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DIY + UNUSUAL GEAR MOTION MUSIC TECH SOFTWARE TECH

Radio Shack's TRS-80 now has polyphonic MIDI and a tracker

Peter Kirn - June 2, 2025

The Tandy Corporation-manufactured, Radio Shack-sold TRS-80 computer debuted in 1977. But now you can now add full polyphonic MIDI support thanks to George Philipps and Michael Wessel. And it's already transformed into a serious live instrument and production tool. Assembly cost: about $35. The TRS-80: a tool for the 2020s.

Here, let's leave the USA's current war on its own universities, science, and research, and travel back to 1978! Back then, the Tandy Corporation was boasting about how it parlayed the Apollo program into a home computer you — *yes, you, fellow American!* – could own for $599. (That's about $2999 in modern dollars; you can pick up one for *substantially* less now.)

This machine was far too limited to do much in the way of sound playback. Not that that stopped TRS-80 developers back in the heyday from attempting some sound applications, pushing Tandy's cheap PC as hard as they possibly could. Here's one set of programs that did that, originally compiled by Dick Smith of Dick Smith Electronics, who made a clone of the TRS-80 Model I and System 80:

Downloadable Disk Images – Programs on "Music" disk

Back in 2025, of course, MIDI is a thing, and cheap chips extend the TRS-80's capabilities. Michael Wessel has been creating custom hardware to add MIDI I/O and external sound playback, either via the card's onboard synth or an outboard instrument. It's even compatible with TRS-80 standard expansions, like Radio Shack's 1978 Expansion Interface and other cards, including modern ones. Working with George Philipps, he's also developed some native software for the TRS-80 to provide onboard tracking and live playback. You can even play the TRS-80 like a dedicated instrument via its MIDI keyboard.

People are using this to make music – really. Here's a gorgeous production by Downpoly:

> Here the Model III drives the music from the S2 McFish, while the Model 4P drives the TR-808 on the TD-6. No pre recording or loops here, just background to one of the latest tracks for the next album.

And more, in a live set:

> Live music from the TRS-80 Model 4s, Orchestra-90, and MIDI/80. Using the S2 Wavetable card on the MIDI/80 to create some surreal backing tracks, complimented with the Orchestra-90 through some wild pedals.Live music from the TRS-80 Model 4s, Orchestra-90 and MIDI/80. Using the S2 Wavetable card on the MIDI/80 to create some surreal backing tracks, complimented with the Orchestra-90 through some wild pedals.

The work has been in development for some time, along with a slew of other wild hacks and add-ons for vintage computers. But we can trace the highlights in a few videos.

Here's a closer look at the hardware and software as it was coming along in the fall – played from that beautiful onboard QWERTY (eat your heart out, *Severance*):

Here's the drum tracker mode:

He's got a few external synths as demos, but to me the most appropriate is the 1987 Roland MT-32 module – a Linear Arithmetic-based synth (like the D-50) that helped pave the way for General MIDI/GS and the Sound Canvas still to come.

This spring, he completed a how-to for getting started with the project – showing that you can turn actual TRS-80 hardware (or more recent emulation boards) into a full-functioning sequencer/tracker:

Michael added speech synthesis to the TRS-80, too, resulting in this wonderful "talking" recreation of the infamous 1960s ELIZA program by Joseph Weizenbaum. (Weizenbaum intended that software's lessons to be a cautionary tale about human-machine interactions, as even his secretary began dishing their innermost secrets to the computer. It was all an eerie prediction of everything that would go horribly wrong with Large Language Models now.)

The videos keep coming even though Michael has labeled the channel as closed and complains about YouTube's algorithm. (I agree. That's why I'm here to be your one-human algorithm for this stuff.)

Hack-a-Day is host to this and Michael's other projects, and provided an update yesterday – thanks to Oliver Chesler for the tip.

> It's MIDI for the TRS-80!

Here's the full project with everything you need in case you just *happen* to be at a flea market and *needed* to bring a TRS-80 home (or someone hacked your credit card and bought a TRS-80 on eBay shipped to your actual address and nothing else in a peculiar identity theft):

MIDI-80 for the TRS-80: A MIDI Sound and Interface Card for the TRS-80 Model 1, III, and 4

Highlights:

- Standard MIDI in and out over DIN (optional)
- Wave Blaster-compatible header or GM expansion over MIDI (Roland SC-55, MT-32)
- TRS-80 drum tracker, MIDI synthesizer, and demo songs

- Compatible with Model 1 Expansion Interface, FreHD, Orchestra soundcards, Talker/80, and more
- Open-source BluePill firmware, hardware schematics, and TRS-80-native software
- Easy through-hole assembly via off-the-shelf components

Enjoy!

Want still more multimedia capabilities? George Philipps has created a *video player* for the TRS-80. Yes, you read that right. It's not running via a helper card that interfaces with the display; it's actually using TRS-80 software to read graphics data as quickly as possible, which he's able to clock up to 60 frames per second depending on the TRS-80 generation. The only non-original hardware (and this is important) is the FreHD hard drive emulator. The *sound* is even native, using PWM on the single-bit TRS-80 sound chip.

It can even play the video I showed at the beginning:

Project page:

trsvid – A video player for TRS-80 Model 1, 3 and 4

And if the TRS-80 is your new favorite computer platform, go listen to the TRS-80 Trash Talk podcast with folks like this chatting.

Note: I did locate one 1990 article on MIDI and the TRS-80, a DIY project by Gary Lee Philipps published in *The Misosys Quarterly*, vol. 5, no. 1, Fall, 1990:

MIDI Your TRS-80 [archive.org]

That in turn could be used with a Model 100 with some adaptations for that portable unit's RS-232 port, but as you saw on this project, there can be some challenges to actually getting good performance.

Tags: 1970s, 1980s, awesomeness, chips, DIY, Electronics, hacks, history, live performance, MIDI, Radio Shack, retro, Roland MT-32, sequencers, speech synthesis, Tandy, trackers, TRS-80, usa

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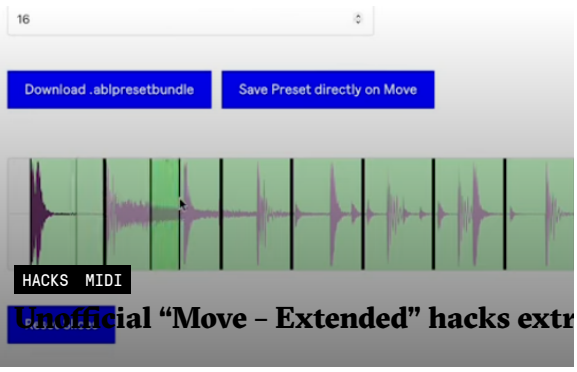


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