Sensor Technology

Catalogue Number	77-8012-0000
Category	Electronics and Electrical Control
Duration	15 Hours

Activity 1: Introduction to Sensors

- What are Sensors?
- Types of Sensors
- Sensor Application: The Computer Mouse
- The SensorLine Panel
- Task: Identifying Various Sensors
- Safety Guidelines
- History of Electricity

Activity 2: Contact Sensors

- Electric Circuits and Switches
- SensorLine Panel
- Electricity Measurement Units
- Using a Voltmeter
- Digital Sensors
- Contact Sensors
- Task: Using a Contact Sensor to Control a Lamp
- Task: Using a Contact Sensor to Control a Lamp (For Use With Hardware)
- Task: Using a Contact Sensor to Activate a Buzzer
- Task: Using a Contact Sensor to Activate a Buzzer (For Use With Hardware)
- Basic Electrical Formulas
- Conclusion

Activity 3: Digital Light Sensors

- Non-Contact Sensors
- Light (Photoelectric) Sensors
- Light
- Task: Detecting the Presence and Absence of Light
- Task: Detecting the Presence and Absence of Light (For Use With Hardware)
- Task: Sensing Light Through Different Mediums
- Task: Sensing Light Through Different Mediums (For Use With Hardware)
- Task: Determining the Light Sensor Detection Range
- Task: Determining the Light Sensor Detection Range (For Use With Hardware)
- Reflection and Reflectivity
- Task: Sensing Reflected Light
- Task: Sensing Reflected Light (For Use With Hardware)
- Task: Defining the Analog to Digital Threshold
- Task: Defining the Analog to Digital Threshold (For Use With Hardware)

Activity 4: Analog Light Sensors

- Analog Sensors
- Light Intensity
- Task: Detecting Light
- Task: Detecting Light (For Use With Hardware)
- Task: Sensing Light Through Different Mediums
- Task: Sensing Light Through Different Mediums (For Use With Hardware)
- Task: Determining the Light Sensor Detection Range
- Task: Determining the Light Sensor Detection Range (For Use With Hardware)
- Task: Sensing Reflected Light
- Task: Sensing Reflected Light (For Use With Hardware)

Activity 5: Reed Switch Sensors

- Reed Switch Sensor
- Magnetism
- Reed Switch Sensor Applications
- Task: Sensing Magnetic Fields
- Task: Sensing Magnetic Fields (For Use With Hardware)
- Task: Determining the Reed Sensor's Detection Range
- Task: Determining the Reed Sensor's Detection Range (For Use With Hardware)
- Task: Determining a Magnetic Reed Sensor's Switching Distance
- Task: Determining a Magnetic Reed Sensor's Switching Distance (For Use With Hardware)
- Reed Switch Activation

Activity 6: Logic AND Circuits

- Reed Switch Application
- Logic Function AND
- Logic AND Sensor Application
- Task: Creating a Logic AND Circuit with Two Sensors
- Task: Creating a Logic AND Circuit with Two Sensors (For Use With Hardware)
- Task: Creating a Logic AND Circuit with Two Reed Switch Sensors
- Task: Creating a Logic AND Circuit with Two Reed Switch Sensors (For Use With Hardware)

Activity 7: Logic OR Circuits

- Logic Function OR Sensor Application
- Logic Function OR
- Task: Creating a Logic OR Circuit with Two Sensors
- Task: Creating a Logic OR Circuit with Two Sensors (For Use With Hardware)
- Task: Creating a Circuit with Three Sensors
- Task: Creating a Circuit with Three Sensors (For Use With Hardware)

Activity 8: Relays - Logic NOT Circuits

- Relays
- Normally Open and Normally Closed
- Logic NOT Function
- Logic NAND Function
- Logic NOR Function
- Task: Creating a Logic NOT Circuit
- Task: Creating a Logic NOT Circuit (For Use With Hardware)
- Task: Creating a Logic NAND Circuit
- Task: Creating a Logic NAND Circuit (For Use With Hardware)
- Task: Creating a Logic NOR Circuit
- Task: Creating a Logic NOR Circuit (For Use With Hardware)

Activity 9: Inductive Proximity Sensors - Introduction

- Induction
- Inductive Proximity Sensors
- Task: Sensing Metallic Objects
- Task: Sensing Metallic Objects (For Use With Hardware)
- Task: Measuring the Sensor's Detection Range
- Task: Measuring the Sensor's Detection Range (For Use With Hardware)
- Inductive Sensors Applications

Activity 10: Inductive Proximity Sensors - Applications

- Inductive Proximity Sensor Application
- Task: Detecting Objects of Different Materials
- Task: Detecting Objects of Different Materials (For Use With Hardware)

Activity 11: Pressure Sensors

- Pressure
- Bourdon Tube Pressure Gauge
- Piezoelectric Effect
- Task: Creating and Releasing Pressure
- Task: Detecting Rising Pressure
- Task: Detecting Rising Pressure (For Use With Hardware)
- Task: Detecting Pressure Drop
- Task: Detecting Pressure Drop (For Use With Hardware)

Activity 12: On-Off Control Systems

- Automatic Control Systems
- Closed Loop Control Systems
- On-Off Control Systems
- On-Off Control Application
- Task: Detecting Pressure with a Pressure Sensor
- Task: Detecting Pressure with a Pressure Sensor (For Use With Hardware)
- Task: Changing the System Parameters
- Task: Changing the System Parameters (For Use With Hardware)

Activity 13: Using an Optic Fiber as a Conductor

- Fiber Optics
- Fiber Optics Applications
- Part Orientation Detection
- Perforation Sensing
- Task: Using an Optic Fiber as a Light Conductor
- Task: Using an Optic Fiber as a Light Conductor (For Use With Hardware)
- Task: Sensing Light Through an Optic Fiber
- Task: Sensing Light Through an Optic Fiber (For Use With Hardware)

Activity 14: Control Circuit Design

Detection Control System Application

Task: Project 1

Task: Project 1 (For Use With Hardware)

Task: Project 2

Task: Task: Project 2 (For Use With Hardware)

Activity 15: Conclusion

Career Opportunities for Sensors

Fiber Optics Technician

Precision Instrument Mechanic and Repairer

Industrial Machine Maintenance Technician

Task: Project - To Create an NOR Logic Function

Task: Final Projects (For Use With Hardware)