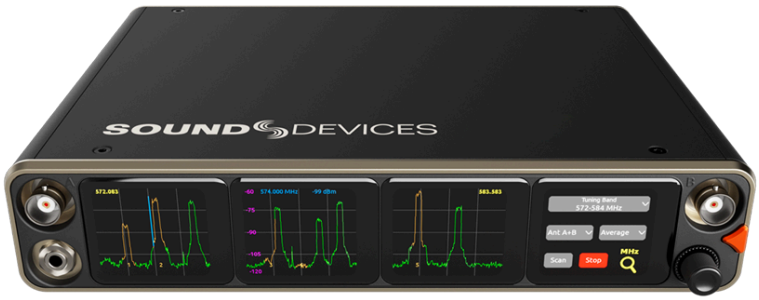
SOUND DEVICES



Sound Devices Astral ARX16

8-, 12-, and 16-Channel, True-Diversity
Receiver with SpectraBand Technology

User Guide v8.40

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Chapter 1: Introduction

The Astral ARX16 is an ultra-high performance, 8-, 12-, and 16-channel wireless microphone receiver in a compact ½-rack wide chassis. It features 8 independent, true-diversity channels which can be expanded to 12 or 16 true-diversity channels via software license. The Astral ARX16 features NexLink, an innovative concept in wireless microphone receivers: full remote control of microphone transmitters via an integrated, long distance RF link.

The Astral ARX16 can be mounted in a standard 19-inch rack or easily placed remotely near the microphone transmitters due to its ability to be powered by Power-over-Ethernet (PoE+), its Dante audio-over-IP, and built-in web server for control via phone, tablet, or computer.

Additionally, the Astral ARX16 can be docked to Sound Devices 833, 888, or Scorpio mixer-recorders using the Astral QuickDock accessory, which provides convenient power, audio, and timecode connections with no additional cables. This accessory allows the Astral ARX16 to connect and disconnect from the 833, 888, or Scorpio in seconds with no tools, and be remote mounted when desired.

1.1 Key Features

- 8-channel ultra-high-performance, true-diversity receivers in a ½ rack size (8.0″ x 6.6″ x 1.6″).
- Expandable to 12 or 16 channels via 4-channel expansion licenses.
- 169 MHz – 1525 MHz tuning range via SpectraBand Technology.
- Compatible with Astral transmitters including the Astral Mini and Astral TX bodypacks and Astral HH handheld.
- NexLink: integrated, long distance remote control of all wireless transmitters inc. group transmitter control.
- Support for the Astral Outpost remote NexLink antenna box.

- Integrated Real Time Spectrum Analyzer (RTSA) and scanner for visualization of RF activity. TV Channel Finder included.
- AutoAssign: automatic deployment of clean frequencies in seconds.
- Dante audio-over-IP of RF receiver audio including Dante Redundancy.
- Flexible powering: via PoE+, DC input, 8-Series, or AC mains (with optional adapter).
- Web App full control, RTSA, and AutoAssign from browser on any computer, smartphone or tablet.
- Full remote operation capability: Power via PoE, audio via Dante, control via Web App.
- Dual DB-25 connectors for 16 channels of mic, line, or AES outputs.
- Convert 16 channels of Dante to analog & AES on DB25 connectors for sending IFB, VOG & more from mixer to set.
- Wide, 6.2″ color OLED array with touch for control and monitoring.
- Optical Fiber Network option via SFP slot. SFP accepts a wide variety of modular network transceivers.
- Astral QuickDock allows docking and undocking in seconds from 8-Series mixer-recorders with no tools.
- Supports GainForward Architecture: No gain setting on the Astral transmitter. Adjust gain at the receiver or mixer.
- 100% digital long-range modulation delivers the longest transmission distance of any digital system on the market.
- T&M (Test & Measurement) modulation for flat phase & frequency response, ideal for acoustic space measurement.
- RF SAW filters for excellent rejection of interference from nearby IFB or camera hop transmitters.
- Excellent audio quality, full 10 Hz – 20 kHz audio bandwidth.
- BNC timecode input for auto timecode sync of transmitters over NexLink
- Front panel and rear panel BNC antenna inputs. Compatible with passive, bias-powered, and smart antennas.

- Cascade out option on rear BNCs for cascading multiple Astral ARX16 units.
- Front-panel headphone output.
- USB-A port for thumb drives, keyboards, transmitter & Astral Outpost pairing, and TC sync. Supports USB hubs.
- AstralComm macro control between DiGiCo consoles and Astral transmitters.

1.2 SpectraBand

The Astral ARX16 incorporates SpectraBand, a technology that enables the Astral ARX16 to tune over a super wide range of 169-1525 MHz. Tuning within this range varies by country.

For instance:

In the USA, the available frequency ranges are:

- The VHF band (169-216 MHz)
- The entire UHF TV band (470-608 MHz)
- The 600 MHz guard band (614-616 MHz)
- The 600 MHz duplex gap (653-663 MHz)
- The 900 MHz ISM Band (902-928MHz)
- The 950 MHz STL Band (941.5-960 MHz)
- The 1.5 GHz AFTRCC band (1435-1525 MHz), with an appropriate license.

In the UK, the available frequency ranges are:

- The VHF band (173-210 MHz)
- The core UK UHF TV band (470-702 MHz)
- The 800 MHz duplex gap (823-832 MHz)
- The 800 MHz guard band (863-865 MHz)

- The DME bands (961-1015 MHz, 1045-1075 MHz, 1105-1154 MHz), with an appropriate license.
- The IMT band (1518-1525 MHz)

Please see https://www.sounddevices.com/available-frequencies/ for further detailed information on which frequency ranges are available for each country.

Tuning Bands

SpectraBand's 169-1525 MHz range is divided into multiple, tightly-filtered tuning bands. The sharp attenuation at either end of a tuning band's range significantly reduces out of band interference resulting in excellent range performance.

1.3 Digital Wireless Modulation

Long Range, Standard, and T&M (Test and Measurement) Modulation

The Astral wireless products offer three proprietary digital modulation schemes that provide unbeatable range, unrivaled audio quality, and very low latency. Modulation schemes can be selected on a per-receiver-channel basis. Long Range modulation has better sensitivity which results in better range. T&M (Test and Measurement) modulation has been specifically optimized for the flattest frequency response and phase response possible to very accurately measure the phase and frequency response of loudspeaker arrays in indoor and outdoor venues. The modulation setting must match between the transmitter and the Astral ARX16 for the transmitted signal to be received and decoded.

Intermodulation Immunity

Because the Astral and A10 digital RF transmission is inherently resistant to intermodulation, multiple A10 and Astral Digital Wireless systems can be used simultaneously on nearby adjacent frequencies without significant worry of intermodulation interference. Systems can be used together when separated by at least 400 kHz. When operating in the 902-928 MHz Band, it is recommended to separate channel frequencies by at least 1 MHz.

1.4 NexLink Wireless Transmitter Control

NexLink is a proprietary 2.4 GHz bidirectional wireless data link technology that allows multiple Astral transmitters to be controlled, monitored, and timecode synced from an Astral ARX16 over long distance. NexLink is designed to offer robust and reliable control over distances far exceeding that of the wireless audio transmission, even in the presence of Wi-Fi and Bluetooth interference. An Astral ARX16 can pair with up to 64 NexLinked transmitters. Astral transmitters include the Astral Mini, Astral TX, and Astral HH.

1.5 GainForward

The Astral ARX16 supports the Astral transmitter's GainForward feature. GainForward eliminates the need to adjust microphone preamplifier gain at the wireless transmitter. Audio levels from the transmitter are controlled either directly from the 8-Series (or any other mixer) trim controls, or from the Astral ARX16 receiver screen. If the talent speaks too softly or emotes too loudly after being "wired" with the transmitter, simply adjust the transmitter gain with the mixer's gain trim, instead of having to access the actual transmitter. Read more about GainForward.

When an Astral ARX16 receiver channel is receiving signal from an Astral transmitter, adjust the receiver channel's gain, low cut, and polarity from its associated 1RX view.

When the Astral ARX16 is docked on an 8-Series, the Astral ARX16's gain, low cut, and polarity settings are bypassed and hidden. In this case, adjust the 8-Series' trim, low cut and polarity gain as necessary. See the 8-Series User Guides for more information.

1.6 Safety Information

All the safety and operating instructions should be read before the product is operated.

WARNING: To reduce the risk of fire or electric shock or damage, do not expose this product to rain or moisture.

The product should not be exposed to dripping or splashing or be used near water (e.g. in a bathroom, a kitchen, wet basement or near a swimming pool etc....) Similarly, do not place objects containing liquids on this product as care should be taken to prevent objects and liquids from entering the product.

RETAIN INSTRUCTIONS: These safety and operating instructions should be retained for future reference.

HEED WARNINGS: All warnings on the product and in the operating instructions should be adhered to.

FOLLOW INSTRUCTIONS: All operation and user instructions should be followed.

VENTILATION: With its 16 channels of very high dynamic range RF Diversity in a tiny ½ rack wide chassis, the Astral ARX16 circuitry generates a bit of heat. This heat must be exhausted into the air to keep the unit cool enough for operation. Cool air is drawn through the side panel of the unit and exhausted through the other side panel. It is imperative that the sides stay unobstructed with decent airflow.

HEAT: The product should be situated away from heat sources such as radiators, heat registers, stoves, or other product (e.g. amplifiers) that produce heat.

FLAME SOURCE: The product should be situated away from any naked flames such as candles, open fires or gas, oil or wood burning heaters.

POWER SOURCES: The product should be connected to a power supply only of the type described in the operating instructions or as marked on the product.

ATTACHMENTS / ACCESSORIES: Only use attachments and /or accessories specified and approved by the manufacturer.

CLEANING: The product should only be cleaned with a soft dry cloth.

DAMAGE REQUIRING SERVICE: The product should be serviced by qualified service personnel when:

- the power supply cord or the plug has been damaged: or
- objects have fallen, or liquid has been spilled into the product: or
- the product has been exposed to rain or moisture; or
- the product does not appear to operate normally or exhibits a marked change in performance; or

- the product has been dropped, or the enclosure damaged.

SERVICING: The user should not attempt to service the product beyond that described in the operating instructions. All other servicing should be referred to qualified service personnel.

INSTALLATION: The product should only be installed and used in accordance with the manufacturers operating instructions. Use only with a cart, stand, tripod, bracket or table specified by the manufacturer, or sold with the product. When a cart is used, use caution when moving the cart/product combination to avoid injury from tip-over.

HEADPHONES: The headphone outputs can produce high sound level which may be harmful to your hearing. The use of lower impedance headphones/earpiece may cause unacceptable high sound levels.

1.7 Architectural Overview

The Astral ARX16 takes a brand-new approach to professional audio receiver design. The Astral ARX16 combines several technologies resulting in a very powerful and versatile product. The diagram below illustrates the architecture of the Astral ARX16.

The first thing to note about the architecture is that there are two entire signal paths. This performs the True Diversity reception inherent in the design. This is a lavish proposition, as it doubles the circuitry, but it is absolutely the best way to perform spatial diversity - superior to any type of antenna or phase diversity.

The first section that comes right after the receive antennas is the first SAW filter array. This pre-select filter is a key element of our unique SpectraBand technology. It allows for a tuning range from 169 MHz - 1525 MHz which is divided into multiple, tightly filtered tuning bands. The extremely sharp attenuation at either end of a tuning band’s range significantly reduces unwanted interference outside the selected tuning band resulting in excellent range performance. Tuning bands vary in width but tend to be around 24 MHz wide.

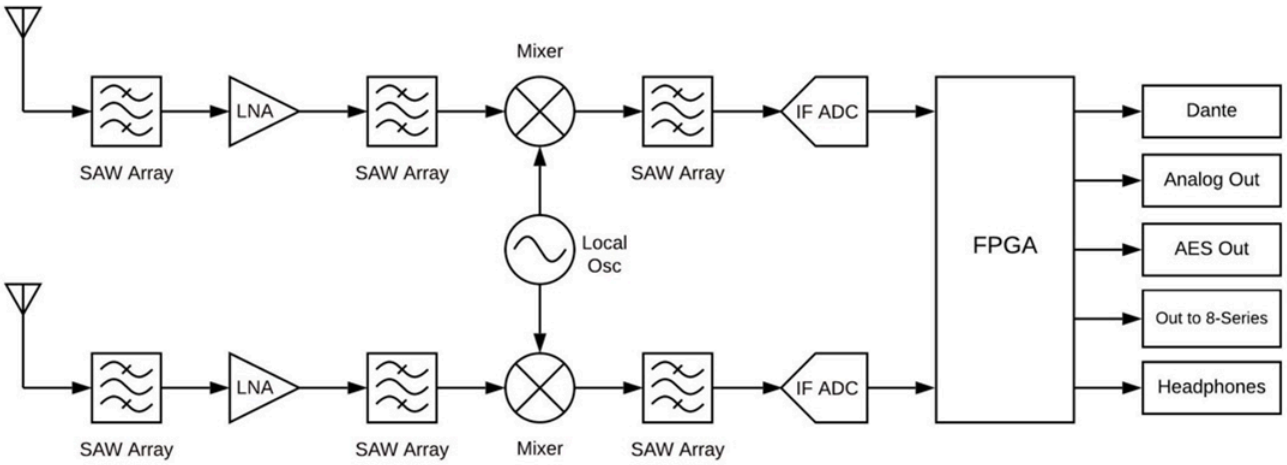
Next is the Low-Noise Amplifier (LNA), which is one of the most important stages in the design. This section has been specially designed for very low noise and high dynamic range, which results in long-range reception and high overload capability. This LNA stage exhibits a noise figure of only 0.35 dB, one of the very best on the market currently.

This is followed by yet another SAW filter array. This array further attenuates out-of-band signals, ensuring reliable reception, and greatly suppressing any image frequencies.

The Local Oscillator and Mixer perform the traditional function of a single down conversion superheterodyne radio. This section has been meticulously designed and is the other key element of our unique SpectraBand technology. This section exhibits extremely low phase noise and wide dynamic range to accurately down convert the RF to a lower Intermediate Frequency (IF) for conversion into the digital domain.

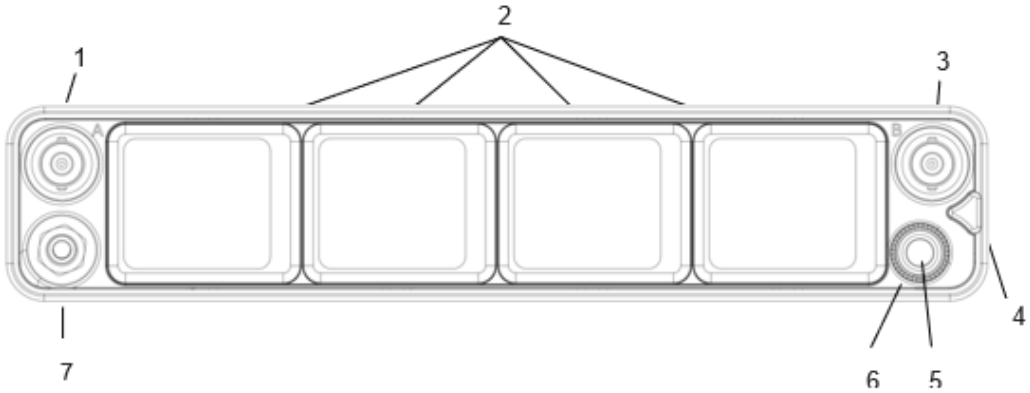
Before conversion into the digital domain, the signal passes through its final array of SAW filters, rejecting any extraneous energy not wanted in the down conversion, as well as providing anti-aliasing before the Analog-to-Digital (A/D) converter. The A/D converter is a wideband, extremely high dynamic range part which accurately captures 24 MHz of IF energy into a digital version of that signal.

The real magic of the entire Astral ARX16 happens within the Field-Programmable Gate Array (FPGA). An FPGA is essentially a giant custom, massively parallel processor programmed in house. The FPGA can perform filtering, frequency conversion, and demodulation in the digital domain which far exceeds anything that can be done via analog or traditional digital circuitry. The FPGA can perform demodulation of 16 channels simultaneously. The FPGA also performs the True Diversity operation which not only selects the best digital word from the two antennas but works at the bit level for additional range. The resultant audio signals are then fed out of the FPGA to the various audio outputs.



Chapter 2: Panel Views

2.1 Front Panel



1 & 3: Antenna Connector A & B

BNC connectors, for connecting to active, passive, or smart antennas.

2: Touch Screens

Color OLED array for control and monitoring.

- Touch can be disabled to prevent inadvertent switching of the screens to different views. Press and hold the Headphone Knob for > 2 secs to disable. Re-enable by pressing and holding the Headphone Knob for > 2 secs. Disabled touch is indicated by a thin orange border around the four OLEDs. The Headphone Knob and Triangle button remain active when touch is disabled.
- Screensaver: To prevent burn in, the OLEDs can be set to turn off after a period of inactivity from the Main Menu>System>Screensaver setting.
- Lockout Mode: The whole front panel interface (OLEDs, Headphone Knob, and Triangle button) can be disabled to prevent unauthorized users from accessing settings. See Main Menu>System>Lockout Mode.

4: Triangle Button

- Press to power up. Press and hold to power down.

- When powered up, press to cycle through the current Receiver view, Main Menu, and RTSA. Backs out of sub-menus.

5: Control Knob

- Rotate to adjust headphone output level.
- Rotate to scroll through lists and select parameter values.
- Rotate to scroll frequency cursor or adjust horizontal/vertical zoom in RTSA/Scan view.
- Hold for 3 seconds to enter Show Mode (locks out touch from the screens).

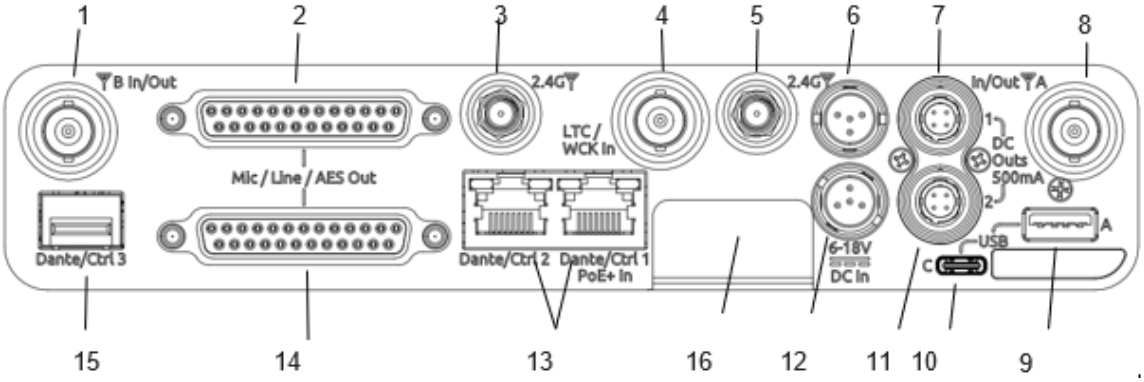
6: Multicolor Ring LED

- Solid blue when powering up
- Red when headphone output is clipping.
- Flashing orange when selected Sync Reference is not detected.
- Solid green when the front panel is locked out. See menu (Main Menu>System>Lockout Mode).

7: Headphone Output

3.5 mm connector

2.2 Rear Panel



1 & 8: Antenna Connector A & B Inputs / Cascade Outs

- BNC connectors for connecting active, passive, or smart antennas.
- Cascade outs for looping through the front panel antenna A & B inputs. Only available when front panel antennas are selected in the (Main Menu>RF) menu. The cascade out passively splits the incoming signal, resulting in approximately 3.5 dB of loss. In some situations, additional antenna gain and/or amplification may be desirable to maintain excellent range.

2 & 14: Top & Bottom D-Sub Audio Output Connectors

25-pin D-Sub connectors for outputting analog (mic/line/guitar level) or AES digital. See menu (*Main Menu>Audio Output)*. Disabled when mounted to an 8-Series via the expansion port. Note: the pin-out follows the AES59 standard. The analog output pin-out is different from the AES digital output pin-out. See Connector Pin Assignments section for more information.

3 & 5: NexLink Antenna Connectors

Dual SMA-F ports for connecting 2.4 GHz SMA-M antennas for NexLink. Both antennas need to be connected. NexLink antennas can be located remotely closer to the action by using the optional Astral Outpost box.

Note: Only use the 2.4 GHz SMA-M antennas supplied with the Astral ARX16 or equivalent. Do not use 2.4 GHz RP-SMA antennas such as those used for the 8-Series Bluetooth antenna.

4: LTC / Wordclock Input

BNC for connecting LTC or Wordclock input. Astral ARX16 auto-detects whether the signal is LTC or Wordclock including the associated frame rate or sample rate. Disabled when mounted to an 8-Series via the expansion port.

6 & 12: DC Inputs

Dual TA4-M, 10-18V DC inputs. Highest voltage takes precedence.

7 & 11: DC Outputs

Dual, 4-pin Hirose female DC outputs (500 mA max between both outputs) for powering IFB transmitters, camera hops, and other low power peripherals. Disabled when docked to an 8-Series via the expansion port.

When powered via TA4, voltage is passed through from the DC input (10-18V). When powered via PoE+, DC Outputs supply 12V DC.

9: USB-A Port

Multi-function USB-A port for:

- Pairing and syncing timecode to Astral transmitters. Connect the transmitter to Astral ARX16 using a USB-C to USB-A cable.
- Pairing to the Astral Outpost remote NexLink antenna accessory.
- Connecting a USB keyboard for naming channels, quick setup files and network. The USB keyboard is active whenever the virtual keyboard screen is displayed.
- Mounting a USB thumb drive for updating firmware and loading/saving settings.

Tip: The USB-A port supports USB hubs so that multiple devices can be connected at the same time. Maximum power output of 2.5 Watts (5V, 500 mA)

10: USB-C Port

For factory use only.

13: Ethernet Ports 1 & 2

2x RJ45 ports for Dante and/or Control. Astral ARX16 can be powered via PoE+ (minimum 25W) via port 1. Dante is disabled when docked to an 8-Series via the expansion port. Control remains enabled.

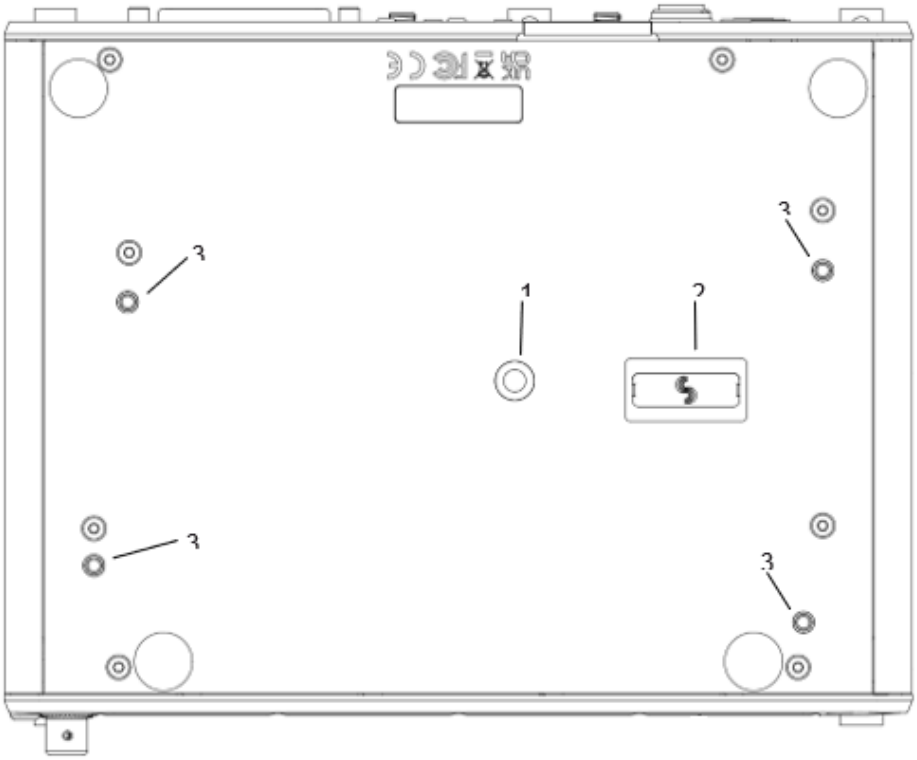
15: SFP Port

Accepts a wide variety of Small Form-factor Pluggable (SFP) modular network transceivers, including optical fiber options for Ethernet Dante and/or Control connection. Dante is disabled when docked to an 8-Series via the expansion port. Control remains enabled.

16: Factory Access Cover

Covers and protects the factory-use only ports.

2.3 Bottom Panel



1: Mounting Point

1 / 4″, 20 screw hole for mounting purposes.

2: Expansion Port

For docking Astral ARX16 to an 8-Series mixer/recorder using the Astral QuickDock optional accessory.

The expansion port provides power from the 8-Series and passes the multichannel receiver digital audio signals from Astral ARX16 to the 8-Series. When docked on an 8-Series:

- The Astral ARX16 and its NexLinked transmitters are controlled from the Astral ARX16 OLED touch screen user interface. The 8-Series interface is not used for control.
- Astral ARX16 rear panel connectors are disabled apart from the antenna connectors, control network, and the USB-A port.
- The USB-A port has the following capabilities:

- Pairing Astral transmitters to the Astral ARX16 by connecting a USB-C cable from the transmitter to the USB-A port.
- Attaching a USB keyboard for entering text directly (e.g. receiver channel names) into the Astral ARX16.
- Mounting a USB thumb drive for updating Astral ARX16 firmware and saving setup files.
- Syncing 8-Series timecode to an Astral transmitter from the Astral ARX16.

3: Screw holes for Astral QuickDock and Astral RX Shelf

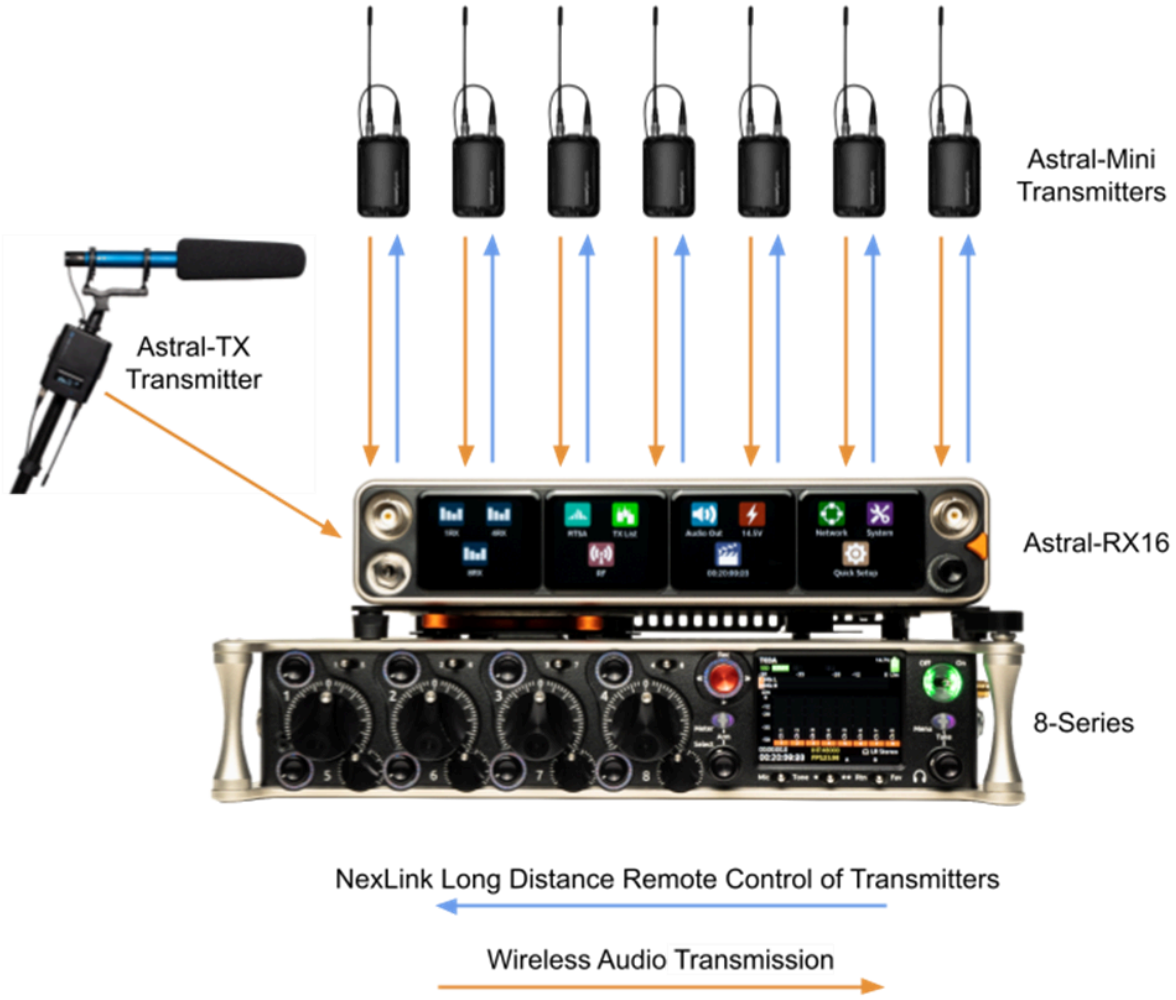
Four screw holes for mounting the Astral ARX16 to an Astral RX Shelf and Astral QuickDock

Chapter 3: Typical Setups

The versatile Astral ARX16 can be used in many types of setup and workflow. This section details just a few examples.

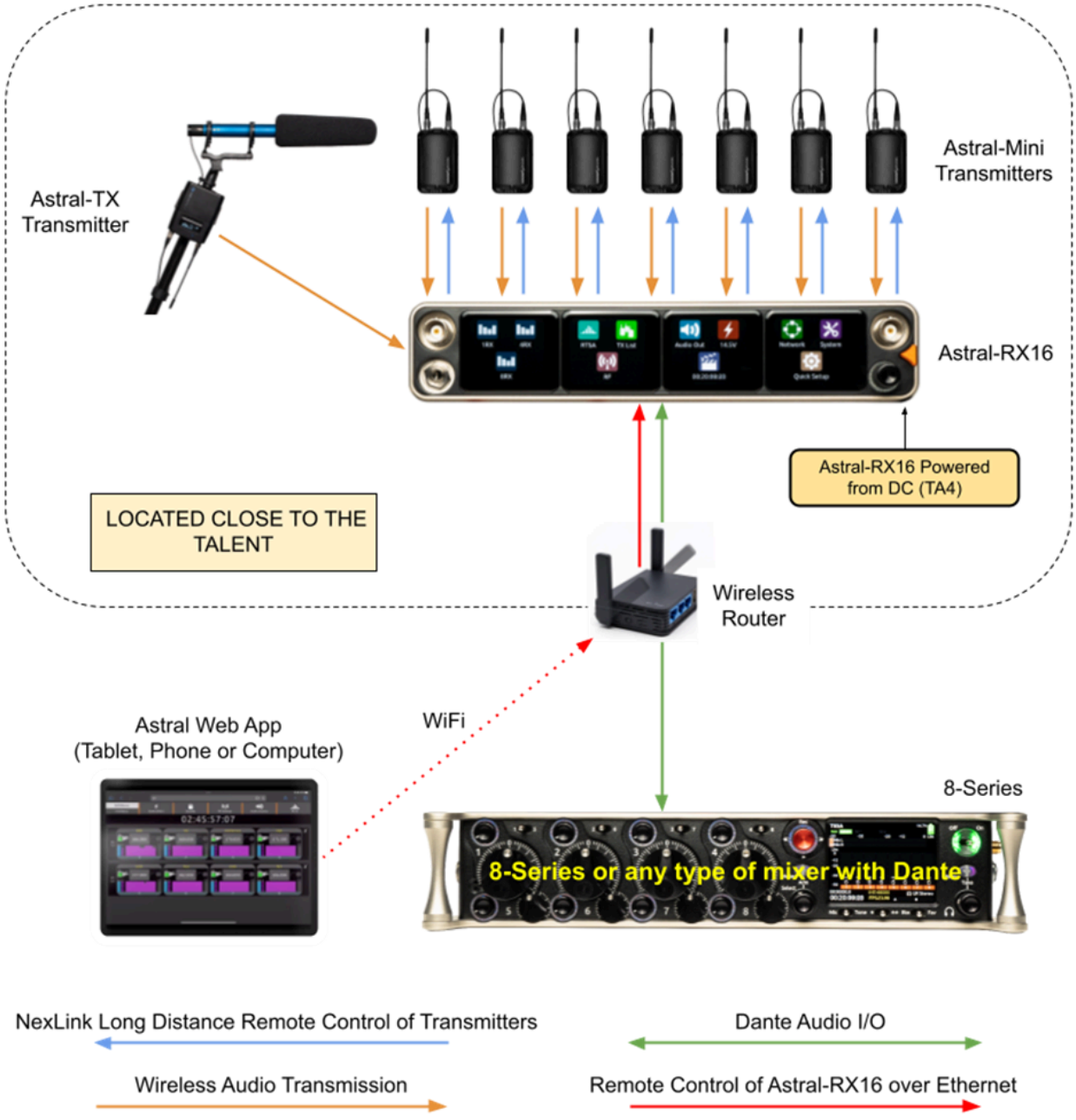
1. Bag Setup: Astral ARX16 docked to an 8-Series Mixer-Recorder

The Astral QuickDock accessory enables the Astral ARX16 to be docked to an 8-Series mixer-recorder. The bottom panel incorporates a multi-pin expansion port that connects power from the 8-Series and passes the multichannel receiver digital audio from Astral ARX16 to the 8-Series.



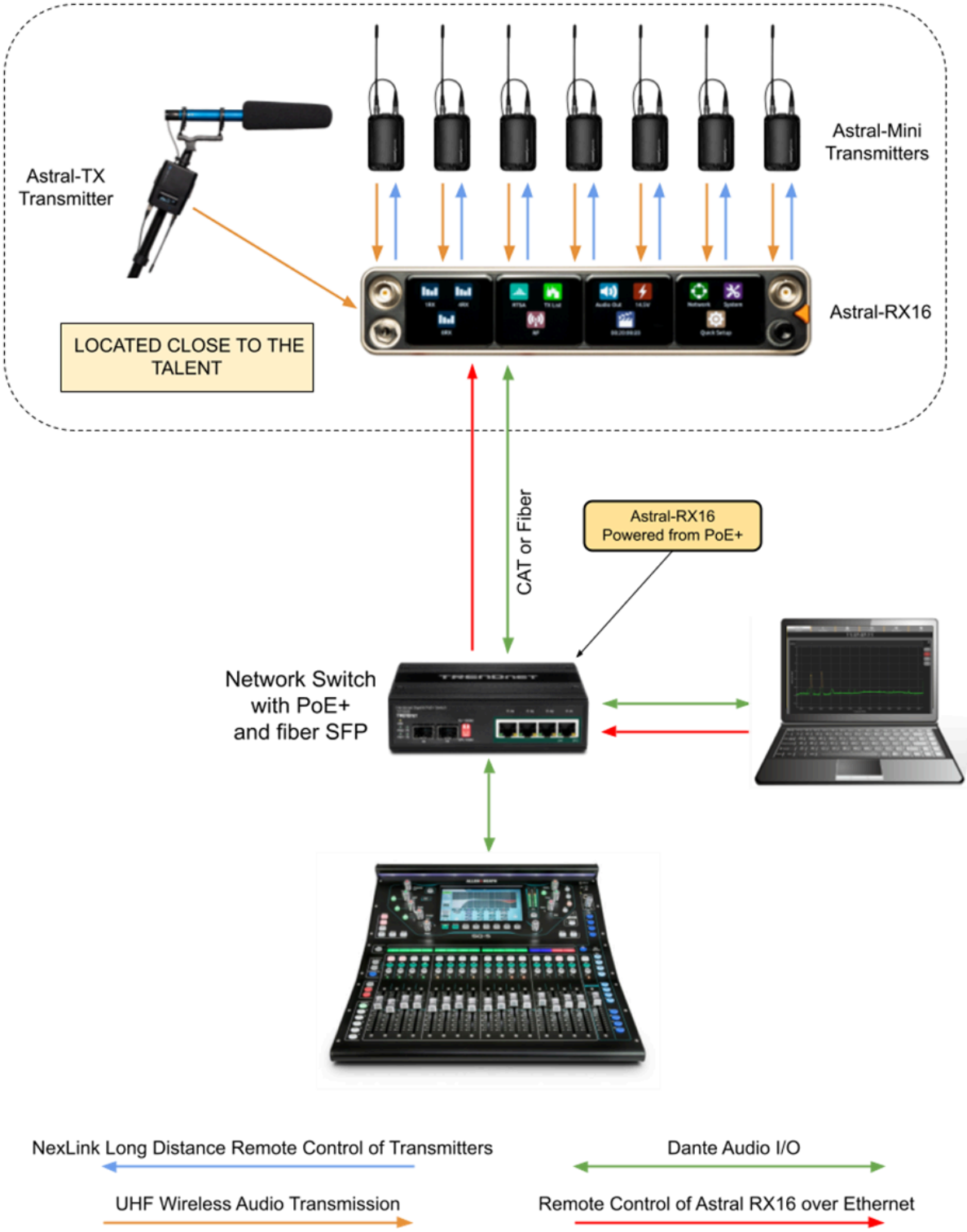
2. Remote Setup: Astral ARX16 located on set, close to talent

Remotely locating the Astral ARX16 multichannel receiver close to talent significantly reduces the chance of RF dropouts since the distance between those wearing the transmitters and the Astral ARX16 receiver is minimized. A single CAT cable can be used to transport Dante audio and remote-control data between Astral ARX16 and the sound mixer. As well as sending Dante audio to the mixer, the Astral ARX16 can also receive Dante audio back from the mixer, useful for distributing VoG and/or IFB feeds etc. via its analog D-Sub outputs. In this example, the Astral ARX16 Web App is running on a tablet and controlling the Astral ARX16 over Wi-Fi.



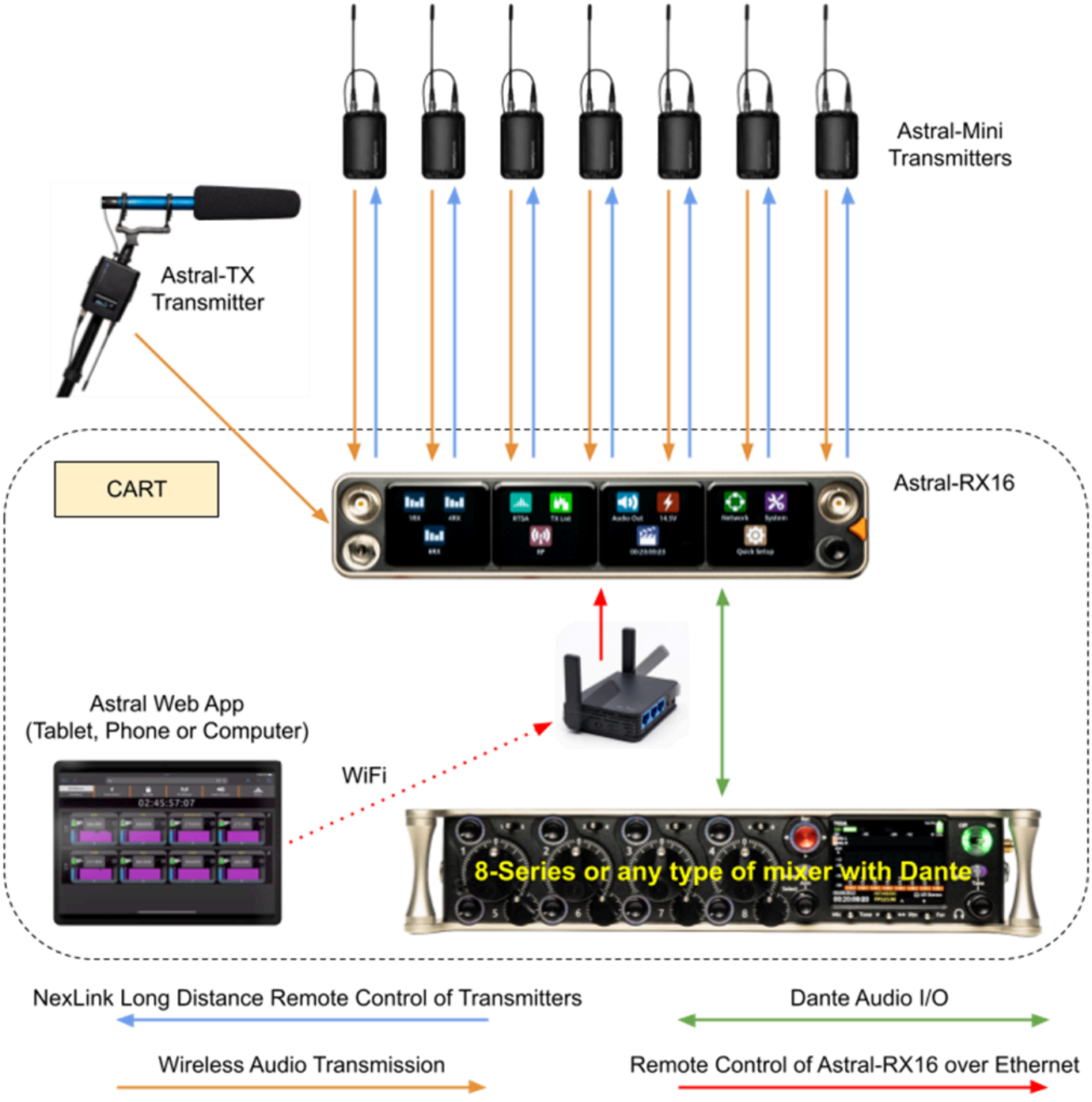
3. Remote Setup: Astral ARX16 located on set, close to talent, powered from PoE+

Like the previous setup, but with the Astral ARX16 being powered over PoE+. In this example, a computer is controlling Astral ARX16 via the Web App and is also sending and receiving Dante to and from Astral ARX16.


Astral-TX
Transmitter
Astral-Mini
Transmitters
Astral-RX16
LOCATED CLOSE TO THE
TALENT
CAT or Fiber
Astral-RX16
Powered from PoE+
Network Switch
with PoE+
and fiber SFP
NexLink Long Distance Remote Control of Transmitters
Dante Audio I/O
UHF Wireless Audio Transmission
Remote Control of Astral RX16 over Ethernet

4. Cart Setup

A typical cart setup with Astral ARX16. As well as sending Dante audio to the mixer, the Astral ARX16 can also send audio from its AES or Analog D-Sub outputs. In this example, the Astral ARX16 Web App is running on a tablet and controlling the Astral ARX16 over Wi-Fi.

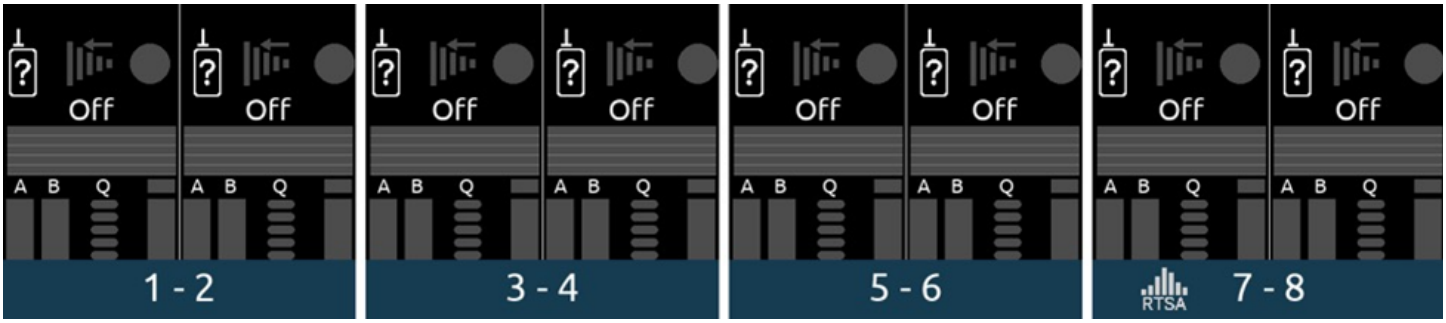


Chapter 4: Quick Start

This Quick Start guide assumes that the Astral ARX16 is being used as a standalone receiver.

- Connect a 10-18V DC power source to either or both TA4-M DC inputs. Alternatively, connect PoE+ to Ethernet port 1.
- Connect suitable passive, bias-powered, or smart antennas to either the front or rear BNC A and B antenna ports.
- If using NexLink to control and monitor Astral transmitters, connect 2.4 GHz antennas to both rear panel 2.4 GHz SMA ports.
- Connect required rear panel audio outputs (Analog, AES, and/or Dante) from Astral ARX16 to external devices.
- Connect headphones to the front panel 3.5 mm headphone output.
- Power Up. Press the front panel triangle button to power up. Press and hold to power down. When powered up for the very first time, receiver channels 1-8 are displayed. This view is called the 8RX View. All RX channels default to Off.

8RX View



- Press the triangle button to display the Main Menu.
- Tap the System icon to enter the System menu.

- Ensure Country is set to the country that you are in. The Country setting determines which Tuning Bands and RF frequencies are legally unrestricted and available for selection in the Astral ARX16. If using Astral transmitters, make sure that the Astral Remote app they are paired to is also set to the same country.

Main Menu

- Tap the RF icon in screen 2 to access the RF menu.
- Select Front or Rear antennas by tapping the button at the bottom of screen 2. When ‘Rear’ is displayed, the rear antennas are selected. When ‘Front’ is displayed, the front antennas are selected.

RF Menu

- If the antennas require bias-power, tap the A and B antenna gear icons to display A and B antenna settings respectively and set both their Power (Bias) settings to On.

Antenna Settings

The antenna icons will show a lightning bolt icon next to them when bias power is enabled.

- **Pair and NexLink Astral transmitters.** Pairing is a process that adds Astral transmitters to the Astral ARX16 TX List. The TX List is an inventory of available transmitters that can be selected for

wireless remote-control (via NexLink) and assigned to receiver channels.

Note: A10-TX transmitters cannot be paired or NexLinked with the Astral ARX16. To tune to an A10-TX, manually set the RF freq, Modulation & Privacy of the Astral ARX16 receive channel to the same as the A10-TX.

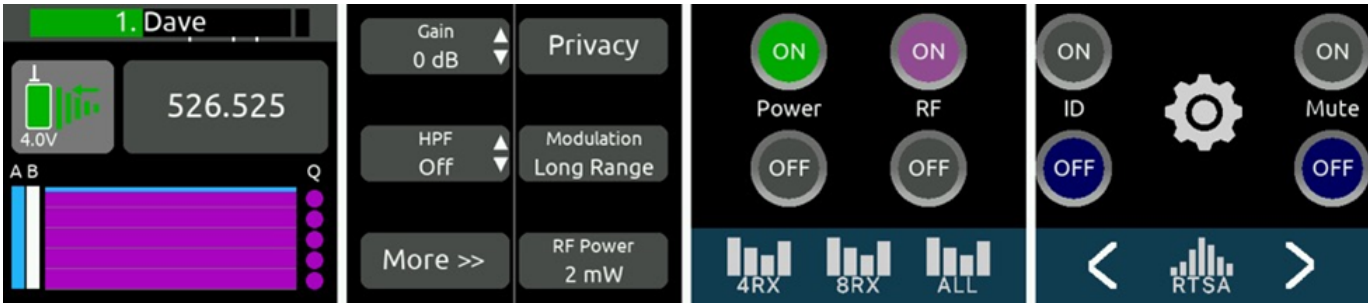
From the Main Menu, tap the TX List icon.

To pair an Astral transmitter, ensure it has a charged battery or batteries installed, then connect its USB-C port to the Astral ARX16 USB-A port. The Astral transmitter will appear in the TX List after a few seconds. The Astral ARX16 will then automatically establish a NexLink connection between the transmitter and the next available receiver channel. This can take up to a minute or so. Once connection is established, the NexLink RSSI icon is displayed in the TX List > NexLink column.

TX List

- From the TX List, rotate the front panel knob to highlight a receiver channel, then press the knob to jump to its 1RX View from which the receiver and its NexLinked transmitter can be configured and monitored.

1RX View

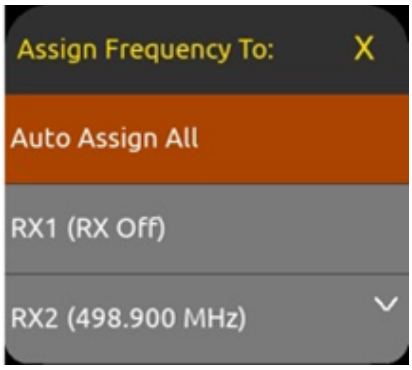


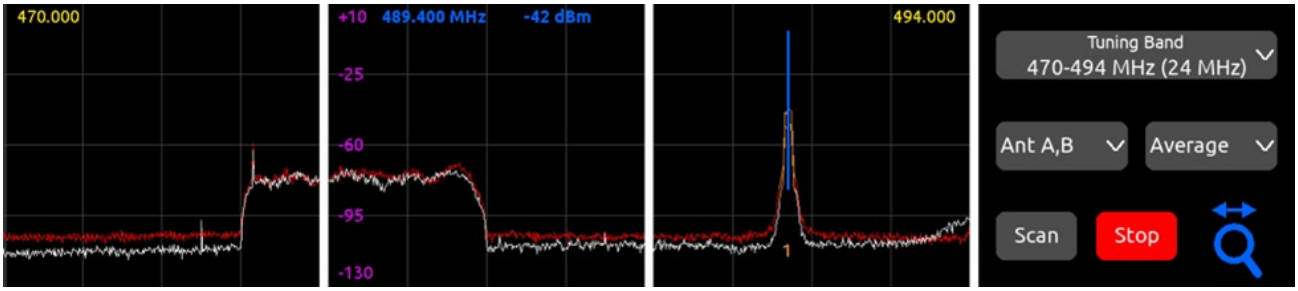
- In the 1RX View, ensure the transmitter is within NexLink range by checking that the NexLink RSSI indicator in the leftmost screen shows good signal strength.

- If the Astral transmitter is not already on, tap the Power ON button in screen 3 of the 1RX View.

- Press the triangle button to access the Main Menu, then tap the RTSA icon.

- In the RTSA, rotate the Control knob (or tap the top half of the plot) to move the blue vertical frequency marker to a clean frequency (i.e. where there is low background RF noise). Press the Control knob to display the 'Assign Frequency To:' list then tap RX1 to assign the clean frequency to the required receiver channel (in this example, channel 2). The frequency is automatically pushed to the transmitter and its RF signal appears in the trace. Alternatively, select 'Auto Assign All' at the top of the list to automatically deploy clean frequencies to all active channels.





Tip: Before assigning frequencies, it is highly recommended to perform a scan of the local RF environment using Scan Mode to identify and choose a clear Tuning Band. See RTSA > Scan Mode for further information.

- Tap the orange number below the transmitter signal to jump to the 1RX View for that channel number, tap the Gain button and rotate the Control knob to bring up the gain until you see audio signal from the lav connected to the Astral transmitter. Press the Control knob to store the gain value.
- Put your headphones on and listen. Rotate the Control knob clockwise to increase the HP gain.

Congratulations! You have your first wireless channel ready to go.

Chapter 5: Powering

The Astral ARX16 is powered from TA4 (10-18 VDC), PoE+, from the 8-Series (via expansion port), or via XL-WPTA4 AC mains adapter (purchased separately).

The control knob ring LED illuminates blue during power up, then goes out once fully booted. When the Astral ARX16 is first powered on, the last accessed RX View is displayed.

Tips for reducing Astral ARX16 power consumption:

Turn off unused receiver channels. See 1RX View.

Disable Dante by setting Network > Port Configuration to Control Only, All Ports

Where possible, power via TA-4 or the 8-Series. While PoE is a practical and convenient option for powering the Astral ARX16 remotely, it is slightly less efficient than straight DC. This is due to the finite efficiency of the PoE injector and the internal PoE supply of the Astral ARX16.

5.1 Powering when Astral ARX16 is standalone (not docked to an 8-Series)

Connect a 10-18 VDC power source (20 watt minimum) to the TA4 DC power inputs and/or PoE+ power source (30 watt minimum) to ethernet port 'Dante/Ctrl 1'. Connecting multiple power sources allows for redundancy since the Astral ARX16 seamlessly switches between power sources should one fail. The power source with highest voltage takes precedence and is displayed along with its voltage beneath the Power menu icon in the Main Menu and in screen 1 of the Power menu.

- To turn Astral ARX16 on, press the triangle button or, with Power menu > 'Turn on when power is applied' enabled, simply connect a power source.
- To turn Astral ARX16 off, press and hold the triangle button until the 'Powering down ..." progress bar completes.

5.2 Powering when Astral ARX16 is docked to an 8-Series

Connect power to the 8-Series. Power is supplied to the Astral ARX16 from the 8-Series expansion port.

Note: When docked, powering via the Astral ARX16 TA4 or PoE+ power inputs is disabled.

Ensure that the 8-Series System Menu > Expansion Port is set to On.

- If Power menu > 'Turn on when power is applied' is enabled, Astral ARX16 automatically powers on when the 8-Series is turned on.

- If Power menu > ‘Turn on when power is applied’ is disabled, turn on the 8-Series then press the triangle button to turn on Astral ARX16.
- To turn Astral ARX16 off but keep the 8-Series on, press and hold the triangle button until the ‘Powering down ..” progress bar completes.
- To turn off both the 8-Series and Astral ARX16, move the 8-Series power toggle switch to Off.

5.3 Power – DC Outputs

The DC Out 1 and 2 can be used for powering IFB transmitters, camera hops, and other low power peripherals.

Enable or disable each DC Output from the Power menu.

- When powered via its TA4 DC inputs, the Astral ARX16 supplies 500 mA maximum between both DC outputs. DC Output voltage is passed through from the DC input (10-18V).
- When powered via PoE+, Astral ARX16 supplies 500 mA maximum and DC Output voltage is 12V DC.
- When powered by the 8-Series, Astral ARX16 supplies 3W maximum for each DC Output. Exceeding this limit may cause malfunction. Voltage dependent on 8-series power source voltage.

Chapter 6: Navigating the User Interface

The Astral ARX16 is operated from its front panel triangle button, control knob, and four touch screens or remotely via its web interface.

Triangle Button

- Press to power up. Press and hold to power down.
- When Astral ARX16 is powered up, press to cycle between the RX View, Main menu, and RTSA. When in a menu or submenu, the triangle button exits to the menu above.

Control Knob

- Rotate to adjust headphone output level. The headphone gain is displayed momentarily in the rightmost screen.
- Rotate to scroll through lists and select parameter values. Press to store.
- Rotate to scroll frequency cursor or adjust horizontal/vertical zoom in the RTSA/Scan view.
- Press for 3 seconds to enable Show Mode (screen touch is locked out). Press angina for 3 seconds to disable Show Mode.

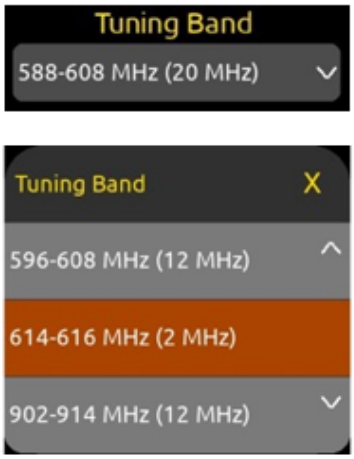
Touch Screen UI Elements

The Astral ARX16 uses different UI elements for changing settings i.e. toggle switch, list button, value button, action button, etc.

Note: When any touch screen UI element is selected, brightness is reduced, and touch is disabled on all other touch screens.

- **Toggle Switch:** Tap to toggle between On and Off. Typically used for functions that have on and off states e.g. Power > DC Out 1 and DC Out 2.

- **List Button:** Displays a list of items to choose from. A list button is identified by a down arrow inside the button on the right. The currently selected item is displayed inside the button.

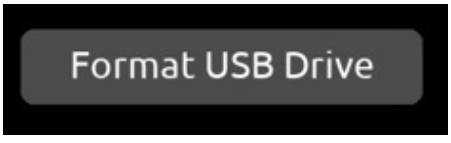


- Tap the list button to display a list of items to choose from.
- Scroll the list of items by rotating the Control or tapping the up/down arrows, then press the Control knob to select the item and exit the list. Alternatively, tap directly on the list option to select it.
- To exit the list without making any changes, press the triangle button or tap anywhere in the list's title bar.

- **Value Button:** Displays a parameter's value.

- Tap to select - the button turns orange.
- Rotate the Control knob to adjust the value.
- Press the Control knob or tap the button to exit.

- **Action Button:** A button that initiates a process e.g. Format USB Drive. The button contains the name of the process.



- Two-State Button: A button that has two values or options other than On/Off. The top row labels the function, and the bottom row shows the current setting.

Chapter 7: RX Views

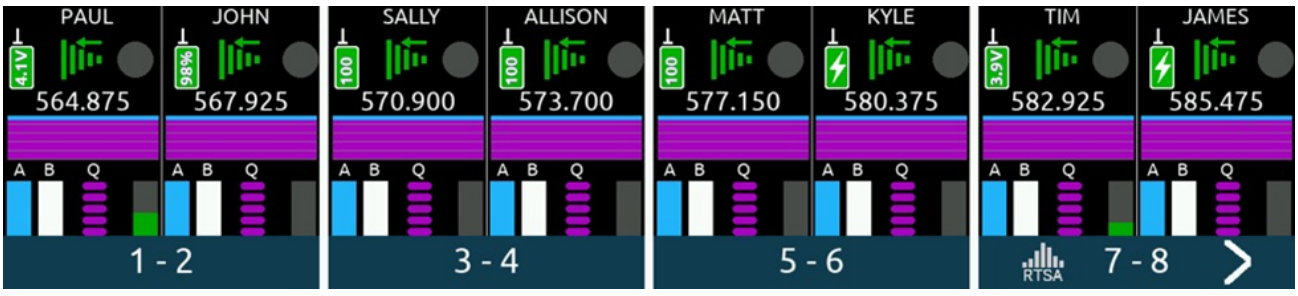
RX Views display real-time receiver channel, transmitter signals, and status information across the four touch screens. There are several types of RX View:

- All (Displays either 8, 12 or 16 channels, depending on how many channel expansion licenses are installed)
- 8RX View (available when at least one channel expansion license is installed)
- 4RX View
- 1RX View

Upon power up, the Astral ARX16 shows the last displayed RX View.

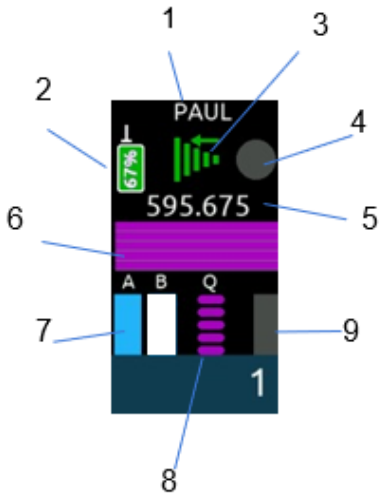
7.1 8RX View

('All' View when no channel expansion licenses are installed)



- Displays 8 receiver channel strips, two per screen.
- Tap the right arrow at the bottom of screen four to bank to the next four or eight channels (w/expansion license only).

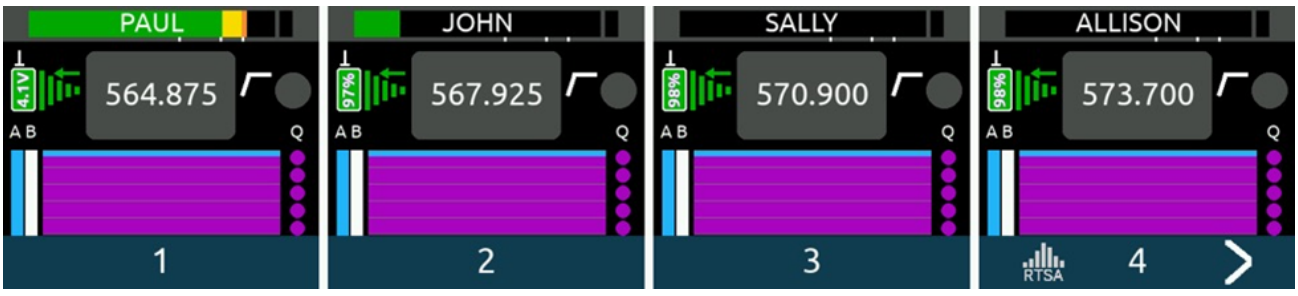
- Tap two neighboring screens simultaneously to display the 4RX View for those receiver channels. For example, tap screen 2 and 3 simultaneously to display the 4RX View for receiver channels 3-6.
- Tap any receiver channel strip to display its 1RX View.



- **Channel Name:** Displays the name of the transmitters that is currently feeding the channel.
  - The transmitter name can be edited if the channel is NexLinked to an Astral transmitter.
  - The transmitter name cannot be edited if an A10-TX is assigned to it.
- **Transmitter Battery Level Icon:** Indicates the remaining transmitter battery charge as a color and in % or V depending on the type of battery the transmitter is using. If an AA or AAA, the battery level is displayed as a voltage. If an NP-BX1, then it is displayed as a %.
  - Gray = Transmitter is Off
  - Green = Good
  - Orange = OK
  - Red = Low
  - Flashing Red = Depleted (transmitter RF and audio is disabled)
- **NexLink RSSI Meter:** Indicates the RSSI of the received 2.4 GHz NexLink signal from the transmitter. The RSSI color signifies the transmitter NexLink status.
  - Green = Transmitter is on and NexLink active
  - White = Transmitter is off and NexLink active
  - Gray = No connection or out of range

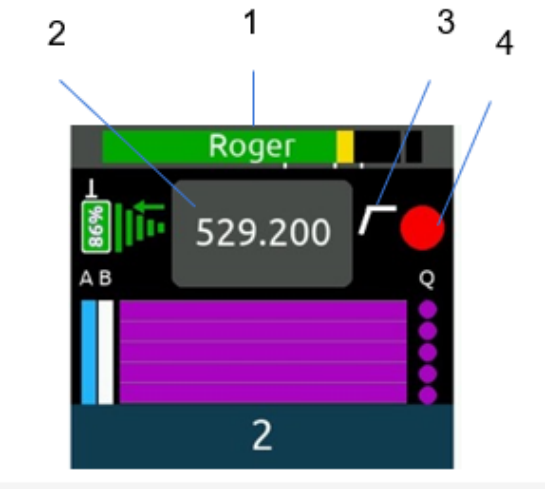
- **Record/Mute Status:** Indicates whether the transmitter feeding the receiver channel is recording and/or muted.
  - Red = Recording
  - Blue = Muted
  - Blue fill, red border = Recording and muted
  - Gray = Not recording or muted
- **RF Frequency:** Displays the receiver channel's frequency.
  - If an Astral transmitter has an active NexLink connection and NexLink>NexLink Tuning Mode is set to 'Automatic', the transmitter will follow the assigned receiver channel frequency.
  - Displays 'RX Off' when the receiver channel is Off.
  - The frequency flashes red when there is a NexLink issue. Go to the 1RX View > Gear Menu > NexLink Status screen to determine the cause of the issue.
- **RF History:** Displays the receiver channel's RSSI or Q history. See RF Menu.
- **A and B RSSI Meters:** Indicates the received antenna signal strength from the A and B antennas at the RX channel's current frequency. The RSSI meter scale is -100 to -65 dBm.
- **Link Q Meter:** Indicates the quality of the received wireless audio transmission from the transmitter.
- **Audio Meter:** Indicates the received audio level from the transmitter. The audio meter scale is -90 to 0 dBFS for GainForward sources and -50 to 0 dBFS for non-GainForward sources.

7.2 4RX View

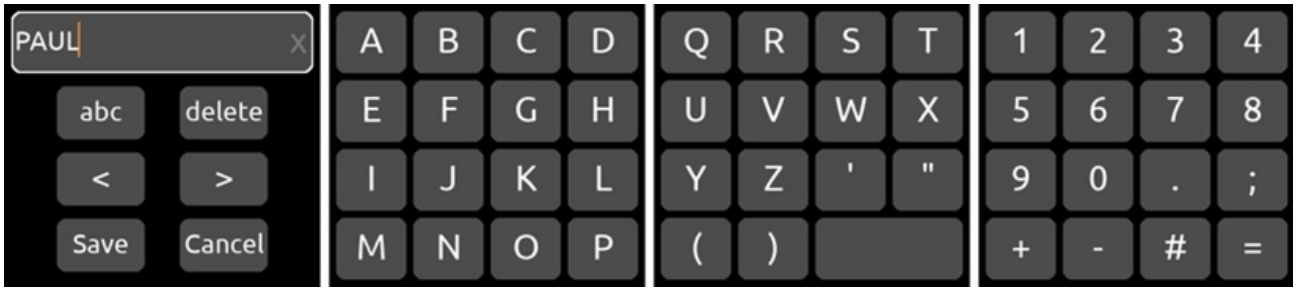


- Displays 4 receiver channels, one per screen.
- Tap the right arrow at the bottom of screen four to bank to the next four channels 5-8. In the channels 5-8 bank, tap the left arrow at the bottom of screen one to bank to the previous four channels 1-4.

- Tap any receiver channel screen to display its 1RX View.
- Tap the RTSA icon at the bottom of screen 4 to display the RTSA in screen 4.



- **Channel Name and Audio Meter:** Displays the transmitter (channel) name inside an audio level meter. Tap the meter to edit the name (12-character maximum) using the virtual keyboard.
  - The transmitter name can be edited if the channel is NexLinked to an Astral transmitter
  - The transmitter name cannot be edited if the channel is being fed from an A10-TX.



  - If NexLinked to an Astral transmitter, the name is pushed to the transmitter.
  - The name is rippled to the 8-Series channel that the receiver channel is routed to if docked to an 8-Series and the 8-Series menu [Channel Setup > Use Wireless Names] is enabled.

    Note: Transmitter names will persist on receiver channels over a power cycle. Transmitter names will be cleared from receiver channels if any of the following events occur:
    Factory settings are loaded on the receiver.
    If a receiver channel is toggled to OFF and the Astral ARX16 is power cycled.
    If a transmitter is unassigned from a channel when the channel name matches the transmitter

name.

- **RF Frequency:** Displays the receiver channel's frequency. Tap to edit the frequency.
  - If NexLinked to an Astral transmitter and NexLink Tuning Mode is set to Automatic, it is the same as the transmitter frequency.
  - Displays 'RX Off' when the receiver channel is Off.
  - The frequency flashes red when there is a NexLink issue. Go to the 1RX View > Gear Menu > NexLink Status screen to determine the cause of the issue.

  - Tap the frequency button to select a frequency within the current Tuning Band.
  - To enter a frequency, tap each frequency field then rotate the Control knob to select a value. Tap OK to store or Cancel to exit without saving. Alternatively, jump through the frequency fields by pressing the Control knob.
  - To save power, turn off a receiver channel by setting the RX On/Off toggle to Off

If NexLinked to an Astral transmitter, the frequency is automatically pushed to the transmitter unless the NexLink menu's 'Manually set ...' toggle switch is enabled.

- **HPF:** Indicates if the HPF is active either on the transmitter (if an A10-TX) or receiver channel (if an Astral transmitter).
- **Record/Mute:** Indicates if the transmitter is recording and/or muted. Red for record, blue for mute, and blue with red border for both record and mute.

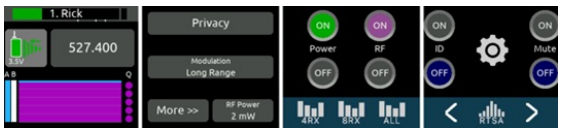
7.3 1RX View

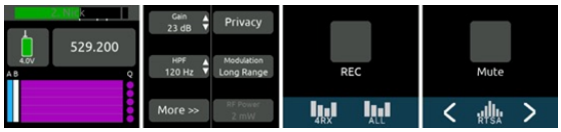
Displays a receiver channel's received signal, audio level, control functions and status across the four OLEDs.

Use the 1RX View to perform detailed control and monitoring of a receiver channel and its associated transmitter. The 1RX View has different control layouts depending on the following criteria:

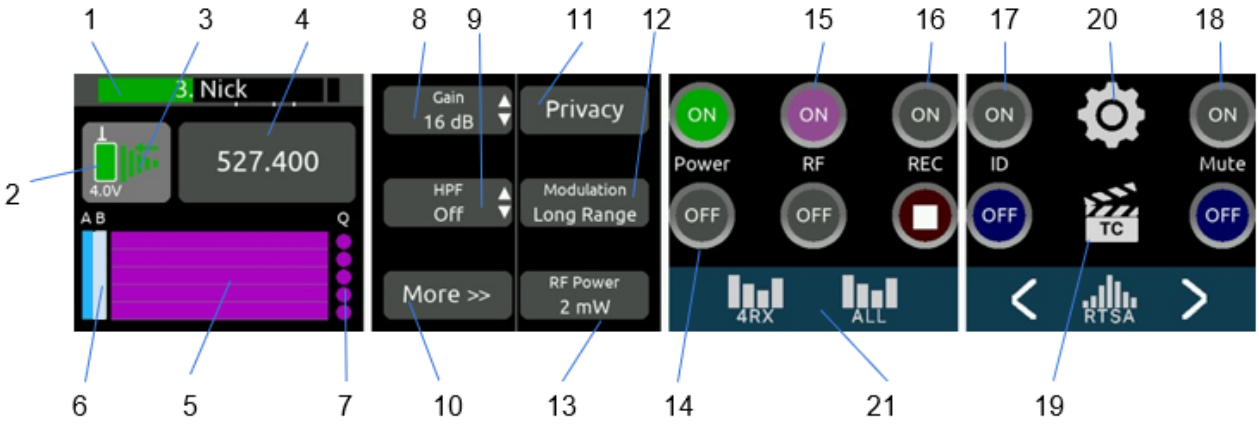
- The model of the transmitter feeding the channel (Astral HH, Astral TX, Astral Mini, or A10-TX)
- Whether the channel is sourced from one or multiple transmitters.
- Whether the channel is sourced from a NexLinked or non-NexLinked (e.g. A10-TX) transmitter.
- Whether the channel's Mode is set to RF Only, REC Only, or RF+REC
- Whether the Astral ARX16 is standalone or docked to an 8-Series mixer/recorder

Some 1RX View Layout examples

Astral ARX16	Mode	Description	1RX View Layout
Standalone	REC+ RF	Channel sourced from a single Astral transmitter (See Example 1 below for a detailed description)	
Standalone	RF Only	Channel sourced from a single Astral transmitter	
Standalone	REC+ RF	Channel sourced from multiple Astral transmitters (See Example 2 below for a detailed description)	
Docked	RF Only	Channel sourced from a single Astral transmitter	

		(expansion license installed)	
Standalone	--	Channel sourced from an A10-TX or non-NexLink'd transmitter. To tune to an A10-TX, manually set the RF freq, Modulation & Privacy of the Astral ARX16 receive channel to the same as the A10-TX.	

7.3.1 Example 1: 1RX View when sourced from a single Astral TX transmitter in REC+RF Mode, Standalone



- Navigate to the next or previous channel's 1RX View by tapping the right and left arrows at the bottom of screen 4.
- Navigate to other RX Views by tapping the RX View icons at the bottom of screen 3.

- Tap the RTSA icon at the bottom of screen 4 to display the RTSA for the selected channel frequency in screen 4. The RTSA is approx. 1 MHz wide and centered on the selected frequency. Tap the RTSA to jump to the full RTSA for the currently selected Tuning Band.

  - **Channel Name and Audio Meter:** Displays the transmitter (channel) name inside an audio level meter. Tap the meter to edit the name (12-character maximum) using the virtual keyboard. The audio meter scale is -90 to 0 dBFS for GainForward sources and -50 to 0 dBFS for non-GainForward sources, i.e. A10-TX.
    - The transmitter name can be edited if the channel is NexLinked to an Astral transmitter.
    - The transmitter name cannot be edited if the channel is being fed from an A10-TX.
    - If NexLinked to an Astral transmitter, the name edits are pushed to the transmitter.
    - The name is rippled to the 8-Series channel that the receiver channel is routed to if docked to an 8-Series and the 8-Series menu [Channel Setup > Use Wireless Names] is enabled.
  - **Transmitter Battery Level Icon:** Indicates the remaining transmitter battery charge as a color and in % or V depending on the type of battery the transmitter is using. If an AA, AAA, or 18650, the battery level is displayed as a voltage. If an NP-BX1, then it is displayed as a %.
    - Gray = Transmitter is Off
    - Green = Good
    - Orange = OK
    - Red = Low
    - Flashing Red = Depleted (transmitter RF and audio is disabled)
  - **NexLink RSSI Meter:** Indicates the RSSI of the received 2.4 GHz NexLink signal from the transmitter. The RSSI color signifies the transmitter NexLink status.
    - Green = Transmitter is on and NexLink active
    - White = Transmitter is off and NexLink active
    - Gray = No connection or out of range

For receiver channels that are sourced from a single transmitter, tap the NexLink RSSI meter to display the NexLinked Transmitter List from which you can select an Astral transmitter to NexLink to.

- **RF Frequency:** Displays the receiver channel's frequency.
  - The frequency flashes red when there is a NexLink issue. Go to the 1RX View > Gear Menu > NexLink Status screen to determine the cause of the issue.
  - Tap the frequency button to select a frequency within the current Tuning Band.

  - To enter a frequency, tap each frequency field then rotate the Control knob to select a value. Tap OK to store or Cancel to exit without saving. Alternatively, jump through the frequency fields by pressing the Control knob.
  - To save power, turn off a receiver channel by setting the RX On/Off toggle to Off.

If NexLinked to an Astral transmitter, the frequency is automatically pushed to the transmitter unless the NexLink menu's 'Manually set ...' toggle switch is enabled.

- **RF History:** Displays the receiver channel's RSSI, Q, or RSSI+Q history. See Menu > RF.
- **A and B RSSI Meters:** Indicates the strength of the received diversity signal from the transmitter.
- **Link Q Meter:** Indicates the quality of the received diversity signal from the transmitter.
- **Gain:** Adjusts receiver channel gain, -6 to 60 dB. Unavailable when docked to an 8-Series; use 8-Series channel trim gains instead.
- **HPF:** Adjusts receiver channel HPF (Off, 40, 60, 80, 100, 120, 160, 200 Hz). Unavailable when docked to an 8-Series; use 8-Series channel HPF instead.
- **More:** Tap to access a second page of settings including:

- **Audio Outs:** Tap to access the Audio Output Routing popup on OLEDs 1-4 from which the RX channel's Main and Aux (1-3) audio output paths can be configured.

The Astral ARX16 has 32 audio outputs which can be fed from up to 16 receiver channel main/aux paths. Each of these 32 audio outputs can be selected as feeds for the analog, AES, and Dante output interfaces. Multiple receiver channels can be summed to any of these 32 audio outputs by assigning them to the same main or aux (1-3) path in the Audio Output Routing popup. When doing so, the following is displayed: "Output already has one or more RX channels routed to it. Continue? OK, Cancel". Select OK to sum the RX channels to the same output or cancel, to cancel the routing.

Note: When multiple RX channels are summed to the same output, it is possible to clip the output (exceed 0 dBFS). Adjust RX Channel gain controls or the Audio Menu's Global RX Output Gain accordingly.

Note: An RX Channel's Main and Aux (1-3) paths cannot be set to the same Output. "Main and Aux cannot have the same output. Select another output. OK" is displayed if this routing is attempted.

The Main Audio Output path is typically used as the 'normal' program feed path. The Aux (1-3) Audio Output paths are typically used for talkback purposes but there is a myriad of other possible use cases. Aux (1-3) are activated from Astral transmitter control switches or buttons or using the RX channels' Aux (1-3) On/Off toggles. Enable the 'Aux (1-3) Mutes Main' toggle switch to mute the Main feed when Aux (1-3) are active.

Main: Selects the Main program feed output path. Select from Out 1 to Out 32. Factory default is RX Channel 'n' to Main Out 'n'.

Aux (1-3): Selects the Aux (1-3) program feed output path. Select from Out 1 to Out 32. Factory default is RX Channel 'n' to Aux Out 'None'

- **Polarity:** Adjusts the polarity of the channel audio between Normal and Reverse. Unavailable when docked to an 8-Series; use 8-Series channel polarity instead.
- **Audio Offset:** This setting is only available in a transmitter's TX View and when the transmitter is assigned to an RX channel with more than one transmitter assigned. The audio offset is a value stored in the Astral transmitter that tells the receiver channel it is feeding to apply a gain offset to the incoming transmitter audio signal. When a receiver channel has multiple transmitters assigned, this can be used to compensate for the different transmitter audio output levels resulting from microphones / lavs with different sensitivities.
- **Mode:** Sets a NexLinked Astral transmitter's Mode. Options are RF only, REC only, and REC+RF (non-US TX models only or Astral TX models not set to Lav). The Astral HH does not support REC+RF mode.
- **<<Back:** Tap to access the first page of settings.

- **Privacy:** Tap to set a Privacy Key. This prevents unauthorized Astral receiver users deciphering the transmitter audio signal. Tap New Key to generate a random 4-digit key or Clear Key, to reset to zeros. The key is pushed to NexLinked transmitters assigned to the receiver channel.

- **Modulation:** Sets Modulation between Standard, Long Range, and T&M (Test & Measurement). Compared to Standard Modulation, Long Range Modulation has better sensitivity. This increased sensitivity results in better range in challenging RF environments. The Modulation setting must match between the transmitter and the Astral ARX16 for the transmitted signal to be received. If NexLinked to an Astral transmitter, the modulation setting is automatically pushed to the transmitter unless the NexLink menu's 'Manually set ...' toggle switch is enabled.
- **RF Power:** Sets a NexLinked Astral transmitter's RF power. Options are 2 mW, 10 mW, 20 mW, 40 mW, and 100mW (Astral HH only). RF Power Level options are dependent on TX model, Country, Tuning Band, Frequency Authorization, and whether the 'Allow Extra High RF Power' option is

enabled in the Gear menu. The RF Power text changes to a red font if the actual transmitter power is different from that selected RF Power, for example, if a restricted frequency authorization expires.

- **Power On/Off Buttons:** Tap to power on and off the transmitter and receiver channel.
- **RF On/Off Buttons:** Tap to enable or disable transmitter RF transmission.
- **Record Start/Stop Buttons and Status:** Tap to start and stop the transmitter recording. Record button is red when recording. The record stop/start buttons are not displayed when the Astral transmitters are in RF Only mode.

Note: When initiating record on an Astral transmitter through an ARX receiver or Astral Remote, the status ***`Starting Recording`*** *is displayed.*
If the transmitter is unable to begin recording, it automatically retries up to five times, with each retry reflected in the status. If all attempts fail, the status ***`Starting Recording Failed`*** *is displayed.*

- **ID On/Off Buttons:** Tap to identify the Astral transmitter. Its LEDs will start flashing and if it's an Astral TX, it will also vibrate.
- **Mute On/Off buttons:** Tap to mute and unmute the transmitter.
- **Transmitter Timecode Status (only available in Rec Only or Rec+RF mode):** Tap the TC Icon to display whether the Astral transmitter has synced successfully to the Astral ARX16. Displays 'TC synced' when successfully synced. Tap again to return to the TC Icon.

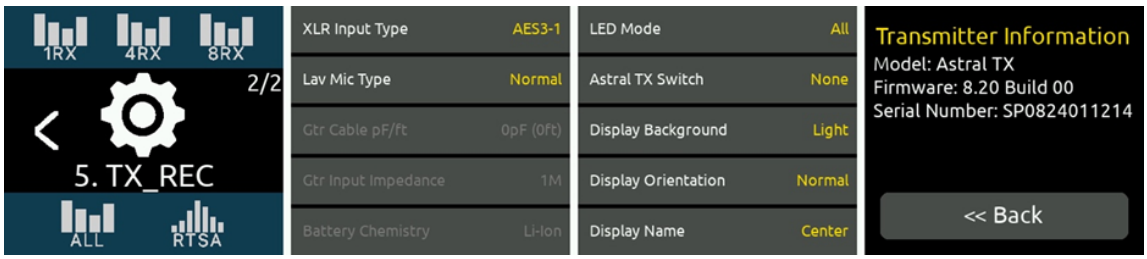
Note: Astral transmitters hold their synced timecode accurately for 4 hours after power down, then reset. Without a battery inserted, they hold for 1 hr after power down.

- **Gear Menu:** Provides access to two pages of other transmitter settings plus NexLink Status alerts. Available options depend on Astral transmitter model, Astral Mini or Astral TX.

Gear Menu Page1/2

- **NexLink Status:** Displays status alerts relating to communication over NexLink. See NexLink Status Alerts
- **Transmitter LEDs:** Enables or disables the transmitter's LEDs.
- **Auto-Power with Lemo Connection:** Set to ON to have the Astral transmitter automatically power on when a Lemo is connected.
- **Resume Record upon Powering On:** Set to ON to have the Astral transmitter automatically resume recording on power up if it was recording prior to powering down.
- **Allow Extra High RF Power:** Allows the selection of 40 mW (and 100 mW if an Astral HH) for RF Power. RF Level availability is dependent on TX model, Country, Tuning Band, and Frequency Authorization.
- **Format TX:** Sends a command to the Astral transmitter to format its recording media. Select OK or Cancel at the 'Are you sure you want to format?' prompt. 'Formatting in Progress' is displayed during formatting. 'Format Successful' is displayed when the process has completed successfully.
- **Restore TX Settings:** Sends a command to the Astral transmitter to restore its setting to factory defaults.

- **More ...**: Selects Page 2/2. Available settings depend on selected Astral transmitter model.

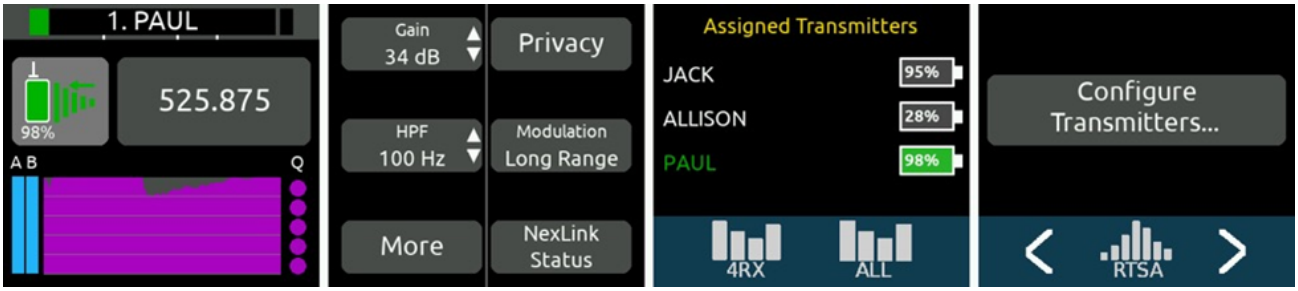


Example: Page 2/2 for the Astral TX

- **Power Mini when Removed from PowerStation:** Astral Mini Only. Set to ON to have an Astral Mini transmitter automatically power on when removed from a PowerStation-8M. Not available for the Astral TX transmitter.
- **Mini Battery Doubler Installed:** Astral Mini Only. When set to YES, the battery remaining % indicator adapts to the Astral Mini BatteryDoubler's discharge characteristics to provide accurate readings.

    - **Transmitter Information:** Displays the NexLinked transmitter's model, firmware version and serial number.
    - **XLR Input Type:** Astral TX Only. Select Mic, Line, P12, P48, AES3-1, AES3-2, AES42-1, or AES42-2. If Lav or Guitar are connected to the Astral TX, they are automatically selected. When a Guitar is detected, the Guitar Cable Capacitance and Input Impedance options below are un-grayed.
    - **Lav Mic Type:** Astral TX Only. Select Normal or 3-Wire. Note that the Astral TX's auto-input type sensing is disabled when set to 3-Wire.
    - **Battery Chemistry:** Astral TX Only. Selects chemistry type for 1.5V type batteries: NiMH, Alkaline, or Lithium Primary.
    - **Control Ring Type:** Astral HH Only. Selects what type of Control Ring is installed on the Astral HH. Select from Control-0, Control-1, Control-3, and Control-Sw.
    - **Control Ring LEDs:** Astral HH Only. Selects what the selected Control Ring's LEDs should show.
    - **Slide Switch:** Astral HH with Control-Sw installed only. Selects the function of the slide switch. Select from None, Mute, Rec, Aux Latch, Power, GPIO, and RF.
    - **Button:** Astral HH with Control-1 installed only. Selects the function of the button. Select from None, Mute, Rec, Aux Hold, Aux Latch, Power, Control, RF and PTT.
    - **Button-L, -C, -R:** Astral HH with Control-3 installed only. Selects the function of the L, C, and R buttons. Select from None, Mute, Rec, Aux Hold, Aux Latch, Power, Control, RF and PTT.
    - **Display LEDs:** Astral HH Only. Selects what the selected ePaper Display's backlight should show.
    - **LED Mode:** Astral TX Only. Select from All, Front Only, or Top Only.
    - **Astral TX Switch:** Astral TX Only. Selects the function of the optional toggle switch. Select from None, Power, Mute, Record, Aux, RF Control.
    - **Display Background:** Astral TX Only. Selects Light or Dark background color.
    - **Display Orientation:** Astral TX Only. Select between Normal or Flipped.
    - **Display Name:** Astral TX and Astral HH Only. Select between Top and Center.
- **RX View Navigation Icons:** Tap to navigate to another RX View.

7.3.2 Example 2: 1RX View when sourced from multiple Astral transmitters in REC+RF Mode, Standalone

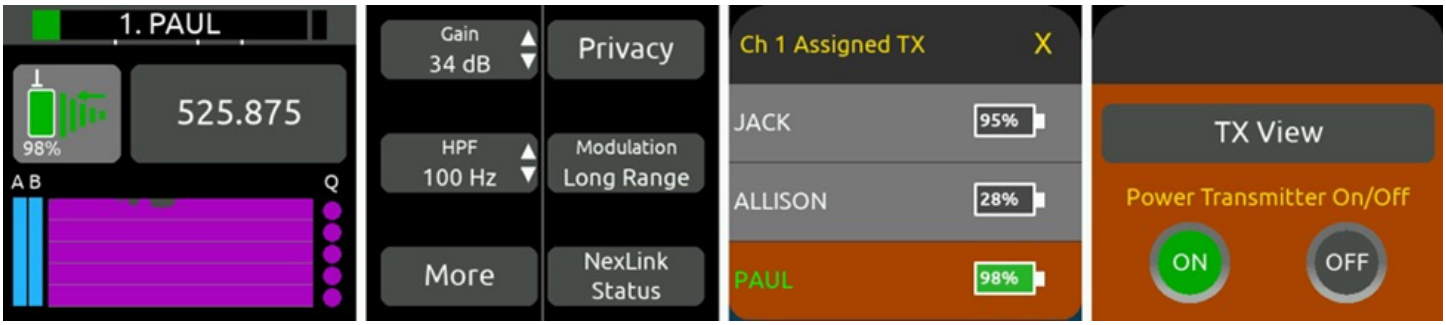


Many of the controls are the same as those described in Example 1. However, this 1RX View displays only those functions which are common to the receiver channel and all assigned transmitters. To change settings pertaining to only one of the assigned transmitters, tap 'Configure Transmitters...', highlight the transmitter, then tap TX View. The TX View can also be accessed from the TX List.

When a receiver channel is sourced from multiple transmitters, the Assigned Transmitters list in OLED 3 displays a list of all assigned transmitters. The transmitter name shown in OLED 1 and the one shown in green font in the Assigned Transmitters list, is the transmitter that is currently being received by the channel over the forward link.

Frequency, Modulation, and Privacy settings are applied to all assigned transmitters when NexLink Tuning Mode is set to Automatic.

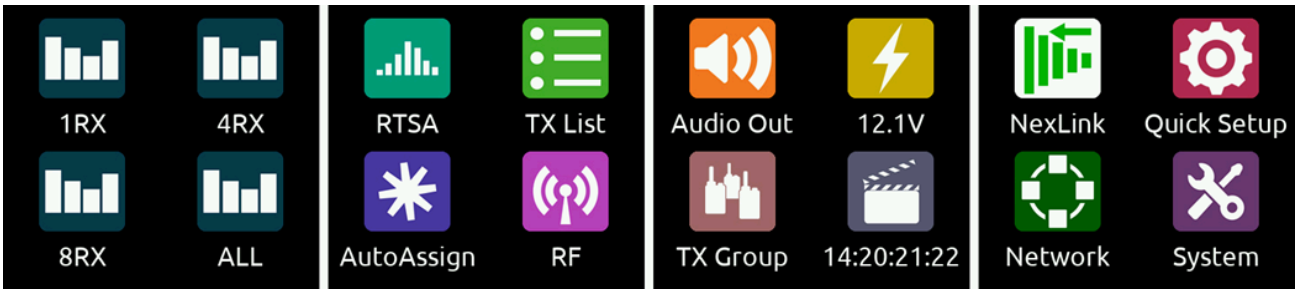
Note: Make sure to have only one assigned transmitter powered up at a time otherwise they will interfere with each other. Power On/Off buttons are conveniently included in the view accessed by tapping 'Configure Transmitters...', to make it easy to ensure only one transmitter is powered on at a time: select a transmitter in the list then tap the power ON or OFF buttons as necessary.



Chapter 8: Menus

All the Astral ARX16 settings are organized into menus which are accessed via the top-level Main Menu. The triangle button cycles between the current RX view, Main Menu, and RTSA. Press the triangle button one or two times to display the Main Menu. The leftmost touch screen displays icons for the various RX views. Tap an RX View icon to jump to its RX View. When in a menu, back out to the menu above by pressing the triangle button or tapping the leftmost screen (except when in the RTSA menu).

Main Menu



Menu	Description
1RX	Displays a receiver channel's received signal, audio level, control functions and status across the four screens.
4RX	Displays 4 receiver channels, one per screen. See Operating the Astral ARX16
8RX	Displays 8 receiver channel strips, two per screen. See Operating the Astral ARX16
ALL	Available if expansion licenses are installed. Displays 12 or 16 RX channels depending on how many 4-ch expansion licenses are installed.
TX List	Displays an inventory of paired TXs and which RX channels they are NexLinked to. Pair/Unpair, Handoff & control an individual TX or group of TXs. 'TX List' flashes yellow when any paired transmitter assigned to an RX channel is not connected via NexLink.
TX Group	Accesses the TX Group Control menu where commands can be sent to all or custom groups of TX.
RF	Accesses antenna, tuning band, RF History settings, and Antenna Length menu
RTSA	Displays the RTSA, a real time spectrum analysis tool for assisting in frequency coordination.
AutoAssign	Scans the current tuning band for clean frequencies and assigns them to active channels and their paired TX.
Audio Out	Accesses D-Sub outputs, headphone output, sync reference, sample rate settings, and tone generator settings.
Power	Displays the DC input voltage. Enables/disables DC Out 1 and 2 and configures whether the Astral ARX16 should power on automatically when power is applied.

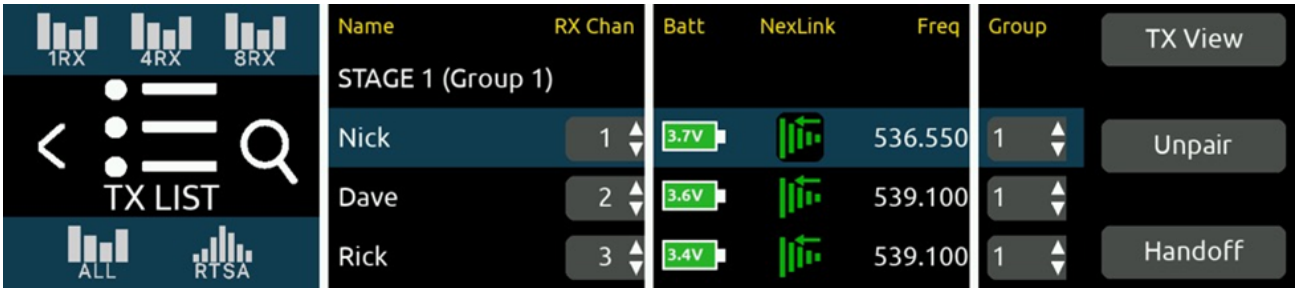
Timecode	Displays incoming LTC BNC timecode and frame rate
NexLink	NexLink-related settings including Astral Outpost settings
Network	Network-related settings for Dante and Control, RF Mirror Mode
System	Various system settings. See System Menu for details.
Quick Setup	Load and Save Setup files for quick recall. Setups can be saved to 8 internal memory slots or to an external USB drive connected to the USB-A port.

Chapter 9: TX List

The TX List is an inventory of all paired Astral transmitters and which RX channels, if any, they are assigned to. Up to 64 transmitters can be paired with the Astral ARX16. 'Pairing' is a process that establishes a NexLink relationship between the Astral ARX16 and Astral transmitter. Once paired, an Astral transmitter can be controlled and monitored from Astral ARX16. Transmitters can also be assigned to user-nameable groups. Up to 8 user groups are available. When one or more transmitters are assigned to a group, that group is displayed at the top of the TX list. An 'All TX Group' is optionally available and will appear at the top of the TX List if the System > Show All TX Group toggle is set to On.

One or more Astral transmitters can be assigned to a single receiver channel. When the Astral ARX16 is set to 'Manually set frequency ...' in the NexLink menu (see Manually Set Frequency, Modulation, and Privacy on Transmitters), all transmitters assigned to a receiver channel are sent that channel's RX Frequency, Modulation, and Privacy settings. This makes it easy to quickly switch between transmitters assigned to the same receiver channel, particularly useful in live scenarios such as switching to a backup transmitter or switching between a performer's different mics or instruments that are being fed to the same channel on an external mixer.

Note: When multiple transmitters are assigned to the same receiver channel and frequency, to prevent interference, ensure that only one of those transmitters is actively transmitting.



9.1 Pairing an Astral Transmitter to the Astral ARX16

To establish NexLink wireless control between an Astral transmitter and the Astral ARX16, a new transmitter must be added to the TX List in a process called 'pairing'. Pairing is saved indefinitely over power cycles, and typically only must be done during initial system setup. Once paired, a transmitter can be assigned to a receiver channel ('Chan') and group. Paired transmitters that are not assigned to a receiver channel can still be controlled via NexLink from the TX List. A transmitter can only be paired with one Astral Receiver at a time; however, it is possible to wirelessly 'handoff' control to another Astral Receiver easily - see Unpairing/Handoff.

Pairing automatically assigns the transmitter to the next available receiver channel number, but it is easy to subsequently reassign to any receiver channel. Should a transmitter not be required for a particular production or event, simply remove the receiver channel assignment by setting the transmitter channel number to '-'. Once transmitters are paired, they remain persistently in the TX List until unpaired.

Note: *When Astral ARX16 is assigned as a Backup in RF Mirror Mode, its TX List is replaced by the Primary Astral ARX16's TX List.*

Transmitters can be paired wirelessly or via USB.

9.2 Pairing via USB

- Enter the TX List by tapping the TX List icon in the Main Menu.
- Connect the Astral transmitter's USB-C port directly to the Astral ARX16's rear USB-A port directly or via a USB hub. It is not necessary for the Astral transmitter to be powered on or for it to have a battery installed during USB pairing.

- Wait for several seconds while the Astral transmitter pairs to the Astral ARX16. The Astral transmitter will appear in the list once discovered, then go through the pairing process - 'Connecting' then 'Initializing'.
- Disconnect the USB cable between the Astral transmitter and the Astral ARX16.

Tip: Use a USB Hub (or PowerStation-8M) to pair multiple Astral transmitters simultaneously.

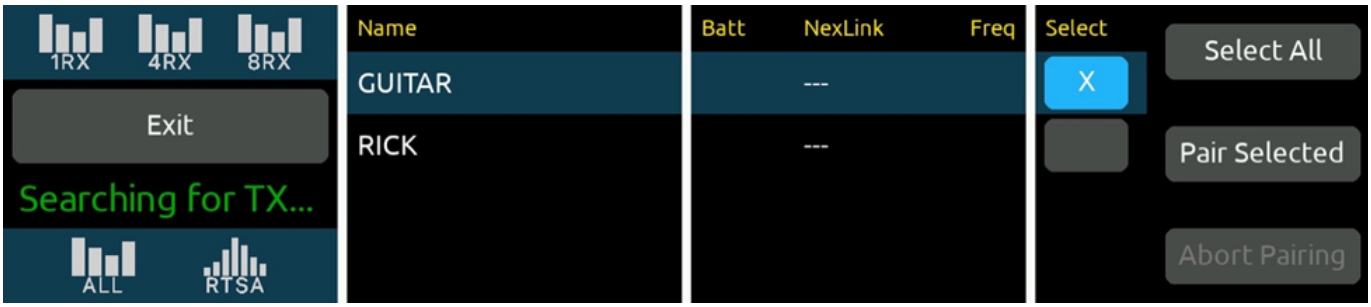
9.3 Wireless Pairing

Note: *A transmitter cannot be wirelessly paired with Astral ARX16 if the Astral Remote app is open and in communication with it.*

Note: *When using an Astral Outpost for NexLink control, wireless transmitter pairing requires that both the Astral ARX16 and Astral Outpost have their 2.4GHz antennas installed.*

- Put the Astral transmitter into pairing mode as follows:
  - Astral Mini: Power off the Astral Mini, then press and hold the red button inside the battery compartment until the Mini's blue light flashes continuously.
  - Astral TX and Astral HH: Access the transmitters menu and select Pair. Its blue light will flash continuously and 'Pairing. Please wait ... ' is displayed.
  - All TX: Use the TX List's Handoff button from the Astral ARX16 that currently has NexLink control.
- Go to the Astral ARX16's TX List and tap the search icon in OLED 1 to display the 'Searching for TX' View.

  Note: *Astral ARX16 uses its local 2.4 GHz antennas (not Outpost antennas) to search for transmitters in pairing mode. Once found, transmitters are displayed in the list.*



- Tap a transmitter's Select box to select/deselect it for pairing to the Astral ARX16. A 'X' in a blue Select box indicates that it is selected. Tap Select All to select all transmitters.
- Tap 'Pair Selected'. When pairing multiple transmitters, the system assesses each TX, starting with the transmitter with the lowest frequency and assigns it to the lowest available RX channel.
- At the popup, select whether to apply the transmitter's current frequency to the RX Channel.
    - Select No to have the Astral ARX16 send the assigned RX channel's frequency to the transmitter.
    - Select Yes to have the Astral ARX16 get the frequency from the transmitter and assign it to the RX Channel. When assigning to RX channels, the system assesses each TX in turn and assigns it to the lowest available RX channel that is in a band that corresponds to the transmitter's frequency. If it can't find a corresponding band, it will not assign the transmitter i.e. 'RX Chan' is set to '--'.
- During pairing, the green 'Searching for TX' text in OLED 1 changes to 'Pairing TX'. Pairing progress is indicated in the NexLink column in OLED 3 and changes from 'Waiting' to 'Connecting' to 'Initializing'. The NexLink RSSI icon is displayed once NexLink communication is fully established. Allow the process to fully complete before exiting out of the screen. Leaving the screen before all selected transmitters are paired, displays 'Transmitter(s) are still being paired or being assigned to channels. OK'.

- Tap Abort Pairing to abort pairing of transmitters that are not yet paired.
- Tap Exit once all transmitters have paired. Exiting the screen before all selected transmitters are paired, displays 'Abort pairing transmitters that are not yet paired? OK, Cancel'

9.4 Unpairing / Handoff

Unpairing or handing off a transmitter breaks its NexLink relationship with the Astral ARX16 and removes it from the TX List. Do this if you want to clear out unused transmitters from the TX List or hand off

NexLink control to another Astral ARX8, Astral ARX16, or Astral ARX32. Once a transmitter is unpaired or handed off, the Astral ARX16 can no longer control it via NexLink. Unpairing and Handoff are very similar actions:

- Select Unpair to simply unpair a TX from the Astral ARX16 and remove it from the TX List. Groups of transmitters cannot be unpaired.
- Select Handoff to unpair and put the TX into pairing mode, ready to be paired with another Astral Receiver. Groups of transmitters can be handed off.

To Unpair, rotate the Control knob to select a transmitter in the list and tap the Unpair button in OLED 4. An 'Are you sure ...'' popup appears. Tap OK to unpair and remove the transmitter from the TX List.

To Handoff, rotate the Control knob to select a transmitter or transmitter group in the list and tap the Handoff button in OLED 4. This unpairs the selected transmitters and puts them into Pairing mode. They are now discoverable by other Astral Receivers. Follow the instructions in Wireless Pairing to establish pairing with another Astral-Receiver.

9.5 TX List Description

The TX List displays the following columns:

- **Name:** The name of the paired transmitter. Tap to edit the name.
- **RX Chan:** The receiver channel number to which the transmitter is assigned. Tap to assign. Unassign by setting to '-'.
- **Batt:** Displays the transmitter's power status and battery level. A battery icon with gray fill is powered off.
- **NexLink:** Displays NexLink status.
  - ---: After powering up, Astral ARX16 is waiting to hear from the Astral transmitter. Transmitter is out of range or its battery is depleted if it remains in this state.

    To conserve power, powered-off transmitters enter sleep mode after 4 hours of NexLink inactivity. This occurs when both the Astral ARX16 and the transmitter have been powered off for more than

4 hours. While in sleep mode, the transmitter's NexLink communication is disabled. To wake up a sleeping transmitter, it must be near the Astral ARX16. Once awakened, long-range NexLink communication is automatically restored. Consider using strategically placed Astral Outposts to wake up transmitters located a long way from the Astral ARX16.

  - Connecting: Establishing NexLink communication.
  - Initializing: Initializing connection.
  - NexLink RSSI icon: NexLink communication established. Displays the quality of the NexLink signal.
    - When TX is on, the RSSI level display is green
    - When TX is off, but NexLink is active, the RSSI level display is white
    - When TX has no NexLink communication, the RSSI level display is gray.
- **Freq:** Displays the transmitter's frequency.
- **Group:** Assign the selected transmitter to a transmitter group. Grouping allows multiple transmitters to simultaneously respond to a group command such as Power On/Off. There are 8 groups, 1-8. Set to '-' to unassign a transmitter from a group. If no transmitters are assigned to a group, then that group is inactive and does not appear in the TX List. Active groups are displayed as rows at the top of the TX List in ascending numerical order. Tap a group's name to edit it. The group number is shown in parentheses after the group name. A group name can be up to 12 characters long.

The TX List is sorted according to ascending receiver channel (RX Chan) number. When multiple transmitters are assigned to the same receiver channel, they are sorted in alphabetical order within that channel number's group.

9.6 Assigning a Paired Transmitter to a Receiver Channel

Assigning a paired transmitter to a receiver channel enables synchronization of frequency, modulation, and privacy settings between the transmitter and that receiver channel. Up to 16 transmitters can be assigned to the same receiver channel.

- Rotate the Control knob to select a transmitter, then tap the 'RX Chan' box.
- Rotate the Control knob to choose a channel number, then press the Control knob to store.

- If the selected receiver channel has no transmitters already assigned, the selected transmitter is immediately assigned to that channel.
- If the selected receiver channel already has one or more transmitters assigned to it, a popup is displayed in OLED 2 prompting whether the selected transmitter should be added to that receiver channel or replace the transmitter that is currently assigned to it. If Replace is selected, the replaced transmitter is unassigned from the RX Channel.

- If you are only working with a single transmitter per receiver channel, you can select that single transmitter directly from that channel's 1RX View. In the 1RX View, tap the NexLink Icon to display the 'NexLinked Transmitter' List from which you can select an Astral transmitter.

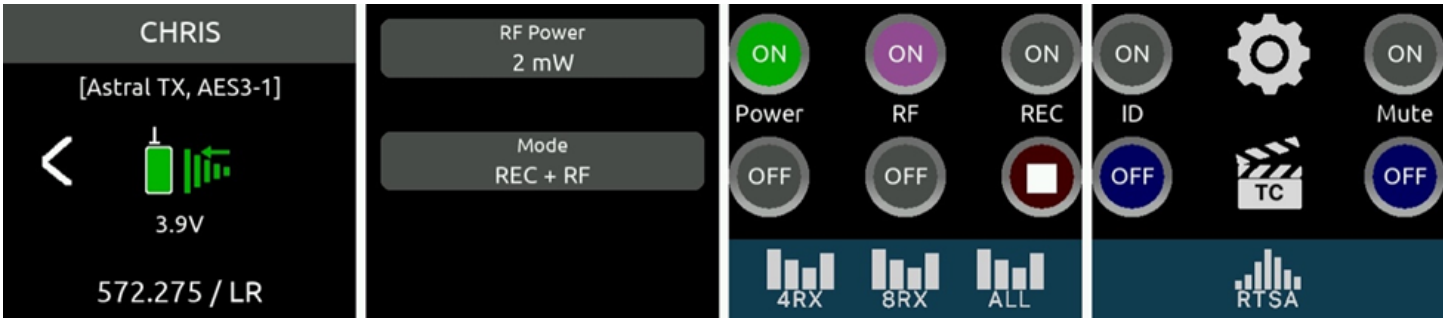
Tip: Rotate the Control knob to scroll through the TX List. Select a transmitter by highlighting its row, then press the Control knob to jump directly to its receiver channel's 1RX View.

Tip: The TX List icon in the Main Menu is yellow if not all transmitters are connected and green when all transmitters are successfully connected or when no transmitters have been paired. If using the Astral Remote app for control, it is best practice to fully close the Astral Remote app or disable transmitter control in the app's Manage Transmitters view until transmitters are shown as connected in the TX List.

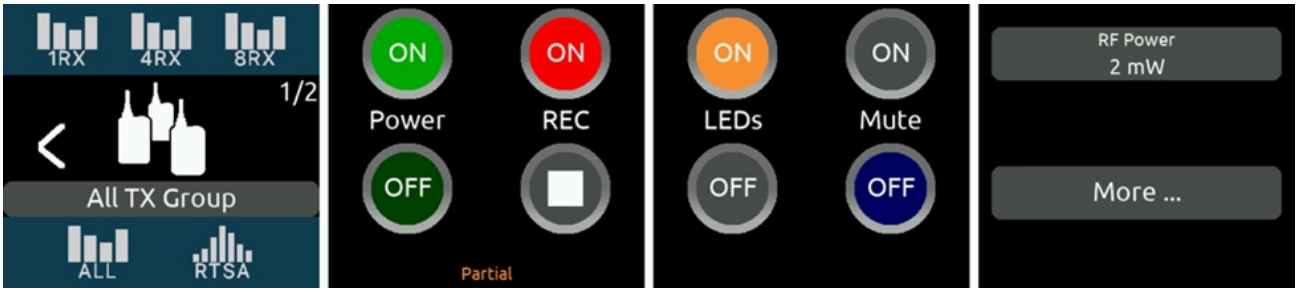
9.7 TX View

Tap the TX View button to access the selected transmitter's settings. The button is grayed out when the transmitter is not connected via NexLink. TX settings can also be accessed via the 1RX View of the receiver channel that the transmitter is assigned to.

For a detailed description of many of the TX View's controls which it shares with the 1RX View and its Gear menu, see 1RX View.



Chapter 10: TX Group Control



The TX Group menu provides access to commands that are applied simultaneously to All or custom groups of NexLinked transmitters assigned to RX channels. Tap the Group Selector Button in OLED 1 to select the Group of transmitters to which commands should be sent to. Alternatively, access the TX Group Control by selecting the Group at the top of the TX List menu and tapping the Group Ctrl button in OLED 4. The following commands are supported:

- Power On/Off
- Record On/Off
- LEDs On/Off
- Mute On/Off
- RF Power
- Modulation
- Mode

- Format
- ID

If at least one transmitter does not respond correctly or match the command status, ‘Partial’ is displayed below the respective command’s buttons. Partial status for REC, LEDs and Mute functions are only reported for transmitters that are powered on.

Tap the **More ...** button to cycle between the two pages of group commands. Page 2 includes Modulation, Mode, Format, and ID.

Chapter 11: RF Menu

The RF Menu accesses antenna, tuning band, and RF History settings. From the Main Menu, tap the RF icon to enter the RF Menu.

11.1 Antenna Setup

The antenna inputs A and B can be switched as a pair between the front or rear panel BNCs. When set to front, the antenna’s matching rear BNC can be set to Cascade Out, ideal for daisy chaining units.

When daisy chaining Astral ARX16, it is recommended to use an external powered antenna to overcome the 3 dB splitting loss in the Astral ARX16 so that the receivers maintain excellent range.

- **Antenna In button:** Tap to toggle between the Front and Rear BNCs for the A and B antenna inputs.
- **A, B Gear Icons:** Tap to access settings for the A and B antennas.
  - **Power (Bias):** Provides 12 VDC bias power for active or smart antennas. When On, a lightning power icon appears next to the antenna's icon in the RF Menu. When setting Power (Bias) to On, a "Turn on Antenna Bias Power" prompt is displayed. Select OK to turn on bias power.
  - **Cascade out:** When the Front/Rear antenna input button is set to Front, the rear BNCs can be set as cascade outs for daisy chaining units. The Cascade out option is grayed out when the antenna BNC inputs are set to Rear.
  - **Smart Antenna:** Tap to enable remote control of the Wisycom LFA smart antenna. The LFA control settings are grayed out when Smart Antenna is disabled. After turning power bias On, allow about 20 seconds for the smart antenna fields to become accessible.
  - **LFA Gain Mode:** Sets gain of Antenna A or B in 1 dB steps. [Off, Bypass, -12 to 27dB].
  - **LFA Gain:** Sets gain of Antenna A or B in 1 dB steps. [Off, Bypass, -12 to 27dB].
  - **LFA Filter Type:** Sets the filter type of Antenna A or B.
  - **LFA Filter Freq:** Sets the filter freq of Antenna A or B.
  - **LFA Name:** Displays name of Antenna A/B.
  - **LFA Display Brightness:** Sets Antenna A/B display brightness in increments of 1. [1-10]
  - **LFA Display Color:** Sets Antenna A/B display color. [White, Black]
  - **LFA Display Timeout:** Sets the duration of Antenna A/B display timeout in steps of 1 second. [5 to 240 seconds]
  - **LFA Display Rotate:** Sets the rotation of the Antenna A/B display. [0 or 180]
  - **LFA LED:** Sets Antenna A/B LED activity. [On or Off]
  - **LFA Version Info:** Displays system information about the Wisycom LFA- B-F1.

11.2 Tuning Band

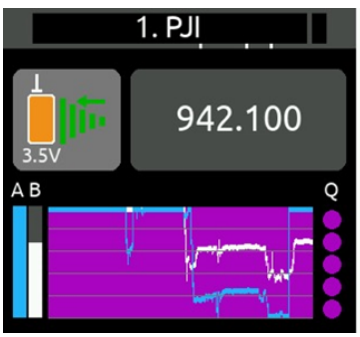
Sets the Astral ARX16's Tuning Band and displays its trace across the rightmost screen. The Tuning Band can also be set from the RTSA. See RTSA and Architectural Overview for more information.

11.3 RF History

The RF History plot is displayed in the 1RX, 4RX, and 8RX Views. It displays RF signal level (RSSI) or link quality history over a specified duration.

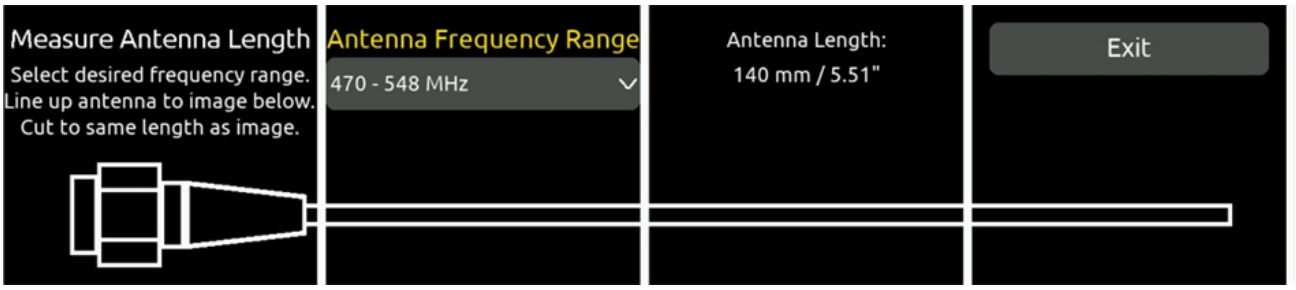
- **Duration:** Set from 30 to 600 seconds in 10 second steps.
- **Type:** Choose from the following:
  - RSSI: Displays Antenna A or B's RSSI, whichever is the highest. Displayed a green bars.
  - Link Q: Displays Link Quality. Displayed as purple bars.
  - RSSI + Q: Displays RSSI, Link Quality, and RF overload status.
    - Purple bars for Link Q
    - Blue line for Ant A RSSI and
    - White line for Ant B RSSI.
    - Orange bars indicate that the antenna inputs are approaching overload and
    - Red bars indicate that the antenna inputs are overloading.

See Antenna RF Overload Indication below.



11.4 Antenna Length

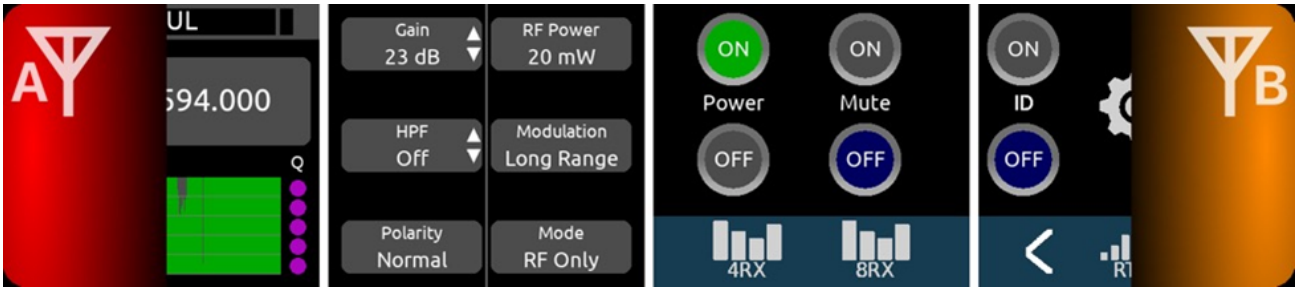
For convenience, the Astral ARX16 includes a ¼ wave whip antenna length measurement view. Simply select the desired frequency range, line up the whip antenna to the displayed graphic and cut to size.



Chapter 12: Antenna RF Overload Indication

The Astral ARX16 indicates whether its A and B antenna inputs are approaching overload or overloading.

- Red = Overload
- Orange = Approaching overload



- Left indicator (in OLED 1) = A antenna overload status
- Right indicator (in OLED 4) = B antenna overload status
- The red and orange indicators are held for a minimum of 2 seconds. Tap the indicator to manually clear it for at least 10 seconds.

Tip: Things to try when an RF signal is approaching overload or overloading an antenna input:

- Increase the distance between transmitter and receiver antennas

- Reduce RF power on the transmitter
- If using amplified external antennas, reduce the amplifier gain

Use the RTSA screen to examine from where the interference is coming. If the interference is not from the transmitters in use but rather some other sources, consider changing the tuning band and frequency such that the interfering RF signal is moved out of band.

Chapter 13: Spectrum Analyzer

The Astral ARX16 incorporates a real-time, spectrum analyzer for assisting in frequency coordination and selection of clean RF frequencies anywhere within the entire SpectraBand range (169 MHz to 1525 MHz). The Spectrum Analyzer also includes:

- AutoAssign: an algorithm that finds the cleanest frequencies and automatically assigns them to RX channels and their paired transmitters.
- TV Channel Finder: an algorithm that automatically looks for and displays 6 MHz or 8 MHz TV Channels so that those frequency regions can be avoided when assigning frequencies.

The analyzer is accessed from the RTSA menu, the RF menu, or by tapping the RTSA icon in OLED 1 of any menu.

The Spectrum Analyzer includes two Modes of operation:

- **RTSA Mode:** Live real-time spectrum analysis of the currently selected band filter range while maintaining reception of multichannel wireless audio. RTSA is an acronym for Real Time Spectrum Analyzer.
- **Scan Mode:** Analysis of the entire or user-selectable portions of the 169 MHz - 1525 MHz spectrum. The trace is typically refreshed a few times per second. All channel audio is muted in Scan Mode.

In both modes, RF signal level (in dBm) as ‘seen’ by each antenna is displayed on the vertical axis with RF frequency (in MHz) displayed on the horizontal axis.

Toggle between RTSA Mode and Scan Mode by tapping the Scan / RTSA button in OLED 4.

Recommended Workflow

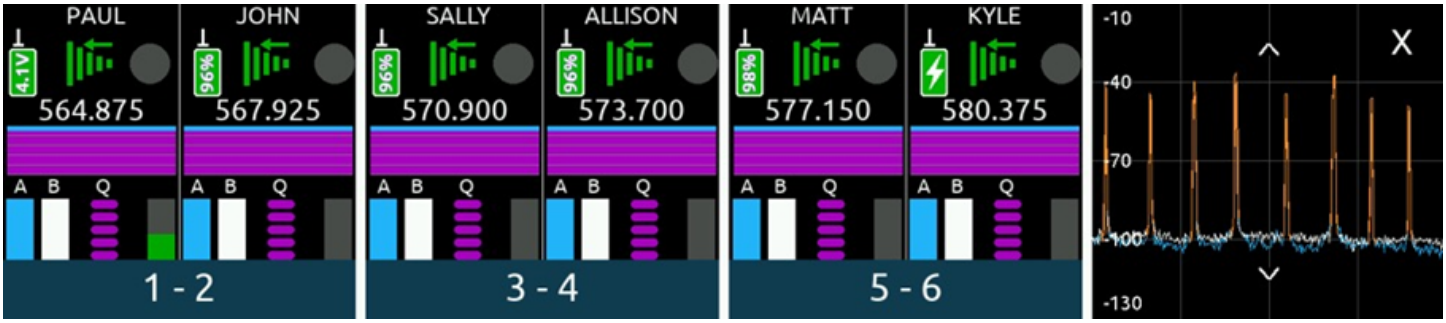
It is best practice to first use the Scan tool to find the cleanest band, then use the RTSA or AutoAssign to find the cleanest frequencies within that band. Once clean frequencies are found they can be assigned to receiver channels and their associated NexLinked transmitters directly from the RTSA or AutoAssign views.

13.1 RTSA Mode

RTSA Mode displays live RF signal level for the current band filter range.

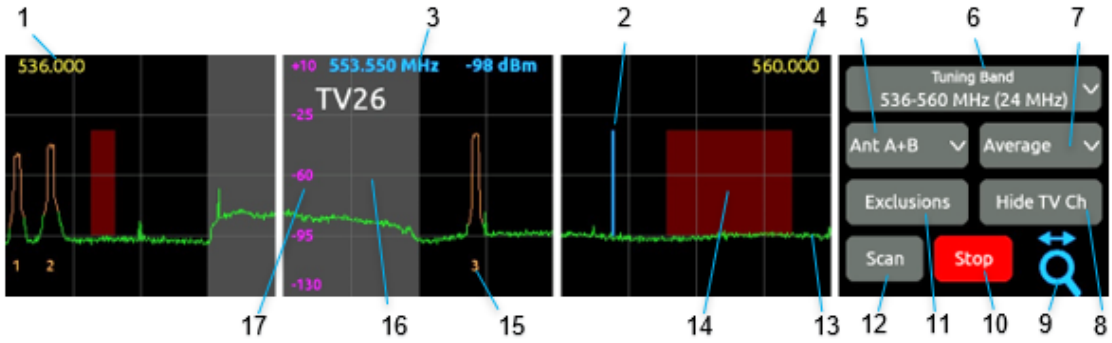
The RTSA View can be displayed on a single screen (touch screen 4) or expanded across all 4 touch screens.

Single Screen RTSA View in OLED



- From any RX View, show the single screen RTSA View on OLED 4 by tapping the RTSA icon at the bottom of OLED 4.
- Hide the single screen RTSA view by tapping the ‘X’ at the top right of the view.
- Change the vertical ‘dBm’ scale by tapping the up/down arrows.
- Switch to the expanded RTSA view by tapping the center of the screen.
- The single screen RTSA view is also displayed in the RF menu.

Expanded RTSA View

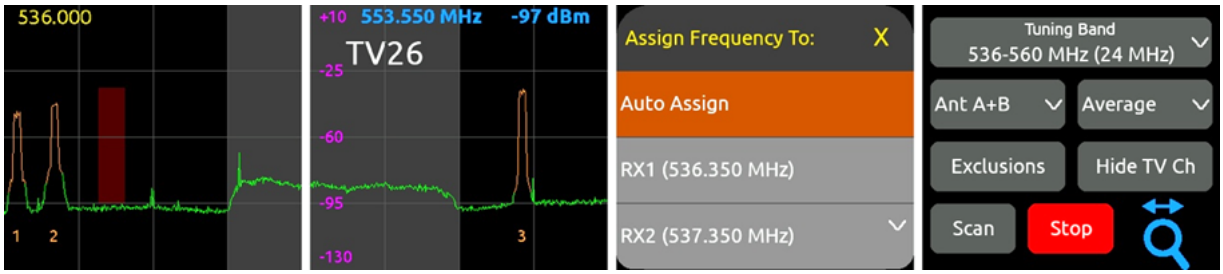


Access the expanded RTSA View by tapping the center of the single screen RTSA View or by tapping the RTSA icon in the Main Menu or bottom of screen 1 in other menus.

Exit the expanded RTSA View by pressing the triangle button.

- **Start Frequency:** Shows the start frequency of the displayed plot.
- **Frequency Marker:** Tap anywhere in the top half of the three OLEDs to locate the blue frequency marker at any desired frequency. To more precisely position the marker, rotate the Control knob with the Zoom Tool set to horizontal scroll mode (blue Zoom Tool icon). The marker can be used to identify a specific frequency and its received signal strength.

  Press the Control knob to display the “Assign Frequency To:” list. Assign the blue frequency marker’s current frequency to any receiver channel or select ‘Auto Assign All’ to automatically scan and assign multiple clean frequencies at once. See AutoAssign for more information.

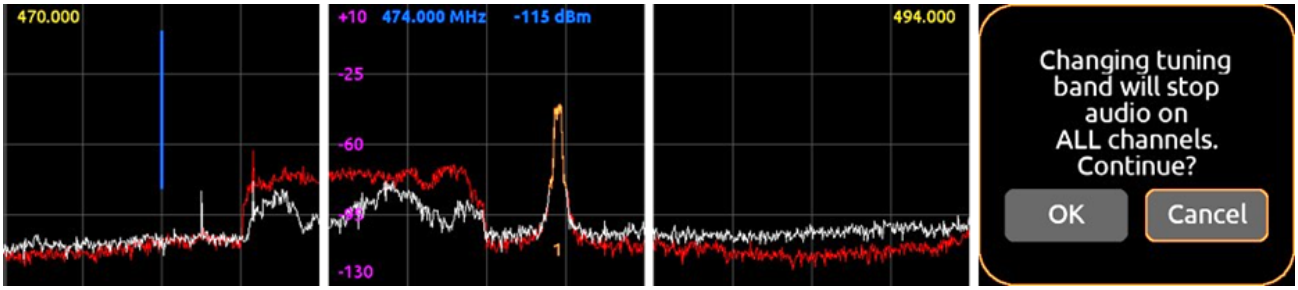


- **Marker MHz/dBm:** Displays the Frequency Marker’s current frequency and dBm value.
- **End Frequency:** Shows the end frequency of the displayed plot.
- **Antenna Options:** Selects which antenna (Ant) signals are displayed.
  - Ant A: Only antenna A (red line)
  - Ant B: Only antenna B (white line)
  - Ant A+B: Highest of Ant A and Ant B.
  - Ant A, B: Both Ant A and Ant B.

- **Tuning Band:** Sets the Astral ARX16's Tuning Band and displays its trace across the first three screens. The Tuning Band can also be set from the RF Menu.

  A Tuning Band is a tightly filtered frequency band from within which Astral ARX16's receiver channels must operate. RF signals outside the selected tuning band are sharply attenuated to significantly reduce unwanted out-of-band RF interference. See Architectural Overview for further information

- Tap the Tuning Band button. If System > More > Notifications > 'Audio Off Warnings' is enabled, a popup appears to warn that audio will stop on all channels if the Tuning Band is changed. Select OK to display a list of the currently selected Country's Tuning Bands and their width in MHz. Country is set from the System menu.
- With the Tuning Band list open, rotate the Control knob to scroll through the list. To make it easy to select a Tuning Band with the least amount of RF congestion, the Tuning Band and its RTSA display switches 'live' as the list is scrolled.
- Tap the Tuning Band list title bar to close the Tuning Band list.



Tuning Band List

Quick Recall of a Tuning Band's Assigned Frequencies

Each Tuning Band's assigned receiver channel frequencies are stored and automatically recalled when selecting a Tuning Band. This is particularly useful for:

a) Quickly comparing the RF performance of assigned freq groups as you switch between tuning bands.

b) Pre-configuring alternate tuning bands with pre-assigned frequencies to prepare for unforeseen changes in the RF environment.

Note: Each Tuning Band's assigned frequency cache is cleared when Astral ARX16 is powered down.

- **Trace Type:** Sets the trace characteristic.
  - Normal: Displays the live view of the spectrum seen by each antenna.
  - Average: Displays temporally averaged (smoother) live view of the spectrum seen by each antenna.
  - Peak Hold: Displays and holds peak values. To reset, tap the Trace Type popup and tap Peak Hold.
  - Normal + Pk: Shows both Normal and Peak Hold traces.
  - Average + Pk: Shows both the Average and Peak Hold traces.
- **Show/Hide TV Channel:** Tap to show or hide TV channels. When Show TV Ch is selected, Astral ARX16 analyzes the filter band to discover and display TV channels.
- **Zoom Icon:** Tap the Zoom icon to cycle the Control knob's rotate function between the three zoom modes - marker locate (blue), zoom horizontal (yellow), and zoom vertical (pink). Tapping to locate the frequency marker automatically changes the Zoom icon to the blue marker locate function.
- **Stop/Start Button:** Tap to start or stop the RTSA or Scan mode. Pressing stop freezes the current display.

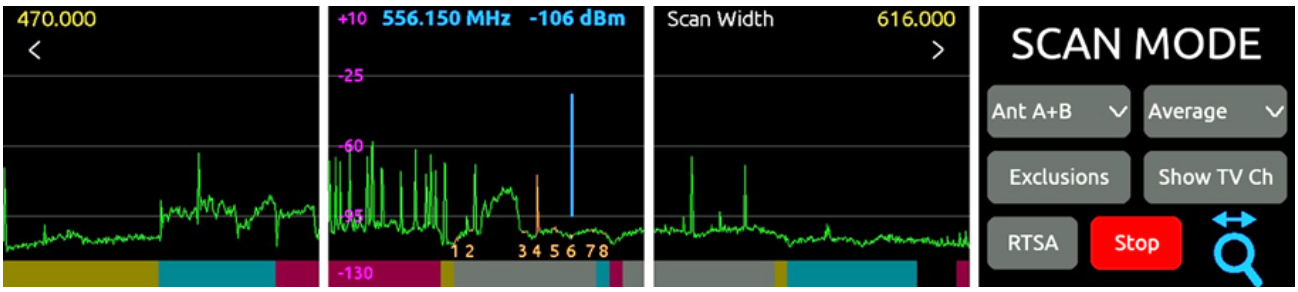
  Tip: Use the Astral ARX16 Web App to export RTSA data as a .csv and .png file.
- **Exclusions:** Tap Exclusions to create or delete frequency Exclusion Regions. See Frequency Exclusion Regions for more info.
- **Scan/RTSA Button:** Tap to switch between RTSA and Scan modes. When switching to Scan mode, the following popup is displayed if System > More > 'Show Audio Off Warnings' is enabled.

  "Changing to Scan Mode will stop audio on ALL channels. Continue? [OK, Cancel]"
- **Trace:** The real time trace of the received RF spectrum.

- **Frequency Exclusion Region:** Translucent red regions indicate user-created Frequency Exclusion Regions.
- **RX Channel Indicator:** Indicates the frequency and channel number of an enabled receiver channel. The channel number and frequency portion of the trace that is associated with that number, is highlighted orange. Tap the orange number to jump directly to that channel's 1RX View.
- **TV Channel or Restricted Frequency Region:**
  - A vertical gray region **without** a TV channel number indicates a restricted frequency region. It is not possible to assign a receiver channel to frequencies within this region.
  - When 'Show TV Ch is activated, a vertical gray region **with** a TV channel number identifies a discovered TV channel. It is possible to assign a receiver channel to frequencies within a TV channel, but it is not recommended.

    Note: In Scan Mode, TV Channel number labels are not displayed in the gray TV channel regions.
- **Vertical dBm scale:** Displays the vertical dBm scale. Adjust the scale using the Pink Zoom Tool. Choose from +10 to -130dBm, -10 to -130 dBm, -30 to -130 dBm, and -50 to -130 dBm

13.2 Scan Mode



Use Scan mode to view the whole Astral ARX16 169 MHz - 1525 MHz spectrum and zoom in to see smaller sections in more detail. The complete scan trace is refreshed a few times a second. Scan mode makes it quick and easy to find and select a clean Tuning Band. Access Scan mode by tapping the Scan button in OLED 8 of the RTSA View.

Note: When the Scan view is selected, the Web App RTSA menu switches to Scan view too, and vice versa.

The Scan trace width and start/end points can be adjusted in several ways:

- Tap ‘Scan Width’ at the top of OLED 3 to display the Scan Width popup. Enter a Start and End frequency of reset to the default 470-616 MHz setting.

- Select the zoom horizontal tool by tapping the zoom icon in OLED 4 until the yellow zoom icon is displayed. Rotate the Control knob clockwise to zoom in and counterclockwise to zoom out.
- Tap '> to bank to the next range of frequencies with the same width. For example, if 470 to 616 MHz is currently displayed, tapping ‘>’ will display 616 to 762 MHz
- Tap '<' to bank to the previous range of frequencies with the same width.

  Note: When entering Scan mode, the last selected range is shown.

  Note: The scan trace shows the various selectable filter ranges as colored strips at the bottom of the display. Filter ranges can overlap. These overlapping ranges are shown as gray strips.

To select a Tuning Band:

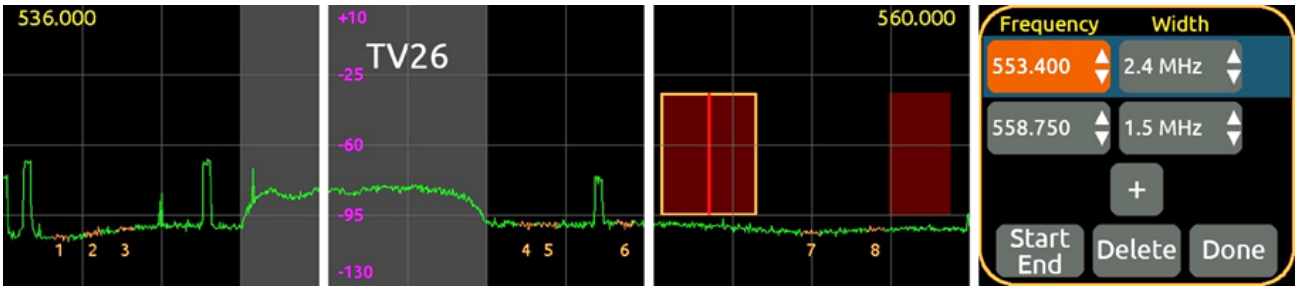
- Locate the vertical blue frequency marker within a Tuning Band, then press the Control knob to select the Tuning Band that the marker is located in.
- If the blue frequency marker is located within an overlapping Tuning Band ‘gray’ strip, pressing the Control knob will display a prompt asking to select the Upper or Lower Band. Cancel the popup by pressing the triangle button.
- When a Tuning Band is selected, the RTSA mode is automatically selected for that Tuning Band.

13.3 Exclusion Regions

Create Exclusion Regions to prevent RX channel frequencies from being manually assigned or AutoAssigned to specific frequencies or frequency ranges. This can be helpful in avoiding certain blocks of frequencies that are reserved for other uses e.g. IEMs. Up to 12 Exclusion Regions can be created.

Note: An Exclusion Region can span neighboring filter ranges.

Note: The vertical blue frequency marker used for assigning frequencies cannot be located within an Exclusion Region.



Exclusion List

From the RTSA or Scan Mode view, tap the Exclusions button in OLED 4 to display the Exclusions List.

The Exclusion List displays all created Exclusion Regions. Rotate the Control Knob to scroll through the list and highlight a region for editing. A new Exclusion Region can be created by selecting the '+' button, the last item in the list.

Creating an Exclusion Region

- Tap Exclusions in OLED 4 to display the Exclusion list. The frequency marker changes from blue to red.
- Tap '+' to create a new Exclusion Region centered on the red frequency marker.
  Note: If there are 3 or more exclusion regions already in the list, rotate the Control Knob clockwise to scroll to the '+' button at the bottom of the list.
  The new Exclusion Region appears in the spectrum as an orange-bordered red region with a default width of 0.4 MHz (400 kHz). The frequency cell in OLED 4 is automatically highlighted orange indicating it is ready to be set.

- There are two methods for creating Exclusion Regions. Toggle between the two methods with the bottom left button in OLED 4 labelled either ‘Start End’ or Freq Width’.
    - Using the Frequency and Width method.
        - Set the Exclusion Region’s center frequency by rotating the Control Knob or tapping anywhere in the spectrum.
        - Set the Exclusion Region’s width by tapping the width cell so that it is highlighted orange then rotate the Control Knob.
        - Tap the width cell to deselect it.
    - Using the Start and End frequency method.
        - Tap the Start cell then set the start frequency by rotating the Control Knob or tapping anywhere in the spectrum.
        - Tap the End cell then set the end frequency by rotating the Control Knob or tapping anywhere in the spectrum.
        - Tap the End cell to deselect it.
- Repeat steps 2-3 to create additional Exclusion Regions.
- Tap Done to Exit the Exclusion List.

Selecting an Existing Exclusion Region for Editing or Deleting

- Tap Exclusions in OLED 4 to display the Exclusion List.
- Select an Exclusion Region by scrolling through the Exclusion List or tapping a Region on the spectrum display. The selected exclusion region is indicated by an orange border.
- Once selected, tap a Start, End, Frequency, or Width cell to edit the Exclusion, or tap the Delete button and choose whether to delete the selected Exclusion Region or All Exclusion Regions.

Chapter 14: AutoAssign

Use AutoAssign to find and automatically assign multiple clean frequencies to selected RX channels. AutoAssigned RX Channel frequencies are by default, automatically sent to their assigned NexLinked transmitters.

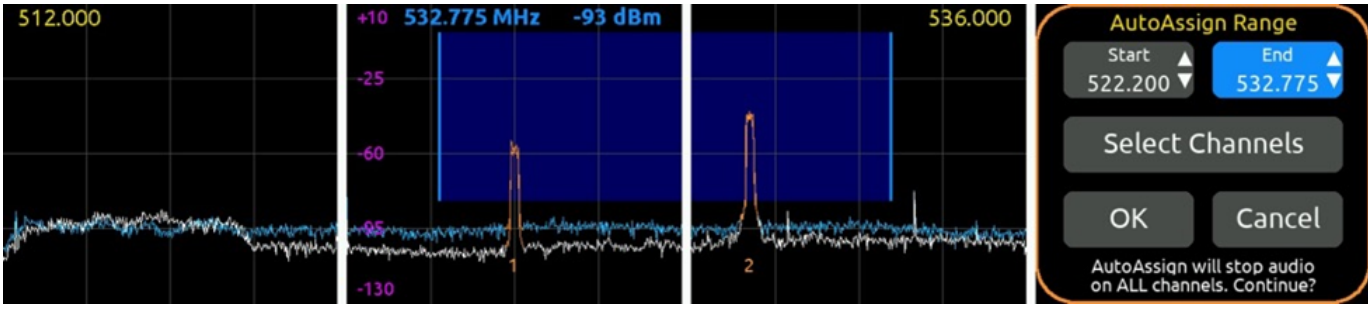
The AutoAssign Process

AutoAssign performs the following steps:

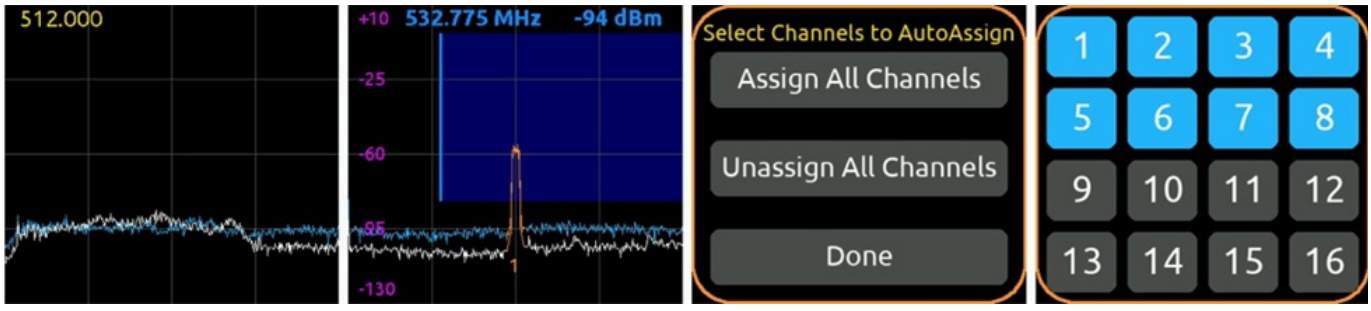
- Disables RF for those transmitters assigned to selected RX channels. (RX channels are selected by tapping the Select Channels button in the AutoAssign view)
- Stops audio on all channels.
- Analyzes the selected AutoAssign range for clean frequencies and assigns them to enabled RX channels and their paired transmitters.
- RF is re-enabled for those transmitters that were ON prior to the AutoAssign process.
- If it is not possible to find clean frequencies for all the selected RX channels, a popup displays how many channels out of the total were assigned.

How to Start the AutoAssign Process

- Tap the Main Menu > AutoAssign icon. The RTSA View appears with the full tuning band range highlighted blue. The AutoAssign Range popup is displayed in screen 4 with the Start button already selected.



- Tap Select Channels in OLED 4 to display the Select Channels popup. Choose channels to AutoAssign, then tap Done.



- Tap OK to start the AutoAssign process.
- From the RTSA:

- Tap the display or rotate the Control knob to position the AutoAssign vertical start marker at the frequency where the AutoAssign range should start.
- Tap the End button in OLED 4, then tap the display or rotate the Control knob to position the AutoAssign vertical end marker at the frequency where the AutoAssign range should end.
- Tap Select Channels to display the Select Channels popup. Choose channels to AutoAssign, then tap Done.
- Tap OK to begin analyzing the selected range.

  Note: By default, the full range of the band is selected.

  Note: It is not possible to select a range less than 1 MHz

  Note: It is not possible to set an End frequency lower than the Start frequency.

AutoAssign can also be instigated from the RTSA View:

- Press the Control knob to display the 'Assign Frequency To:' list.
- Select 'Auto Assign'.

  Note: Channels are not necessarily assigned in numerical order from lowest to highest frequency.

Chapter 15: Audio Outputs

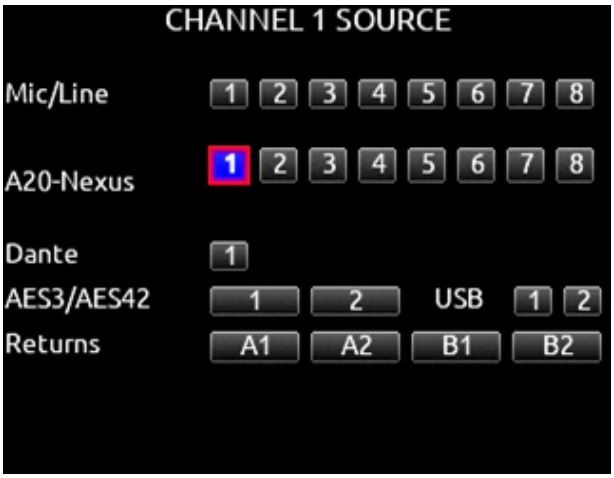
The Astral ARX16 has 32 audio outputs which can be fed from up to 16 receiver main/aux paths. Multiple receiver channels can be summed to any audio output by assigning them to the same main or aux path from their 1RX Views. These 32 audio outputs are fed to other devices via the analog, AES, and Dante physical output interfaces. When standalone, Astral ARX16 can also be set up to convert incoming Dante channels 1-16 to analog and/or AES outputs. All Audio and Sync settings are configured from the Audio Out Menu.

When docked to an 8-Series mixer/recorder, the Astral ARX16's multichannel outputs 1-16 are output via the expansion port to the 8-Series and Astral ARX16's analog, AES, and Dante outputs are disabled. Outputs 17-32 are disabled when docked to an 8-series. Audio Outputs are configured in the Audio Out Menu.

Routing Astral ARX16 Audio when Docked to an 8-Series Mixer/Recorder

From an 8-Series channel screen, select any one of the Astral ARX16's audio outputs as channel source. Astral ARX16 outputs are only shown when an Astral ARX16 is docked via the expansion port and enabled via the 8-Series System > Expansion Port menu.

888 Mixer/Recorder Channel Screen



Routing Astral ARX16 Audio to Dante Outputs

The Astral ARX16 audio outputs [1-32] are hardwired to its Dante transmit channels [1-32] respectively. Astral ARX16's Dante transmit channels are named Astral ARX16_Tx1, Astral ARX16_Tx2, Astral ARX16_Tx3 etc.

Use Dante Controller running on a MAC or PC computer to route Astral ARX16's Dante outputs to any Dante device on the network. See https://www.audinate.com/products/software/dante-controller

Note: Astral ARX16 stores its Dante routing to/from other Dante devices, even after power cycling. As such, once setup, the computer running Dante Controller is no longer required unless the routing needs to be changed.

The Astral ARX16 is identified on a Dante network by its ‘Astral ARX16 Name’. The default Astral ARX16 Name is Astral ARX16-[last 6 characters of the Astral ARX16’s MAC address]. This name can be changed using Dante Controller or from the Astral ARX16’s Network menu.

Routing Astral ARX16 Audio or Dante Inputs to Analog or AES Outputs

Configure what to output from the top and bottom D-Sub connectors in the Audio Out > ‘Top D-Sub Output’ and ‘Bottom D-Sub Output’ lists. The options for both D-Subs are:

Disabled	Out 17-24 → Line	Dante 1-8 → Line
Out 1-8 → Line	Out 17-24 → 10	Dante 1-8 → -10
Out 1-8 → 10	Out 17-24 → Mic	Dante 1-8 → Mic
Out 1-8 → Mic	Out 17-24 → AES	Dante 1-8 → AES
Out 1-8 → AES	Out 17-24 → Guitar	Dante 9-16 → Line
Out 1-8 → Guitar	Out 25-32 → Line	Dante 9-16 → 10
Out 9-16 → Line	Out 25-32 → 10	Dante 9-16 → Mic
Out 9-16 → 10	Out 25-32 → Mic	Dante 9-16 → AES
Out 9-16 → Mic	Out 25-32 → AES	
Out 9-16 → AES	Out 25-32 → Guitar	
Out 9-16 → Guitar		

Headphone Output

The Astral ARX16’s 3.5 mm stereo headphone output provides direct monitoring of the Astral ARX16’s receiver channels or Dante inputs.

- Set headphone gain [-40 to 20 dB] by rotating the Control knob. HP gain is briefly displayed in OLED 4. .

- Headphone Output Routing
  - RX 1-8 St: Monitors receivers 1-8 with odd receiver output routed to the left ear and even receiver output routed to the right ear. (RX 1-12 or RX 1-16 St options are offered if 4-channel expansion licenses are installed)
  - RX 1-8 Mono: Monitors receivers 1-8 mono'd to both ears. (RX 1-12 or RX 1-16 Mono options are offered if 4-channel expansion licenses are installed).
  - Dante 1-16 St: Monitors Dante In 1-16 with odd Dante channels routed to the left ear and even Dante channels routed to the right ear.
  - Dante 1-16 Mono: Monitor Dante In 1-16 mono'd to both ears.
- When viewing a receiver channel's 1RX View, that receiver channel is solo'd in both ears.

Headphone Soloing

To solo an RX channel, open its 1RX View. The channel's audio is sent to both ears.
Use Audio Out > HP Solo Settings > Solo Control to choose where soloing is triggered:

- Local — from the front panel 1RX View
- Web App — from the Web App 1RX View

To monitor the solo on a remote output, select a destination using HP Solo Settings > Send Solo To (options: None, Out 1–32). You can choose how the solo behaves at the destination output:

- Summed — solo is added to existing audio
- Override — solo replaces (mutes) existing audio; enable Solo Mutes Program to activate this mode

Audio Out Sample Rate

- The sample rate of the AES and Dante digital outputs is determined by the Audio Out > Sample rate and Sync Reference settings.
- The Astral ARX16 outputs digital audio at 44.1, 48, or 96 kHz sample rates. Factory default is 48 kHz.
- The sample rate can only be set when the Sync Reference is set to Internal or BNC In (when receiving timecode). Otherwise, the sample rate field is read-only.

Audio Out Sync Reference

The Astral ARX16's Dante and AES outputs can be sync'd to the following sync reference sources:

- Internal
- BNC In (Word Clock or LTC). The Astral ARX16 auto-detects whether the incoming signal is Wordclock or timecode. A 75-ohm BNC input termination can be enabled or disabled using the switch in OLED 3 of the Timecode menu.
- Dante
- 8-Series (automatically selected when docked to an 8-Series)

The following table indicates how the digital output sample rate is determined for each type of sync reference source:

Sync Reference	Astral ARX16 Sample Rate Setting
Internal	44.1k, 48k or 96k
BNC In (Word Clock)	Determined by incoming Word Clock frequency
BNC In (LTC)	44.1k, 48k or 96k
Dante	Determined by Dante network sample rate
8-Series (automatically selected when docked to 8-Series)	Determined by the 8-Series sample rate. Timecode and sync reference are received from the 8-Series.

- If the selected sync reference input is not detected, the Astral ARX16 switches to its internal clock AND the HP encoder ring LED flashes orange to indicate that the selected sync reference is not present or invalid.
- When synced to Internal or Dante, the BNC In can still be used as an LTC source.

Tone Generator

Enable the Tone Generator to send a tone (sine wave) at a specific level and frequency to selected RX Channel outputs. The tone level can be adjusted from -20 to 0 dBFS and the tone frequency from 10 Hz to 20 kHz. When the Tone toggle is enabled, a popup appears confirming whether to turn on the tone or not. Tap Yes or No.

Tap Tone Routing to display Tone to RX channel routing screens. Select which RX channel outputs to route the tone to. When activated, the tone signal will be viewable on the selected RX channel audio meters in the RX Views. Tone on selected RX channels is fed to external devices by routing them to physical analog and digital outputs via the main and aux feeds to Audio Outs 1-32 in OLED 2 of the 1RX Views. To output via analog or AES, make sure to select the applicable Audio Outs in the D-Sub source drop down lists. Audio Outs 1-32 are directly fed 1:1 to Dante outputs 1-64.

If the Astral ARX16 is power-cycled with the tone generator enabled, on the next boot, all routed tone to outputs and headphones will be automatically disabled to prevent an unexpected audio disruption.

Audio Meters

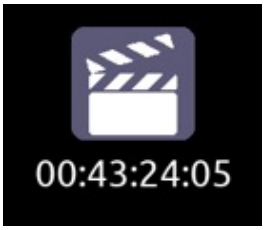
Audio meters for Audio Outs 1-32 are displayed in OLED 4. The meter scale uses colors to signify level thresholds as follows:

- Green: up to -20 dBFS
- Yellow: -20 to -12 dBFS
- Orange: -12 to -1 dBFS
- Red: 0 dBFS, clipping

Chapter 16: Timecode

With NexLink, the Astral ARX16 can simultaneously sync multiple Astral transmitters when they are set to REC only or REC+RF mode. This feature ensures zero-frame drift between multiple recording transmitters and therefore making it easy to sync with picture in post especially when the free SD-Utility software tool is used to conform and merge the individual Astral transmitter recordings into a single polyphonic wav file.

The Timecode menu displays BNC input LTC and its frame rate. Tap the timecode slate icon in the Main Menu to access the Timecode menu. The incoming timecode is displayed below the icon making it unnecessary to enter the Timecode menu to check valid timecode is being received.



Enable the 75-ohm BNC input termination in OLED 3 to ensure optimum signal integrity and prevent signal reflections. This applies to both WCK and LTC signals.

The Astral ARX16 receives timecode in two ways:

- **From the rear panel LTC/WCK BNC In port.** The Astral ARX16 automatically detects whether a word clock or timecode signal is connected. When the source is timecode, the frame rate is automatically detected.
- **From the 8-Series when docked via the expansion port.** When docked to the 8-Series, the Astral ARX16's BNC In port is disabled and timecode and sync are received from the 8-Series. Use the 8-Series Timecode/Sync menu to set up timecode and sync as necessary.

Syncing Astral transmitters to Astral ARX16 timecode.

- The Astral ARX16 will automatically sync timecode to all Astral transmitters when a timecode source is plugged into the BNC In port. When synced, the Astral transmitters blink their blue timecode LED for about 10 seconds and the Astral ARX16 displays 'TC synced' in transmitter 1RX View > TC menus (accessed by tapping the TC Icon).
- An Astral transmitter is also synced from the Astral ARX16 by connecting its USB-C port to the Astral ARX16 USB-A port while in the Timecode menu. When connected, the Timecode Menu displays a Sync Astral button at the bottom of OLED 4.

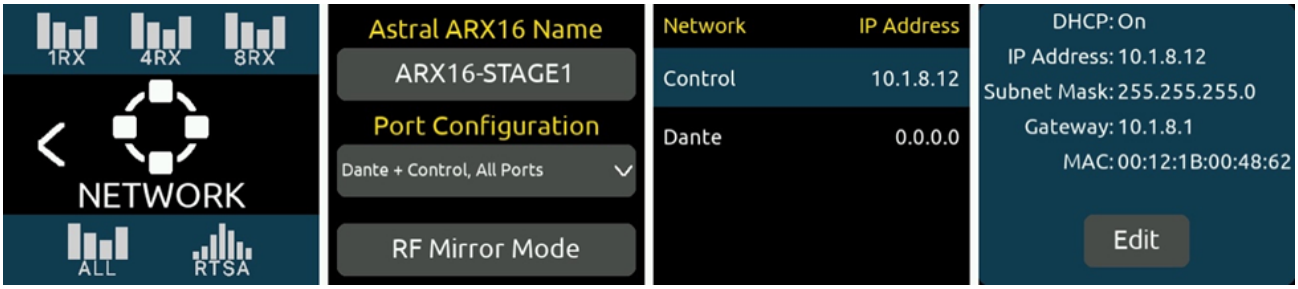
- The top of screen 1 displays how many of the NexLinked transmitters are synced.

Chapter 17: Network

The Astral ARX16 supports both Dante and IP control. IP control permits the following functionality:

- Remote control via the web app running on any computer, tablet, or smartphone.
- RF Mirroring Mode for allowing a second Astral ARX16 to mirror the RF and NexLink settings of a primary Astral ARX16.
- Using the Astral Outpost as a remote NexLink-antenna box.

From the Main Menu, tap the Network icon to access the Network menu.



17.1 Port Configuration when Astral ARX16 is Standalone

Incorporating a three-way network switch with two RJ45 ports and one SFP port, Dante and Control can be combined or segregated between the ports from the Network > Port Configuration list. Select ‘Ethernet Disabled’ to deactivate all network functionality. This can help to reduce power consumption.

Port Configuration	Dante/Ctrl 1 (RJ45)	Dante/Ctrl 2 (RJ45)	Dante/Ctrl 3 (SFP)
Control only, All Ports	Control		
Dante + Control, All Ports	Dante and Control		
Dante (1, SFP), Control (2)	Dante	Control	Dante
Dante Pri (1), Dante Sec (2), Control (SFP)	Dante Primary	Dante Secondary	Control
Dante Pri (1), Dante Sec + Control (2, SFP)	Dante Primary	Dante Secondary + Control	
Ethernet Disabled	-	-	-

When selecting a new port configuration, the following popup message appears: "Are you sure you want to change the port configuration? OK, Cancel."

17.2 Astral ARX16 Name

Tap to enter a unique name for the Astral ARX16. The Astral ARX16 Name is used as the Dante Device name in a Dante network and the network device name in a Control network.

The factory default Astral ARX16 Name is Astral ARX16-[last 6 characters of the MAC address]

Warning: Changing the Astral ARX16 Name will cause the Astral ARX16 to disconnect from the Network for about a minute.

17.3 Dante and Control IP Settings

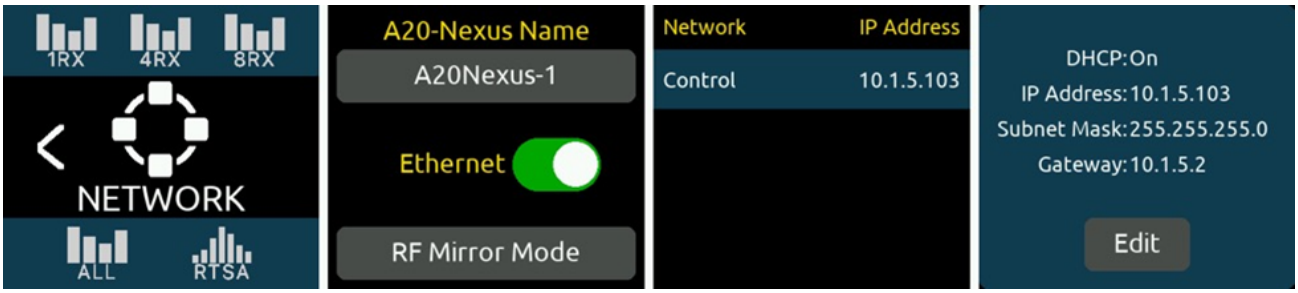
Astral ARX16 supports both DHCP and static IP address setup. Dante and Control can be independently configured for DHCP or static IPs.

- When set to DHCP and connected to a DHCP server, Astral ARX16 automatically configures its IP address, subnet mask and gateway.
- When DHCP is Off, manually edit the static IP address, subnet mask and gateway fields. Tapping each field brings up the virtual keyboard. Hit Set to apply the settings.

Note: When making network changes (Port Configuration, IP addresses, etc.), allow time for the changes to take place. This can take a minute or two.

17.4 Port Configuration when Astral ARX16 is docked to an 8-Series

Dante is disabled when the Astral ARX16 is docked to an 8-Series and all ports are set to Control. Port Configuration settings are hidden as they are no longer required. An Ethernet On/Off toggle switch is displayed allowing the enabling/disabling of Web control, Astral Outpost and RF Mirroring functionality.



17.5 RF Mirror Mode

RF Mirror Mode allows a second Astral ARX16 unit to mirror the RF and NexLink settings of a primary Astral ARX16 such that if the primary unit fails or loses power, the secondary ('Backup') unit continues to receive and output audio seamlessly as well as taking over NexLink control of paired Astral transmitters. It is the perfect redundant system for mission critical events where failure is not an option. The following settings are mirrored:

- TX List
- NexLink menu switch –> "Manually set Frequency, Modulation, and Privacy on Transmitters"
- RX channel settings: Frequencies, Modulation, Privacy, Gain, HPF, and Polarity
- Global RX Out Gain
- DiGiCo Console List (when Network > RF Mirror Mode > Mirror DiGiCo Console List is On.)

  Note that in RF Mirror mode there are two entirely separate audio feeds: one from the primary unit, and one from the secondary unit. There is no automatic switching of the audio feeds - it is incumbent on the user to switch the audio externally. Tip: When using DiGiCo consoles, if the primary fails, the secondary unit can issue an RF Mirror macro command to the console to switch over from its Main to Alt inputs seamlessly.

The software version, country, and number of RX channels (based on installed expansion licenses) must be identical between the Primary and Backup units before mirroring can be enabled.

To configure an Astral ARX16 as a Backup to a Primary Astral ARX16:

- Connect one of the Backup's ethernet ports to one of the Primary unit's ethernet ports.
- Ensure both Primary and Backup units' ethernet ports are set to Control in their respective Network Menus.
- On the Backup unit, go to the Network, tap the RF Mirror Mode button in OLED 2 and enter the IP address of the Primary unit in the Primary IP Address box.

- Set the Backup unit's RF Mirror Mode to On.
- Select either `Local` or `Primary` to use any Astral Outpost connected to the mirrored or primary Astral ARX16. *Hitting cancel will keep RF Mirror Mode disabled.*

- Once setup is complete, the Status field & OLED border color indicate the state of the Backup unit as follows:

Status Message	OLED Border Color	Description
Mirroring Disabled	None	RF Mirror Mode is disabled.
Connecting to primary unit	Red	Establishing connection to Primary unit. This typically only appears very briefly unless the Backup is unable to connect to the Primary.
Mirroring Primary unit	Yellow	Backup unit is mirroring the Primary's settings successfully (TX List, NexLink Tuning Mode, RX channel settings, Global RX Out Gain, Console List). The Primary is still responsible for NexLink control.
Serving as Primary unit	Green	The Primary has failed (e.g. loss of power) and the Backup has taken over full NexLink control from the Primary.
Country mismatch	Red	Displayed when the Primary and Backup's country settings do not match. These settings must match before Mirroring can be enabled.
Software version mismatch	Red	Displayed when the Primary and Backup's software versions do not match. These must match before Mirroring can be enabled.
Channel count mismatch	Red	Displayed when the Primary and Backup's number of available RX channels are not matched. These must match before Mirroring can be enabled.

- When the Backup unit has established connection to the Primary and is ready to activate Mirror Mode, the following message is displayed:
  "The existing TX List will be cleared and replaced with the Primary's TX List. Continue? OK, Cancel".

- Select Cancel to disable Mirror Mode.
- Select OK to continue activating Mirror Mode. Once Mirror Mode has been successfully activated, the OLED borders illuminate red and the Status field displays “Mirroring Primary unit”.

A message will also be displayed with the option to continue using the Backup unit’s Outpost configuration in the event it takes over (Local) or to mirror the Primary unit’s Outpost configuration (Primary).

NexLink commands and settings are grayed out on the Backup. These only become active if the Primary unit fails. The following popup is displayed if any RF-related control on the OLEDs is touched:

“That setting cannot be modified while mirroring another unit”

- Should the Primary unit fail, lose network connectivity, or power down, the Backup unit seamlessly takes over NexLink control and receiver duty, the Status field displays “Serving as Primary unit”, and the yellow border surrounding all OLEDs changes to green. If the Primary unit comes back online, it is prevented from communicating with its transmitters or Astral Outposts until the Backup unit is switched off or Mirror Mode is disabled.

Disabling Mirror Mode

- Tap the Mirror Mode toggle to disable Mirror Mode.
- If the Backup is serving as Primary unit (i.e. displaying green borders), the following popup appears: “Turning off Mirror Mode will unpair ALL transmitters. Continue? Yes, No”
  - When Yes is selected, the Backup unit exits Mirror Mode and its TX List is cleared.
  - When No is selected, the Backup unit remains in Mirror Mode.

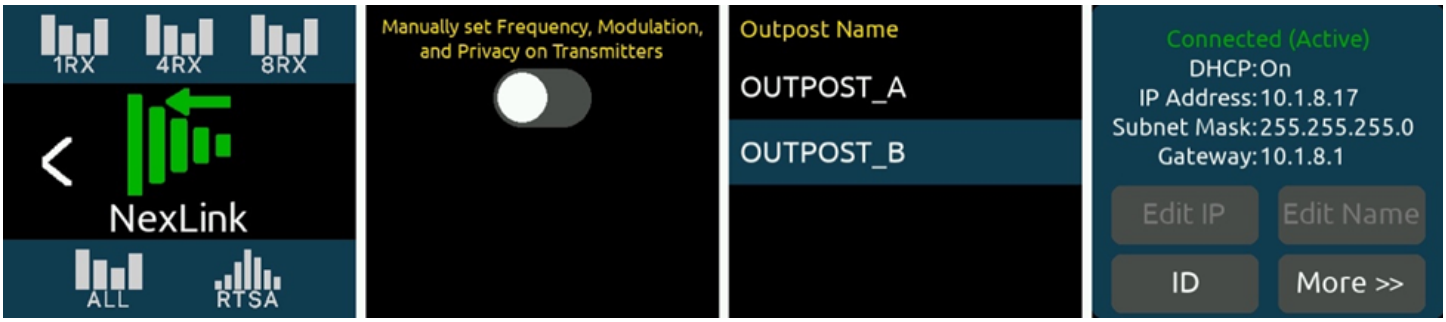
Chapter 18: NexLink Menu

The Astral ARX16 can wirelessly control and monitor Astral transmitters via NexLink over long distances. NexLink is Sound Devices’ proprietary protocol for long-distance remote control of Astral transmitters. The Astral Outpost is a remote NexLink antenna box which can be used to remotely locate the NexLink

antennas closer to the action. Up to eight Outposts, together with local NexLink antennas, form a NexLink network where all nodes simultaneously transmit and receive data. The first device to successfully receive a message acts upon it. All 'active' Outposts automatically join the network without any user interaction. To prevent an Outpost from being part of the network, remove its ethernet connection or power it down. When multiple Outposts are in use, the RX View NexLink signal strength meters display the highest value. See Astral Outpost for further information.

Note that only the Astral ARX16's local 2.4 GHz antennas, not the Astral Outpost's antennas, are used when wirelessly pairing, performing wireless firmware updates or pairing to Astral Remote. Both local Astral ARX16 and Astral Outpost antennas are used to wake up transmitters that have been off for more than 4 hours.

Tap the NexLink Menu Icon in the Main Menu to access NexLink settings and the paired Outpost List.



Before using an Astral Outpost, it must be paired and configured with the Astral ARX16 by connecting its USB-C port to the Astral ARX16's USB-A port.

18.1 Pairing and Connecting a New Astral Outpost

- Connect the Astral Outpost via its USB-C port directly to the Astral ARX16 USB-A port, not via a USB hub. The Astral ARX16 automatically pairs to the Astral Outpost and displays it in the list.
- The Astral Outpost's default name is 'Astral Outpost-MMMMMM' where MMMMMM are the last 6 digits of the MAC address. Its name can be changed by tapping the Edit Name button which is ungrayed when connected via its USB-C port to the Astral ARX16 USB-A port.
- Connect the Outpost to the Astral ARX16's control network via ethernet or fiber.

- By default, the Astral Outpost's DHCP is enabled. When enabled, the Astral Outpost is automatically assigned an IP address by a connected DHCP server.
- The IP settings can be configured by tapping the Edit IP button which is ungrayed when connected via the Outpost's USB-C to the Astral ARX16 USB-A port.

Edit IP, Edit Name, and Restore Settings can only be selected when the Outpost is connected via its USB-C port to the Astral ARX16's USB port.

18.2 Manually Set Frequency, Modulation, and Privacy on Transmitters

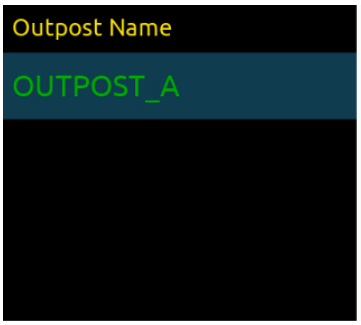
Determines whether Astral transmitter frequency, modulation, and privacy settings are automatically or manually sent from the Astral ARX16 to the Astral transmitter over NexLink. When the toggle switch is disabled, these settings are automatically sent from Astral ARX16 to the transmitters. When the toggle switch is enabled, it is necessary to manually set frequency, modulation, and privacy on both the Astral ARX16 and transmitters.

Note: If these settings do not match between the Astral ARX16 and transmitters, audio is not received.

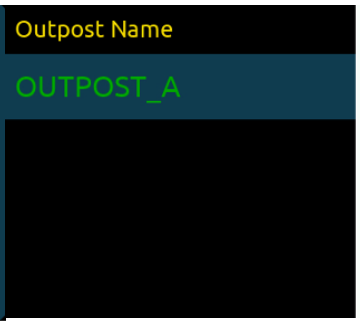
18.3 Astral Outpost List

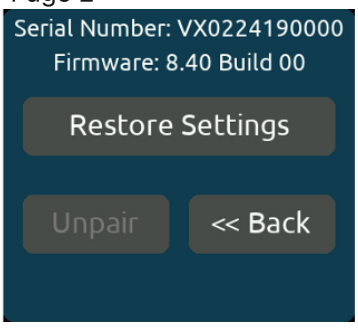
OLED 3 lists paired Astral Outposts in alphanumeric order. OLED 4 has two pages. Toggle between them by tapping 'More...'

OLED 4 Page 1



OLED 4 Page 2





OLED 4 Page 1

- **Status:** Displays the Astral Outpost's USB and network connection status
  - Connected (Active): Green. Network connected; Outpost is active.
  - ---: Network not connected.
  - USB: USB-C connected to Astral ARX16 USB-A port. USB must be connected to edit the Outpost settings. When Outpost's USB-C is connected to Astral ARX16, 'USB' is displayed before the network connection status.
- Network Information:
  - DHCP status
  - IP address
  - Subnet Mask
  - Gateway
- **Edit IP:** The IP settings can be configured by tapping the Edit IP button which is only ungrayed when connected via the Outpost's USB-C to the Astral ARX16 USB-A port.
- **Edit Name:** With USB-C connected to Astral ARX16, tap Edit Name to edit the Outpost's name.
- **ID:** Tap to identify an Astral Outpost when multiple Astral Outposts are paired, powered and connected to the Astral ARX16's control network. Tapping the ID button will flash the selected Astral Outpost's rear panel power LED, blue.
- **More >>:** Tap to select page 2.

OLED 4 Page 2

- **Serial Number:** The Astral Outpost's serial number.
- **Firmware:** The Astral Outpost's firmware version.
- **Restore Settings:** Tap the button to return the selected Astral Outpost's name and IP address to factory defaults. Default IP Address, Subnet Mask, and Gateway are all set to 0.0.0.0. Default Name is 'Astral Outpost-MMMMMM' (where MMMMMM= the last 6-digits of the Outpost's MAC address). The

Astral Outpost must be connected to Astral ARX16 via USB-C for the Restore Settings button to be ungrayed.

- **Unpair:** Tap Unpair to remove the selected Astral Outpost from the list and Astral ARX16's cache of known, configured Astral Outposts. Note: It is not possible to unpair when the Outpost's USB-C port is connected to the Astral ARX16 USB-A port.

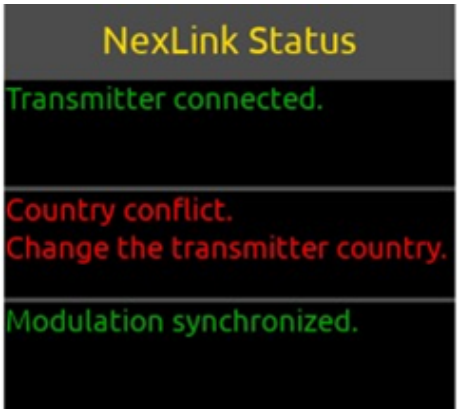
Updating Astral Outpost Firmware (via USB Thumb Drive)

- Download the latest. prg update file from the Sound Devices website.
- Copy the .prg file to the root of an Astral ARX16 formatted USB thumb drive.
- Power the Astral Outpost via >15 W PoE or USB-C source.
- Insert the USB thumb drive into the Astral Outpost's USB-A port. The Astral Outpost automatically detects the .prg file and starts updating. During the update process, the Astral Outpost's rear panel power LED flashes alternating red, green, and blue. Once the update has been completed successfully, the rear panel power LED changes to solid blue and the .prg file is automatically erased from the thumb drive. If the update fails, the power LED flashes red.

Updating Astral Outpost Firmware (via Ethernet from Astral ARX16)

- Download the latest. prg update file from the Sound Devices website.
- Copy the .prg file to the root of an Astral ARX16 formatted USB thumb drive
- Insert the thumb drive into the Astral ARX16's USB-A port.
- Ensure Astral Outpost is connected via Ethernet to the Astral ARX16 and powered on.
- Go to the Astral ARX16's front System button, tap More, select Firmware Update, choose the Astral Outpost from the Device list, then select Start Update in OLED 4.
- The Astral ARX16 sends the firmware to the Astral Outpost over Ethernet. During the update process, the Status field in Page 1 displays the firmware upload then update progress and the Astral Outpost's rear panel power LED alternately flashes red, green and blue. Once the update has been completed successfully, the rear panel power LED changes to solid green and the .prg file is automatically erased from the thumb drive. If the update fails, the power LED flashes red.

18.4 NexLink Status Alerts



The NexLink Status View allows you to monitor NexLink communication between the Astral ARX16 and Astral transmitters. This can assist in resolving NexLink issues. Access the NexLink Status View from the 1RX View Gear menu, TX View Gear menu, or, if the channel is sourced from multiple transmitters, directly from the 1RX View's NexLink Status button.

A receiver channel's Gear icon, NexLink Status button, and RF Frequency display turn red when there is a NexLink error.

NexLink Status Alerts

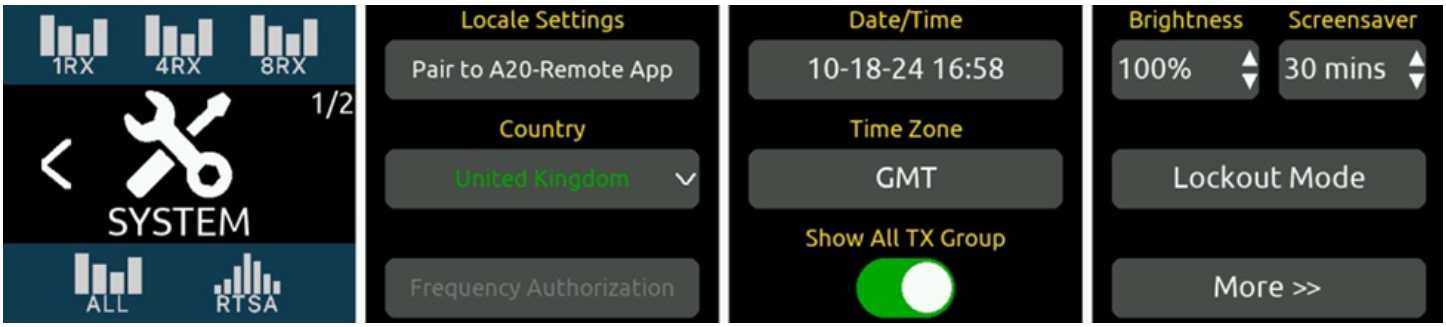
Message	Text Color	Description
Searching for transmitter	Yellow	An Astral transmitter has been linked to the Astral ARX16 but NexLink communication to the transmitter has not yet been established or has been lost. The transmitter may be out of range, or its battery drained.
Transmitter powered off	White	An Astral transmitter is NexLinked to Astral ARX16 and is powered off.
NexLink connected	Green	An Astral transmitter has been successfully NexLinked to Astral ARX16
UHF frequency synchronized	Green	The frequency of the transmitter matches that of the receive channel that it is assigned to.
Modulation synchronized	Green	The modulation of the transmitter matches that of the receive channel that it is assigned to.
Frequency mismatch. Set the transmitter frequency.	Red	The frequency of an assigned transmitter does not match that of the receive channel. Manually set the transmitter frequency to the same frequency as the receiver channel or set the Astral ARX16's NexLink Tuning Mode to 'Push'.
Modulation mismatch. Set the transmitter modulation.	Red	The modulation setting of an assigned transmitter does not match that of the receive channel. Manually set the transmitters modulation to the same modulation as the receiver channel or set the Astral ARX16's NexLink Tuning Mode to 'Push'.
Privacy key mismatch.	Red	The privacy key setting of an assigned transmitter does not match that of the receive channel. Manually set the transmitters

Set the transmitter privacy key.		privacy key to the same modulation as the receiver channel or set the Astral ARX16's NexLink Tuning Mode to 'Push'.
Country conflict. Change the transmitter country.	Red	The country code of the transmitter does match that of the Astral ARX16. No synchronization of settings will be done until these match. Either change the country from Astral Remote or from the Astral ARX16.
No receive frequency. Set the receive frequency	White	The frequency of the receive channel is set to 'Off'. In the 1RX or 4RX View frequency popup, set the channel to a valid frequency and ensure the channel is 'On'.

Chapter 19: System Menu

Tap the System Icon in the Main menu to access System settings. The System menu includes various system settings organized over two pages. Switch to the 2nd page by tapping the 'More >>' button.

System menu page 1



19.1 Pair to Astral Remote App (Locale Settings)

The Astral ARX16 must be paired with the Astral Remote iOS /Android app to set Country and activate Frequency Authorizations on Astral ARX16 and its paired transmitters.

- Download the Astral Remote iOS or Android app from their respective App stores
- Open the app and select the Manage Devices view
- From the Astral ARX16 > System menu, tap ‘Pair to Astral Remote App’
- The Astral ARX16, along with its name and firmware version automatically appear in the Astral Remote’s Manage Devices List

19.2 Country

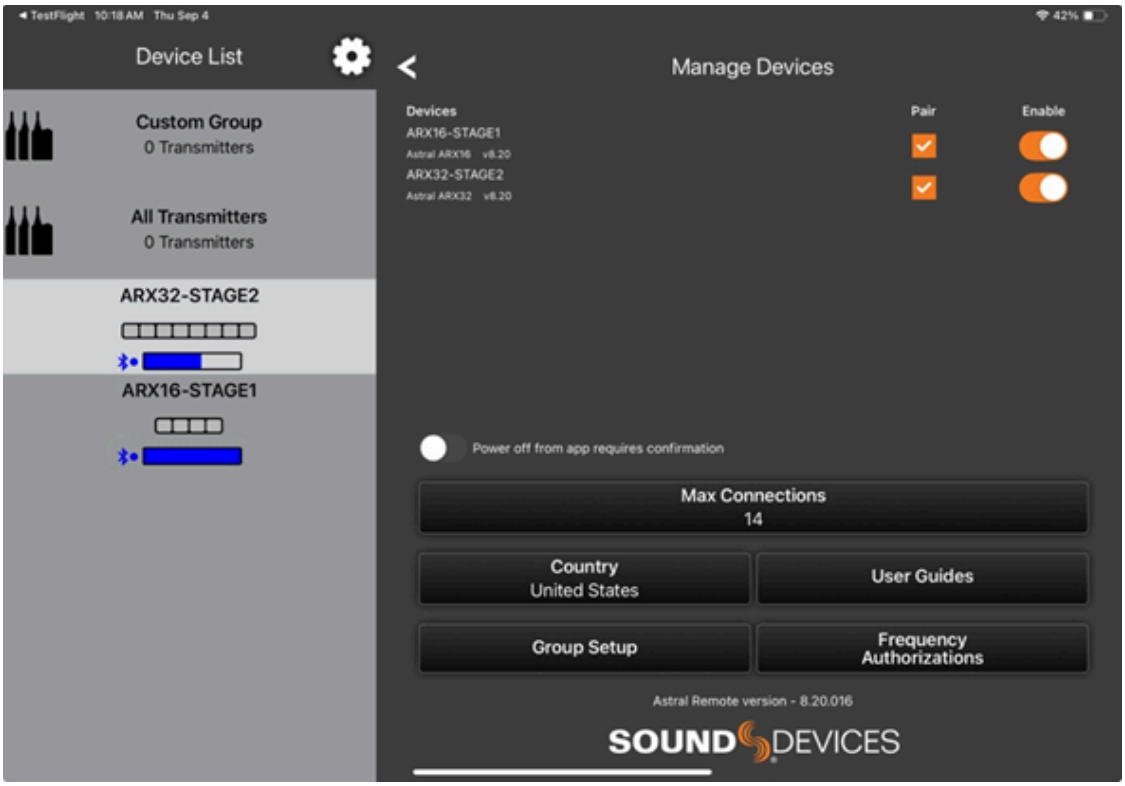
The Country setting determines which Tuning Bands, RF frequencies, and transmit powers are legally available for selection in a Country.

- Astral ARX16 and Astral transmitters must be set to the same Country.
- When the Country setting is changed, Astral ARX16 must restart for the changes to take effect.
- Changing the Country setting sets the Tuning Band to the default filter range for that Country.
- If the Astral ARX16 and an Astral transmitter’s country settings are not matched, a warning popup appears in OLED 1 as follows:

“Cannot use 1 or more TX as they are set to a different country than the Astral ARX16. Change country on the Astral ARX16 or the TX from the Astral Remote App.”

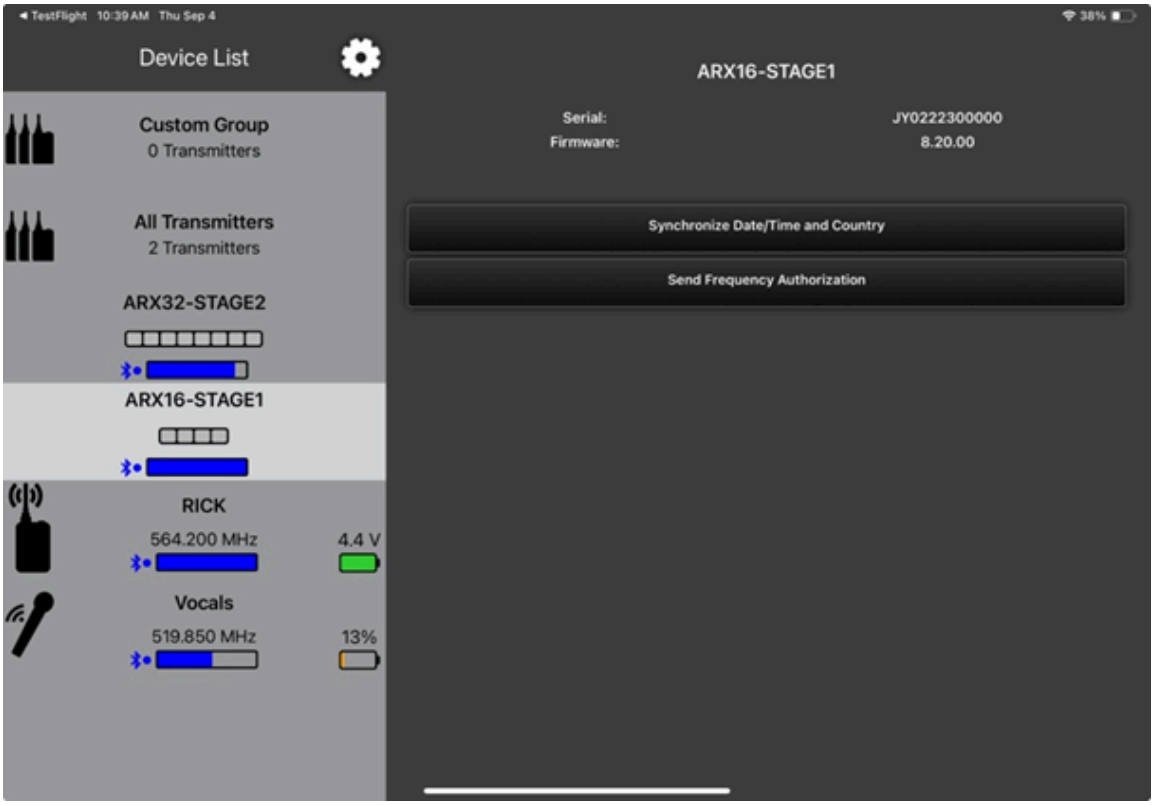
Country, OK.

The Astral ARX16 can quickly change the country setting of all paired transmitters automatically to make changing locations very easy. To accomplish this, the Astral ARX16 uses the Astral Remote iPhone/Android app along with a smartphone’s GPS to verify the current location The Astral ARX16 must be paired with the Astral Remote app to achieve this.



Once Astral ARX16 is paired, use Astral Remote to sync the mobile device's country (determined by the mobile device's location services) and date/time to the Astral ARX16.

19.3 Syncing Astral Remote's Country, Date, & Time settings to Astral ARX16.



- Select the Astral ARX16 in the Astral Remote app's Device List (left pane).
- In the Astral ARX16's Details View (right pane), tap the "Synchronize Date/Time and Country" button.
- When successfully synchronized from Astral Remote, the Astral ARX16's Country button displays the updated Country setting in green font and its Date/Time button displays the updated date and time. The Astral Remote app displays "Country Changed. Changing the country will not take effect until the Astral ARX16 is restarted."
- Restart the Astral ARX16 for the Country setting to take effect.

Once the Astral ARX16 is synced and restarted, it relays its Country and Date/Time information automatically to all NexLinked transmitters.

If the Astral Remote app is not available to sync Country to Astral ARX16, tap the Astral ARX16's Country button to manually set the Country. In this case, the Country setting is not automatically pushed to the

transmitters. The following message is displayed: “A manually selected country will not be automatically pushed to transmitters. Choose one anyway? Yes, No”

Tap ‘Yes’ to select a country from the list. “Changing the country will restart the unit. Continue?” is displayed. Tap OK to restart.

When manually setting the country on Astral ARX16, be sure to also manually set the Astral transmitters to the same country using Astral Remote. Refer to the Astral transmitter user guides for more information. If the Astral ARX16 and an Astral transmitter’s country settings are not matched, a warning popup appears in OLED 1 as well as a ‘Country conflict’ alert in the NexLink Status screen.

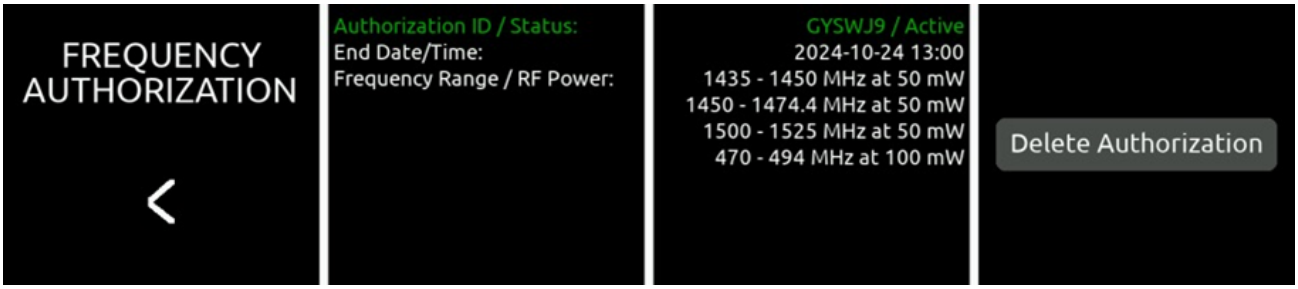
19.4 Frequency Authorization

Displays information pertaining to frequency authorizations. The button is grayed out if no valid Frequency Authorizations are loaded. See Restricted Frequency Authorization for further details.

- Authorization ID/Status: A Frequency Authorization can be “active” or “inactive”. In either case, the presence of the frequency authorization unlocks in the Astral ARX16 and paired transmitters the ability to tune to the frequencies and desired RF power levels listed. Only an “active” Frequency Authorization allows a transmitter to actually transmit RF on frequencies or at power levels not allowed in the transmitter’s current country. A Frequency Authorization must be “activated” by the paired Astral Remote app which determines whether the mobile device is within the effective time period, country and geolocation. If so, Astral Remote then activates the Frequency Authorization in the Astral ARX16 and its paired transmitters.

To activate a frequency authorization:

- In Astral Remote > Manage Devices > Frequency Authorizations, enter your approved Authorization ID (contact RF_Request@SoundDevices.com to obtain the necessary authorization.
- Tap the Submit button.
- Select a paired Astral receiver in the Astral Remote's Device List and tap 'Send Frequency Authorization'. 'Successfully sent Frequency Authorization' is displayed.
- Tap the Astral Receiver's System > Frequency Authorization button to access the Frequency Authorization view. 'Pending Restart' is displayed in yellow if the authorization was received successfully. Restart the receiver.
- Go to the Frequency Authorization view again to confirm that the authorization is loaded and displaying 'active' in green font.
- Activate the authorizations in paired transmitters by restarting them.
- End Date/Time: The Date/Time where the authorization becomes inactive.
- Frequency Range / RF Power: Up to 8 frequency ranges and their associated max RF power levels that are authorized to be used when a Frequency Authorization is active.



- Tap Delete Authorization to remove the frequency authorization. It will be removed from the Astral ARX16 and paired transmitters upon next bootup of each device.

19.5 Miscellaneous Settings

Date/Time

The Astral ARX16's Date/Time has two purposes:

- Sends the date/time to Astral transmitters where the value is used to set the creation time of the Astral transmitter recorded files.
- Sets the creation date/time of Astral ARX16 Quick Setup files.

Tap Date/Time to bring up the Date/Time popup, then enter MM/DD/YY and HH/MM/SS. In each field, rotate the Control knob to set a value, then press the Control to jump to the next field. Tap Done to store.

Time Zone

Set the time zone from GMT -12:00 to GMT +13:00

Show All TX Group

Shows or hides the All TX Group at the top of the TX List

Brightness

Tap to adjust the brightness of the OLED array and the LEDs.

Screensaver

The screensaver can help prevent OLED burn in. The screensaver time sets the duration from when the OLEDs were last touched to when the OLEDs display the screensaver. Select between 1 min, 5 mins, 15 mins, 30 mins, and never. The screensaver is canceled upon the touch of any front panel control.

Lockout Mode

Enable Lockout Mode to prevent unauthorized or accidental access to front panel controls including OLEDs, HP Encoder and triangle button. Lockout mode can be enabled locally or via the web app. When

Lockout mode is enabled, the HP encoder ring LED is backlit green to indicate that the Astral ARX16 is still on.

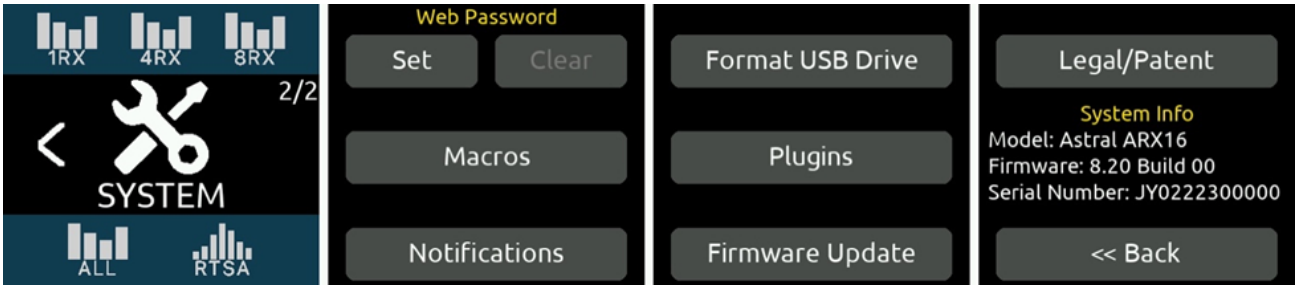
To enable Lockout mode from the Astral ARX16, tap the Lockout Mode button. The following popup is displayed:

“Are you sure?
To disable Lockout, tap the
left display whilst pressing HP.
OK, Cancel”

To disable Lockup Mode, tap the left display whilst pressing the HP knob.

Note: You can also use Show Mode to prevent accidental changes to the front panel screens - this disables touch essentially making the screens read-only. Press and hold the Control knob for 3 seconds to toggle Show Mode on/off. When on, an orange border is displayed around each screen and if a screen is touched, a ‘The screen is locked’ popup appears.

System menu page 2



Web Password

Tap Set to set a security password for accessing the Web App.

Tap to clear the Web App password. The button is grayed out when no password is set.

Macros

Tap to setup send and receive macro commands between Astral devices and DiGiCo consoles via an AstralComm control network. ‘AstralComm’ is a proprietary protocol specifically designed to

communicate commands between DiGiCo consoles and Sound Devices Astral devices. See Macros for detailed setup information.

Notifications

The Notifications popup menu provides options for enabling or disabling various notification popups from being displayed including:

- TX Power Off Confirm: When set to ON, powering off a transmitter from a 1RX View displays “Are you sure?”. Tap OK to power off the transmitter. Use this function to prevent accidentally powering down transmitters.
- Stop Confirmation: When set to ON, stopping a transmitter from recording from a 1RX View displays “Are you sure?”. Tap OK to stop the transmitter recording. Use this function to prevent accidentally stopping recording.
- Mute Confirmation: When set to ON, muting a transmitter from a 1RX View displays “Are you sure?”. Tap OK to mute the transmitter. Use this function to prevent accidentally muting transmitters
- RF Off Confirmation: When set to ON, setting RF to off on a transmitter from a 1RX View displays “Are you sure?”. Tap OK to disable RF on the transmitter. Use this function to prevent accidentally disabling RF on transmitters.
- Audio Off Warnings: When the toggle is off, the Astral ARX16 does not show a warning popup that audio will stop when switching Bands and when switching to Scan mode.
- Tx Battery Warnings: When the toggle is On, the Astral ARX16 flashes all its OLED’s borders red and displays a warning popup to indicate one of the paired transmitters is low on battery. Choose to ignore the warning or tap OK, in which case the warning will reappear.
- RX Power Off Confirm: When set to On, if the Triangle Button is pressed and held to power off the unit, a confirmation message appears, "Are you sure?". Tap Yes to confirm power down or No.
- Fire Macro Confirm: When set to On, if a macro is selected under System > Macros and the Fire button is pressed, a confirmation message appears, "Fire Macro ID x Are you sure?" (where "x" is the macro ID number). Tap Yes to proceed or Cancel.

Format USB Drive

A USB drive connected to the USB-A port can be used for updating firmware and saving quick setup files. Before using the USB drive, it must be formatted by the Astral ARX16.

- Tap Format USB drive, then select OK in the popup.
- USB Drives are formatted as FAT32.

Plugins

Tap Plugins to display and install licenses and plugins.

Firmware Update

See Updating Firmware

Legal/Patent

Displays legal and patent information for the Astral ARX16 across all OLED screens.

System Info

Displays model name, firmware version, and serial number

<< Back

Tap to go back to page 1 of the System menu.

19.6 Macros - AstralComm

'AstralComm' is a proprietary protocol specifically designed to send and receive macro commands between Sound Devices Astral devices and one or more DiGiCo consoles over a network.

Note: *Only DiGiCo SD or Quantum consoles running v20xx or later support Macro Outputs from the Astral ARX16.*

Commands can be triggered from the following:

a. Astral TX with the optional Astral TX Switch fitted.

b. Astral HH with the optional Control 1, 3, Switch rings, with one or three buttons or the switch fitted.

c. Astral ARX16 changing the transmitter status of: Power, Mic Mute, RF Mute, Record

For example, Control Ring buttons on multiple Astral HH transmitters could trigger different macros on one or more consoles to mute specific channels. Or perhaps a Astral ARX16's 'All TX Power On' group command could trigger a macro that unmutes all channels on a particular console.

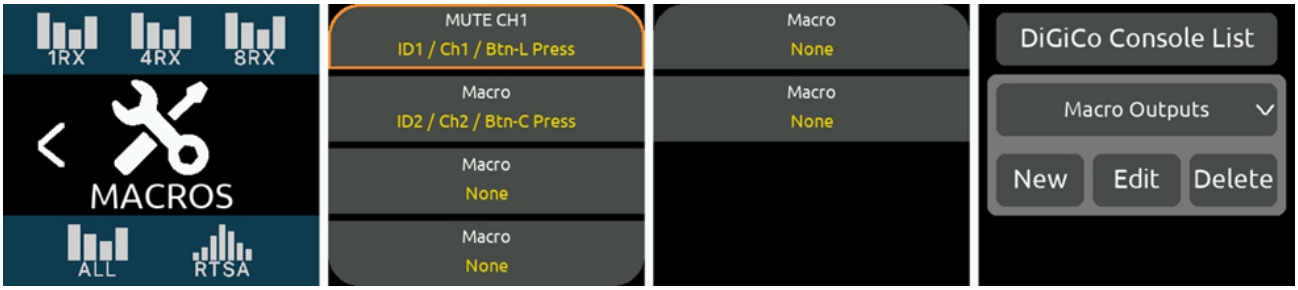
d. RF Mirror

This trigger allows you to automatically send a macro command from a secondary Astral ARX16 to a DiGiCo console if the primary Astral ARX16 fails.

For example, this could be used to trigger a DiGiCo console macro to switch from its 'Main' audio inputs to 'Alt' audio inputs so that show audio is not interrupted.

19.6.1 Establishing AstralComm Communication

System > Macros Menu



To establish communication between Astral ARX16 and a DiGiCo console, the following conditions must be met:

- Both must be connected via the same control network. See Network menu.
- The DiGiCo console's IP address must be added to the Astral ARX16's System > Macros > DiGiCo Console List in OLED 4.
- Astral ARX16 must be added to the DiGiCo console's Setup > External Control > External Devices list. Please refer to the console's Software Reference Manual for further information. Macro commands are acted upon if:
    - Astral ARX16 and DiGiCo console macros have matching command IDs.
    - The Astral ARX16 IP address matches the console macro's Device ID that has been assigned to that Astral ARX16's IP address.

19.6.1.1 DiGiCo Console List

Access the DiGiCo Console List (Macros > OLED 4) to add consoles to which macro commands will be sent. The Astral ARX16 broadcasts macro commands to all consoles in the list. Up to 10 consoles can be added. Tap Delete to remove consoles from the list.

***Note**: An AstralComm network can consist of up to ten Astral ARX16 receivers (standalone or in RF Mirror Mode) and ten DiGiCo SD or Quantum consoles.*

***Note**: When working with DiGiCo consoles with dual engines, add the IP address for each engine to the console list. Only the "active" engine will listen to the received AstralComm commands.*

19.6.2 Creating Macro Commands

AstralComm supports up to 256 macro commands. Ensure that Command IDs match between the Astral ARX16 and DiGiCo console.

Macro Output commands are sent from the Astral ARX16 and its paired Astral transmitters to trigger macros on a DiGiCo console. Each user-nameable command is defined by its Source, Condition, and Command ID.

Macro Input commands are received from a DiGiCo console to trigger actions on the Astral ARX16 or its paired Astral transmitters. Each user-nameable command is defined by its Target, Action, and Command ID.

Tap the Macro Outputs/Macro Inputs button in OLED 4 to switch the Macro menu display between Macro Outputs and Macro Inputs.

New: Tap New to create a new macro and add it to the list in OLEDs 2-7.

Edit: Select a macro in OLEDs 2-7, then tap Edit to edit it.

Delete: Select a macro in OLEDs 2-7, then tap Delete to delete it.

Fire: Fires the macro for test purposes.

MACRO OUTPUTS EDIT POPUP

Name

Enter a descriptive name for the command. The default name is ‘Macro’. Up to 20 alphanumeric characters are permitted.

Source

Selects which receiver channel or TX Group is the source for the macro command. Options include:

- RX Channel Number (1-n, where ‘n’ is the number of available RX channels installed).
- TX Group Number (1-8)
- All TX Group

- RF Mirror

Condition

To send a command from the selected source, choose the paired transmitter button action, transmitter control switch position, transmitter state, or Astral ARX16 action that should trigger it.

A. **Transmitter Button Actions (Applies to the Astral HH Control Ring buttons)**

[Button-L, Button-C, or Button-R] Release

[Button-L, Button-C, or Button-R] Press/Release

B. **Transmitter Control Switch Position (Applies to the Astral HH Control Ring Switch and Astral TX Switch)**

[Control Switch] On/Off

[Control Switch] On

[Control Switch] Off

C. **Transmitter State (Sends the command when the Astral ARX16 receives confirmation that the transmitter state is true)**

[TX Power, TX Mute, TX Record, or TX RF] is On

[TX Power, TX Mute, TX Record, or TX RF] is Off

D. Astral ARX16 Action (Sends the command immediately when the Astral ARX16 initiates the action from its interface or the web app. It does not wait to receive confirmation from the transmitter)

Initiate [TX Power, TX Mute, TX Record, or TX RF] On

Initiate [TX Power, TX Mute, TX Record, or TX RF] Off

[TX Group 1-8 Power, TX Group 1-8 Mute, TX Group 1-8 Record, or TX Group 1-8 RF] On

[TX Group 1-8 Power, TX Group 1-8 Mute, TX Group 1-8 Record, or TX Group 1-8 RF] Off

[All TX Group Power, All TX Group Mute, All TX Group Record, or All TX Group RF] On

[All TX Group Power, All TX Group Mute, All TX Group Record, or All TX Group RF] Off

Command ID

Range: None, 1 to 256. The Command ID must correspond with the DiGiCo console Macro's Command ID otherwise the console macro will not be activated.

MACRO INPUTS EDIT POPUP

Name

Enter a descriptive name for the command. The default name is ‘Macro’. Up to 20 alphanumeric characters are permitted.

Target

Selects which receiver channel or TX Group is the target for the macro command. Options include:

- RX Channel Number (1-n, where ‘n’ is the number of available RX channels installed).
- TX Group Number (1-8)
- All TX Group
- OLED
- Web App

Action

The action that is performed on the selected Target when an incoming macro command from a DiGiCo console is detected and validated.

A. Target Type: RX Channel Number

- TX Power On, TX RF On, TX Mute On, TX Record On, TX ID On
- TX Power Off, TX RF Off, TX Mute Off, TX Record Off, TX ID Off
- TX Power On/Off, TX RF On/Off, TX Mute On/Off, TX Record On/Off, TX ID On/Off (Macro toggles the On/Off state)
- Set Gain To [-6 to 60dB]
- Increase Gain By, Decrease Gain By [1 dB, 2 dB, 5 dB]
- Set HPF To [Off, 40 Hz, 60 Hz, 80 Hz, 100 Hz, 120 Hz, 160 Hz, 200 Hz]
- Increase HPF Frequency, Decrease HPF Frequency
- Set RF Power To [2 mW, 10 mW, 20mW, 40 mW, 100 mW]
- Increase RF Power, Decrease RF Power

B. Target Type: TX Group Number

- TX Power On, TX RF On, TX Mute On, TX Record On, TX ID On
- TX Power Off, TX RF Off, TX Mute Off, TX Record Off, TX ID Off

C. Target Type: OLED (Use to trigger the Astral ARX16 front panel to show a specific view)

- None, Show RX Channel 1-n, Show RTSA, Show TX List, Show Home, Show RF Menu, Show Audio Menu

D. Target Type: Web App (Use to trigger the Astral Web App to show a specific view)

- None, Show RX Channel 1-n, Show RTSA, Show TX List, Show Home, Show RF Menu, Show Audio Menu

Command ID

Range: None, 1 to 256. The Command ID must correspond with the DiGiCo console Macro's Command ID otherwise the macro will not be activated.

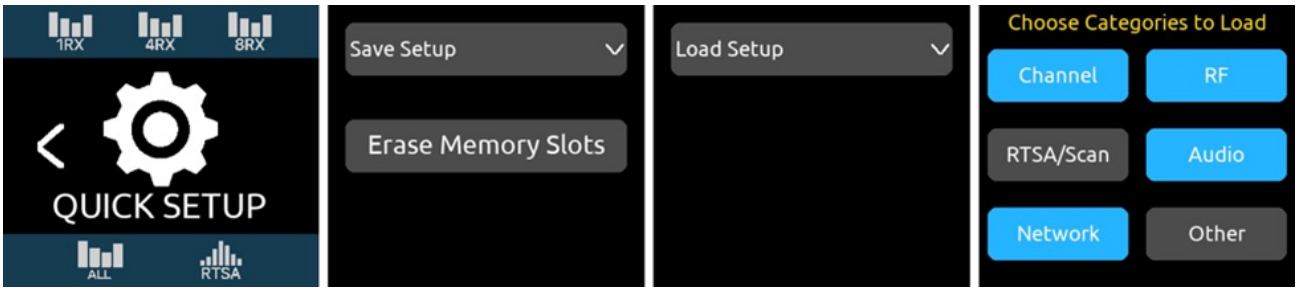
19.6.3 Macros and RF Mirror Mode

Macro commands created on a Primary Astral ARX16 are mirrored to a Secondary Astral ARX16 when RF Mirror Mode is activated. Based on whether the DiGiCo Console List is set to be mirrored or not, the system can be configured so that both units send macro commands or only the active unit sends macro commands. Select Network > RF Mirror Mode, then turn on or off the 'Mirror DiGiCo Console List' setting as follows:

- On = Only the active unit (Primary or Secondary) sends the macro commands. This is typically used in single console applications.
- Off = Both Primary AND Secondary units send the macro commands. This is typically used in scenarios where Primary and Secondary Astral ARX16 are each feeding their own consoles.

Chapter 20: Quick Setup Menu

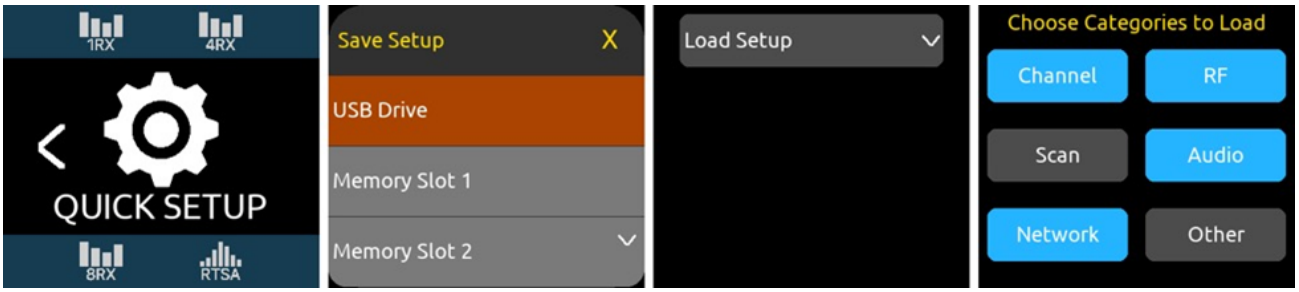
Quick Setup provides a way to save and load Astral ARX16 settings. Settings are saved to internal memory slots 1-8 or to a USB thumb drive connected to the USB-A port.



Save Setup

- All Astral ARX16's current settings are saved when saving a setup.
- Saving to an internal memory slot overwrites the existing setup file.

- Tap Erase Memory Slots to erase internal memory slots 1-8.
- Tap Save Setup to display a list of destinations (8 internal memory slots and USB thumb drive). Select a destination then use the virtual keyboard to name the setup. Tap Save to store the current Astral ARX16 settings.
- During the save process, “Saving Setup …” is displayed.



Load Setup

- Choose which categories (Channel, RF, RTSA/Scan, Audio, Network, Other) to load. This allows you to select only the settings you want to change and which ones you want to remain.
- Tap Load Setup to bring up a list of the setup files stored in the eight internal memory slots and USB drive. Selecting a setup from the list loads the selected categories from that setup. During the load setup process, “Loading Setup …” is displayed.

Category	Setting
Channel	RF Frequency
	Modulation
	Privacy key
	RX On/Off
	Transmitters assigned to channel
	Polarity
	Gain
	HPF
RF	Rear/Front Antenna Select
	A and B Antenna Bias Power
	A and B Antenna Cascade out
	Current Tuning Band
	RF History duration
	RF History Type
	NexLink Tuning Mode (Automatic or Manual)
RTSA/Scan	RTSA/Scan Zoom Mode
	RTSA/Scan Vertical dBm Scale
	RTSA/Scan Antenna Display Selection

	RTSA/Scan Antenna Display Characteristics
	Scan Width
	Bandwidth
Audio	Top D-Sub Output Routing and Analog Output Level
	Bottom D-Sub Output Routing and Analog Output Level
	Headphone Out Routing
	Headphone Out Gain
	Sync Reference and Sample Rate
Network	Port Configuration
	RF Mirror Mode
	Control: DHCP On/Off
	Dante: DFCP On/Off
	Control: Static IP address, subnet mask, gateway
	Dante: Static IP address, subnet mask, gateway
	Web App Show Mode
Other	Brightness
	Screensaver
	DC Out 1
	DC Out 2

	Turn On when Power is Applied
	Time Zone
	Notification settings

Default Settings

The Load Setup list also includes a ‘Default Settings’ option for restoring the Astral ARX16 to default settings. Selecting default settings unpairs transmitters from the TX List, clears settings, and erases memory slots. The ARX16 must reboot to complete the process.

Chapter 21: Web App

Remote control the Astral ARX16 from anywhere in the world using the Astral ARX16 Web App, a browser-based remote-control application for the Astral ARX16 that can be run on any computer, tablet, or smartphone. It duplicates virtually all the functions available from the Astral ARX16 front panel. The integrated RTSA view is particularly useful for performing real time spectrum analysis over a wired or wireless network. Export the RTSA data as .csv and .png files to keep a record of a location’s RF environment. The .csv files can be imported into many of the popular frequency coordination applications.

- The app’s GUI is dynamically optimized for the screen size on which it’s being viewed, whether a computer, tablet or smartphone screen.
- To ensure the web app functions correctly, use the latest version of Chrome, Safari, or Edge.
- Only one web client is supported. For reliable operation, do not have multiple browsers or tabs open with the same Astral ARX16 IP address.
- When using a Wi-Fi access point with the Astral ARX16, it is best practice to switch the Wi-Fi access point to 5 GHz so that the Wi-Fi doesn’t interfere with the 2.4 GHz NexLink.

21.1 Accessing the Web App

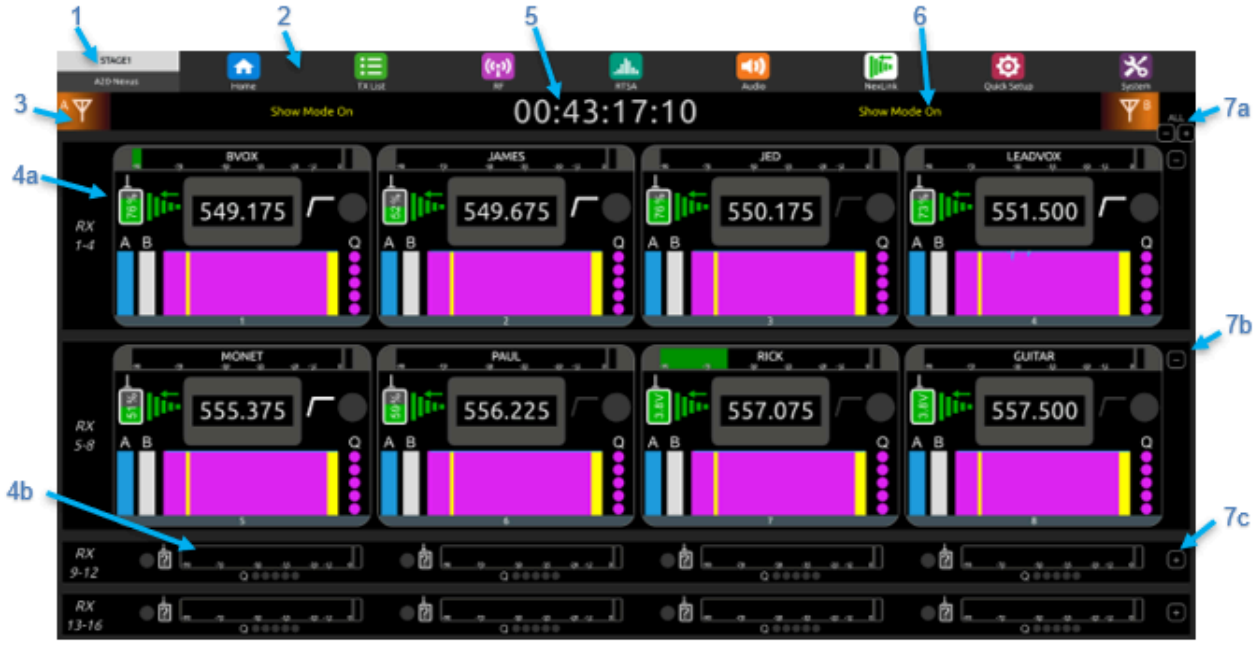
- The web-enabled device being used must be on the same network as Astral ARX16 to access the web app. A VPN is required if Astral ARX16 is outside of the local network.
- See Network for information on how to configure and connect the Astral ARX16 to a network.
- Go to the Network menu.
- Make a note of the IP address shown in the Control IP Settings screen.
- Enter that IP address into a web-enabled device's web browser.

Tips: When running multiple Astral ARX16 receivers, open each one in its own separate browser tab. It is also recommended to clear the Web App's browser cache after a firmware update.

With Chrome, it is recommended to set font size to medium in the Chrome Appearance Settings for correct appearance.

Note: All web app screenshots are captured using an Apple MacBook Pro 15" computer.

21.2



- **Astral ARX16 Name:** Displays the Astral ARX16 Dante and Control network name.

- **Menu Tab Bar:** Displays the various menu tab icons. Click a menu tab icon to display its menu.
- **Antenna Limiter / Overload Indicators:** Indicate whether the Astral ARX16's A and B antenna inputs are approaching overload or overloading. 'A' antenna indicator is shown screen left and 'B' antenna indicators are shown screen right. Red = Overload. Orange = Approaching overload.
- **RX Channel:** Displays important parameters for each RX channel. Click to access a detailed view of the RX channel.
    - Expanded RX Channel View. Shown when '+' is clicked
    - Collapsed RX Channel View. Shown when '-' is clicked
- **Timecode / Command Status Display:** Displays Astral ARX16 timecode (when received via the rear TC BNC port) or status of commands sent to the Astral ARX16.
- **Show Mode / RF Mirror Mode Status:** Indicates whether Show Mode or RF Mirror Mode are active. In these modes, the Web App is read-only. Enable Show Mode from the System menu.
- **Expand / Collapse / ALL Icons:** RX channel rows can be expanded or collapsed; Click '+' to expand and '-' to collapse. Click 'ALL' to expand or collapse ALL channels.
    - All
    - Collapse
    - Expand

21.3 Menu Tabs

21.3.1 Home

Displays an overview of all receiver channels. See above. Click an RX Channel to view its detailed view, aka 1RX View.

21.3.1.1 1RX View

- Duplicates the functionality of the Astral ARX16's front panel 1RX View. See 1RX View.
- When Mode is set to RF Only, the (Rec)ord button is grayed out.

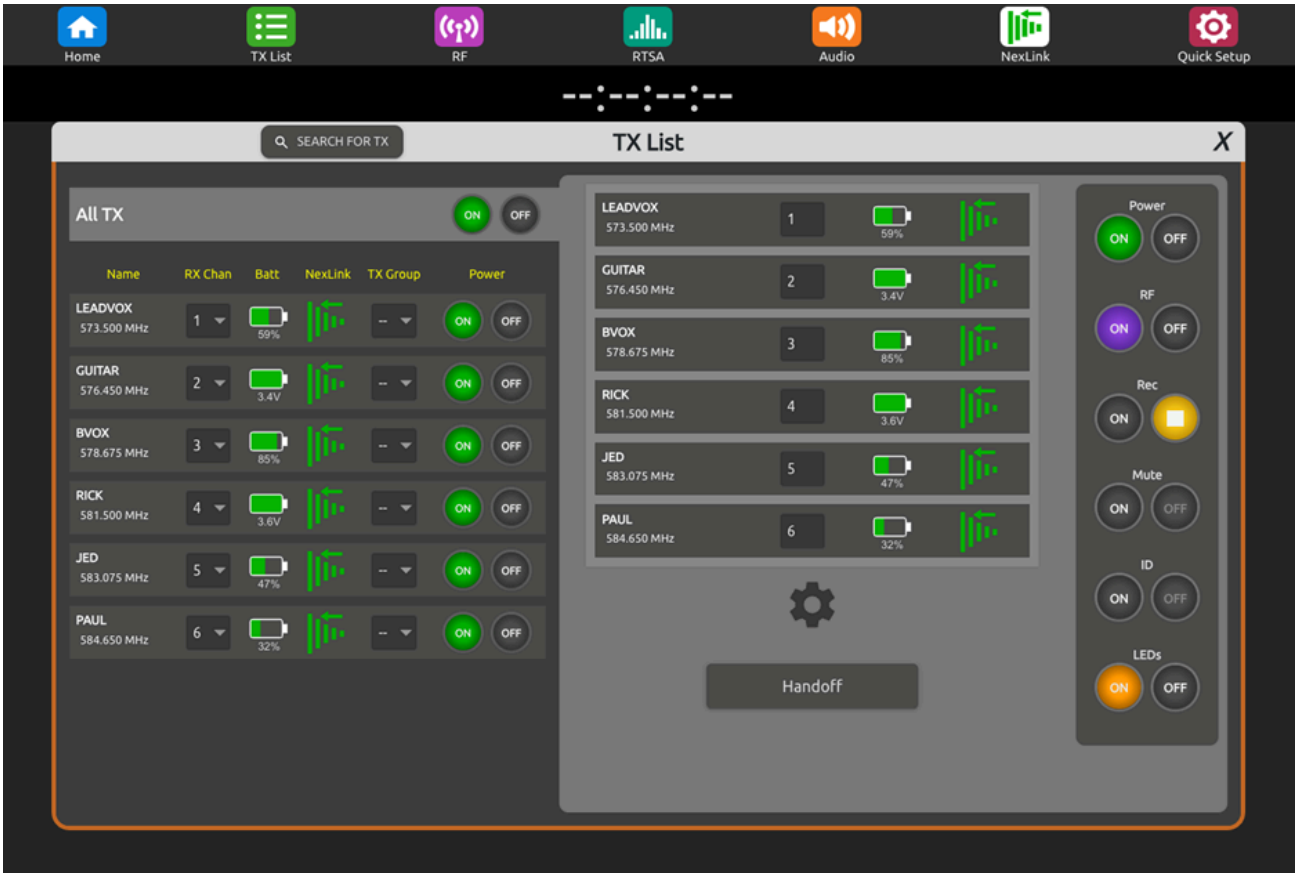
- **Receiver Channel:** Click to jump straight to another receiver channel's 1RX View.
- **Name:** Click to edit the paired transmitter's name. Double-click to highlight the whole name for editing.
- **Frequency:** Click to edit the receiver channel's frequency. Double-click to highlight the whole frequency for editing.
- **Frequency Selector:** Click to open a window to select frequency and to enable/disable the RX channel.
- **Select TX:** Click to select a paired transmitter for the RX channel. There are two options depending on whether a single or multiple transmitters are assigned to the channel.
    - **Single TX assigned:** Click to select a paired Astral transmitter from the list.
    - **Multiple TX assigned:** A multi-transmitter icon in the Select TX button indicates that multiple TX are assigned to the channel. Click the button to display a list of all transmitters currently assigned. From here, turn a transmitter's RF On/Off and/or set its audio offset gain. When one transmitter's RF is enabled, the other transmitters' RF outputs are automatically disabled to

prevent interference.

- **Gear Menu:** Duplicates the Gear menu in the front panel's 1RX View. See 1RX View
- **Exit:** Tap or click to exit back to the Main View.
- **Transmitter Control Buttons:** NexLink transmitter control buttons for Power, RF, Record, Mute, ID, and LEDs
- **Receiver and Transmitter Settings:** RF Power only applies to the transmitter. Modulation, Mode, and Privacy apply to both transmitter and receiver. Gain, HPF, Polarity, and Audio Outs only apply to the receiver channel. All transmitter settings are sent over NexLink.
- **RF History duration:** Click to adjust the RF History duration from 30 to 600 seconds.
- **RF History:** Displays RF History data. See RF History.
- **RSSI Meters:** Displays the RSSI A and B meters for the antenna inputs.

21.3.2 TX List

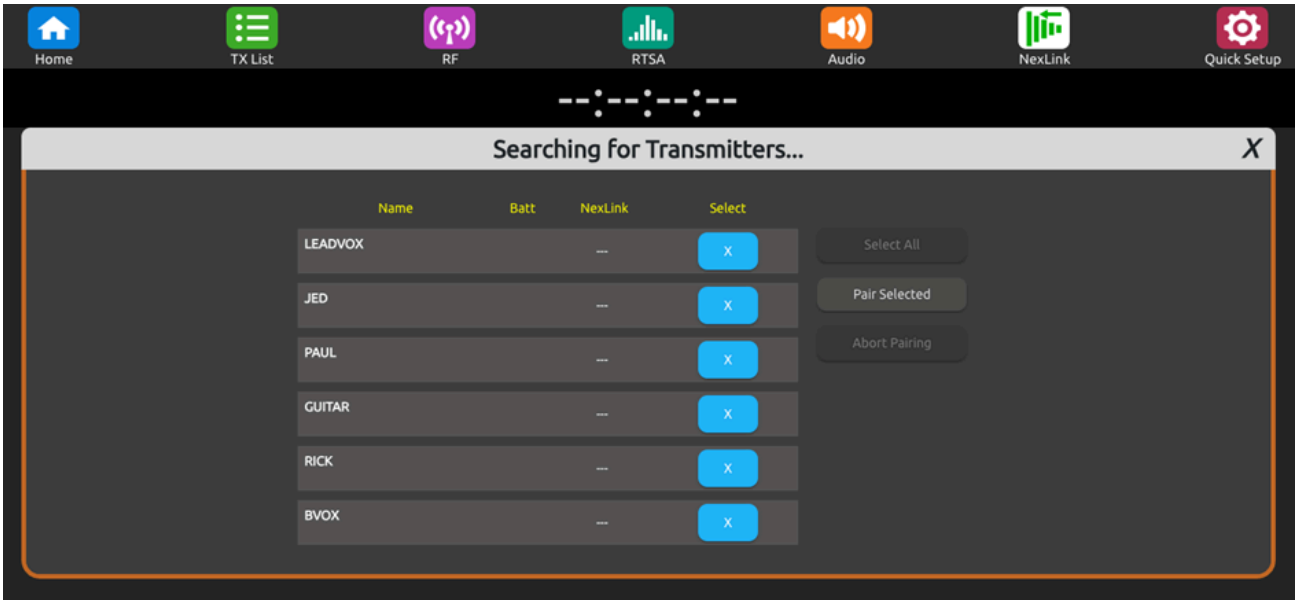
Displays a list of all paired Astral transmitters, TX battery level, which RX channel they are assigned to, their NexLink status, and TX Group assignment. Each row includes quick access to transmitter Power On/Off control. Up to 64 transmitters can be paired with the Astral ARX16. Select a transmitter in the left pane to access its settings in the right pane. If at least 1 transmitter is assigned to a TX Group (1-8), that group is displayed as a row above the list of transmitters. Select that group's row to access its group controls in the right pane.

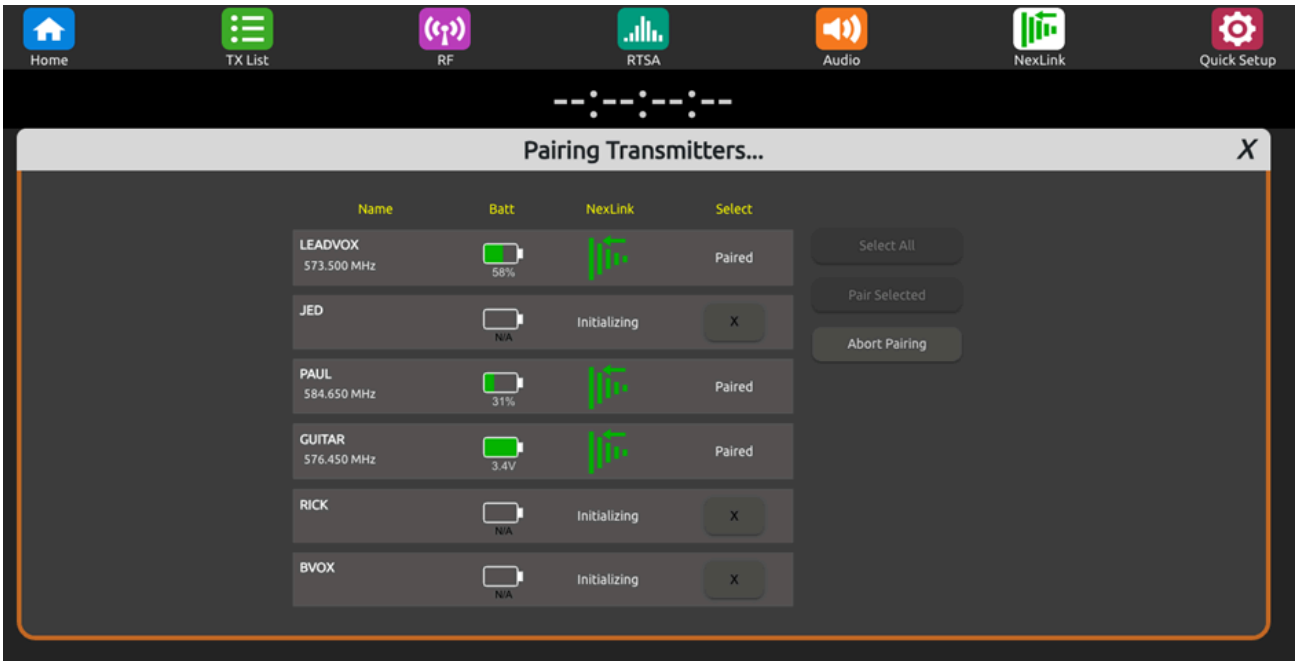


Searching For and Pairing to Transmitters Wirelessly

Click the 'SEARCH FOR TX' button in the TX List title bar to display the 'Searching for Transmitters ...' window. The system will search for transmitters that have been put into pairing or handoff mode. Pairing mode is indicated by flashing blue LEDs on the transmitters.

Click select boxes to choose which transmitters to pair with, then click the Pair Selected button. The system will now initiate the pairing sequence. The NexLink column displays the connection status: Waiting, Connecting, Initializing, Paired.





21.3.3 RF

Sets Antenna Mode, Bands 1-3, Antenna Pairs 1-3, RF and Waterfall History parameters. See RF Menu

Tuning Band: Click to select a filter range for the tuning band.

RF History: Select whether to display RSSI, Link Q, or both. Select the RF History's duration; this can also be changed from the 1RX views.

Waterfall History: Select the waterfall's resolution (Low, Medium, High) and speed (Very fast, Fast, Medium, Slow, Very slow).

Antenna In: Selects whether to use the front antenna pair or rear antenna pair. When the front pair are selected, the rear BNCs can be set as antenna cascade outputs in the Smart Antenna gear menus below.

Smart Antenna: Various settings for the smart antennas connected to antenna inputs A and B.

21.3.4 RTSA

The Web App's RTSA duplicates the functionality of the Astral ARX16's front panel RTSA. See Spectrum Analyzer.

- **Frequency Marker:** Click anywhere in RTSA graph to locate the Frequency Marker at any desired frequency. To move the marker, drag the cursor from side to side. The marker popup identifies the frequency (MHz) and its received signal strength (dBm). When the marker is placed at a restricted frequency, the 'Assign' button changes to 'Invalid' with a red background. To hide the marker, tap or click the X inside the marker popup.

  Tap or click the Assign button to display the 'Assign Frequency' list. Assign the Frequency Marker's displayed frequency to any receiver channel.
- **TV Channel:** When the TV Finder button is active, the plot displays TV channels that are discovered by the built-in TV Channel Finder algorithm.
- **Waterfall:** Mini waterfall display that is shown when clicking the Waterfall button. The waterfall can also be displayed as a full height overlay when clicking the Waterfall button again.

  Options: Select between Off, Mini Waterfall (displays the waterfall trace above the RTSA) or Waterfall overlay (displays the waterfall on top of the RTSA).
- **Transmitter Name / Number:** Displays the paired transmitter's name and receiver channel number. Roll over the name to display a gray rectangle (when Meters button is not enabled); click to jump to that receiver channel's 1RX view or drag horizontally to assign the channel to a new frequency. The NexLinked transmitter will automatically follow. Dragging to within 300 kHz of another receiver channel is not allowed. When dragging, the displayed frequency value changes from white to red to indicate that the selected frequency is within 300 kHz of another channel.

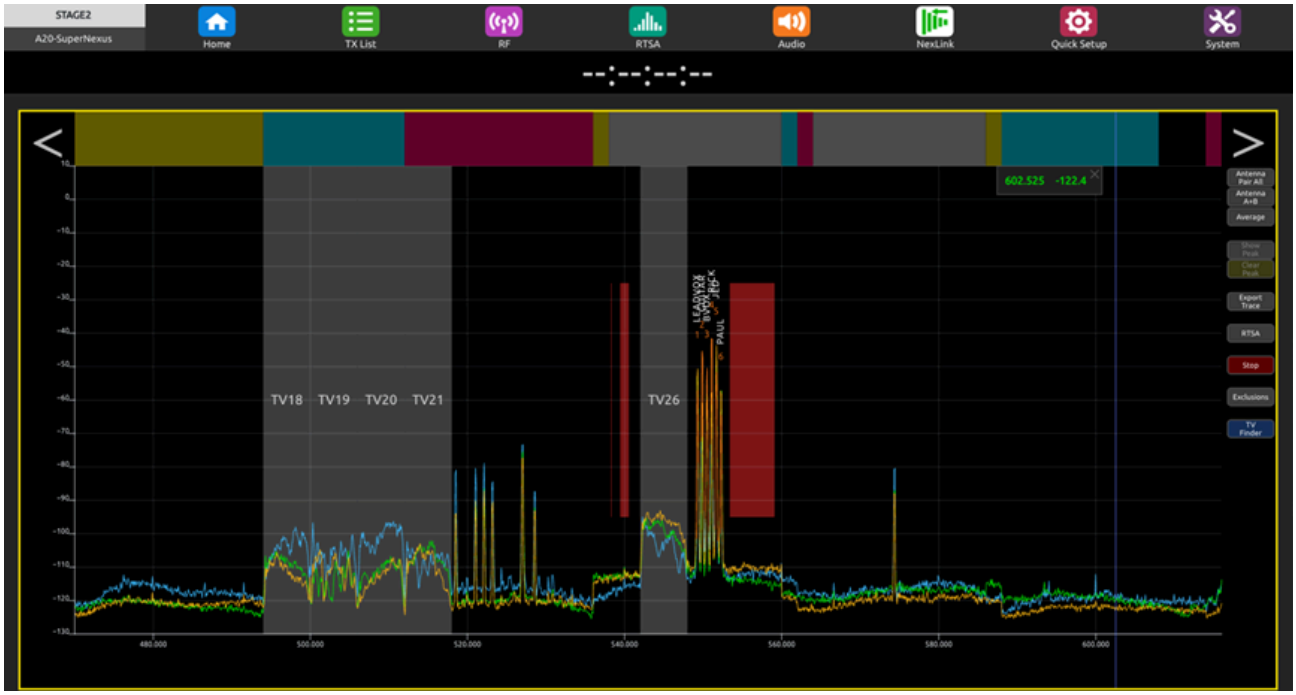
- **Exclusion Region:** A red region indicates the presence of a user-programmed exclusion region. It is not possible to assign receiver channels within exclusion regions.
- **RTSA Function Buttons:** Various RTSA functions including:
  - **Waterfall:** An RF history of RSSI levels versus frequency displayed as a color heat map ranging from black (low RSSI level), through blue, green, yellow, and orange to red (high RSSI level).

    The Waterfall has three display options selected by the Waterfall button top right.

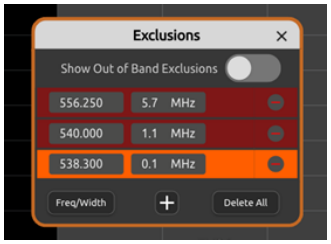
    i. Off (Waterfall hidden)
    ii. Mini (Waterfall displayed above the RTSA, as shown in the picture above)
    iii, Overlay (waterfall overlaid full height over the RTSA)

    The Waterfall duration (Very Slow to Very Fast) and resolution (High, Medium, Low) can be set in the RF tab.
  - **Antenna Pair Options:** Selects which antenna pairs are displayed.
  - **Antenna A/B Options:** Selects which antenna (Ant) signals are displayed.
    i. Ant A: Only antenna A (red line)
    ii. Ant B: Only antenna B (white line)
    iii. Ant A+B: Highest of Ant A and Ant B
    iv. Ant A, B: Both Ant A and Ant B
  - **Trace Type:** Sets the trace characteristic. Choose from Normal or Average.
  - **Show/Hide Peak Trace Button:** Selects whether the Peak trace (gray) is displayed.
  - **Clear Peak Trace Button:** Resets the peak trace.
  - **AutoAssign Button:** Tap to bring up the blue, translucent AutoAssign range window. Drag the left and right edges of the window to set the AutoAssign frequency range. Tap the Assign button to start the AutoAssign process or tap Cancel to exit.
  - **Export Trace Button:** Tap or click to save the RTSA trace data as a .csv file and .png image file. Files are saved to the browser's download destination.
  - **Scan/RTSA Button:** Tap to toggle the display between RTSA mode and Scan mode. The front panel OLEDs of Astral ARX16 follow the selection. The colored regions at the top of the Scan plot represent the different filters for the selected country. Click one of the colored regions to

select a filter.

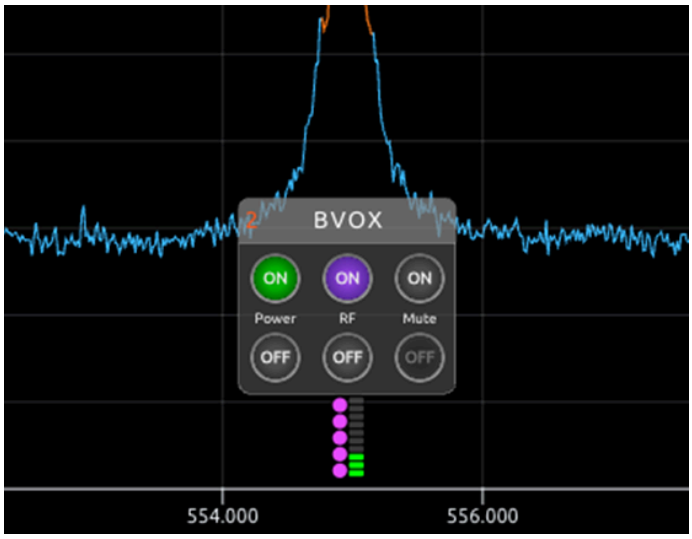


- **Start/Stop Button:** Starts and stops the RTSA or Scan.
- **Exclusions:** Click the Exclusions button to create, edit or delete an exclusion region.



- **TV Finder:** Click the TV Finder button to enable the TV Finder algorithm and display discovered TV channels.
- **Meter:** Click to display the Q and Audio meters for the receiver channels.

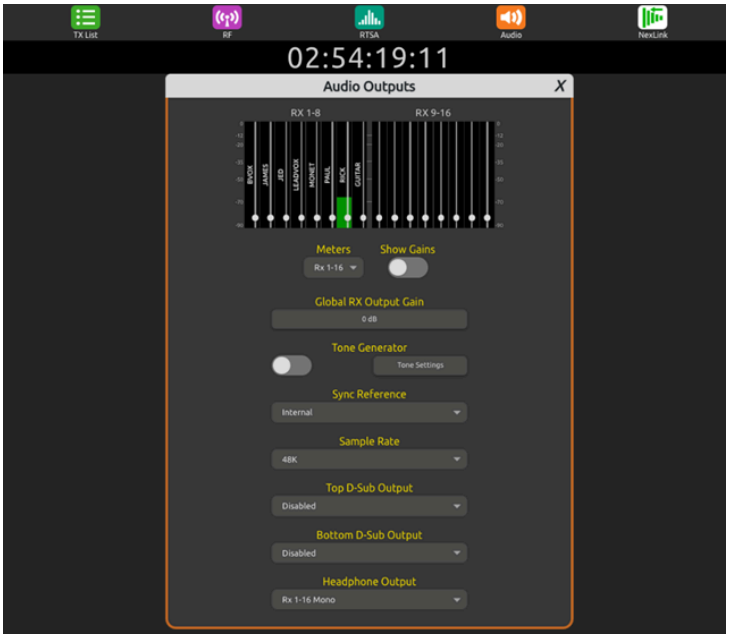
- **Frequency / X-axis:** Use pinch gestures or rotate a mouse wheel to zoom in/out horizontally.
- **Meter Button:** Click the Meter button to display the Q and audio meters for all displayed receive channels. Roll over a receiver channel's meters to display its paired transmitter's mini control panel. The control panel provides access to Power On/Off, RF On/Off, and Mute On/Off. Drag the mini control panel's title bar horizontally to assign the channel to a new frequency. The NexLinked transmitter will automatically follow. Dragging to within 300 kHz of another receiver channel is not allowed. When dragging, the displayed frequency value changes from white to red to indicate that the selected frequency is within 300 kHz of another channel.



- **Amplitude dBm / Y-axis:** Use pinch gestures or rotate a mouse wheel to zoom in/out vertically.

21.3.5 Audio

Sets sync reference, sample rate, AES, analog, tone generator, and headphone output routing. Use the RX channel metering, gain level sliders, and Global RX Output Gain to optimize audio output levels.



21.3.6 NexLink

NexLink related settings including setup of the Astral Outpost. See NexLink Menu

21.3.7 Quick Setup

Load and save settings files for quick configuration of the Astral ARX16's settings. See Quick Setup Menu

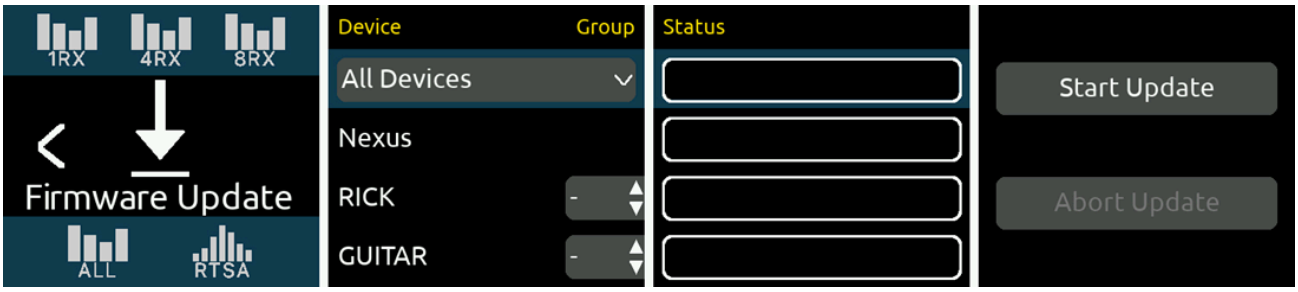
21.3.8 System

The System tab provides access to Power, Web App security, Lockout, Macro, and Notification settings as well as Astral ARX16 System Info. See System Menu for more info.

Chapter 22: Updating Firmware

Periodically Sound Devices issues new firmware for the Astral series. Make certain to register your products at the Sound Devices website to receive firmware update notifications.

Firmware updates are instigated from the System > Firmware Update menu. You can choose to update Astral ARX16 only, paired individual transmitters, all paired transmitters, custom groups of paired transmitters, Astral Outpost or all devices. When more than one device is selected, updates take place sequentially with the Astral ARX16 updated last.



Paired transmitters are updated wirelessly from the Astral ARX16 via Bluetooth. Wirelessly updating a transmitter requires that it is powered on. Once a PRG file has been completely sent to the transmitter, it automatically begins updating.

Note: Transmitters can also be updated via micro-SD card or USB-C. See the Astral transmitter user guides for further information.

- Download new PRG update files for your Astral ARX16 and transmitters from the Sound Devices website.
- Copy the PRG files to the root of a USB thumb drive formatted by the Astral ARX16. See System menu.
- Insert the USB thumb drive into the rear panel USB-A port.
- Access the System > Firmware Update to access the Firmware Update menu.
- Scroll the list in OLED 2 to select which device(s) to update.
    - Highlight Astral ARX16 to update Astral ARX16 only
    - Highlight a transmitter to update only that transmitter
    - To update more than one device, highlight the top row to open the Select Devices list, then choose:

i. All Devices (Astral ARX16, all paired transmitters, paired and connected Outposts)

ii. All Transmitters

iii. Transmitter Group 1-8 (Not available if transmitters have not been assigned to a group. Assign transmitters to a group via the Group column cells)

- Tap the Start Update button in OLED 4 to display the 'Choose [model name] update file' list.
- Select the applicable PRG update file for your device. If more than one device has been selected for update, a list is presented sequentially for each model. Once the last model's update file has been selected, tap OK to start the update process or Cancel to exit. Update progress & status is displayed in the status view in OLED 3.
- Once firmware has been updated successfully, 'Update complete' is displayed in the status view. See Update Status below.

Note: To wirelessly update paired transmitters, they must be powered on.

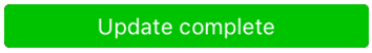
Note: Once Astral ARX16 has updated, it automatically restarts and displays "Unit has been updated."

Note: Do not use the web app whilst updating firmware. After an Astral ARX16 update, it is recommended to clear the web app's browser cache.

Note: Updating ARX firmware clears its TX List (unpairs all transmitters).

22.1 Firmware Update Status

Device firmware update progress and status is displayed in OLED 3. Status is reset when Astral ARX16 is restarted.

	PRG update file is being sent wirelessly to the transmitter
	Transmitter has received the PRG update file and is now updating. The Transmitter LEDs flash red, green, and blue
	Device has updated successfully. Device must restart before this status is displayed
	Device update process has been aborted by the user
	Selected PRG file is incompatible with the selected device. Update aborted
	Transmitter is out of range - bring closer to the Astral ARX16 Or battery is dead - replace with charged battery
	Transmitter battery is too low to begin updating. Update aborted Battery is considered too low when in the red state

22.2 Aborting a Firmware Update

Abort sending a PRG file to a transmitter

Highlight the transmitter that is currently being sent an update file and tap the ‘Abort Update’ button. Tap OK to abort or Cancel to continue sending the PRG file.

Abort Pending (Queued) Device Updates

Highlight the top row and tap the 'Abort Update' button or tap the left arrow in OLED 1 or the triangle button. Tap OK to abort pending updates or Cancel to continue updates uninterrupted.

Note: It is not possible to abort an Astral ARX16 update once it has started.

22.3 Refresh List

Press the Refresh List button to update the current list of connected devices. This list is automatically refreshed upon entering the Firmware Update menu. Use the Refresh List button only if you have remained in the menu for an extended period and the connected devices may have changed.

Chapter 23: Channel Expansion Licenses

The Astral ARX16 can be expanded from 8-channels to 12- or 16- channels by purchasing one or two 4-channel Expansion Licenses from the Sound Devices website. Permanent or rental licenses (1-week or 30-day) are available.

Channel Expansion licenses are installed via a USB thumb drive inserted into the Astral ARX16 USB-A port.

To install a license

- Download the purchased license (.lic file) from the Sound Devices website.
- Copy the license to the root of a USB thumb drive that has been formatted by the Astral ARX16.
- Insert the USB thumb drive into the rear panel USB-A port.
- Access the System menu, tap More ..., then tap Plugins.
- Tap Install.

Once installation has finished, the Astral ARX16 will automatically restart.

Chapter 24: Astral Wireless Guitar System

The Sound Devices Astral Wireless Guitar System delivers an enhanced level of sonic clarity and extended range for discerning musicians. It is designed to replace a high-quality guitar cable without altering the tone, feel, or level between your guitar and amplifier, maintaining an exact 0 dB input-to-output signal path for true cable-equivalent performance.

See the Astral Wireless Guitar System User Guide for detailed setup information

The Sound Devices Astral Guitar System comprises the following products:

- Astral multi-channel receiver (ARX8/ARX16 or ARX32)

Note: When operating the Astral Wireless Guitar System with an Astral ARX16 or ARX8, ensure that you use the XL-WPTA4-NEX Power Supply to achieve optimal grounding and eliminate hum.

- Astral TX transmitter
- Astral Guitar Box
- A20-TX Smart Guitar Cable (patent pending)
- A20-TX Guitar Strap Clip

Why Use the Astral Wireless Guitar System?

For generations, guitarists have understood that the sound and feel of a rig is shaped by every part of the signal path—the guitar and its pickups, cables, pedals, wireless system, amplifiers, and everything in between. Even seemingly small changes in cable capacitance, input impedance, signal level, or electrical grounding can change how a guitar responds and sounds. Going wireless has traditionally meant accepting some level of compromise, whether in tone, feel, noise performance, or the ability to faithfully reproduce the interaction between a guitar and the rest of the rig.

The Sound Devices Astral Wireless Guitar System was designed to eliminate those compromises from the entire signal path. At the guitar, the **patent-pending A20-TX Smart Guitar Cable** uses active, miniaturized circuitry built directly into the ¼" plug to precisely adjust capacitance and input impedance, allowing the player to recreate the electrical characteristics and feel of a traditional wired rig. That signal

is then carried by the **Astral TX** to the **Astral Receiver**, delivering the sonic integrity, RF performance, and reliability expected from Sound Devices. From the Astral Receiver's balanced guitar-level outputs, the **Astral Guitar Box** uses premium Lundahl transformers to convert the signal for direct connection to unbalanced 1/4" guitar rig inputs while preserving the tone, dynamics, and feel of the instrument. From guitar to amplifier, every component is designed to work together as one complete system—not a collection of compromises. The result is the freedom and reliability of wireless without giving up the tone, feel, or character of the rig you've built.

Key Features

- Adjustment of cable capacitance ranging from 0 pF to 1500 pF in increments of 25 pF. This range corresponds to 1 to 60 feet of a typical guitar cable, adjustable in 1-foot steps.
- Selectable input impedance options of 100k, 1M, and 10M ohms, enabling the guitar's pickup to experience the same input characteristics as the amplifier.
- An impressive 18V of signal headroom at the ¼" plug, ensuring no unwanted distortion and providing an extensive 140dB of dynamic range with any guitar or bass, including high-output humbuckers and active pickups.
- Fully digital modulation with a complete audio bandwidth spanning 10 Hz to 20 kHz.
- Ultra-low latency of 1.9 ms for superior responsiveness, which is particularly critical for in-ear monitoring.
- 0 dB gain from the ¼" input to the ¼" output, effectively replicating a cable so that the amplifier or pedalboard receives the guitar's output precisely.
- From balanced to unbalanced connections, the Astral Wireless Guitar System consistently delivers exceptional electrical and tonal performance throughout the entire signal path.

Additional Features

- Adjustment of these parameters can be performed locally via the Astral TX or remotely through the Astral Receiver or WebGUI via NexLink Technology.
- Two-sided, secure guitar strap clips designed to prevent the transmitter from loosening or detaching from the guitar strap.

- Ultra-low-noise circuitry ensures a clean signal even at the highest gain settings.
- Exceptional RF range and RF tuning bandwidth (169 MHz – 1525 MHz). The same transmitters and receivers are compatible for use in any country worldwide.

Chapter 25: Accessories

25.1 Included

- 2x Monarch Antennas
- 2x Articulating Arm with ¼″-20 mount for Mounting Monarch Antennas
- 2x 30″ BNC to BNC Antenna Cables
- 2x 2.4 GHz Antennas, SMA-M
- 2x Astral 2.4G Ant+Mount for Mounting to Astral ARX16 Side Panels
- 4x Rubber Feet
- 1x plastic SFP Cage Protective Cover
- Astral ARX16 Product Document
- Audio Product Portfolio Brochure
- 2x Promo Stickers

25.2 Optional

- Astral QuickDock
- Monarch Antenna (inc. articulating arm, BNC to BNC cable, BNC to SMA cable)
- Astral RX Shelf

- 2.4 GHz Antennas, SMA-M (set of 2)
- Astral 2.4G Ant+Mount
- XL-WPTA4 Power Supply
- Astral VHF Dipole BNC (set of 2 VHF antennas)

25.3 Astral QuickDock for 8-Series

The Astral QuickDock enables the Astral ARX16 to be docked to 833, 888, or Scorpio mixer-recorders. The bottom panel incorporates a multi-pin port that connects power from the 8-Series and passes the multichannel receiver digital audio from Astral ARX16 to the 8-Series.

When docked on an 8-Series:

- Power must be provided by the 8-Series - Astral ARX16 power inputs (TA4 and PoE+) are disabled.
- The Astral ARX16 and its NexLinked transmitters are controlled from the Astral ARX16 front panel or its web app. The 8-Series user interface is not used for control.
- Most Astral ARX16 rear panel connectors are disabled apart from the antenna connectors, the USB-A port, the Ethernet control ports, and the DC Outs.
- The USB-A port has the following capabilities when Astral ARX16 is docked on an 8-Series:
    - Pairing Astral transmitters to the Astral ARX16 by connecting a USB-C cable from the transmitter to the USB-A port.
    - Attaching a USB keyboard for entering text directly (e.g. receiver channel names) into the Astral ARX16.
    - Mounting a USB thumb drive for updating Astral ARX16 firmware.
    - Jamming 8-Series timecode to an Astral transmitter via the Astral ARX16.
- When docked to an 8-Series, the Astral ARX16 Ethernet ports can only be used for control, not Dante.

Attaching Astral ARX16 to an 8-Series

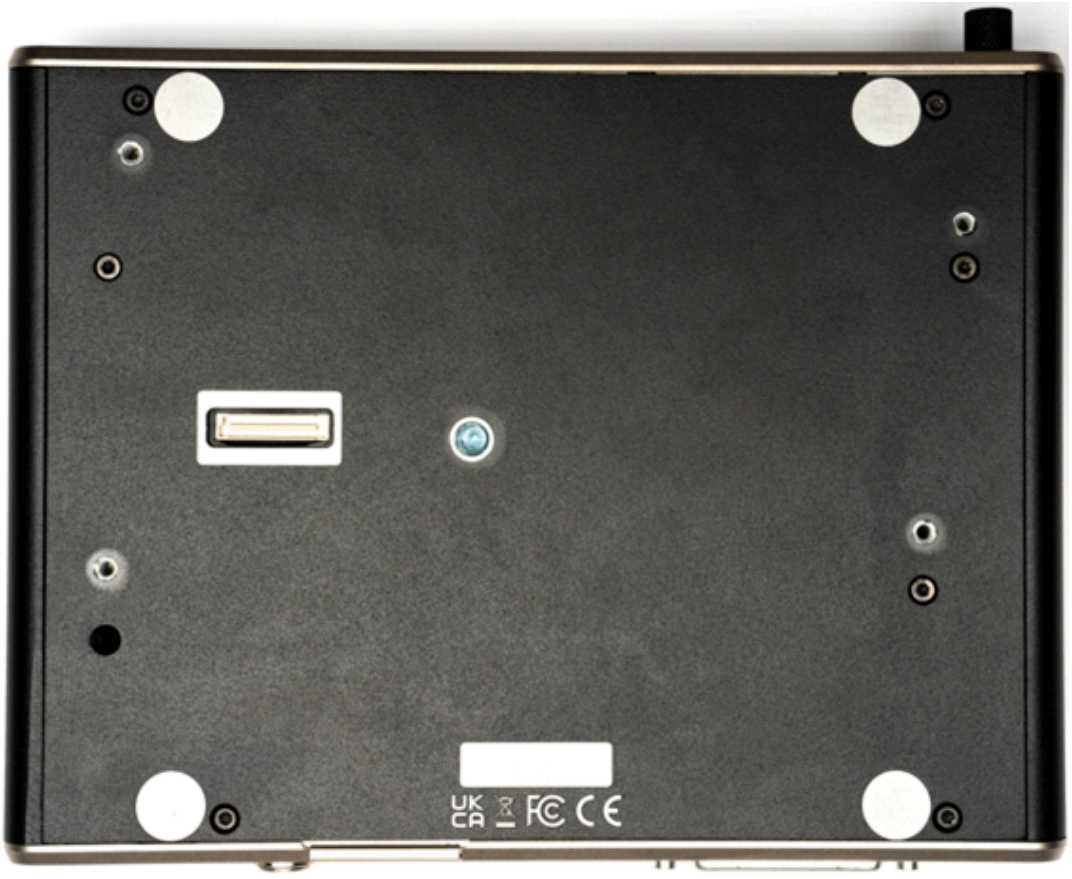
The Astral QuickDock accessory is required to mount the Astral ARX16 to an 8-Series mixer/recorder.

The Astral QuickDock comes with the following parts:

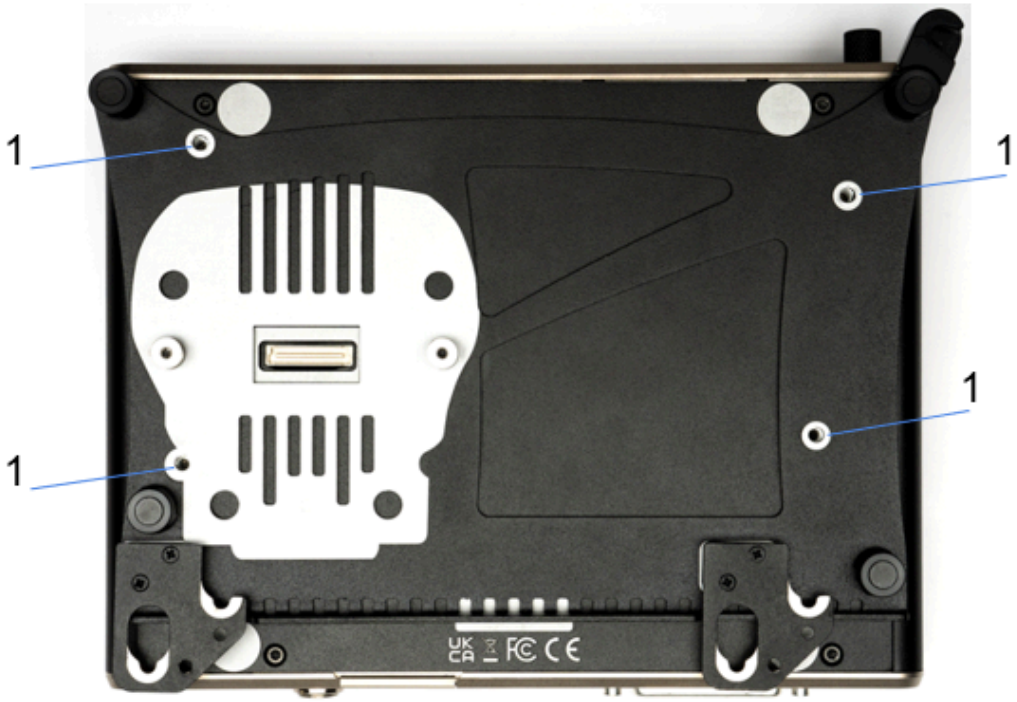
- Mounting plate with detachable Quick Release mechanism and multi-pin connector.
- 2 mm and 1/16″ Allen keys.
- Four 1/16″ Allen screws for securing the mounting plate to the bottom of the Astral ARX16.
- Three long 2 mm and two short 2 mm Allen mounting pillars for securing the rear of the Astral ARX16 with mounting plate to the top of the 8-Series.
- Additional mounting brackets and screws for Scorpio.

Use the following instructions for mounting and unmounting the Astral ARX16 to an 8-Series mixer/recorder.

- Ensure both Astral ARX16 and 8-Series do not have power applied.
- Place the Astral ARX16 upside down on a clean, flat surface.



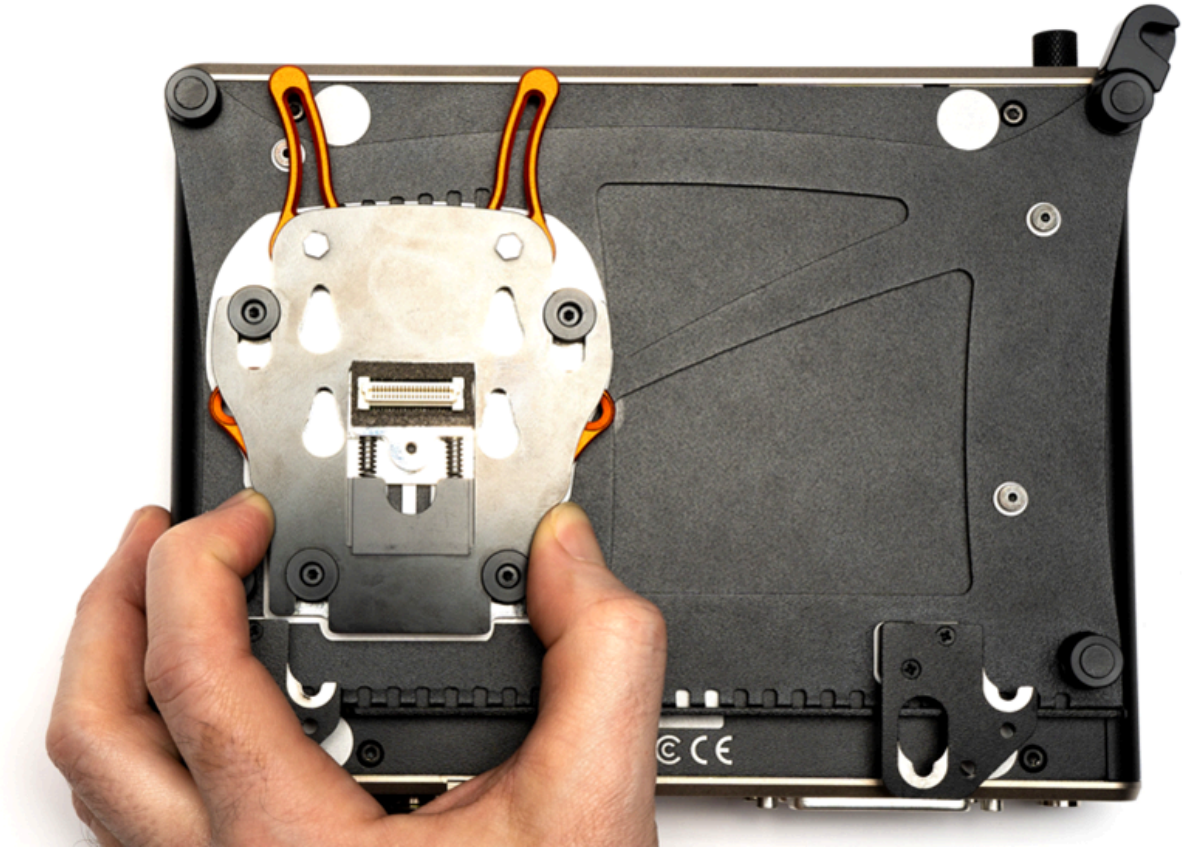
- Position the QuickDock mounting plate on the bottom of the Astral ARX16.



  - Align the four mounting plate holes (1) with the screw holes on the bottom of the Astral ARX16.

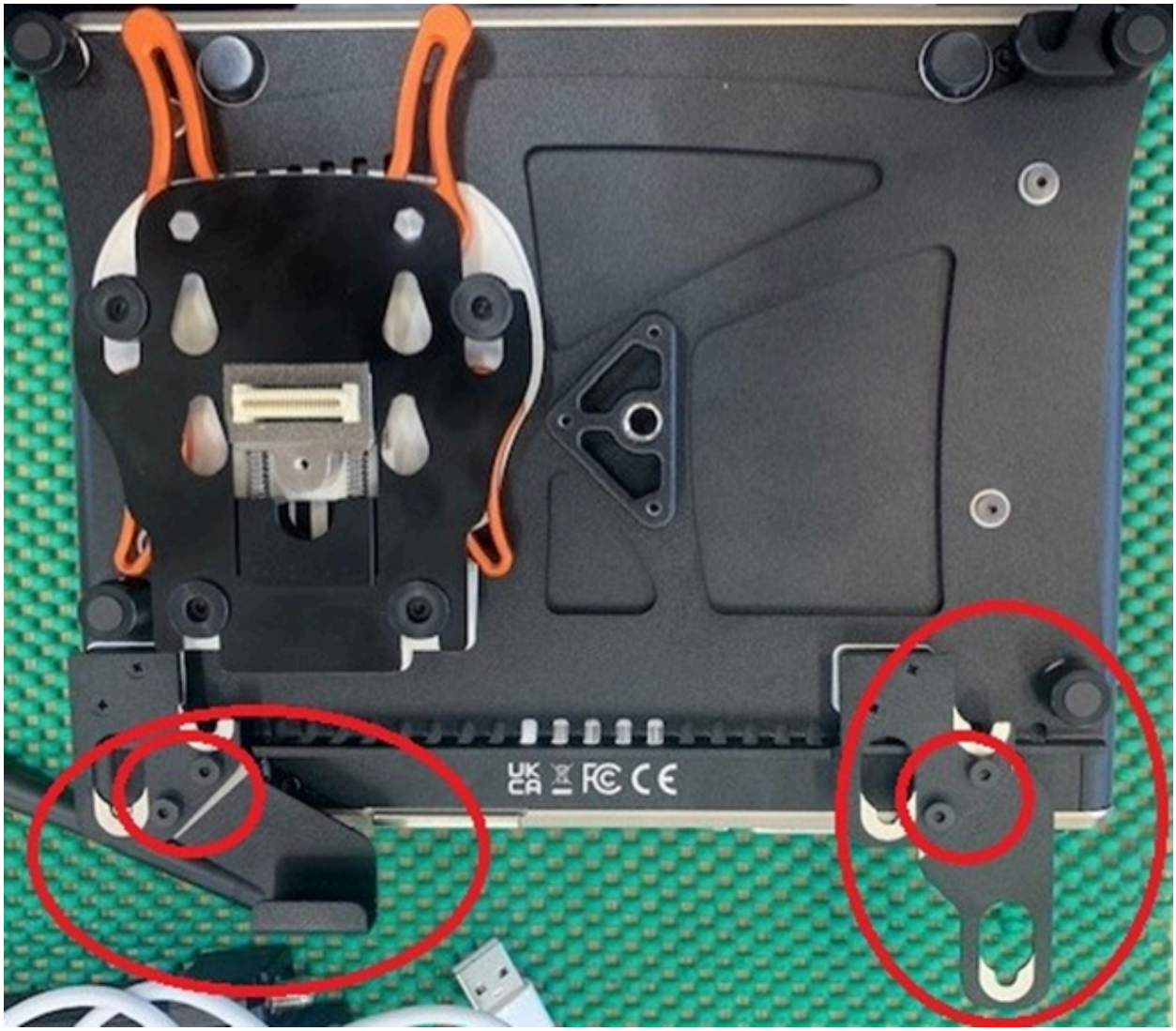
    Secure the mounting plate.
  - To make it easy to secure the mounting plate with the four Allen screws, temporarily detach the Quick Release mechanism from the mounting plate (if not already done so) by squeezing

together both the rear red levers and lifting.



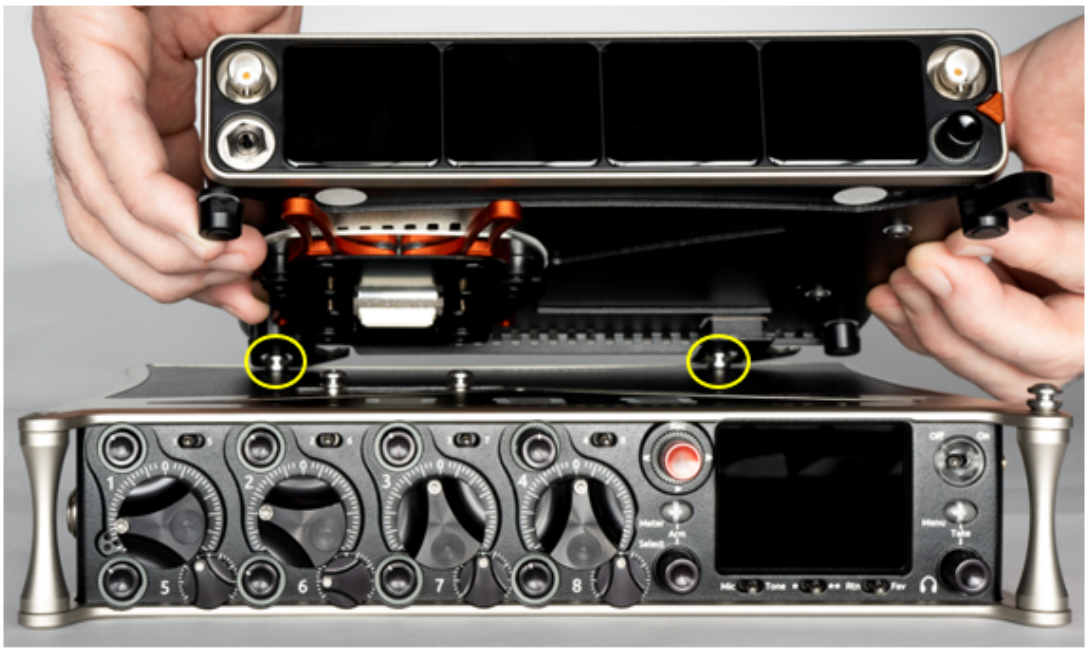
- Using the 1/16″ Allen key, secure the mounting plate by screwing the four Allen screws into screw holes (1)
- Reattach the Quick Release mechanism. Squeeze both the rear red release levers and locate the quick release mechanism so that the multi-pin connector mates with the expansion port on the Astral ARX16. Firmly press down and ensure the quick release mechanism is flush with the surface of the mounting plate.
- Scorpio only: Attach the two additional Scorpio mounting brackets using 2 screws per bracket as shown below.

Scorpio Only Brackets



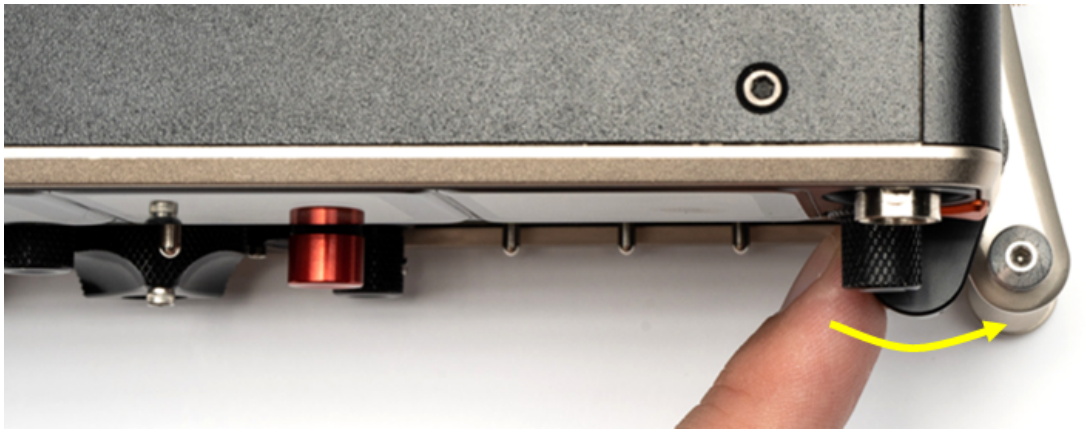
- On the 8-Series, screw in the five mounting pillars.
  - Replace three screws (2) with the three long mounting pillars. **Note:** For Scorpio, only the top right corner screw (2) and bottom right pillar screw (2) need to be replaced with mounting pillars.
  - Screw in the two short mounting pillars into screw holes (3). **Note:** For Scorpio, use the two screw holes just below and either side of the bottom 16-pin expansion port.

- To mount the Astral ARX16 with attached Astral QuickDock to the top of the 8-series:
    - Start by hooking the Astral ARX16 mounting plate onto the two rear mounting pillars (833 and 888) or one rear mounting pillar (Scorpio).



- Next, squeeze both front red release levers together and press down firmly on top of the Astral ARX16. Once located in place, release the red levers.

- Finally, slide the Astral ARX16's front-right black latch over the front-right 8-series mounting pillar.



- To undock the Astral ARX16 from the 8-Series,
  - Slide the Astral ARX16's front-right black latch off the 8-Series mounting pillar.
  - Squeeze both the front red release levers and lift the Astral ARX16 from the front.
  - Slide out the Astral ARX16 towards the rear of the 8-Series to unhook.

25.4 Astral Outpost

The Astral Outpost is a remote NexLink-antenna box. NexLink is Sound Devices' proprietary protocol for long-distance remote control of Astral transmitters. This game-changing system allows remote control of all parameters on the transmitters – and has a distance far exceeding the RF audio link. Since NexLink operates at 2.4 GHz, its antennas cannot be remote-mounted more than a few inches due to cable loss – until now. With the Astral Outpost, the NexLink antennas can be located near the action, along with the UHF audio antennas. The remote mounting is simple, using either Cat-6 Ethernet cable or even fiber optic Ethernet.

You can use up to eight Astral Outpost units at the same time, together with the Astral ARX16's built-in NexLink antennas, to create a NexLink antenna network. This setup provides robust coverage across large and complex environments. See NexLink Menu for how to setup an Astral Outpost.

Key Features

- Powered by PoE or USB-C 15W power supply
- Cat-6 (Ethercon connector) or Optical Ethernet (via SFP module)
- Rugged, rain-resistant chassis
- Dual ¼", 3/8″, 5/8″ mounting hole blocks
- Pair with Astral ARX16 via the Astral Outpost's USB-C port. Supplied with USB-A to USB-C pairing cable.
- Supports NexLink antenna networks with multiple Astral Outposts
- Customize an Astral Outpost's name for easy identification e.g. Stage 1, Stage 2 etc.
- Monitor Astral Outpost connection status directly from Astral ARX16.
- Recessed reset button for resetting to factory defaults
- Rear panel LED for indicating power, ID'ing from Astral ARX16, and firmware update progress
- Firmware updates via ethernet or USB-A thumbdrive.

The Astral Outpost must be powered from either a PoE or USB-C 15W power supply.

The rear panel Power LED illuminates as follows: Solid blue = starting up; Solid green = powered on; Flashing blue = Receiving NexLink ID command; Alternating red, green, blue = updating firmware; Flashing red = failed update.

ESD: *The Outpost's ethernet connection may be interrupted in an environment with ESD phenomenon when powered by a PoE supply. In such an event, it is recommended to restart the connection manually.*

25.5 Monarch Antenna

The Astral ARX16 ships with two Monarch, omnidirectional, wide-bandwidth (470-1525 MHz) antennas. These antennas provide uniform coverage and gain across the exceptionally wide SpectraBand tuning range of Astral ARX16. Each antenna is paired with a multi-function clamp and articulating arm, as well as an RG58 BNC-M to BNC-M cable (30 in.)

When purchased as a separate accessory, the Monarch antenna also includes an RG174 BNC-M to SMA-M cable (18 in.)

The Monarch kit comes with the following parts:

- 1x Monarch antenna with BNC-F connector and 1/4"-20 female threaded mount
- 1x adjustable clamp and articulating arm with ¼"-20 male threaded mount
- 1x 30 in/75 cm BNC-M to BNC-M cable
- 1x 18 in/45 cm BNC-M to SMA-M cable

25.6 Astral RX Shelf

The Astral RX Shelf is a 1RU, 19″ rack shelf designed to accommodate two Astral ARX16 or one Astral ARX16 and one PowerStation-8M side by side. The shelf's rack ears have multiple fixing holes allowing the depth of the shelf to be adjusted. An Astral ARX16 or PowerStation-8M can be mounted to the left, center, or right of the shelf. The Astral RX Shelf kit comes with the following parts:

- 1x rack shelf
- 2x rack ears
- 6x rack ear screws
- 8x mounting screws for securing in place two Astral ARX16 or PowerStation-8M, or one of each

Assembling the Astral RX Shelf

- **Fitting the rack ears.** Each rack ear has multiple holes to allow the depth of the shelf to be adjusted. Position the rack ear on the side of the shelf, then select which three holes to use for the preferred depth, making sure to align them with the screw holes in the shelf's side panels. Fix in place using three rack ear screws.
- **Mounting an Astral ARX16 to the shelf.** Turn the shelf upside down then align the Astral ARX16 front panel with the front edge of the shelf. The holes in the shelf tray allow the Astral ARX16 to be positioned to the left, center, or right of the shelf.

25.7 Astral 2.4G Ant+Mount

These easy-to-install adjustable antenna brackets are perfect for when the Astral ARX16 is used in a bag and allow the 2.4 GHz antenna to be mounted on either side panel towards the front of the Astral ARX16, extending the 2.4GHz antenna out of the top of the bag for better NexLink range.

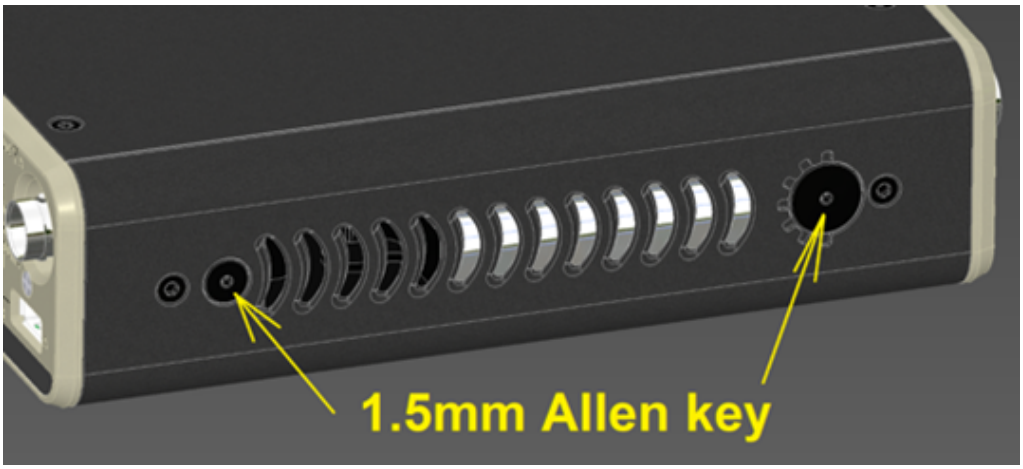
The Astral 2.4G Ant+Mount Kit comes with the following parts:

- 1x 2.4 GHz Antenna (SMA-M)
- 1x 18 in/45 cm SMA-M to SMA-M Cable (RG58)

- 1x adjustable bracket with SMA-F coupler and mounting hardware
- 1x 1.5 mm Allen key
- 1x 2.0 mm Allen key
- 1x 3/32″ Allen key

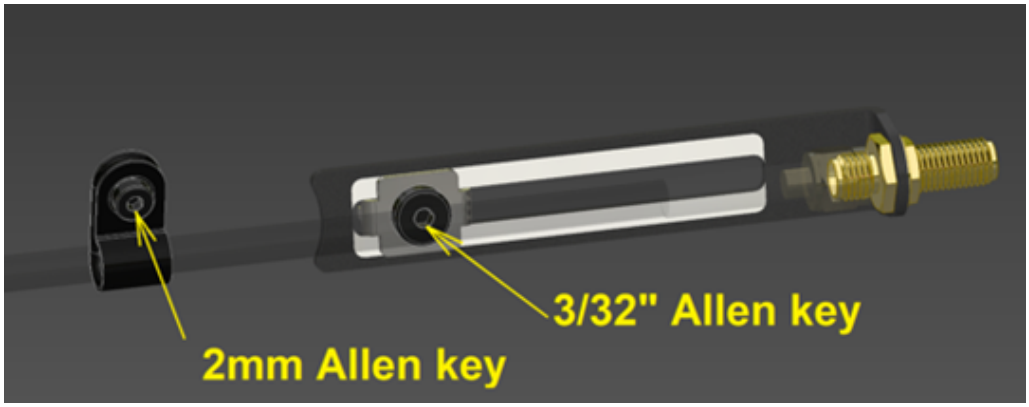
Mounting the Antenna Brackets

- **Remove the bracket screw hole protective covers:** Using the 1.5 mm Allen key to unscrew the two protective covers from each Astral ARX16 side panel. Put the protective covers in a safe place should you need to reinstall them at a future time.



- **Installing the adjustable antenna brackets:**
  - Position the adjustable bracket assembly (with fitted SMA to SMA cable) on the Astral ARX16 side panel such that the ¼″ screw aligns with the screw hole near the front of the Astral ARX16.
  - Use the 3/32″ mm Allen key to screw in the ¼″ bracket screw so that it loosely holds the bracket in place.
  - Adjust the lateral position and angle of the bracket to your preference, then tighten the bracket screw.
  - Adjust the position of the cable clamp so that it aligns with the side panel screw hole near the rear of the Astral ARX16.
  - Use the 2 mm Allen key to tighten the cable clamp.
  - Connect the SMA cable to the nearest rear panel 2.4 GHz SMA port.

- Repeat above procedure for the other side’s antenna bracket.



Chapter 26: Restricted Frequency Authorizations

The wireless system operator needs to be aware of local regulations and comply with all applicable laws regarding operation of wireless devices.

Frequency Authorizations allow the unlocking of restricted frequencies that require proof of a valid license before they can be used. Once a license has been granted, please contact Sound Devices (RF_Request@SoundDevices.com) to obtain the necessary authorization. An Authorization ID and License Code will be generated by Sound Devices based on the license provided. The Authorization ID or License Code can be entered into the Astral Remote App and then synchronized with an Astral ARX8, Astral ARX16, or Astral ARX32 receiver and its paired Astral transmitters.

Synchronized Frequency Authorizations can be viewed on the Astral ARX16 and paired Astral TX and Astral HH transmitters. See System Menu > Frequency Authorization for more info.

An example of a frequency band requiring an unlock code in the United States is 1435-1525 MHz. Program Making and Special Events (PMSE) wireless operators typically call 1435-1525 MHz the "AFTRCC band". AFTRCC stands for Aerospace and Flight Test Band Coordinating Council. This organization coordinates several frequency bands for use by air and spacecraft in the United States. This includes 1435-1525 MHz.

Per the United States Federal Communications Commission (FCC) rules, wireless microphones are allowed as secondary users in the 1435-1525 MHz AFTRCC band. This is detailed in the FCC Part 74 rules:

https://www.ecfr.gov/current/title-47/chapter-I/subchapter-C/part-74

One section of the Part 74 rules that's of particular interest to operators seeking an AFTRCC band license is 74.803(d):

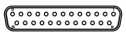
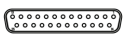
https://www.ecfr.gov/current/title-47/chapter-I/subchapter-C/part-74#p-74.803(d)

Generally speaking, a wireless operator needs to show they've used all other available spectrum before the AFTRCC will consider a license request in the 1435-1525 MHz range. If granted, the license is normally assigned for a specific location and a specific time range.

Sound Devices encourages all wireless operators to obtain a Part 74 license, and specifically to make sure applicable parts of the 600 MHz and 950 MHz range are included with their license application. This can help show an operator is aware of the available spectrum and is utilizing it responsibly.

More information on Part 74 licensing can be found here: https://www.local695.com/fcc-licensing/

Chapter 27: Connector Pin Assignments

Connector		Pin Assignments	Notes
DB-25 (Top and Bottom D-Sub) (Ch 1-8 Analog Out)		1–Output 8 signal (+) 2–Output 8 Ground 3–Output 7 signal (-) 4–Output 6 signal (+) 5–Output 6 Ground 6–Output 5 signal (-) 7–Output 4 signal (+) 8–Output 4 Ground 9–Output 3 signal (-) 10–Output 2 signal (+) 11–Output 2 Ground 12–Output 1 signal (-) 13–unused 14–Output 8 signal (-) 15–Output 7 signal (+) 16–Output 7 Ground 17–Output 6 signal (-) 18–Output 5 signal (+) 19–Output 5 Ground 20–Output 4 signal (-) 21–Output 3 signal (+) 22–Output 3 Ground 23–Output 2 signal (-) 24–Output 1 signal (+) 25–Output 1 Ground	Mates with DB-25 Male Connectors Wired per the AES59 standard
DB-25 (Top and Bottom D-Sub)		1–Digital Out 4 signal (+) 2–Digital Out 4 Ground 3–Digital Out 3 signal (-) 4–Digital Out 2 signal (+) 5–Digital Out 2 Ground	Mates with DB-25 Male Connectors Wired per the AES59 standard.

(Ch 1-8 AES Out)		6–Digital Out 1 signal (-) 7–Unused 8–Unused 9–Unused 10–Unused 11–Unused 12–Unused 13–Unused 14–Digital Out 4 signal (-) 15–Digital Out 3 signal (+) 16–Digital Out 3 Ground 17–Digital Out 2 signal (-) 18–Digital Out 1 signal (+) 19–Digital Out 1 Ground 20–Unused 21–Unused 22–Unused 23–Unused 24–Unused 25–Unused	Digital Out 1 = Ch 1,2 Digital Out 2 = Ch 3,4 Digital Out 3 = Ch 5,6 Digital Out 4 = Ch 7,8
BNC (LTC/WCK) input		Center pin - signal Sleeve - ground	Unbalanced 75-ohm connector recommended
BNC (Front/Rear Antenna)		Center pin - signal Sleeve - ground	50-ohm connector recommended
SMA		Center pin - signal Sleeve - ground	SMA-F ports for connecting 2.4 GHz SMA-M

(2.4 GHz, Rear NexLink)			antennas for NexLink.
SFP		Per SFF INF-8074i standard	For Dante and Control networks.
Ethernet (RJ45)		Standard 8P8C (female)	For Dante and Control networks. Dante/Ctrl 1 port supports PoE+
TA4 (DC In 1 & 2)		Pin 1 = ground Pin 2 = Pin 3 = Pin 4 = positive volts	10-18V
4-pin Hirose (DC Out 1 & 2)		Pin 1 = ground Pin 4 = positive volts	10-18V, 500 mA max between both outputs (i.e., 250 mA + 250 mA)
USB-A		Per USB-IF standard	5V, 500mA

Chapter 28: Specifications

Specifications are subject to change without prior notice. For the latest information available on all Sound Devices products, visit our website: www.sounddevices.com

28.1 Astral ARX16 Specifications

Patents: The Astral ARX16 is protected by US patents US10678294B2, US20190166523A1, International patent WO2018022209A1, and several patents pending.

RF

Tuning

- 169 to 1525 MHz (1356 MHz switching bandwidth)
- 25 kHz steps
- SpectraBand Technology for maximum rejection of out-of-band signals
- Available frequencies depend on country of operation

Modulation

- Proprietary, 100% digital RF modulation
- Standard, Long Range, or T&M (Test & Measurement), selectable per channel

Spurious Rejection

- >100 dB typical

Cascade output

- 50 ohm
- 3.5 dB Insertion Loss from front BNC through rear BNC: It is recommended to use an external powered antenna to overcome the 3 dB splitting loss in the Astral ARX16 so that the receivers maintain excellent range.
- Wideband power split, pre-LNA

RF Bias output

- 12V, 200 mA each BNC
- Smart antenna support, Wisycom-compatible

Audio

Latency

- Standard modulation = 2 ms, analog or digital outputs
- Long Range modulation = 3.9 ms, analog or digital outputs
- T&M (Test and Measurement) = 7 ms, analog or digital outputs

Audio Frequency Response

- 10 Hz–20 kHz, +/- 1 dB relative to 1 kHz

Low Cut

- Off, 40 Hz, 60 Hz, 80 Hz, 100 Hz, 120 Hz, 160 Hz, 200 Hz
- 3rd order, 18dB/oct roll off.

Dynamic Range

- > 130 dB with an Astral transmitter

Analog Outputs

- D-Sub 25 outputs conforming to AES59 'Tascam' standard
- Balanced connection
- 120-ohm output impedance

Analog Output Level

- Line: +20 dBu for 0 dBFS
- Guitar: +20 dBu for -5 dBFS (note: same as Line output, but level matched for Astral Guitar Box balanced-to-1/4" unbalanced converter)
- -10: +6 dBu for 0 dBFS
- Mic: -20 dBu for 0 dBFS

Tone Generator

- 1 kHz tone, adjustable from -20 to 0 dBFS

Audio Output Sample Rate

- 44.1, 48, or 96 kHz

Digital Audio Output

- AES3 balanced connection, 110-ohm output impedance

Audio-Over-IP

- Dante, 44.1, 48, or 96 kHz sample rate

Sync

- LTC / Wordclock BNC input, software-switchable 75-ohm termination
- Dante
- 8-Series (when docked)

Network

Dante Audio-Over-IP

- 16 input/output channels

Control

- Web-based control and monitoring of all Astral ARX16 settings

Connections

- 2x RJ45 ports: For Dante and/or Control. Port 1 supports powering from PoE+
- 1x SFP: For Dante and/or Control. Compatible with Small Form-factor Pluggable (SFP) network transceivers

NexLink

Protocol

- 2.4 GHz, proprietary frequency-hopping backlink control of transmitters over long distance

Connections

- Front or rear diversity pair
- SMA-F ports for connecting 2.4 GHz SMA-M antennas

USB

Type

- USB-A: 5V, 1.5A output; supports keyboards, flash drives, Astral transmitters, Astral Outpost, and USB hubs

Drive Format

- FAT32

Powering

Sources

- DC Input on locking TA4 connector, pin-4 = (+), pin-1 = (-): dual, redundant (highest voltage takes precedence).
- PoE+: 802.3at, 30W needed (standard 15W PoE 802.3af will not work)
- 8-Series (through unit-to-unit connector when docked)
- AC mains adapter (XL-WPTA4 sold separately)

Levels

- DC input, 10 to 18V in, 2A minimum at 10 VDC
- 11 W idle, default configuration
- Extra power passed through for USB power, active antenna power, and DC output power
- USB-A: 5V, 500 mA output; supports keyboards, thumb drives, Astral transmitters, and USB hubs

- DC Outs: max 500 mA between both outputs.

Environmental

Operating Temperature Range

- -10 °C to +55 °C

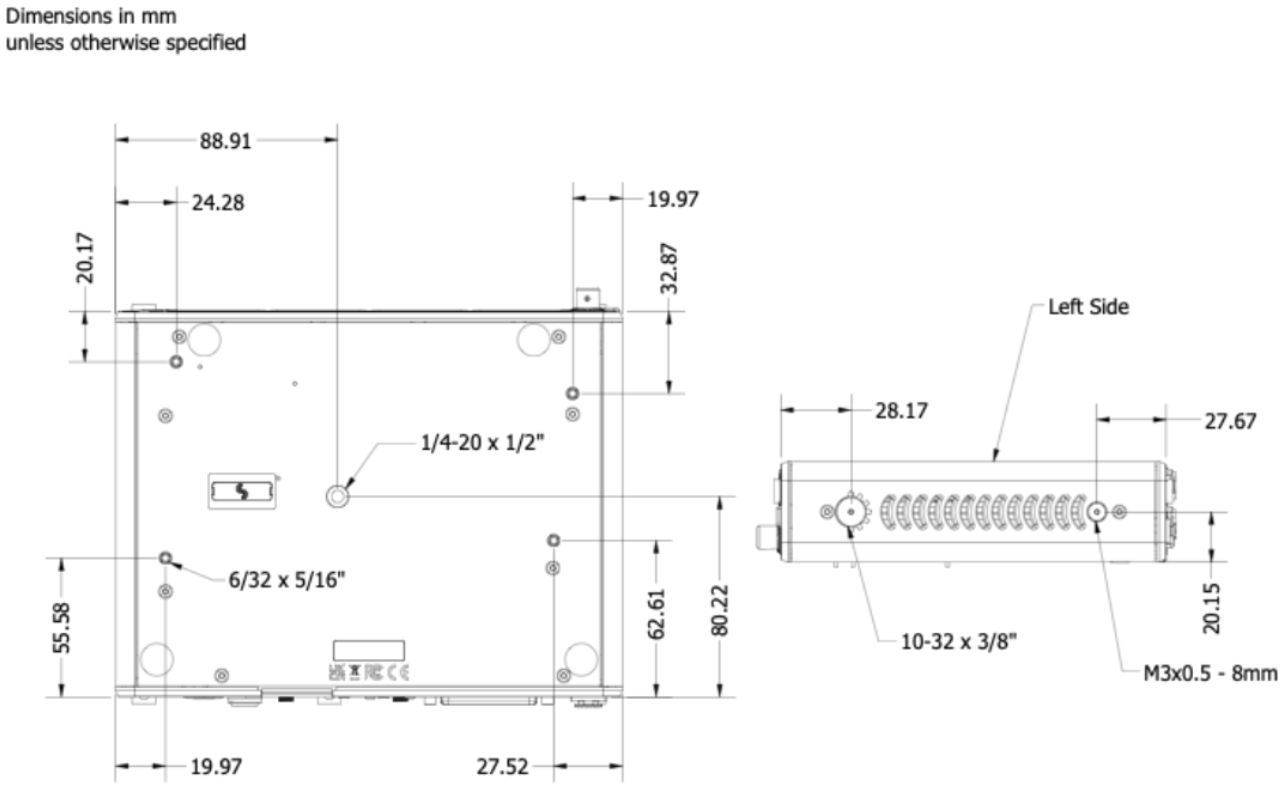
Dimensions (H x W x D)

- 4.0 cm x 20.3 cm x 16.7 cm
- (1.6 in x 8.0 in 6.6 in)

Weight

- 1.27 kg (unpackaged)
- 2.8 lbs. (unpackaged)

28.1.1 Astral ARX16 Threaded Holes



28.2 Astral Outpost Specifications

Network

Connections

- 1x RJ45 port and 1x SFP port: For NexLink control connection to Astral ARX16 and Astral Outpost firmware updates

NexLink

Protocol

- 2.4 GHz, proprietary frequency-hopping backlink control of transmitters over long distance

Connections

- 2x SMA-F ports for connecting 2.4 GHz SMA-M antennas

USB

Type

- USB-A: 5V, 1.5A output; supports USB thumb drive (formatted FAT32) for firmware updates only.
- USB-C: 5V, 3A (15W) for pairing with Astral ARX16 and/or powering

Powering

- PoE+ In (15W)
- USB-C: 5V, 3A (15W)

Environmental

Operating Temperature Range

- -10 to 40 C; 14 to 104 F

Dimensions (H x W x D)

- 3.2 cm x 16 cm x 13.2 cm; 1.26 in x 6.3 in x 5.2 in

Weight

- 0.66 kg (unpackaged)
- 1.45 lbs. (unpackaged)

28.3 Monarch Specifications

Frequency range

- 470 MHz - 1600 MHz

Gain

- 2.2 dBi

Pattern

- Omnidirectional

Return Loss

- Better than 15 dB across entire 470 - 1600 MHz range

Mounting Threads

- ¼″-20

Dimensions (H x W x D)

- 17.0 cm x 21.0 cm x 1.7 cm
- (6.68 in x 8.26 in 0.67 in)

Weight

- 0.12 kg (unpackaged)
- 0.26 lbs. (unpackaged)

Chapter 29: Note on RF Interference

Sound Devices does not guarantee the absence of any interfering spurs across all bands in all situations. Some small spurs can originate within the Astral ARX16, and others can come from many sources (Ethernet, AES/EBU interconnects, external mixer/recorders, USB drives, USB keyboards, etc.). This, combined with the extreme sensitivity of the Astral ARX16's front end, mean that the user must be very careful with the quality of cables used, as well as antenna and antenna cable routing and placement. We highly recommend placing antennas as far as possible from other pieces of equipment, especially antennas from intentional transmitters such as IFB units.

Sound Devices recommends using high-quality, shielded Ethernet cables (whether using PoE+ or not) to minimize interference at RF frequencies caused by Ethernet. Additionally, it is a best practice to keep Ethernet cables as far away from the receiving antennas and the receiving antennas' coax cable (if used).

Chapter 30: Servicing the Astral ARX16

Do not attempt to service the Astral ARX16. The internal parts are microscopic and not user serviceable. Please send to Sound Devices for any service needs. https://support.sounddevices.com

Chapter 31: Warranty

Sound Devices, LLC warrants the items listed above against defects in materials and workmanship for a period of ONE (1) year from date of original retail purchase. Users who register their product directly with Sound Devices Technical Support using the online form or by phone, will receive an additional ONE (1) year of warranty coverage, extending the complete warranty period to TWO (2) years from the date of original retail purchase. To extend the warranty coverage period, registration must be completed within the initial ONE (1) year warranty period. Products must be purchased through authorized Sound Devices resellers to qualify for Warranty coverage. Damage resulting from the opening of a Sound Devices product or attempted repairs by a non-authorized Sound Devices repair technician will void warranty coverage.

This is a non-transferable warranty that extends only to the original purchaser. Sound Devices, LLC will repair or replace the product at its discretion at no charge. Warranty claims due to severe service conditions will be addressed on an individual basis.

THE WARRANTY AND REMEDIES SET FORTH ABOVE ARE EXCLUSIVE. SOUND DEVICES, LLC DISCLAIMS ALL OTHER WARRANTIES, EXPRESS OR IMPLIED, INCLUDING WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. SOUND DEVICES, LLC IS NOT RESPONSIBLE FOR SPECIAL, INCIDENTAL, OR CONSEQUENTIAL DAMAGES ARISING FROM ANY BREACH OF WARRANTY OR UNDER ANY OTHER LEGAL THEORY. Because some jurisdictions do not permit the exclusion or limitations set forth above, they may not apply in all cases.

For all service, including warranty repair, please contact Sound Devices for an RMA (return merchandise authorization) before sending your unit in for repair. Products returned without an RMA number may experience delays in repair. When sending a unit for repair, please do not include accessories, including SSD drives, CF cards, batteries, power supplies, carry cases, cables, or adapters unless instructed by

Sound Devices. Sound Devices repairs and replacements may be completed using refurbished, returned or used parts that have been factory certified as functionally equivalent to new parts.

Sound Devices, LLC

Services Repair RMA #XXXXX

E7556 State Road 23 and 33

Reedsburg, WI 53959 USA

Telephone: +1-608-524-0625

Chapter 32: Legal Notices

Product specifications and features are subject to change without prior notification. Read and fully understand this manual before operation.

 This document is supplied as a technical guide. Special care has been taken in preparing the information for publication; however, since product specifications are subject to change, this document might contain omissions and technical or typographical inaccuracies. Sound Devices, LLC does not accept responsibility for any losses due to the use of this guide.

LIMITATION ON SOUND DEVICES' LIABILITY. TO THE FULLEST EXTENT PERMITTED BY LAW, SOUND DEVICES SHALL HAVE NO LIABILITY TO THE END USER OR ANY OTHER PERSON FOR COSTS, EXPENSES, DIRECT DAMAGES, INCIDENTAL DAMAGES, PUNITIVE DAMAGES, SPECIAL DAMAGES, CONSEQUENTIAL DAMAGES OR OTHER DAMAGES OF ANY KIND OR NATURE WHATSOEVER ARISING OUT OF OR RELATING TO THE PRODUCTS, THESE TERMS AND CONDITIONS OR THE PARTIES' RELATIONSHIP, INCLUDING, WITHOUT LIMITATION, DAMAGES RESULTING FROM OR RELATED TO THE DELETION OR OTHER LOSS OF AUDIO RECORDINGS OR DATA, REDUCED OR DIMINISHED AUDIO

QUALITY OR OTHER SIMILAR AUDIO DEFECTS ARISING FROM, RELATED TO OR OTHERWISE ATTRIBUTABLE TO THE PRODUCTS OR THE END USER'S USE OR OPERATION THEREOF, REGARDLESS OF WHETHER SUCH DAMAGES ARE CLAIMED UNDER CONTRACT, TORT OR ANY OTHER THEORY. "CONSEQUENTIAL DAMAGES" FOR WHICH SOUND DEVICES SHALL NOT BE LIABLE SHALL INCLUDE, WITHOUT LIMITATION, LOST PROFITS, PENALTIES, DELAY DAMAGES, LIQUIDATED DAMAGES AND OTHER DAMAGES AND LIABILITIES WHICH END USER SHALL BE OBLIGATED TO PAY OR WHICH END USER OR ANY OTHER PARTY MAY INCUR RELATED TO OR ARISING OUT OF ITS CONTRACTS WITH ITS CUSTOMERS OR OTHER THIRD PARTIES. NOTWITHSTANDING AND WITHOUT LIMITING THE FOREGOING, IN NO EVENT SHALL SOUND DEVICES BE LIABLE FOR ANY AMOUNT OF DAMAGES IN EXCESS OF AMOUNTS PAID BY THE END USER FOR THE PRODUCTS AS TO WHICH ANY LIABILITY HAS BEEN DETERMINED TO EXIST. SOUND DEVICES AND END USER EXPRESSLY AGREE THAT THE PRICE FOR THE PRODUCTS WAS DETERMINED IN CONSIDERATION OF THE LIMITATION ON LIABILITY AND DAMAGES SET FORTH HEREIN AND SUCH LIMITATION HAS BEEN SPECIFICALLY BARGAINED FOR AND CONSTITUTES AN AGREED ALLOCATION OF RISK WHICH SHALL SURVIVE THE DETERMINATION OF ANY COURT OF COMPETENT JURISDICTION THAT ANY REMEDY HEREIN FAILS OF ITS ESSENTIAL PURPOSE.

FCC Conformity

NOTE: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception,

which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

—Reorient or relocate the receiving antenna.

—Increase the separation between the equipment and receiver.

—Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.

—Consult the dealer or an experienced radio/TV technician for help.

This device complies with FCC RF exposure limits for general population / uncontrolled environments. A separation distance of at least 20 cm must be maintained between the antenna and all persons. This device must not be co-located with any other antenna or transmitter. This device has been approved to operate with the antenna type listed below:

Model: W1010 Type: Wireless External Antenna for 2.4 GHz Application

Manufacturer: PulseLarson Max. Gain: 2.0dBi

No change to the antenna type is permitted. Any change to the antenna could result in the device exceeding the RF exposure requirements and void the user’s authority to operate the device.

Changes or modifications not expressly approved by the manufacturer could void the user’s authority to operate the equipment.

To comply with FCC part 15 rules in the United States, the Astral ARX16 receiver must be professionally installed.

It is the responsibility of the operator and professional installer to ensure that only certified antennas are to be used in the United States.

Industry Canada Conformity

This device complies with ISED RF exposure limits for general population / uncontrolled environments. A separation distance of at least 20 cm must be maintained between the antenna and all persons. This device must not be co-located with any other antenna or transmitter. This device has been approved to operate with the antenna type listed below:

Model: W1010 Type: Wireless External Antenna for 2.4 GHz Application

Manufacturer: PulseLarson Max. Gain: 2.0dBi

No change to the antenna type is permitted. Any change to the antenna could result in the device exceeding the RF exposure requirements and void the user’s authority to operate the device.

This Device complies with Industry Canada License-exempt RSS standard(s). Operation is subject to the following two conditions: 1) this device may not cause interference, and 2) this device must accept any interference, including interference that may cause undesired operation of the device.

Cet appareil se conforme aux normes ISED sur les limites d'exposition aux radiofréquences pour la population générale et environnements non controllés. Une distance minimale d'au moins 20cm doit être maintenue entre l'antenne et toute personne. Cet appareil ne doit pas être co-localisé avec toute autre antenne ou transmetteur. Cet appareil a été aprouvé pour fonctionner avec le type d'antenne ci-dessous:

Model: W1010 Type: Antenne externe sans fil pour application à 2.4 GHz

Manufacturer: PulseLarson Gain Max: 2.0 dBi

Aucun changement de type d'antenne n'est permis. Tout changement sur l'antenne pourrait causer l'appareil à excéder les limites d'exposition RF et annuler le droit de l'usager à faire fonctionner cet appareil.

Cet appareil est conforme avec Industrie Canada, exempts de licence standard RSS (s). Son fonctionnement est soumis aux deux conditions suivantes: 1) ce dispositif ne peut pas causer d’interférences, et 2) ce dispositif doit accepter toute interférence, y compris les interférences qui peuvent causer un mauvais fonctionnement de l’appareil.

WEEE Statement

If you wish to discard a Sound Devices product in Europe, contact Sound Devices (England) for further information.

Chapter 33: Declaration of Conformity

CE

Manufacturer's Name: Sound Devices, LLC

Manufacturer's Address: E7556 State Road 23 and 33 Reedsburg, WI 53959 USA

We, Sound Devices LLC, declare under our sole responsibility that the product

Product Name: Astral ARX16

Model Number: Astral ARX16

Description: Digital Wireless Receiver

is in conformity with the essential requirements of the following relevant Union harmonization legislation:

Radio Equipment Directive (RED) 2014/53/EU

Low Voltage Directive 2014/35/EU

RoHS Directive 2011/65/EU

The following harmonized standards and/or normative documents were applied:

Health & Safety (Article 3.1(a) of RED) EN 62368-1:2014

EN 50566:2017

EMC (Article 3.1(b) of RED) EN 301-489-1 v2.2.3:2019

EN 301-489-9 v2.1.1:2019

EN 301-489-17 v3.2.4:2020

RF Spectrum (Article 3.2 of RED) EN 300 422-1 v2.1.2:2017

EN 300 328 v2.2.2:2019

EN 300 440 v2.1.1:2017

Signed for and on behalf of Sound Devices LLC:

Nov 21st, 2022

Date	Matt Anderson - Sound Devices, LLC President

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