Langstone V2 & V3 construction experiences.

Hi fellow Langstone builders.
I thought my recent experiences might benefit anyone embarking on a Langstone using an Adalm Pluto and either a Raspberry Pi 4 or 5. Sorry, no Lime unit available here to test with my hardware.

First, a vote of thanks to Colin, G4EML (my anagram amateur friend, hi!). I have long wanted to build a Langstone for use with QO-100 and, potentially, on the higher amateur bands above 1 GHz. Only recently have I amassed the necessary component parts (or so I thought*) and grasped the fact that Colin had fully completed the Langstone project work to create a functioning system. I had imagined that the Portsdown system had been finished successfully by BATC members and that the Hayling project had come to an end with "only" the Amateur TV variant left standing - how wrong I was! Thanks for the effort and time spent Colin! A great job.

I started by using the latest V3 Langstone material available on GitHub once I had acquired a Raspberry Pi 5 (used, via CeX) and a standard V1 Pi Screen (McMichael Rally 2025). I did read a number of Langstone posts on a variety of online sources and believed I had collected sufficient information to construct a working V3 system. Despite easily following the GitHub instructions to program the Pi, assembling a complete Langstone proved a failure with a number of different error messages being received at several stages of the build resulting in a lengthy period of investigation into obscure causes and likely errors on my part.
It seemed easier to back up a little and, luckily, I had an unused Raspberry Pi 4 to hand with a second V1 Pi Screen display. I then embarked on a Langstone V2/Pi 4 system and achieved a similar level of failure to the Pi 5 system with many of the same error reports!
A considerable period of research online and some steady learning about the Langstone with frequent reference to the numerous postings available on several Internet sites now occupied me for 10 to 15 days of fault finding (BATC, Amsat-DL and the UK Microwave Group's Wiki (https://wiki.microwavers.org.uk/Langstone_Project) plus specific Google searches.

Eventually, it became clear that the following system requirements had been overlooked in both my builds and I was obliged to make these key changes in order to get 2 working systems! Unknown to me at first were the following "compulsory" matters provided from my own experiences and without any criticism:-

1. You must follow Colin's embedded instructions in GitHub explicitly. Use Pi as the ID and Raspberry as the Pi password.
2. You must use high quality USB cables for all Pi and Pluto connections. These must always be "charging and data synchronising" cables i.e. all connections are made end-to-end in the cable wiring and not just the two charging lines alone. Be prepared to change and upgrade cables as necessary.
3. You must use only the specified hardware components - Pi 4 or 5 for V2 or V3 Langstone systems and a Pluto or Lime for the SDR role. The display screen must be the standard V1 Pi unit according to GitHub text but Colin has recently added the V2 version of the Pi screen of greater pixel count/resolution as an updated variant.
4. You are expected to know - or discover - that the USB Mouse* component must be an older wired type with a rotary finger wheel and a ball movement, NOT an LED/camera version. I did not see that specified anywhere.
5. I already had two working USB Audio "dongles" available for the microphone/headphone interface and tried both in each system - neither worked*. Re-checking multiple postings on a variety of sites revealed that there was an expectation that the Audio dongle be a specific wired type available easily for "about £3" from e-Bay or similar sources. The photo illustrations of some Langstone systems constructed by others was a great help in identifying the precise type. After recent inflation, £7 spent gave successful results on both my systems!
6. You must NOT power the Pluto with dual supply inputs from both the Pi USB connection and, separately, from an external source into the Pluto power input socket! Only the Pi 5 Volt feed must be used via the data cable connection for a straightforward/non-Ethernet system as described on GitHub - many thanks to Heiner, DD0KP from a posting on Amsat-DL. Guess who had been providing both...!
7. You will need to use an appropriate power supply of adequate rating for the Pi 4 or 5. Many of the error messages received ask that you check power supply and/or connections as likely causes of failure. I did that countless times but I only ever found one dubious USB lead and changed it for another.

During the construction of both of my Langstone systems, I found the test and fault finding software utilities Colin has built-in very valuable. I just needed to work through the 7 items listed above to achieve the desired results.

Regards, Ted Jewell, G4ELM