UCL FLEMING SOCIETY

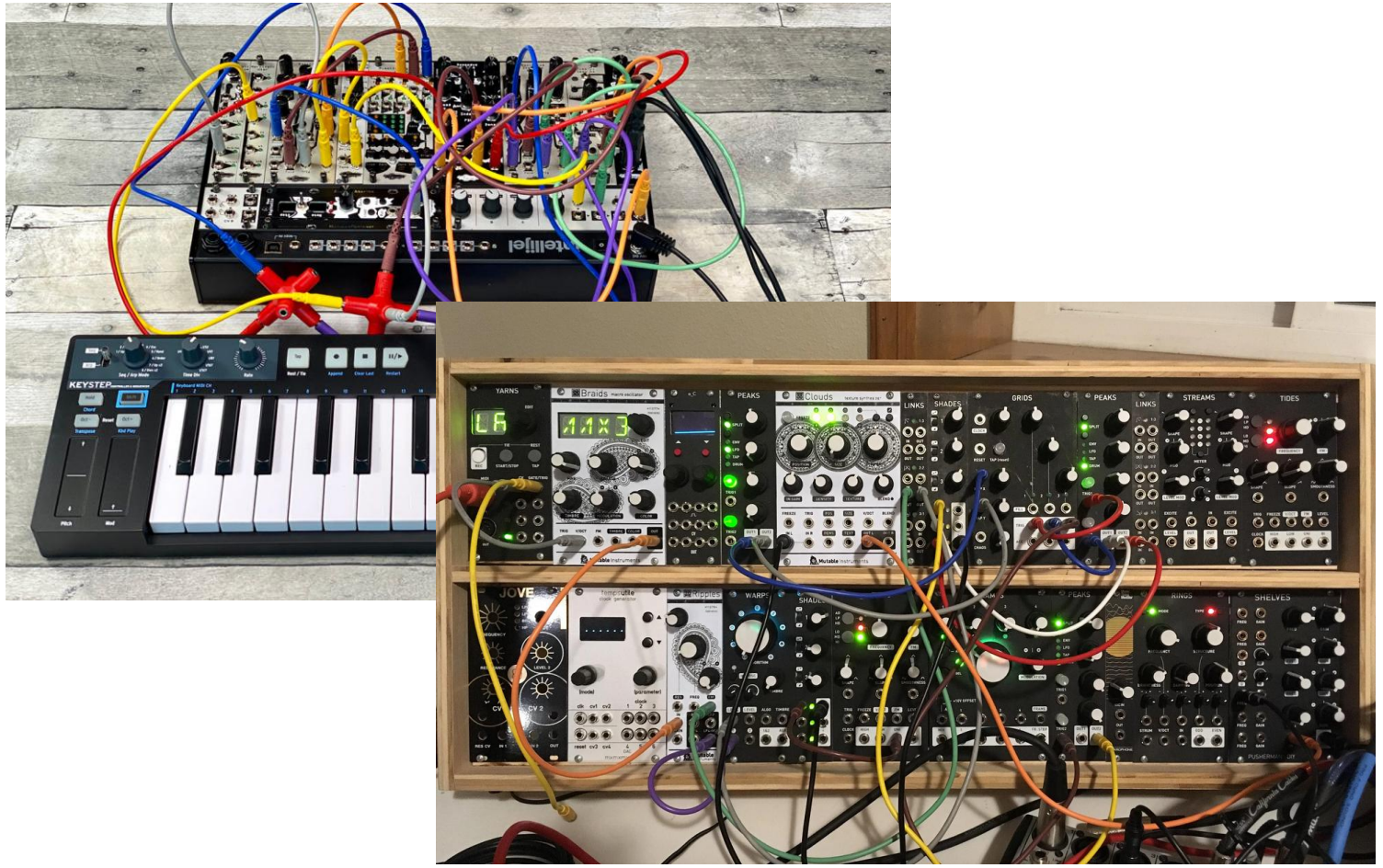
PCB SYNTHS

INTRODUCTION SESSION

WHAT IS A MODULAR SYNTHESISER?

Different components are separate modules that connect using patch cables

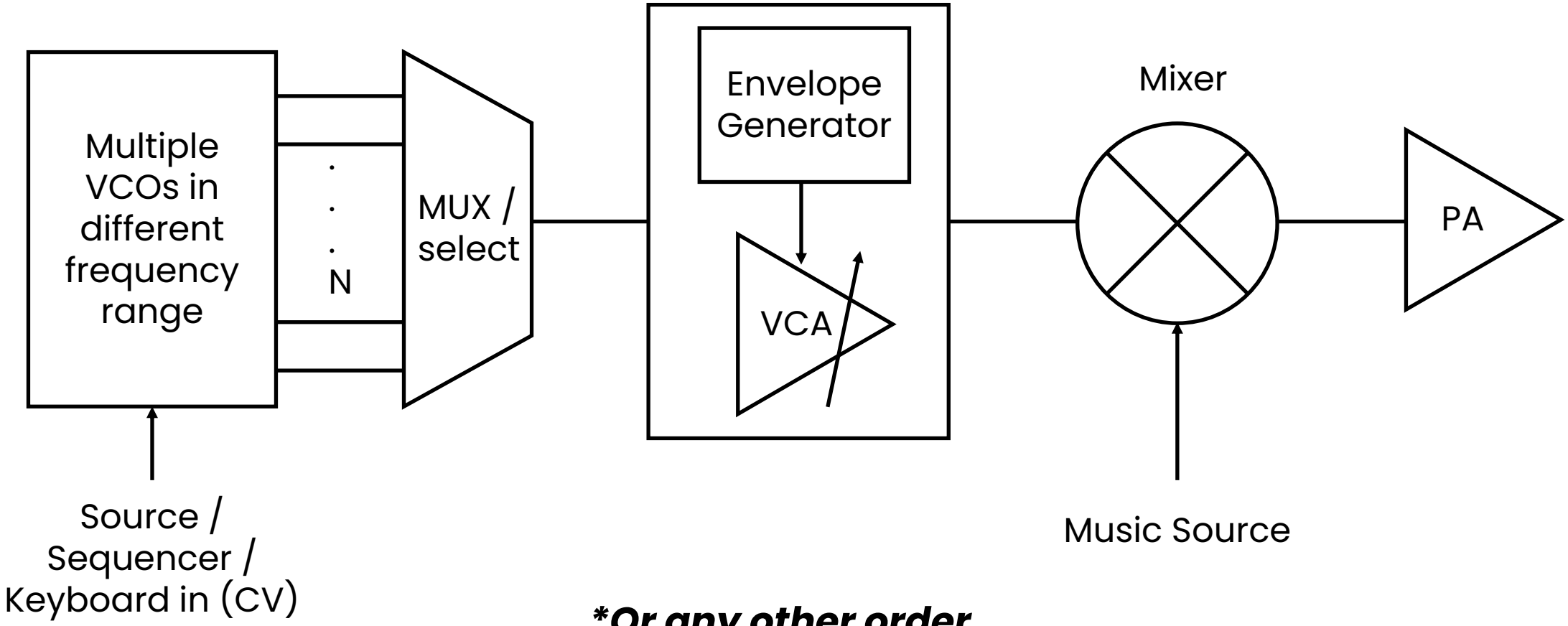
High level of customisation, experimentation, and flexibility in sound.



(PROVISIONAL) TIMELINE

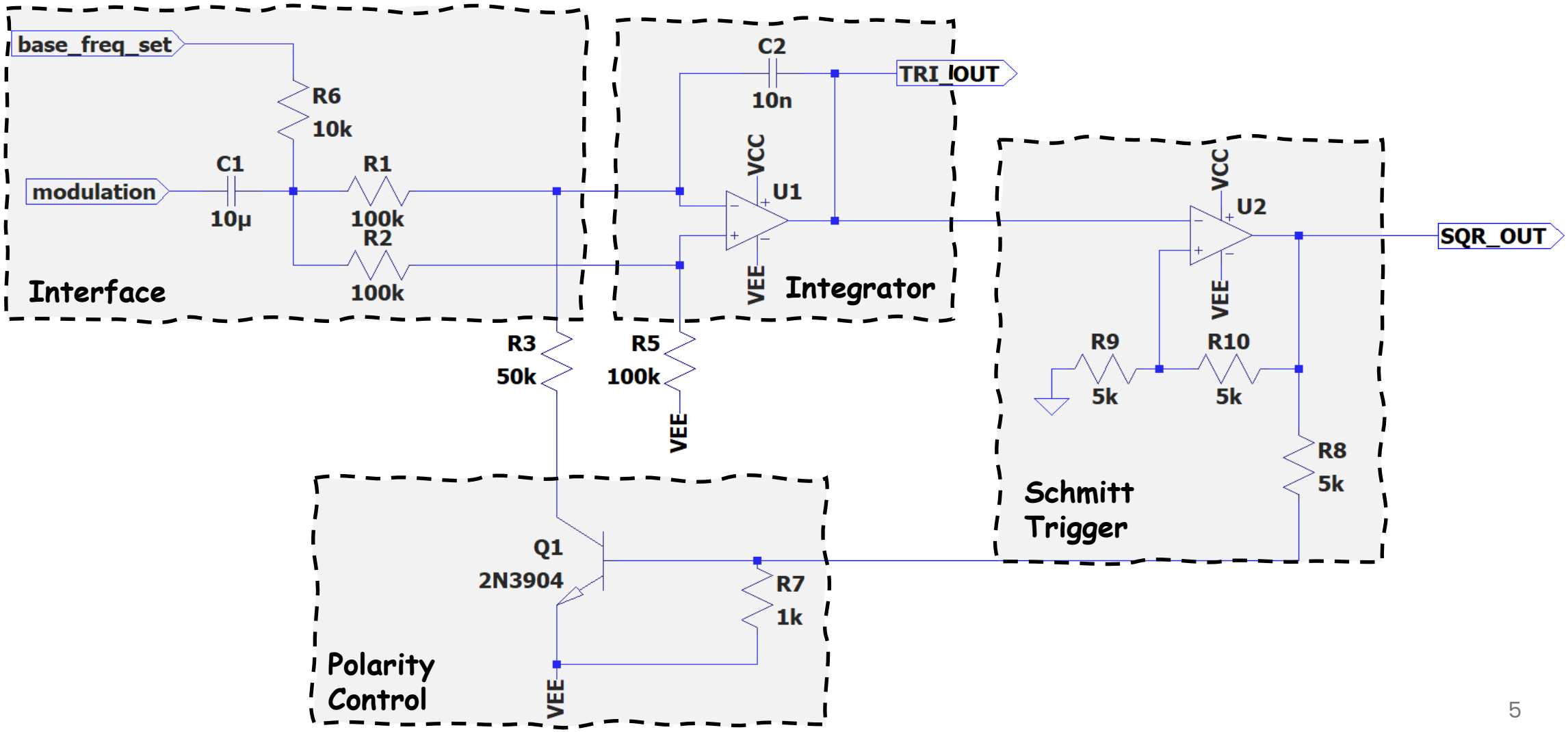
- **1st workshop (Today)**
  - Intro to project / synth system
  - Intro to the circuit building blocks
  - Intro to KiCAD and PCB design
- **2nd workshop (13/03/2025)**
  - Start to design (details TBD)
- **3rd workshop (26/03/2025)**
  - Q&A and support
- **Submission Deadline (End of April – Mid May TBD)**
- **Final building blocks integration (End of May - Start of June TBD)**

EXAMPLE SYSTEM TOPOLOGY



Or any other order

MODULES:
VOLTAGE CONTROLLED OSCILLATOR (VCO)



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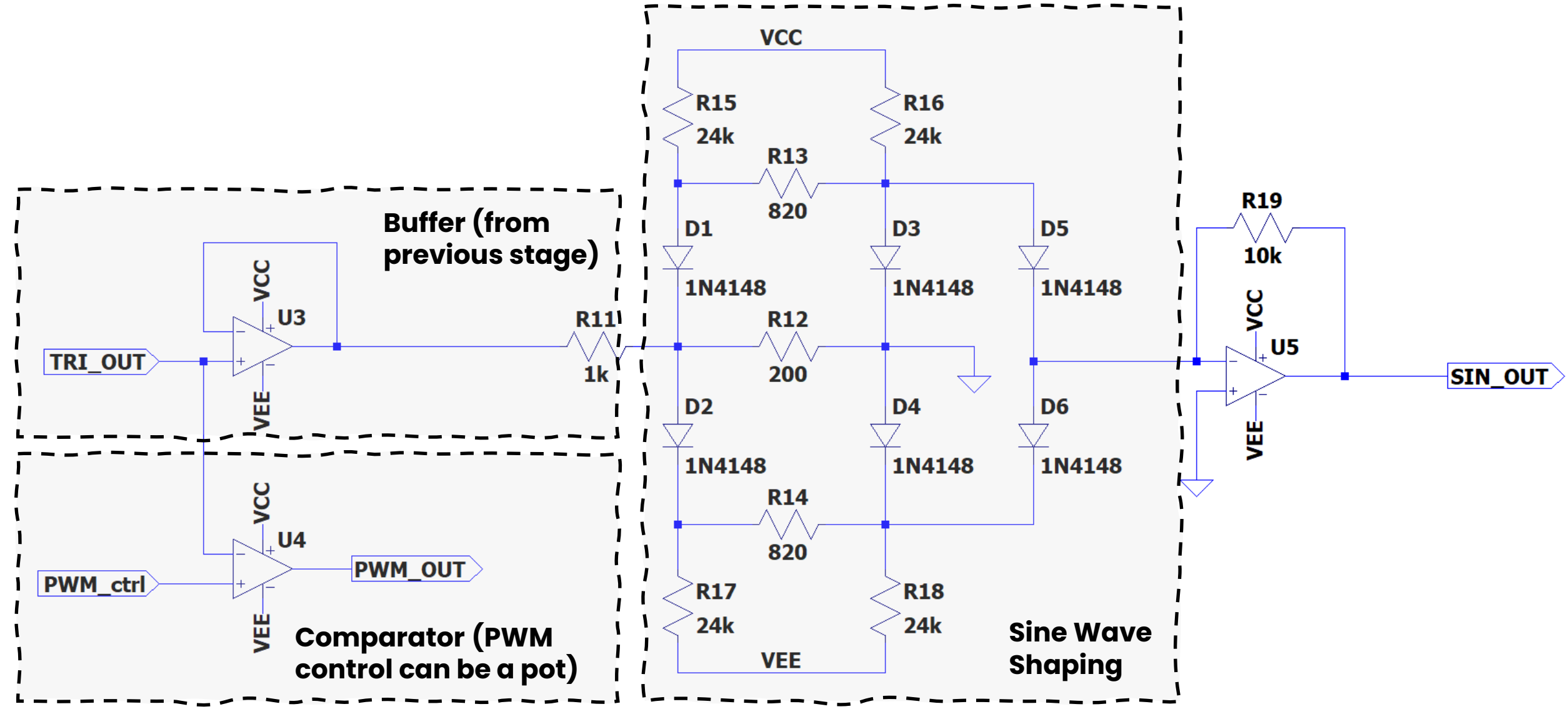
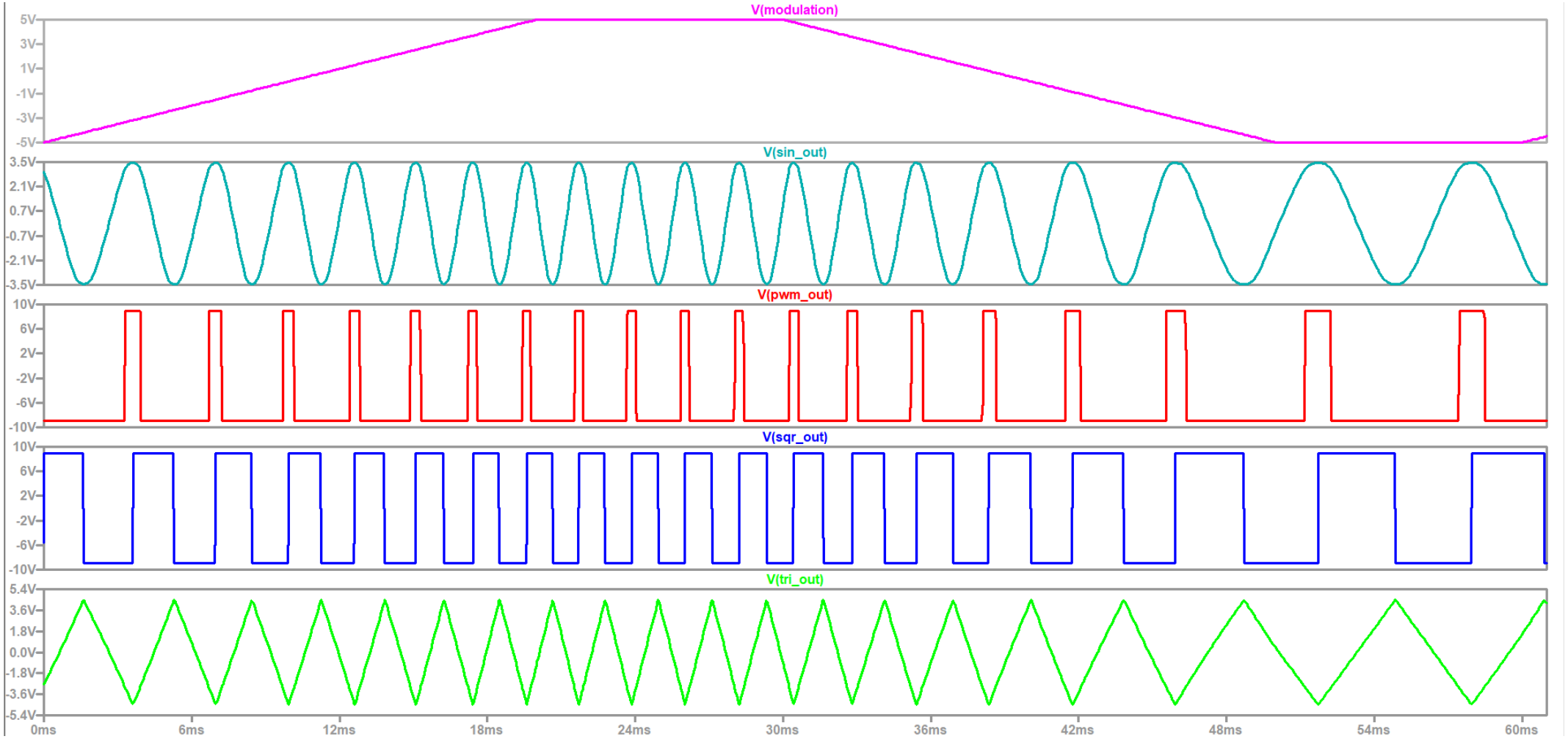
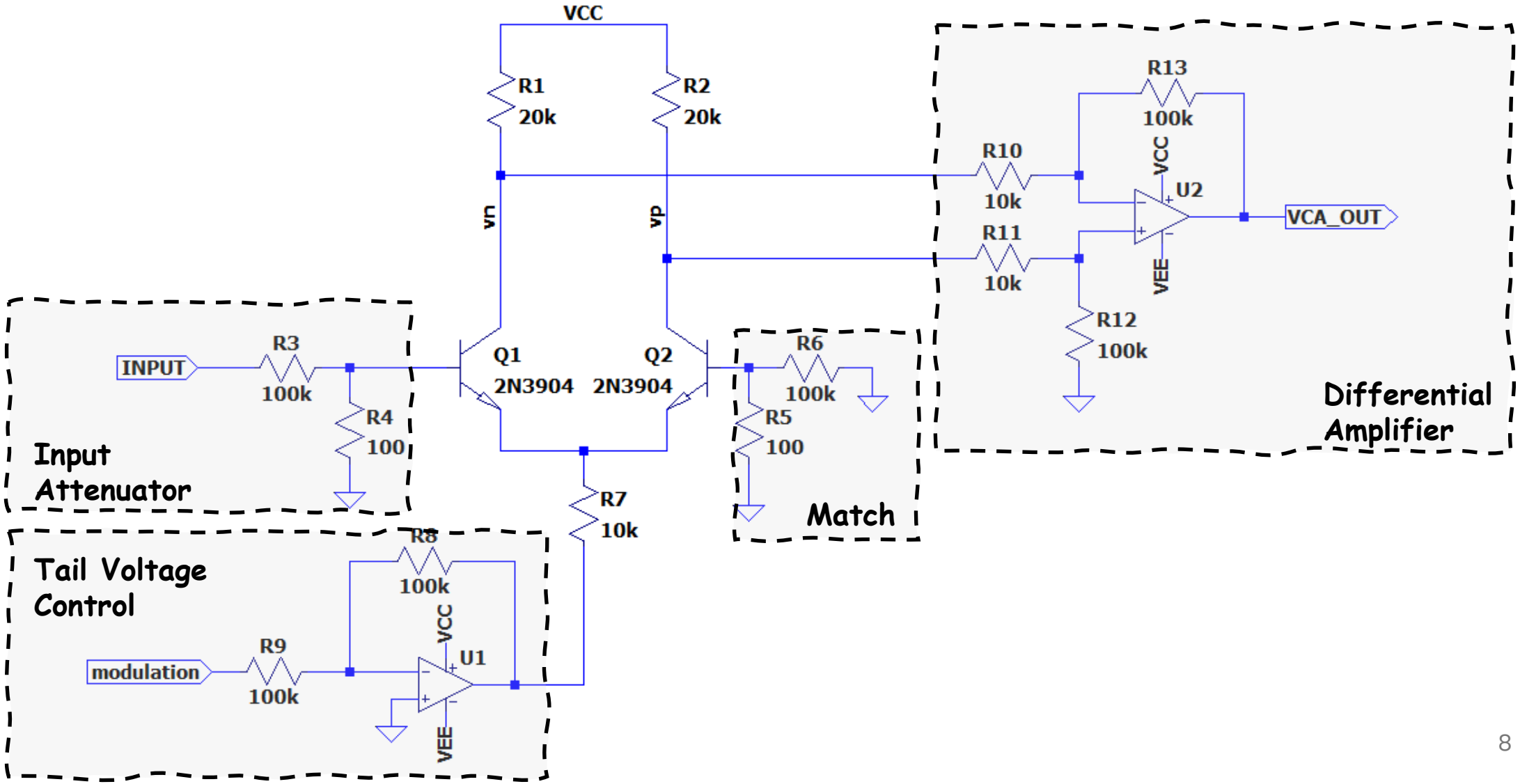
MODULES: WAVE SHAPER (PWM, SINE)



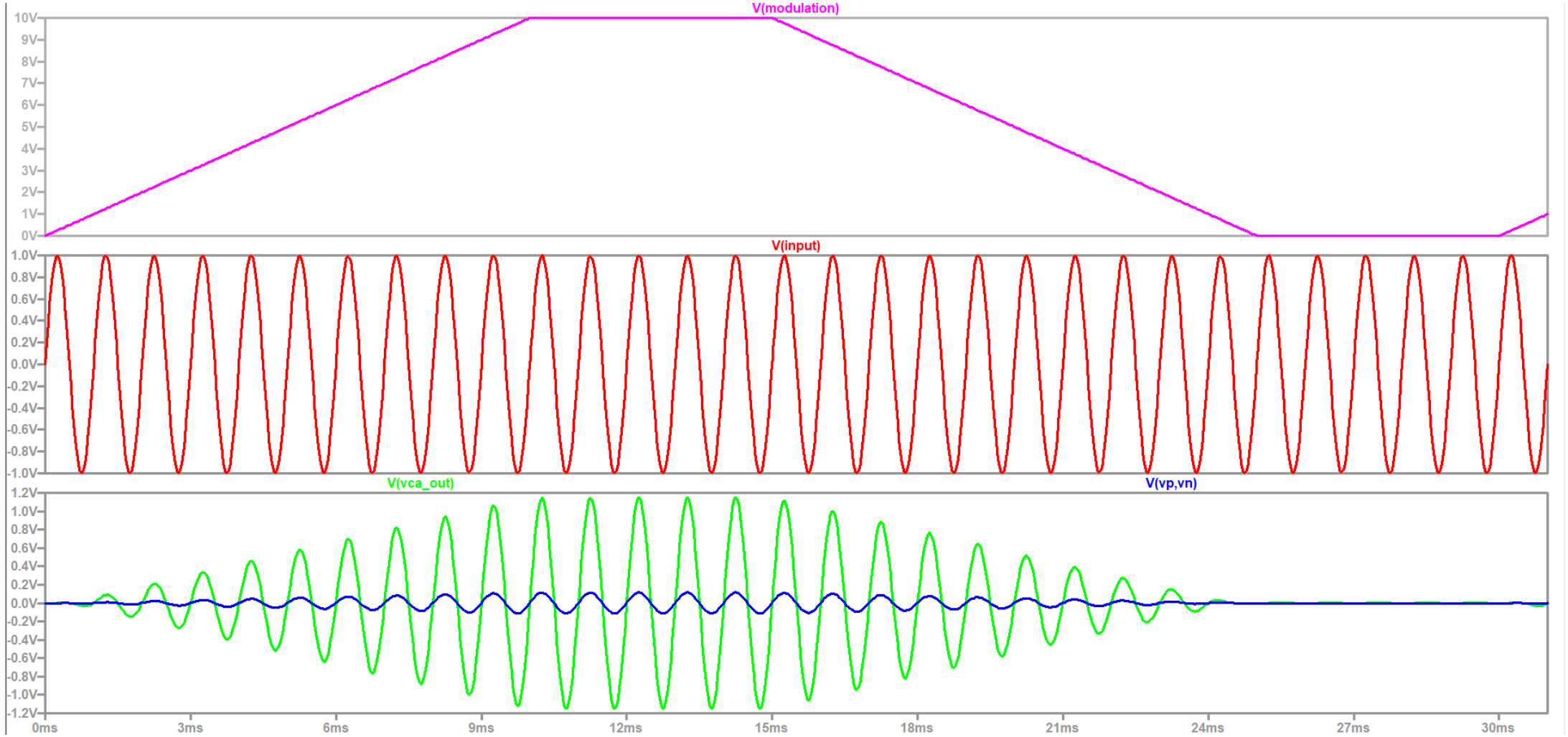
MODULES: VCO WAVEFORMS



MODULES: VOLTAGE CONTROLLED AMPLIFIER (VCA)



MODULES: VCA WAVEFORMS

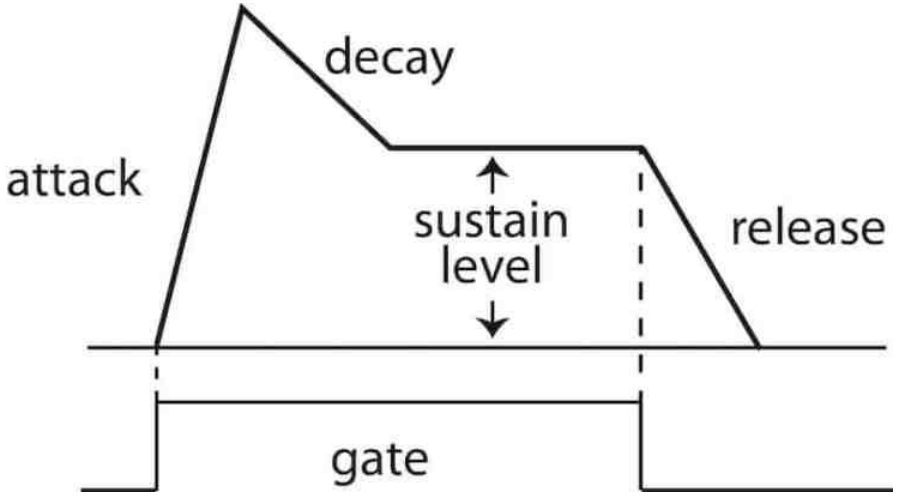


MODULES: ENVELOPE GENERATOR (EG)

Creates a voltage outline that can be applied to a waveform over time (using a VCA).

It can take the form of:

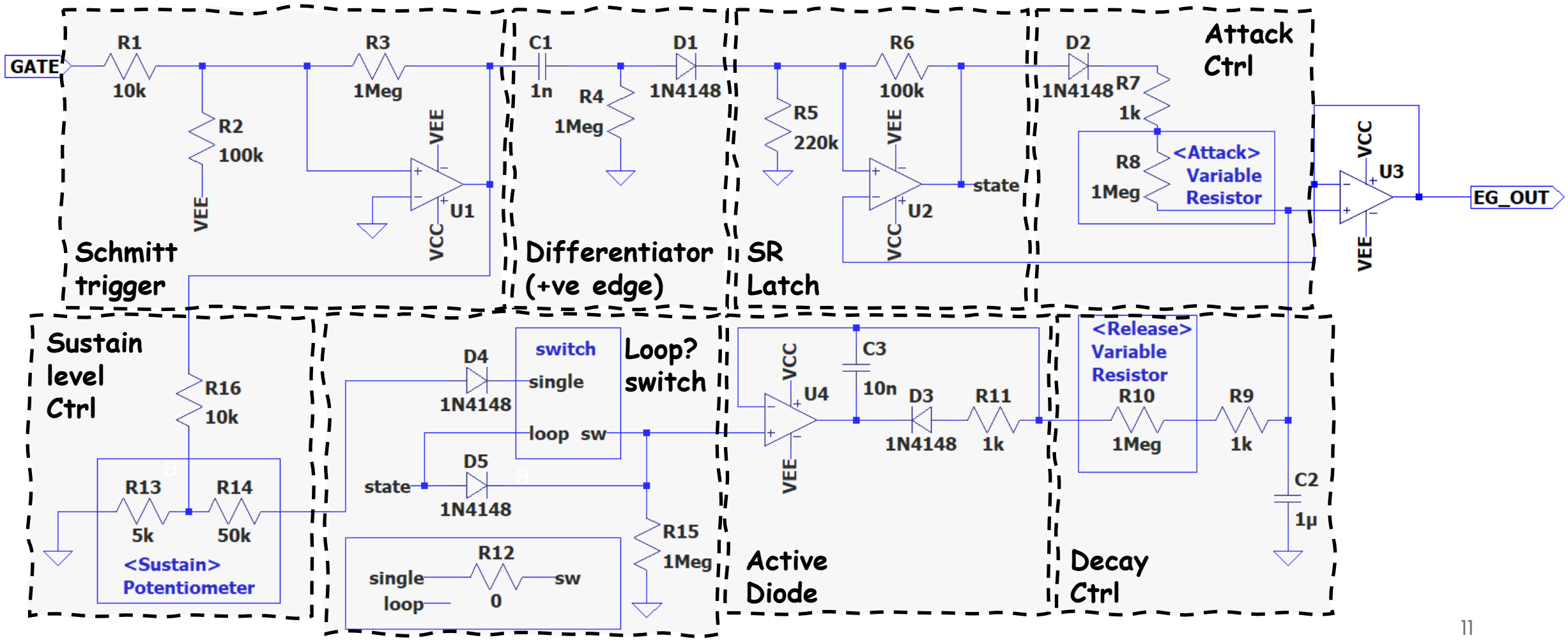
- **Attack Release (AR)**
- Attack Decay (AD)
- Attack Hold Release (AHD)
- **Attack Decay Sustain Release (ADSR)**
- Attack Decay Sustain Hold Release (ADSHR)



ADSR Envelope

MODULES: ENVELOPE GENERATOR(EG)

WARNING: It is getting very involved···



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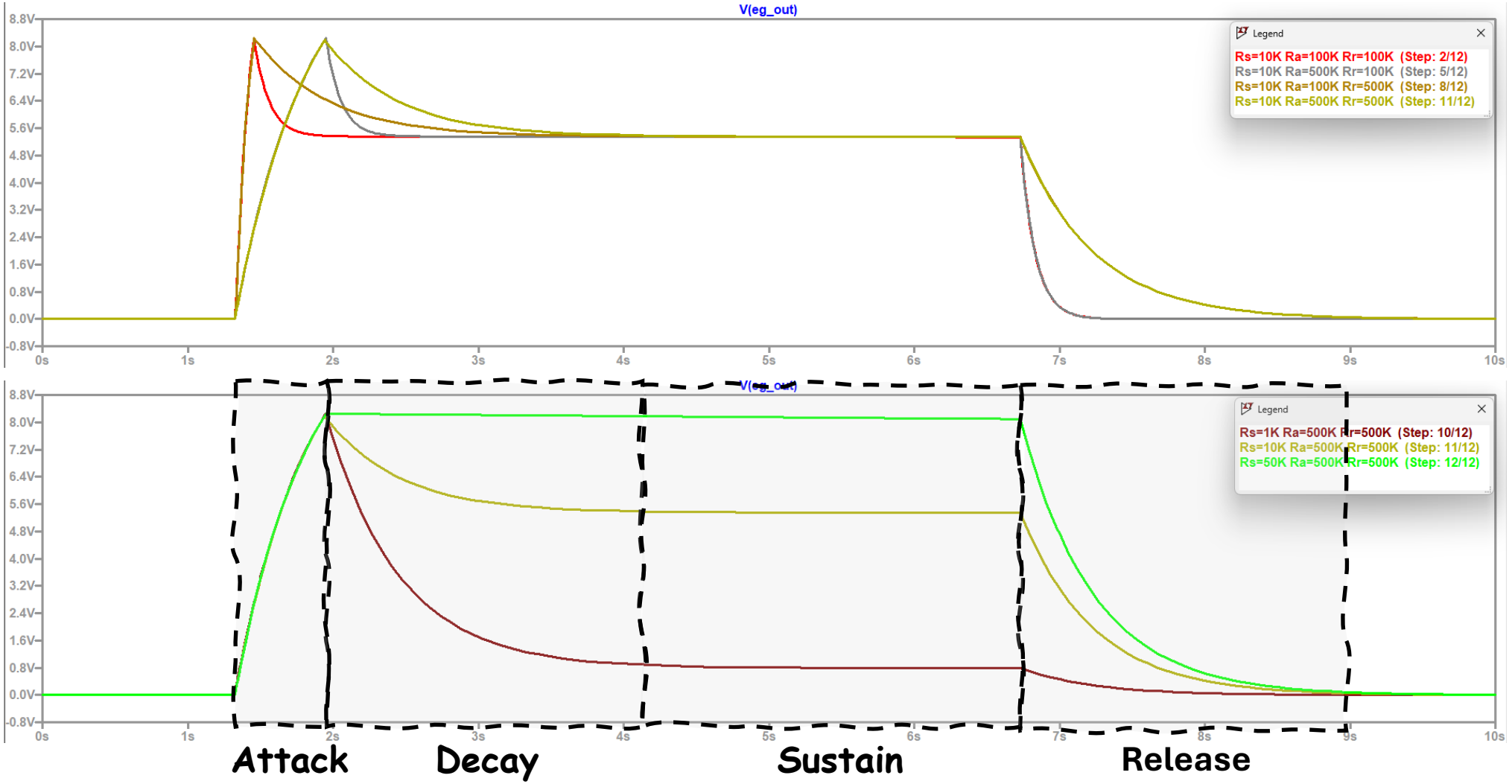
MODULES: EG WAVEFORMS



MODULES: OTHER IDEAS?

Other Modules:

- Voltage Controlled Filters (VCF)
- Low Frequency Oscillators (LFO)
- Noise Generator
- Sample & Hold
- Resonator
- Reverb
- Drum Machine
- Compressor
- Distortion
- Delays
- Mixer/ Patch Board
- Diode Ladder
- Preamplifier
- Speaker Amplifier
- Headphone Amplifier

EURORACK MODULES

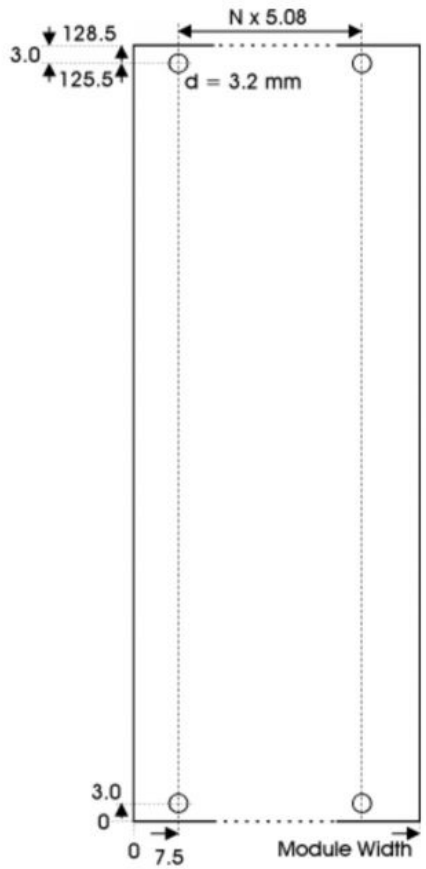
Position of the mounting holes	Module width [HP]	calculated module width [mm] (= multiples of 5.08 mm)	actual module width [mm]
	1	5.08	**5.00**
	1.5	7.62	**7.50**
	2	10.16	**9.80**
	4	20.32	**20.00**
	6	30.48	**30.00**
	8	40.64	**40.30**
	10	50.80	**50.50**
	12	60.96	**60.60**
	14	71.12	**70.80**
	16	81.28	**80.90**
	18	91,44	**91,30**
	20	101.60	**101.30**
	21	106.68	**106.30**
	22	111.76	**111.40**
	28	142.24	**141.90**
	42	213.36	**213.00**

Table 1: Position of the mounting holes and front panel width in HP and mm