

Arhitecturi propuse pentru proiect

[CursIEM_3E_2017]

I. Descriere proiect

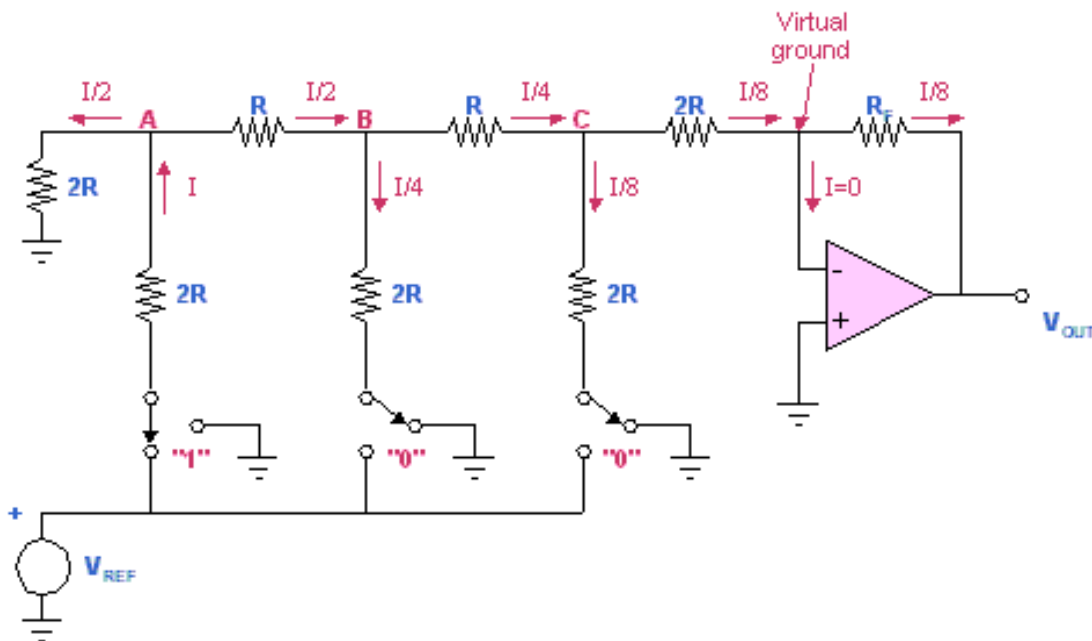
Proiect Matlab-Simulink (25p):

Construirea unui CNA/CAN, osciloscop, voltmetru, multimetru, generator de semnal:

1. Schema, cu indicarea sursei bibliografice de unde provine aceasta (inclusiv cursul de IEM); (2p)
2. Reproducerea schemei în Matlab-Simulink; (8p)
3. Testarea funcționalității, cu menționarea problemelor întâlnite și cu soluțiile găsite; (8p)
4. Redactarea în LaTeX, cu includerea și comentarea rezultatelor. (7p)

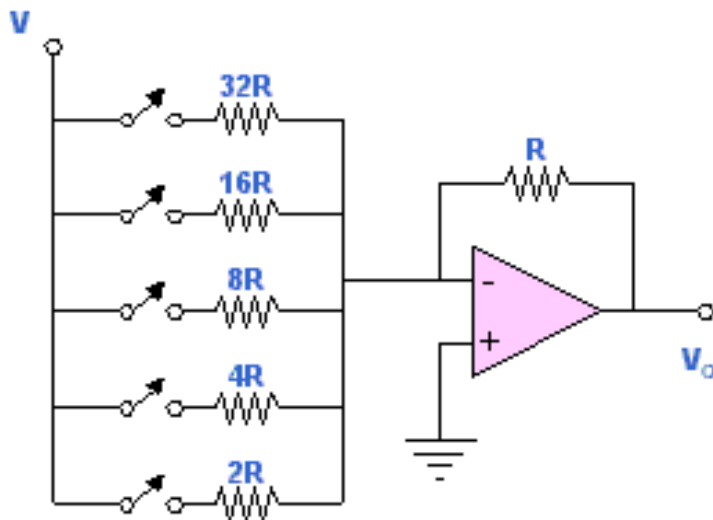
II. Opțiuni pentru tema proiectului (schemele date reprezintă un potențial punct de început al proiectului; dezvoltarea ulterioară depinde de fiecare dintre dumneavoastră)

1. CNA R-2R



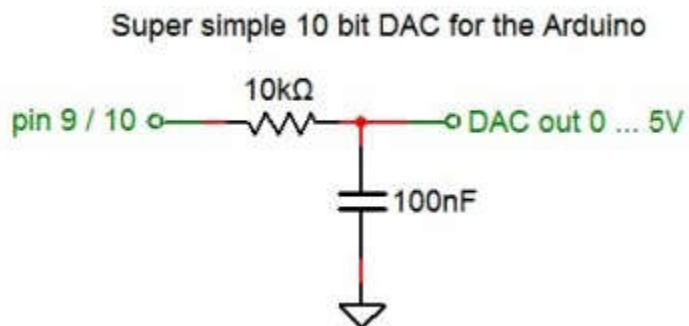
Referință bibliografică: <http://www.asmcommunity.net/forums/topic/?id=13135>, accesat pe 13.11.2017.

2. CNA cu rezistențe ponderate



Referință bibliografică: <http://www.asmcommunity.net/forums/topic/?id=13135>, accesat pe 13.11.2017.

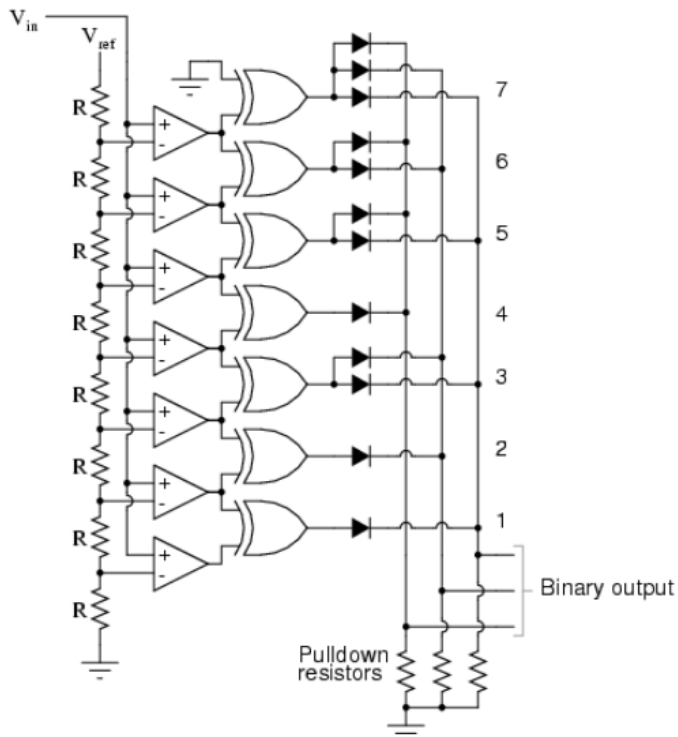
3. CNA cu PWM



Referință bibliografică:

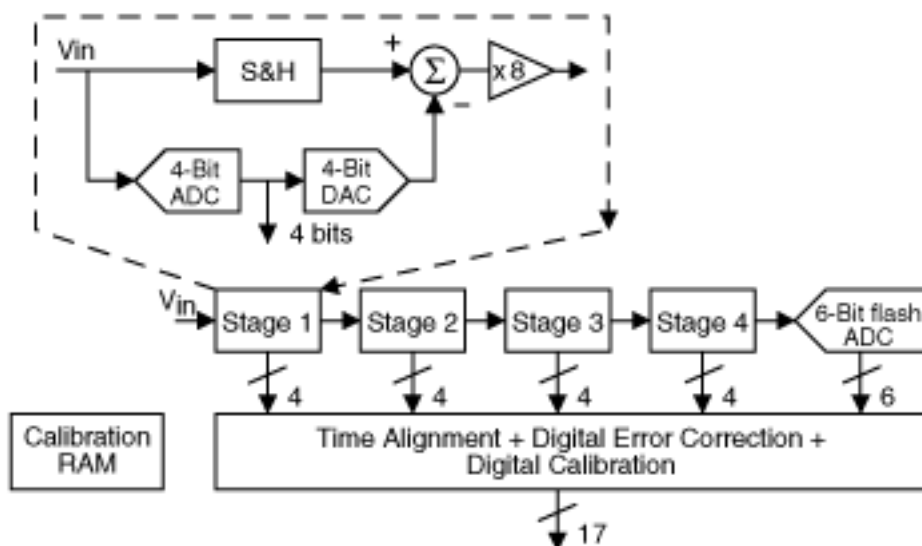
<http://www.avdweb.nl/arduino/hardware-interfacing/fast-pwm-dac.html>, accesată pe 13.11.2017.

4. CAN flash



Referință bibliografică: <https://www.allaboutcircuits.com/textbook/digital/chpt-13/flash-adc/>, accesat pe 13.11.2017.

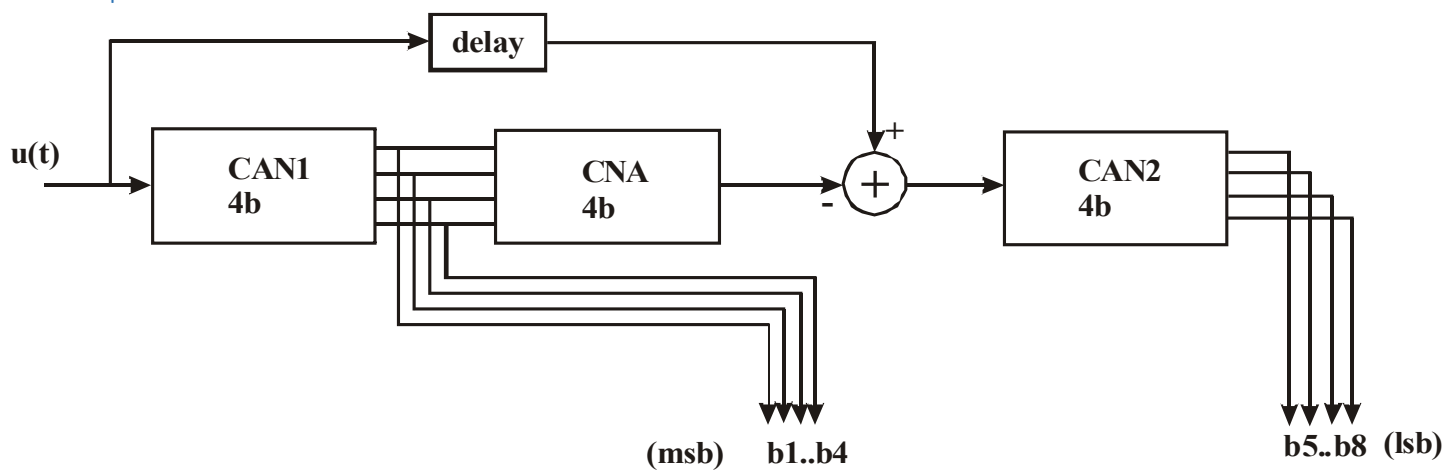
5. CAN flash-pipeline



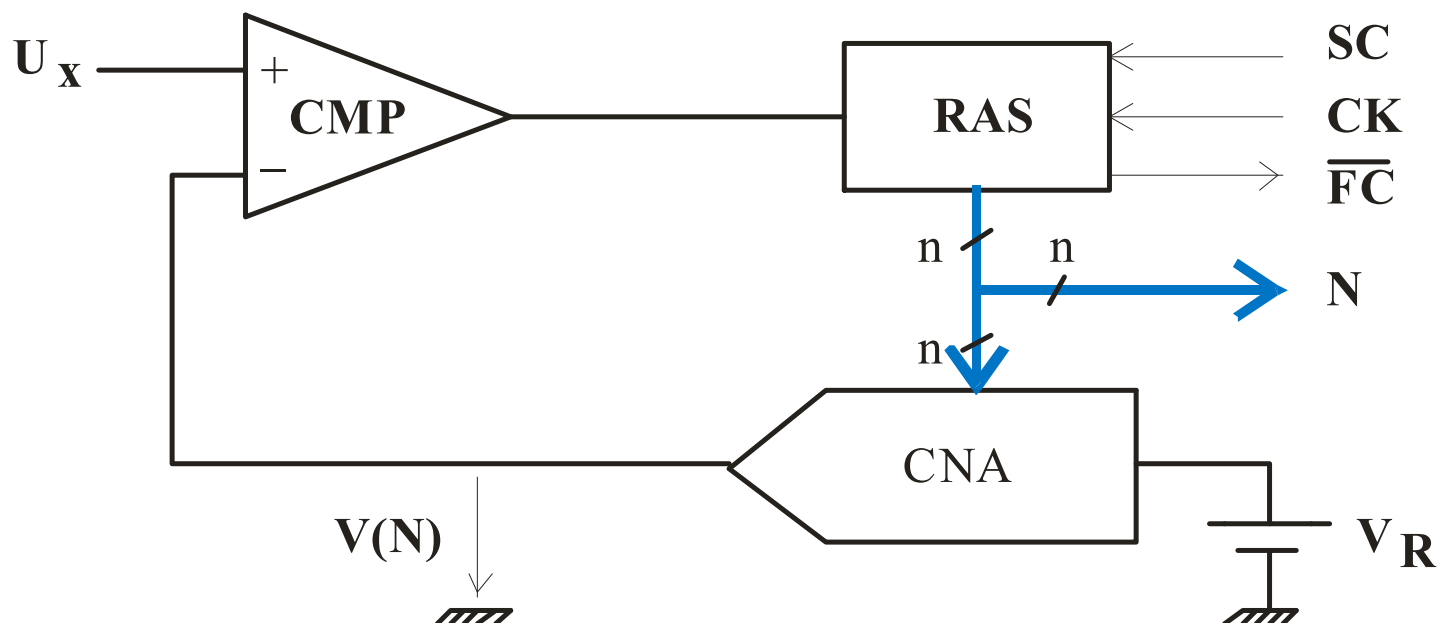
MAX1200 pipelined ADC architecture [MAX1200].

Referință bibliografică: <https://www.maximintegrated.com/en/app-notes/index.mvp/id/1023>, accesat pe 13.11.2017.

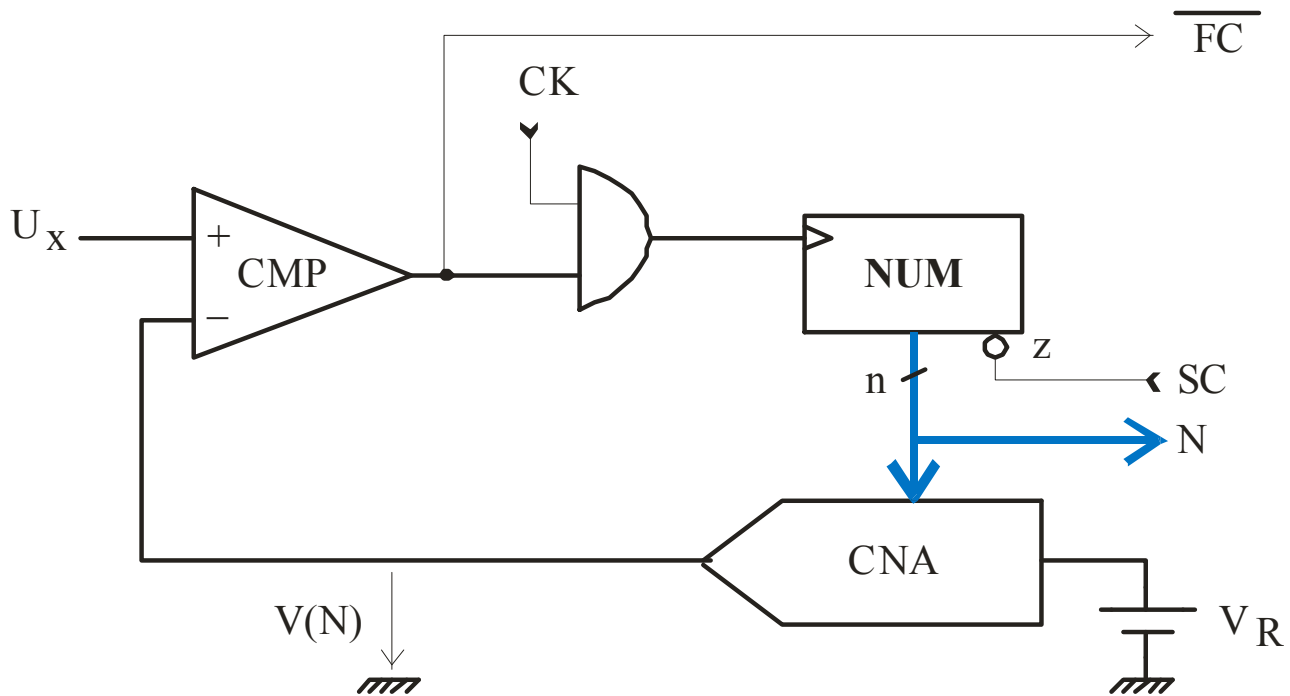
6. CAN paralel-serie



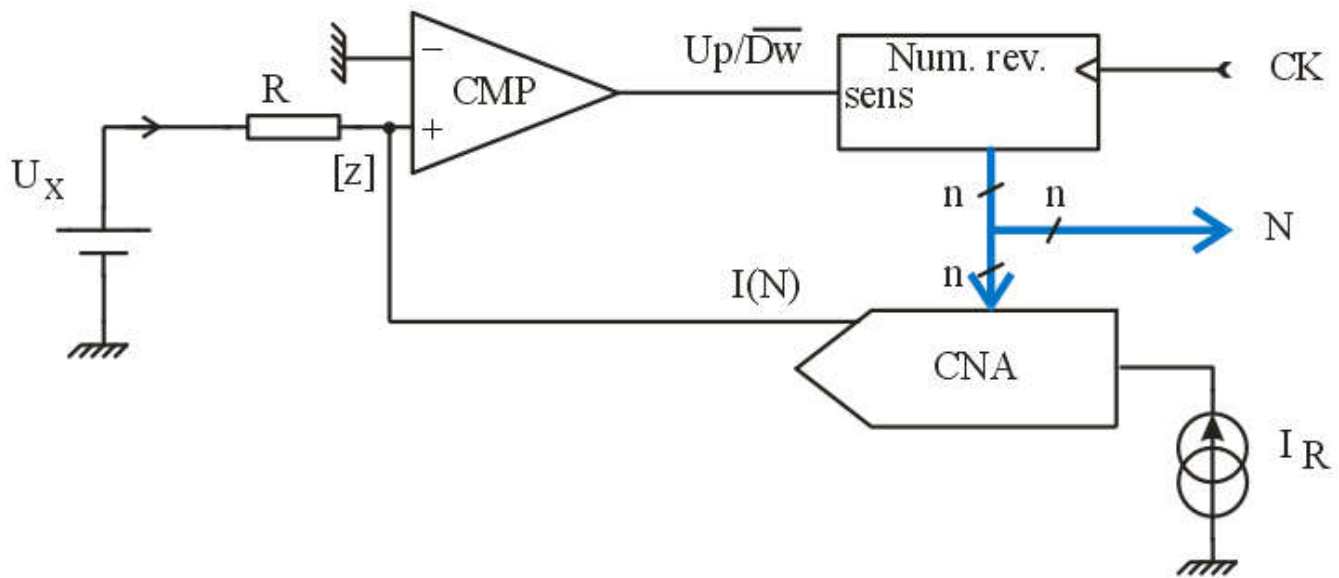
7. CAN cu aproximații succesive



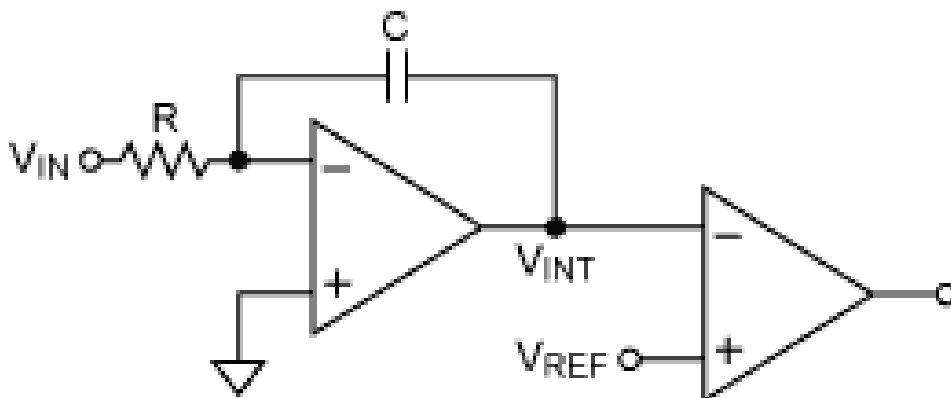
8. CAN cu rampă în trepte



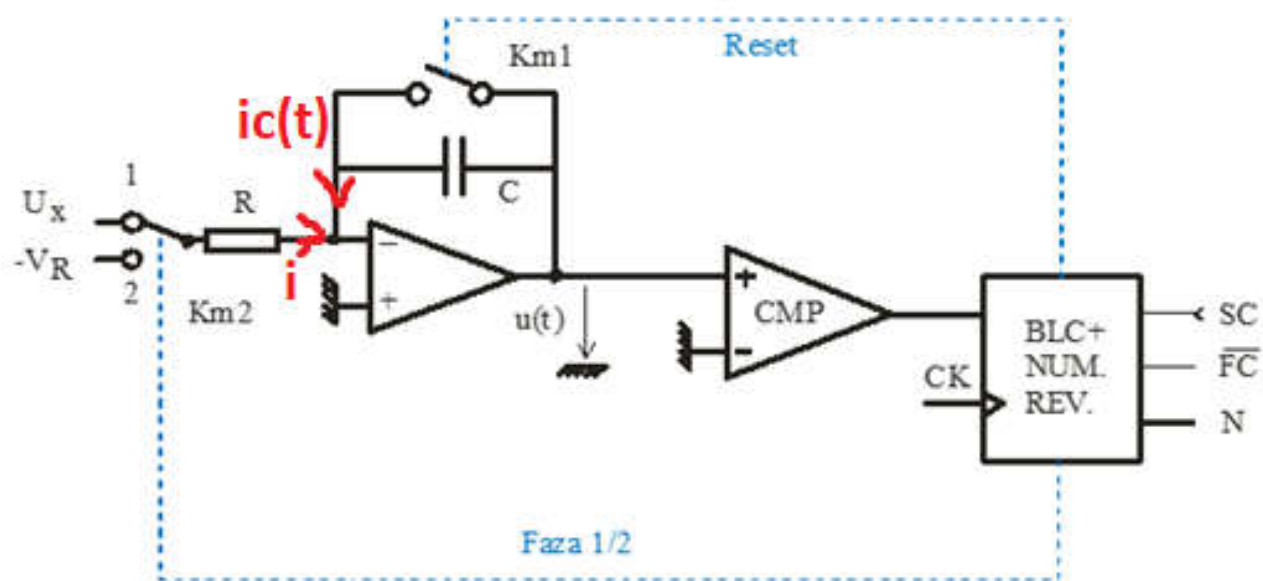
9. CAN cu urmărire



10. CAN simplă pantă;

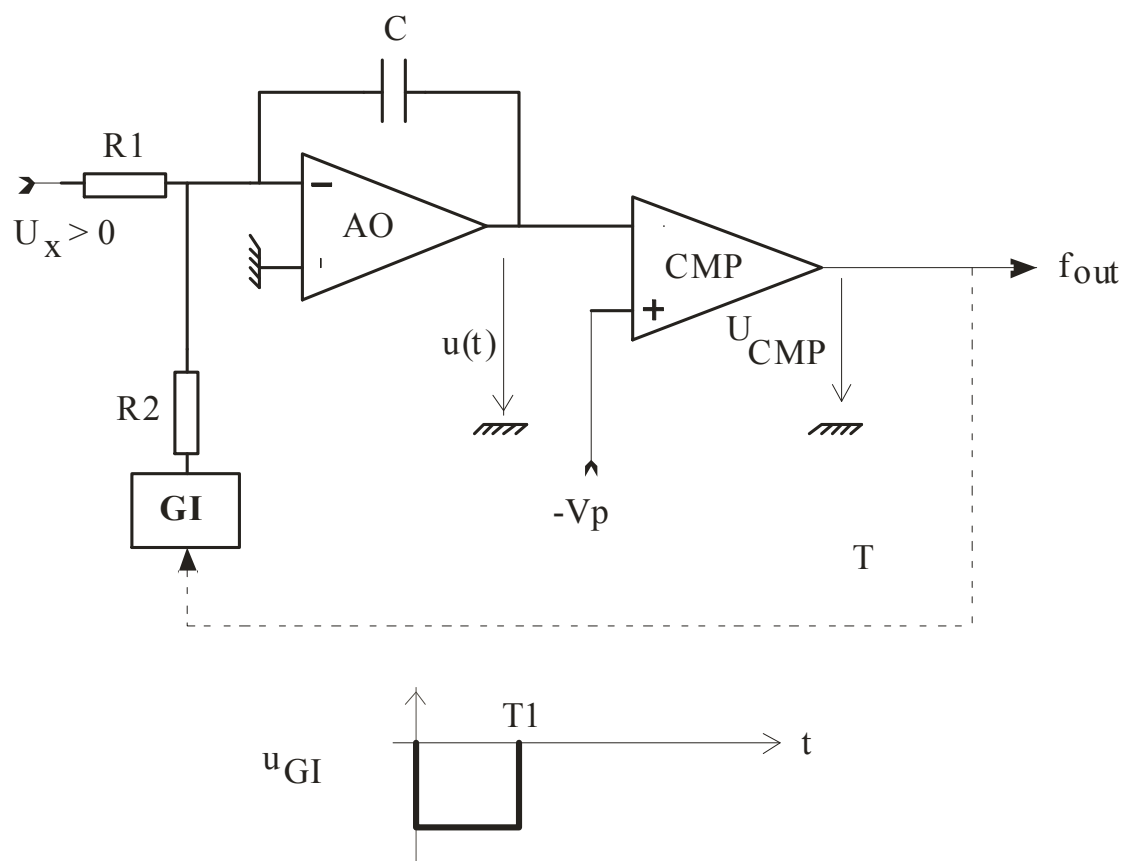


11. CAN dublă pantă



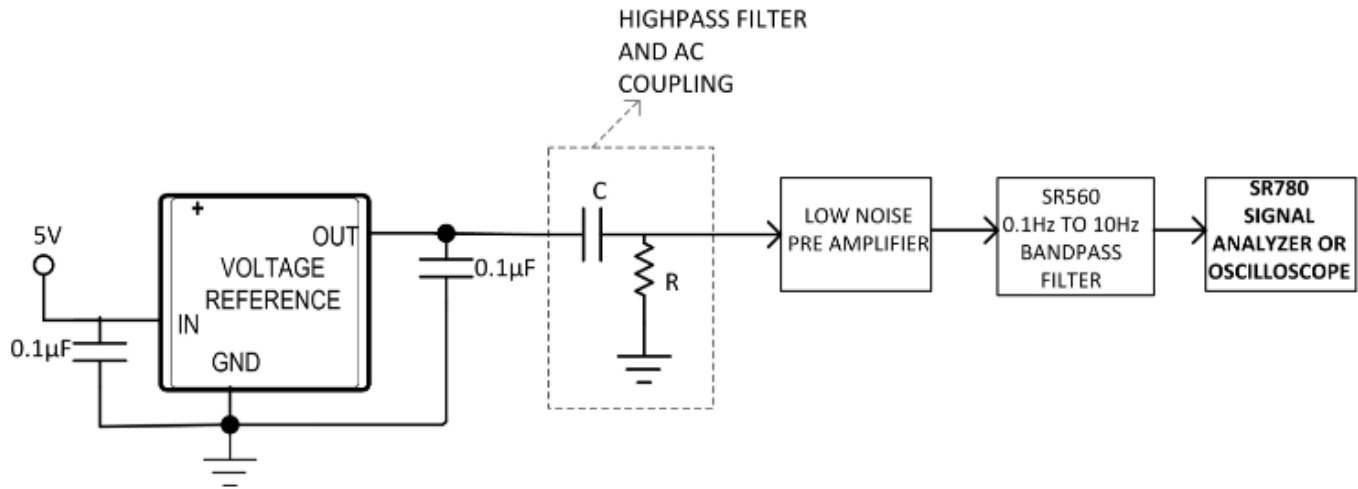
CAN dublă pantă. Schemă simplificată. [CursIEM3B]

12. CAN cu conversie U-f (cu echilibrare de sarcină)



13. Voltmetru de c.c. pentru semnale mici

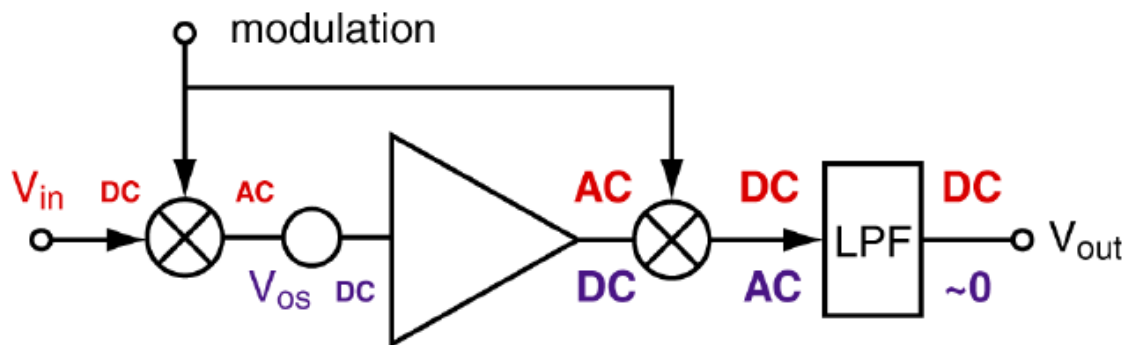
De exemplu:



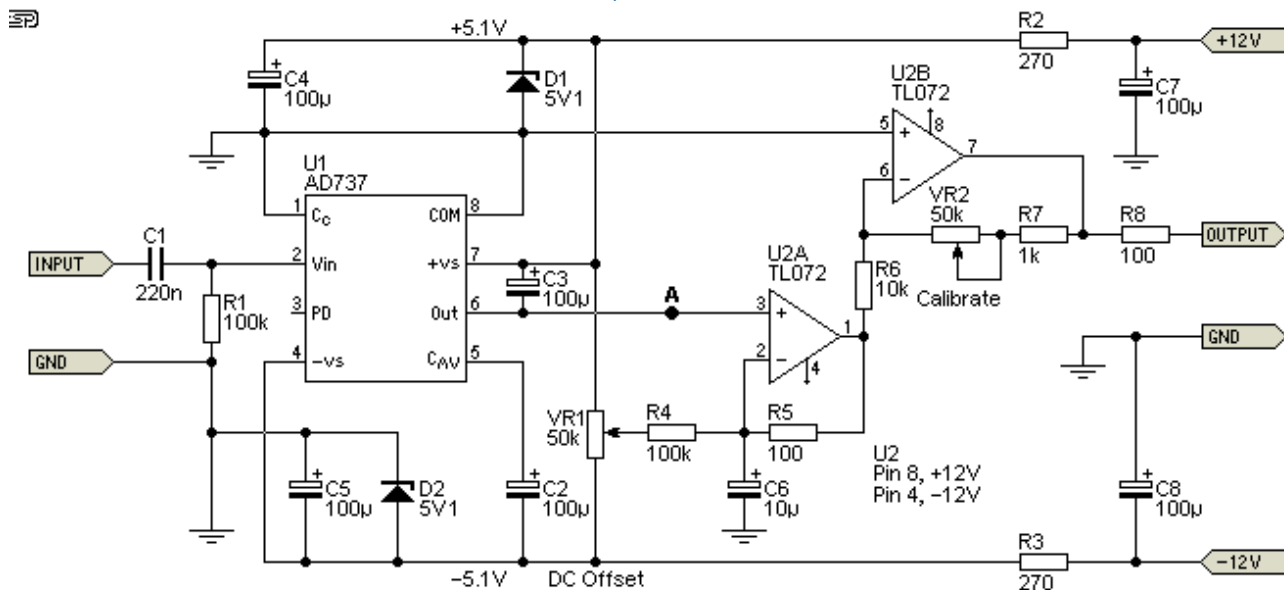
„Typical setup for measuring the noise of a voltage reference” []

Referință bibliografică: <https://www.ecnmag.com/article/2015/08/simple-effective-method-and-circuit-measure-very-low-1-f-voltage-reference-noise-1%C2%B5vp-p-01hz-10hz>, accesat pe 13.11.2017.

14. Amplificator de c.c. cu chopper

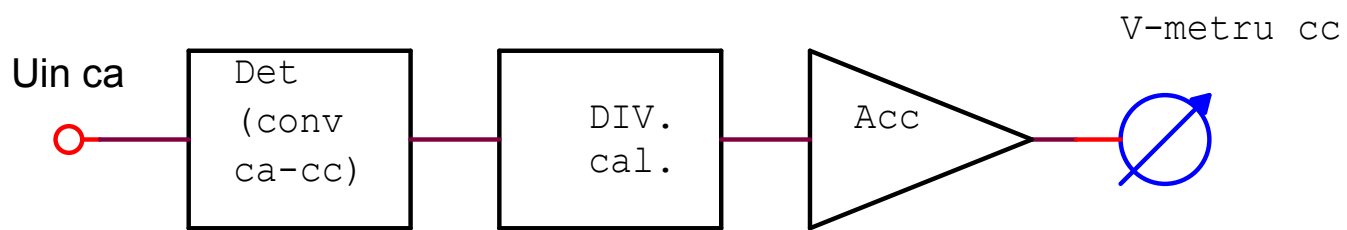


15. Voltmetru de c.a. TRUE RMS De exemplu:

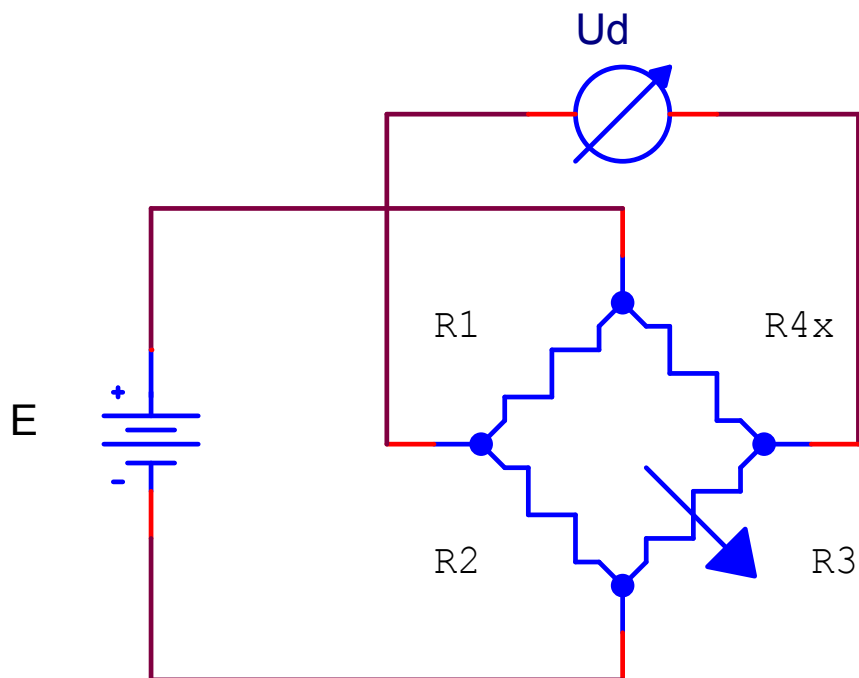


Referință bibliografică: <http://sound.whsites.net/project140.htm>, accesat pe 13.11.2017.

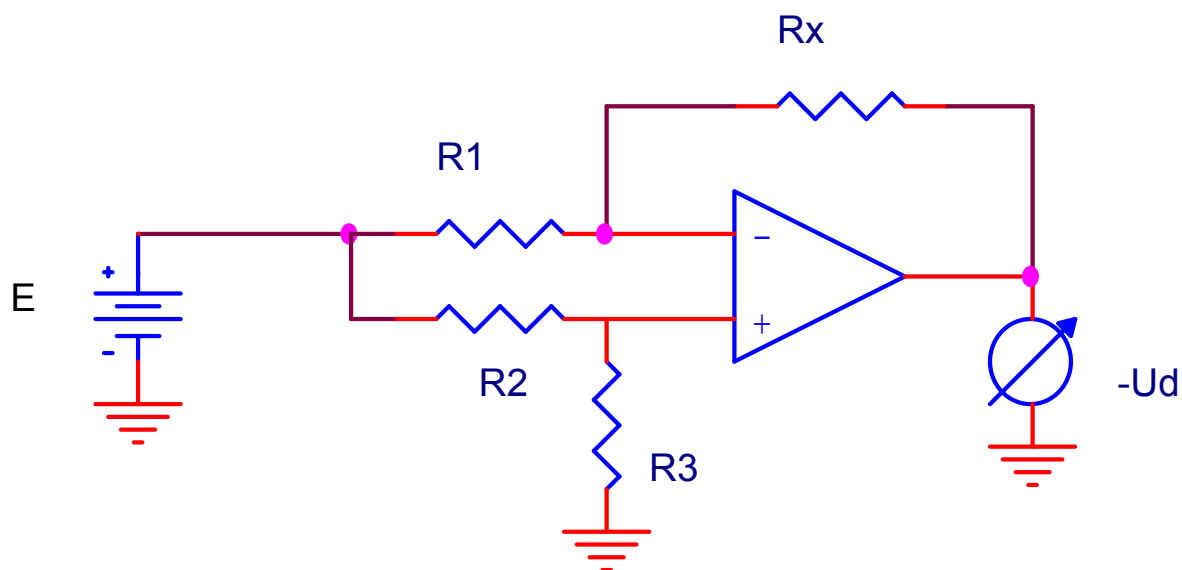
16. Voltmetru de c.a. cu amplificare în c.c.



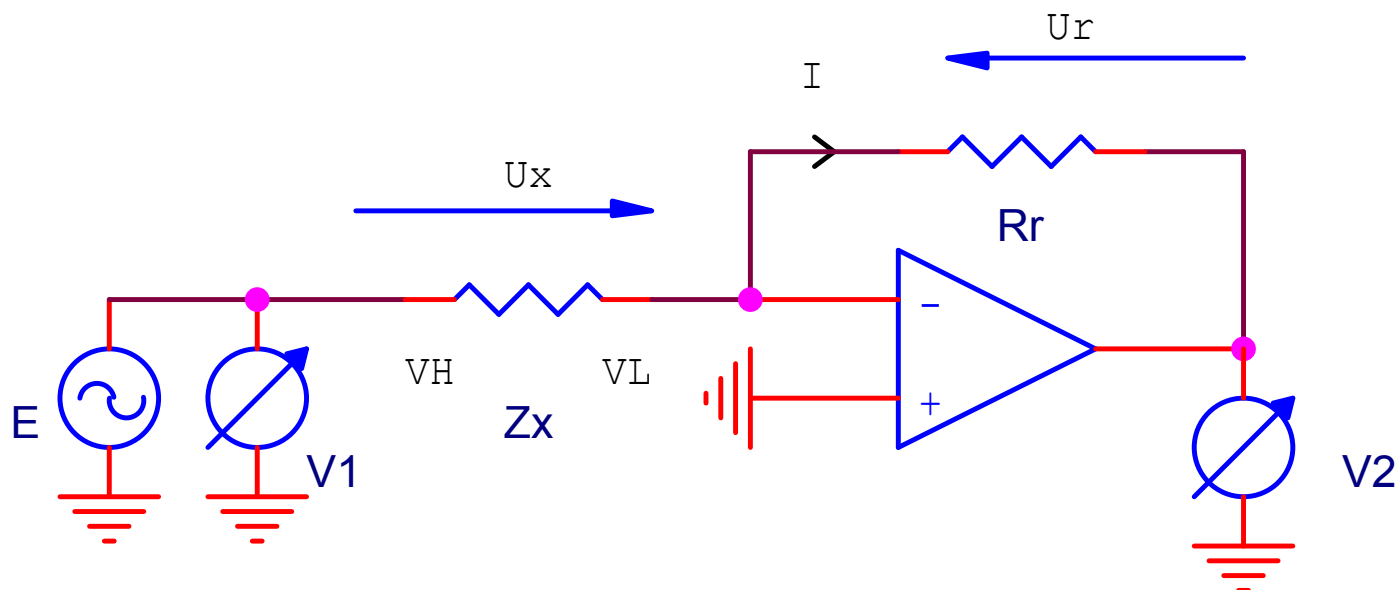
17. Puntea Wheatstone de cc și de ca



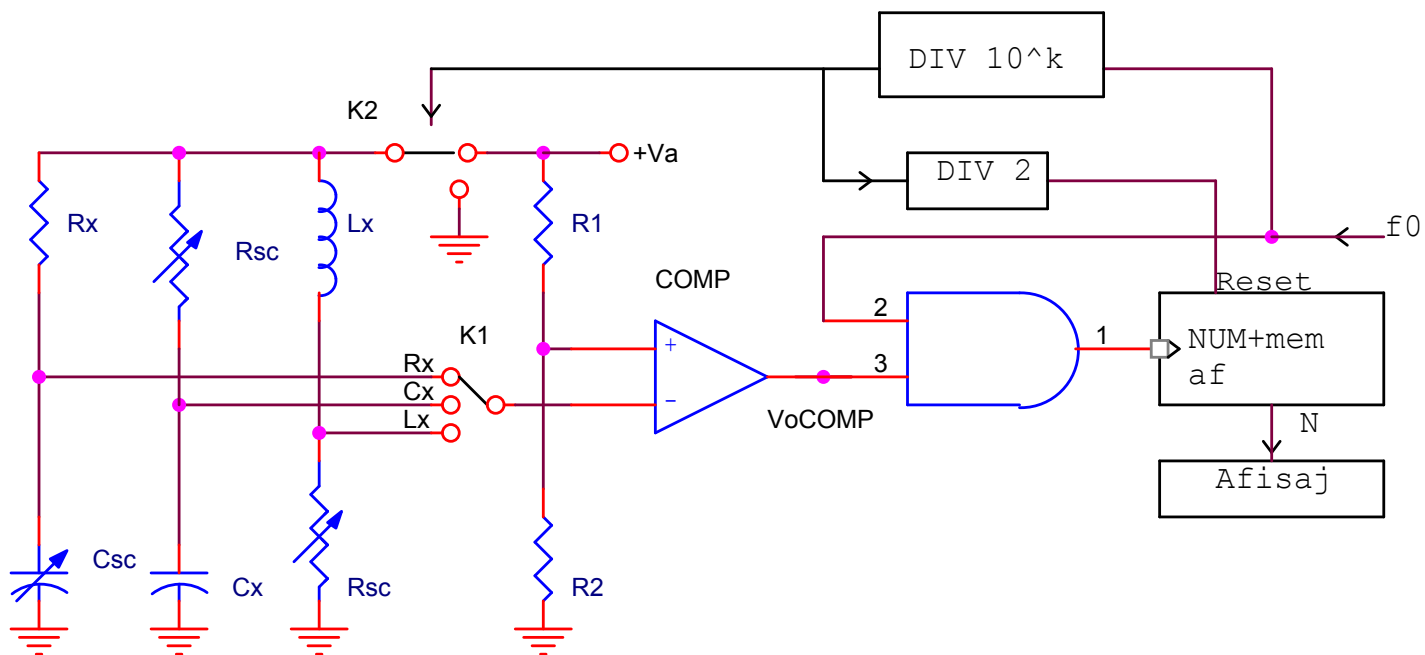
18. Puntea Wheatstone liniarizată



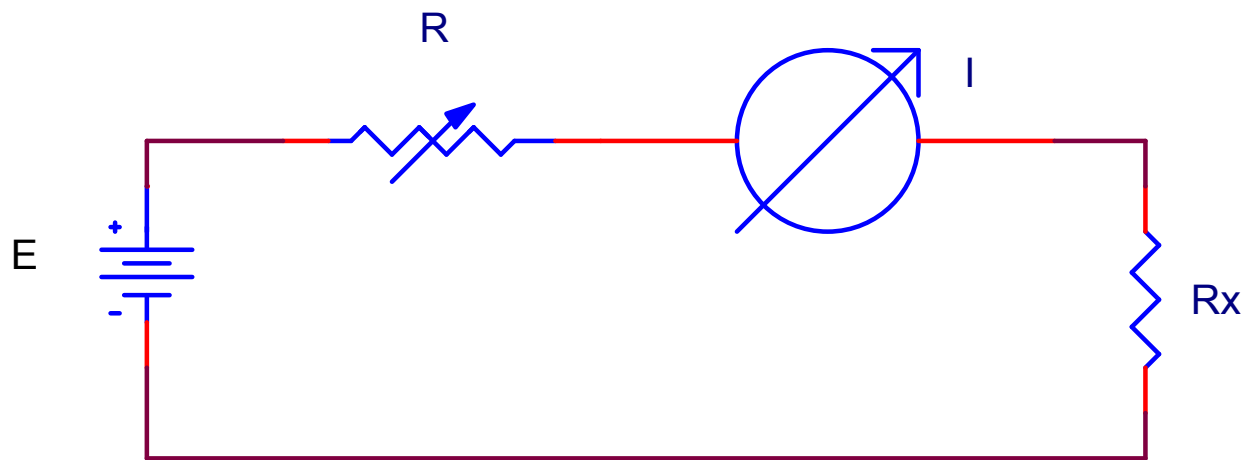
19. LCR-metru numeric folosind puntea cu echilibrare automată (ABB- Auto Balancing Bridge)



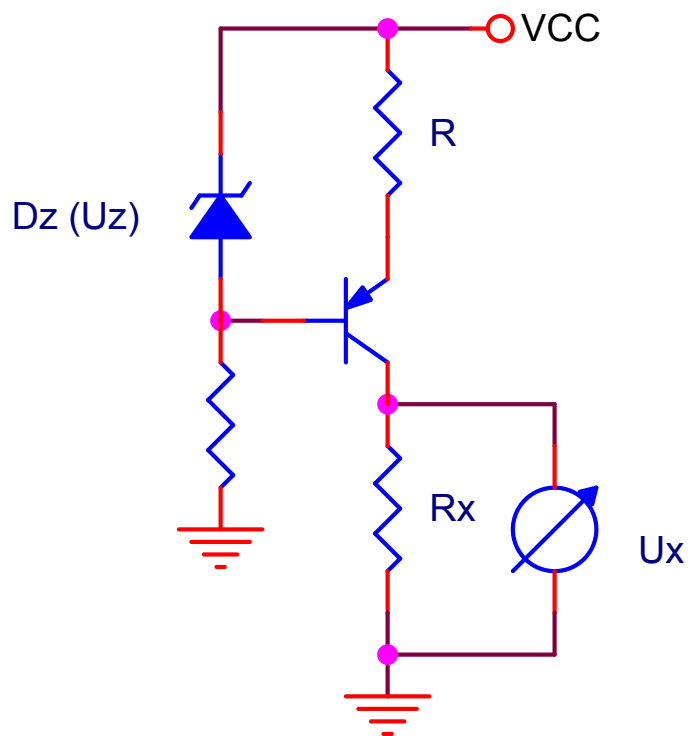
20. Convertorul cu mono-stabil în punte



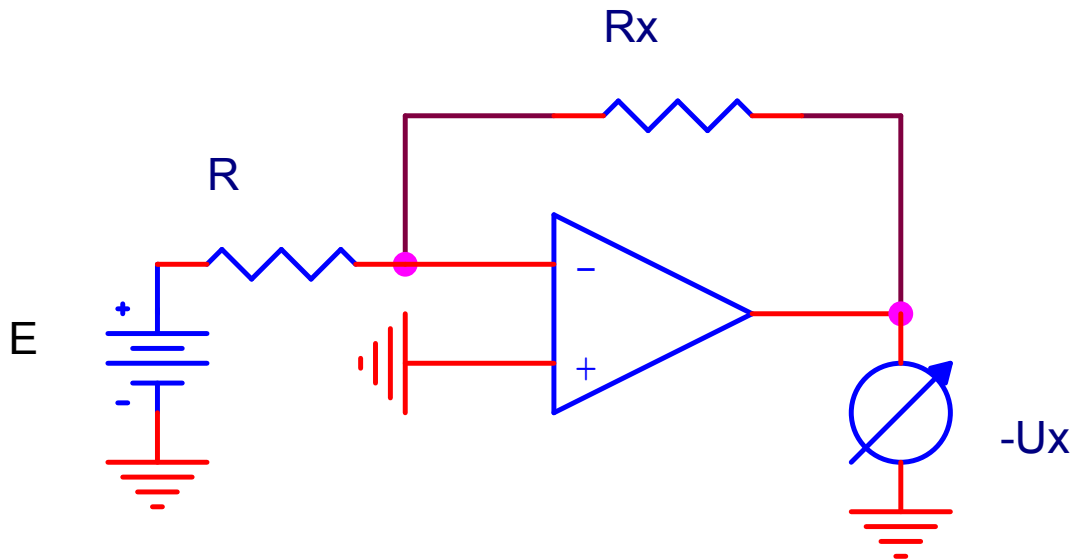
21. Ohmetrul cu indicator analogic



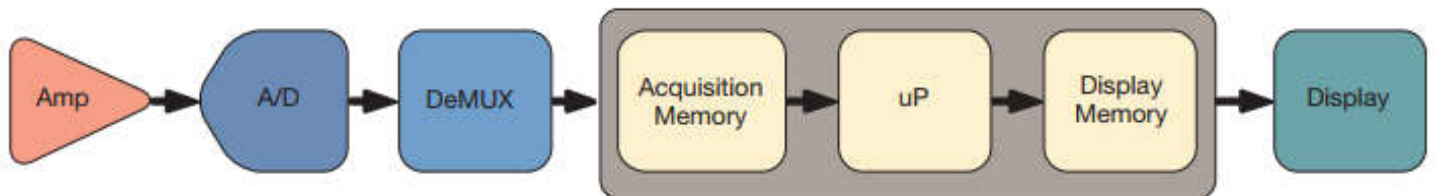
22. Ohmetrul electronic (liniarizat)



23. Ohmetrul electronic cu A.O.

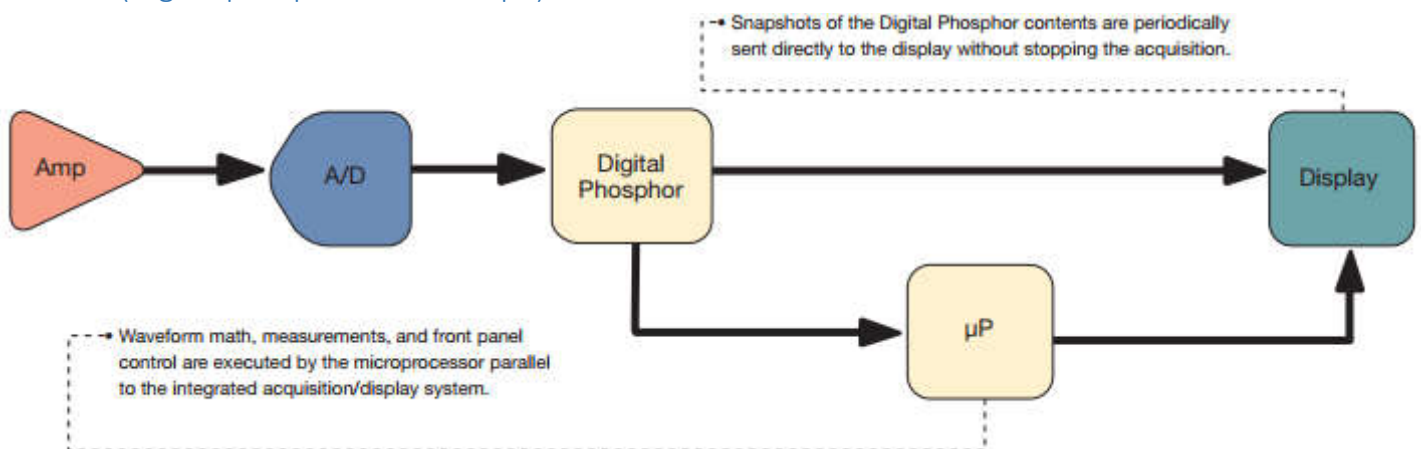


24. DSO (Digital storage oscilloscope)



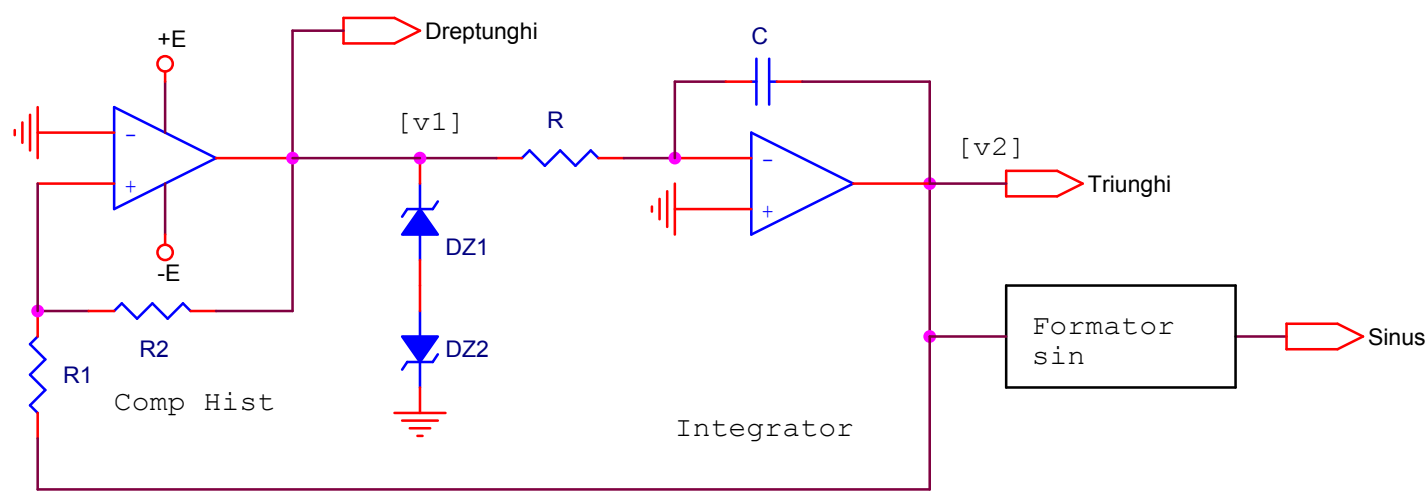
Referință bibliografică: http://info.tek.com/rs/584-WPH-840/images/XYZs-of-Oscilloscopes_03W_8605_7.pdf, accesat pe 6.11.2017.

25. DPO (Digital phosphor oscilloscope)

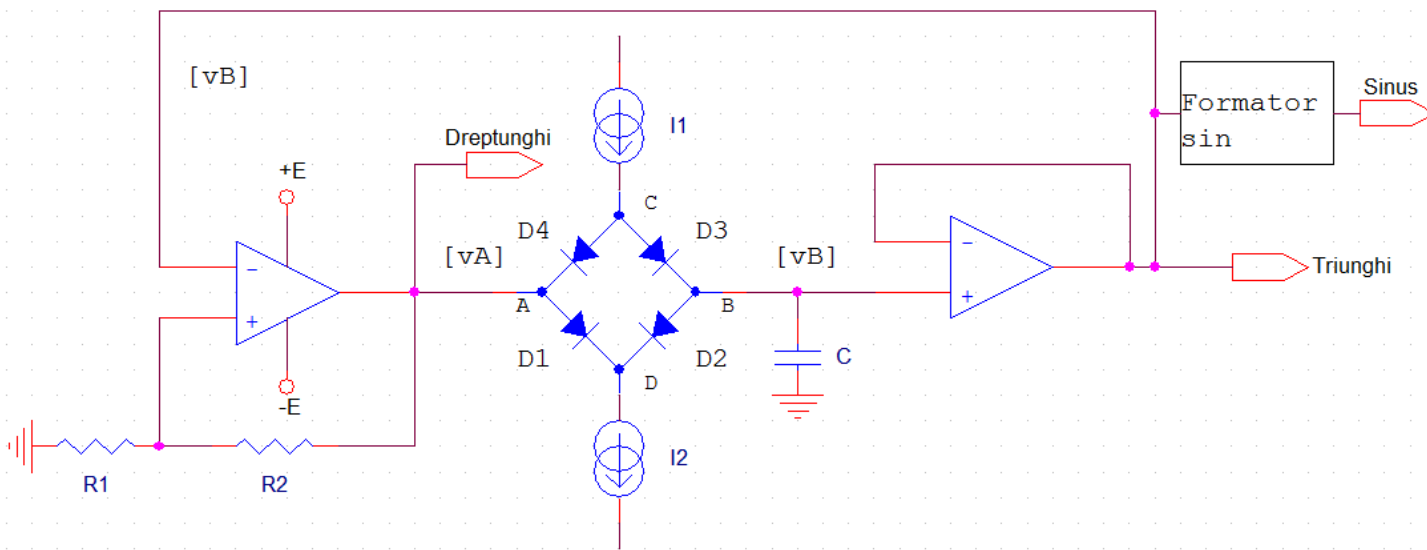


Referință bibliografică: http://info.tek.com/rs/584-WPH-840/images/XYZs-of-Oscilloscopes_03W_8605_7.pdf, accesat pe 6.11.2017.

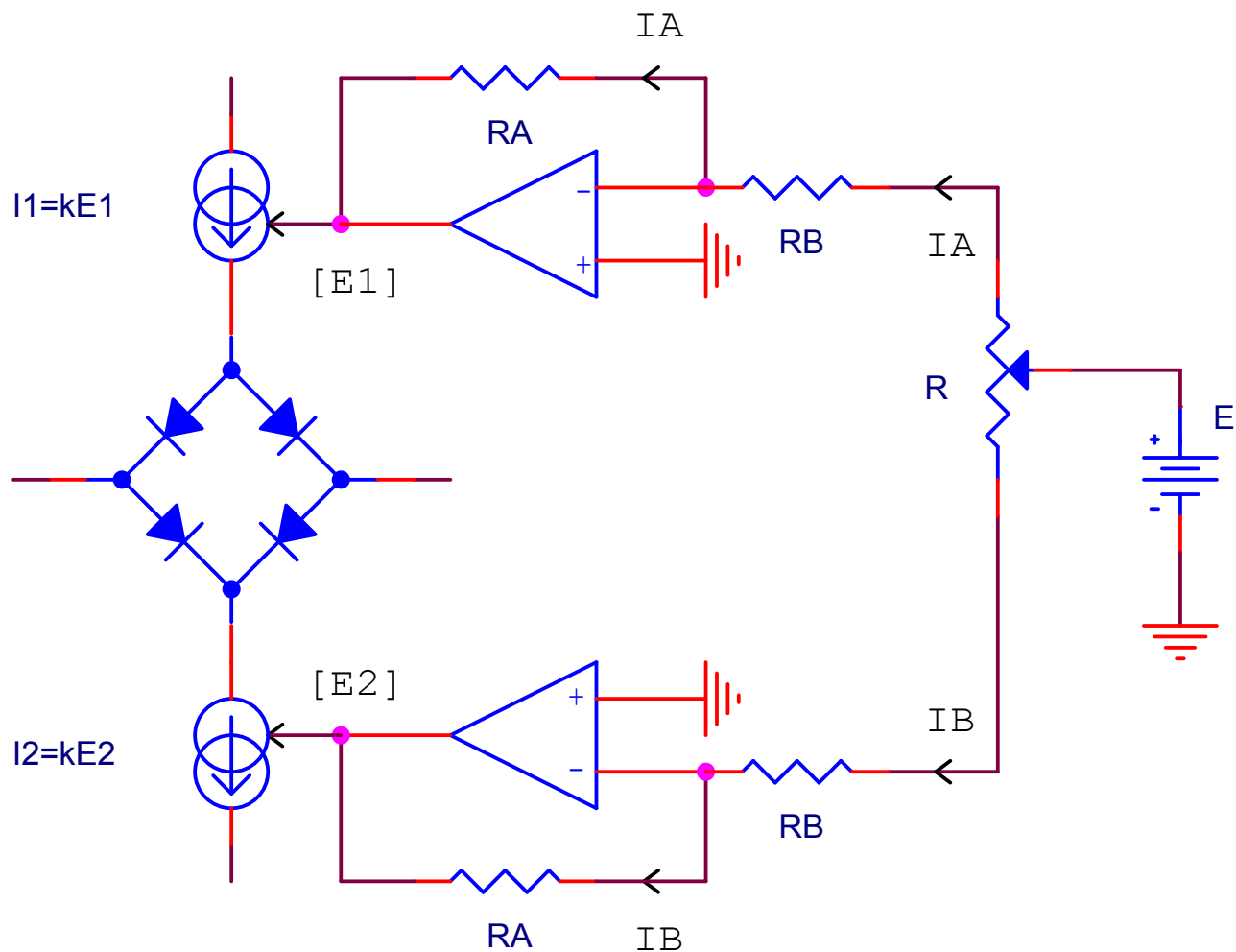
26. Generator de funcții de joasă frecvență



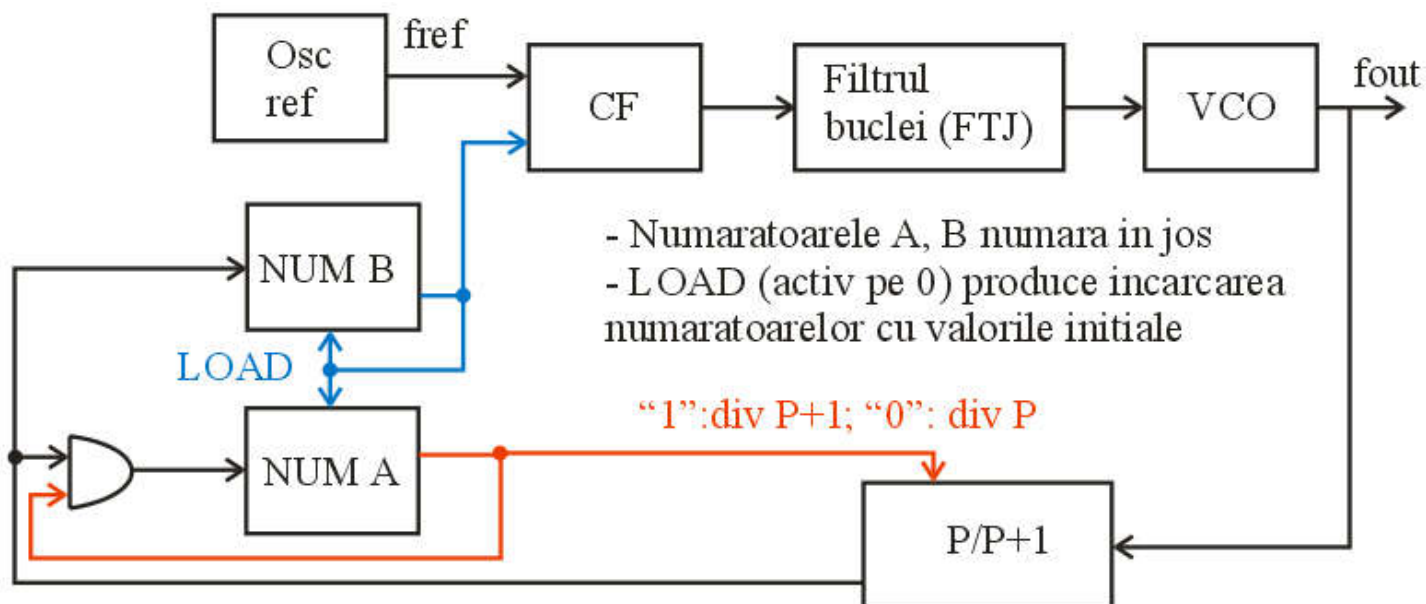
27. Generator de funcții de JF/MF



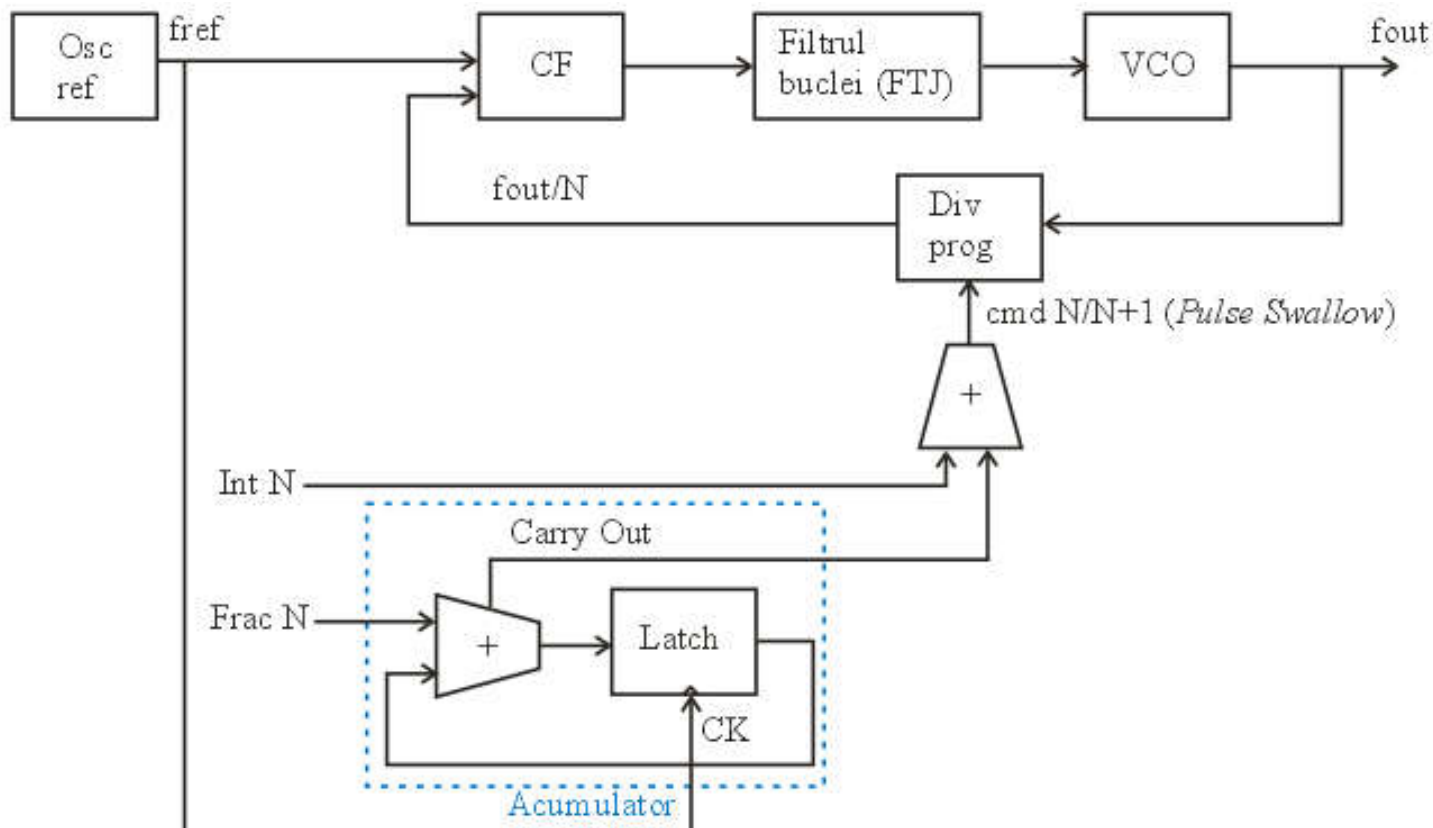
28. Generator de JF/MF cu factorul de umplere reglabil



29. PLL cu dual-modulus prescaler



30. PLL cu N fracționar



Referință bibliografică: R.E. Best, „Phase locked loops 6/e: design, simulation and applications”, ISBN-13: 978-00714935758.

31. Generator de radio frecvență cu PLL

