

Sistem pengukur gain bandwidth product operational amplifier berbasis mikrokontroler = Measurement system of operational amplifier gain bandwidth product based on microcontroller

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Abstrak

Penelitian tentang pembuatan Sistem Pengukur Gain Bandwidth Product Operational Amplifier Berbasis Mikrokontroler telah dilakukan. Sistem ini dapat mengetahui hubungan antara penguatan dengan frekuensi sehingga dapat diketahui nilai gain bandwidth product suatu operational amplifier. Objek yang diukur pada penelitian kali ini adalah uA741. Pengukuran ini dilakukan dengan memberikan sinyal sinus pada range dan interval frekuensi tertentu ke objek lalu dihitung nilai penguatannya. Sinyal sinus tersebut dihasilkan oleh IC AD9837 yang diprogram oleh mikrokontroler ATmega 8535.

Hasil penelitian ini berupa grafik hubungan penguatan terhadap frekuensi yang ditampilkan di LabVIEW sehingga dapat diketahui nilai gain bandwidth product objek yang diukur. Hasil ini kemudian dibandingkan dengan literatur berupa data sheet operational amplifier uA741 dan dihitung kesalahan literatur dari pengukuran ini. Grafik pengukuran yang didapat memiliki pola yang sesuai dengan literatur dan didapatkan nilai gain bandwidth product sebesar 538,46 KHz dengan kesalahan literatur sebesar 46,50 %.

.....Research on Measurement System of Operational Amplifier Gain Bandwidth Product Based on Microcontroller had been done . The system could determine the relationship between the frequency and gain in order to know the value of gain bandwidth product of operational amplifier. Object that was measured in this research was uA741. These measurements were carried by providing a sine signal at a particular frequency range and interval to the object to calculate the gain value. The sine signal was generated by the AD9837 IC programmed by the ATmega 8535 microcontroller.

The results of this study was gain related to the frequency graph shown in LabVIEW in order to know the value of gain bandwidth product of the measured object. These results were then compared with the literature as shown of uA741 operational amplifier data sheet and the error of these measurements were calculated. The measurement graph obtained had the patterns which corresponded to the literature and the obtained value of the gain bandwidth product was 538.46 KHz with an error of 46.50% compared to the literature data.