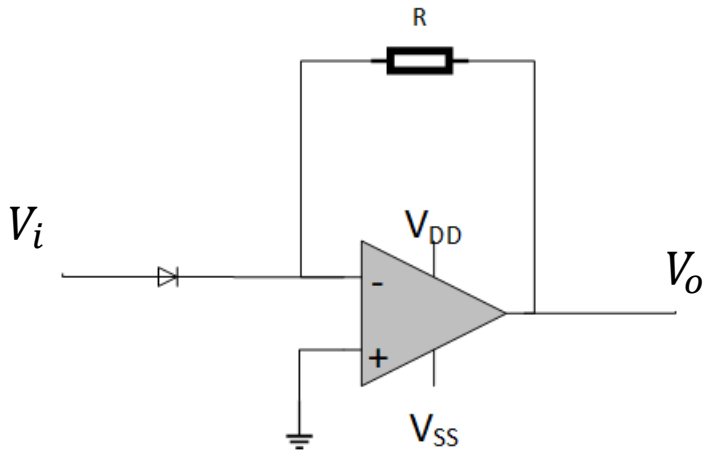
ELM320 ANALOG ELEKTRONİK

Ders Materyali

İŞLEMSEL YÜKSELTEÇ UYGULAMA DEVRELERİ

İŞLEMSEL YÜKSELTEÇ UYGULAMA DEVRELERİ

Üstel yükselteç:

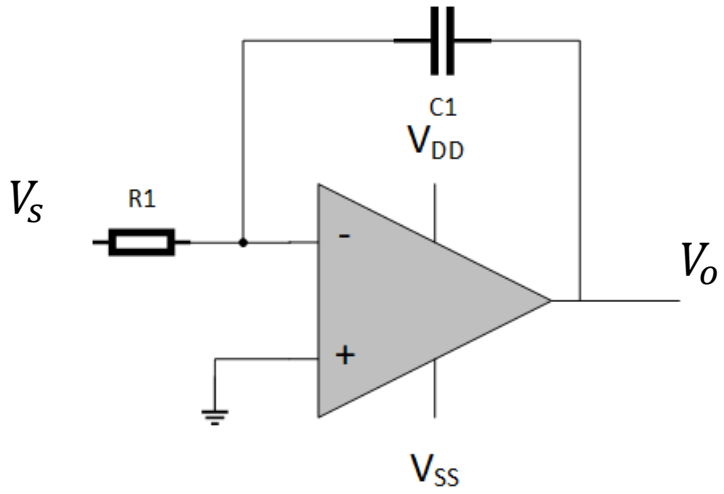


$$V_o = -RI_S e^{\frac{V_i}{V_T}}$$

$$V_T = \frac{kT}{q}$$

İŞLEMSEL YÜKSELTEÇ UYGULAMA DEVRELERİ

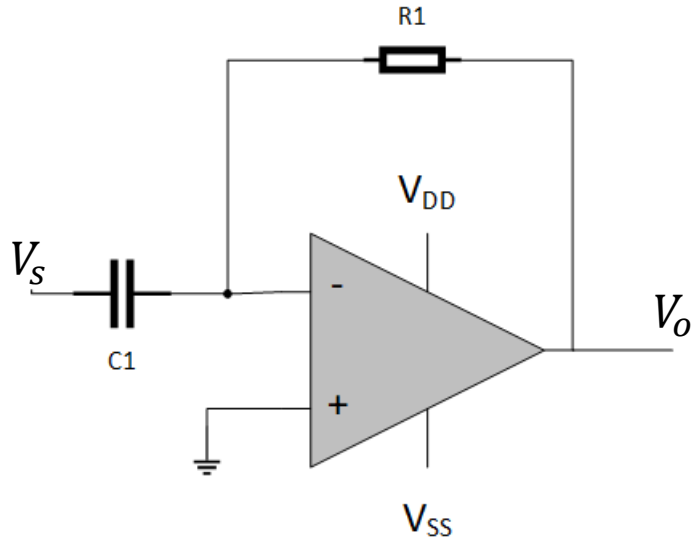
İntegral alıcı yükselteç devresi:



$$V_o(t) = -\frac{1}{R1C1}\int_{-\infty}^{t} V_s(t)dt$$

İŞLEMSEL YÜKSELTEÇ UYGULAMA DEVRELERİ

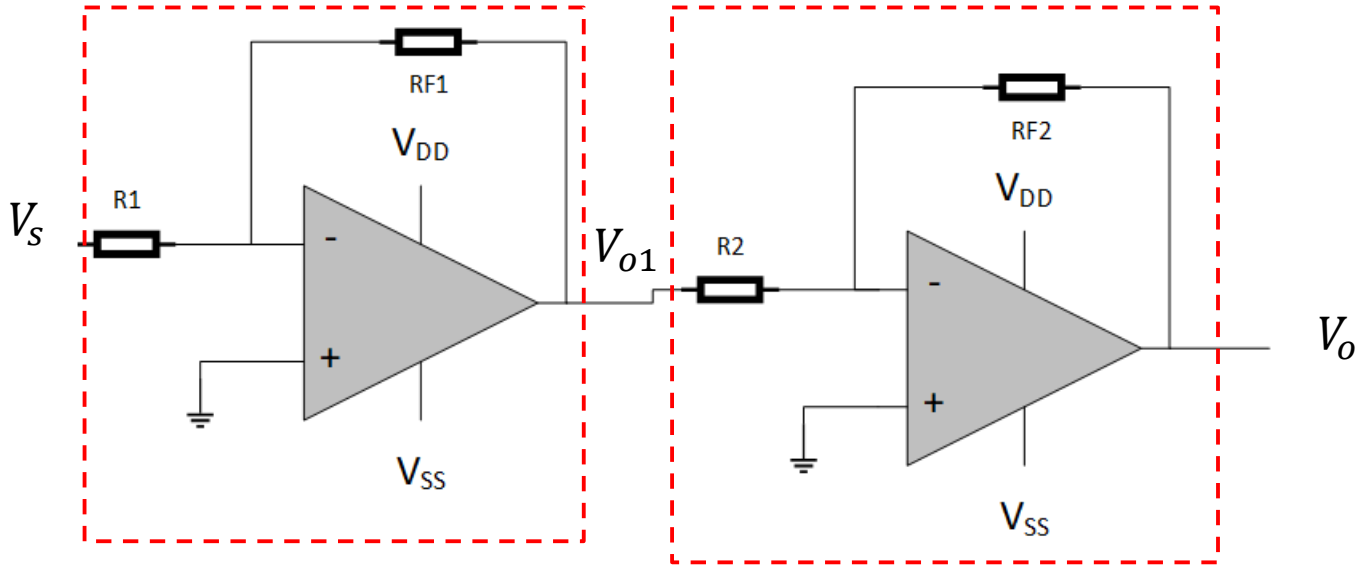
Türev alıcı yükselteç:



$$V_o(t) = -R1C1\frac{dV_s(t)}{dt}$$

İŞLEMSEL YÜKSELTEÇ UYGULAMA DEVRELERİ

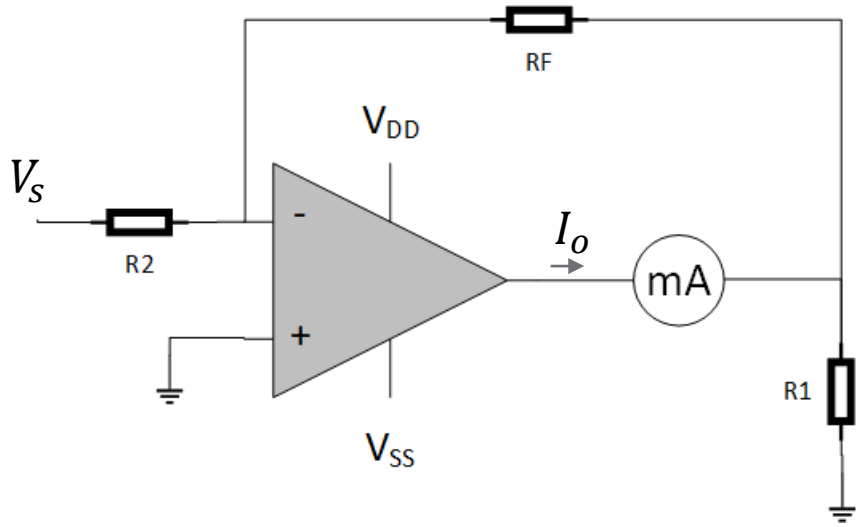
Kaskad yükselteç:



$$V_{o1} = \underbrace{-\frac{RF1}{R1}}_{A_{V1}} V_s \qquad V_o = \underbrace{-\frac{RF2}{R1}}_{A_{V2}} V_{o1} \qquad A_{VT} = A_{V1} x A_{V2}$$

İŞLEMSEL YÜKSELTEÇ UYGULAMA DEVRELERİ

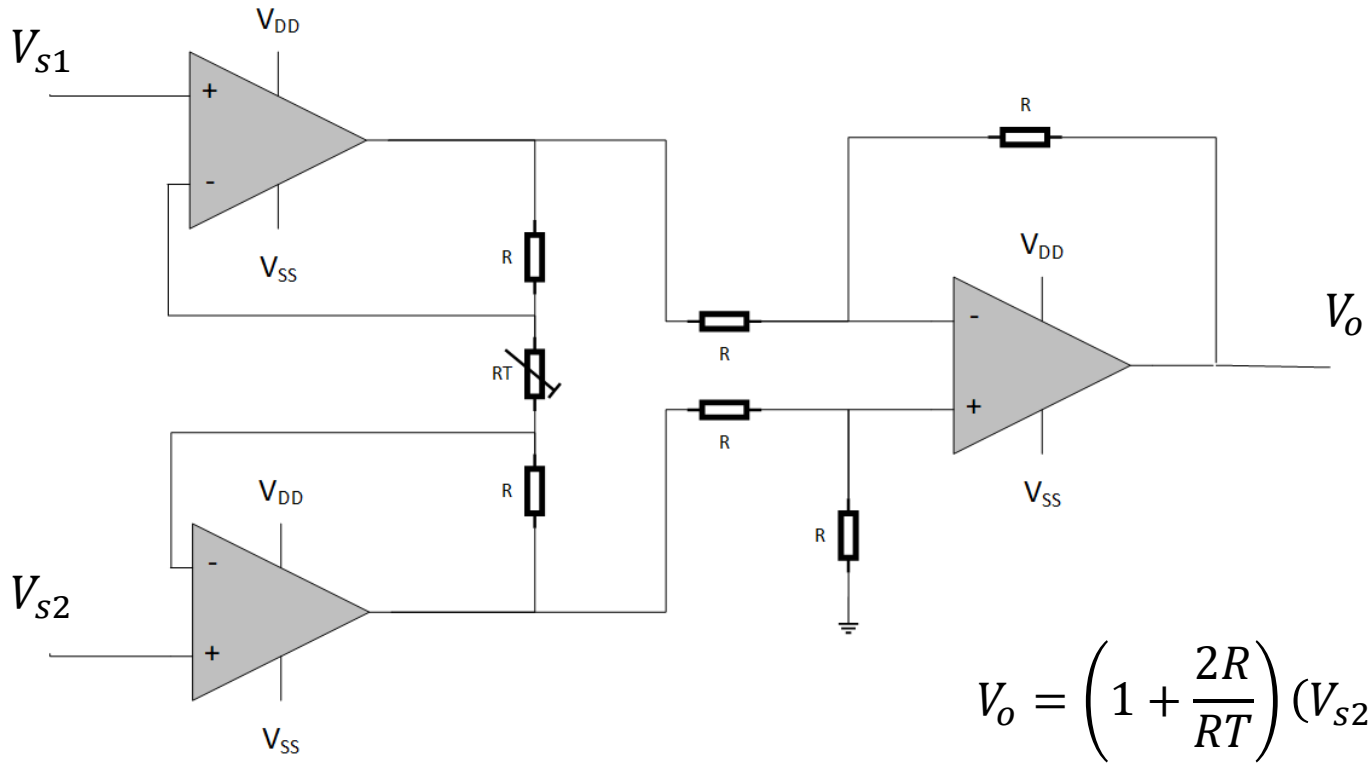
İşlemsel yükselteç ile yapılan analog voltmetre:



$$\frac{I_o}{V_S} = \frac{RF}{R1xR2}$$

İŞLEMSEL YÜKSELTEÇ UYGULAMA DEVRELERİ

Enstrümantasyon yükselteci:



$$V_o = \left(1 + \frac{2R}{RT}\right)(V_{s2} - V_{s1})$$

KAYNAKLAR

- Robert Boylestad, Louis Nashelsky, Electronic Devices and Circuit Theory, Prentice Hall, 1998.
- Art Kay, Timothy Claycomb, TI Designs –Precision: VerifiedDesignComparator with HysteresisReference Design, Texas Instruments Application Note, TIDU020A, 2013.
- Electronics tutorials website: https://www.electronics-tutorials.ws
- Tim Regan, Jon MunsonGreg Zimmer, Michael Stokowski, Current Sense Circuit Collection, Linear Technology Application Note 105 (an105fa), 2005.
- Neil Zhao, Wenshuai Liao, and Henri Sino, High-Side Current Sensing with Wide Dynamic Range: Three Solutions, Analog Dialogue 44-12, December 2010.
- CircuitsToday website: http://www.circuitstoday.com/log-amplifier
- Learning about Electronics website: http://www.learningaboutelectronics.com/Articles/Difference-between-a-single-and-dual-supply-op-amp.php
- OKAWA Electric Design website: http://sim.okawa-denshi.jp/en/
- Analog Devices website: https://www.analog.com/designtools/en/filterwizard/
- Hank Zumbahlen, Multiple Feedback Filters, Analog Devices Mini Tutorial (MT-220), 2012.
- Website: http://www.righto.com/2015/10/inside-ubiquitous-741-op-amp-circuits.html
- Ron Mancini and Richard Palmer, Sine-Wave Oscillator, Texas Instruments Application Report, SLOA060, 2001.