

Temperature and humidity measurement instrumentation based on colpitts oscillator

Khairul Amri, author

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Abstrak

This thesis is designed to get the instrumentation with high sensitivity. Generally, this thesis presents several noteworthy characteristics. First, Colpitts oscillator is used as measurement instrumentation for temperature and humidity with frequency output varying which correlate with those parameters. Second, AT-Tiny2313-20PU is employed as frequency counter interfaced to a computer through an RS-232 port. Third, LabVIEW is employed as the software development environment to communicate from computer to external hardware for automatically uploading and processing data. The increasing sensitivity gotten is from $(29,9 \times 10^{-3}, 45 \times 10^{-2})$ C/0C to $(-9,73 \times 10^{-4}/T)$ Hz/0C and from $(1,83 \times 10^{-9})$ F/%RH to $(-48,3 \times 10^{-2})$ Hz/%RH for temperature and humidity respectively.