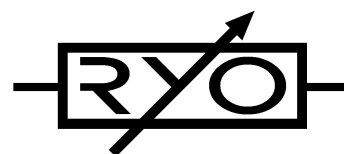**Roll Your Own Synthesizer**
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KYMATICA DEVICES
www.kymatica.com

2xVCX Bill of materials version 1.0

Reference	Quantity	Value	Description
C1 C2 C3 C4 C5 C6 C7 C8 C9 C10 C11 C12	12	100nF	Capacitor (bypass) MLCC X7R 2.5-2.54mm pin pitch
C13 C14	2	10uF	Capacitor (electrolytic) 2mm pin pitch, 5mm dia, max 10mm height. Min 25V.
CON1	1	IDC 10-pin	IDC 10 pin power connector (2x5 pin)
D1 D2 D3 D4 D5 D6	6	1N4148	Signal diode
D7 D8	2	1N5818	Schottky diode (or 1N5817, 1N5819)
J1 J2 J3 J4 J5 J6 J7 J8 J9	9	3.5mm jack	Thonkiconn 3.5mm jack socket
PCB_CON1_1 PCB_CON2_1	2	8 pin header male	PCB connector PCB1 (1x8 pin)
PCB_CON1_2 PCB_CON2_2	2	8 pin header female	PCB connector PCB2 (1x8 pin)
Pcv1 Pcv2	2	100k	Potentiometer Alpha 9mm
Pofs1 Pofs2	2	22k	Potentiometer Alpha 9mm (20-25k)
Q1 Q2	2	BC557B	PNP transistor
R1 R2 R3 R4 R5 R6 R7 R8 R10 R12 R16 R17 R19 R20 R37 R38 R39 R40 R41	19	100k	Resistor 1/4W 1% ca 7mm long
R21 R22 R29 R31 R47 R48	6	10k	Resistor 1/4W 1% ca 7mm long
R23 R24 R27 R28	4	22k	Resistor 1/4W 1% ca 7mm long
R25 R26 R30 R32	4	470R	Resistor 1/4W 1% ca 7mm long
R42 R43 R44	3	1k	Resistor 1/4W 1% ca 7mm long
R45 R46	2	10R	Resistor 1/4W 1 to 5% ca 7mm long
R9 R11 R13 R14 R15 R18 R33 R34 R35 R36	10	200k	Resistor 1/4W 1% ca 7mm long
SW1 SW2	2	on-off-on	SPDT on-off-on mini toggle switch. Mouser# 108-1MS3T2B3M2QE-EVX
TRbal1 TRbal2	2	50R	Trimpot Bourns 3296W or equivalent
TRgain1 TRgain2	2	50k	Trimpot Bourns 3296W or equivalent
U1 U2 U3	3	TL074	DIP-14 quad op-amp (or TL084)
U4	1	LM13700	DIP-16 dual OTA
U5	1	TL072	DIP-8 dual op-amp (or TL082)
U1 U2 U3	3	DIP14	IC Socket
U4	1	DIP16	IC Socket
U5	1	DIP8	IC Socket
	2		PCB spacer 11mm
	4		Knobs
	1		16 to 10 pin IDC ribbon cable
	1		Panel
	1		PCB1
	1		PCB2

Calibration

For best results, let the module warm up with power on for 20-30 minutes before calibration.
Use either your hearing or an oscilloscope.

Patch an **unconnected cable** to the **A1 input**.
Set the **toggle** at the **right (B>A)** position, turn **OFFSET 1 knob to 0%** and **CV attenuator 1 knob to 100% +**.
Patch a VCO to CV1 input and **adjust TRbal1** for minimum CV bleed-through on OUT1.
Move **VCO patch cable to B1 input**, turn **OFFSET knob to 100%** and **adjust TRgain** for minimal amplitude on OUT.
Repeat until satisfaction. Do the same for the second channel (2).

Power consumption
34mA @ +12V
32mA @ -12V