

TOPPOBRILLO

SPORT MODULATOR USER GUIDE

the **SPORT MODULATOR** integrates the concept of a 'sample' or 'track and hold' unit with that of a 'lag processor' (adding 'memory' to the lag-loop or calculably sabotaging sample accuracy, according to how you're looking at it :) into a versatile amalgamation of the two, capable of performing both functions simultaneously.

BASIC FUNCTIONS

(apply to either section) □

sample and hold

each section can be used as a sample and hold with variable slew-limiting by pressing the MODE switch [the LED will light] use the IN for the voltage to be sampled and S/H input as the sample control.

lag processor

each section can perform the duties of a linear lag-processor by use of the external input. the slew limit is set by the manual control and CV.

TIP- get a nonlinear response by feeding the output back into the VC in.

track (lag) and hold

same as above, use the S/H in for HOLD command.

VCLFO/clock

each section essentially becomes a wide-range VCLFO when the CYCLE switch is pressed. CYCLE mode takes priority over an external input, if present.

If the section is in LAG mode, a bipolar linear TRIANGLE wave is available at the OUTPUT jack. a SQUARE wave is present at the END output with an output range of approximately 0-5V. The S/H input can be used to 'freeze' the LFO at any point in its cycle.

in **HOLD mode** synchronized staircase waveforms with controllable step-size can be generated with an external sample control signal.

TIP- obtain a variable-skew sawtooth wave from the OUTPUT by patching END into the VC input, and adjusting the level control.

When cycling in LAG mode, the MANUAL control range is from around .033Hz [1 cycle in 30 seconds] to around 700Hz. with an external control src, this range can be extended from completely stopping the cycle to around 1.5kHz.

OVERVIEW OF PANEL

INPUT- WILL ACCEPT ANY SIGNAL WITHIN +/-12V RANGE

END OUT- GATE OUTPUT THAT IS NORMALLY HIGH. WHEN THE INPUT APPROACHES THE SLEW LIMIT [SET BY THE INITIAL CONTROL AND CV] THE GATE WILL BECOME ACTIVE, GOING LOW ON FALLING ACTION AND RETURNING HIGH WHEN THE OUTPUT 'CATCHES UP' WITH THE INPUT SOURCE. OUTPUT RANGE IS AROUND 0-5V; IN S/H MODE, THE OPERATION CAN BE SEEN AS COMPARING AN INPUT SIGNAL WITH THE PREVIOUSLY HELD VALUE.

S/H INPUT- CONTROL INPUT. ANY SIGNAL THAT EXCEEDS THE THRESHOLD [SET AROUND 1.25V] WILL CAUSE THE OUTPUT TO EITHER:
A. HOLD ITS VALUE UNTIL THE S/H CONTROL GOES LOW
AGAIN [IN L/H MODE] OR-
B. ACQUIRE A NEW SAMPLE ACCORDING TO SLEW LIMIT [IN S/H MODE] I.E. AS CLOSE TO THE INPUT SOURCE AS THE SLEW LIMIT WILL ALLOW WITHIN THE SAMPLE WINDOW

MODE SWITCH- SWITCHES BETWEEN LAG AND HOLD OR SAMPLE AND HOLD MODES. IN S/H MODE THE YELLOW LED WILL BE LIT. BOTH SECTIONS SHOULD POWER ON IN L/H MODE BUT OCCASIONALLY A SECTION MAY POWER ON IN S/H MODE.

CYCLE SWITCH- PRESSING THIS SWITCH ROUTES AN INTERNAL HYSTERETIC COMPARATOR TO THE INPUT AND IGNORES SIGNALS PRESENT AT THE IN JACK.

SIGNAL LED- NORMALLY, THE RED SIGNAL LED MONITORS THE OUTPUTS ACTION IN THE 0 TO POSITIVE RANGE [DARK AT 0V] WHEN PUT IN CYCLE MODE, THE LED WILL INDICATE A BIPOLAR SWING [DARK AT NEGATIVE END OF SWING]

THE UNLABELED JACK IN THE MIDDLE COMPARES THE TOP AND BOTTOM SECTIONS. IF THE TOP SECTION IS MORE POSITIVE THAN THE BOTTOM, THE OUTPUT GOES HIGH. THE OUTPUT RANGE IS AROUND +/-5V.

MORE PATCH EXAMPLES

sync'd modulations- set one section to cycle in LAG mode, set the other to cycle in HOLD mode. use the END out of the 1st section to clock the other section. you will have a synced cycling of the 2 sections to send to whatever. the RATE that the 2nd section is set at controls the ratio of cycles per cycle.

VC divider/ cascaded dividers/ suboscillators- put 1 section of the SM in HOLD mode and set it to CYCLE. clock it with an external LFO or VCO or something. the END out is now a variable division of the input freq according to the RATE and CV. take that END out [or just the OUT itself] and send it to the other section of the SM in the same mode for another variable division. the OUTS are of course nice staircases to climb up and down. use as suboscillators

slope detector/ "velocity gates"- with both sections in LAG mode, plug an input src into the IN of 1 section, take an inverted copy of that same src and go to the IN of the other section. the RATEs act as 'threshold' controls for rising and falling slopes. if your input signal rises or falls faster than the slew rate allows, the END outs will indicate this by going low and returning high when the input returns to a steady state. this can be very useful with controllers such as joysticks, as it responds to the 'velocity' of the movement.

BIT crushing' with HF rolloff- works the same way as the sample and hold patch. use an external VCO or something relatively fast for the clock, the RATE acts as a nice filter and you're in stereo

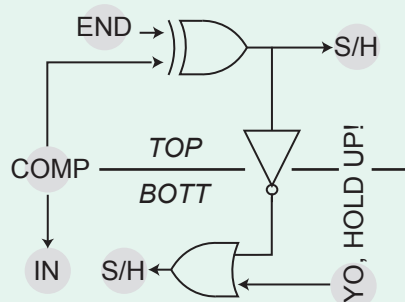
"autolag" sequencing ala Buchla MARF etc- TOP section in LAG mode, sequencer [or switch] into the IN of the TOP section. COMPARATOR out to the IN of the bottom section, BOTTOM END out to the clock in of the sequencer or switch. turn the RATE of the TOP section all the way CW. turn the RATE of the BOTT section down to around 8 o'clock for slower stuff, up to whatever for audio. the smooth "auto-lagged" output is available at the OUT of the BOTTOM section for your pleasure

"Serge Random Source" patch- TOP section HOLD mode. plug a noise source into the IN of the top section. COMP out to BOTTOM section IN, END [or the COMP out muted] out of BOTTOM section to TOP S/H in. the TOP OUT is random STEPPED and the BOTT out is random SMOOTH.

you can patch the END out of the BOTTOM section (or the COMP out) to BOTTOM CV in for some control over distribution. try other inputs as well.

"digital" noise oscillator- same patch as above- use noise as the input [you can use any type of signal IN for rad sounds] the END out of the BOTTOM will give you awesome flavors of random pulses. the RATE of the TOP section is NOISE/TONE balance, RATE of BOTT is frequency of events

quadrature function generators w/ hold- requires an EXOR and NOT gate such as Doepfer A-166 TOP section END to 1 input of an EXOR gate. mult. COMPARATOR to BOTTOM section IN and to the other input of the EXOR gate [be sure it is OK with bipolar signals]. mult the out of the EXOR gate to a logic INVERTER [for XNOR] and to S/H in of TOP section. patch the INVERTER out to the S/H in of BOTTOM section. set TOP section to cycle. add an external HOLD input with an or gate- see illustration:



WARRANTY ETC.

this unit requires regulated +/-12V power and was calibrated as such- no additional adjustments should be necessary. if the unit fails to operate properly for any reason, please contact me at:

info@toppobrillo.com

this unit is warrantied against manufacturing defects for 2 years from purchase date, but is not warrantied against physical damage or other user caused damage and service charges may apply under these circumstances.

please do not plug power cable incorrectly! and do not supply the unit with more than +/-12V. -V is clearly indicated near the power connector. (red stripe to the inside of PCB)

Thanks!