

Ham 45H – ASL Firmware: Pi from Scratch

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- The diminutive Raspberry Pi (RasPi, Pi) is a little computer that uses a camera card for its memory and programming.
 - Obtain a Raspberry Pi. Model 3 B+ is the preferred tradeoff of usefulness versus heat generation.
 - Model 2 does not have built in WiFi and Model 4 creates excess heat. 3B need heatsink, 4 needs fan.
 - Acquire a power supply 5.1V with microUSB connector, rated 2.5A for Model 3 and 3.0 A for Model 4.
 - Acquire a MastersCommunication.com RL-20 radio adapter board. It comes with USB-A to USB-B cable.
 - Acquire a micro-SD (μ SD), 8 – 32 GB, Class 10, U3 or greater; preferably SanDisk Extreme.
 - Avoid 64GB or larger. Raspberry uses FAT32. SD cards larger than 32 GB are exFAT format.
- Use PC or Laptop to create the card image (*.img). This is like transferring photos.
 - Download an image to write to the card from http://downloads.allstarlink.org/index.php?b=ASL_Images_Beta.
 - Select the ASL Beta image for Raspberry Pi. Use latest version.
 - Download will take several seconds.
 - Follow instructions to unzip or extract the zip file. This will take a few minutes.
 - Save the image (*.img) on your computer in a readily accessible location.
 - Write down the location.
- Download the Raspberry Pi Imager app for writing to SD cards. <https://www.raspberrypi.com/software/>
 - Place the card in the appropriate slot on your computer. An adapter may be required.
 - The card will likely be loaded as drive G: Observe which drive it is.
 - Start the app. Choose storage to select the microSD card device.
 - Choose storage. Scroll down to Use Custom.
 - Select the AllStarLink image saved earlier.
 - RPI app will (1) format SD card with FAT32, (2) copy the .img, (3) then verify. All in one.
- Other tools may be helpful for maintenance and backup.
 - These are all downloadable by searching with Browser.
 - Be careful with clicks. SourceForce downloads stuff you do not want.
 - “SD Card Formatter” will properly format FAT32 up to 32GB cards. <https://www.sdcard.org/downloads/formatter/sd-memory-card-formatter-for-windows-download/>
 - “Win32DiskImager” will read and write images to SD cards after they are formatted. <https://sourceforge.net/projects/win32diskimager/>
 - The app can copy your existing image and save on the PC for later use.
 - Be sure to select “Read only active partitions.
 - Otherwise, the image will not be rewritable on different SD cards.
 - Follow the instructions.
 - When using app, press OK and Exit before removing cards from the slot.
- Put it together.
 - Connect the Pi to the RL-20 using a USB-A to USB-B connector cable.
 - Insulate the circuit boards or better install them in a case.
 - Connect Ethernet cable
 - Connect the power supply to the Pi.
 - Connect the power supply to the wall.
 - First red then flashing green lights should show on the corner of the board by the plug.
- With a browser search for “PuTTY”. Download.
- Follow *Ham 45H – ASL Firmware: Elmer Card* for general set-up. This will get you running.
- If you want more information or want to tweak configuration files consider these articles.
 - Ham 45B – ASL Firmware: Pi Headless* has more discussion.
 - Ham 45D – ASL Firmware: Configure COS LED* is the set-up for the LED used in troubleshooting.
 - Ham 45G – ASL Firmware: simpleusb & rpt.conf* is for configuration.files. Set CTCSS=off in simpleusb.conf.
 - Ham 45E – ASL Firmware: Audio Adjust* has details about audio configuration.
- Life is good. Enjoy!

