

# Analog Components

## resistor

Description:	Resistor
Arguments:	1: Resistance in Ohm
Optional Arguments:	None
Arguments:	None
Inlets:	1: In/Out
Outlets:	1: In/Out
	1 (In/out)

## ground

Description:	Functions as electrical ground.
Arguments:	None
Optional Arguments:	None
Inlets:	1: Ground
Outlets:	None

## voltage

Description:	Constant DC power source
Arguments:	1: Power in Volts
Optional Arguments:	None
Inlets:	None
Outlets:	1: V+ 2: V-

## Current

Description:	Constant current source
Arguments:	1: Current in Ampere
Optional Arguments:	None
Inlets:	1: I- 1: I+

## Click

Description:	Creates an impulse on system startup
Note:	Useful for triggering self-oscillation
Arguments:	1: Impulse power in Volts
Optional Arguments:	None
Inlets:	None
Outlets:	1: V+ 2: V-

## capacitor

Description: Capacitor  
Arguments: 1: Capacitance in Farad  
Optional Arguments: 0  
Inlets: 1: In/Out  
Outlets: 1: In/Out

### diode

Description: Diode  
Note: Quite processor intensive  
Arguments: None  
Optional Arguments: None  
Inlets: 1: Cathode  
Outlets: 1: Anode

### bjt

Description: Bipolar Junction Transistor  
Note: Very processor intensive, obsolete  
Arguments: 1: 0 = npn, 1 = pnp  
Optional Arguments: 1: 0 = Silicon, 1 = Germanium (experimental)  
Inlets: 1: Base  
Outlets: 1: Collector  
2: Emitter

### nnp

Description: Bipolar Junction Transistor: NPN  
Note: Very processor intensive  
Arguments: None  
Optional Arguments: 1: 0 = Silicon, 1 = Germanium (experimental)  
Inlets: 1: Base  
Outlets: 1: Emitter  
2: Collector

### pnp

Description: Bipolar Junction Transistor: PNP  
Note: Very processor intensive  
Arguments: None  
Optional Arguments: 1: 0 = Silicon, 1 = Germanium (experimental)  
Inlets: 1: Base  
Outlets: 1: Emitter  
2: Collector

### **varres**

Description: Variable resistor  
Arguments: 1: Init value in Ohm  
Optional Arguments: None  
Inlets: 1: In/Out  
2: Set resistance in Ohms (digital)  
Outlets: 1: In/Out

### **pot**

Description: Potentiometer  
Arguments: 1: Potentiometer value  
Optional Arguments: None  
Inlets: 1: Wiper  
2: Set pot position on scale of 0 to 1 (digital)  
Outlets: 1: Terminal 1  
2: Terminal 2

### **opamp**

Description: Ideal Operational Amplifier  
Note: This op-amp supplies itself with (unlimited) power  
Arguments: None  
Optional Arguments: None  
Inlets: 1: V+  
2: V-  
Outlets: 1: Vout

### **inductor**

Description: Inductor  
Arguments: 1: Inductance in H  
Optional Arguments: None  
Inlets: 1: In/Out  
Outlets: 1: In/Out

### **transformer**

Description: Transformer  
Arguments: 1: Scale (<1 is step-down, 1 is unity, >1 is step up)  
Optional Arguments: None  
Inlets: 1: Vin+  
2: Vin-  
Outlets: 1: Vout+  
2: Vout-

### input

Description:	Direct audio file to analog signal conversion
Arguments:	1: Link to sample (use ./media to refer to media library)
Optional Arguments:	2: Volume
Inlets:	None
Outlets:	1: V+ 2: V-

### output

Description:	Direct analog audio output
Note;	This output will work for both realtime playback or exporting
Arguments:	1: Volume
Optional Arguments:	None
Inlets:	1: Vin+ 2: Vin-
Outlets:	None (or your speakers)

## Conversion objects

### dac

Description:	Convert digital signal to analog domain
Arguments:	None
Optional Arguments:	None
Inlets:	1: Digital Signal
Outlets:	1: Vout+ 2: Vout-

### adc

Description:	Convert analog signal to digital domain
Arguments:	None
Optional Arguments:	None
Inlets:	1: Vin+ 2: Vin-
Outlets:	1: Digital Signal

# Digital Components

## I/O

### input-

Description:	Mono digital sample input
Arguments:	1: Link to sample (use ./media to refer to media library)
Optional Arguments:	2: Volume
Inlets:	None
Outlets:	1: Mono output

### stinput-

Description:	
Arguments:	1: Link to stereo sample (use ./media to refer to media library)
Optional Arguments:	2: Volume
Inlets:	None
Outlets:	1: Left output 2: Right output

### rtinput-

Description:	Realtime input
Note:	Will use your default audio input port
Arguments:	1: Volume
Optional Arguments:	None
Inlets:	None
Outlets:	1: Mono out

### output-

Description:	Stereo digital audio output
Arguments:	1: Volume
Optional Arguments:	None
Inlets:	1: Left input 2: Right Input
Outlets:	None

### dcblock-

Description:	Block DC shifts
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Arguments:	None
Optional Arguments:	None
Inlets:	1: Input
Outlets:	1: Output

## MIDI

### ctlin-

Description:	Receive MIDI control messages
Arguments:	None
Optional Arguments:	None
Inlets:	None
Outlets:	1: CC 2: Value

### notein-

Description:	Receive MIDI note messages
Arguments:	None
Optional Arguments:	None
Inlets:	None
Outlets:	1: Note 2: Velocity

### mtof-

Description:	Convert MIDI to frequency
Arguments:	None
Optional Arguments:	None
Inlets:	1: Input
Outlets:	1: Output

## Signal generators

### cycle-

Description:	Generate a sine wave
Arguments:	None
Optional Arguments:	1: Init frequency
Inlets:	1: Set frequency
Outlets:	1: Signal Output

### sig-

Description:	Generate a constant number
Arguments:	None
Optional Arguments:	1: Init value
Inlets:	None

Outlets: 1: Constant number

### **rect-**

Description: Generate a square wave  
Arguments: None  
Optional Arguments: 1: Init frequency  
Inlets: 1: Set frequency  
Outlets: 1: Signal Output

### **phaser-**

Description: Generate a sawtooth wave  
Arguments: None  
Optional Arguments: 1: Init frequency  
Inlets: 1: Set frequency  
Outlets: 1: Signal Output

### **triangle-**

Description: Generate a triangle wave  
Arguments: None  
Optional Arguments: 1: Init frequency  
Inlets: 1: Set frequency  
Outlets: 1: Signal Output

## **Other**

### **Slider-**

Description: Creates a slider to change values directly  
Arguments: None  
Optional Arguments: None  
Inlets: None  
Outlets: 1: Output

### **delay-**

Description: Delay a digital signal  
Arguments:  
Optional Arguments:  
Inlets:  
Outlets:

### **change-**

Description: Outputs 1 if number has changed, 0 if it hasn't  
Arguments: None

Optional Arguments:	None
Inlets:	1: Input
Outlets:	1: Changed

#### **delta-**

Description:	Difference between last input and current input
Arguments:	None
Optional Arguments:	None
Inlets:	1: Input
Outlets:	1: Difference

#### **history-**

Description:	Delay input by 1 sample
Arguments:	None
Optional Arguments:	None
Inlets:	1: Input
Outlets:	1: Outputs the previous input

#### **elapsed-**

Description:	Ticks since system started up
Arguments:	None
Optional Arguments:	None
Inlets:	1: Input
Outlets:	1: Elapsed samples

#### **clip-**

Description:	Clips signal between 2 numbers
Arguments:	None
Optional Arguments:	1: Init min 2: Init max
Inlets:	Unclipped signal
Outlets:	Clipped signal

### **Arithmetic**

#### **+-**

Description:	Add
Arguments:	None
Optional Arguments:	1: Init value
Inlets:	1: Left operand



	Outlets:	2: Right operand 1: Solution
--	Description:	Subtract
	Arguments:	None
	Optional Arguments:	1: Init value
	Inlets:	1: Left operand 2: Right operand
	Outlets:	1: Solution
!--	Description:	Inverse subtract
	Arguments:	None
	Optional Arguments:	1: Init value
	Inlets:	1: Left operand 2: Right operand
	Outlets:	1: Solution
*_	Description:	Multiply
	Arguments:	None
	Optional Arguments:	1: Init value
	Inlets:	1: Left operand 2: Right operand
	Outlets:	1: Solution
/-	Description:	Divide
	Arguments:	None
	Optional Arguments:	1: Init value
	Inlets:	1: Left operand 2: Right operand
	Outlets:	1: Solution
!/-	Description:	Inverse divide
	Arguments:	None
	Optional Arguments:	1: Init value
	Inlets:	1: Left operand 2: Right operand
	Outlets:	1: Solution
>-	Description:	Bigger than
	Arguments:	None

	Optional Arguments:	1: Init value
	Inlets:	1: Left operand 2: Right operand
	Outlets:	1: Solution
<hr/>		
<-	Description:	Smaller than
	Arguments:	None
	Optional Arguments:	1: Init value
	Inlets:	1: Left operand 2: Right operand
	Outlets:	1: Solution
<hr/>		
>=-	Description:	Bigger than or equal to
	Arguments:	None
	Optional Arguments:	1: Init value
	Inlets:	1: Left operand 2: Right operand
	Outlets:	1: Solution
<hr/>		
<=-	Description:	Smaller than or equal to
	Arguments:	None
	Optional Arguments:	1: Init value
	Inlets:	1: Left operand 2: Right operand
	Outlets:	1: Solution
<hr/>		
==-	Description:	Equal to
	Note:	Since the system mostly works with floats, with will hardly ever return true
	Arguments:	None
	Optional Arguments:	1: Init value
	Inlets:	1: Left operand 2: Right operand
	Outlets:	1: Solution
<hr/>		
!=-	Description:	Not equal to
	Note:	Almost always true because of float-based calculations
	Arguments:	None
	Optional Arguments:	1: Init value
	Inlets:	1: Left operand

**Modulo**  
Inlets: 2: Right operand  
1: Solution  
Outlets:

**%-**  
Description: Modulo  
Arguments: None  
Optional Arguments: 1: Init value  
Inlets: 1: Left operand  
2: Right operand  
Outlets: 1: Solution

**!%-**  
Description: Inverse modulo  
Arguments: None  
Optional Arguments: 1: Init value  
Inlets: 1: Left operand  
2: Right operand  
Outlets: 1: Solution

**Pow-**  
Description: Power  
Arguments: None  
Optional Arguments: 1: Init value  
Inlets: 1: Left operand  
2: Right operand  
Outlets: 1: Solution

**Sqrt-**  
Description: Square root  
Arguments: None  
Optional Arguments: None  
Inlets: 1: Input  
Outlets: 1: Solution

**In-**  
Description: Natural logarithm  
Arguments: None  
Optional Arguments: None  
Inlets: 1: Input  
Outlets: 1: Solution

**log10-**  
Description: Log10  
Arguments: None

Optional Arguments:	None
Inlets:	1: Input
Outlets:	1: Solution

### **log2-**

Description:	Log2
Arguments:	None
Optional Arguments:	None
Inlets:	1: Input
Outlets:	1: Solution

### **&&- / and-**

Description:	Logical AND
Arguments:	
Optional Arguments:	1: Init value (?)
Inlets:	1: Input 2: Input
Outlets:	1: Output

### **||- / or-**

Description:	Logical OR
Arguments:	None
Optional Arguments:	1: Init value (?)
Inlets:	1: Input 2: Input
Outlets:	1: Output

### **accum-**

Description:	Accumulates everything you throw at it
Arguments:	None
Optional Arguments:	1: Init value
Inlets:	1: Values to accumulate
Outlets:	1: Output

### **abs-**

Description:	Absolute value
Arguments:	None
Optional Arguments:	None
Inlets:	1: Input
Outlets:	1: Output

### **ceil-**

Description:	Round up to integer
Arguments:	None
Optional Arguments:	None

Inlets: 1: Input  
Outlets: 1: Output

### **floor-**

Description: Round down to integer  
Arguments: None  
Optional Arguments: None  
Inlets: 1: Input  
Outlets: 1: Output

### **gate-**

Description: Gate  
Arguments: None  
Optional Arguments: None  
Inlets: 1: Input to be gated  
2: Gate: 0.= closed, 1 = open  
Outlets: 1: Gated output

### **scale-**

Description: Scale values between range  
Arguments: None  
Optional Arguments: 1: Init input min.  
2: Init input max.  
3: Init output min.  
4: Init output max.

Inlets: 1: Input to be scaled  
2: Input min.  
3: Input max.  
4: Output min.  
5: Output max.

Outlets: 1: Gated output

