

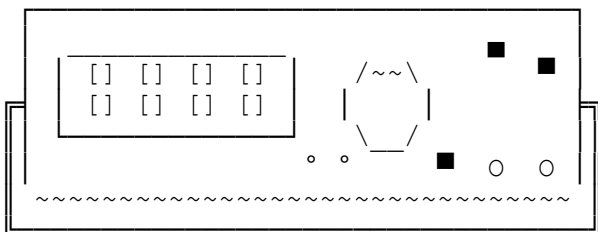
Old Venner Counter Type TSA3334

By G8MNY

(Updated Feb 11)

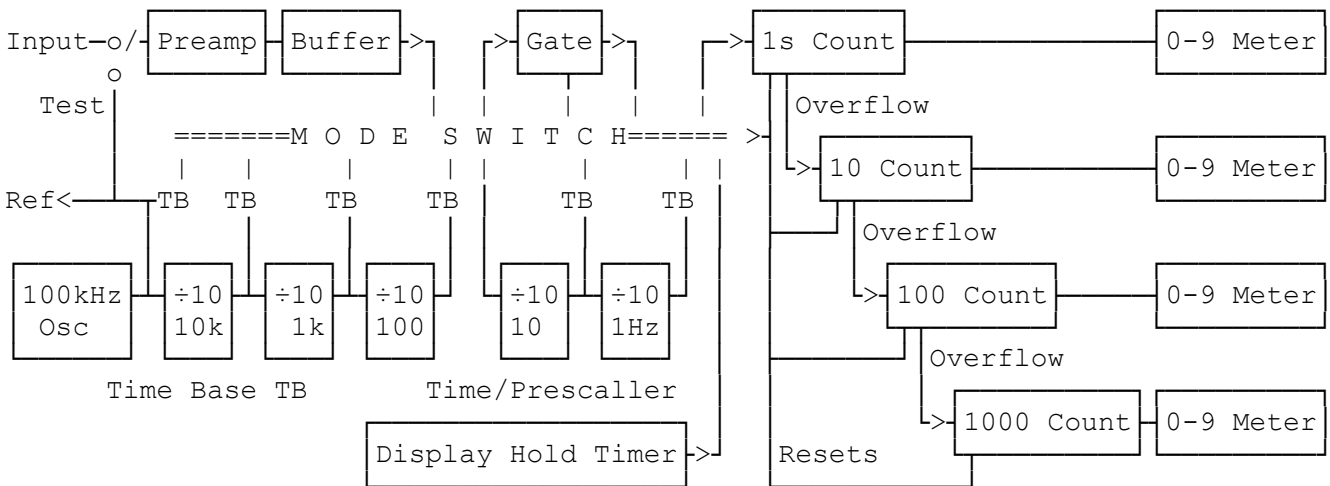
(8 Bit ASCII graphics use code page 437 or 850, Terminal Font)

I have been investigating how a very old 1MHz Frequency Counter/Timer works. It is all done with Germanium PNPs & no ICs! And it uses 4 2,5cm tall projected numbers for the display, as it was made before Nixi tubes & LEDs!



INPUT 0.1-1V 100kΩ//60pF  
 FREQUENCY Range 1Hz-1.2MHz ±1 count  
 Gate times 1S 10mS 1ms 100uS 10uS  
 PERIOD 0.1uS-99.99mS  
 Prescalers 1:1 1:10 1:100  
 COUNT 0-9999 repeating  
 Ref Output 100kHz 1V  
 Supply 115/230V or 12V dc (+ case!)

SCHEMATIC



HOW IT WORKS

The large MODE SWITCH can rearrange the units to COUNT continuously, Gated with a TimeBase for FREQUENCY or count a TimeBase gated with the input for PERIODS.

The display timer (Manual or about 2 seconds) starts the process off, clears down the counters & enables the timer gate.

Each counter & divider circuit uses 8 transistor in 4 bistables as binary ripple counters they are wired to reset @ 10 & overflow to the next counter or divider.

Each display digit consists of a meter with 0-9 number shadow mask & lamp. The DC drive for these uses 4 resistor (72k 36k 18k & 9k) from each binary stage of the counter output, such that the meter current represents the number 0-9.



External presets are used to scale & zero each meter (0 & 9 test buttons provided).

For PERIOD measurement, it rewires the units, to counts the 100kHz & uses the last 2 ÷10s fed from the input frequency, to give of the input gates of 1x 10x or 100x that period. This results in measurements of 10x 1x 0.1x in uS.

PSU

This is -7.5V for the electronics & a raw -10V regulated for the 4 lamps.

IN USE

Despite being very old it still all works & is very easy to read. The 4 Digit readout might seem to be a limitation, but overflow counting is possible. So to measure say 1.250895MHz you 1st read the 1250kHz & then alter the range to see the 0895Hz.

For low frequencies like CTCSS tones, where 1/10 of Hz resolution is needed, then Period measurement & a calculator comes into its own.

See other tech buls "Watson 'Hunter' Counter Mods", "PIC Freq Counter Mods", "198kHz Off Air Standard", & "Off Air Lock for Ref Osc."

Why Don't U send an interesting bul?

73 De John, G8MNY @ GB7CIP