

*MADHAV INSTITUE OF TECHNOLOGY AND SCIENCE, GWALIOR*

SENSOR TECHNOLOGY

ASSIGNMENT 2



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Classifications of sensors.

Sensors can be classified as-

1.a) Direct sensor:

The direct sensors are those that employ certain physical effects to make a direct energy conversion into an electrical signal generation or modification.

Example: Thermocouple

1.b) Complex Sensor:

A complex sensor needs one or more transducers of energy before a direct sensor can be employed to generate an electrical output.

Example: Chemical sensor, which converts the energy of a chemical reaction into heat (transducer) and another part, a thermopile, which converts heat into an electrical signal. The combination of the two makes a chemical sensor, a device which produces electrical signal in response to a chemical change.

2.a) Passive sensor:

A passive sensor does not need any additional energy source and directly generates an electric signal in response to an external stimulus.

Most of passive sensors are direct sensors

Examples: Photodiode, Piezoelectric sensor.

2.b.) Active sensor:

The active sensors require external power for their operation,

which is called an excitation signal. That signal is modified by the

sensor to produce the output signal.

Example: Resistive strain gauge in which electrical resistance relates to a strain.

3.c) Absolute sensor:

An absolute sensor detects a stimulus in reference to an absolute physical scale that is independent of the measurement conditions.

Example: Thermistor, a temperature-sensitive resistor. Its electrical resistance directly relates to the absolute temperature scale of Kelvin.

3.b) Relative Sensor:

Relative Sensors provide measurement to a fixed or variable measurement.

Example: Thermocouple, where the temperature difference is measured, not the actual temperature.