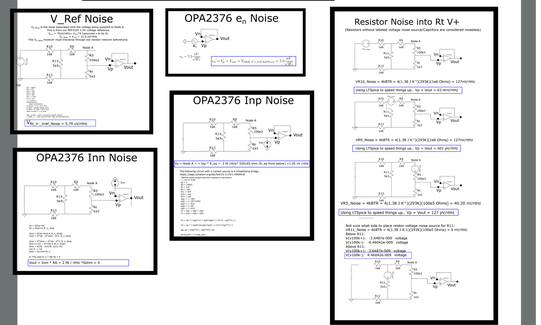
Rt Measurement Voltage Noise Section Before INA826

Rt V+ Measurement Voltage Noise Section

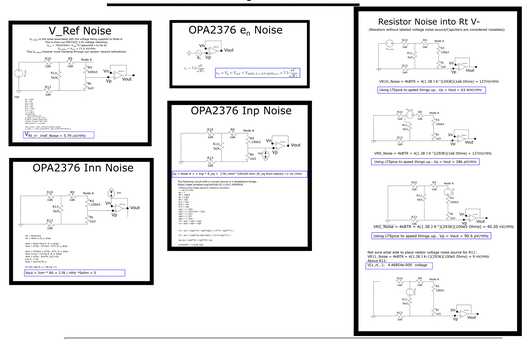


$$V_{+\,Rt\,rms} = \sqrt{(V_{ref\,noise})^2 + (e_n)^2 + (V_{inp})^2 + (V_{inn})^2 + (V_{R10\,Noise})^2 + (V_{R9\,Noise})^2 + (V_{R5\,Noise})^2 + (V_{R11\,Noise})^2}$$

$$V_{+\,Rt\,rms} = \sqrt{(5.79\frac{nV}{\sqrt{Hz}})^2 + (7.5\frac{nV}{\sqrt{Hz}})^2 + (1.0\frac{nV}{\sqrt{Hz}})^2 + (0\frac{fV}{\sqrt{Hz}})^2 + (63.4\frac{nV}{\sqrt{Hz}})^2 + (401\frac{pV}{\sqrt{Hz}})^2 + (127\frac{pV}{\sqrt{Hz}})^2 + (4.46\frac{nV}{\sqrt{Hz}})^2}$$

$$V_{+\,Rt\,rms} = 5.79\frac{uV}{\sqrt{Hz}}$$

Rt V- Measurement Voltage Noise Section



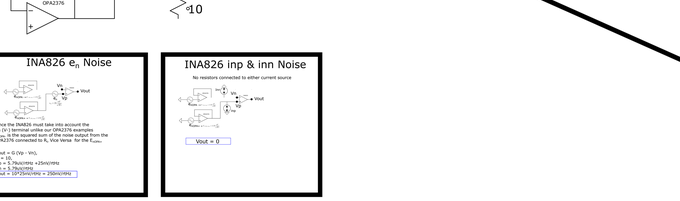
$$V_{-\,Rt\,rms} = \sqrt{(V_{ref\,noise})^2 + (e_n)^2 + (V_{inp})^2 + (V_{inn})^2 + (V_{R10\,Noise})^2 + (V_{R9\,Noise})^2 + (V_{R5\,Noise})^2 + (V_{R11\,Noise})^2}$$

$$V_{-\,Rt\,rms} = \sqrt{(5.79\frac{nV}{\sqrt{Hz}})^2 + (7.5\frac{nV}{\sqrt{Hz}})^2 + (1\frac{nV}{\sqrt{Hz}})^2 + (0\frac{fV}{\sqrt{Hz}})^2 + (63.4\frac{nV}{\sqrt{Hz}})^2 + (286\frac{pV}{\sqrt{Hz}})^2 + (90.6\frac{pV}{\sqrt{Hz}})^2 + (4.46\frac{nV}{\sqrt{Hz}})^2}$$

$$V_{-\,Rt\,rms} = 5.79\frac{uV}{\sqrt{Hz}}$$

Rt Measurement Voltage Noise Section at INA826

INA826:
Vout = G (Vp - Vn), G = 10
However witht he decimal places above, Vout = 0...
10*(5.790353787207652 5e-06 - 5.790353770850651e-06) = 1.636e-13 V/rtHz

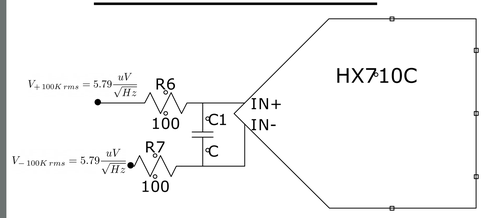


$$IN_+ = \sqrt{(250\frac{nV}{\sqrt{Hz}})^2 + (1.27\frac{nV}{\sqrt{Hz}})^2} = 250\frac{nV}{\sqrt{Hz}}$$

$$V_{-\,OPA333\,rms} = 5.8\frac{uV}{\sqrt{Hz}}$$

Noise at Each HX710C Inputs

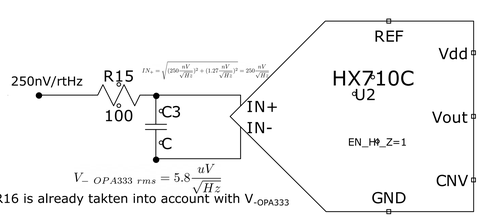
Noise at 100K HX710C Inputs



Total 100K Measurement Noise = $\sqrt{(IN_+ - IN_-)^2 + (e_{HX710C})^2}$

Total 100K Measurement Noise = $\sqrt{(5.79\frac{nV}{\sqrt{Hz}} - 5.79\frac{uV}{\sqrt{Hz}})^2 + 2*(50\frac{nV}{\sqrt{Hz}})^2} = 70.7\frac{nV}{\sqrt{Hz}}$

Noise at R_t HX710C Inputs



$IN_+ = \sqrt{(250\frac{nV}{\sqrt{Hz}})^2 + (1.27\frac{nV}{\sqrt{Hz}})^2} = 250\frac{nV}{\sqrt{Hz}}$

$V_{-\,OPA333\,rms} = 5.8\frac{uV}{\sqrt{Hz}}$

R16 is already takten into account with $V_{-OPA333}$

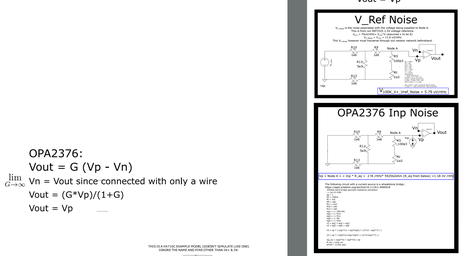
Total R_t Measurement Noise = $\sqrt{(IN_+ - IN_-)^2 + (e_{HX710C})^2}$

Total Rt Measurement Noise = $\sqrt{(250\frac{nV}{\sqrt{Hz}} - 5.8\frac{uV}{\sqrt{Hz}})^2 + 2*(50\frac{nV}{\sqrt{Hz}})^2} = 5.55\frac{uV}{\sqrt{Hz}}$

100K Measurement Voltage Noise Section

100K V+ Measurement Voltage Noise Section

OPA2376:
Vout = G (Vp - Vn)
Vn = Vout since connected with only a wire
$\lim_{G\to\infty}$ Vout = (G*Vp)/(1+G)
Vout = Vp

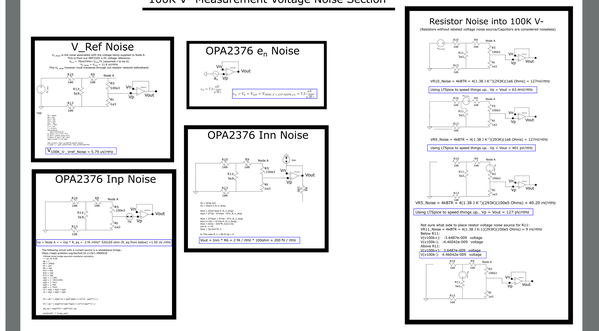


$$V_{+\,100K\,rms} = \sqrt{(V_{ref\,noise})^2 + (e_n)^2 + (V_{inp})^2 + (V_{inn})^2 + (V_{R10\,Noise})^2 + (V_{R9\,Noise})^2 + (V_{R5\,Noise})^2 + (V_{R11\,Noise})^2}$$

$$V_{+\,100K\,rms} = \sqrt{(5.79\frac{nV}{\sqrt{Hz}})^2 + (7.5\frac{nV}{\sqrt{Hz}})^2 + (1.18\frac{nV}{\sqrt{Hz}})^2 + (200\frac{fV}{\sqrt{Hz}})^2 + (63.4\frac{nV}{\sqrt{Hz}})^2 + (11.9\frac{nV}{\sqrt{Hz}})^2 + (36.4\frac{nV}{\sqrt{Hz}})^2 + (3.65\frac{nV}{\sqrt{Hz}})^2}$$

$$V_{+\,100K\,rms} = 5.79\frac{uV}{\sqrt{Hz}}$$

100K V- Measurement Voltage Noise Section

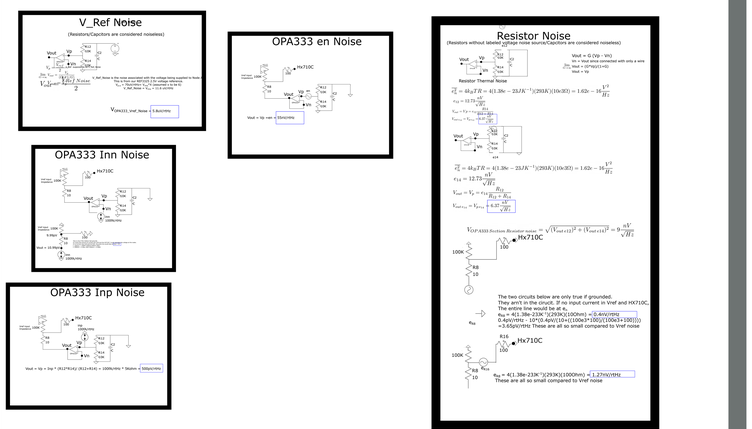


$$V_{-\,100K\,rms} = \sqrt{(V_{ref\,noise})^2 + (e_n)^2 + (V_{inp})^2 + (V_{inn})^2 + (V_{R10\,Noise})^2 + (V_{R9\,Noise})^2 + (V_{R5\,Noise})^2 + (V_{R11\,Noise})^2}$$

$$V_{-\,100K\,rms} = \sqrt{(5.79\frac{nV}{\sqrt{Hz}})^2 + (7.5\frac{nV}{\sqrt{Hz}})^2 + (1.05\frac{nV}{\sqrt{Hz}})^2 + (200\frac{fV}{\sqrt{Hz}})^2 + (63.4\frac{nV}{\sqrt{Hz}})^2 + (401\frac{pV}{\sqrt{Hz}})^2 + (127\frac{pV}{\sqrt{Hz}})^2 + (4.46\frac{nV}{\sqrt{Hz}})^2}$$

$$V_{-\,100K\,rms} = 5.79\frac{uV}{\sqrt{Hz}}$$

OPA333 Voltage Noise Section at INA826



$$V_{-\,OPA333\,rms} = \sqrt{(V_{ref\,noise})^2 + (e_n)^2 + (V_{inp})^2 + (V_{inn})^2 + (V_{R12\,Noise})^2 + (V_{R14\,Noise})^2 + (V_{R8\,Noise})^2 + (V_{R16\,Noise})^2}$$

$$V_{-\,OPA333\,rms} = \sqrt{(5.8\frac{uV}{\sqrt{Hz}})^2 + (55\frac{nV}{\sqrt{Hz}})^2 + (500\frac{pV}{\sqrt{Hz}})^2 + (0\frac{pV}{\sqrt{Hz}})^2 + (6.37\frac{nV}{\sqrt{Hz}})^2 + (6.37\frac{nV}{\sqrt{Hz}})^2 + (0.4\frac{nV}{\sqrt{Hz}})^2 + (1.27\frac{nV}{\sqrt{Hz}})^2}$$

$$V_{-\,OPA333\,rms} = 5.8\frac{uV}{\sqrt{Hz}}$$