Original Paper

Development of an Online Heat Index Measurement System for Thermal Comfort Determination

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Received: 04 February 2013 / Accepted: 23 August 2013 / Published online: 24 September 2013

Abstract
This paper presents the development of a reliable heat index (HI) measurement system for evaluating the thermal comfort of a particular building or a particular area. The HI is an index that combines air temperature and relative humidity (RH) to determine the human-perceived equivalent temperature. To measure the air temperature and RH, temperature to digital converter and RH to voltage converter is used. HI is calculated online with the help of embedded firmware of the microcontroller. This calculated value is then transferred to the computer through standard RS 232 serial port. The same sensor node is tested with the RS 485 network standard by changing the transceiver of the node. The system is calibrated using four standard saturated binary salt solutions.

Keywords
Relative humidity (RH) and temperature – Heat index – Thermal comfort – Sensor node