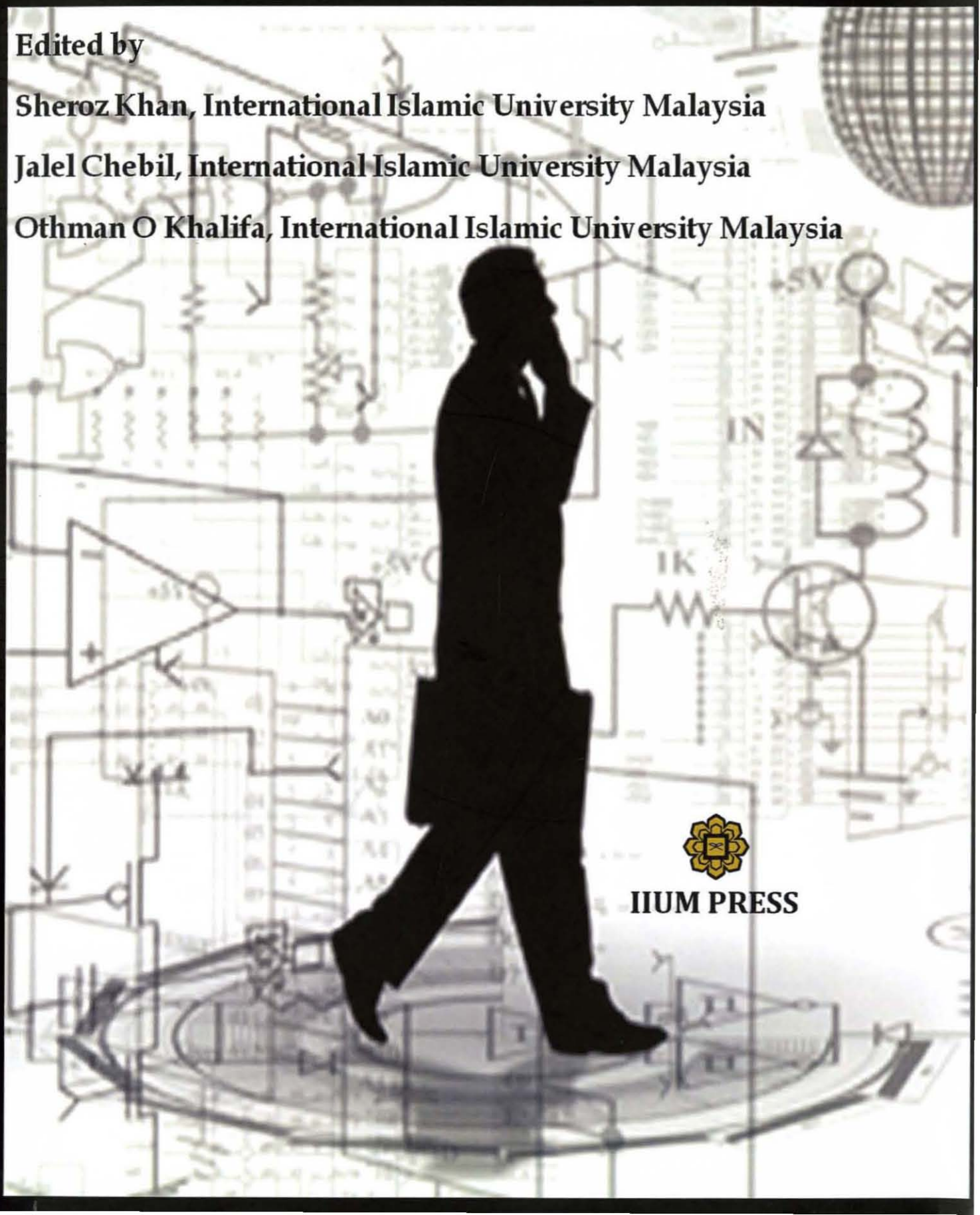
PRINCIPLES OF TRANSDUCER DEVICES AND COMPONENTS

Edited by

Sheroz Khan, International Islamic University Malaysia

Jalel Chebil, International Islamic University Malaysia

Othman O Khalifa, International Islamic University Malaysia



IIUM PRESS

PRINCIPLES OF TRANSDUCER DEVICES AND COMPONENTS

Edited by

Sheroz Khan, International Islamic University Malaysia

Jalel Chebil, International Islamic University Malaysia

Othman O Khalifa, International Islamic University Malaysia

IIUM Press

Published by:
IIUM Press
International Islamic University Malaysia

First Edition, 2011

Perpustakaan Negara Malaysia Cataloguing-in-Publication Data

Sheroz Khan, Jalal Chebil & Othman Khalifa: Principles of Transducer Devices and Components

ISBN: 978-967-418-172-7

Member of Majlis Penerbitan Ilmiah Malaysia – MAPIM
(Malaysian Scholarly Publishing Council)

Printed By:
IIUM PRINTING SDN.BHD.
No. 1, Jalan Industri Batu Caves 1/3
Taman Perindustrian Batu Caves
Batu Caves Centre Point
68100 Batu Caves
Selangor Darul Ehsan
Tel: +603-6188 1542 / 44 / 45 Fax: +603-6188 1543
EMAIL: iiumprinting@yahoo.com

CONTENTS

Chapter 7

OUTPUT CONTROL DEVICES: ACTUATORS

RUMANA TASNIM, ATIKA ARSHAD, SHEROZ KHAN, MUSSE MOHAMOD

7.0 INTRODUCTION

The wide spreading applications of actuators have opened up several possibilities in technical areas. The basic difference between sensor (e.g., thermometer) and actuator can be simply referred as: sensor is able to measure a signal or stimulus obtaining information from the "real world" whereas actuator itself can generate a signal or stimulus (see Figure 7.1). In other word, a transducer can convert a physical phenomenon into an electric signal while an actuator can convert an electric signal to a physical phenomenon.

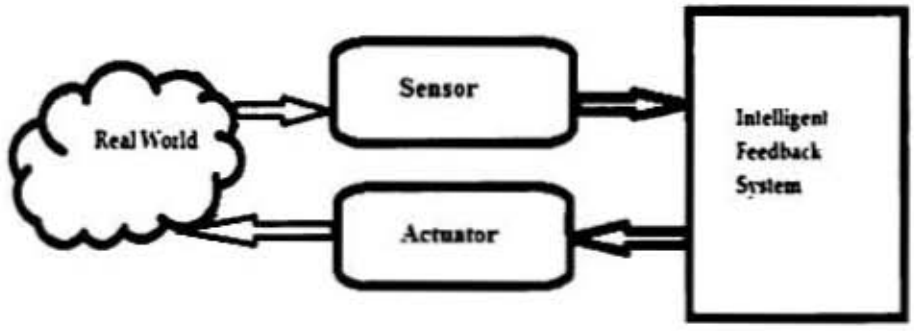


Fig. 7.1: Block Diagram of Actuation Interface

7.1 ACTUATORS BASICS

Actuator is a fundamental part of control and instrumentation systems. Actuators steer particular parts to control the overall process of a system. Such actuators operate on various basic principles. Actuator is basically functioned by any source of energy which is found in the form of an electric current, hydraulic fluid pressure or pneumatic pressure. In the field of electronic engineering, actuators can be referred as subdivided transducers which are capable of converting any input signal e.g. an electrical signal into motion. While actuator operates, continually it gets commands from their controllers. Accordingly it drives a plant for attaining a pre-determined control objective. By using sensors and