

10 MHz Divider Chain

by

James Miller G3RUH

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This logic unit takes a 10 MHz input and outputs TTL signals 10 MHz to 1 Hz in decade steps, and 5 MHz.

Circuit Description

U1 is a 74AC14 hex inverter with Schmidt trigger inputs. Pin 1 acts as a buffer for the low level sinewave signal typical of 10 MHz oscillators; terminals are marked **10M In**. Input can also be TTL magnitude.

74HC390 is a dual divide by 10 counter. Each part consists of a divide by 5 (with asymmetric output), and a divide by 2. U2 provides a 10 MHz, 5 MHz and 1 MHz square waves. **10M 5M 1M**

The second 10 MHz output from U1 pin 12 **10M Out** is intended to supply a regenerated TTL signal to other equipment, such as the Brooks Shera GPS controller.

The 1 MHz output from U2 pin 13 also drives a chain of three 74HC390 dual divide by 10 counters, U3/4/5 which provide six square wave outputs via the hex buffer U6. **100 , 10 , 1 kHz** and **100 , 10 , 1 Hz**

Power consumption is 5v/15 ma. Terminals marked: **+5v , 0v**

Printed Board

Component layout for the PCB is shown in the drawing. Components are loaded onto side-1, which has the copper ground plane, and soldered on side-2 which has normal tracks.

The grounded pin of each pair of terminals is marked with a bar.

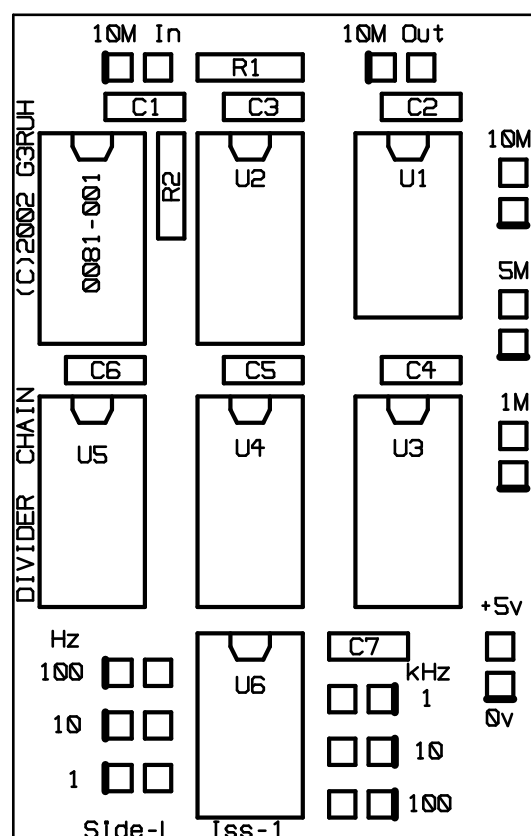
The IC marked 0081-001 within its box, is spare for the user.

Component list

Layout: Issue 1

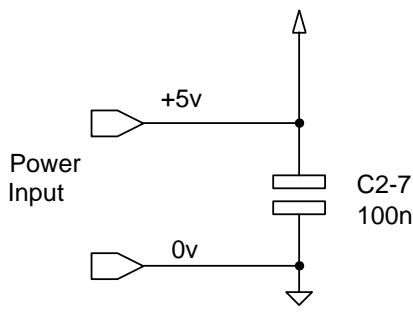
Ref	Qty	Description	Farnell
R1,2	2	470R 1/8w	934-3245
C1	1	1n	975-2897
C2-7	6	100n	100-6030
U1	1	74AC14N	300-6477
U2-5	4	CD74HC390E	173-9940
U6	1	CD74HC14E	312-0195
--	12	Terminals Black	873-1195
--	12	Terminals Red	266-8702

Farnell part numbers updated 2020 Nov 13



Divider Logic

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Devices			Power		
			+5v	0v	
U1	74AC14		U1,6	14	7
U2-5	74HC390		U2-5	16	8
U6	74HC14				

