

SYNTH HACKS #16

HACKING GENERAL MIDI

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For a technology designed to make synthesizers sound the same, General MIDI (GM) offers some amazing sonic spice when you use it in unexpected ways. I've been hacking one of the world's tiniest GM synths, the M5Stack MIDI Unit (m5stack.com; Figure 1). Not only is it smaller than a strawberry, it costs just \$14.50 and includes DIN and 3.5mm TRS jacks for both MIDI In and Out. A third 3.5mm jack outputs stereo audio.

The fourth side of the box includes a four-pin Grove (JST) port for the included cable; it's designed to connect to an Arduino, adding MIDI I/O to DIY electronics projects. To convert the MIDI Unit to a standalone sound module, I cut the



Fig. 2

The MIDI Unit is even smaller than the iconic Ploytec PL2. I modified the included cable to power it from USB and route incoming MIDI to the synth chip, the dinky SAM2695 from Dream.

cable in half, soldered the data wires (yellow and white) together, and then soldered a USB plug to the power wires (Figure 2). That let me power it from USB and play the internal synth by connecting a MIDI controller to one of the inputs.

In this configuration, the MIDI Out jacks forward the input data, making the Unit a handy format converter: You can connect a DIN cable to the input and a TRS cable to the output (or vice versa) and drive a downstream synth. As a bonus, the TRS jack adds 5V to the ring, which let me power a CME Bluetooth MIDI transmitter for even more synth action.

Like all General MIDI synths, the MIDI Unit has 128 standard sounds designed to be played like a mini orchestra—up to 16 different instruments at once on 16 MIDI channels, including a drum kit. To facilitate layering (and low cost), the sounds are short and thin, with spicy sampled attacks and bland sustain loops, but that's also their superpower: GM sounds shine when layered with thicker analog synths, adding ear-catching transients and then melting into the background with a



Fig. 1

The M5Stack MIDI Unit is unbelievably small and cheap but adds a lot to a MIDI setup. A simple hack converts it from a MIDI interface to a standalone synth.

supportive murmur. The tiny timbres also pair well with external effects, blooming instead of turning muddy.

Got a monosynth with an external oscillator input? Run a GM synth into it to play paraphonic chords. Most GM presets use only a few samples, so you can get wonderfully plucky and sludgy tones by playing extremely high or low notes. Some GM synths (including the MIDI Unit) also respond to a vast number of MIDI commands so you can even shape the sound live.

General MIDI can also inspire new compositional approaches. When George “The Fat Man” Sanger (Figure 3) debuted it in 1993 on *The 7th Guest* soundtrack, the game immediately sold 1.5 million copies. “I knew I had a one-armed drummer,” he jokes, “and a couple of violin players who could

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play only one note at a time but were also incredibly fast and could skip from high to low easily. So I would write to them, and I would also write counterpoint, and hocketing, and fugue — all the musical tools. And that's the fun of it: There's so little to work with that you concentrate on the things that matter.”



Fig. 3

George Sanger, with two GM modules he used as references while scoring classic video games. Read a full interview at batmosphere.com/fat.