

## Commercial Thermostats



### DESCRIPTION

Thermostats can provide either temperature control or over-temperature protection by breaking electrical contact when a specified temperature is reached.

Honeywell manufactures a wide range of 12,7 mm [0.5 in] commercial snap-action thermostats for possible use in a wide array of small and major appliances, office copy machines, medical equipment, heat detectors, HVAC equipment and more.

These snap-action thermostats include automatic and manual reset options, phenolic or ceramic housings and a wide variety of mounting brackets and terminal options.

Each thermostat's design is configured from a base unit, and may be customized for temperature tolerance and mechanical configurations, meeting the customer's needs for accuracy and exactitude.

Honeywell can also integrate these thermostats in higher value cable assemblies, incorporating wire harness and connectors.

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## NOMENCLATURE

The nomenclature given in Figure 1 is provided for reference only.

Figure 1. Commercial Thermostat Nomenclature



## 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].

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



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]	±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]
	±4 [±6]	±5 [±8]	8 to 16 [15 to 29]
111 °C to 150 °C [231 °F to 302 °F]	±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]

**Table 2. 2450R/2450HR/2455R/2452R/2452HR Series Specifications**

Characteristic	Parameter
Switch type	SPST
Reset type	automatic
Amperage	See Tables 3, 4
Voltage	120 Vac to 250 Vac
Operating temperature range	0 °C to 150 °C [32 °F to 302 °F]
Environmental exposure range	-18 °C to 177 °C [0 °F to 350 °F]
Materials:	
Base	phenolic
Contacts	silver alloy
Terminals	unplated brass, plated brass or steel
Closure	aluminum, brass or stainless steel
Brackets	aluminum or stainless steel
UL and CSA approvals	<ul style="list-style-type: none"> <li>• 2455R: 6,35 mm [0.25 in] clearance; UL File MH8267, UL File E36103; CSA File LR21048</li> <li>• 2450HR: 1,59 mm [0.0625 in] clearance; UL File E36103; CSA File LR21048</li> <li>• 2450R: 1,59 mm [0.0625 in] clearance; UL File E36103; CSA File LR 21048</li> <li>• 2452R: 2.66mm [0.105 in] clearance; UL E36103</li> <li>• 2452HR: 2.66mm [0.105 in] clearance; UL36103</li> </ul>
Weight	6 g [0.2 oz] (does not include brackets or wire leads)

**Table 3. 2450R/2450HR/2452R/2452HR Contact Ratings**

Life Cycles	120 Vac	240 Vac	277 Vac
100,000	15 A resistive	10 A resistive	10 A resistive
30,000	125 VA pilot duty	125 VA pilot duty	-

**Note:** 2450 approval rating is limited by EN60730-1 to 125 Vac max.

**Table 4. 2455R Contact Ratings**

Life Cycles	120 Vac	240 Vac	277 Vac
100,000	15 A resistive 4.4 FLA 26.4 LRA 125 VA pilot duty	10 A resistive 2.2 FLA 13.2 LRA 125 VA pilot duty	7.2 A resistive
6,000	5.8 FLA, 34.8 LRA	2.9 FLA, 17.4 LRA	-

**Note:** Additional contact ratings are available, please contact Honeywell.

**Figure 3. 2450R/2450HR/2455R/2452R/2452HR Basic Dimensions**



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Figure 4. 2450RC/2450RCH/2455RC Series Automatic Reset Thermostat



Table 5. 2450RC/2450RCH/2455RC 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]	35 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]
	±4 [±6]	±5 [±8]	8 to 16 [15 to 29]

Table 6. 2450RC/2450RCH/2455RC Series Standard Temperature Characteristics (continued)

Operating Temperature Range	Tolerance		Standard Mean Differential °C [°F]
	Open °C [°F]	Close °C [°F]	
111 °C to 149 °C [231 °F to 300 °F]	±7 [±12]	±10 [±18]	45 to 56 [81 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]
150 °C to 170 °C [301 °F to 335 °F]	±8 [±15]	±11 [±20]	39 to 45 [71 to 80]
	±6 [±10]	±11 [±20]	34 to 39 [61 to 70]
	±6 [±10]	±8 [±15]	28 to 33 [50 to 60]
	±6 [±10]	±7 [±12]	22 to 27 [40 to 49]
171 °C to 220 °C [336 °F to 425 °F]	±14 [±25]	±14 [±25]	51 to 56 [91 to 100]
	±11 [±20]	±11 [±20]	39 to 50 [71 to 90]
	±8 [±15]	±11 [±20]	28 to 39 [50 to 70]
221 °C to 235 °C [426 °F to 450 °F]	±14 [±25]	±14 [±25]	51 to 56 [91 to 100]
	±11 [±20]	±11 [±20]	39 to 50 [71 to 90]
	±8 [±15]	±11 [±20]	28 to 39 [50 to 70]
236 °C to 260 °C [451 °F to 500 °F]	±14 [±25]	±14 [±25]	31 to 56 [60 to 100]
	±11 [±20]	±11 [±20]	28 to 50 [50 to 90]

Table 7. 2450RC/2450RCH/2455RC Series Specifications

Characteristic	Parameter
Switch type	SPST
Reset type	automatic
Amperage	See Tables 8, 9
Voltage	120 Vac to 250 Vac
Operating temperature range	0 °C to 260 °C [32 °F to 500 °F]
Environmental exposure range	-20 °C to 287 °C [0 °F to 550 °F]
Materials:	
Base	ceramic
Contacts	silver alloy
Terminals	plated steel
Closure	aluminum, brass, or stainless steel
Brackets	stainless steel
Approvals	<ul style="list-style-type: none"> <li>• 2450RCH: 1,59 mm [0.0625 in] clearance through air and over surface; UL File E36103; CSA File LR21048</li> <li>• 2450RC: 1,59 mm [0.0625 in] clearance; UL file E36103; CSA File LR21048</li> <li>• 2455RC: 6,35 mm [0.25 in] clearance; UL File E36103; CSA File LR21048</li> </ul>
Weight	6 g [0.21 oz] (does not include brackets or wire leads)

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**Table 8. 2450RCH/2450RC Contact Ratings**

Life Cycles	120 Vac	240 Vac
100,000	15 A resistive	10 A resistive
30,000	125 VA pilot duty	125 VA pilot duty

**Table 9. 2455RC Contact Ratings**

Life Cycles	120 Vac	240 Vac
100,000	15 A resistive	10 A resistive
100,000	4.4 FLA 26.4 LRA	2.2 FLA 13.2 LRA
100,000	125 VA pilot duty	125 VA pilot duty

**Note:** Additional contact ratings are available, please contact Honeywell.

**Figure 5. 2450RC/2450RCH/2455RC Basic Dimensions**





Figure 6. 2455RM/2450CM Series Phenolic or Ceramic Manual Reset Thermostats



The 2455RM (phenolic)/2450CM (ceramic) Series is a single pole, single throw, snap-acting, non-adjustable thermostat. 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 housing; the bimetal disc is retained by a metal heat-conducting end cap. The circuit remains open above the room ambient temperature until the manual reset button is depressed. 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. For increased sensitivity, an exposed bimetal disc may be specified. A variety of mounting brackets and terminals is available.

All versions are UL/CSA, European approved.

Potential applications include those where a manual reset is desired, including:

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

Table 10. 2455RM Series Standard Temperature Characteristics

Operating Temperature Range	Tolerance °C [°F]
52 °C to 93 °C [125 °F to 200 °F]	±5 [±8]
94 °C to 121 °C [201 °F to 250 °F]	±6 [±10]
122 °C to 150 °C [251 °F to 302 °F]	±7 [±12]

Table 11. 2450CM Series Standard Temperature Characteristics

Operating Temperature Range	Tolerance °C [°F]
52 °C to 93 °C [125 °F to 200 °F]	±5 [±8]
94 °C to 121 °C [201 °F to 250 °F]	±6 [±10]
122 °C to 149 °C [251 °F to 300 °F]	±7 [±12]
150 °C to 177 °C [301 °F to 350 °F]	±8 [±15]
177 °C to 204 °C [351 °F to 400 °F]	±10 [±18]
205 °C to 232 °C [401 °F to 450 °F]	±11 [±20]

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**Table 12. 2455RM/2450CM Series Specifications**

Characteristic	Parameter
Switch type	SPST
Reset type	manual
Amperage	15 A resistive at 6,000 cycles (UL); 16 A resistive at 1000 cycles (EU)
Voltage	120 Vac to 250 Vac
Operating temperature range	2455RM: 52 °C to 150 °C [125 °F to 302 °F] 2450CM: 52 °C to 232 °C [125 °F to 450 °F]
Environmental exposure range	2455RM: -20 °C to 177 °C [0 °F to 350 °F] 2450CM: -20 °C to 260 °C [0 °F to 500 °F]
Materials:	
Base	2455RM: phenolic; 2450CM: ceramic
Contacts	silver alloy
Terminals	2455RM: unplated brass, plated brass or steel; 2450CM: plated steel
Closure	aluminum, brass, or stainless steel
Brackets	stainless steel
Approvals	UL File E36103, CSA File LR21048
Weight	6 g [0.21 oz] (does not include brackets or wire leads)

## NOTICE

- 2455RM/2450CM thermostats are intended as a manual reset control. They are not to be used on applications where a limit thermostat is required unless back-up protection is provided. Units have been tested by UL for 1,000 cycles under load, 5,000 cycles no load, and are not considered as limit devices.
- This range of thermostats has an automatic reset function with manual override function.
- Reset pin operation should not be performed above 70% of set point temperature.

**Table 13. 2450CM/2455RM Contact Ratings**

Life Cycles	120 Vac	240 Vac
6,000	15 A resistive	10 A resistive
6,000	4.4 FLA 26.4 LRA 125 VA pilot duty	2.2 FLA 13.2 LRA 125 VA pilot duty

**Note:** Additional contact ratings are available, please consult Honeywell.

**Figure 7. 2455RM/2455CM Basic Dimensions**



**Figure 8. 2455RD Series Phenolic Manual Reset**



The 2455RD Series is a single pole, single throw, snap-acting, non-adjustable thermostat. 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 housing; the bimetal disc is retained by a metal heat-conducting end cap. The circuit remains open above the room ambient temperature until the manual reset button is depressed. (These devices are constructed with an additional steel disc so that they are manual reset only. They do not have an automatic reset.) 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. For increased sensitivity, an exposed bimetal disc may be specified. A variety of mounting brackets and terminals is available.

All versions are UL/CSA and European approved.

Potential applications include those where a manual reset is desired, including:

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

**Table 14. 2455RD Series Standard Temperature Characteristics**

Operating Temperature Range	Tolerance °C [°F]
52 °C to 93 °C [125 °F to 200 °F]	±5 [±8]
94 °C to 121 °C [201 °F to 250 °F]	±6 [±10]
122 °C to 150 °C [251 °F to 302 °F]	±7 [±12]

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**Table 15. 2455RD Series Specifications**

Characteristic	Parameter
Switch type	SPST
Reset type	manual
Amperage	15 A resistive at 6,000 cycles (UL); 16 A resistive at 1000 cycles (EU)
Voltage	120 Vac to 250 Vac
Operating temperature range	2455RD: 52 °C to 150 °C [125 °F to 302 °F]
Environmental exposure range	2455RD: -20 °C to 177 °C [0 °F to 350 °F]
Materials:	
Base	phenolic
Contacts	silver alloy
Terminals	unplated brass, plated brass or steel
Closure	aluminum, brass, or stainless steel
Brackets	stainless steel
Approvals	UL File E36103, CSA File LR21048

**Table 16. 2455RD Contact Ratings**

Life Cycles	120 Vac	240 Vac
6000	15 A resistive	10 A resistive

**Note:** Additional contact ratings are available, please consult Honeywell.

**Figure 9. 2455RD Basic Dimensions**



Figure 10. Series 2455RBV Overmolded Automatic Reset Thermostats



The 2455RBV Series has a temperature-sensitive bimetal disc, electrically and thermally isolated from the switch that is used to actuate the normally closed contacts. The 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 or ceramic housing; the bimetal disc is retained by a metal heat-conducting end cap. The unit is then encapsulated in epoxy.

This series is UL/CSA and European approved.

Potential applications include:

- Automotive
- Industrial equipment
- HVAC

Table 17. 2455RBV Series Standard Temperature Characteristics

Operating Temperature Range	Tolerance		Standard Mean Differential °C [°F]
	Open °C [°F]	Close °C [°F]	
-12,2 °C to 26,7 °C [10 °F to 80 °F]	±4 [±7]	±6 [±10]	17 to 44 [30 to 80]
	±3 [±6]	±4 [±8]	14 to 28 [25 to 50]
	±3 [±5]	±4 [±8]	11 to 22 [20 to 40]
27,2 °C to 105 °C [81 °F to 221 °F]	±3 [±6]	±6 [±10]	17 to 44 [30 to 80]
	±3 [±5]	±4 [±8]	11 to 28 [20 to 50]

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**Table 18. 2455RBV Series Specifications**

Characteristic	Parameter
Switch type	SPST
Reset type	automatic
Amperage	see Table 19
Voltage	120 Vac to 250 Vac
Operating temperature range	0 °C to 105 °C [32 °F to 221 °F]
Environmental exposure range	-18 °C to 126.6 °C [0 °F to 260 °F]
Materials:	
Boot	nylon, with epoxy filled or injection molded
Base	internal 2455RC ceramic or 2455R phenolic
Contacts	silver alloy
Terminals	plated steel with wires
Closure	aluminum, brass, or stainless steel
Brackets	stainless steel
Approvals	UL File SA4469, CSA File LR21048.
Weight	6.5 g [0.23 oz] (does not include brackets or wire leads)

**Table 19. 2455RBV Series Contact Ratings**

Life Cycles	120 Vac	240 Vac
100,000	15 A resistive	10 A resistive
6,000	5.8 FLA 34.8 LRA	2.9 FLA 17.4 LRA
100,000	4.4 FLA 26.4 LRA 125 VA pilot duty	2.2 FLA 13.2 LRA 125 VA pilot duty

**Note:** Additional contact ratings are available, please contact Honeywell.

**Figure 11. 2455RBV Basic Dimensions**



Figure 12. 2450A/2455RA Heat Detection Thermostats



The 2450A/2455RA Series is a single pole, single throw, snap-acting, non-adjustable thermostat designed for easy mounting in devices such as fire alarms, security devices and smoke detectors. 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. Devices are UL recognized and designed for use in both photoelectric and ionization type smoke detectors. Thermostats are available with and without collectors and meet UL spacing requirements for 15 ft, 30 ft and 50 ft. They are available to open or close on a temperature rise of 47 °C [117 °F] to 107 °C [225 °F]. Devices feature gold contacts for low voltage requirements and are epoxy sealed at the cap and terminal for long storage life of the application. Collectors are available in silver, black, beige, gold or bronze finishes.

All versions are UL approved.

Potential applications:

- Smoke alarm/heat detectors in industrial, residential and commercial

**NOTICE**

Final approval of a fire detection system is determined by UL as outlined in UL #521 and UL #217 for the suitability of the combination of the thermostat (2450A/2455RA) and the user's mounting base, together with its intended application of the total fire detection system. To assist the use with design and testing , a minimum of 0.25 in extension beyond the housing is recommended.

Table 20. 2450A/2455RA Series Standard Temperature Characteristics

Detection (Close on Rise)		Release (Open on Rise)	
Close °C [°F]	Open °C [°F]	Open °C [°F]	Close °C [°F]
47 ±3 [117±5]	30 min [85 min]	57 ±3 [117 ±5]	30 min [85 min]
57 ±3 [135 ±5]	32 min [90 min]	57 ±3 [135 ±5]	32 min [90 min]
69 ±3 [156 ±5]	32 min [90 min]	69 ±3 [156 ±5]	32 min [90 min]
85 ±4 [185 ±7]	32 min [90 min]	85 ±4 [185 ±7]	32 min [90 min]
107 ±4 [225 ±7]	32 min [90 min]	107 ±4 [225 ±7]	32 min [90 min]

**Notes:**

- Additional switches can be provided as long as they fall between 47,2 °C to 107,2 °C [117 °F to 225 °F] close on rise or open or rise.
- Please consult Honeywell for tolerances and temperatures not listed.

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**Table 21. 2450A/2455RA Series Specifications**

Characteristic	Parameter
Switch type	SPST
Reset type	automatic
Amperage	3 A
Voltage	120 Vac
Operating temperature range	47,2 °C to 107,2 °C [117 °F to 225 °F]
Environmental exposure range	-0 °C to 150 °C [32 °F to 302 °F]
Materials:	
Base	phenolic
Contacts	gold flash
Terminals	unplated brass, plated brass
Closure	aluminum
Brackets	aluminum
Approvals	UL File S1015 and S1389; Guide USCV2 and TAOZ2, UL Standard #521, #217
Weight	6 g [0.21 oz] (does not include brackets)

**Figure 13. 2450A/2455RA Basic Dimensions**



**Figure 14. 2450A/2455RA Collector**



**Figure 15. 2450A and 2455RA Spacing**





Figure 16. 2450R/2455R/2450RC/2455RC/2450HR/2450RCH Series “One Shot” Thermostats



Table 22. 2450R/2455R/2450RC/2455RC/2450HR/2450RCH Series “One Shot” Standard Temperature Characteristics

Operating Temperature Range	Tolerance °C [°F]
52 °C to 93 °C [125 °F to 200 °F]	5 [8]
94 °C to 121 °C [201 °F to 250 °F]	6 [10]
122 °C to 149 °C [251 °F to 300 °F]	7 [12]
150 °C to 177 °C [301 °F to 350 °F]	8 [15]
177 °C to 204 °C [351 °F to 400 °F]	10 [18]
205 °C to 232 °C [401 °F to 450 °F]	11 [20]
232 °C to 260 °C [451 °F to 500 °F]	14 [25]

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**Table 23. 2450R/2455R/2450RC/2455RC/2450HR/2450RCH Series “One Shot” Specifications**

Characteristic	Parameter
Switch type	SPST
Reset type	One Shot
Amperage	see Table 24
Voltage	120 Vac to 250 Vac
Operating temperature range	2450R/2455R/2450HR/2450RCH: 52 °C to 150 °C [125 °F to 302 °F] 2450RC/2455RC: 52 °C to 260 °C [125 °F to 500 °F]
Environmental exposure range	2450R/2455R/2450HR/2450RCH: 17.8 °C to 177 °C [0 °F to 350 °F] 2450RC/2455RC: 17.8 °C to 287 °C [125 °F to 550 °F]
Materials:	
Base	phenolic or ceramic
Contacts	silver alloy
Terminals	unplated brass, plated brass or steel
Closure	aluminum, brass, stainless steel
Brackets	stainless steel
Approvals	UL File E36103, CSA File LR43279
Weight	6 g [0.21 oz] (does not include brackets or lead wires)

**Table 24. 2450R/2455R/2450RC/2455RC/2450HR/2450RCH Series “One Shot” Contact Ratings**

Cycles	120 Vac	240 Vac	277 Vac
1	15 A resistive	10 A resistive	10 A resistive

**Notes:**

- Resets below -35 °C [-31 °F].
- Additional contact ratings are available. Please consult Honeywell.

**Figure 17. 2450R/2455R/2450RC/2455RC/2450HR/2450RCH Series “One Shot” Basic Dimension**



**REDI-TEMP THERMOSTATS**

REDI-TEMP thermostats are pre-configured as shown and are readily available.

**Figure 18. 3455RC REDI-TEMP Series (See page 6 for specifications and potential applications.)**



**Table 25. 3455RC REDI-TEMP Series Open on Rise**

Catalog Listing	Open Temp. °C [°F]	Open Tolerance °C [°F]	Close Temp. °C [°F]	Close Tolerance °C [°F]
3455RC-100-220	18 [65]	±3 [±5]	-1 [30]	±5 [±8]
3455RC-100-221	24 [75]	±3 [±5]	4 [40]	±5 [±8]
3455RC-100-222	29 [85]	±3 [±5]	13 [55]	±5 [±8]
3455RC-100-223	35 [95]	±3 [±5]	18 [65]	±5 [±8]
3455RC-100-224	41 [105]	±3 [±5]	24 [75]	±5 [±8]
3455RC-100-225	46 [115]	±3 [±5]	29 [85]	±5 [±8]
3455RC-100-226	52 [125]	±3 [±5]	35 [95]	±5 [±8]
3455RC-100-227	57 [135]	±3 [±5]	41 [105]	±5 [±8]
3455RC-100-228	63 [145]	±3 [±5]	46 [115]	±5 [±8]
3455RC-100-229	68 [155]	±3 [±5]	52 [125]	±5 [±8]
3455RC-100-230	73 [165]	±3 [±5]	57 [135]	±5 [±8]
3455RC-100-231	79 [175]	±3 [±5]	63 [145]	±5 [±8]
3455RC-100-232	85 [185]	±3 [±5]	68 [155]	±5 [±8]
3455RC-100-233	91 [195]	±3 [±5]	73 [165]	±5 [±8]
3455RC-100-234	96 [205]	±4 [±6]	79 [175]	±5 [±8]
3455RC-100-235	102 [215]	±4 [±6]	85 [185]	±5 [±8]
3455RC-100-236	107 [225]	±4 [±6]	91 [195]	±5 [±8]
3455RC-100-237	113 [235]	±4 [±6]	96 [205]	±5 [±8]
3455RC-100-238	118 [245]	±4 [±6]	102 [215]	±5 [±8]
3455RC-100-239	124 [255]	±4 [±7]	107 [225]	±5 [±8]
3455RC-100-240	135 [275]	±4 [±7]	118 [245]	±5 [±8]
3455RC-100-241	146 [295]	±4 [±7]	129 [265]	±5 [±8]
3455RC-100-242	157 [315]	±6 [±10]	135 [275]	±8 [±15]

**Table 26. 3455RC REDI-TEMP Series Close on Rise**

Catalog Listing	Close Temp. °C [°F]	Close Tolerance °C [°F]	Open Temp. °C [°F]	Open Tolerance °C [°F]
3455RC-100-243	21 [70]	±5 [±8]	2 [35]	±3 [±5]
3455RC-100-244	32 [90]	±5 [±8]	16 [60]	±3 [±5]
3455RC-100-245	43 [110]	±5 [±8]	27 [80]	±3 [±5]
3455RC-100-246	54 [130]	±5 [±8]	38 [100]	±3 [±5]
3455RC-100-247	66 [150]	±5 [±8]	49 [120]	±3 [±5]
3455RC-100-248	77 [170]	±5 [±8]	60 [140]	±3 [±5]
3455RC-100-249	88 [190]	±5 [±8]	71 [160]	±3 [±5]
3455RC-100-250	99 [210]	±5 [±8]	82 [180]	±4 [±6]
3455RC-100-251	110 [230]	±5 [±8]	93 [200]	±4 [±6]

**Note:** Materials and contact ratings are the same as those for 2455RC.

# Commercial Thermostats

## MOUNTING HARDWARE

Figure 19. Brackets



Figure 19. Brackets (Continued)



Figure 20. Brass Mounting Studs



# Commercial Thermostats

Figure 21. Terminals



Figure 21. Terminals (Continued)



## **WARNING**

### **PERSONAL INJURY**

DO NOT USE these products as safety or emergency stop devices or in any other application where failure of the product could result in personal injury.

**Failure to comply with these instructions could result in death or serious injury.**

### **WARRANTY/REMEDY**

Honeywell warrants goods of its manufacture as being free of defective materials and faulty workmanship. Honeywell's standard product warranty applies unless agreed to otherwise by Honeywell in writing; please refer to your order acknowledgement or consult your local sales office for specific warranty details. If warranted goods are returned to Honeywell during the period of coverage, Honeywell will repair or replace, at its option, without charge those items it finds defective. **The foregoing is buyer's sole remedy and is in lieu of all other warranties, expressed or implied, including those of merchantability and fitness for a particular purpose. In no event shall Honeywell be liable for consequential, special, or indirect damages.**

While we provide application assistance personally, through our literature and the Honeywell web site, it is up to the customer to determine the suitability of the product in the application.

Specifications may change without notice. The information we supply is believed to be accurate and reliable as of this printing. However, we assume no responsibility for its use.

## **WARNING**

### **MISUSE OF DOCUMENTATION**

- The information presented in this product sheet is for reference only. Do not use this document as a product installation guide.
- Complete installation, operation, and maintenance information is provided in the instructions supplied with each product.

**Failure to comply with these instructions could result in death or serious injury.**

### **SALES AND SERVICE**

Honeywell serves its customers through a worldwide network of sales offices, representatives and distributors. For application assistance, current specifications, pricing or name of the nearest Authorized Distributor, contact your local sales office or:

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# **Honeywell**





# Thermostats Line Guide



**Precision engineering. Commercial sense.** From the exacting needs of high-end industrial and aerospace applications to commercial safety and office equipment usage, Honeywell Sensing and Control (S&C) thermostat solutions are the recognized, respected leader. Both our commercial and precision snap-action thermostats include automatic and manual reset options, phenolic or ceramic housings and a wide variety of

mounting brackets and terminal options — while our precision line includes both hermetic and non-hermetic devices. And each thermostat's design is configured from a base unit, and can be customized for temperature tolerance and mechanical configurations, meeting any of your needs for accuracy and exactitude. It makes sense to trust industry-leading engineering and innovation.

## FEATURES

### COMMERCIAL THERMOSTATS

#### 2450A Series.

**Features:** Cost effective • Gold alloy contacts • Epoxy-sealed cap and terminals • Wide variety of terminals  
• Only a stepped aluminum cap - 15' spacing, 1" collector for 30' spacing, and a 1.5" collector for 50' spacing. Collector brackets available per UL

**Benefits:** Gold alloy contacts for low voltage fire alarm, smoke detector and potential security device applications. Small size allows enhanced response to temperature changes. Epoxy sealed for extended life. Available with or without heat collectors. Potential for use in office copy machines, heat and smoke detectors, HVAC equipment, computers, aircraft/aerospace, radar equipment, medical equipment, and electronic control systems.

#### 2450CM Series.

**Features:** Cost effective • Rivet sleeve construction • Wide variety of mounting brackets and terminals

**Benefits:** Small size allows enhanced response to temperature changes. Potential for use in high current HVAC, appliance, hot water heater and office automation applications.

#### 2450CMG Series.

**Features:** Cost effective • Gold alloy contacts • Rivet sleeve construction  
• Wide variety of mounting brackets and terminals

**Benefits:** Small size allows enhanced response to temperature changes. Gold alloy contacts for potential use in low voltage HVAC, appliances, hot water heater and office automation applications.

#### 2450HR Series.

**Features:** Cost effective • Rivet sleeve construction • Factory calibrated • Wide variety of mounting brackets and terminals

**Benefits:** Small size allows enhanced response to temperature changes. Factory calibrated to customer's specs. 4-posted "H" construction for application mounting bracket. Potential for use in HVAC, major appliances, automotive, heat and smoke detectors and office copy machines.

#### 2450HRG Series.

**Features:** Cost effective • Gold alloy contacts • Rivet sleeve construction  
• Factory calibrated • Wide variety of mounting brackets and terminals

**Benefits:** Small product size allows enhanced response to temperature changes. Factory calibrated to customer's specification. 4-posted "H" construction for application mounting bracket. Gold alloy contacts for low voltage HVAC, major appliance, automotive, heat/smoke detectors and copy machine potential applications.

# Thermostats Line Guide

## Well over 5,000 reasons to choose Honeywell.

With over 5,000 quality components in our thermostat line, we meet any domestic or international need for commercial or precision snap-action solutions.

### Commercial thermostats:

You'll find Honeywell quality in a wide array of small and major appliances, automotive applications, office copy machines and HVAC equipment, plus heat and smoke detectors. Whether it's military or aerospace industries, or your office building, each Honeywell S&C thermostat can be designed to offer the performance and reliability you demand, and the service you need.

### Precision thermostats:

A highly reliable lineup for potential high-end applications, including computers, copy machines, aircraft, radar, medical equipment and electronic control systems — each designed to meet the most stringent environmental conditions for dielectric strength, moisture, resistance, vibration, shock and hermetic seal. And S&C offers custom-packaged thermostats for complete application flexibility.



### Commercial Thermostats

	2450A Series	2450CM Series	2450CMG Series
<b>Use</b>	heat detection	high current	low voltage
<b>Reset type</b>	automatic	manual	manual
<b>Housing material</b>	phenolic, epoxy seal cap and terminals	ceramic	ceramic
<b>Functional property</b>	open or close on rise	open on rise	open on rise
<b>Amperage</b>	3 A	15 A/10 A	0.5 A
<b>Operating temperature range</b>	47 °C to 107 °C [117 °F to 225 °F]	52 °C to 232 °C [125 °F to 450 °F]	52 °C to 232 °C [125 °F to 450 °F]
<b>Environmental exposure range</b>	0 °C to 150 °C [32 °F to 302 °F]	10 °C to 260 °C [50 °F to 500 °F]	10 °C to 260 °C [50 °F to 500 °F]
<b>Contacts</b>	WE-1 gold alloy cross point	silver/nickel alloy	WE-1 gold alloy cross point
<b>Approvals</b>	UL	UL, CSA, VDE	UL, CSA, VDE



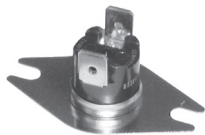
### Commercial Thermostats

	2450HR Series	2450HRG Series	2450R Series
<b>Use</b>	high current	low current	high current
<b>Reset type</b>	automatic	automatic	automatic
<b>Housing material</b>	phenolic	phenolic	phenolic
<b>Functional property</b>	open or close on rise	open on rise	open or close on rise
<b>Amperage</b>	15 A/10 A	0.5 A	15 A/10 A
<b>Operating temperature range</b>	0 °C to 150 °C [32 °F to 302 °F]	0 °C to 150 °C [32 °F to 302 °F]	0 °C to 150 °C [32 °F to 302 °F]
<b>Environmental exposure range</b>	-18 °C to 177 °C [0 °F to 350 °F]	-18 °C to 177 °C [0 °F to 350 °F]	-18 °C to 177 °C [0 °F to 350 °F]
<b>Contacts</b>	silver/nickel alloy	WE-1 gold alloy cross point	silver/nickel alloy
<b>Approvals</b>	UL, CSA	UL, CSA	UL, CSA



## Commercial Thermostats

	2450RC Series	2450RCG Series	2450RG Series
<b>Use</b>	high current	low voltage	low voltage
<b>Reset type</b>	automatic	automatic	automatic
<b>Housing material</b>	ceramic	ceramic	phenolic
<b>Functional property</b>	open or close on rise	open or close on rise	open or close on rise
<b>Amperage</b>	15 A/10 A	0.5 A	0.5 A
<b>Operating temperature range</b>	0 °C to 260 °C [32 °F to 500 °F]	0 °C to 260 °C [32 °F to 500 °F]	0 °C to 150 °C [32 °F to 302 °F]
<b>Environmental exposure range</b>	-20 °C to 287 °C [0 °F to 550 °F]	-20 °C to 287 °C [0 °F to 550 °F]	-18 °C to 177 °C [0 °F to 350 °F]
<b>Contacts</b>	silver/nickel alloy	WE-1 gold alloy cross point	WE-1 gold alloy cross point
<b>Approvals</b>	UL, CSA, VDE	UL, CSA, VDE	UL, CSA



## Commercial Thermostats

	2455R Series	2455RA Series	2455RVB Series
<b>Use</b>	high current	heat detection	high current
<b>Reset type</b>	automatic	automatic	automatic
<b>Housing material</b>	phenolic	phenolic, epoxy seal cap and terminals	ceramic, epoxy overmold
<b>Functional property</b>	open or close on rise	close on rise	open or close on rise
<b>Amperage</b>	15 A/10 A	3 A	15 A/10 A
<b>Operating temperature range</b>	0 °C to 150 °C [32 °F to 302 °F]	47 °C to 107 °C [117 °F to 225 °F]	-12 °C to 105 °C [10 °F to 250 °F]
<b>Environmental exposure range</b>	-18 °C to 177 °C [0 °F to 350 °F]	0 °C to 150 °C [32 °F to 302 °F]	-18 °C to 121 °C [0 °F to 250 °F]
<b>Contacts</b>	silver/nickel alloy	WE-1 gold alloy cross point	silver/nickel alloy
<b>Approvals</b>	UL, CSA, VDE	UL	UL, CSA, VDE

# Thermostats Line Guide



## Commercial Thermostats

	2455RC Series	2455RG Series	2455RM Series
<b>Use</b>	high current	low voltage	high current
<b>Reset type</b>	automatic	automatic	manual
<b>Housing material</b>	ceramic	phenolic	phenolic
<b>Functional property</b>	open on rise	open or close on rise	open on rise
<b>Amperage</b>	15 A/10 A	0.5 A	15 A/10 A
<b>Operating temperature range</b>	0 °C to 260 °C [32 °F to 500 °F]	0 °C to 150 °C [32 °F to 302 °F]	0 °C to 150 °C [32 °F to 302 °F] (inclusive)
<b>Environmental exposure range</b>	-20 °C to 287 °C [0 °F to 550 °F]	-18 °C to 177 °C [0 °F to 350 °F]	-18 °C to 260 °C [0 °F to 500 °F]
<b>Contacts</b>	silver/nickel alloy	WE-1 gold alloy cross point	silver/nickel alloy
<b>Approvals</b>	UL, CSA, VDE	UL, CSA, VDE	UL, CSA, VDE



## Precision Thermostats

### 3000 Series

<b>Description</b>	custom packaged
<b>Amperage</b>	7.0 A resistive
<b>Housing material</b>	stainless steel or brass
<b>Operating temperature</b>	-29 °C to 260 °C [-20 °F to 500 °F]
<b>Environmental exposure range</b>	-62 °C to 288 °C [-80 °F to 550 °F]
<b>Dielectric strength</b>	MIL-STD-202, Method 301; 1250 Vac 60 Hz - Terminal to Case
<b>Insulation resistance</b>	MIL-STD-202, Method 302; 50 MOhm min. Terminal to Case
<b>Contact resistance</b>	MIL-STD-202, Method 307; 0.050 Ohm
<b>Hermetic seal</b>	MIL-STD-202, Method 112; Cond. A, 1x10 <sup>-5</sup> atm cc/s
<b>Moisture resistance</b>	MIL-STD-202, Method 106
<b>Shock</b>	N/A
<b>Vibration</b>	N/A
<b>Thermal shock</b>	N/A
<b>Salt spray</b>	N/A
<b>Acceleration</b>	N/A



## Precision Thermostats

	3100 Series	3100U Series	3106 Series
<b>Description</b>	hermetic	UL-approved hermetic	low level hermetic
<b>Amperage</b>	2.0 A/1.0 A/5.0 A/5.0 A	3.0 A resistive max.	100 mA/500 mA
<b>Housing material</b>	steel housing hermetically sealed with glass-to-metal seal at terminal junction	steel housing hermetically sealed with glass-to-metal seal at terminal junction	steel housing hermetically sealed with glass-to-metal seal at terminal junction
<b>Operating temperature</b>	-29 °C to 260 °C [-20 °F to 500 °F]	-29 °C to 260 °C [-20 °F to 500 °F]	-29 °C to 204 °C [-20 °F to 400 °F]
<b>Environmental exposure range</b>	-62 °C to 288 °C [-80 °F to 550 °F]	-62 °C to 288 °C [-80 °F to 550 °F]	-62 °C to 260 °C [-80 °F to 500 °F]
<b>Dielectric strength</b>	MIL-STD-202, Method 301; 1250 Vac 60 Hz - Terminal to Case	MIL-STD-202, Method 301; 1250 Vac 60 Hz - Terminal to Case	MIL-STD-202, Method 301; 1250 Vac 60 Hz - Terminal to Case
<b>Insulation resistance</b>	MIL-STD-202, Method 302; Cond. B - 500 MOhm - 500 Vdc applied	MIL-STD-202, Method 302; 50 MOhm or MIL-STD-202, Method 302; Cond. B - 500 MOhm - 500 Vdc applied	MIL-STD-202, Method 302; Cond. B - 500 MOhm - 500 Vdc applied
<b>Contact resistance</b>	MIL-STD-202, Method 307; 0.050 Ohm	MIL-STD-202, Method 307; 0.050 Ohm max.	MIL-STD-202, Method 307; 0.050 Ohm
<b>Hermetic seal</b>	MIL-STD-202, Method 112; Cond. 1 x 10 <sup>-5</sup>	MIL-STD-202, Method 112; Cond. 1 x 10 <sup>-5</sup>	MIL-STD-202, Method 112; Cond. 1 x 10 <sup>-5</sup>
<b>Moisture resistance</b>	MIL-STD-202, Method 106	MIL-STD-202, Method 106	MIL-STD-202, Method 106
<b>Shock</b>	N/A	N/A	N/A
<b>Vibration</b>	N/A	N/A	N/A
<b>Thermal shock</b>	N/A	N/A	N/A
<b>Salt spray</b>	N/A	N/A	N/A
<b>Acceleration</b>	N/A	N/A	N/A

## Thermostats Line Guide



### Precision Thermostats

	3150 Series	3153 Series	3156 Series	3200 Series
<b>Description</b>	low silhouette hermetic	low silhouette hermetic	low level, silhouette hermetic	aerospace
<b>Amperage</b>	2.0 A/1.0 A/2.0 A/2.0 A	2.0 A resistive	100 mA/500 mA	5.0 A resistive
<b>Housing material</b>	steel housing hermetically sealed with glass-to-metal seal at terminal junction	steel housing hermetically sealed with glass-to-metal seal at terminal junction	steel housing hermetically sealed with glass-to-metal seal at terminal junction	steel housing hermetically sealed with glass-to-metal seal at terminal junction
<b>Operating temperature</b>	-29 °C to 177 °C [-20 °F to 350 °F]	-29 °C to 177 °C [-20 °F to 350 °F]	-29 °C to 204 °C [-20 °F to 400 °F]	-51 °C to 163 °C [-60 °F to 325 °F]
<b>Environmental exposure range</b>	-54 °C to 260 °C [-65 °F to 500 °F]	-65 °C to 260 °C [-85 °F to 500 °F]	-62 °C to 260 °C [-80 °F to 500 °F]	-65 °C to 177 °C [-85 °F to 350 °F]
<b>Dielectric strength</b>	MIL-STD-202, Method 301; 750 Vac 60 Hz - Terminal to Case	MIL-STD-202, Method 301; 1250 Vac 60 Hz - Terminal to Case	MIL-STD-202, Method 301; 1250 Vac 60 Hz - Terminal to Case	MIL-STD-202, Method 301; 1250 Vac
<b>Insulation resistance</b>	MIL-STD-202, Method 302; Cond. B - 500 MOhm - 500 Vdc applied	MIL-STD-202, Method 302; 500 MOhm	MIL-STD-202, Method 302; Cond. B - 500 MOhm - 500 Vdc applied	MIL-STD-202, Method 302; 500 MOhm
<b>Contact resistance</b>	MIL-STD-202, Method 307; 0.050 Ohm	MIL-STD-202, Method 307; 0.050 Ohm max.	MIL-STD-202, Method 307; 0.050 Ohm	MIL-STD-202, Method 307; 0.025 Ohm max.
<b>Hermetic seal</b>	MIL-STD-202, Method 112; Cond. 1 x 10 <sup>-5</sup>	MIL-STD-202, Method 112; Cond. C	MIL-STD-202, Method 112; Cond. 1 x 10 <sup>-5</sup>	MIL-STD-202, Method 112; Cond. C
<b>Moisture resistance</b>	MIL-STD-202, Method 106	MIL-STD-202, Method 106	MIL-STD-202, Method 106	MIL-STD-202, Method 106
<b>Shock</b>	N/A	MIL-STD-202, Method 213; 100 G	N/A	MIL-STD-202, Method 213; 750 G
<b>Vibration</b>	N/A	MIL-STD-202, Method 204; 20 G	N/A	MIL-STD-202, Method 204; 30 G; MIL-STD-202, Method 214; 50 G
<b>Thermal shock</b>	N/A	MIL-STD-202, Method 107; Cond. B	N/A	MIL-STD-202, Method 107; Cond. B
<b>Salt spray</b>	N/A	MIL-STD-202, Method 101; Cond. B	N/A	MIL-STD-202, Method 101; Cond. B
<b>Acceleration</b>	N/A	N/A	N/A	MIL-STD-202, Method 212; 20 G

### **2450R Series.**

**Features:** Cost effective • Rivet sleeve construction • Low profile • Wide variety of mounting brackets and terminals

**Benefits:** Low profile and small size allows enhanced response to temperature changes. Factory calibrated to customer's specification. Potential for use in high current HVAC, major appliance, automotive, heat/smoke detector and copy machine applications.

### **2450RC Series.**

**Features:** Cost effective • Rivet sleeve construction • Low profile • Wide variety of mounting brackets and terminals

**Benefits:** Low profile and small size allows enhanced response to temperature changes. Potential for use in high current HVAC, power supplies, decorative fire places, glue gun applications.

### **2450RCG Series.**

**Features:** Cost effective • Gold alloy contacts • Rivet sleeve construction • Low profile • Wide variety of mounting brackets and terminals

**Benefits:** Low profile and small product size allows enhanced response to temperature changes. Gold alloy contacts allow for potential use for low voltage HVAC, power supply, decorative fire places and glue gun applications.

### **2450RG Series.**

**Features:** Cost effective • Gold alloy contacts • Rivet sleeve construction • Wide variety of mounting brackets and terminals

**Benefits:** Small product size allows enhanced response to temperature changes. 4- posted "H" construction for application mounting bracket. Gold alloy contacts allow for potential use for low voltage tabletop appliance applications.

### **2455R Series.**

**Features:** Cost effective • Rivet sleeve construction • High profile • High current • Wide variety of mounting brackets and terminals

**Benefits:** Small product size allows enhanced response to temperature changes. Factory calibrated to customer's specification. Potential for use in high current HVAC, automotive, copy machine, major appliance and heat/smoke detection applications.

### **2455RA Series.**

**Features:** Cost effective • Gold alloy contacts • Epoxy-sealed cap and terminals • Wide variety of terminals • Stepped aluminum cap - 15 ft spacing, 1" collector for 30' spacing, and a 1.5 in collector for 50 ft spacing. Collector brackets available per UL

**Benefits:** Small size allows enhanced response to temperature changes. Epoxy sealed for long life. Available with or without heat collectors. Gold alloy contacts allow for potential use for low voltage fire alarm, smoke detector and security device applications.

### **2455RBV Series.**

**Features:** Cost effective • Epoxy overmold • Rivet sleeve construction • Dust-free housing • Factory calibrated • Wide variety of mounting brackets and terminals

**Benefits:** Epoxy overmolded construction provides electrical insulation. Small size allows enhanced response to temperature changes. Factory calibrated to customer's specification. Potential for use in high current automotive and industrial equipment applications.

### **2455RC Series.**

**Features:** Cost effective • Rivet sleeve construction • High profile • Wide variety of mounting brackets and terminals

**Benefits:** Small product size allows enhanced response to temperature changes. Potential for use in high current HVAC, power supply, spa and office automation applications.

### **2455RG Series.**

**Features:** Cost effective • Gold alloy contacts • Rivet sleeve construction • High profile • Factory calibrated • Wide variety of mounting brackets and terminals

**Benefits:** Small product size allows enhanced response to temperature changes. Factory calibrated to customer's specification. Gold alloy contacts allow for potential use for low voltage HVAC, automotive, copy machines, heat/smoke detection and major appliance applications.

### **2455RM Series.**

**Features:** Cost effective • Rivet sleeve construction • Factory calibrated • Wide variety of mounting brackets and terminals

**Benefits:** Small size allows enhanced response to temperature changes. Used in high current. Factory calibrated to customer's specification. Potential uses include HVAC, power supply and office automation.

## **PRECISION THERMOSTATS**

### **3000 Series.**

**Features:** Custom packaging • Hermetically sealed • Tight tolerances • Tight differentials • Customized probe length • Hermetic connector or potted constructions

**Benefits:** Internal and external design options meet exacting customer requirements. All-welded, hermetically-sealed stainless steel construction for potential military applications requiring flexibility in mounting and terminal configurations.

### **3100 Series.**

**Features:** Hermetically sealed • Tight tolerances • Tight differentials • Pre-set and tamper proof • SPST contacts • Wide variety of mounting brackets and terminals

**Benefits:** Designed to meet or exceed critical commercial and industrial specifications. Temperature calibrations pre-set at factory. Each unit 100% thermally and mechanically inspected. Potential applications include computers, medical electronics, power supplies, industrial controls, infotech, and test equipment.



### **3100U Series.**

**Features:** UL approved • Hermetically sealed • Tight tolerances • Tight differentials • Pre-set and tamper proof • SPST contacts • Wide variety of mounting brackets and terminals

**Benefits:** UL approved products designed to meet or exceed critical commercial and industrial specifications. Temperature calibrations pre-set at factory. Each unit 100 % thermally and mechanically inspected. Potential applications include computers, medical electronics, power supplies, industrial controls, infotech, and test equipment.

### **3106 Series.**

**Features:** Gold alloy contacts • Hermetically sealed • Tight tolerances • Tight differentials • Pre-set and tamper proof • SPST contacts • Wide variety of mounting brackets and terminals

**Benefits:** Gold alloy contacts for low voltage applications. Designed to meet or exceed critical commercial and industrial specifications. Temperature calibrations pre-set at factory. Each unit 100% thermally and mechanically inspected. Potential applications include computers, medical electronics, power supplies, industrial controls, infotech, and test equipment.

### **3150 Series.**

**Features:** Low silhouette and compact design • Hermetically sealed • Tight tolerances • Tight differentials • Pre-set and tamper proof • SPST contacts • Wide variety of mounting brackets and terminals

**Benefits:** Low silhouette and compact design may be well suited for potential applications including industrial, food service, telecom, medical, and infotech where space is at a premium. Temperature calibrations pre-set at factory. Each unit 100% thermally and mechanically inspected.

### **3153 Series.**

**Features:** Low silhouette and compact design • Hermetically sealed • Tight tolerances • Tight differentials • Pre-set and tamper proof • SPST contacts • Wide variety of mounting brackets and terminals

**Benefits:** Acceptance testing performed in accordance to Mil-PRF-24236, Table III. Temperature calibrations pre-set at factory. Each unit 100% thermally and mechanically inspected. Low silhouette and compact design may be well suited for potential military and commercial aircraft applications where space is at a premium.

### **3156 Series.**

**Features:** Low silhouette and compact design • Gold alloy contacts • Hermetically sealed • Tight tolerances • Tight differentials • Pre-set and tamper proof • SPST contacts • Wide variety of mounting brackets and terminals

**Benefits:** Gold alloy contacts for potential low voltage applications. Temperature calibrations pre-set at factory. Each unit 100% thermally and mechanically inspected. Low silhouette and compact design may be well suited for potential applications including industrial, food service, telecom, medical, and infotech where space is at a premium.

### **3200 Series.**

**Features:** NASA certified • Space qualified • Hermetically sealed • Tight tolerances • Tight differentials • Pre-set and tamper proof • SPST contacts • Wide variety of mounting brackets and terminals available

**Benefits:** Temperature calibrations pre-set at factory. Each unit 100% thermally and mechanically inspected. Designed to meet or exceed military and aerospace specifications for spaceflight use, including temperature stability, shock, vibration and cleanliness.

**Warranty.** Honeywell warrants goods of its manufacture as being free of defective materials and faulty workmanship. Honeywell's standard product warranty applies unless agreed to otherwise by Honeywell in writing; please refer to your order acknowledgement or consult your local sales office for specific warranty details. If warranted goods are returned to Honeywell during the period of coverage, Honeywell will repair or replace, at its option, without charge those items it finds defective. **The foregoing is buyer's sole remedy and is in lieu of all warranties, expressed or implied, including those of merchantability and fitness for a particular purpose. In no event shall Honeywell be liable for consequential, special, or indirect damages.**

While we provide application assistance personally, through our literature and the Honeywell web site, it is up to the customer to determine the suitability of the product in the application.

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 **WARNING**  
**PERSONAL INJURY**

- DO NOT USE these products as safety or emergency stop devices or in any other application where failure of the product could result in personal injury.

**Failure to comply with these instructions could result in death or serious injury.**

 **WARNING**  
**MISUSE OF DOCUMENTATION**

- The information presented in this catalogue is for reference only. DO NOT USE this document as product installation information.
- Complete installation, operation and maintenance information is provided in the instructions supplied with each product.

**Failure to comply with these instructions could result in death or serious injury.**

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**Honeywell**

# Notes



Product Range Guide

## **Thermal Products**

# For innovation that's well apart, there's only Honeywell S&PS

With more than 50,000 products ranging from snap-action, limit, toggle, and pressure switches to position, speed, pressure, and airflow sensors, Honeywell Sensing and Productivity Solutions (S&PS) has one of the broadest sensing and switching portfolios.

Honeywell sensor, switch, and control components are tailored to exact specifications for stronger performance, longer productivity, and increased safety. Enhanced accuracy and durability are built into every part, improving output and endurance. For our customers, this can reduce expenditures and operational costs. Our global footprint and channels help to competitively price such components for your chosen application and provide immediate technical support.

While Honeywell's switch and sensor solutions are suitable for a wide array of basic and complex applications, our custom-engineered solutions offer enhanced precision, repeatability, and ruggedness. We offer domain knowledge and technology resources, along with a close working relationship, to develop and deliver cost-effective, individually tailored solutions. Whether clean-slate development or simple modifications to an existing design are needed, our expertly engineered solutions help to meet the most stringent requirements with world-class product designs, technology integration, and customer-specific manufacturing.

Global service, sourcing, and manufacturing. Industry-leading engineers. Value-added assemblies and solutions. A one-stop, full-service, globally competitive supplier.



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# Temperature Sensors | Temperature Probes

Compact and easy to install. Operate with enhanced sensitivity, reliability, and stability under diverse conditions of shock, vibration, humidity, and corrosion. Wide variety of custom packages available for air, liquid, and solid temperature sensing. Potential applications include transportation, compressors, HVAC/R, automation control, and aviation.



Series	LTP	R300	ES110
Temp. sensing type	immersion/air-gas	immersion	air-gas
Thermistor type	NTC	RTD	NTC
Nominal resistance at 25 °C [77 °F]	1000 Ohm, 2252 Ohm, 2057 Ohm, 2795 Ohm	100 Ohm	2000 Ohm
Operating temperature range	-40 °C to 150 °C [-40 °F to 302 °F]	-40 °C to 275 °C [-40 °F to 572 °F] continuous, excursion to 300 °C [572 °F] for 10 minutes max.	-40 °C to 150 °C [-40 °F to 302 °F]
Housing material	brass hex, stainless steel probe tip	stainless steel	brass
Electrical and mechanical interface	Bosch Kompakt, Delphi Metri-Pack 150 Series, AMP Seal 16, AMP Minitimer, AMP Superseal, Deutsch DT04-2P; M10 to M18, 3/4 UNF, or G 1/4 threads, two hex options	overmolded connector with M14 x 1.50 thread	overmolded connector with M10 x 1.25 or M12 x 1.50 thread
Features	low temperature passive probes have durable, closed-tip design	enhanced response, reliability, and accuracy; stainless steel construction	exposed thermistor, rugged design, brass encapsulation



Series	ES120	500	6655
Temp. sensing type	immersion	air-gas/immersion-liquid level/surface	air/surface
Thermistor type	NTC or KTY	NTC	NTC
Nominal resistance at 25 °C [77 °F]	2000 Ohm	200 Ohm to 1,000,000 Ohm (inclusive)	10,000 Ohm, 12,000 Ohm
Operating temperature range	-40 °C to 150 °C [-40 °F to 302 °F]	-40 °C to 300 °C [-40 °F to 572 °F] (inclusive)	-20 °C to 110 °C [-4 °F to 230 °F]
Housing material	brass	plastic, aluminum, stainless steel, epoxy filled, tin- or nickel-plated copper, ceramic or kynar-filled tubing	phenolic
Electrical and mechanical interface	overmolded connector with M10 x 1.25, M10 x 1.0, M12 x 1.5, M14 x 1.50 thread, or 1/8 PTF	wide variety of connectors, lead types, materials, and insulation	quick connect terminal: (90°, 0.25 in), (0°, 0.25 in), (45°, 0.25 in), (90°, 0.1875 in)
Features	enclosed thermistor, rugged design, brass encapsulation	wide selection of housing, resistance, and termination options	low, compact profile, tight interchangeability, enhanced accuracy and response time

# Temperature Sensors | RTD Sensors

Silicon-based, thin film RTDs (Resistance Temperature Detectors) are laser trimmed for accuracy and interchangeability. Offer stable, fast linear outputs with a wide temperature range. Accurate and interchangeable without recalibration. Available in discrete or packaged versions in plastic and ceramic, miniaturized and surface mount housings.



Series	HEL-700	HEL-775
<b>Sensor type</b>	100 Ohm, 1000 Ohm platinum RTD	100 Ohm, 1000 Ohm platinum RTD
<b>Temperature coefficient</b>	0.00385 Ohm/Ohm/°C 0.00375 Ohm/Ohm/°C	0.00385 Ohm/Ohm/°C 0.00375 Ohm/Ohm/°C
<b>Temperature sensing range</b>	TFE teflon: -70 °C to 260 °C [-94 °F to 500 °F] fiberglass: -75 °C to 500 °C [-100 °F to 932 °F]	-55 °C to 150 °C [-67 °F to 302 °F]
<b>Packaging type</b>	alumina tube	ceramic case
<b>Termination</b>	28 AWG or 24 AWG lead wire	SIP
<b>Base resistance and interchangeability</b>	100 Ohm: ±0.1 % at 0 °C 100 Ohm: ±0.2 % at 0 °C 1000 Ohm: ±0.1 % at 0 °C 1000 Ohm: ±0.2 % at 0 °C	100 Ohm: ±0.1 % at 0 °C 100 Ohm: ±0.2 % at 0 °C 1000 Ohm: ±0.1 % at 0 °C 1000 Ohm: ±0.2 % at 0 °C
<b>Self-heating</b>	<15 mW/°C for 0.85 O.D. typ.	<6.8 mW/°C typ.; 9.7 mW/°C typ.
<b>Termination material</b>	24 AWG nickel-coated, stranded copper 28 AWG nickel-coated, stranded copper	phosphor bronze with tin silver plating
<b>Features</b>	teflon or fiberglass lead wires, wide temperature range, ceramic case material, multiple sizes	enhanced stability, thin film platinum, ceramic SIP, solderable leads



Series	HEL-776/777	700
<b>Sensor type</b>	100 Ohm, 1000 Ohm platinum RTD	100 Ohm, 1000 Ohm platinum RTD
<b>Temperature coefficient</b>	0.00385 Ohm/Ohm/°C 0.00375 Ohm/Ohm/°C	0.00385 Ohm/Ohm/°C 0.00375 Ohm/Ohm/°C
<b>Temperature sensing range</b>	-55 °C to 150 °C [-67 °F to 302 °F]	-70 °C to 500 °C [-94 °F to 932 °F] leaded: -50 °C to 130 °C [-58 °F to 266 °F]
<b>Packaging type</b>	molded plastic	radial chip or surface mount axial flip chip
<b>Termination</b>	SIP	lead wires or solderpads
<b>Base resistance &amp; interchangeability</b>	100 Ohm: ±0.1 % at 0 °C 100 Ohm: ±0.2 % at 0 °C 1000 Ohm: ±0.1 % at 0 °C 1000 Ohm: ±0.2 % at 0 °C	100 Ohm: Class A; 100 Ohm: Class B 1000 Ohm: Class A; 1000 Ohm: Class B 1000 Ohm: Class 2B
<b>Self-heating</b>	<15 mW/°C typ.	0,4 K/mW, 0,6 K/mW, or 0,8 K/mW at 0 °C [32 °F]
<b>Termination material</b>	Cu alloy 194 solder dipped with Sn/Ag	Pt-clad Ni wire and end termination galvanic Sn-plated with Ni barrier layer
<b>Features</b>	enhanced stability, thin film platinum, molded plastic SIP package, solderable leads	interchangeability, SMD and chip package versions, enhanced stability and time response

# Temperature Sensors | RTD Sensors

Potential applications include HVAC, electronics assemblies, semiconductors, and process control. motor overload and semiconductor protection, electronic assembly thermal management and temperature compensation, as well as HVAC/R equipment.



Series	HRTS	TD
<b>Sensor type</b>	100 Ohm, 1000 Ohm platinum RTD	2000 Ohm silicon resistive element
<b>Temperature coefficient</b>	0.00385 Ohm/Ohm/°C 0.00375 Ohm/Ohm/°C	-
<b>Temperature sensing range</b>	-70 °C to 260 °C [-94 °F to 500 °F]	-40 °C to 150 °C [-40 °F to 302 °F]
<b>Packaging type</b>	ceramic case	plastic or threaded aluminum case
<b>Termination</b>	lead wires	SIP or lead wires
<b>Base resistance and interchangeability</b>	100 Ohm: ±0.1 % at 0 °C 100 Ohm: ±0.2 % at 0 °C 1000 Ohm: ±0.1 % at 0 °C 1000 Ohm: ±0.2 % at 0 °C	R2000 Ohm ±5 Ohm at 20 °C
<b>Self-heating</b>	<0.3 mW/°C typ.	-
<b>Termination material</b>	28 AWG nickel-coated, stranded copper, teflon insulated	TD4A: solderable leads available TD5A: insulated
<b>Features</b>	resistance interchangeable, accurate, fast, laser-trimmed, wide temperature range	interchangeable without recalibration, thin film, laser trimmed, air or liquid temperature sensing





# Temperature Sensors | Thermistors

Change resistance with change in temperature. Available in wide range of resistance values and temperature ranges. Variety of packages and sizes from leaded devices to surface mount versions. Potential applications include military, aerospace, appliances, medical, and instrumentation such as chromatography, thermal conductivity and gas analysis.



Series	111	112	115	120
Description	small, hermetically sealed glass bead	large, hermetically sealed glass bead	E-I tested and matched beads on header assembly	mini glass probe
Operating temperature range	-60 °C to 300 °C [-76 °F to 572 °F]	-60 °C to 300 °C [-76 °F to 572 °F]	-60 °C to 300 °C [-76 °F to 572 °F]	-60 °C to 300 °C [-76 °F to 572 °F]
Dissipation constant in still air	0.1 mW/°C	0.4 mW/°C	varies with assembly type	0.7 mW/°C, 1.0 mW/°C
Time constant in air	0.5 s	4.0 s	0.5 s	10.0 s
Nominal resistance at 25 °C [77 °F]	1 kOhm, 2 kOhm, 8 kOhm, 10 kOhm, 100 kOhm	200 Ohm, 500 Ohm, 1 kOhm, 2 kOhm, 5 kOhm, 10 kOhm, 50 k Ohm, 100 kOhm, 500 kOhm, 2 MOhm	2 kOhm, 8 kOhm	1 kOhm, 2 kOhm, 10 kOhm
Maximum diameter	0,36 mm [0.014 in]	1,14 mm [0.045 in]	0,36 mm [0.014 in]	1,5 mm [0.060 in]
Termination material	platinum iridium	platinum iridium	glass to metal header	dumet
Lead length	9,6 mm [0.375 in]	9,6 mm [0.375 in]	31,75 mm [1.25 in]	31,8 mm [1.25 in]
Features	enhanced response time and long-term stability, hermetically sealed in glass, micro size, welded platinum iridium leads	enhanced response time, hermetically sealed in glass, small size, enhanced long-term stability		E-I matched in air or helium, interchangeable pairs, extended life, compression-type glass hermetic seal, high pressure solder seal



Series	140	142	143	173
Description	small disc	large disc	large disc	EIA 0805 surface mount, end-banded
Operating temperature range	-60 °C to 150 °C [-76 °F to 302 °F]	-60 °C to 150 °C [-76 °F to 302 °F]	-60 °C to 150 °C [-76 °F to 302 °F]	-60 °C to 125 °C [-76 °F to 257 °F]
Dissipation constant in still air	3.0 mW/°C, 4.0 mW/°C	3.0 mW/°C, 4.0 mW/°C	5 mW/°C to 7 mW/°C	3.5 mW/°C
Time constant in air	10.0 s	10.0 s	16.0 s to 20.0 s	10.0 s
Nominal resistance at 25 °C [77 °F]	500 Ohm, 1 kOhm, 3 kOhm, 5 kOhm, 10 kOhm, 50 kOhm, 100 k Ohm	500 Ohm, 1 kOhm, 3 kOhm, 5 kOhm, 10 kOhm, 50 kOhm, 100 k Ohm	100 Ohm, 200 Ohm, 1 kOhm, 3 kOhm, 5 kOhm, 30 kOhm	500 Ohm, 5 kOhm, 10 kOhm, 22 kOhm, 33 kOhm, 47 kOhm, 50 kOhm, 100 kOhm
Maximum diameter	2,54 mm [0.1 in]	3,81 mm [0.15 in]	6,35 mm [0.25 in]	EIA 0805 SMD
Termination material	tinned copper	tinned copper	tinned copper	solder-plated nickel barrier
Lead length	38,1 mm [1.50 in]	38,1 mm [1.50 in]	38,1 mm [1.50 in]	-
Features	pc-board mountable, rugged design, solderable leads	pc-board mountable, rugged design, solderable leads	rugged design, pc-board mountable, solderable leads	surface mount, tape and reel, glass-coated ceramic, 0805 EIA package





121	126	128	129	135
standard glass probe	matched large glass bead	matched mini glass probe	matched large glass probe	glass encapsulated chip, DO-35 type
-60 °C to 300 °C [-76 °F to 572 °F]	-60 °C to 300 °C [-76 °F to 572 °F]	-60 °C to 300 °C [-76 °F to 572 °F]	-60 °C to 300 °C [-76 °F to 572 °F]	-60 °C to 300 °C [-76 °F to 572 °F]
1.0 mW/°C	0.8 mW/°C	2.1 mW/°C	3.0 mW/°C	2.5 mW/°C
22.0 s	4.0 s	10.0 s	22.0 s	4.0 s
2 kOhm, 5 kOhm, 10 kOhm, 50 kOhm, 100 kOhm, 1 MOhm	2 kOhm, 100 kOhm	2 kOhm, 15 kOhm	2 kOhm, 4 kOhm	1 kOhm, 2 kOhm, 5 kOhm, 10 Ohm, 20 kOhm, 25 kOhm, 30 kOhm, 47 kOhm, 50 kOhm, 100 kOhm, 200 kOhm, 230 kOhm, 500 kOhm, 1 MOhm, 5 MOhm
2,54 mm [0.10 in]	2,54 mm [0.10 in]	3,05 mm [0.120 in]	5,08 mm [0.20 in]	2,0 mm [0.080 in]
dumet	platinum iridium	dumet	dumet	tinned copper-clad steel
50,8 mm [2.00 in]	9,6 mm [0.375 in]	31,8 mm [1.25 in]	50,8 mm [2.00 in]	28,6 mm [1.125 in]
hermetically sealed in glass, enhanced reliability and stability, weldable/solderable dumet leads	hermetically sealed in glass, interchangeability, enhanced sensitivity and reliability, small size	hermetically sealed in glass, interchangeability, enhanced sensitivity and reliability, minia- ture size	interchangeability; enhanced sensitivity, reliability, and stability; miniature size	enhanced temperature capability, uniform dimensions, tape and reel



175	192	194	197	ICL
EIA 1206 surface mount, end-banded	uni-curve with bare leads and epoxy	uni-curve with insulated leads and epoxy	chip with bare leads and epoxy	in-rush current limiter
-60 °C to 125 °C [-76 °F to 257 °F]	-60 °C to 150 °C [-76 °F to 302 °F]	-60 °C to 150 °C [-76 °F to 302 °F]	-60 °C to 125 °C [-76 °F to 257 °F]	-40 °C to 185 °C [-40 °F to 365 °F]
3.5 mW/°C	0.75 mW/°C	0.75 mW/°C	0.75 mW/°C	12.7 mW/°C to 23 mW/°C
10.0 s	15.0 s	15.0 s	15.0 s	32 s to 93 s
5 kOhm, 10 kOhm, 5 kOhm, 100 k Ohm, 440 kOhm	500 Ohm, 1 kOhm, 2,252 Ohm, 3 kOhm, 5 kOhm, 10 kOhm, 30 kOhm, 50 k Ohm, 100 kOhm	2,252 Ohm, 3 kOhm, 5 kOhm, 10 kOhm, 30 kOhm, 100 kOhm, 50 kOhm	300 Ohm, 1 kOhm, 3 kOhm, 5 kOhm, 10 kOhm, 50 kOhm, 100 kOhm	0.5 Ohm to 220 Ohm ±20 %
EIA 1206 SMD	2,413 mm [0.095 in] <sup>1</sup>	2,413 mm [0.095 in] <sup>1</sup>	2,413 mm [0.095 in] <sup>1</sup>	9.5 mm [0.374 in] to 32 mm [1.26 in]
solder-plated nickel barrier	tinned copper, alloy 180	solid nickel, Teflon <sup>®</sup> insulated	tinned copper, alloy 180	tinned copper
-	38,1 mm [1.50 in]	38,1 mm [1.50 in]	38,1 mm [1.50 in]	[25,4 mm] 1 in min.
surface mount tape and reel, glass-coated ceramic, 1206 EIA package	resistance temperature curve interchangeability, enhanced stability and life, epoxy coated	resistance temperature curve interchangeability, enhanced stability and life, epoxy coated, teflon-coated leads	rapid response times, epoxy coated	enhanced reliability, special high- temp protective coating, rugged design, pc-board mountable

<sup>1</sup>On a 2252 and 3000 Ohm part, diameter can be up to 3,05 mm [0.120 in] max.

# Thermostats | Precision Thermostats

Provide either temperature control or over-temperature protection. Hermetic/non-hermetic devices available. Custom packaged for application flexibility and designed to operate in extreme environmental conditions. Potential applications include computers, medical electronics, power supplies, industrial controls, test equipment, and aerospace.



Series	3000 Custom Packaged	3100 Hermetic	3100U REDI TEMP
<b>Description</b>	custom packaged	hermetic	UL-approved hermetic
<b>Amperage</b>	dependent on the internal device	2.0 A/1.0 A/5.0 A	3.0 A resistive max.
<b>Housing material</b>	stainless steel or brass	steel housing hermetically sealed with glass-to-metal seal at terminal junction	steel housing hermetically sealed with glass-to-metal seal at terminal junction
<b>Operating temperature range</b>	-29 °C to 260 °C [-20 °F to 500 °F]	-29 °C to 260 °C [-20 °F to 500 °F]	-29 °C to 260 °C [-20 °F to 500 °F]
<b>Environmental exposure range</b>	-62 °C to 288 °C [-80 °F to 550 °F]	-62 °C to 288 °C [-80 °F to 550 °F]	-62 °C to 288 °C [-80 °F to 550 °F]
<b>Dielectric strength</b>	MIL-STD-202, Method 301; 1250 Vac 60 Hz - terminal to case	MIL-STD-202, Method 301; 1250 Vac 60 Hz - terminal to case	MIL-STD-202, Method 301; 1250 Vac 60 Hz - terminal to case
<b>Insulation resistance</b>	MIL-STD-202, Method 302; 50 MOhm min. terminal to case	MIL-STD-202, Method 302; Cond. B - 50 MOhm - 500 Vdc applied	MIL-STD-202, Method 302; Cond. B - 50 MOhm - 500 Vdc applied
<b>Contact resistance</b>	MIL-STD-202, Method 307; 0.050 Ohm	MIL-STD-202, Method 307; 0.050 Ohm	MIL-STD-202, Method 307; 0.050 Ohm max.
<b>Hermetic seal</b>	MIL-STD-202, Method 112; Cond. A, $1 \times 10^{-5}$ atm cc/s	MIL-STD-202, Method 112; Cond. $1 \times 10^{-5}$ atm cc/s	MIL-STD-202, Method 112; Cond. $1 \times 10^{-5}$ atm cc/s
<b>Moisture resistance</b>	MIL-STD-202, Method 106	MIL-STD-202, Method 106	MIL-STD-202, Method 106
<b>Approvals</b>	-	-	UL/CSA
<b>Features</b>	custom packaging, hermetically sealed, tight tolerances and differentials, hermetic connector or potted construction	hermetically sealed, tight tolerances and differentials, pre-set and tamper proof, SPST contacts	hermetically sealed, tight tolerances and differentials, pre-set and tamper proof, SPST contacts





**3106 Low-level Hermetic**

**3150 Low Silhouette Hermetic**

**3156 Low-level Silhouette Hermetic**

**3001/3004 Series Non-Hermetic**

low-level hermetic

low silhouette hermetic

low level, silhouette hermetic

low profile silhouette

100 mA/500 mA

2.0 A/1.0 A

100 mA/500 mA

1 A to 3 A (3001, 3001U Series)\*  
2 A to 4 A (3004 Series)\*

steel housing hermetically sealed with glass-to-metal seal at terminal junction

steel housing hermetically sealed with glass-to-metal seal at terminal junction

steel housing hermetically sealed with glass-to-metal seal at terminal junction

phenolic base with metal closure

-29 °C to 204 °C  
[-20 °F to 400 °F]

-29 °C to 177 °C  
[-20 °F to 350 °F]

-29 °C to 204 °C  
[-20 °F to 400 °F]

-18 °C to 168 °C  
[0 °F to 335 °F]

-62 °C to 260 °C  
[-80 °F to 500 °F]

-54 °C to 260 °C  
[-65 °F to 500 °F]

-62 °C to 260 °C  
[-80 °F to 500 °F]

-18 °C to 177 °C  
[0 °F to 350 °F]

MIL-STD-202, Method 301;  
1250 Vac 60 Hz - terminal to case

MIL-STD-202, Method 301;  
750 Vac 60 Hz - terminal to case

MIL-STD-202, Method 301;  
1250 Vac 60 Hz - terminal to case

MIL-STD-202, Method 301; 1500 Vac 60 Hz terminal to case (2000 Vac 3004)

MIL-STD-202, Method 302;  
Cond. B - 50 MOhm - 500 Vdc applied

MIL-STD-202, Method 302;  
Cond. B - 50 MOhm - 500 Vdc applied

MIL-STD-202, Method 302;  
Cond. B - 500 MOhm - 500 Vdc applied

MIL-STD-202, Method 302; Cond. B  
500 MW, 500 Vdc applied

MIL-STD-202, Method 307; 0.025 Ohm

MIL-STD-202, Method 307; 0.050 Ohm

MIL-STD-202, Method 307; 0.050 Ohm

MIL-STD-202, Method 307; 50 mW

MIL-STD-202, Method 112;  
Cond. 1 x 10<sup>-5</sup> atm cc/s

MIL-STD-202, Method 112;  
Cond. 1 x 10<sup>-5</sup> atm cc/s

MIL-STD-202, Method 112;  
Cond. 1 x 10<sup>-5</sup>

-

MIL-STD-202, Method 106

MIL-STD-202, Method 106

MIL-STD-202, Method 106

-

-

-

-

UL/CSA

gold-alloy contacts, hermetically sealed, tight tolerances and differentials, pre-set and tamper proof, SPST contacts

hermetically sealed, tight tolerances and differentials, pre-set and tamper proof, SPST contacts

gold-alloy contacts, hermetically sealed, tight tolerances and differentials, pre-set and tamper proof, SPST contacts

tight tolerances and differentials, low profile, available to open or close on temperature rise, dust-proof phenolic base, SPST contacts

# Thermostats | High Reliability Thermostats

Provide either temperature control or over-temperature protection. Hermetic/non-hermetic devices available. Manufactured to meet stringent requirements of military and aerospace industries for dielectric strength, moisture, resistance, vibration, and shock. Many potential applications in aerospace and defense applications.



Series	3200 Aerospace	3153 Low Silhouette Hermetic
Description	aerospace	low silhouette hermetic
Amperage	5.0 A resistive	2.0 A resistive
Housing material	steel housing hermetically sealed with glass-to-metal seal at terminal junction	steel housing hermetically sealed with glass-to-metal seal at terminal junction
Operating temperature range	-51 °C to 163 °C [-60 °F to 325 °F]	-29 °C to 177 °C [-20 °F to 350 °F]
Environmental exposure range	-65 °C to 177 °C [-85 °F to 350 °F]	-65 °C to 260 °C [-85 °F to 500 °F]
Dielectric strength	MIL-STD-202, Method 301; 1250 Vac	MIL-STD-202, Method 301; 1250 Vac 60 Hz - terminal to case
Insulation resistance	MIL-STD-202, Method 302; 500 MOhm	MIL-STD-202, Method 302; 500 MOhm
Contact resistance	MIL-STD-202, Method 307; 0.025 Ohm max.	MIL-STD-202, Method 307; 0.050 Ohm max.
Hermetic seal	MIL-STD-202, Method 112; Cond. C	MIL-STD-202, Method 112; Cond. C
Moisture resistance	MIL-STD-202, Method 106	MIL-STD-202, Method 106
Shock	MIL-STD-202, Method 213; 750 G	MIL-STD-202, Method 213; 100 G
Vibration	MIL-STD-202, Method 204; 30 G; MIL-STD-202, Method 214; 50 G	MIL-STD-202, Method 204; 20 G
Thermal shock	MIL-STD-202, Method 107; Cond. B	MIL-STD-202, Method 107; Cond. B
Salt spray	MIL-STD-202, Method 101; Cond. B	MIL-STD-202, Method 101; Cond. B
Acceleration	MIL-STD-202, Method 212; 20 G	-
Approvals	MIL-S-24236/NASA S-311-641/01	MIL-S-24236
Features	NASA certified, space qualified, hermetically sealed, tight tolerances and differentials, pre-set and tamper proof, SPST contacts	hermetically sealed, tight tolerances and differentials, pre-set and tamper proof, SPST contacts

\* Based on 240 Vac and life-cycle dependent. Call for further details.





### 3MS1 QPL

### 3500

### 3800 Industrial-Grade

### 3600/3601 Custom-Packaged

military	military	severe-duty applications	PCB mountable TO-5
5 A resistive	5 A resistive	7 A resistive	1 A resistive
steel housing with glass-to-metal seal at terminal junction	steel housing with glass-to-metal seal at terminal junction	steel housing with glass-to-metal seal at terminal junction	nickel
-46 °C to 190 °C [-50 °F to 375 °F]	-51 °C to 204 °C [-60 °F to 400 °F]	-29 °C to 260 °C [-20 °F to 500 °F]	40° C to 120 °C [104 °F to 248 °F]
-65 °C to 260 °C [-85 °F to 500 °F]	-65 °C to 260 °C [-85 °F to 500 °F]	-62 °C to 260 °C [-80 °F to 500 °F]	-50 °C to 150 °C [-58 °F to 302 °F]
MIL-STD-202, Method 301; 1250 Vac	MIL-STD-202, Method 301; 1250 Vac	MIL-STD-202, Method 301; 1250 Vac 60 Hz terminal to case	500 Vac 60 Hz for one second, terminal to case
MIL-STD-202, Method 302; 500 MW	MIL-STD-202, Method 302; 500 MW	MIL-STD-202, Method 302, Cond. B; 50 MW min. terminal to case	20 mW at 500 Vdc
MIL-STD-202, Method 307; 0.050 W max.	MIL-STD-202, Method 307; 0.050 W max.	MIL-STD-202, Method 307; 50 mW max.	60 mW
MIL-STD-202, Method 112; Cond. C	MIL-STD-202, Method 112; Cond. C	MIL-STD-202, Method 112; Cond. A 1x10 <sup>-5</sup> atm cc/s	1x10 <sup>-3</sup> atm cc/s
MIL-STD-202, Method 106	MIL-STD-202, Method 106	MIL-STD-202, Method 106	-
MIL-STD-202, Method 213; 100 G	MIL-STD-202, Method 213; 400 G	MIL-STD-202, Method 213; 400 G	-
MIL-STD-202, Method 204; 20 G	MIL-STD-202, Method 204; 20 G	MIL-STD-202, Method 204; 20 G	-
MIL-STD-202, Method 107; Cond. B	MIL-STD-202, Method 107; Cond. B	-	-
MIL-STD-202, Method 101; Cond. B	MIL-STD-202, Method 101; Cond. B	-	-
MIL-STD-202, Method 212; 20 G	MIL-STD-202, Method 212; 20 G	-	-
qualified to MIL-S-24236; QPL listed	meets or exceeds the requirements of MIL-S-24236	-	-
each unit is 100% thermally and mechanically inspected, available to open or close on temperature rise, calibrations preset at factory, SPST contacts	tight tolerances and differentials, hermetically sealed, designed specifically for military and commercial aircraft, each unit is 100% thermally and mechanically inspected	easily customized, used where high levels of vibration and mechanical shock are common	gold contacts, available to open or close on temperature rise, specifically designed for PCBs, flexible circuitry, sophisticated time-based circuits, wave solderable

# Thermostats | Commercial Thermostats

Provide either temperature control or over-temperature protection. Automatic or manual reset options. Phenolic or ceramic housings. Potential applications include HVAC, computers, medical equipment, appliances, automotive, office automation, fireplaces, and water heaters.



Series	2450A	2450CM	2450CMG
Use	heat detection	high current	low voltage
Reset type	automatic	manual	manual
Housing material	phenolic, epoxy seal cap and terminals	ceramic	ceramic
Functional property	open or close on rise	open on rise	open on rise
Amperage	3 A	15 A/10 A	0.5 A
Operating temperature range	47 °C to 107 °C [117 °F to 225 °F]	52 °C to 232 °C [125 °F to 450 °F]	52 °C to 232 °C [125 °F to 450 °F]
Environmental exposure range	0 °C to 150 °C [32 °F to 302 °F]	10 °C to 260 °C [50 °F to 500 °F]	10 °C to 260 °C [50 °F to 500 °F]
Contacts	WE-1 gold alloy cross point	silver/nickel alloy	WE-1 gold alloy cross point
Approvals	UL	UL, CSA, VDE	UL, CSA, VDE
Features	gold-alloy contacts; epoxy-sealed cap and terminals	rivet sleeve construction	gold-alloy contacts; rivet sleeve construction



Series	2450RG	2455R	2455RA
Use	low voltage	high current	heat detection
Reset type	automatic	automatic	automatic
Housing material	phenolic	phenolic	phenolic, epoxy seal cap and terminals
Functional property	open or close on rise	open or close on rise	close on rise
Amperage	0.5 A	15 A/10 A	3 A
Operating temperature range	0 °C to 150 °C [32 °F to 302 °F]	0 °C to 150 °C [32 °F to 302 °F]	47 °C to 107 °C [117 °F to 225 °F]
Environmental exposure range	-18 °C to 177 °C [0 °F to 350 °F]	-18 °C to 177 °C [0 °F to 350 °F]	0 °C to 150 °C [32 °F to 302 °F]
Contacts	WE-1 gold alloy cross point	silver/nickel alloy	WE-1 gold alloy cross point
Approvals	UL, CSA	UL, CSA, VDE	UL
Features	gold-alloy contacts; rivet sleeve construction	rivet sleeve construction; high profile and current	gold-alloy contacts; epoxy-sealed cap





<b>2450HR</b>	<b>2450HRG</b>	<b>2450R</b>	<b>2450RC</b>	<b>2450RCG</b>
high current	low current	high current	high current	low voltage
automatic	automatic	automatic	automatic	automatic
phenolic	phenolic	phenolic	ceramic	ceramic
open or close on rise	open on rise	open or close on rise	open or close on rise	open or close on rise
15 A/10 A	0.5 A	15 A/10 A	15 A/10 A	0.5 A
0 °C to 150 °C [32 °F to 302 °F]	0 °C to 150 °C [32 °F to 302 °F]	0 °C to 150 °C [32 °F to 302 °F]	0 °C to 260 °C [32 °F to 500 °F]	0 °C to 260 °C [32 °F to 500 °F]
-18 °C to 177 °C [0 °F to 350 °F]	-18 °C to 177 °C [0 °F to 350 °F]	-18 °C to 177 °C [0 °F to 350 °F]	-20 °C to 287 °C [0 °F to 550 °F]	-20 °C to 287 °C [0 °F to 550 °F]
silver/nickel alloy	WE-1 gold alloy cross point	silver/nickel alloy	silver/nickel alloy	WE-1 gold alloy cross point
UL, CSA	UL, CSA	UL, CSA	UL, CSA, VDE	UL, CSA, VDE
rivet sleeve construction; factory calibrated	gold-alloy contacts; rivet sleeve construction; factory calibrated	rivet sleeve construction; low profile	rivet sleeve construction; low profile	gold-alloy contacts; rivet sleeve construction; low profile



<b>2455RVB</b>	<b>2455RC</b>	<b>2455RG</b>	<b>2455RM</b>
high current	high current	low voltage	high current
automatic	automatic	automatic	manual
ceramic, epoxy overmold	ceramic	phenolic	phenolic
open or close on rise	open on rise	open or close on rise	open on rise
15 A/10 A	15 A/10 A	0.5 A	15 A/10 A
-12 °C to 105 °C [10 °F to 250 °F]	0 °C to 260 °C [32 °F to 500 °F]	0 °C to 150 °C [32 °F to 302 °F]	0 °C to 150 °C [32 °F to 302 °F] (inclusive)
-18 °C to 121 °C [0 °F to 250 °F]	-20 °C to 287 °C [0 °F to 550 °F]	-18 °C to 177 °C [0 °F to 350 °F]	-18 °C to 260 °C [0 °F to 500 °F]
silver/nickel alloy	silver/nickel alloy	WE-1 gold alloy cross point	silver/nickel alloy
UL, CSA, VDE	UL, CSA, VDE	UL, CSA, VDE	UL, CSA, VDE
epoxy overmolded; rivet-sleeve construction; dust-free housing; factory calibrated	rivet sleeve construction; high profile	gold-alloy contacts; rivet sleeve construction; high profile; factory calibrated	rivet sleeve construction; factory calibrated



# Heaters | Flexible Heaters

Flat or custom geometry configurations with single, multiple or variable Watt densities provide stable, uniform, and customized heat output for unique application needs. May be bonded to other system components or combined with other thermal products to form custom-engineered heating systems. Potential applications include medical, HVAC/R, and LCD displays,



<b>Series</b>	<b>78000</b>
<b>Description</b>	transparent
<b>Maximum power</b>	0.8 W/cm <sup>2</sup> [5 W/in <sup>2</sup> ]
<b>Operating/storage temperature range</b>	-40 °C to 85 °C [-40 °F to 185 °F]
<b>Size constraints</b>	0,60 m x 0,43 m [22 in x 17 in]
<b>Geometry</b>	specific to customer requirements within size constraints
<b>Heater trace pattern</b>	continuous layer of ITO (Indium Tin Oxide) across entire surface
<b>Construction</b>	very thin layer of ITO electrically sputtered on PET polyester film; electrical connection made via silver ink or carbon bus bars laid on top of the ITO; wire connections are made via ring terminals eyeleted to the silver or carbon bus bars or flexible tail/connector
<b>Standard wire</b>	<ul style="list-style-type: none"> <li>• UL 1180 Teflon*</li> <li>• gauge per customer request</li> <li>• otherwise selected for max. heater current draw</li> </ul>
<b>PSA</b>	yes
<b>Approvals</b>	-
<b>Features</b>	no wires in clear view area, optical grade, thin film polyester, low power consumption



### 3400

### 3100

### 3200

Kapton<sup>®</sup> insulated or Kapton<sup>®</sup> insulated high temperature

silicon wire-wound

silicon chemically etched

6.2 W/cm<sup>2</sup> [40 W/in<sup>2</sup>]

6.2 W/cm<sup>2</sup> [40 W/in<sup>2</sup>]

6.2 W/cm<sup>2</sup> [40 W/in<sup>2</sup>]

Kapton<sup>®</sup> insulated: 177 °C [350 °F] max.

250 °C [482 °F] max.  
200 °C [392 °F] max. (UL)

250 °C [482 °F] max.  
200 °C [392 °F] max. (UL)

0,61 m x 0,61 m [24 in x 24 in]

none, virtually any size and shape

0,61 m x 0,61 m [24 in x 24 in]

specific to customer requirements within size constraints

specific to customer requirements

specific to customer requirements within size constraints

specific to customer requirements

specific to customer requirements

specific to customer requirements

contain etched, resistive foil encased between two layers of Kapton<sup>®</sup>; Kapton<sup>®</sup> insulated uses acrylic, thermoset bonding adhesive

contains resistive wire encased between two layers of fiberglass-supported silicone rubber; all bonding adhesives are uncured silicone rubber; cured under pressure and temperature during manufacturing

contains resistive foil traces encased between two layers of fiberglass-supported silicone rubber bonded together using temperature and pressure; heater trace patterns generated similar to processes used in pc-board design and manufacture

- UL 1180 Teflon<sup>®</sup>
- gauge per customer request
- otherwise selected for max. heater current draw

- UL 1180 Teflon<sup>®</sup>
- gauge per customer request
- otherwise selected for max. heater current draw

- UL 1180 Teflon<sup>®</sup>
- gauge per customer request
- otherwise selected for max. heater current draw

yes

yes

yes

UL, CSA

UL, CSA, TUV

UL, CSA, TUV

low out gassing, variety of geometries, high dielectric strength with minimal thickness

virtually any size or shape, multi-strand resistance wires

multiple watt densities or varying trace geometries; flat, molded-to-shape, spiral wrap

# Humidity Sensors | Honeywell Humidicon™

Digital output-type relative humidity and temperature sensor combined in same package. Offer a range of accuracies from  $\pm 1.7$  %RH typ. to  $\pm 4.5$  %RH typ., wide operating temperature ranges, and low hysteresis. Potential applications include HVAC/R, air compressors, weather stations, telecom cabinets, respiratory therapy, and incubators/microenvironments.



Series	Honeywell Humidicon™ HIH6000	Honeywell Humidicon™ HIH6100
<b>Description</b>	digital output-type relative humidity (RH) and temperature sensor combined in same package	digital output-type relative humidity (RH) and temperature sensor combined in same package
<b>Humidity accuracy</b>	$\pm 4.5$ %RH typ.	$\pm 4.0$ %RH typ.
<b>Temperature accuracy</b>	$\pm 1.0$ °C typ.	$\pm 1.0$ °C max.
<b>Operating temperature range</b>	-40 °C to 100 °C [-40 °F to 212 °F]	-25 °C to 85 °C [-13 °F to 185 °F]
<b>Hysteresis</b>	-	-
<b>Output</b>	I <sup>2</sup> C or SPI	I <sup>2</sup> C or SPI
<b>Package type</b>	SIP 4 Pin or SOIC-8 SMD	SIP 4 Pin or SOIC-8 SMD
<b>Response time</b>	6 s typ. in 20 l/min minimum airflow	6 s typ. in 20 l/min minimum airflow
<b>Long-term stability</b>	$\pm 1.2$ %RH for five years	$\pm 1.2$ %RH for five years
<b>Operating humidity range</b>	0 %RH to 100 %RH	0 %RH to 100 %RH
<b>Compensated humidity range</b>	20 %RH to 80 %RH	10 %RH to 90 %RH
<b>Moisture/dust filter</b>	yes (some listings)	yes (some listings)
<b>Voltage supply</b>	3.3 Vdc typ.	3.3 Vdc typ.
<b>Features</b>	industry-leading long term stability, reliability, and relative humidity accuracy; lowest total cost solution; energy efficient; available with or without hydrophobic filter and condensation-resistance; optional one or two %RH level alarm outputs	industry-leading long term stability, reliability, and relative humidity accuracy; lowest total cost solution; energy efficient; available with or without hydrophobic filter and condensation-resistance; optional one or two %RH level alarm outputs





### Honeywell HumidIcon™ HIH7000

### Honeywell HumidIcon™ HIH8000

### Honeywell HumidIcon™ HIH9000

digital output-type relative humidity (RH) and temperature sensor combined in same package

digital output-type relative humidity (RH) and temperature sensor combined in same package

digital output-type relative humidity (RH) and temperature sensor combined in same package

±3.0 %RH typ.

±2.0 %RH typ.

±1.7 %RH typ.

±1.0 °C typ.

±0.8 °C typ.

±0.6 °C typ.

-40 °C to 100 °C [-40 °F to 212 °F]

-40 °C to 125 °C [-40 °F to 257 °F]

-40 °C to 125 °C [-40 °F to 257 °F]

-

-

±1.0 %RH

I<sup>2</sup>C or SPI

I<sup>2</sup>C or SPI

I<sup>2</sup>C or SPI

SIP 4 Pin or SOIC-8 SMD

SIP 4 Pin or SOIC-8 SMD

SIP 4 Pin or SOIC-8 SMD

6 s typ. in 20 l/min minimum airflow

6 s typ. in 20 l/min minimum airflow

8 s max., 1/e slow moving air

±1.2 %RH for five years

±1.2 %RH for five years

±1.2 %RH for five years

0 %RH to 100 %RH

0 %RH to 100 %RH

0 %RH to 100 %RH

20 %RH to 80 %RH

10 %RH to 90 %RH

10 %RH to 90 %RH

yes (some listings)

yes (some listings)

yes (some listings)

3.3 Vdc typ.

3.3 Vdc typ.

3.3 Vdc typ.

industry-leading long term stability, reliability, and relative humidity accuracy; lowest total cost solution; energy efficient; available with or without hydrophobic filter and condensation-resistance; optional one or two %RH level alarm outputs

industry-leading long term stability, reliability, and relative humidity accuracy; lowest total cost solution; energy efficient; available with or without hydrophobic filter and condensation-resistance; optional one or two %RH level alarm outputs

industry-leading long term stability, reliability, and relative humidity accuracy; lowest total cost solution; energy efficient; available with or without hydrophobic filter and condensation-resistance; optional one or two %RH level alarm outputs

# Humidity Sensors | Humidity

Configured with integrated circuitry to provide on-chip signal conditioning. Covered, filtered or unfiltered integrated circuit available. Potential applications include refrigeration, drying, meteorology, battery-powered systems, OEM assemblies, HVAC/R, office automation, and medical.



Series	HIH-5030/5031	HIH-4000
Description	covered, filtered or unfiltered integrated circuit	integrated circuit
Output	analog voltage	analog voltage
Package type	surface mount	SIP (2,54 mm [0.100 in] or 1,27 mm [0.050 in] lead pitch)
Response time	5 s typ. 1/e in slow moving air	5 s typ. 1/e in slow moving air
Long-term stability	±1.2 %RH for five years; ±0.25 %RH each year	±1.2 %RH for five years; ±0.25 %RH each year
Operating temperature range	-40 °C to 85 °C [-40 °F to 185 °F]	-40 °C to 85 °C [-40 °F to 185 °F]
Operating humidity range	0 %RH to 100 %RH	0 %RH to 100 %RH
Moisture/dust filter	yes (some listings)	no
Cover/case	yes	no
Calibration and data print out	no	yes (some listings)
Accuracy	±3 %RH	±3.5 %RH
Voltage supply	2.7 Vdc to 5.5 Vdc	4 Vdc to 5.8 Vdc
Features	near linear voltage output vs. %RH, laser trimmed, molded thermoset plastic housing, chemically resistant, tape and reel	near linear voltage output vs. %RH; laser trimmed, molded thermoset plastic housing, chemically resistant






HIH-4010/4020/4021	HIH-4030/4031	HIH-4602-A, C	HIH-4602-L
covered or uncovered, filtered or unfiltered integrated circuit	covered, filtered or unfiltered integrated circuit	monolithic IC with integral thermistor or precision RTD	integrated circuit
analog voltage	analog voltage	analog voltage (for humidity), resistance (for temperature)	analog voltage
SIP (2,54 mm [0.100 in] or 1,27 mm [0.050 in] lead pitch)	surface mount	TO-5 can	slotted TO-5 can
5 s typ. 1/e in slow moving air	5 s typ. 1/e in slow moving air	50 s typ. 1/e in slow moving air	30 s typ. 1/e in slow moving air
±1.2%RH for five years; ±0.25%RH each year	±1.2%RH for five years	±1.2%RH for five years	±1.2%RH for five years
-40 °C to 85 °C [-40 °F to 185 °F]	-40 °C to 85 °C [-40 °F to 185 °F]	-40 °C to 85 °C [-40 °F to 185 °F]	-40 °C to 85 °C [-40 °F to 185 °F]
0 %RH to 100 %RH	0 %RH to 100 %RH	0 %RH to 100 %RH	0 %RH to 100 %RH
yes (some listings)	yes (some listings)	yes	no
yes (some listings)	yes	yes	yes
yes (some listings)	yes (some listings)	yes (some listings)	yes (some listings)
±3.5 %RH	±3.5 %RH	±3.5 %RH	±3.5 %RH
4 Vdc to 5.8 Vdc	4 Vdc to 5.8 Vdc	4 Vdc to 5.8 Vdc	4 Vdc to 5.8 Vdc
near linear voltage output vs. %RH, laser trimmed, molded thermoset plastic housing, chemically resistant	near linear voltage output vs. %RH, laser trimmed, molded thermoset plastic housing, chemically resistant, tape and reel	humidity and temperature sensing in one package, near linear voltage output vs. %RH, laser trimmed, chemically resistant, built-in static protection	near linear voltage output vs %RH, laser-trimmed, chemically resistant, enhanced accuracy, fast response



### Humidity Sensors Used in Wall Mount Transducers (Asia-Pacific Region Only)

### SCT Series

<b>Description</b>	humidity and temperature wall mount transducer using Honeywell HumidCon™ humidity/temperature sensor
<b>Humidity measurement range</b>	0 % RH to 100 %RH non-condensation
<b>Humidity accuracy</b>	±4 %RH (25 °C [77 °F], 10 %RH to 90 %RH) ±5 %RH (5 °C to 50 °C [41 °F to 122 °F], 10 %RH to 90 %RH)
<b>Temperature measurement range</b>	-5 °C to 55 °C [13 °F to 131 °F], 0 °C to 70 °C [32 °F to 158 °F], -25 °C to 60 °C [-13 °F to 140 °F]
<b>Temperature accuracy</b>	±0.5 °C, ±0.3 °C, ±0.2 °C, or ±1 °C (depending on type of internal sensor used)
<b>Long term drift</b>	±0.05 %RH typ. and ±1.2 %RH max. at 50 %RH for 5 years stability
<b>Operating temperature range</b>	-20 °C to 70 °C [-4 °F to 158 °F] (units with LDC display) -25 °C to 85 °C [-13 °F to 185 °F] (units without LDC display)
<b>Voltage supply</b>	24 Vdc ±10%, 50 mA max. (units with 4 mA to 20 mA output) 18 Vdc to 40 Vdc, 15 mA max. or 24 Vac ±15%, 50/60 Hz, 50 mA max (units with 0 V to 10 V output)



# As one of the world's leading providers of sensors and switches, Honeywell understands and meets the requirements of a wide variety of industries.

Honeywell Sensing and Control is a global leader in providing reliable, cost-effective sensing and switching solutions for our customers' applications. We serve thousands of customers in four core industry segments: industrial, medical equipment, transportation, and aerospace/military products.

## **Aerospace and Defense**

Aerospace applications are among the most demanding for any type of product. Rigorous FAA requirements, extreme environments (temperature, shock, vibration, the need for hermetic sealing), and the ability to customize devices are just a few of the parameters often required of sensors and switches in these applications. Aerospace customers typically value speed in prototyping and development, and Honeywell's vertically integrated, AS9100-approved manufacturing locations enhance our ability to produce devices in a wide variety of packages. The precision output of our products helps reduce risk and cost in key applications while also minimizing the need for unscheduled maintenance.

Honeywell's in-depth aerospace engineering experience allows us to work with customers in the design and development of products that best meet the specified requirements of their individual applications. Making products simple to install makes the job easier every step of the way. And, the odds are that Honeywell is already on the list of trusted suppliers for many

aerospace companies, underscoring the decades of experience we bring to this field.

Honeywell products for this industry (many of them PMA-certified) include force sensors, load cells, potentiometers, pilot controls, pressure sensors, pressure switches, resolvers, sensor/actuator assemblies for systems ranging from aerostructures to fuel control to flight surfaces, speed sensors, temperature probes, thermostats, torque sensors, y-guides for cargo systems, MICRO SWITCH™ sealed and high-accuracy switches, MICRO SWITCH™ pushbutton switches, and MICRO SWITCH™ rocker and toggle switches.

## **Medical**

Medical applications typically require sensors and switches that are highly stable and extremely reliable to enhance patient safety and comfort. Stability is often essential to minimize long term drift, reduce the need for recalibration, and improve ease of use for medical equipment operators. Reliability enhances patient safety in life-critical applications, reduces downtime, and improves test throughput in applications such as clinical diagnostics. The product needs to be



easy to use and easy to design into a system, so Honeywell's extensive customization and built-in calibration/amplification capabilities are strong benefits. Confidence in Honeywell's product performance, reliability, and availability provide peace of mind for medical equipment manufacturers who choose Honeywell.

Honeywell offerings for this industry include airflow sensors, board mount and heavy duty pressure sensors/transducers, Hall-effect magnetic position sensors, humidity sensors, flexible heaters, force sensors, thermostats, infrared sensors, pressure and vacuum switches, potentiometers and encoders, MICRO SWITCH™ pushbutton, rocker, and toggle switches, and hour meters.

## Industrial

The industrial arena can be a rough one. From high-speed food processing to high-force stamping applications, reliable and cost-effective sensors and switches often help minimize repair costs, maximize system life, and reduce overall system expense. Durability can mean the difference between smooth-running processes and expensive downtime. Accurate, repeatable sensor or switch output can reduce the need for calibration once the device is applied. Because of the wide variety of potential applications, Honeywell's ability to deliver a customized product that can meet virtually any size, weight, and power requirement – as well as any packaging stipulations for tough, harsh environments – often makes it easy to incorporate and use our devices. Safety is another important consideration for industrial users, and our products meet a wide variety of regulatory safety requirements.

Honeywell's industrial product line includes airflow sensors, current sensors, humidity sensors, fiber-optic and liquid-level sensors, linear position sensors, oxygen sensors,



pressure sensors, potentiometers and encoders, speed sensors, temperature probes, ultrasonic sensors, thermostats, flexible heaters, SMART position sensors, board mount and heavy duty pressure sensors/transducers, force sensors, push-pull switches, and MICRO SWITCH™ basic switches, hazardous area switches, safety switches, key and rotary switches, limit switches, sealed and high-accuracy switches, pushbutton, rocker, toggle switches, and relays.

## Transportation




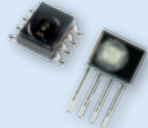




Getting from Point A to Point B is often challenging for end-customers of transportation providers – Honeywell aims to make the trip easier with highly reliable, cost-effective switches and sensors. Our products are designed to support rigorous engine requirements, and their efficiency can also help optimize engine performance. Customization is often required to allow a switch or sensor to be mounted in tight or challenging environments including vibration, temperature extremes, and road contamination. The durability of Honeywell products enhances system reliability, which is also boosted by the stable, accurate output of our devices. All of these capabilities allow demanding customers to rely on Honeywell's many years of experience in the transportation industry.

Honeywell products for transportation applications include Hall-effect rotary position sensors, inertial measurement units, infrared sensors, keyless entry sensors, magnetic position sensors, pressure sensors, speed and direction sensors, ultrasonic sensors, thermostats, temperature probes, SMART position sensors, and MICRO SWITCH™ pushbutton, rocker, and toggle switches.











## SENSORS

	<p><b>Thermostats:</b> Commercial and precision snap-action. Automatic or manual reset options, phenolic or ceramic housings.  <b>May be used in:</b> Telecommunications • Battery Heater Controls • Computers • Copy Machines • Fax Machines • Food Service • Food Carts • Small and Major Appliances • Heat and Smoke Detectors • HVAC Equipment</p>		<p><b>Pressure transducers – heavy duty:</b> Provide a complete amplified and compensated pressure measurement solution. Choice of ports, connectors, outputs and pressure ranges, engineered to be resistant to a wide variety of media for use in most harsh environments.  <b>May be used in:</b> Industrial HVAC/R and Air Compressors • General System and Factory Automation Pump, Valve and Fluid Pressure • Transportation (Heavy Equipment and Alternative Fuel Vehicles) System • Pneumatics • Hydraulics</p>
	<p><b>Magnetic sensors:</b> Digital and analog Hall-effect position ICs, magnetoresistive position ICs, Hall-effect vane and magnetic sensors.  <b>May be used in:</b> Speed and RPM Sensing • Motor/Fan Control • Magnetic Encoding • Disc Speed • Tape • Flow-Rate Sensing • Conveyors • Ignitions • Motion Control/Detection • Power/Position • Magnetic Code Reading • bration • Weight Sensing</p>		<p><b>Humidity sensors:</b> Digital, analog, and combined humidity/temperature sensing versions. Provide on-chip signal conditioning with accuracy capability to <math>\pm 1.7\%</math> RH. Stable, reliable, low-drift performance. Standardized, platform-based sensors.  <b>May be used in:</b> Medical • HVAC/R • Weather Stations • Air Compressors • Telecommunications • Grain Storage • Incubators</p>
	<p><b>Current sensors:</b> Accurate and fast response. Almost no thermal drift or offset with temperature. Adjustable linear, null balance, digital and linear.  <b>May be used in:</b> Variable Speed Drives • Overcurrent Protection • Power Supplies • Ground Fault Detectors • Robotics • Industrial Process Control • Wattmeters</p>		<p><b>Flexible heaters:</b> Flat or custom geometry configurations with single, multiple and variable watt densities. Stable, uniform heating. Can be bonded parts or combined in value-added assemblies.  <b>May be used in:</b> Medical • HVAC/R • LCD Displays • Power Generation • Telecommunication</p>
	<p><b>Pressure sensors – board mount:</b> Full line of industrial-grade sensors: media-isolating design, multiple ports and outlets, and electrical configurations.  <b>May be used in:</b> Pneumatic Controls • Air Compressors • Process Monitoring • Hydraulic Controls • VAV Controls • Clogged Filter Detection • Presence/Absence of Flow • Transmissions</p>		<p><b>Temperature sensors:</b> Customized probes, thermistors and RTD sensors. Plastic/ceramic, miniaturized, surface-mount housings and printed circuit board terminations.  <b>May be used in:</b> Semi-Conductor Protection • Vending Machines • Power Generation • Hydraulic Systems • Medical • Thermal Management • Temperature Compensation</p>

## ELECTROMECHANICAL SWITCHES

	<p><b>MICRO SWITCH™ basic switches:</b> Snap-action precision switches. Compact. Lightweight. Designed for repeatability and enhanced life. Basic switches: large, standard, miniature, subminiature, hermetically sealed, water-tight and high-temperature versions.  <b>May be used in:</b> Vending Machines • Communication Equipment • HVAC • Appliances • Automotive • Electronic Gaming Machinery • Valve Controls • Irrigation Systems • Foot Switches • Pressure • Temperature Controls</p>		<p><b>MICRO SWITCH™ sealed and high accuracy switches:</b> Precision “snap action” mechanisms. Wide variety of actuators, terminations, circuitry configurations, electrical ratings, contact materials and operating characteristics.  <b>May be used in:</b> Landing Gear • Flap/Stabilizer Controls • Thrust Reversers • Space Vehicles • Armored Personnel Carriers • De-Icer Controls • Wingfold Actuators • Industrial Environments • Valves • Underwater</p>
	<p><b>MICRO SWITCH™ hazardous area switches:</b> Flame path designed to contain and cool escaping hot gases that could cause an explosion. MICRO SWITCH™ EX, BX, CX and LSX Series.  <b>May be used in:</b> Grain Elevators and Conveyors • Off-Shore Drilling • Petrochemical • Waste-Treatment Plants • Control Valves • Paint Booths • Hazardous Waste Handling Facilities</p>		<p><b>Key and rotary switches:</b> Environmentally sealed, 2-3-4 position switches. O-rings help keep dirt and moisture out and prolong life.  <b>May be used in:</b> All-Terrain Vehicles • Golf Carts • Snowmobiles • Scissor Lifts • Telehandlers • Construction and Marine Equipment • Skid Loaders • Agricultural Equipment • Material Handlers</p>
	<p><b>Pressure and vacuum switches:</b> Feature setpoints from 3 psi to 4500 psi. Rugged components have enhanced repeatability, flexibility and wide media capability. Uses diaphragm or quad seal/piston.  <b>May be used in:</b> Transmissions • Hydraulics • Brakes • Steering • Generators/Compressors • Dental Air • Embalming Equipment • Oxygen Concentrators • Air Cleaners • Fuel Filters • Pool Water Pressure</p>		<p><b>MICRO SWITCH™ toggle switches:</b> Hermetic and environmentally sealed options. Enhanced reliability. Center pin for ultimate stabilization. Available in many shapes, sizes and configurations.  <b>May be used in:</b> Aerial Lifts • Construction Equipment • Agriculture and Material-Handling Equipment • Factory-Floor Controls • Process Control • Medical Instrumentation • Test Instruments • Military/Commercial Aviation</p>

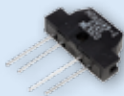
## LIMITLESS™ WIRELESS SOLUTIONS

	<p><b>Limitless™ switches and receivers:</b> Combines the best of MICRO SWITCH™ limit switches with commercial wireless technology. Beneficial for remote monitoring where wiring/maintenance is not physically possible or economically feasible. Used for position sensing and presence/absence detection.  <b>Limitless™ Operator Interface:</b> Adds a human interface device to the product-driven interfaces of Limitless™ switches and receivers. Choose and install a desired operator or utilize one of Honeywell's pushbuttons.  <b>May be used in:</b> Valve Position • Crane Boom/Jib/Skew Position • Lifts • Material Handling • Presses • Construction/Ag Machines • Conveyors • Industrial Environments • Remote/Temporary Equipment • Grain Diverters or Flaps • Door Position</p>
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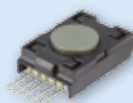
With more than 50,000 sensing, switching and control products ranging from snap-action, limit, toggle and pressure switches to position, speed, pressure and airflow sensors, Honeywell has one of the broadest sensing and switching portfolios available.



**Position sensors:** The **SMART position sensor** measures linear, angular or rotary position of a magnet attached to a moving object so that the object's position can be determined or controlled. Its simple, non-contact design eliminates mechanical failure mechanisms, reduces wear and tear, and improves reliability and durability.  
**May be used in:** Valve Position • Material Handling • Plastic Molding • Passenger Bus Level Position • Truck-Mounted Crane Outrigger Position • Aerial Work Lift Platform • Front Loader and Digger/Excavation Boom Position  
**Potentiometer sensors:** Measure linear, rotary position or displacement. Honeywell's proprietary conductive plastic delivers extensive temperature range and infinite resolution, and provides precision position measurement.  
**May be used in:** Robotic Motion Control • Marine Steering • In-Tank Level Sensing  
**Ultrasonic sensors:** Measure time delays between emitted and echo pulses, often accurately determining the sensor-to-target distance.  
**May be used in:** Level Measurement • Height and Thickness Sensing • Diameter Control



**Infrared sensors:** IREDS, sensors and assemblies for object presence, limit and motion sensing, position encoding and movement encoding. Variety of package styles, materials and terminations.  
**May be used in:** Printers/Copiers • Motion Control Systems • Metering • Data Storage Systems • Scanning • Automated Transaction • Drop Sensors • Non-Invasive Medical Equipment



**Force sensors:** Variety of package styles and various electrical interconnects including pre-wired connectors, printed circuit board mounting and surface mounting for flexibility.  
**May be used in:** Infusion and Syringe Pumps • Blood Pressure Equipment • Pump Pressure • Drug Delivery Systems • Occlusion Detection • Kidney Dialysis Machines



**Proximity sensors:** Designed to meet demanding temperature, vibration, shock and EMI/EMP interference requirements. Number of housing materials and termination styles.  
**May be used in:** Aircraft Landing Gear • Gun Turret Position Control • Door/Hatch Monitoring



**Speed sensors:** Measure speed, position and presence detection utilizing magneto-resistive, variable reluctance, and Hall-effect technologies.  
**May be used in:** Cam and Crankshafts • Transmissions • Fans • Pumps • Mixers • Rollers • Motors



**Airflow sensors:** Advanced microstructure technology. Sensitive and fast response to flow, amount/direction of air or other gas. Analog or digital output. Thin-film, thermally isolated bridge structure consists of a heater and temperature sensing elements.  
**May be used in:** HVAC • Respirators • Process Control • Oxygen Concentrators • Gas Metering • Chromatography • Leak Detection Equipment • Medical/Analytical Instrumentation • Ventilation Equipment



**Rotary position sensors:** Digital and analog Hall-effect, magneto-resistive and potentiometric devices and resolvers for sensing presence of a magnetic field or rotary position. Directly compatible with electronic circuits for application flexibility.  
**May be used in:** Audio and Lighting • Frequency • Temperature • Position • Medical/Instrumentation • Computer Peripherals • Manual Controls • Joysticks • Telecom • Welding • Heating • Aerospace



**MICRO SWITCH™ aerospace-grade pressure switches:** Lightweight, compact pressure switches. Meets military and DO-160 standards. Lower operating force provides application versatility with enhanced precision. Design modularity allows for configuration of the switch, facilitating rapid customization.  
**May be used in:** Aerospace Systems • Engines, Fuel Pressure and Hydraulic Systems • Military Ground Vehicles • Ordnance and Munitions Release Systems • Military Maritime Systems



**MICRO SWITCH™ limit switches:** Broadest and deepest limit switch portfolio. Rugged, dependable position detection solutions. MICRO SWITCH™ heavy-duty limit switches (HDLS), medium-duty and global limit switches. Hermetically and environmentally sealed switches.  
**May be used in:** Machine Tools • Woodworking • Textile • Printing Machinery • Metal Fabrication • Balers/Compactors • Forklifts • Bridges • Robotics • Wind Turbines • Elevators • Moving Stairs • Doors • Dock Locks/Levelers • Aerial Lifts • Cranes • Conveyors • Rail • Shipboards • Dock Side



**MICRO SWITCH™ pushbutton switches:** Lit or unlit. Wide range of electrical and display design, pushbuttons and manual switches. Many shapes, sizes and configurations. Easy to apply, operate and maintain.  
**May be used in:** Control Boards and Panels • Industrial and Test Equipment • Flight Decks • Medical Instrumentation • Process Control



**MICRO SWITCH™ sealed and standard rocker switches:** Wide range of electrical and display design. Many shapes, sizes, buttons and configurations to enhance manual operation.  
**May be used in:** Transportation • Agricultural and Construction Equipment • Test Equipment • Heavy-Duty Machinery • Marine Equipment • Small Appliances • Telecom • Medical Instrumentation • Commercial Aviation

## SAFETY SWITCHES



**MICRO SWITCH™ safety switches:** For operator point-of-operation protection, access detection, presence sensing, gate monitoring and electrical interfacing. High-quality, dependable, cost-effective solutions.  
**May be used in:** Packaging and Semi-Conductor Equipment • Plastic-Molding Machinery • Machine Tools • Textile Machines • Lifts • Industrial Doors • Balers • Compactors • Aircraft Bridges • Telescopic Handlers • Refuse Vehicles

## **Warranty/Remedy**

Honeywell warrants goods of its manufacture as being free of defective materials and faulty workmanship. Honeywell's standard product warranty applies unless agreed to otherwise by Honeywell in writing; please refer to your order acknowledgement or consult your local sales office for specific warranty details. If warranted goods are returned to Honeywell during the period of coverage, Honeywell will repair or replace, at its option, without charge those items it finds defective. **The foregoing is buyer's sole remedy and is in lieu of all other warranties, expressed or implied, including those of merchantability and fitness for a particular purpose. In no event shall Honeywell be liable for consequential, special, or indirect damages.**

While we provide application assistance personally, through our literature and the Honeywell web site, it is up to the customer to determine the suitability of the product in the application.

Specifications may change without notice. The information we supply is believed to be accurate and reliable as of this printing. However, we assume no responsibility for its use.

## **Find out more**

To learn more about Honeywell's sensing and switching products, call **+1-815-235-6847**, email inquiries to **info.sc@honeywell.com**, or visit **sensing.honeywell.com**

## **Honeywell Sensing and Productivity Solutions**

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