Specification for Arduino-base General Computational Music Module – the ArdCore model

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Modified: <none>

Overview

The creation of this device is a method to provide simplified (and generalized) programming functionality to the world of analog synthesis. To date, most compute modules have been purpose-specific (MIDI-to-CV conversion, sequencing); while this is useful, it does not provide an adequate opportunity for the artist that includes programming/coding in their practice.

This specification is to provide the analog modular community with a standardized use of the Arduino microcontroller system, and will include a large number of example sketches (programs) that accomplish tasks within the modular world. Any Arduino user can utilize these specifications to create modules, control systems or computer interfaces, and will be able to use any programs that others may come up with.

Arduino Usage

The most important definition for the use of an Arduino in this environment is to define the pin usage. The ArdCore model will use the pins in the following way:

Analog Pins:

Analog In 0	Analog input 0 – knob or voltage
Analog In 1	Analog input 1 – knob or voltage
Analog In 2	Analog input 2 – knob or voltage
Analog In 3	Analog input 3 – knob or voltage
Analog In 4 (nano and mega)	Analog input 4 – knob or voltage
Analog In 5 (nano and mega)	Analog input 5 – knob or voltage
Analog In 6 (nano and mega)	Analog input 6 – knob or voltage
Analog In 7 (nano and mega)	Analog input 7 – knob or voltage

Digital Pins:

Digital Pin 0	Unused (avoiding conflict with TX function)
Digital Pin 1	Unused (avoiding conflict with RX function)
Digital Pin 2	Clock Input (interrupt-driven)
Digital Pin 3	Digital Output 0 – gate/trigger use
Digital Pin 4	Digital Output 1 – gate/trigger use
Digital Pin 5	8-bit Analog Output - LSB

Digital Pin 6	8-bit Analog Output – 2nd bit
Digital Pin 7	8-bit Analog Output – 3rd bit
Digital Pin 8	8-bit Analog Output – 4th bit
Digital Pin 9	8-bit Analog Output – 5th bit
Digital Pin 10	8-bit Analog Output – 6th bit
Digital Pin 11	8-bit Analog Output – 7th bit
Digital Pin 12	8-bit Analog Output – MSB
Digital Pin 13	Unused (avoiding conflict with load display)

Conclusion

This is the first pass at this specification – more will be described/defined over the next few weeks. We have created many sketches to support this specification, including a stable quantizer, trigger delay, drunken-walk CV and other useful functions. These will be posted on the 20 Objects site (http://www.20Objects.com) as they are completed and tested.