

### Introduction

<b>Instrumentation</b>	It's a branch of engineering that studies the measurement and control of process variable
<b>instrument</b>	It's a device that is used to measure or control the process variable

### Temperature

<b>Temperature</b>	It's a degree of hotness or coldness of a body
<b>Heat</b>	It's a form of energy that can be used to do work
<b>Thermo-couple</b>	A temperature sensor that uses the principles of change in <b>EMF</b> developed between two dissimilar metals connected at one junction ( <i>hot/measuring junction</i> & cold/reference junction)
<b>Grounded hot junction</b>	A Thermo-couple were by the sensing element is physical attached to the inside of the probe wall.
<b>Ungrounded junction</b>	A Thermo- couple were by the sensing element is isolated from the inside of the probe wall.
<b>Exposed Junction</b>	A Thermo-couple were by the sensing element is exposed to the surrounding enviroment.
<b>Ambient temperature</b>	It's the air temperature that surrounds us.
<b>Resistance Temperature Detector(RTD)</b>	A temperature sensor which measures temperature using the principles that the resistance of metal changes with temperature.
<b>Black body</b>	Is a body that absorbs all the radiation falling upon it.

### Pressure

<b>Pressure</b>	It's a force applied on a surface per unit area.
<b>Absolute pressure</b>	Total pressure exerted above absolute zero.pressure
<b>Gauge pressure</b>	It's the pressure exerted above atmospheric pressure.
<b>Atmospheric pressure</b>	It's the pressure exerted by the weight of atmosphere.
<b>Vacuum</b>	It's the pressure exerted below atmospheric pressure.
<b>Differential pressure</b>	It's the algebraic difference between two pressures.



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### Final Control Element

<b>Final control element</b>	It's a device that manipulates a process variable(process control system)
<b>Control valve</b>	It's a mechanical device that is fitted in a pipeline throttling the flow.
<b>Actuator</b>	It's a mechanical device that controls the valve.
<b>Air regulator</b>	It's a mechanical device that is used to regulate the pressure and keep it constant.
<b>Lock-up device</b>	It's a device that is used to seal the air system feeding a pneumatic operated control valve in the event of an air failure.
<b>Volume booster</b>	It's an auxiliary force balance pneumatic which speeds up the response of a diaphragm motor when actuated by a pneumatic signal.
<b>Positioner</b>	It's a device that receives and gives control signals for the actuator and make sure to move it to desired position.
<b>Electropneumatic transducer (I/P)</b>	It's a transducer which convert analog electric controller signal into proportional air signal.
<b>Solenoid valve</b>	It's an electromechanical operated valve.
<b>Stroking</b>	It's a procedure of checking out the operation of a control valve.

### Electronics

<b>Electronics</b>	It's a study of how to control the flow of electrons.
<b>Soldering iron</b>	It's an instrument use to do soldering on electronic component.
<b>Flux</b>	It's a chemical that removes the oxides during the soldering process, forcing the oxides away from the solder joints.
<b>Soldering wire</b>	It's a fusible metal alloy with a low temperature melting point used to permanently join two metals that have a higher melting point.
<b>Resistor</b>	It's an electrical component that resist the flow of current.
<b>Resistance</b>	It's an opposition to the flow of current.



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### Electronics (cont)

<b>Potential difference</b>	It's the difference of electrical potential between two points.
<b>Current</b>	It's the rate of flow of charge.
<b>Capacitor</b>	It's an electrical component that stores electrical energy in an electric field.
<b>Capacitance</b>	It's the ability of an electrical component to store energy in a form of electric charge.
<b>Conductor</b>	It's a material that have a low resistance.
<b>Semi-conductor</b>	It's a material that have moderate resistance.
<b>Insulator</b>	It's a material that have a high resistance.
<b>Power</b>	The rate at which energy is being transferred in an electric power.
<b>Light Dependent Resistor(LDR)</b>	It's an input transducer which converts brightness to resistance.
<b>Thermistor</b>	It's an input transducer which converts temperature to resistance.
<b>Inductor</b>	An inductor is a passive electronic component that stores energy in the form of a magnetic field.
<b>Transducer</b>	It's a device that convert one type of signal into another type of signal.
<b>Input transducer</b>	Convert a quantity to an electrical signal or resistance.
<b>Output transducer</b>	Convert an electrical signal to another quantity.
<b>Alternating current</b>	It's an electric current which periodically reverses direction and changes magnitude continuously
<b>Direct current</b>	It's an electric current which flows in one direction
<b>Diode</b>	It's an electrical component that allows current to flow in one direction.
<b>Transistor</b>	It's a semiconductor device with three connection used to amplify or switch electronic signals.
<b>Integrated circuit</b>	It's an assembly of electronic component scuffed in a chip.
<b>Cathode Ray Oscilloscope</b>	
<b>Breadboard</b>	It's a board used to make temporary circuit.
<b>Stripboard</b>	It's a board used to make permanent circuit.



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