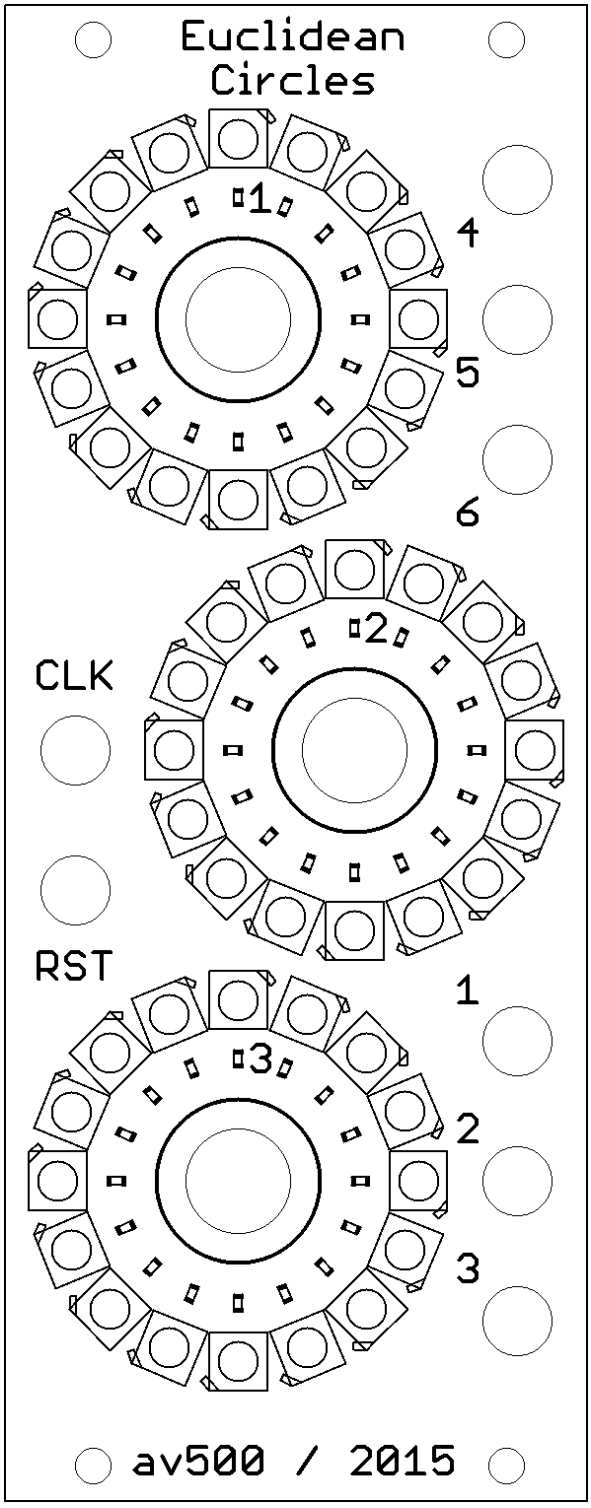
EUCLIDEAN CIRCLES by av500 – User Manual rev1.0



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INSTALLATION

- **Euclidean Circles** is a **10 hp** Eurorack module
- the module only needs **5V** to operate, it does not use +12V/-12V at all. If your rack does not have a 5V supply you will need to add that before using it
- carefully check the **orientation** of the 16-pin power connector, the **red stripe** should be at the bottom of the module, see the labeling on the PCB. There is a protection diode so plugging it in the wrong way should not do harm.
- depending on the LED brightness setting, the modules consumes between **60mA** and **300mA** from the 5V supply

BASIC OPERATION on CHANNELS 1-3

- connect a clock signal to the clock input labeled **CLK**
- press buttons **#1, #2** or **#3** to switch between states:
  - **BLUE** control the length of the sequence on circle **1-3**
  - **ORANGE** control the fill of the sequence on circle **1-3**
  - **PURPLE** control the start point of the sequence on circle **1-3**
- channels **1-3** output a signal for every fill position of the sequence
- channels **4-6** output the off-beats of channels **1-3**
- a rising edge signal on the **RST** input will reset all channels to step 1 on the next clock signal
- if you wonder what this is all about:
  https://en.wikipedia.org/wiki/Euclidean_rhythm

6-CHANNEL MODE

- in **6-CHANNEL** mode (see **PRESETS and SETTINGS** below) long press **button #1** to switch between controlling channels **1-3** and **4-6**:
  - **CYAN** control the length of the sequence on channel **4-6**
  - **ORANGE** control the fill of the sequence channel **4-6**
  - **PURPLE** control the start point of the sequence on channel **4-6**

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AUTO CLOCK

- long press **button #2** to enter **AUTO CLOCK** mode
- rotate **button #2** clockwise to increase internal clock speed, the range is between 10 and 2500 bpm
- rotate **button #2** fully counterclockwise to stop internal clock
- press **button #2** to exit **AUTO CLOCK** mode

PRESETS and SETTINGS

- long press **button #3** to enter **PRESETS and SETTINGS** mode
- one preset always loads and saves the length, fill and start values for all channels
- **button #1** selects and stores presets:
  - current preset is shown with a **green LED**
  - **load preset:** rotate button **#1** to select preset **1-16** and press it shortly to **load** the preset
  - **save preset:** rotate button **#1** to select preset **1-16** and **long press** it until the circle turns all green to **save** the preset
  - loading or saving a preset will cancel the **PRESETS and SETTINGS** mode and return to basic operation
- **button #2** turns settings on and off:
  1. **6-CHANNEL -** when **off**, channels 4-6 output the offbeats of channels 1-3, when **on** there are 6 independent channels in total
  2. **TOGGLE -** output signal toggles at each pulse instead of following the input clock
  3. **PRESCALE 12 -** channel #2 advances by each step set on channel #1
  4. **PRESCALE 123 -** channel #2 advances by each set step of channel #1 and channel #3 advances by each set step of channel #2
  5. **CHAIN 12 -** channel #1 is played once followed by channel #2; the combined sequence is output on channel #1
  6. **CHAIN 123 -** channel #1 is played once followed by channel#2 and then channel #3; the combined sequence is output on channel #1

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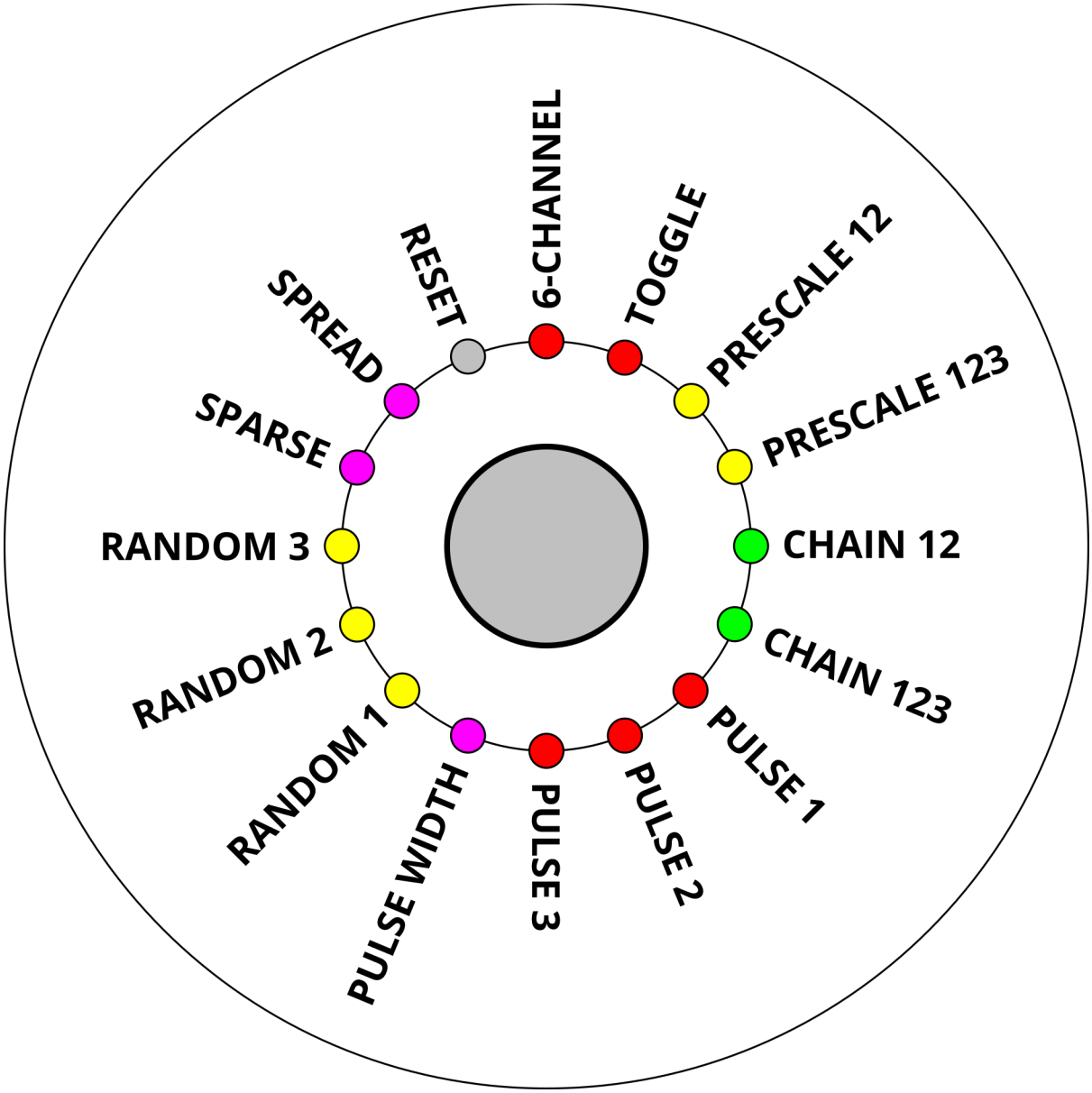
7. **FIXED PULSE 1 -** fixed output pulse width for channel **#1**
8. **FIXED PULSE 2 -** fixed output pulse width for channel **#2**
9. **FIXED PULSE 3 -** fixed output pulse width for channel **#3**
10. **PULSE WIDTH -** off: 10 ms, on 1 ms
11. **RANDOM 1 -** 25% probability of muting a set step on channel **#1**
12. **RANDOM 2 -** 25% probability of muting a set step on channel **#2**
13. **RANDOM 3 -** 25% probability of muting a set step on channel **#3**
14. **SPARSE -** only the currently **active** steps are shown by the LED circles
15. **SPREAD -** the active steps per circle are always spread circularly around the button
16. **RESET** - manually resets all channels to the first step on the next external or internal clock signal

- **RESET ALL:** press and hold button **#2** on setting **16** for at least **5** seconds to erase all presets and settings, **use with caution**
- **rotate button #3** to control the **brightness** of the LEDs in 8 steps
- **SETTINGS** and **brightness** are saved whenever one of the **PRESETS** is saved
- press **button #3** to exit **PRESETS and SETTINGS** mode

SAFE MODE:

- to enable **SAFE MODE**, press and hold all three buttons while powering up the unit, after ~1s all circles will turn **RED** and safe mode is permanently enabled
- with **SAFE MODE** enabled, the third circle will show all **RED** at power up
- in **SAFE MODE** all settings are disabled, there is no **AUTO CLOCK** and the **brightness** is at level 1. The pattern at startup is whatever pattern was saved as preset 1 when **SAFE MODE** was enabled
- to disable **SAFE MODE**, press and hold all three buttons while powering up the unit, after ~1s all circles will turn **GREE** and safe mode is permanently disabled

Enjoy!

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