tides

_travelers guide
_for managing gravity

3 modes	3 ranges	20 min to 10 khz

[range] press **[range]** hold › then noon = 12 o'clock cw / ccw = clockwise / counter

one envelope, lfo or oscillator · shape, slope and smoothness bend the wave in three directions

the 2014 tides, firmware 1.1 · long press = 1 s

magenta = hold

01 buttons · LEDs

td_01

[mode]	AD envelope ● › cycle ○ › AR envelope ● › cycle … steps back and forth
[range]	low ● 20 min–5 hz › medium ○ 0.05–300 hz › high ● 8 hz–10 khz, back and forth
[range] 1 s	**clocked / pll mode** on or off · the range LED blinks while it's on (06)
[mode] 1 s	**calibration** · only with cables in the fm and level inputs (08)
output LED	brightness = the wave · ● attack · ● decay, sustain, release
remembered	mode, range and clocked mode survive power off

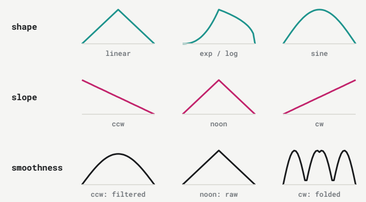
02 knobs

td_02

[frequency]	±4 octaves around the range · in clocked mode it picks the ratio instead
[fm] att	polarity and amount of the fm input · unpatched = fine tune
[shape]	the curve of the rise and the fall: linear, exponential or sine segments
[slope]	rise vs fall time · ccw = no rise · noon = equal · cw = no fall
[smoothness]	noon = raw · ccw = 2-pole low-pass, rounder · cw = wavefolder, bumps and kinks
cv ins	shape, slope and smoothness jacks add to their knobs

__fig.01 : three dimensions

the wave, bent



three knobs, three directions · each has its own cv input

03 modes

td_03 · **[mode]**

● AD	**single shot**: rise then fall on each **[trig]** · needs a trigger to move
○ cycle	**looping**: lfo at low / medium, oscillator at high · **[trig]** resets the phase
● AR	**sustained**: rises, holds while the **[trig]** gate is high, falls when it ends
high range	a different set of shapes, a linear (pwm-like) slope, built to sound different at audio rate

04 inputs

td_04 · all 100k

[trig]	AD / AR: the trigger or gate · cycle: phase reset · 0.7 v threshold
[freeze]	high = the wave stops where it is, until the input drops
[v/oct]	pitch, digitally tracked · calibrate if it drifts
[fm]	through the fm attenuverter · read at 6 khz
[level]	a vca on uni and bi, 0–8 v · unpatched = full level
[clock]	locks the frequency or envelope time to a clock or audio (06)

05 outputs

td_05

[uni]	0 to 8 v: the wave as you'd expect it
[bi]	±5 v, but a different wave: a bump up then a bump down (fig.02) · slope sets the ratio between them
[high tide]	+5 v from the end of the rise until the cycle restarts or retriggers
[low tide]	+5 v from the end of the fall until the next trigger · chain envelopes with either
try	crossfade uni and bi at audio rate: a fourth dimension of timbre

09 peacocks

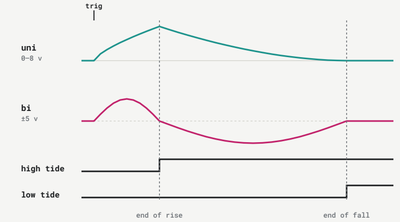
td_09 · the easter egg

1. dummy cables in **[fm]** and **[level]**
2. hold **[mode]** 1 s › yellow · hold **[mode]** 1 s again › green
3. hold **[range]** 1 s › red

uni and bi into a scope in x–y mode draw a pair of peacocks · any button leaves

__fig.02 : uni, bi and the tides

one AD envelope



06 clocked · pll

td_06 · **[range]** 1 s

[range] 1 s	on: tides locks to the **[clock]** input · the range LED blinks · same again = off
[frequency]	now picks the ratio to the clock: divide ccw, multiply cw, 1:1 at noon (fig.04)
audio in	feed it an audio signal and it plays a harmony locked to it

__fig.04 : clock ratios

the frequency knob, clocked



frequency knob in clocked mode · noon = 1:1

10 the high range

td_10 · time vs frequency

why	at audio rate you hear harmonics, not the drawn wave, so high mode swaps in shapes that sound different
[slope]	linear here, like pwm · exponential-ish in low and medium, for very short attacks and long decays
expect	small level and offset errors: some edges are smoothed to stop aliasing

12 the module

td_12 · 2014–2018

size	14 hp · 25 mm deep · 55 mA +12 v · 5 mA –12 v
range	0.5 mhz to 10 khz across the three ranges
cv	shape, slope, smooth read at 1 khz · fm 6 khz · level 48 khz · outs 16-bit, 48 khz

07 calibration

td_07

v/oct, fm and level

if notes drift out of tune

1. **[frequency]** at noon · a cable in **[fm]** and one in **[level]**, other ends loose
2. keyboard or precision cv into **[v/oct]**
3. hold **[mode]** 1 s › all LEDs yellow
4. send 1 v (c2) · press **[mode]** › all LEDs green
5. send 3 v (c4) · press **[mode]** › done

bi output offset

trimmer on the back

1. nothing in **[trig]** · mode AD or AR · range medium
2. measure **[bi]** and turn the trimmer to 0 v

08 firmware

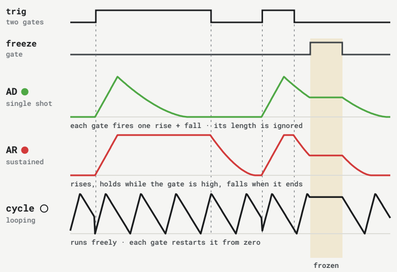
td_08 · v1.1, the last

1. unplug everything · audio out of your computer into **[fm]**
2. power on holding **[mode]** · all 3 LEDs blink yellow
3. play tides_1.1.wav · LEDs cycle and flash green per block · it reboots when done

all LEDs red = level too low or high: change it, press **[mode]**, start the file again · 1.1 added an alias-free (polyblep) triangle at audio rate

__fig.05 : one gate, three modes

trig + freeze



11 first patches

td_11

percussive envelope

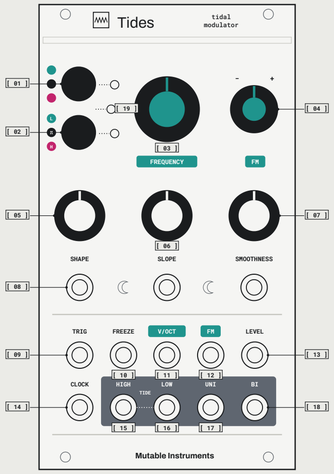
● AD · medium · trigger › **[trig]** · **[uni]** › a vca
[slope] ccw = instant attack, long decay

voice

○ cycle · high · pitch › **[v/oct]**
[smoothness] is the filter / folder · crossfade uni and bi for timbre

__fig.03 : front panel

01–08 = controls · 09–19 = jacks + LEDs



[01]	**__mode :** AD · cycle · AR
[02]	**__range :** low · med · high · clock
[03]	**__frequency :** ±4 oct · clock ratio
[04]	**__fm att :** fine tune unpatched
[05]	**__shape :** segment curves
[06]	**__slope :** rise vs fall
[07]	**__smoothness :** filter ‹ › fold
[08]	**__cv ins :** shape · slope · smooth

[09]	**__trig :** trigger · gate · reset
[10]	**__freeze :** stops the wave
[11]	**__v/oct :** pitch
[12]	**__fm :** through 04 · firmware in
[13]	**__level :** vca for uni / bi
[14]	**__clock :** sync · pll
[15]	**__high tide :** end of rise
[16]	**__low tide :** end of fall
[17]	**__uni :** 0–8 v
[18]	**__bi :** ±5 v, two bumps
[19]	**__LEDs :** mode · output · range

_where things hide

no menus · td_13

held buttons

- **range 1 s** clocked / pll on · off
- **mode 1 s** calibration (cables in fm + level)
- **mode 1 s ×2, range 1 s** the peacocks, from calibration

at power on

- **hold mode** firmware update, audio into fm
- **remembered** mode, range, clocked mode

LED codes

top to bottom: mode, output, range

mode	● AD ○ cycle ● AR
range	● low ○ medium ● high **blink** clocked
output	● rising ● falling / held brightness = level
calibration	● send 1 v ● send 3 v
firmware	● blinking = ready ● flash = block ok ● all = level wrong