

DEFINITION OF TERMS

- **Automatic Reset:** A type of thermostat that will automatically reset at a specific temperature (i.e. a thermostat operates at 65,5 °C [150 °F] and resets at 48,89 °C [120 °F]).
- **Bimetal:** Two dissimilar metals bonded together to form the material for manufacturing thermally-sensitive discs which actuate the thermostat.
- **Close on Rise (COR):** Refers to operation of the contacts. When the temperature rises to its set point, the contacts close or make contact and complete the circuit.
- **Contact Resistance:** The value of resistance measured between the terminals.
- **Dielectric Strength:** The value of insulation between two electrically conducting parts. It may be tested by the application of a predetermined overvoltage for a specified time.
- **Differential:** The temperature difference between the operate and reset set points, also known as operate and reset.
 - **Nominal:** The temperature difference between nominal set points regardless of tolerance.
 - **Maximum:** Maximum number of degrees between actual opening and closing set points.
 - **Minimum:** Minimum number of degrees between actual opening and closing set points.
- **Exposure Temperature:** Thermal environment of a device during application operation.
- **FLA (Full Load Amps):** Current taken from the line by the motor when the motor is yielding the rated hp at the rated voltage and frequency.
- **Life Cycles:** The endurance rating of the thermostat expressed in number of operations with stated electrical load applied. Temperature limit application = open on rise.
- **LRA (Locked Rotor Amps):** The amount of current the motor can be expected to draw under starting conditions when full voltage is applied, also known as starting inrush current.
- **Manual Reset:** A bimetal thermostat with a reset button that must be pressed to reset the contacts.
- **Open on Rise (OOR):** Refers to the operation of contacts. When the temperature rises to its set point the contacts open, terminating the circuit.
- **Overmold:** Encapsulation with an insulating material.
- **Phenolic:** Thermoset plastic used for the insulating body of the thermostat.
- **Set Point:** The nominal temperature at which the thermostat operates.
- **SPST (Single Pole/Single Throw):** A switch with one current path which can be either open or closed.
- **Tolerance:** The allowable range above and below the set point temperature.
- **Operate:** Change of state when the thermostat reaches its set point.
- **Reset:** Change of state when the thermostat returns to its original condition prior to operation.

NOTES

- **Standard Temperature Characteristics Tables:**
 - **Temperatures:** Please consult applications engineering for temperature ranges, tolerances and differentials not noted. The operating temperature ranges include tolerances.
 - **Tolerances:** The \pm tolerances given have been established after review of many thermostat applications. Attempts should be made to establish the widest acceptable tolerance possible.
- **UL and CSA Approvals:** 12,7 mm [0.5 in] thermostats are available with multiple agency approval for incorporation into equipment.
- **Fan control applications:** Require thermostat set points to be derated by 20 °C from the equivalent temperature limit application. They also close on rise.
- **Dimensions:** Are for reference only and are given in mm [in].

Commercial Thermostats

Figure 2. 2450R/2450HR/2455R/2452R/2452HR Series Phenolic Automatic Reset Thermostat



The 2450R/2450HR/2455R/2452R/2452HR Series is a single pole, single throw, snap-acting, non-adjustable thermostat which may be used in applications such as power supplies, general appliances and medical equipment. A temperature-sensitive bimetal disc, electrically and thermally isolated from the switch, is used to actuate the normally-closed contacts. Contacts open when surface or ambient temperatures increase to the operating set point of the calibrated bimetal disc. The entire switch is enclosed in a phenolic housing; the bimetal disc is retained by a metal heat-conducting end cap. Due to the small size of this unit and the inherently low mass of the bimetal snap-action disc, response of this thermostat to temperature changes is extremely rapid, compared to other commercially available thermostatic devices. A variety of mounting brackets and terminals are available.

All versions are UL/CSA approved. The 2452R/2452HR/2455R version meets the requirements of EN60730-01.

Potential applications include:

- Power supplies
- Appliances
- Medical equipment
- Water heaters
- Office automation
- Industrial equipment
- HVAC equipment

Table 1. 2450R/2450HR/2455R/2452R/2452HR Series Standard Temperature Characteristics

Operating Temperature Range	Tolerance		Standard Mean Differential °C [°F]
	Open °C [°F]	Close °C [°F]	
0 °C to 26 °C [32 °F to 79 °F]	±4 [±7]	±6 [±10]	28 to 34 [50 to 60]
	±4 [±6]	±6 [±10]	22 to 27 [40 to 49]
	±4 [±6]	±5 [±9]	17 to 22 [30 to 39]
	±4 [±6]	±5 [±8]	14 to 16 [25 to 29]
	±3 [±5]	±5 [±8]	8 to 14 [15 to 24]
27 °C to 82 °C [80 °F to 180 °F]	±5 [±9]	±8 [±15]	45 to 56 [81 to 100]
	±4 [±7]	±6 [±11]	34 to 45 [61 to 80]
	±4 [±6]	±6 [±10]	28 to 34 [50 to 60]
	±3 [±5]	±6 [±10]	22 to 27 [40 to 49]
	±3 [±5]	±5 [±9]	17 to 22 [30 to 39]
83 °C to 110 °C [181 °F to 230 °F]	±3 [±5]	±5 [±8]	8 to 16 [15 to 29]
	±6 [±10]	±8 [±15]	45 to 56 [81 to 100]
	±5 [±8]	±8 [±15]	34 to 45 [61 to 80]
	±4 [±7]	±7 [±12]	28 to 34 [50 to 60]
	±4 [±6]	±6 [±10]	22 to 27 [40 to 49]
	±4 [±6]	±5 [±9]	17 to 22 [30 to 39]
111 °C to 150 °C [231 °F to 302 °F]	±4 [±6]	±5 [±8]	8 to 16 [15 to 29]
	±7 [±12]	±10 [±18]	45 to 56 [80 to 100]
	±5 [±9]	±8 [±15]	34 to 45 [61 to 80]
	±5 [±8]	±7 [±12]	28 to 34 [50 to 60]
	±4 [±7]	±7 [±12]	22 to 27 [40 to 49]
	±4 [±7]	±6 [±11]	17 to 22 [30 to 39]
	±4 [±7]	±6 [±10]	14 to 16 [25 to 29]