PRINCIPLES OF TRANSDUCER DEVICES AND COMPONENTS

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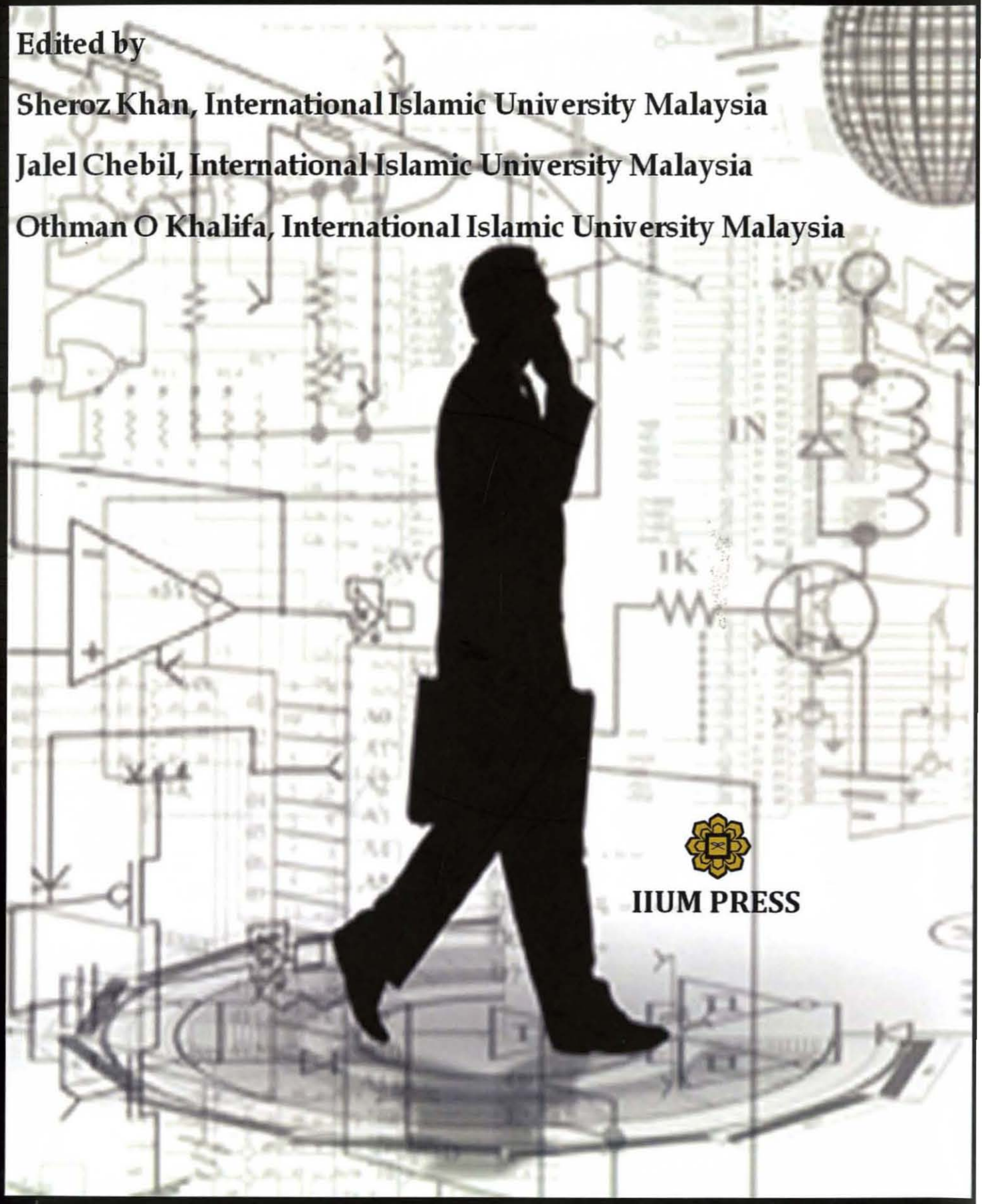

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CONTENTS

Chapter 18

LINEARIZING TECHNIQUES FOR SENSOR OUTPUT

MOHAMMAD TAHIR SIDDIQI, SHEROZ KHAN, UMMER SIDDIQI

18.0 INTRODUCTION

Sensors are fundamental part of circuit performing measurement as well as control in various fields. They present the measured quantity in analog electrical signal which is processed to perform the desired operation. Most of the signal processing nowadays is in digital domain due to advantages like noise-insensitivity, more robustness, better production yield, reliability and testability. To bring all these merits into real world applications, it is desirable to convert analogue signals output of sensor into digital domain representation. But due to non-linearity of the sensor output the digital approximation of actual physical signal is erroneous and does not correspond to the actual measured quantity. This chapter discuss about various methods for linearizing the output of the sensors.

18.1 SENSORS

Sensors, as shown in Figure 18.1 comprise of two parts, the sensing element which is basically a transducer followed by electronic circuitry. Today, single-chip silicon sensors with built-in signal conditioning and A/D conversion are integral parts of any sensor-based system.

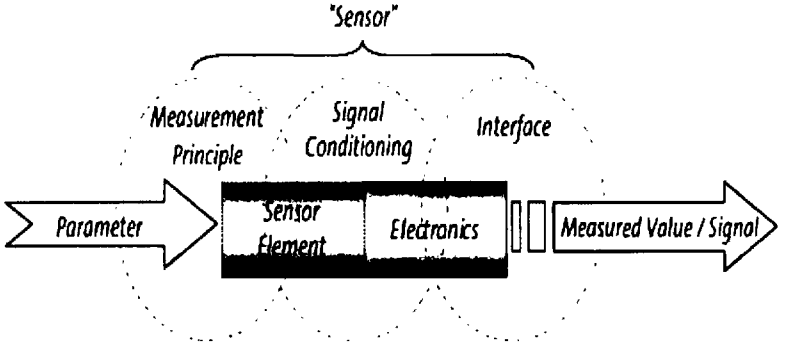

Fig. 18.1: Building Block of A Sensor