

MIDI Retro-scope - A Foenix Rising Production (by EMwhite)

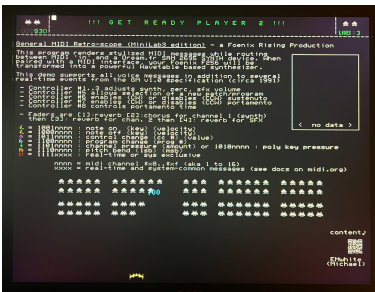
MIDI Retro-scope began as a pair of 30-line SuperBASIC programs intended to exercise and demonstrate the tonal capabilities of the DREAM SAM 2695 IC, and specifically, the DIY integration to the Foenix F256 Jr. **MIDINOTES.BAS** played three notes in succession across all General MIDI patches (1..128) while **MIDIPERC.BAS** played each of the GM Percussion instruments at three different velocity levels between MIDI notes 36 (Kick Drum 2 @ C2) and note 81 (Open Triangle @ A5). Demos were posted to the Foenix Discord in late June and can be viewed [here](#).

Subsequently, a DIY MIDI interface for the F256 Jr. was developed based on the [MIDI.ORG](#) reference design and more specifically, [Michael St. Pierre's ATARI work](#). Early versions of an interface were tested during development of the SIDlab software in the late 1st quarter of 2024 but abandoned in favor of what ended up being a more simple design. Notes and pictures of the final prototype version were posted to Discord in late July and can be accessed [here](#).

You'll also see on the EMwhite channel of the Foenix Discord server, a non-public YouTube video which discusses and demonstrates 65C02 assembly code embedded in a SuperBASIC program which adjoined a Roland TR-08 drum machine (via MIDI IN interface) with a DREAM SAM 2695 IC: <https://youtu.be/MUK32tz9LQ>. I've also begun work on a Newsletter article focused on this project within Foenix Rising Issue #16, a draft of which can be accessed [here](#).

Since deciding to attend VCF Midwest, I endeavored to tie a few of these pieces together and develop a more full-featured program to support playing the DREAM IC from a MIDI keyboard, an on-screen patch/program picker to select a GM instrument, and improvements to the rudimentary 'scope' capabilities of the 256-byte MIDI character dump shown in the video above. I am hopeful that the time invested in these capabilities can be repurposed for the [F256K2](#).

As part of the preparation for VCF MW, I procured an inexpensive and portable 2-octave MIDI keyboard which offered what turned out to be a surprising set of control capabilities for the DREAM IC. I will be publishing more on the keyboard integration in the coming weeks, but for those curious, it's the ARTURIA MiniLAB 3; ~\$100 USD.



Additionally, I opted to develop a mini-game within the MIDI scope capability; a simple joystick controlled ship that a 2nd 'player' could move left-and-right to shoot falling objects and static text while 'player one' played music or tapped out drum beats on the attached MIDI keyboard.

The original idea was to tie notes played on the keyboard to sprites representing musical notes. However, upon approaching a Discord member for help with graphics and sprite control code, the idea evolved into a retro-arcade theme and I am utterly thankful for the help. In the end, I was given 'api' entry points for control of numerous functions. A big "thank you" to the generous person who wishes to remain anonymous!

With 'arcade' on the mind, I had yet another idea; placement of static Space Invader adversaries on screen and to develop a set of sound effects, appropriate for an arcade shooter; this demonstrated the simplicity and power of the DREAM IC for arcade sound effects. As one good-idea led to others, I ultimately had to call it quits by Thursday evening; Friday was dedicated to packing and traveling to Chicago for VCF MW.

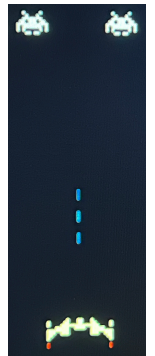
Unfortunately, the software portion of the project consumed many hours and led to my not having demo-ready hardware for the show. I dragged a breadboard based circuit, flying patch wires, and an unshielded joystick connector that floated dangerously above the naked F256 Jr. circuit board. As a result of this and the cacophony of noise in the convention hall, a table based general public demo turned out to be impractical.

But I was pleased to find an audience of a dozen Foenix owners and interested parties, patient enough to stand by while I setup my rig in an adjacent lounge area. Second to the capabilities of the DREAM integration and sound quality, many were impressed with the performance of the F256 and its ability to process MIDI data while the 2nd player controlled a hi-res shape-table based ship while shooting sprites falling from the sky.

I returned home to New Jersey determined to further develop the retro-arcade portion of MIDI Retro-scope and am releasing a partially playable demo, complete with score keeping and keyboard control ('A', 'D', and 'L' to shoot, 'R' to bump the round [advances the object-set]). This version has slightly enhanced graphics and animation, and [additional objects](#) and movable invaders are a work-in progress. With the production F256K2 shipping a full month away, I'm modifying code to utilize SID and PSG sound effects to add depth to the demo. Beta 2 will be released on Sept. 22nd.



If you have DIY DREAM hardware in your F256K or F256 Jr., all of the MIDI capabilities will work as they did during the demo in Chicago at VCF MW. If you've wired the Feather footprint (or the DB9 serial out) to a DIY MIDI interface of your own, it will trigger audio on an attached device as demonstrated.



A community ask: please provide feedback on the EMwhite channel on the Foenix Discord. In doing so, consider that the mini-game in MIDI Retro-scope is an amusement, not intended to be a full arcade-quality game. At release, MIDI Retro-scope's primary purpose will be a design studio for DREAM GM Sound Effects, allowing editing of parameters that you can use to produce code for use in your own programs. More soon...