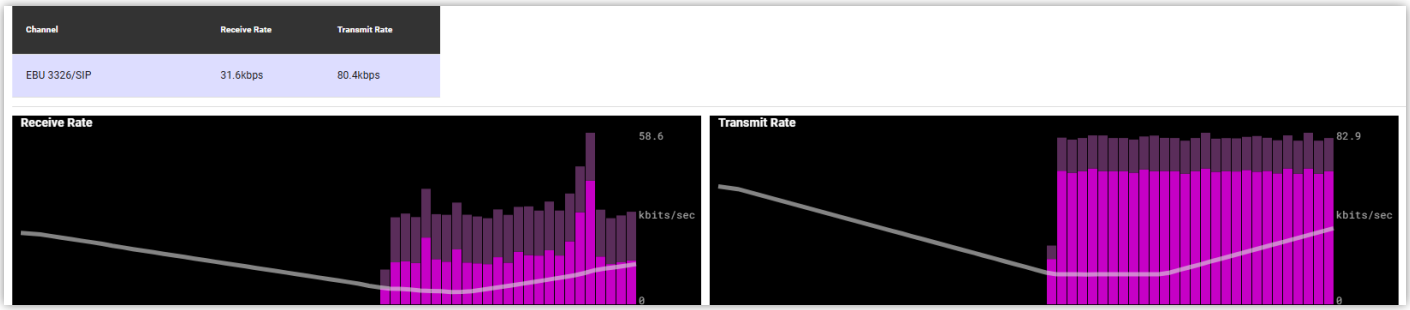


FIGURE 59 - CODEC CHANNEL

SYSTEM SETTINGS TAB

The **System Settings Tab** shown in *Figure 60* defines system-wide parameters, such as *Remote Connection Password*, *Unit Name* and whether to deliver *Mic-level Output*. Configuration options on the left side of the screen are categorized by drop-down menus. Clicking a drop-down category will 'nest' or 'un-nest' the options within. Selecting any of the configuration options will open the corresponding *Configuration Panel* on the right side of the screen, where settings are chosen and saved (or reverted to default values).

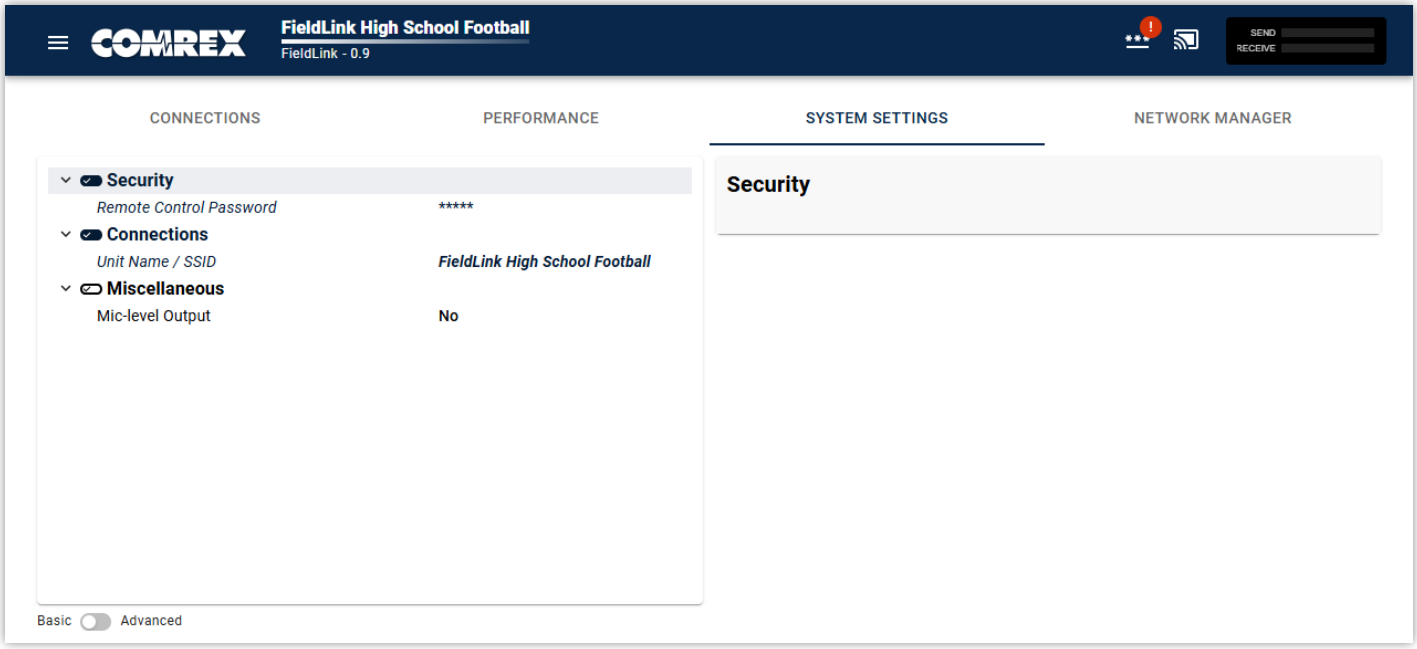


FIGURE 60 - SYSTEM SETTINGS

These settings are segmented into commonly-used and advanced options. In order to simplify the interface, **Advanced Options** are normally hidden from the user until the toggle switch in the lower-left of the screen is set from "Basic" to "Advanced".

SECURITY SETTINGS

Remote Control Password - This allows for setting a user-defined "Remote Password" for the *Web User Interface* and *Comrex Device Manager* to control or configure the FieldLink. The default password is shown here and can also be found in the system settings menu of the **Font Panel Display**, where a new randomly-generated password can be selected. Only here in the web interface can a new password can be user-defined (set to any value). A desired password can be entered in the text field, but must be set by clicking "Apply Changes". Once the remote password is changed, it can no longer be found using the Front Panel Display, as a security precaution.

Note: Users should take note of any updated password, as a forgotten password will require resetting the password back to default in order for users to regain access to the FieldLink. See "System Settings" on page 29 for more details on resetting passwords using the Front Panel Display.

CONNECTIONS

Unit Name / SSID - Users are encouraged to name their FieldLink here. The default name of a codec is based on the unique Node ID (MAC address) of the unit. By changing this to something familiar and unique (e.g., “Luca Pressbox”), you will see this name reflected in the main information banner of the web user interface, as well as when scanned on a network using the **Comrex Device Manager** program.

Note: The “Unit Name” is also used as the **SSID** (network name) for the Access Point attached to the “AP” port on the rear panel of the FieldLink (if using a Comrex-approved AP). Wireless users will need to connect their phones to this network in order to make calls to the FieldLink, so an appropriate Unit Name is helpful.

MISCELLANEOUS

Mic-level Output - When enabled, this option changes the FieldLink’s output level to better work with pressbox mixers that only have microphone level inputs. This option is the also available in the audio settings menu of the **Front Panel Display**, and any changes will be reflected in both locations.

ADVANCED SYSTEM SETTINGS

The **System Settings Tab** has a toggle switch in the lower-left corner of the screen which allows for more advanced user options that are hidden by default. When switched to “Advanced”, additional configuration options are displayed (as shown in *Figure 61*).

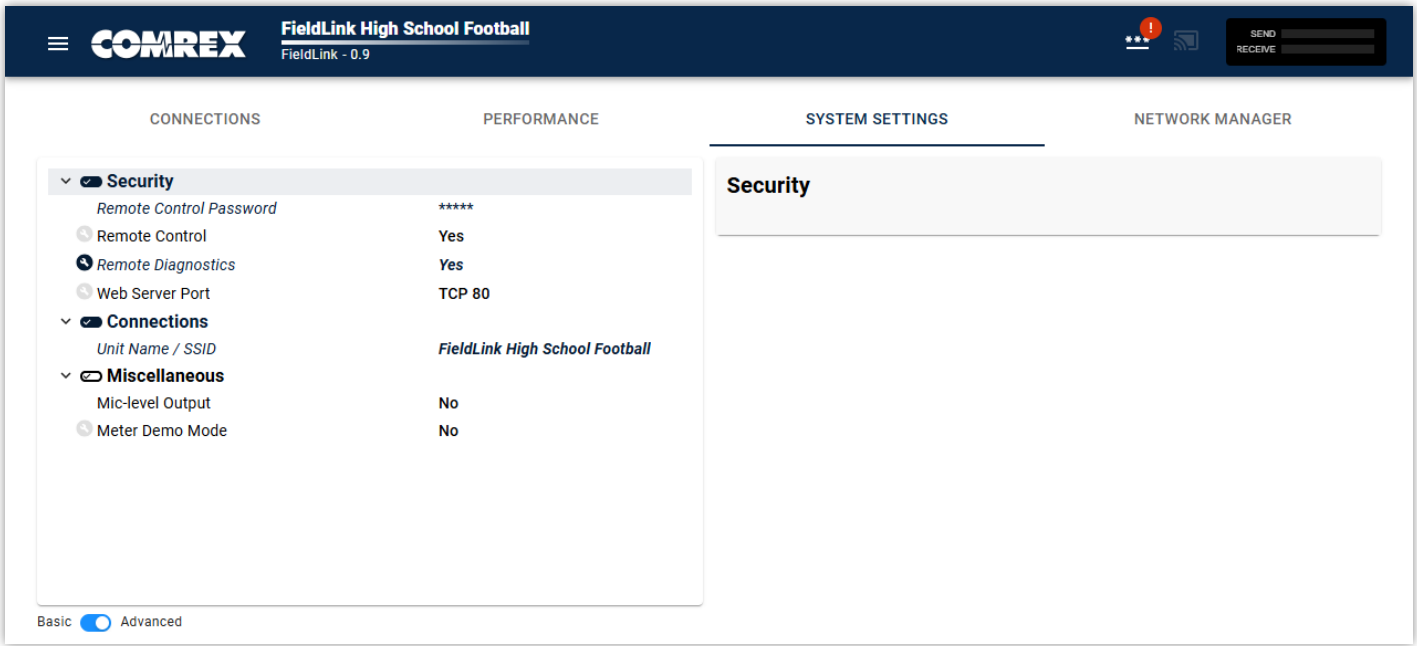


FIGURE 61 - ADVANCED SYSTEM SETTINGS

SECURITY (ADVANCED)

Remote Control (Yes/No) - Defaulted to “Yes”, this enables or disables the web user interface entirely. Turning this off means control of FieldLink can only happen from the **Front Panel Display**. This option must be set to “Yes” to enable firmware updates. (This option may only be changed in the System console; it is “View Only” in the Web Interface.)

Remote Diagnostics (Yes/No) - Defaulted to “No”, this option enables/disables the FieldLink SSH port for aid in Comrex support diagnosing issues. SSH requires a private key and is not user accessible. Change this option to “Yes” only when asked by the Comrex support team, and set it back to “No” when finished.

Web Server Port - This controls the port that the web user interface uses on the attached LAN. On some networks, it may be desirable for FieldLink to deliver the web user interface on a non-default TCP port (default being 80). **Note: Making a change here then forgetting the chosen port may result in web access being unavailable until the FieldLink is reset to factory default.**

Miscellaneous (Advanced)

Meter Demo Mode - Enables a demo function on the front panel display and should not be used for broadcast purposes.

NETWORK MANAGER TAB

The last tab on the web user interface is the **Network Manager Tab** as shown in *Figure 62*. FieldLink has two network ports and they can be configured here. Options here are more comprehensive than those provided on the *Front Panel Interface*.

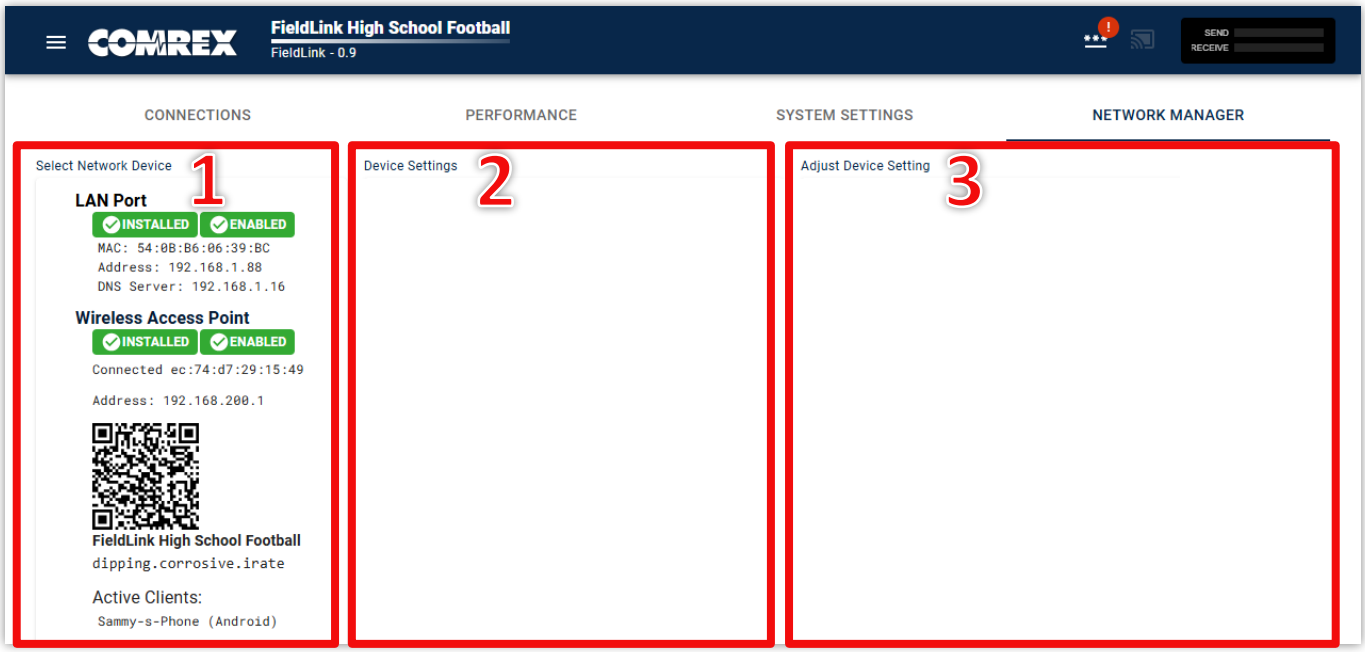


Figure 62 - Network Manager

The Network Manager screen is organized into three columns which populate as selections are made. The first column on the left side of the screen is labeled “**Select Network Device**”. You can select the *LAN Port* and *Wireless Access Point Port* individually and change specific settings for each.

Once a network device is selected, it will populate the available options for that device in the center column, labeled “**Device Settings**”. Selecting any option in the center column will open the configuration panel (the third column) on the right side of the screen.

The third column, labeled “**Adjust Device Settings**”, is where the settings are chosen and saved (or reverted to default values).

LAN Port

The **LAN Port** serves two main functions. in **AP Mode** it is optional and can be used to share internet connection with wireless users who are associated with the FieldLink's Access Point. This allows callers to stay connected to the public internet while sending audio to FieldLink via the FieldTap app. (Note: This option requires enabling **AP Gateway Mode**, as described on page 45.) In **LAN Mode**, this port is the only network connection used for wireless users to connect.

The LAN Port's network device entry in the left column will display the FieldLink's **MAC** address, and when connected to a LAN, it will also display the LAN IP address (labeled simply "**Address**") and the **DNS Server** (as shown in *Figure 63*).

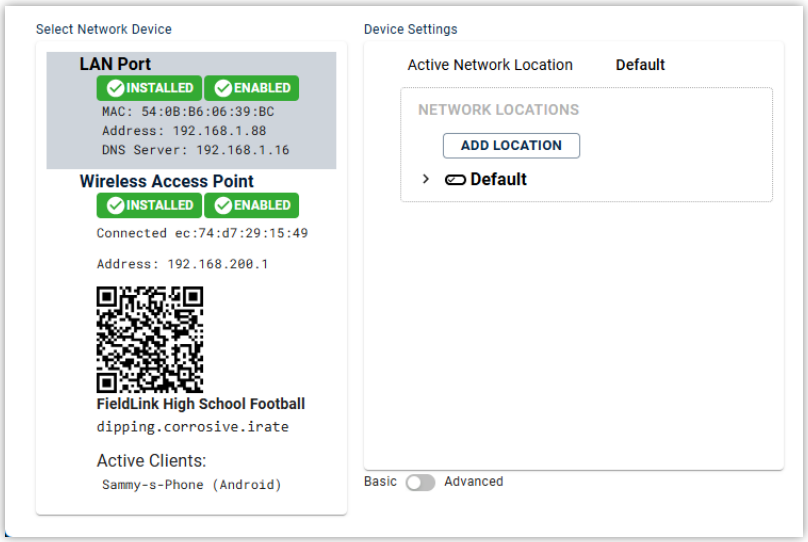


Figure 63 - LAN Port

Select the LAN Port to display the *Device Settings* in the center column. This includes a list of '**Network Locations**' as well as an option to choose the **Active Network Location**.

Similar to the *System Settings Tab*, each network device's settings are segmented into commonly-used and advanced options. In order to simplify the interface, **Advanced Options** are normally hidden from the user until the toggle switch on the bottom of the *Device Settings* column is set from "Basic" to "Advanced".

NETWORK LOCATIONS

The LAN Port on FieldLink is set by default to use **DHCP**, meaning it will extract all needed network configuration from the LAN to which it is connected. It might be preferable in some cases to set this port to **Static**, meaning the configuration details such as the IP address will not change over time. In order to account for a variety of deployment options, FieldLink utilizes a configuration method called "Locations". **Network Locations** are selectable sets of network configurations that offer on-the-fly connection to different pre-configured networks, rather than overwriting each previous network's credentials whenever a new network connection is required.

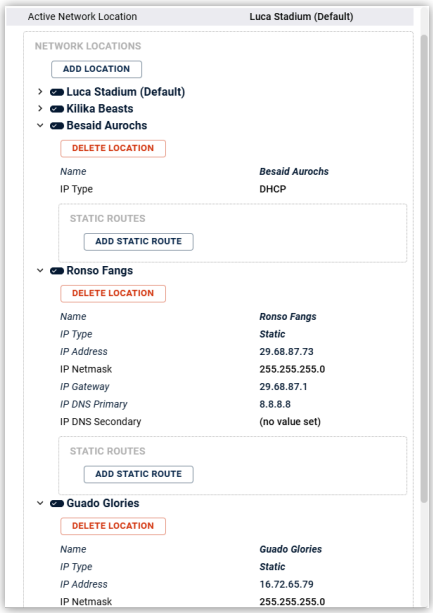


Figure 64 - Network Locations List

The default Network Location can be edited to reflect the FieldLink's primary deployment configuration, or left in DHCP mode if preferred. New locations can be added for secondary or temporary deployments as needed. *Figure 64* shows an example of FieldLink being configured for a variety of sports teams' Home locations.

The LAN Port device settings largely revolve around the use of these Network Locations.

Active Network Location - This option establishes which Network Location the FieldLink is currently using for its LAN Port. Be default, the *Active Network Location* is set to use a pre-configured location called "Default", which is set for DHCP. Selecting the "Active Network Location" option in the *Device Settings* column will open the configuration panel on the right, allowing selection of a new active location via the drop-down menu (as shown in *Figure 65*). After selecting any new option, clicking the "Apply Changes" button on the lower-right is required to apply the setting.

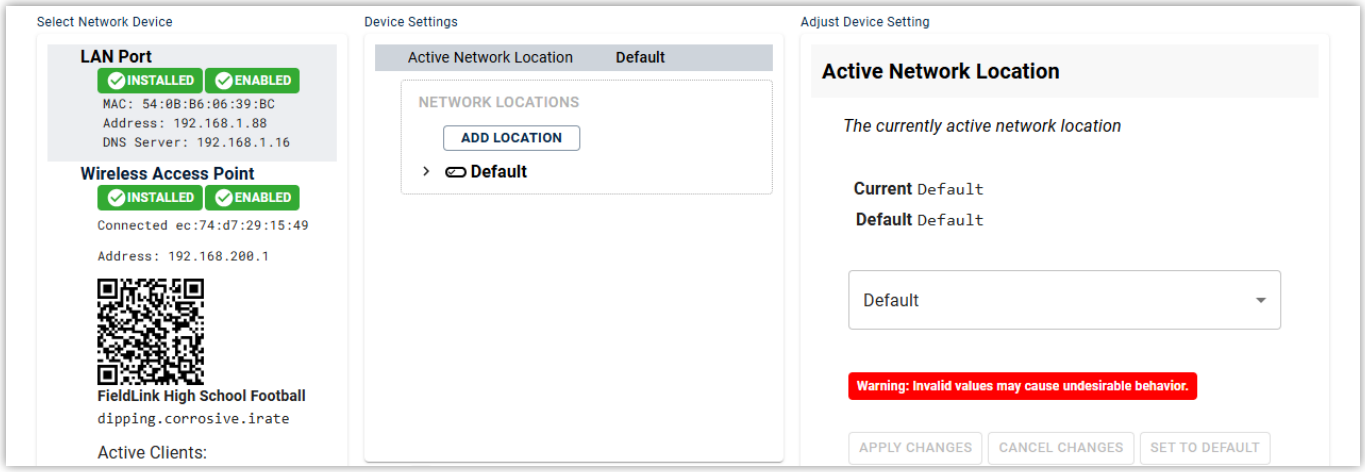


FIGURE 65 - ACTIVE NETWORK LOCATION

Figure 66 below shows the available options for new and existing Network Locations.

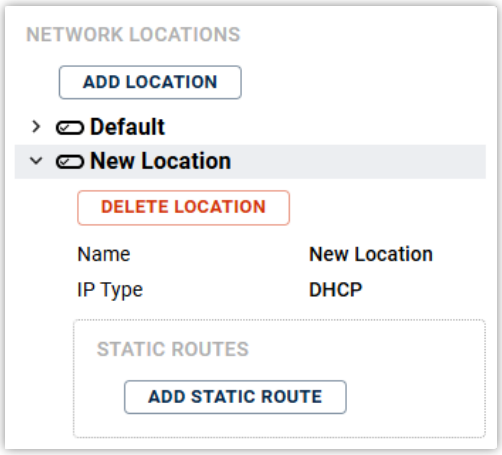


FIGURE 66 - NETWORK LOCATION OPTIONS

Add Location - This will generate a new network location titled "New Location" and place it in the list underneath existing entries. Selecting this new entry allows for additional configuration, which is the same process as editing the default location.

Delete Location - This will remove the corresponding network location from the list, and cannot be undone. When choosing this option, a prompt will display requiring confirmation before the location is erased.

Name - Allows the location to be renamed. As with all settings, the "Apply Changes" button must be clicked before settings are changed.

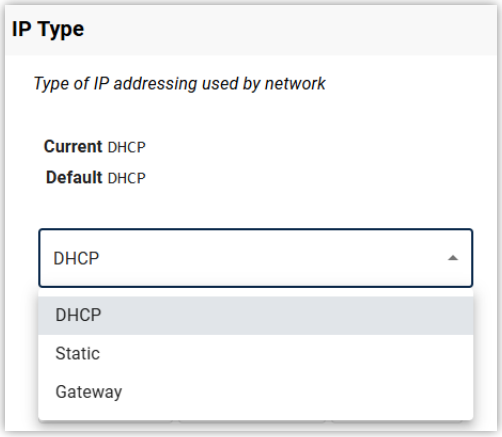


FIGURE 67 - IP TYPE

IP Type - Allows a network location to be set from the default "DHCP" to "Static", using the drop-down menu in the configuration panel as shown in *Figure 67*.

Note: the "Gateway" IP type is not applicable for most usage of FieldLink and should not be selected here. This should not be confused with the "**AP Gateway Mode**" setting, which allows wireless users to share the FieldLink's internet connection while associated with its attached AP (described in more detail on page 45).

When set to “Static”, additional options become available (as shown in *Figure 68*). These include **IP Address**, **IP Netmask**, **IP Gateway**, **IP DNS Primary** and **IP DNS Secondary**. Static mode requires network-specific values to be entered in each of these new fields. Comrex **strongly** recommends consulting with the local IT Administrator to obtain these values before attempting to set FieldLink to “Static” mode. Be sure to click “Apply Changes” after each value is entered.

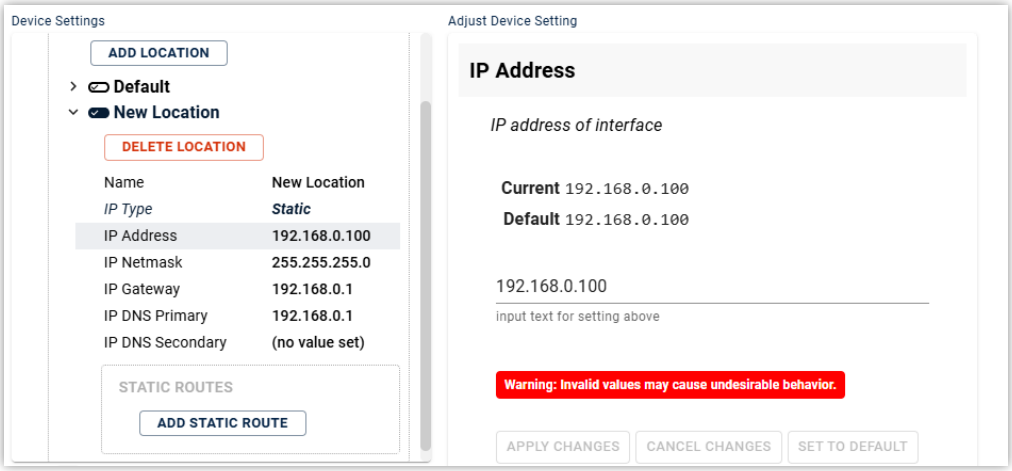


FIGURE 68 - STATIC IP SETTINGS

Changes can be made and saved to any non-active Network Location without interrupting current operation; however, caution is advised to ensure that any changes to the currently selected **Active Network Location** are accurate and appropriate. Changes made to the Active Location will often result in an immediate disconnect from the Web User Interface, as the IP address used by the current session may no longer be valid. As such, any changes which affect the current Active Network Location will prompt an additional “Apply Changes” button at the top of the “Device Settings” column (as shown in *Figure 69*). Click this button only when you are confident that the configuration is valid.

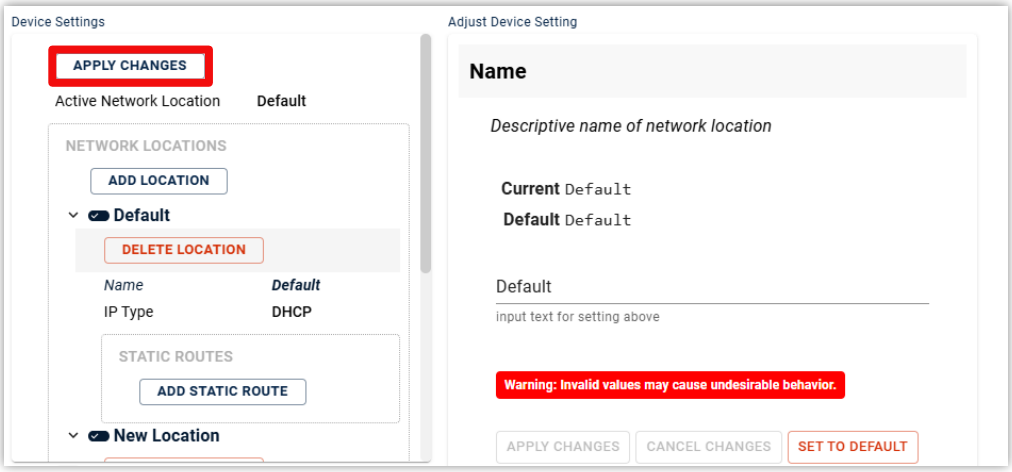


FIGURE 69 - APPLY CHANGES

ADVANCED LAN PORT SETTINGS

Each Network Device has a toggle switch at the bottom of the “Device Settings” column which allows for more advanced user options that are hidden by default. When switched to “Advanced”, additional configuration options are displayed in this column:

Preserve After Reset - This option ensures that changes to the unit’s network configuration will be preserved even if the device is reset to factory defaults. This setting is disabled by default, and Comrex advises users to be cautious when enabling it. If the LAN Port parameters are set incorrectly, it is possible to be locked out of the *Web User Interface*, and

you will then have to use the **Comrex Device Manager** program's "Network Recovery Mode" or perform a Factory Reset using the Front Panel Display (as described on page 30).

Broadcast Config - This option allows the unit to be identified and configured via broadcast communication on the *Web User Interface* and **Comrex Device Manager**. It is enabled by default and should remain this way.

Wireless Access Point

The second **Network Device** listed in the *Network Manager Tab* is the **Wireless Access Point**. This device is only active when the FieldLink is used in **AP Mode**, with a Comrex-approved Access Point ("AP"). When in **LAN Mode** or when using a non-Comrex-approved AP, this section will be blank.

The Wireless ACCESS Point's network device entry in the left column (as shown in *Figure 70*) will indicate the MAC address of the AP that is attached to the "AP" port on the rear panel of the FieldLink. If the device does not show the "**Connected**" status, check the following factors:

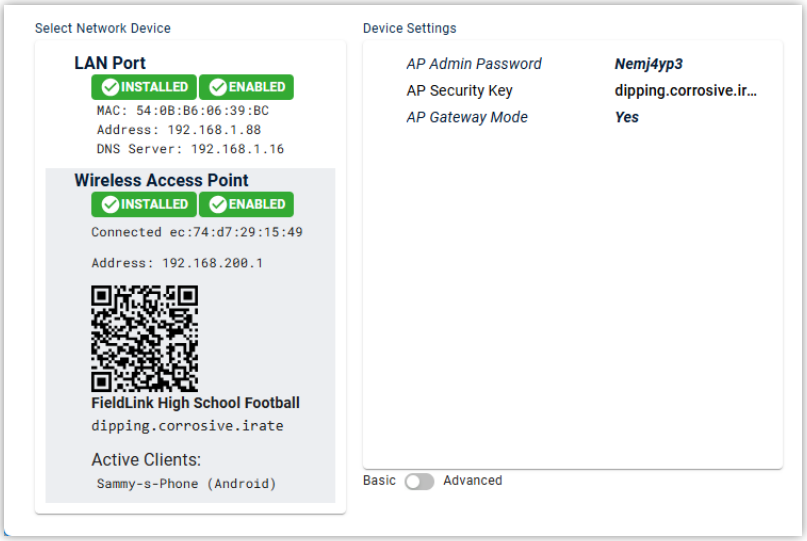


Figure 70 - Wireless Access Point

- *Ensure that the AP is connected to the "AP" port*
- *Check that power is getting to the AP*
- *And verify that the AP Admin Password is set correctly.*

When connected, it will also display the FieldLink's IP address on the associated wireless network (labeled simply "**Address**") and generate a status window to facilitate wireless connections to the FieldLink.

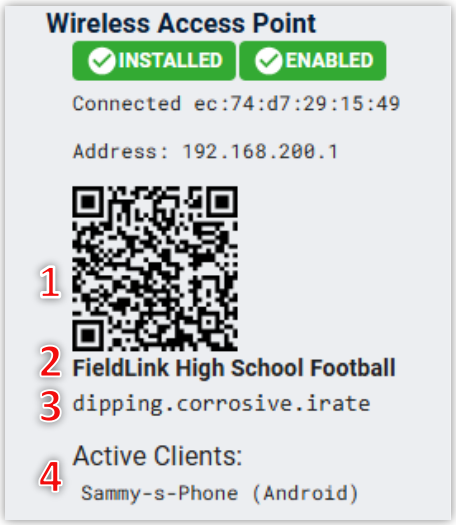


Figure 71 - Wireless Status

WIRELESS STATUS WINDOW

The **Wireless Status Window** here in the *Network Manager Tab* will mirror the information available on "Wireless Info" and "Active Clients" pages of the *Front Panel Display* menu. The information is **annotated** in *Figure 71*.

1. A "**QR Code**" appears which wireless users can scan using their phone's camera app. This will automatically associate the user's phone with the FieldLink's attached Wireless AP.
2. The **SSID** (Network Name) of the Wireless AP.
3. The **AP Security Key** (Password) used to connect to the Wireless AP.
4. A list of **Active Clients** currently connected to the AP. (Note: The names appearing here are determined by the Android or Apple system settings of the user's smartphone, not by the FieldTap app.

Selecting the **Wireless Access Point**'s Network Device entry in the left column of the *Network Manager Tab* will display the available "Device Settings" in the center column, as shown in *Figure 72*.

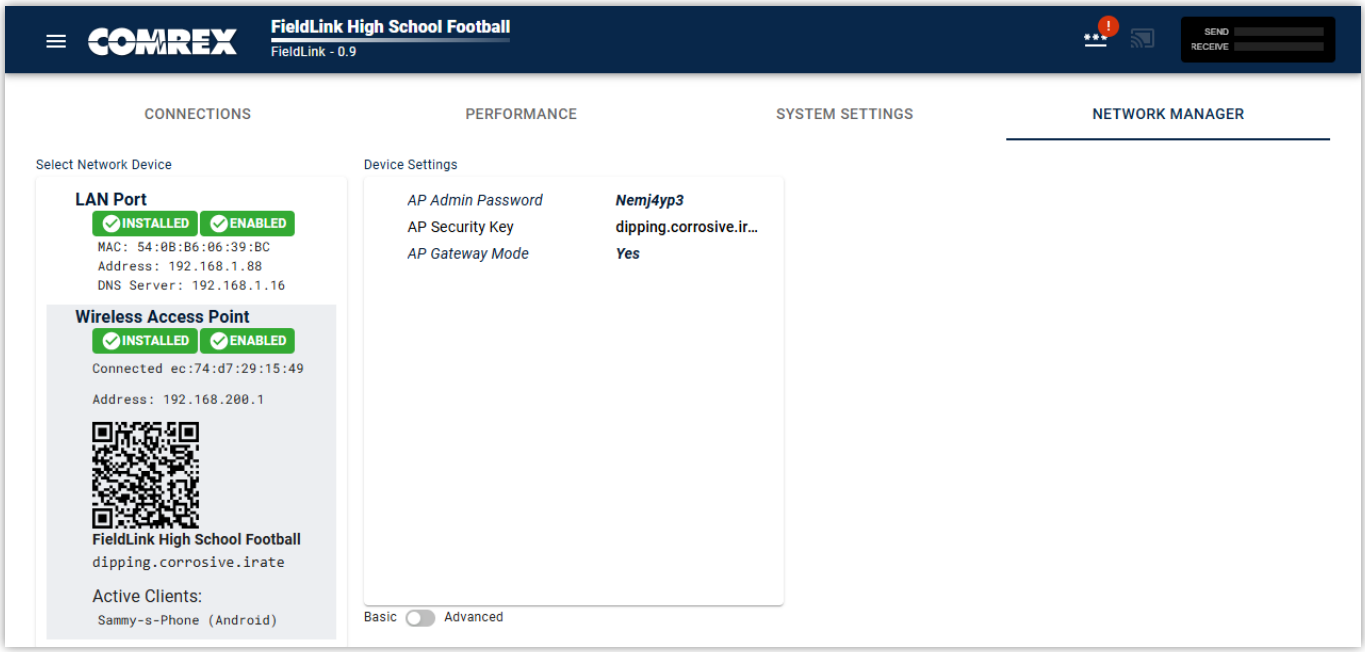


FIGURE 72 - WIRELESS AP SETTINGS

Selecting any of the available options in the "Device Settings" column will display the *Configuration Panel* on the right side of the screen (as shown in *Figure 73*), where settings can be adjusted and saved (or reverted to default values). As with other settings, always be sure to click the "Apply Changes" button to finalize any adjustments.

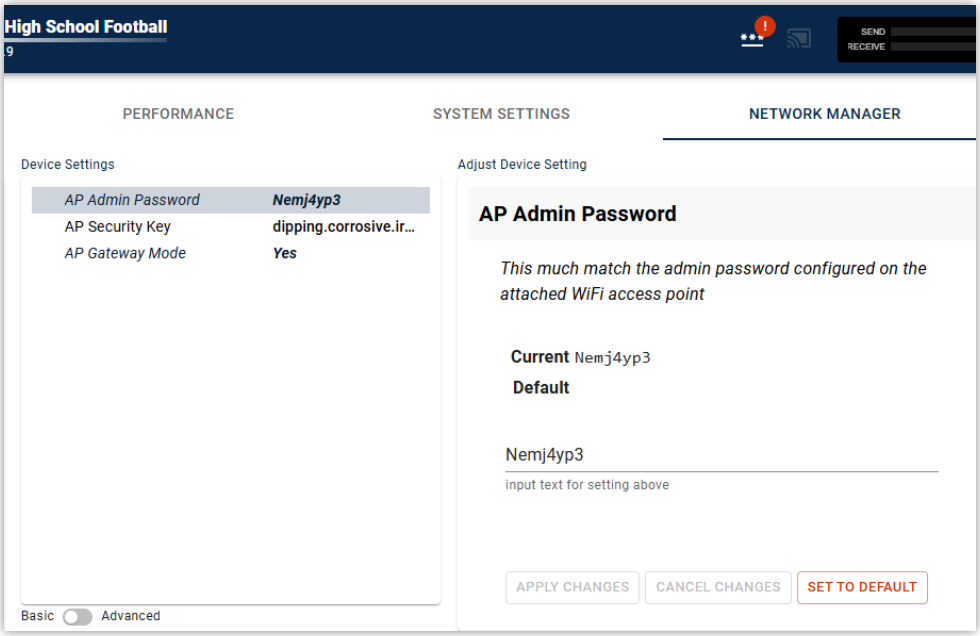


FIGURE 73 - ADJUSTING AP SETTINGS

AP Admin Password - This password must match the password of the **AP's Admin Interface**. If this is a Comrex-approved AP, it will be written on a sticker on the rear panel of the AP. If it has been manually changed on the AP directly, you'll need to change it here for the FieldLink to communicate with the AP. Note: The AP will still accept calls if this password is incorrect, but you won't see status and config options on the Fieldlink's *Front Panel Display* or in the *Web User Interface*.

AP Security Key - This is the password that phones will use to connect to the AP's Wi-Fi signal. A random three word password is chosen by default, but can change to any value here. Unlike the *Front Panel Display* options (which only allow selection of random discrete passwords), any alphanumeric characters can be entered here. Changes will be reflected in the *Wireless Status Window* in the left column, as well as the data embedded in the **QR code** displayed there.

AP Gateway Mode - This option allows for Internet sharing with wireless users. On many phones, connecting to a wireless AP with no Internet access will prevent the phone from reaching the web. This may also cause some phones to attempt 'dropping' the AP's wireless network to avoid a lack of connectivity. By turning this option to "Yes" and connecting a network to the **LAN Port** on the rear panel of the FieldLink, wireless users will share that network connection and obtain valid internet connection. This option is disabled by default.

Advanced Wireless Access Point Settings

Each Network Device has a toggle switch at the bottom of the "Device Settings" column which allows for more advanced user options that are hidden by default. When switched to "Advanced", additional configuration options are displayed in this column:

Enabled - In some circumstances, you may wish to completely disable the **AP Port** to prevent its accidental use in "LAN Mode". Setting this to "No" disables the port. The port is enabled by default.

Preserve After Reset - If other settings in the AP config menu have been changed, it might be desirable to not have them erased when a factory reset is initiated (e.g., unattended operation). Setting this to "Yes" will preserve the Wireless Access point settings, even after a factory reset. This option is disabled by default.

Wireless Network ID - FieldLink assigns itself an IP address on the AP port of **192.168.200.1**. In some rare circumstances this may be an IP address conflict, so this field allows changing of the third decimal of the IP address from 200 to another value (e.g. 192.168.75.1). Note that the default address is hard-coded into the **FieldTap** app, so if this value changes, a new contact must be created in FieldTap with the new address.

Access Point ID - In the rare case that multiple APs are connected to the AP port (via a switch), this will allow entry of the MAC address of the AP to be used with FieldLink. No value is needed here for a single AP, and by default field is empty.

X. USING FIELDTAP WITH FIELDLINK

FieldTap is a smartphone application that allows users to make live, high quality audio connections to Comrex codec hardware (*ACCESS*, *BRIC-Link* and *NX* products). FieldTap is now also the tool used to connect sideline audio contributors to **FieldLink**. It is designed to be very simple to set up and use, delivering studio quality sound in each direction of the call. FieldTap uses the SIP protocol and the Opus audio encoder.

FieldTap a free download on the Google Play Store for Android and the Apple App Store for iOS.

INSTALLING FIELDTAP

Navigate to your phone's app store, and look for the FieldTap app, as shown in *Figure 74*.

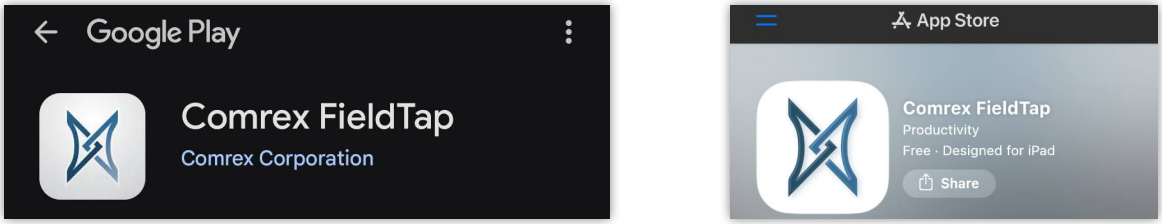


FIGURE 74 - FIELDTAP IN THE APP STORE

Note: Older versions of the FieldTap app do not support FieldLink by default and some phones may not have an option to update to the latest version. If your phone cannot connect to FieldLink, uninstall any older version of FieldTap and download a fresh installation before attempting to connect.

QR INSTALL CODES

Using the **Front Panel Display** on FieldLink, users can easily scan QR codes with their phone's camera app to be brought directly to the FieldTap page of their respective app store. Simply swipe Left on the *Dashboard* screen (as shown in *Figure 75*) to find the QR code for the Android app; swipe left again to find the QR code for the iOS page.

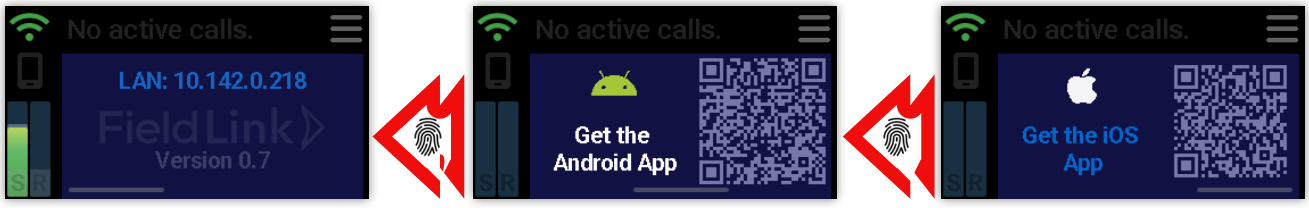


FIGURE 75 - FIELDTAP QR CODES

ASSOCIATING WITH THE ACCESS POINT

Calls made to FieldLink via the FieldTap app require the user's phone to be associated with the FieldLink's Access Point ("AP"). When attached to FieldLink, a Wireless AP generates a private Wi-Fi network with a network security key.

WIRELESS AP'S NETWORK DETAILS

From the *Dashboard* screen on the FieldLink's *Front Panel Display*, press the wireless icon in the top left to open the **Wireless Info** screen, as shown in *Figure 76*. The information only available if using the Comrex-approved Access Point, and if the FieldLink is properly connected to the AP.

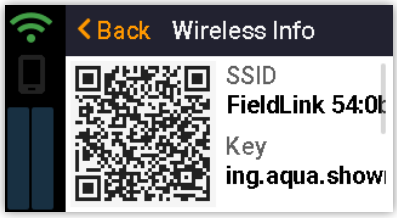


FIGURE 76 - WIRELESS INFO SCREEN

The *Wireless Info* screen will show the **SSID** and **AP Security Key** to allow users to manually associate their phone with the installed Access Point, along with a **QR code** for a phone's camera app to do this automatically. Scan the code or enter the network credentials into your phone's network list before proceeding.

For APs not recommended by Comrex, association with the AP must be done manually, using the SSID and Wireless Security Key of the Wi-Fi network. This can generally be found in the AP's *Admin Interface*.

CALLING FIELDLINK

Once a phone is associated with the AP, open the FieldTap app and choose the default contact labeled "Comrex FieldLink", as shown in *Figure 77*. At this point, you can press "Connect" to make an audio connection to the FieldLink.

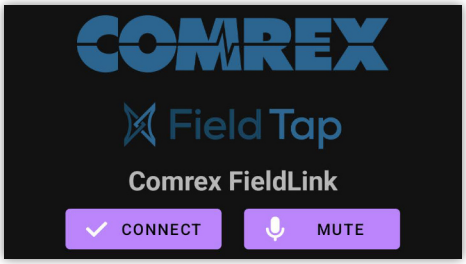


FIGURE 77 - CONNECT

If the **Home Screen** does not already display the default FieldLink contact, tap the three-line "Hamburger Menu" button on the top-left of the screen and open "Contacts" to find the FieldLink entry (as shown in *Figure 78*). Tap the "Comrex FieldLink" entry to give it green checkmark.

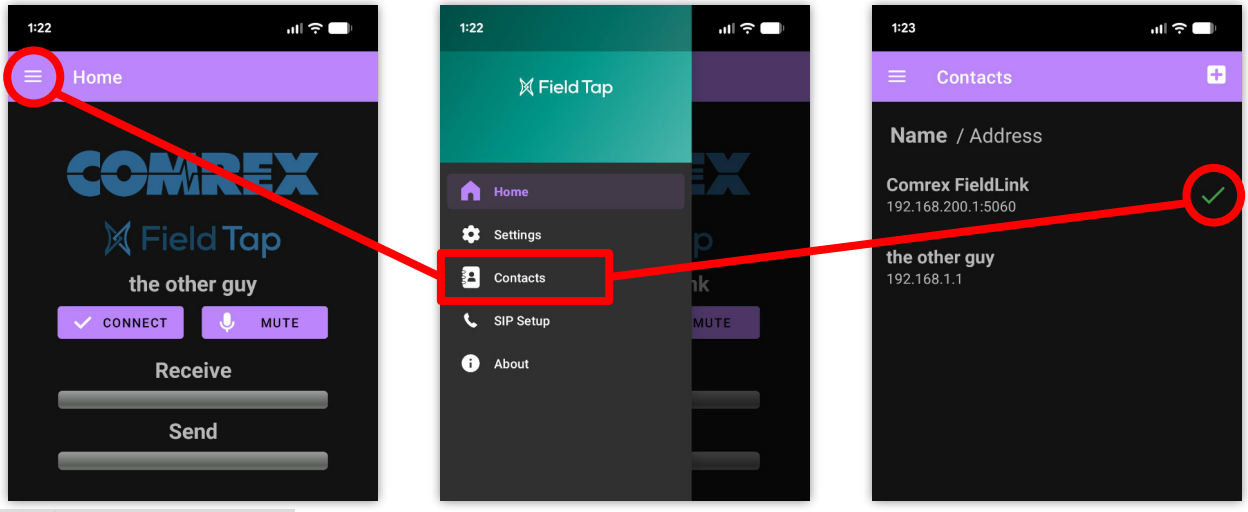


FIGURE 78 - FINDING FIELDLINK

CONNECTING IN LAN MODE

FieldLink has the ability to use existing LAN—rather than attaching a Wireless AP—as long the network offers a Wi-Fi signal and does not enforce "client isolation".

With a LAN attached to the "LAN" port on the rear panel of the FieldLink, use your phone's network settings menu to connect to the Wi-Fi network associated with that LAN. A local Network Administrator can provide the correct SSID and Network Security Key for this.

ADDING A CONTACT

When using **LAN Mode**, FieldTap will not automatically generate a contact for FieldLink. Instead, this must be done by tapping the three-line "Hamburger Menu" button in the top-left of the screen, and choosing "Contacts", as shown in *Figure 79*.

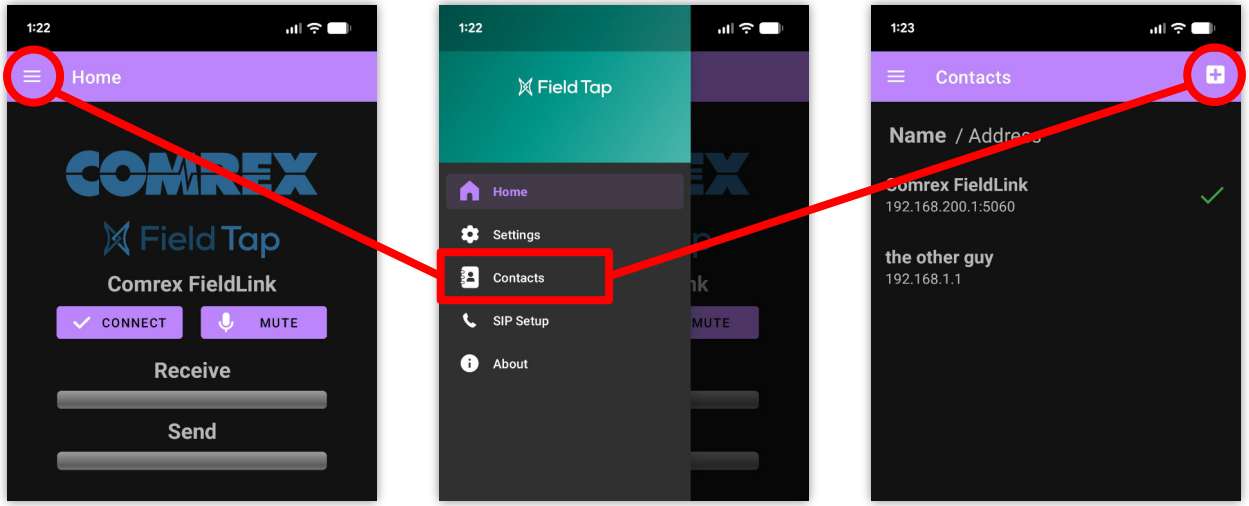


FIGURE 79 - CONTACTS

In the **Contacts Screen**, tap the "**+**" icon in the top-right of the screen to generate a new contact. Any name can be used for the new contact, but you will need to input the FieldLink's **LAN IP address** (found on the dashboard screen of the Front Panel Interface) in order to connect, as shown in *Figure 80*. Be sure to check the "Make Active Contact" box before saving the new contact. The new contact will then appear on the *Home Screen* where you can tap "Connect" to make a call.

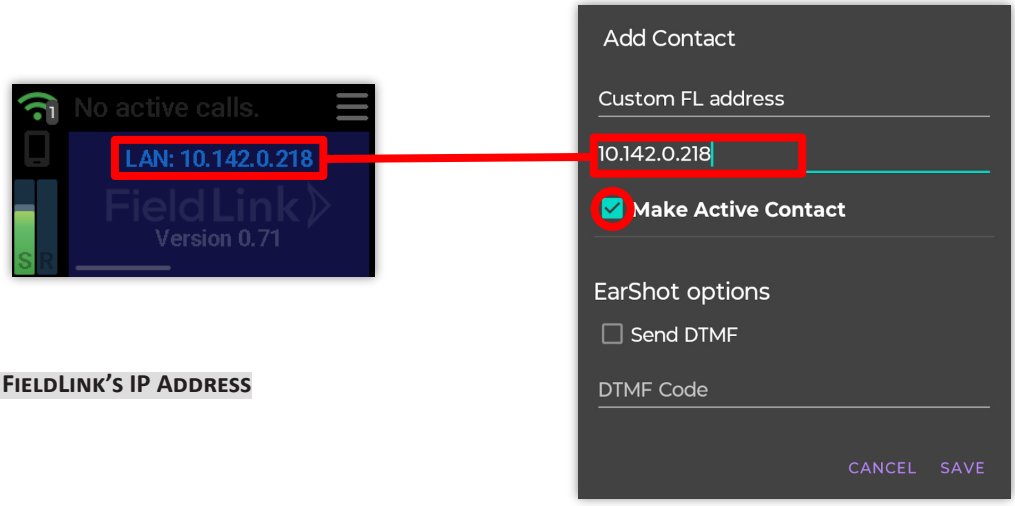


FIGURE 80 - FIELDLINK'S IP ADDRESS

XI. QUICKSTART & TROUBLESHOOTING

This section skips over many of the details concerning the configuration of FieldLink, and focuses instead on the minimum information needed to start receiving sideliner calls. For more details on any of these steps, please see the sections of this manual referenced below.

INSTALLATION

Figure 81 shows the ports available on the rear panel of the FieldLink, including **annotations**.

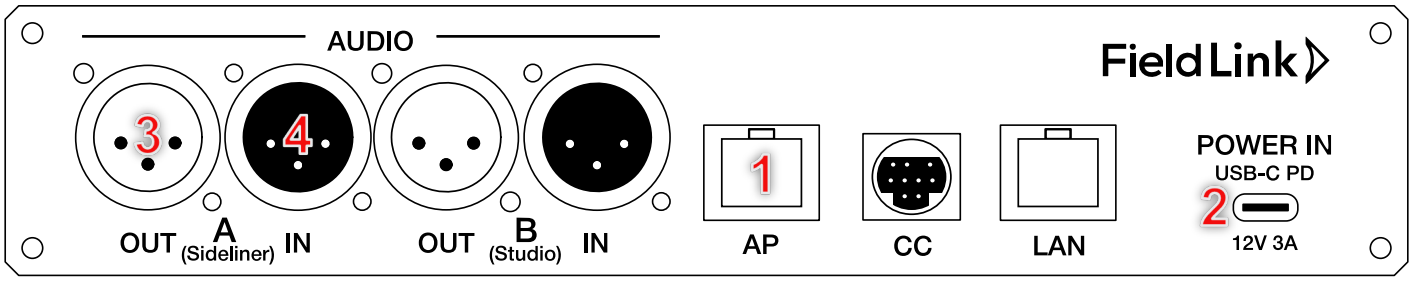


FIGURE 81 - FIELDLINK REAR PANEL

ATTACH THE AP

- Attach the Comrex-approved **Wireless Access Point** to the "AP" port on the rear panel of the FieldLink (**1** in *Figure 81*) using an Ethernet cable.

> For more details regarding ACCESS Point options and configuration see:
>
> - "Using the Comrex-Approved Access Point" on page 17
> - "Using Other Access Points" on page 19
> - "Using FieldLink in LAN Mode" on page 20

APPLY POWER

- Attach the included **USB-C Power Supply** to the FieldLink's power port (**2** in *Figure 81*) using the cable provided.

ATTACH AUDIO

- Attach the FieldLink's **Output** to your pressbox mixer *line level input* via the XLR Out port labeled "A (Sideliner)" (**3** in *Figure 81*).
- Attach a *line level* **Mix-minus** feed from your pressbox mixer to the FieldLink's XLR In port labeled "A (Sideliner)" (**4** in *Figure 81*).

> For more installation details, see:
>
> - "Installation" on page 13

MAKING CONNECTIONS

Figure 82 shows the controls available on the front panel of the FieldLink, including **annotations**.

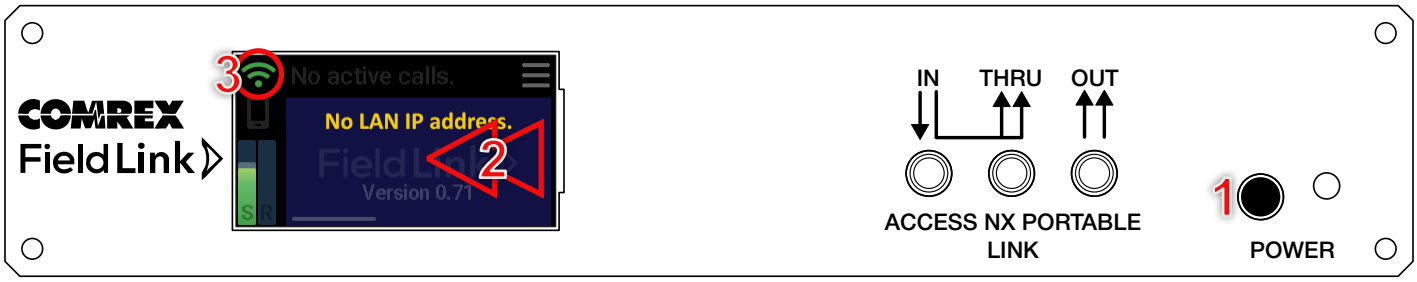


FIGURE 82 - FIELDLINK FRONT PANEL

POWER ON

- Press and hold the **Power Button** (**1** in *Figure 82*) for 2 seconds. Wait for the Front Panel Display to light and for the LED on the attached AP to turn blue.

INSTALL FIELDTAP

- Install the Comrex **FieldTap** app on an Android or iOS phone. Swiping **left** on the *Front Panel Display's* dashboard screen (**2** in *Figure 82*) will display a QR code to link directly to the FieldLink page of Android's app store. Swipe left again to display a similar link for iOS users.

CONNECT PHONE TO AP

- Tap the *Wireless Icon* on the dashboard screen (**3** in *Figure 82*) to display a **QR code** which can be scanned to automatically associate a phone with the AP's Wi-Fi network. This page also displays the **SSID** and **Wireless Security Key** of the Wireless AP attached to the FieldLink which can be used to manually associate a phone with the AP.

MAKE THE CALL

- Open the "Home" screen on the **FieldTap** app and click the "Connect" button labeled "**Comrex FieldLink**" (as shown in *Figure 83*).

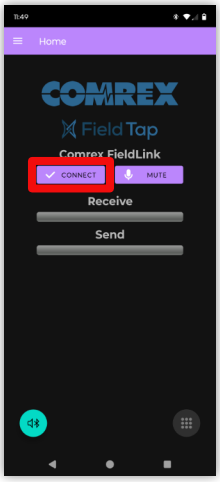


FIGURE 83 - CALLING WITH FIELDTAP

For more details on using the FieldTap app, see:

- "Using FieldTap with FieldLink" on page 46

For more details on using the Front Panel Display, see:

- "Operation & Status via Front Panel Display" on page 21.
- "Configuration via Front Panel Display" on page 24.

For more advanced configuration options, see:

- "Configuration via Web User Interface" on page 31.

TROUBLESHOOTING

Setting Up FieldLink

- *I lost my power adapter. What can I do?*

  Most USB-C chargers capable of 45W or higher will work with FieldLink. Make sure the adapter conforms to the USB-C PD protocol and can deliver 3A at 12V. Not all do, especially those made by Anker. If your charger has multiple USB ports, be sure to only use one of them unless it can supply the full 45W to both ports simultaneously (most will split the output to 22W + 22W, or something similar).

- *The Wireless Icon on my FieldLink is blinking Yellow.*

  FieldLink can not communicate with the Comrex-supplied AP. Double check that the AP Admin Password setting is the same as the password on the AP rear panel sticker. See "AP Admin PW" on page 28 for more details.

- *The Wireless Icon on my FieldLink is blinking Red.*

  This is normal if using LAN mode or using a non-comrex-approved AP. If using the Comrex approved AP, make sure it's attached to the AP port. Try a different Ethernet cable. See "Network Connections" on page 13.

- *I can't change AP settings on my FieldLink.*

  Make sure the wireless icon on the FieldLink is solid green. If not, check the steps mentioned above. See "Using the Comrex-Approved Access Point" on page 17 for more details.

- *I can't enter letters and numbers on the touch screen.*

  Character entry on the touch screen requires a long press on the character to get the FieldLink to accept it.

- *My IT department is complaining about an unauthorized DHCP server.*

  Connect your LAN to the "LAN" port, rather than the "AP" port. See "Network Connections" on page 13.

Using FieldLink

- *FieldTap can't connect to FieldLink.*

  This could be several things:

  a) If using LAN mode or if the Wireless Network ID in the advanced settings has changed, you'll need to make a new FieldTap contact with the FieldLink's IP address, rather than the default.

  b) Make sure your phone is connected to the FieldLink Wi-Fi network. If the signal is poor, phones will often revert to a previously used network. You may need to set your phone to "forget" that network to prevent this.

  See "Using FieldTap with FieldLink" on page 46.

- *FieldTap users can't check scores on their phones while on the FieldLink Wi-Fi.*

  Apply an active Internet connection to the LAN port on FieldLink and set the Gateway mode on FieldLink to "Yes". See "AP Gateway Mode" on page 27 for more details.

- *FieldTap users can hear themselves delayed.*

  The input audio to FieldLink must be a **mix-minus feed**, meaning the FieldTap users' audio must not be included. You can usually configure a mixer to provide mix-minus, or configure an aux bus to create it. See "Audio Connections" on page 14.

- *FieldTap users are dropping in and out.*

  Try to reposition the AP for better directionality toward the contributor, outdoors if possible. Try to avoid broadcasting within large crowds, where bodies an block the signal. If using a mic and headset on your phone, use a phone runner's armband rather than having the phone in a pocket.

  The Comrex-provided AP delivers a directional signal using the latest Wi-Fi standards to avoid dropouts due to Wi-Fi congestion. Some venues, however, are simply blanketed with too many existing APs to allow operation. Explore using FieldLink LAN mode on an existing Wi-Fi network in these venues.