

uebung_4.3.1

Student Group

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Exercise 4.3.1 Instrumentation amplifier

Find out how the instrumentation amplifier works through internet research.

1. Consider the illustrated Falstad Simulation below. What happens when you change the value of the variable resistance?
Analyze especially the minimum and maximum value of the output voltage.
In order to do so, you can start/stop the simulation with the Run/STOP button and read the output voltage by moving the mouse pointer over the output signal in the voltage-time diagram.
2. What happens if you remove the variable resistance and leave the connections open?
Which circuit has the OPVs at the entrance?

3. Compare the following situations. What is to be determined?
 1. Variable resistance is replaced by resistance with $2 \text{ k}\Omega$.
 2. Variable resistance is replaced at the top connection by $1 \text{ k}\Omega$ to mass and lower connection by $1 \text{ k}\Omega$ to mass.
 3. Variable resistance is replaced at the top connection by $1 \text{ k}\Omega$ to a voltage source with 1 V and the lower connection also by another $1 \text{ k}\Omega$ to 1 V .

4. Which transfer equation $U_{\text{A}} = F(U_2, U_1, R_{\text{G}}, R)$ does the initial circuit have, when all resistances (except the variable resistance R_{G}) have the same value R ?

5. What are the advantages of the instrumentation amplifier to the differential amplifier?

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