Integrating Circuit for the POS 150 VCO

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This circuit is designed to integrate about 5 to 15 microsecond, 5V square pulses to produce a triangle ramp output with a voltage difference from min to max that can be varied but is roughly between 2-4 volts and with a variable offset. For the VCO (POS 150) that this circuit was intended for, this 2-4V ramp should correspond to about 12–24MHz frequency sweep on the VCO output.

Using the circuit: The square pulses should be applied through the BNC connector named "input". From the circuit diagram, the signal goes through four amplifiers. The first one integrates the square pulse to make a triangle ramp. The next amplifier amplifies the triangle. This not only makes the amplitude larger but it also increases the offset as well. The next amplifier adds the triangle with positive or negative voltage that can be controlled using the potentiometers named "add" and "subtract". This allows you to add or subtract an offset voltage so that the triangle will be centered wherever you want it. You can monitor how much voltage you are adding or subtracting by measuring the voltage on the BNC connectors paired with the two pots. The ouptut voltage on the connector paired with the subtract pot tells you how much your subtracting and the same for the add connector. The last amplifier just inverts the signal to get the positive signal that you want because the signal is inverted after passing through each amplifier.

This circuit was initially designed to be implemented with the POS 150 VCO to get a ramping frequency centered at 80MHz that ramped from about 75MHz to 85MHz. For this use, the output of the integrating circuit would be the input to the Vtune of the VCO. The input triangle wave would not need to be added to any offset to center it at 80 MHz because this can already be done with the integrating circuit.