# Allstar Node Options

### What Is It?

- AllStarLink is a <u>network of Amateur Radio</u> <u>repeaters</u>, remote base stations and home nodes accessible to each other via Voice over Internet Protocol (VoIP).
- AllStarLink can run on a <u>dedicated</u> <u>computer</u> (including the Raspberry Pi) that you host at your home or repeater site.
- It provides linking of these radio "nodes" to other systems of similar construction <u>anywhere in the world</u> via VoIP.
- Any FM radio with CTCSS that operates in the ham bands <u>can access your node</u> or an AllStar enabled repeater.
- <u>Audio quality is generally extremely good</u> because AllStar uses FM, the audio doesn't sound "compressed", like digital voice modes.
- An AllStar RF Node runs on a Raspberry Pi or other miniPC with an RF hat, and is connected to the AllStarlink network <u>via</u> <u>the internet</u>.



## Why Do I Need It?

Here are some great reasons to consider AllStar:

- One of the primary reasons to set up an AllStar Link, is its huge number of available nodes, presently <u>38,000</u>.
- By connecting to the AllStar Link network, you can communicate with other users and nodes <u>around the world</u> or to your local <u>repeater</u>.
- AllStar Link is compatible with both <u>analog</u> and <u>digital</u> radio systems, allowing you to integrate it into your existing setup without the need for significant upgrades.
- <u>EMCOMM!</u> Setting up an AllStar Link node can contribute to the overall preparedness of your community by establishing an alternative communication infrastructure.
- With an AllStar node, you have the freedom to <u>roam the property</u> near the node with an HT, whether on the road or out of reach of the the repeater.
- <u>FM clarity</u>, without the digital compression. audio artificing.
- Full Duplex Possible.



### What Do I Need?

That depends upon the node:

- You will need a simple computer such as a <u>Raspberry-Pi 2/3/4</u> or a <u>Dell Wyse 3040</u> Mini PC.
- Did you know that the Raspberry-Pi was named following the <u>fruit naming</u> <u>tradition</u> of microcomputers. The "Pi" is short for <u>Python</u>, which was the original operating system.
- A pi-hat or external node of some type which is an <u>FM hotspot</u> that connects to your Raspberry-Pi or Wyse Mini PC.
- An <u>SD card</u> imaged with HamVOIP or ASL3 (free download).
- <u>A node number</u>. You must logon to <u>www.allstarlink.org</u>, create an account and request a node number. If you are using DVSwitch on your Android phone, <u>only an account</u> is needed.
- An <u>FM transceiver</u>.
- An <u>internet connection</u>.



### Do Not Buy!

#### Do NOT purchase a MMDVM!

• Other hotspots, such as the Multi-Mode Digital Voice Modems (MMDVM) ARE NOT compatible with AllStar. They are exclusively for digital modes, such as C4FM, YSF, DMR & DSTAR.



### **Smart Phone**

#### **DVSwitch or RepeaterPhone**

- The most affordable option.
  -DVSwitch Free. Asks for a \$0.99 tip.
  -Repeater phone \$7.99.
- You must register with AllStar, but <u>don't</u> <u>need to request a node</u>.
- Connect to Allstar with WIFI or mobile data and operate from anywhere.
- Much more responsive than what we were used to with EchoLink.
- Configuration instructions are located on our website @ westvalleyarc.com, Navigation Menu/More/AllStar Info Page.



BOARD

KNOWLEDGE CENTER ARRL LEARNING CENTER ARA REPEATERS TITLE 47 PART 97 FED REGS ALLSTAR INFO PAGE TECH ARTICLES EMCOMM ARTICLES LICENSE TEST LOCATIONS WV HAMSHACK INFO. SHOP HERE HAMS OF THE YEARS DOCUMENTS

### **AURSINC SA818**

Aursinc SA818 – Amazon.com

- 420-450MHz/70cm, <u>UHF Only</u>
- <u>500-1000</u> milliwatts
- \$90.00 (fully assembled).
- Requires a <u>Raspberry Pi 2,3,4 or 5</u> single board computer.
- <u>Complete Raspberry Pi4 starter kit</u> with case, fan, heat sinks & power supply, about **\$120.00**.
- Requires a 32G Class 10 microSD card.
- HamVOIP or ASL3 Software Free
- Total Cost, (node + Pi Kit) about **\$215.00**.
- <u>Note:</u> Kits4Hams claims that this node is a <u>clone</u> of theirs and that there are numerous problems with it that violate FCC requirements, making it <u>illegal for sale/use</u> in the US. First, it does not meet the requirements for <u>harmonic levels</u>, exceeding the permitted 2nd harmonic level by over 19 dB and the 3rd harmonic level by about 6 dB. Second, it is not FCC approved.



# **Raspberry Pi Options**

- The main difference between Raspberry Pi 2, 3, 4, and 5 is their <u>processing power</u>, with each subsequent generation offering significantly improved performance, including <u>faster CPUs</u>, <u>better GPU</u> capabilities, more <u>RAM options</u>, and <u>enhanced connectivity</u> features.
- The <u>Pi 5 is the most powerful</u> and advanced option currently available; the <u>Pi</u> <u>2</u> is considered significantly less powerful compared to the newer models.
- The Raspberry <u>Pi 3 or 4 is generally</u> <u>preferrable</u> for most kits, where others require the Pi Zero for its compactness.
- Most have integrated <u>WIFI</u> capability, video, <u>USB</u>, <u>RJ-45</u> ethernet port and an <u>micoSD</u> card slot.
- They can accept a keyboard, mouse and monitor like any other computer.
- Prices listed are from amazon.com.
- There are cheaper units available, such as Ali Express. Complete Kit is \$54.00.





### SHARI PiZero

#### https://kits4hams.com/

- SHARI = SA818 Ham Allstar Radio Interface)
- <u>All-in-one</u> node.
- Available in <u>UHF</u> (420-450 MHz) or <u>VHF</u> (144-148 MHz).
- <u>250 to 500</u> milliwatts RF output power
- Available as a <u>kit</u>, or <u>fully assembled</u>.
- Requires a <u>Raspberry PiZero 2 W</u> single board computer.
- The Pi-Hat sits atop the Raspberry-pi.
- Available in UHF or VHF.
- <u>Basic kit</u> with case (excluding Raspberry Pi) **\$80.00.**
- SA818 pre-soldered \$5.00 (recommended).
- <u>Build yourself</u>, basic + Pi Zero, about **\$125.00**.
- Fully assembled and tested, including Raspberry Pi, **<u>\$205.00</u>**.
- Requires a 32G Class 10 microSD card.
- HamVOIP or ASL3 Software Free



### SHARI PiXX

#### https://kits4hams.com/

- Available as a <u>kit</u>, or <u>fully assembled</u>.
- Requires a <u>Raspberry Pi 2, 3 or 4</u>, single board computer <u>kit</u>.
- Available in <u>UHF</u> (420-450 MHz) or <u>VHF</u> (144-148 MHz)
- <u>400 500 milliwatts</u> RF output power.
- <u>Basic kit</u> with case (excluding Raspberry Pi)
  \$65.00.
- SA818 pre-soldered \$5.00 (recommended).
- Fan option \$8.00 (recommended).
- SD card with HamVOIP preinstalled **\$10.00**.
- <u>Build yourself</u>, (Kit + Basic Pi-4), about \$185.00.
- Fully assembled and tested, (excluding Raspberry Pi), **\$90.00**.
- Requires a 32G Class 10 microSD card.
- HamVOIP or ASL3 Software Free



### SHARI PiHat

#### https://kits4hams.com/

- <u>All-in-one</u> node.
- Available as a <u>kit</u>, or <u>fully assembled</u>.
- Requires a <u>Raspberry Pi2, Pi-3 or Pi4</u>, single board computer.
- <u>UHF</u> (420-450 MHZ) or <u>VHF</u> (144-148MHz).
- <u>250 to 500 milliwatts</u> RF output power.
- The Pi-Hat sits atop the Raspberry-pi.
- Available in UHF or VHF.
- <u>Basic kit</u> with case (excluding Raspberry Pi) **\$80.00**.
- <u>Options</u> to the basic kit:
- Fan \$8.00 (recommended)
- SA818 pre-soldered \$5.00 (recommended).
- SD card with HamVOIP preinstalled \$10.00.
- <u>Build yourself</u>, basic + Pi-4 (\$80.00) about <u>\$160.00</u>.
- Fully assembled and tested, including Raspberry Pi, <u>\$220.00</u>.
- WIFI compatible.
- Frequency and PL tone set via SSH (secure shell) terminal software or HDMI monitor and USB keyboard.



#### AIOC

#### https://na6d.com/

#### All-in-one-Cable

- Compatible with cheaper radios using Kenwood-style connectors, including most <u>Baofengs, BTECH, Wouxun, Quan Sheng,</u> <u>Anysecu</u> and more!. Not compatible with ICOM or Yaesu radios.
- The AIOC works as a COM/Serial port for programming many radios and as a <u>sound</u> <u>card</u> for digital modes.
- The Pi Zero W (<u>wireless</u>) will connect to your WIFI connection.
- Simply set up the VHF or UHF <u>frequency and</u> <u>PL tone on the base radio</u> and program any other HT to that frequency and PL.
- <u>\$34.99</u> (**\$19.99** unsoldered) AIOC Case \$4.00
- <u>Pi Zero 2 W \$30.00</u>, **\$40.00** with kit + Case. About \$64.00 (+microSD).



#### Allscan

#### https://allscan.info/products/#nodes

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- Uses a regular Retevis Dual Band HT.
- Requires the <u>Dell Wyse</u>, or <u>Beelink T5</u> MiniPC & <u>USB Communications Interface</u>.
- The Retevis radio and the interface are your node. They remain at a fixed base.
- The USB communications interface works similar to the sound card in the last model, and <u>digitizes</u> <u>the audio</u> which is connected to your AllStar node via the Dell Wyse or Beelink MiniPC connect to your <u>WIFI connection</u>.
- Simply set up the VHF or UHF <u>frequency and PL</u> <u>tone on the base radio</u> and program any other HT to that frequency and PL.
- <u>Half-Duplex</u> (Fully Assembled) ANH100 \$249.00 - Includes Dell Wyse 3040 MiniPC, AllScan URI101 URI, and 1 Retevis RT85 HT. Add integrated power supply URI150 -\$30.00 = **\$279.00**.
- <u>Full-Duplex</u> (Fully Assembled) ANF101 - Includes Dell Wyse 3040 MiniPC, AllScan URI150 URI, and 2 Retevis RT85 HTs. **\$399.00.**



# Comparison Table

		Node comparison Table						
<u>Manufacturer</u>	Model No.	<u>Duplex</u>	<u>PC</u>	<u>Layout</u>	<u>Cost Kit</u>	<u>Mfr Fully</u> <u>Assembled</u>	<u>Kit Cost + PC</u>	
https://na6d.com/	AIOC	Half	Pi Zero 2 W	HT Jack to Pi	\$24.99	\$34.99	\$64.00	Excludes HT
AURSINC (Amazon)	SA818	Half	Pi 2, 3, 4, 5	USB to Pi		\$90.00	\$215.00	
https://kits4hams.com/	SHARI Pi Zero	Half	Pi Zero 2 W	All-in- One	\$80.00	\$205.00	\$125.00	
https://kits4hams.com/	SHARI PIXX	Half	Pi 3 or 4	USB to Pi	\$65.00	\$90.00	\$185.00	
https://kits4hams.com/	SHARI PiHat	Half	Pi 3 or 4	All-in- One	\$80.00	\$220.00	\$143	
<u>https://allscan.info/</u>	URI150	Half	Dell Wyse	USB to Wyse		\$279.00	\$279.00	Includes HT
https://allscan.info/	ANF101-V2	Full	Dell Wyse	USB to Wy	/se	\$399.00	\$399.00	Includes HT
Pi Zero 2 W \$30.00	Pi 4 Board Only \$	63.00	Pi 4 kit \$118.00					

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# Questions