

**DESIGN, FABRICATION AND CHARACTERIZATION OF
CONDUCTIVITY SENSOR USING PRINTED CIRCUIT BOARD**

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ABSTRACT

This paper described about design, fabrication and characterization of conductivity sensor using printed circuit board (PCB). The main objective is to sense the conductivity of aqua agriculture. A sensor was design by using interdigital capacitor concept where the term interdigital refers to pattern of fingers that is resembled by the shape and relative position of the electrodes. This sensor was fabricated by using PCB in order to minimize the cost than the existing conductivity sensor. Sensor performance was characterized by various test setups to check ability and accuracy of the sensor. From the result, it shown that the sensor has very good sensitivity with correlation coefficient R^2 of 0.969.

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CHAPTER 1

INTRODUCTION

1.1 Introduction to Sensor

A sensor is a device that measures a physical quantity and converts it into an electrical signal which can be read by an observer or by an instrument [1]. This sensor is a device whose output can be quantified and changes with one or more physical phenomena. This output information can be used for process monitoring and control. Sensors are a type of transducers, which means that they change one form of energy into another. For this reason, sensors can be classified according to the type of energy transfer that they detect. For example, a thermocouple converts temperature to an output as electrical signal (voltage) which can be read by a voltmeter. The measurement of physical variables associated with the resulting form of energy allows estimation of the physical variables associated with the input energy. A detector is a device indicating presence, absence, or change of the signal qualitatively, either as a binary signal or as a low resolution signal with several states.

Sensor technology is being used in all sectors of industry and can give a product an added value that makes it competitive. During the past two decades, there has been an unprecedented growth in the number of products and services, which utilize information gained by monitoring and measuring using different types of sensors. The development of sensors to meet the need is referred to as sensor technology and is applicable in a very broad domain including the environment, medicine, commerce and industry [2].