# ELEKTROKARDIOGRAF NIRKABEL DENGAN 3 SADAPAN VIA PERSONAL KOMPUTER

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## ABSTRAK

Sebagai pencegahan dini terhadap kondisi jantung, sangat penting untuk selalu memonitoring kondisi jantung. Monitoring ini dilakukan secara berkala dengan cara pemeriksaan berdasarkan rekaman *ECG*. Oleh karena itu peneliti melakukan perancangan sebuah sistem perangkat monitoring *Electrocardiograph*, yang berfungsi untuk memonitoring keadaan jantung seseorang secara berkala. Perangkat monitoring *ECG* ini bersifat *portable* yang memanfaatkan perangkat personal komputer sebagai tempat media aplikasi visualisasi hasil rekaman *ECG*. Monitoring *ECG* ini menggunakan rangkaian sadapan sinyal *ECG*, rangkaian *microcontroller ATMega 328P*, *Bluetooth HC-05* sebagai *transmitter receiver* data, dan aplikasi *Delphi 7.0* untuk proses visualisasi hasil rekaman *ECG*.

Hasil pengukuran BPM 60 pada alat Modul ECG menunjukkan nilai *error* 3,89 %. Hasil pengukuran tinggi pulsa R Lead I didapatkan nilai *error* sebesar -1,44 %. Hasil pengukuran perbandingan lebar pulsa R Lead I didapatkan nilai *error* sebesar 0,57 %. Hasil pengukuran tinggi pulsa R Lead II didapatkan nilai *error* sebesar 2,53 %. Hasil pengukuran lebar pulsa R Lead II didapatkan nilai *error* sebesar -0,22 %. Hasil pengukuran tinggi pulsa R Lead III didapatkan nilai *error* sebesar -1,04 %. Hasil pengukuran lebar pulsa R Lead III didapatkan nilai *error* sebesar 0,45 %. Nilai *error* Modul EKG disebabkan oleh toleransi *error* komponen yang digunakan cukup tinggi sehingga nilai *cut-off filter* mengalami pergeseran yang menyebabkan proses penapisan/pemfilteran kurang akurat.

Kata Kunci : Jantung, *Electrocardiograph*, *Microcontroller ATMega 328P*, *Bluetooth HC-05*, *Delphi 7.0*, dan personal komputer

# WIRELESS ELECTROCARDIOGRAPH 3 LEADS VIA PERSONAL COMPUTER

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## ABSTRACT

As an early prevention of heart conditions, it is very important to always monitor the condition of the heart. This monitoring is conducted periodically by way of inspection based on ECG recordings. Therefore, researchers do the design of an electrocardiograph monitoring device system, which serves to monitor the state of the person's heart on a regular basis. This ECG monitoring tool is portable which utilizes personal computer device as a place of application media visualization of ECG recording result. This ECG monitoring uses ECG signal tapping circuit, ATMega 328P microcontroller circuit, Bluetooth HC-05 as transmitter receiver data, and Delphi 7.0 application to process the recording of ECG recordings.

The result of BPM 60 measurement on ECG Module tool shows an error value of 3.89%. The result of high measurement of R Lead I pulse obtained an error value of -1.44%. The result of measurement of the width of the R Lead I pulse pulse obtained an error value of 0.57%. The result of high R Lead II pulse measurement got the error value of 2.53%. Results of measurement of R Lead II pulse width obtained error value of -0.22%. The result of high R Lead III pulse measurement got error value equal to -1,04%. R Lead III pulse width measurement results obtained error value of 0.45%. The error value of ECG Module is caused by the error tolerance of the component used is high enough that the cut-off filter value has a shift causing the filtering process/filtering less accurate.

Key Words : Heart, Electrocardiograph, Microcontroller ATMega 328P, Bluetooth HC-05, Delphi 7.0, and personal computer