

MSSIAH

MIDI SID SOFTWARE

Troubleshooting

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Introduction

Dealing with vintage equipment is great fun. Unfortunately there is a downside with vintage electronics: It's old.

Surprisingly many C64s have proven to stand the test of time quite well, though some of them have seen better days and cause headaches when trying to build a bad *ss Commodore synthesizer system with the MSSIAH.

This booklet was put together to remedy the most common hardware problems people have encountered related to MSSIAH usage. It is by no means a guide to finding and fixing errors on the C64 or to trouble-shoot Commodore stuff in general. Its purpose is to point you in the right direction. If you stumble upon something new, feel free to contribute! Contact info is on our website <http://www.mssiah.com>

MSSIAH itself has proven to be quite sturdy and reliable over time. Thanks to our extensive test & quality work with tough quality checks prior to both production and shipping we have never had a single dead-on-arrival! However, MSSIAH is depending on its host computer and requires a flawless C64/128 and power supply unit to function properly. So when the cartridge does not start up or behaves in a weird way you need to turn your attention to your Commodore system.

What goes wrong?

Poor electrical connection in the cartridge port because of old corroded clips or loosened grip prevents cartridge communication. Burnt ICs on the motherboard making cartridge communication impossible. Worn out power supplies failing to deliver enough power to the computer and its extra peripherals (MSSIAH, SID2SID). These are the most common causes but there are tons of other reasons why an old computer fails.

What to do?

Unless you are a hard core tech geek whose idea of fun is to stick your head into an old apparatus for hours, trying to repair a broken C64 is a tedious job.

It's a waste of time when all you want is to take the world by storm with some dazzling 8-bit arpeggios so our recommendation is to find another (working) C64 and power supply unit.

While you're at it, get an extra reserve to be on the safe side. With so many C64s lying around there are lots of bargains out there.

Disclaimer

8bit ventures does not take responsibility for any consequences of following the instructions in this booklet. If you lack experience in electronics or simply have no sufficient knowledge, always consult a professional. Please note that we do not offer repair services or consulting.

Error Cases**Startup problems**

Cartridge does not start up. C64 resets to regular blue screen or is completely black.

Explanation

- Expansion port fails to make electrical connection:
 - Cartridge is not properly inserted?
 - Expansion port connectors are old and corroded?
 - Expansion port connectors are greasy?
 - Expansion port connector's grip has loosened?
- C64 motherboard works but components related to control cartridges are too worn out or broken?
- Power supply unit fails to deliver extra power needed to run the cartridge?
- C64 fuse is blown?

Solution

- Try reinserting the cartridge properly. Use both hands, push it all the way in and make sure it's in place and sits tightly so that the terminals make good contact with the expansion port connectors. Try it again a couple of times if it does not work. Sometimes it's that simple.
- Try cleaning the expansion port with compressed air or a proper cleanser.
- Try tightening the metal clips in the expansion port connector (see chapter "How to fix a poor connector grip").
- Try using another (fully working) C64.
- Try using another (fully working) power supply unit, preferably the later model.
- Check C64 internal fuse.

Additional information

Older cartridges may still work even if one or more descriptions above are true. That is because they do not use the full expansion port like MSSIAH does. That means less need for electrical connection, it's less sensitive to connector wear and has also less power consumption.

So the fact that your computer still manages to launch your old 8 Kb "Hangman" cartridge is unfortunately no guarantee it can handle a larger requiring unit like the MSSIAH.

Category: Startup problems

The cartridge starts up but the screen is garbled.

Explanation

- Something happened during startup that disturbed data communication.
- C64 CIA chip and / or VIC chip is malfunctioning.

Solution

- Try standard procedures with startup problems (see previous category).
- See chapter “How to perform a video bank test”.
- If broken and installed in a socket, exchange the CIA chip (or simply get another C64).

Category: MIDI problems

- MIDI does not work. MSSIAH does not react to MIDI input.
- Erratic MIDI behavior like drop outs, no response to note off etc.

Explanation

- Wrong MSSIAH MIDI receive channel?
- MSSIAH MIDI receive channel switched off permanently?
- MIDI master unit / MIDI drivers / PC MIDI interface configured incorrectly?
- MIDI bus overloaded?
- MIDI circuitry inside the MSSIAH does not get adequate power?

Solution

- Set the correct receive channel in any of MSSIAH's applications (see manuals).
- Try MSSIAH's MIDI diagnostics in the startup menu (see chapter "Bank Tests / MIDI test" in the "*MSSIAH Getting Started*" manual).
- If MIDI channel switched off permanently, see chapter "How to fix a permanently switched off MIDI channel".
- Check your MIDI system. See chapter "How to do a simple test of your MIDI equipment".
Get new MIDI interface, MIDI drivers etc.
- Try using a dedicated MIDI output for MSSIAH MIDI data. When overloading the MIDI bus units may be choked, that is why many interfaces have multiple MIDI outputs named A, B, C etc.
- Make sure you have a late model fully working power supply unit.

Additional information

The no. 1 culprits when MIDI fails are usually your PC MIDI interface and drivers.

Category: Audio problems

- I get no sound?
- There is no sound out of my second SID.

Explanation

- SID broken?
- No audio output routed to SID #2?
- C64 internal addressing to SID broken? (PLA)
- C64 internal audio circuitry failing?

Solution

- Replace possibly broken SID circuit.
- Make sure audio pins are correct in audio output connector and SID2SID's audio connector (see "*MSSIAH Getting Started*" and "*SID2SID Installation*" manuals).
- Get another C64.

Category: Input problems

- Mouse does not work in MSSIAH Sequencer.
- Potentiometers do not work.

Explanation

- Mouse/Potentiometers not activated in the software?
- Internal SID chip broken?

Solution

- Activate mouse/potentiometers in the software (see manuals).
- Make sure you get a signal from the mouse or potentiometers by running the port diagnostics program in the startup menu (see chapter “Bank Tests” in the “*MSSIAH Getting Started*” manual).
- Replace possibly broken SID circuit.

Additional information

The SID circuit is actually the chip handling mice and pot-input. If it's broken, software is unable to read signals from your mouse or paddles.

Other factors that come into play

Is your Commodore 64 modified in any way? Do you have extra peripherals connected? Do you have an expansion port splitter interfering with the cartridge? A custom built power supply unit? Is your SID2SID connected to the wrong pin?

Some words about the Power Supply Unit

This unit alone is more than often the cause of a non-functioning system why it deserves its own chapter. After many years in service it is sadly not a rare case when a PSU fails. It might very well do its job as long as you run your old Commodore computer playing games etc., but when it comes to running peripherals such as the MSSIAH Cartridge it all of a sudden requires more power than when stand alone. That is why a potential problem with a worn PSU has not shown up until now. You can still use your Commodore, just not with a new cartridge. Unless of course, you get a PSU that still cuts it.

The one that we recommend is the late model boxy white PSU for 2.5 amps. It shipped with the memory expansion units and later became standard PSU for the slim line C64.



Do NOT try to repair a power supply unit yourself. That can result in serious and fatal injuries.

What does a flawless C64/128 mean?

It means a computer with a fully working expansion port, no burnt circuits on the motherboard and no too worn out components in the chain of cartridge communication. It also means a power supply unit delivering enough power to the computer, its peripherals and the cartridge.

What exactly are your test & quality procedures?

To eliminate dead-on-arrivals and provide a long life for your MSSIAH Cartridge we have an extensive program for quality checking:

Prior to manufacturing all components are tested. During manufacturing test procedures at the plants secure full functionality. Prior to shipping a final comprehensive quality check startup and test procedure is performed to assure that every cartridge is fully operational. The product is then sealed in an antistatic bag and shipped to its happy owner.

Test Descriptions

How to perform a video bank test

If you experience a garbled screen, not just with any of the MSSIAH applications but with other software, your CIA or VIC chip may be faulty and fails to address the memory banks needed to properly display the screen image.

To test the banks, use MSSIAH's built in diagnostics tool in the startup menu titled "BANK TEST". Read more about it in the chapter "Bank Tests" in the *MSSIAH Getting Started* manual available on our web site

How to perform a SID test

To make sure you get audio out from your SID circuit and that all oscillators work, use the diagnostics tool titled "AUDIO TEST" in the MSSIAH startup menu. Be aware that a silent audio test does not need to indicate a dead audio circuit as other components or address logic to access the SID might have failed. In that case replacing the SID will still yield silence.

Read more about the audio test in the "Audio Test" chapter in the *MSSIAH Getting Started* manual available on our web site.

How to fix a permanently switched off MIDI channel

To quickly test if your MIDI setup works with the MSSIAH you can run the simple MIDI diagnostics tool in the startup menu. It's covered in the "Bank Tests" chapter in the *MSSIAH Getting Started* manual available on our web site.

If the MIDI receive channel shows up like two dashes you have switched off the MIDI receive channel. In case you previously accidentally stored this setting onto the cartridge's flash memory turning off and on your computer does not help. You will need to set a receive channel and store the setting once again.

Follow these steps:

- Run the MIDI diagnostics tool.
- Does the MIDI channel show up like two dashes?
- Close the diagnostics tool and open up MSSIAH Sequencer (any other application is fine too but in the Sequencer you will see all receive channels at once).
- Open MSSIAH's MIDI window and set the MIDI channel, either for track 1 only or for all 3 or 6 tracks.
- Close the Sequencer application.
- As you exit back to the startup menu, it's time to shut down and save the settings. Be aware that this means that all settings for all applications are saved too.
- Read more about saving changes in the "Shutting Down the Computer" chapter in the *MSSIAH Getting Started* manual. It's important you understand the risks involved!
- Once you turn the power back on and enter MIDI diagnostics tool the receive channel is set and you should be able to see incoming notes, velocity and MIDI clock if present.

How to do a simple test of your MIDI equipment

If you do not get a MIDI response from your MSSIAH, first thing is to hook up the very basics and start from there. What we want to do is see that MSSIAH is actually accepting MIDI signals.

The idea is to connect a simple MIDI keyboard directly into the MSSIAH. Directly means that one end of the MIDI cable is supposed to connect to the keyboard's MIDI output and the other end to MSSIAH's MIDI input. It's really important you don't go through any other equipment. Keyboard MIDI out to MSSIAH MIDI in. That's it. You don't want anything to interfere. Start up both MSSIAH and the keyboard before you connect the cable (this eliminates the risk of MSSIAH receiving garbage data when the keyboard starts).

First of all, open Mono Synthesizer and consult the manual on how to set the MIDI receive channel. Set this channel to whatever channel your keyboard is. To not complicate things, use MIDI channel no. 1.

Now close Mono Synthesizer and start the MIDI diagnostics tool in the startup menu (see the "Bank Tests" chapter in the *MSSIAH Getting Started* manual).

Press RETURN key to start the diagnostics tool. We have not tested every keyboard out there, yes, the possibility does exist that some shady OEM manufacturer has had no clue whatsoever what MIDI is all about, but unless your luck has been that bad you should be reading MIDI notes, velocity and perhaps even a MIDI clock (if present) by now.

(On the note of MIDI compatibility, it's worth mentioning that MSSIAH like most MIDI devices nowadays accepts standard note off messages as well as velocity value 0 as note off.)

Once you have established you have MIDI working you can go on and start up any of the MSSIAH applications and play audio.

If you have experienced erratic MIDI behaviour such as drop outs, stuck notes etc., you need to check all the rest of your MIDI equipment. This chapter has helped you to get up and running, the rest of your setup is your responsibility. We can't help you with that, consult your manuals and dealers. A hot tip where to start looking is at your MIDI interface and/or PC drivers. Those have turned out to be the cause of nearly every weird MIDI trouble our customers have asked us about.

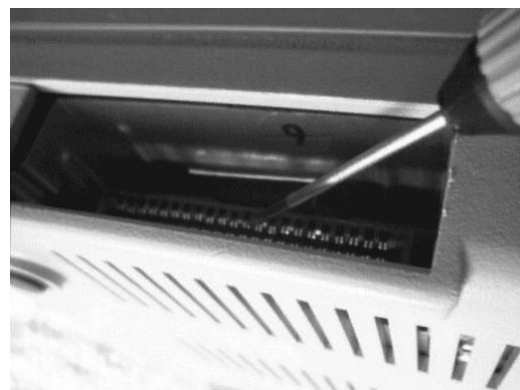
Other: Try not to overload the MIDI bus with too much data going into the MSSIAH. Use a dedicated bus if available. Avoid dumping MIDI Sysex data if possible, at least not huge streams while playing.

How to fix a poor connector grip

The expansion port consists of a simple circuit board connector. It is a rectangular piece of plastic with one upper and one lower row of metal clips. The bare side of the cartridge's circuit board (a.k.a. "terminals") is inserted into the plastic connector and the metal clips enclose the circuit board and make contact with the terminals.

Over the years the metal clips tend to lose their grip and thereby lessens the connection between the port and the cartridge.

The left image below shows the C64's cartridge connector up close:



What you need to do is to tighten its grip by gently bending the clips towards the middle, sort of tightening the gap of the port (right image). Push gently on the clip from the top down.

Work your way through both rows of clips, gently push them all just a little bit towards the middle of the connector. And even if your cartridge port is as good as new after this treatment, the clips have already shown signs of weakening and you will probably have to go through this procedure again after a while.

Don't pull too much or the grip becomes too tight and makes it impossible to insert a cartridge and you will have to reverse the process.

CAUTION:

When touching the metal clips with a screwdriver your body will make electric contact with internal circuits in the computer. It is therefore highly important that you ground yourself (wire your wrist to ground) and start by touching a radiator or something else connected to ground that discharges your body from electrostatic discharge (ESD).

Another option is using a plastic tool since plastics do not transmit current that causes ESD. The screwdriver you see in these pictures is made of metal though.