# QUICK START GUIDE


## AURORA™ Product Family-500W Transceiver

Thank you for purchasing the AURORA 500W transceiver/ software defined radio (SDR) from FlexRadio, Inc. This Quick Start Guide (QSG) will walk you through the steps for installing the AU-510, AU-510M, AU-520 or AU-520M in your operating position and loading SmartSDR® for Windows software on a network connected PC in preparation for your first QSO. Please read all included documentation before proceeding and store this guide and all other contents, including the shipping container, for future reference and use.

The Quick Start Guide is designed to get you on the air with minimum effort. To do this, we assume a basic radio knowledge and do not delve into all the AU-510 / AU-510M / AU-520 / AU-520M and SmartSDR for Windows' many possibilities. For more information, you are referred to the AURORA SmartSDR™ documentation, which can be found in the documentation section (https://flexradio.com/documentation/) on the FlexRadio website.

If you run into any trouble during the set-up process, please:

- Re-check your steps.
- Refer to next paragraph, "Need Assistance"

**Need Assistance?**

If you encounter any issues installing or operating SmartSDR with the AURORA series radios, please use our user support Community (https://community.flexradio.com) to search for your trouble issue, as it may have already been answered by other AURORA product line users.

If you do not find an answer in the Community, you can contact FlexRadio technical support by opening an online HelpDesk request at: https://helpdesk.flexradio.com/hc/en-us/requests/new. For assistance in opening a HelpDesk ticket please refer to https://helpdesk.flexradio.com/hc/en-us/articles/202118688 for step-by-step instructions. For EU countries please contact your national distributor.

**Hours of operation:**

Our Technical Support engineers are available Monday through Friday from 7:00am to 4:30pm Central Standard Time (CST). If you request technical support after business hours, on a holiday or weekend, we will respond to your request during regular business hours in the order it was received.

## IMPORTANT NOTICE - READ BEFORE OPERATING THIS UNIT

### WARNING!

This radio is configured to operate according to regional regulation and may allow operation on frequencies which are not allowed for public use. Operators are required to have a valid amateur radio license from the appropriate regional regulatory authority to operate on amateur radio frequencies.

Except those actions which have been described in the Quick Start Guide and in the AURORA Series Hardware Manual and SmartSDR Software User Guide which are available for this radio, no other manipulations to the radio are allowed. The unit should only be opened and/or serviced by a qualified technician.

Please study the Quick Start Guide and the AURORA Series Hardware Manual and SmartSDR for Windows Software Users Guide prior to operating the unit. These documents contain important information for safe operation. Documentation can be found here (https://flexradio.com/documentation/)

If you have any questions due to misunderstanding, or translation errors, please refer to the AURORA Series Hardware Manual and SmartSDR Software User Guide first.

Radio frequency (RF) energy from transmitters can interact with some electronic devices such as cardiac pacemakers and defibrillators. Please refer to the device manufacturer's precautions when interacting with other electronic devices. If any interaction or interference with a medical device is suspected, **STOP** transmitting immediately.

**IMPORTANT NOTICE - READ BEFORE OPERATING THIS UNIT**

! – WARNING!
Δ - Caution
i - Information

! – This unit is NOT A TOY. It must not be handled by children nor placed/operated within reach of children.

! – Do not leave packing material for this unit unattended. It may be harmful to children if misused.

! – This unit contains small parts that could be a choking hazard to small children. Do not leave accessories unattended.

! – Do not operate this unit in potentially explosive environments.

! – Never attempt to insert wires or any tools into the interior of this unit during operation. This may cause fire or electric shock.

! – This unit must only be operated with the electrical power specifications described in this Quick Start Guide.

! – Never connect or disconnect antennas while transmitting. This may cause electric shock, RF burns, or damage the transceiver.

! - This unit generates Radio Frequency (RF) energy. Use caution and observe proper safety practices regarding your system configuration. When attached to an antenna, this radio is capable of generating RF electromagnetic fields which require evaluation according to your national law to provide any necessary isolation or protection required, with respect to human exposure!

Δ - This unit must only be opened and/or serviced by a qualified technician. Opening the unit may void the manufacturer's warranty.

Δ - Do not operate this unit in areas of extreme humidity.

Δ - Avoid operating this radio in direct sunlight or other areas of extreme heat, excessive vibration, or mechanical force.

Δ - When using earphones, use caution when adjusting the volume to prevent any harm to your hearing.

Δ - If this unit is intended for use in commercial applications, special safety regulations and cautions may apply to prevent accidents.

Δ - If any defect, abnormal result, or other observations occur that are not covered by this Quick Start Guide; immediately cease operation and contact the manufacturer or local distributor for operational advice or repair of the unit.

i - No other physical modification of this radio is allowed. Any other use or modification (including software changes that affect operational characteristics) will void the manufacturer's

warranty.

i - Ensure proper ventilation around the radio; this includes 2” clearance on the sides and back.

i - If you operate this unit in conjunction with an appropriate linear amplifier, always make sure your output power is below the maximum input limits of the amplifier. Consult your amplifier owner’s manual for proper connection and operation.

i - Please study the complete Quick Start Guide and Owner’s Manuals. These documents contain important information regarding the safe operation of this unit. If you have any questions, please contact the manufacturer or local distributor for further information.

# 1.0 GETTING STARTED

**Supplied Accessories:**

The following accessories and materials are included with your AURORA 500W Transceiver. Carefully remove the radio from its shipping container, unpack it, and identify the items listed below.

- One (1) AU-510, AU-510M, AU-520 or AU-520M transceiver (model is determined at time of order)
- One (1) FHM-3 Microphone (optional for EU countries)
- One (1) CAT5e Ethernet cable
- One (1) AC Power Cable
- One (1) GNSS Antenna
- One (1) Hardware & Software Installation Quick Start Guide
- One (1) Optional Rack Mount Kit Option (included only if ordered. Installation information can be found here: https://www.flexradio.com/documentation/aurora-flex-8000-and-flex-6000-bracket-install-guide-pdf/ )
- One (1) Optional Handle Kit Option (included only if ordered. Installation information can be found here: https://www.flexradio.com/documentation/aurora-flex-8000-and-flex-6000-bracket-install-guide-pdf/)

**Additional Required Items Not Supplied with the Radio:**
In addition to the supplied accessories, software, and cables that ship with the AURORA transceiver, you will need to provide the following:

- An HF-Antenna or dummy load.
- A low-impedance RF Ground.
- Powered stereo speakers (computer type) or stereo headphones.
- A personal computer (PC running Windows 11 or above. Windows 11 is preferred. Either 32 or 64-bit operating system. A 64-bit version is preferred.
- A 100Mb or Gigabit Ethernet Network with access to the Internet.

Please Note: the latest version of SmartSDR software can be downloaded from our website at www.flexradio.com/ssdr-for-windows/

## 2.0 MAKING THE CONNECTIONS

The following steps will describe the required connections for getting your AURORA transceiver on the air.

**First Steps:**

1. Carefully remove the packaged accessories and the transceiver (AU-510, AU-510M, AU-520 or AU-520M) from the shipping carton. Remove the plastic covering from the radio.
2. Identify all of the supplied accessories listed above.
3. Place the radio in your operating position making sure it has adequate ventilation.

**Back Panel Connections**

1.) Antenna - Connect an HF antenna with nominal 50 Ohm impedance to one of the SO239 transceiver antenna connectors labeled ANT1 (DEFAULT) or ANT2.

2.) Ground - If antenna ports are used, connect the chassis to the external station ground to protect the operator in the event of a lightening strike. Remove the wingnut marked GND, attach the station ground conductor to the ground screw, and reinstall the wing nut securly to ensure proper bonding.

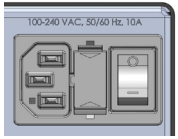
3.) Speakers - Connect powered stereo speakers to the jack marked PWR-SPKR using a 1/8" stereo TRS plug.


4.) Ethernet Connection - Connect one end of the supplied CAT 5e Ethernet cable to the Aurora transceiver. The other end of the CAT 5e Ethernet cable should be connected to your router (preferred). The Aurora can be connected directly to a Windows computer if you do not have a wired Ethernet network in your shack. In this configuration, certain SmartSDR features may not be available.


For a more detailed description of connecting an Aurora radio to a LAN or directly to your PC, please refer to the HelpDesk article "How to Connect Your FLEX-6X00 or FLEX-8X00 to a LAN"

( https://helpdesk.flexradio.com/hc/en-us/articles/202118558-How-to-Connect-your-FLEX-6000-FLEX-8000-to-a-LAN )

If you have questions about connecting your Aurora transceiver to your network, please open a HelpDesk support ticket for assistance.

5.) 


AC Power Cord plug - Connect one end of the AC power cord to the connection on the back of the radio. The other end plugs into a 110V/220V socket outlet with earthing connection.

**Back Panel Connections**

6.) Microphone - Connect the 1/8" (3.5mm) TRS FHM-3 microphone plug or other pin compatible dynamic microphone to the microphone jack. (Note: For EU customers, contact your distributor or FlexRadio EU Representative regarding microphone recommendations.)


7.) Phones (Headphones) - Connect a pair of stereo headphones to the jack marked **Phones** using a 1/8" (3.5mm) TRS plug. This connection is optional if you are using Stereo Speakers connected to the back panel.


**8**.) Key/Paddles/Keyer - Connect your CW paddles, keyer or straight key to the jack marked **KEY** using a 1/8" (3.5mm) TRS plug. Optionally you can use a 1/8" mono (TS) plug for connecting a straight key.

For paddles or a keyer, connect the TRS tip to DOT, Ring to DASH and Sleeve to common. For a straight key, using a TRS plug, connect TRS tip to KEY and Sleeve to common. Do NOT connect the TRS Ring. If using a TS plug with a straight key, connect the tip to KEY and the Sleeve to common.


9. GNSS Antenna - Connect the supplied GNSS antenna to the connector labeled GPS ANT. For optimal operation, an unobstructed view of the horizon is recommended.

## 3.0 GETTING TO KNOW YOUR AURORA 500W TRANSCEIVER

This section provides a description of the AURORA front and rear panel controls and connectors.


### AURORA AU-510 and AU-520 Front Panel

| | |
|---|---|
| 1 | Power Button with colored LED status indicator |

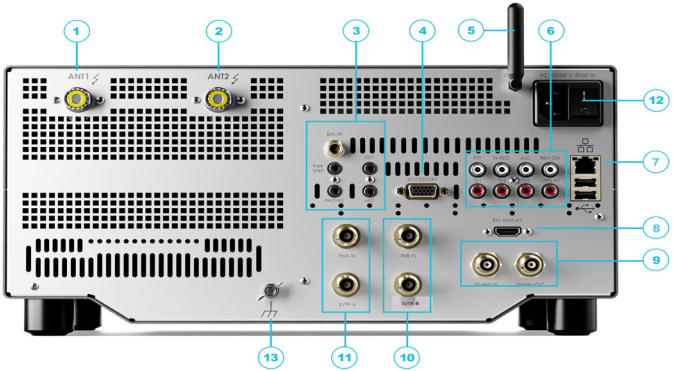

### AURORA AU-510M and AU-520M Front Panel

| | |
|---|---|
| 1 | Power Button |
| 2 | Eight inch multiple touch sensitive HD color display |
| 3 | VFO A multi-function control for audio level, AGC Threshold, Squelch and audio Solo operation |
| 4 | VFO A multi-function control for receiver filter bandwidth |

## AURORA AU-510M and AU-520M Front Panel Cont.

| | |
|---|---|
| 5 | VFO B multi-function control for audio level, AGC Threshold, Squelch and audio Solo operation |
| 6 | VFO B multi-function control for receiver filter bandwidth |
| 7 | Manual transmit (MOX) button |
| 8 | Tune (TUNE) button |
| 9 | ATU on / tune /bypass button |
| 10 | Microphone level, key speed, transmitter power and TX menu multi-function control |
| 11 | Function key, 1 through 6 |
| 12 | VFO A Receiver enable button |
| 13 | VFO A Transmitter enable button |
| 14 | VFO B Receiver enable button |
| 15 | VFO B Transmitter enable button |

| | |
|---|---|
| 16 | A copy to B (A>B); B tracks A (A>>B) |
| 17 | VFO A RIT / XIT indicator |
| 18 | VFO A Tuning knob, VFO A menu / clear control |
| 19 | VFO B tuning knob, VFO B menu / clear control |
| 20 | VFO A and B tuning step control button |
| 21 | VFO A and B tuning lock button |
| 22 | VFO B RIT/XIT indicator |




## AU-510 / AU-510M or AU-520 / AU-520M Rear Panel

| | |
|---|---|
| 1 | Transceiver Antenna Ports #1: SO-239. Caution: Possibilty of electric shock |
| 2 | Transceiver Antenna Ports #2: SO-239. Caution: Possibility of electric shock. |
| 3 | Peripheral Connections (1/8" - 3.5mm) for speaker, keyer, phones, mic. NOTE: BAL IN is for AU-520 and AU-520M ONLY |
| 4 | Accessory Connector: DB-15HD - see pin out in the AURORA Hardware Reference Manual |
| 5 | GNSS Antenna port |
| 6 | Note: 1PPS Connection is NOT used on the AURORA AU-510/AU-510M or on the AURORA AU-520/AU-520M |
| 7 | Gigabit Ethernet Port and USB Accessory Sockets |
| 8 | Connection for an External Display (only available on M models) |
| 9 | GPS Disciplined Oscillator 10MHz Input/Output (Use of the 10MHz Input requires the factory installed GPSDO option) |
| 10 | Transverter B output socket and RXB antenna socket. Only available on the AU-520 / AU-520M) |
| 11 | Transverter A output socket and RXA antenna socket |
| 12 | AC/DC power plug / line cord connection. Socket-outlet should be easily accessible. |
| 13 | Frame or Chassis Terminal |

## 4.0 INSTALLING SMARTSDR™ FOR WINDOWS APPLICATION ON YOUR PC

The SmartSDR™ for Windows application is the software used to interface with the AURORA radio hardware for viewing RF spectrum and controlling the radio. It must be installed before you can start using your AU-510/510M or AU-520/520M with a Windows PC. For more details, we recommend you refer to the SmartSDR for Windows Software User's Guide available via our website.

### Step 1. Obtaining SmartSDR for Windows Software

SmartSDR for Windows software is obtained by downloading the installer from the FlexRadio website:

https://www.flexradio.com/ssdr-for-windows/

Step through the offered list of software to find the latest version (the version with the largest version number), then click on it to start the download.

Note: the SmartSDR Installer will automatically detect your Windows® version and will notify you if it does not meet the minimum operating system requirements.

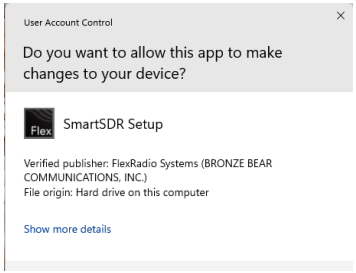
If you need to install .NET Framework 4.0, the SmartSDR for Windows Installer will attempt to download the necessary software from the Internet. Alternately, you can download it directly from Microsoft using this web link BEFORE installing SmartSDR for Windows.

https://www.microsoft.com/en-ca/download/details.aspx?id=17718

Run Windows Update after installing .NET Framework 4.0 to ensure all the required patches and security updates are applied.

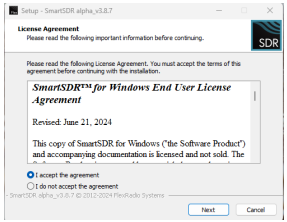
### Step 2. Installing the Software

Double click the SmartSDR for Windows installer (for instance, SmartSDR_v4.1.x_Installer.exe) to begin the software installation process. You may see a Security Warning as shown in the images below.



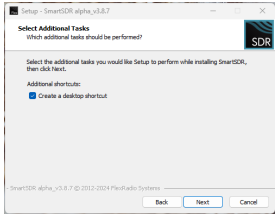

Click **Run** to continue.

The SmartSDR for Windows End User's License Agreement screen is displayed as shown below.



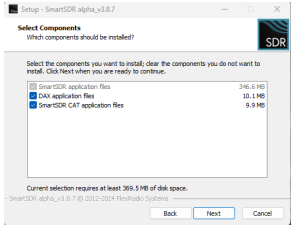

To accept the license agreement, click on the **"I accept the agreement"** radio button and then click **NEXT**.

The Select Destination Location screen is now displayed as shown below. It is recommended that you use the default installation location, as it will use the Windows recommended location for the application files. You may, however, choose an alternate location.



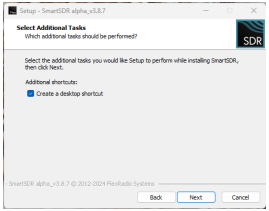

Once you have decided on the installation location of SmartSDR for Windows, click **NEXT** to continue.

The *Select Components* screen is displayed as shown below; additional components may be displayed. The DAX and SmartSDR CAT applications are optional components which are installed by default. If the DAX application files are installed (DAX sound drivers), the installer will prompt to reboot the system at the end of the installation.



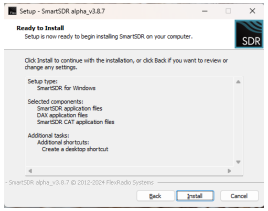

Click **NEXT** to continue.

The Select Additional Task screen is displayed as shown below. It is recommended that you leave the "Create a desktop icon" option checked to provide a convenient way of starting SmartSDR for Windows from your Windows Desktop.



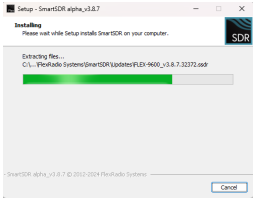

Click **NEXT** to continue.

The *Ready to Install* screen is displayed as shown below.




Click **INSTALL** to continue.

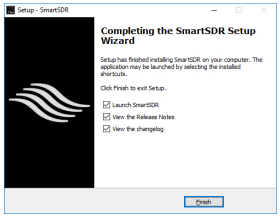
The *Installing* screen will be displayed showing the files being loaded.




After the application files have been installed, additional drivers may be installed.

After a few moments, the *Completing the SmartSDR Setup Wizard* screen will be displayed as shown below. It is highly recommended that you review the *SmartSDR for Windows* Release Notes, any time you update your software, as they contain important information regarding the features and operation for a specific release.

If you want to start the *SmartSDR for Windows* application after the SmartSDR Installer has completed, leave the "Launch SmartSDR" option checked.




Click **FINISH** when you have made your selections.

*Note: If hardware or virtual hardware drivers were loaded as part of the installation process, the screen shown above will not be displayed. You will be prompted to reboot your computer as shown in the image below to ensure that the newly installed drivers have been properly installed and initialized. If prompted, reboot your PC before connecting to your AURORA Series radio.*

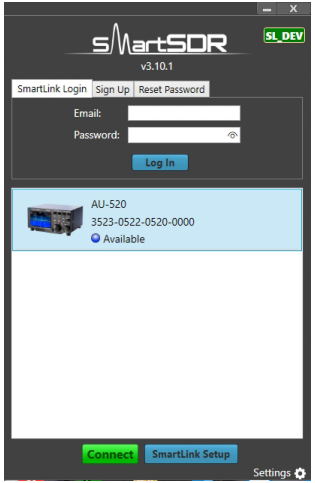

**Step 3. Starting the SmartSDR for Windows Application for the First Time**

Start the AU-510/520 or AU-510M/520M by momentarily pressing, then releasing the power button.

The AU-510M and AU-520M SDRs have a front panel display that initially shows the FlexRadio, Inc. logo and then the text "Loading..." along with a green flashing power button when booting up. Once the AURORA radio is ready, the the power button will be either solid green for units without a GPSDO installed or will have an amber or blue LED, which may be solid or flashing depending on the initialization state of the GPSDO.

Locate the SmartSDR application icon on your desktop as shown below and double click on it to launch SmartSDR for Windows. (Note: your software version number may vary.)

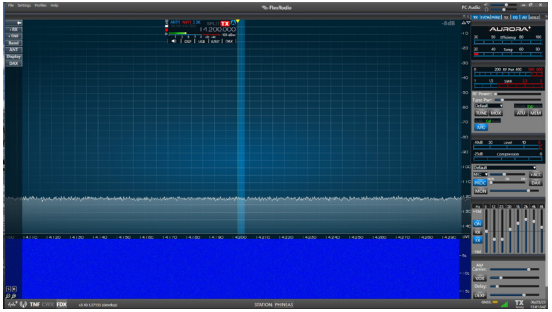

The SmartSDR Radio chooser dialog will appear and your radio should be listed. If you don't see your radio, double check your network connection and network setting.




To start SmartSDR, double click the radio in the Radios area of the dialog box or click the radio once and then press the CONNECT button that appears at the bottom of the screen. "Available" indicates that you may connect to the radio.

**Step 4. Operating Your AURORA 500W Transceiver**

The SmartSDR console will be displayed with one (1) High Definition Panafall Spectrum Display and one Slice Receiver tuned to 14.100.000 MHz as shown below.



To TUNE the receive slice to another frequency click the BAND button on the left hand side of the spectrum display then click the desired band. For further options on how to tune a slice receiver (drag tuning, click tuning, direct frequency entry, etc.) please refer to the *SmartSDR for Windows User Guide*.

**To set the operating MODE:**

1.) On the slice receive control panel, click current MODE (USB, LSB, CW, AM, SAM, DIGU, DIGL, RTTY, FM, NFM, DFM). To display the mode and the filter selection menu.

2.) Right click on the mode drop down box to select your operating mode. See the example shown below. Note that you can select and display three (3) additional "favorite" MODEs by right-clicking the displayed MODE and choosing your favorite from the drop down menu.


**To Transmit in SSB Mode:**

1.) Ensure the radio is plugged into an AC outlet and the radio is powered on.

2.) Select a band, frequency, and the SSB mode (LSB or USB).

3.) Adjust the RF power slider control for the desired RF output. The range is 0 to 500 watts.

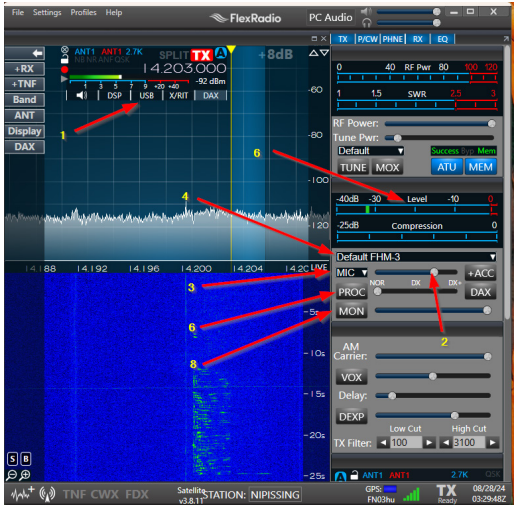
4.) Connect the FHM-3 to the MIC Input and PTT connector on the rear of the radio.

5.) Press the PTT switch on the microphone and speak in a normal voice.

6.) Adjust the MIC slider control for the desired microphone level. Do NOT exceed -5 dBFS on voice peaks on the LEVEL meter.

7.) For additional talk power, click the PROC button and adjust the slider for the desired level. It is recommended to always use PROC set to the normal or DX setting.

**8.)** If you want to hear your transmitted audio, click on the MON (monitor) button and adjust the level with the slider to the right of the button to a comfortable listening level. Headphones are recommended to prevent audio feedback issues.




Congratulations! Your AUROROA radio is receiving and transmitting signals. Please refer to the AURORA Hardware Manual and SmartSDR Software Manual, which are available for this radio, for instructions and additional information regarding the operation of your AURORA 500W transceiver.

**NOTES:**

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