

Troubleshooting Common Thermostat Problems

Gold Series

(And Signature stats P374-0000, 0100, 0200, 0300)

- 1) Clock losing time
- 2) Display goes blank when starting cooling or heating
- 3) Display blanks out during heating
- 4) Unit running backwards or Unit runs both heat and cool at the same time
- 5) Buttons don't work
- 6) Temperature inaccurate
- 7) Fan doesn't come on with the heat
- 8) Thermostat doesn't respond to changes in room temperature
- 9) Erratic operation, partial display, or fluctuating temperature

1) **Clock losing time**

P274-1xxx, P274-2100 Series

The furnace tripping on high temperature limit, or some other safety limit before the product has been powered up long enough to charge the backup capacitor is the most common cause for this. When the temperature limit is exceeded, the furnace shuts off the burners and opens the 24VAC 'R' line to the thermostat. When the stat loses power, the clock will continue to run for 72 hours if the backup capacitor is fully charged (about 4 hours of operation). The furnace blower will remain on to cool the equipment and reset the over temperature condition. When the temperature is back within limits, furnace will resume normal operation, and the power to the stat will be restored. Correction: Find the cause of the high temperature limit trips – dirty filter, etc.

TSTATCCSAC01-B / TSTATCCSHP01-B Series

The clock will be slow by however many minutes the power was off to the thermostat.

2) **Display goes blank when starting cooling or heating**

P274-XXXX Series.

This is uncommon and is typically related to a mis-wire or overloaded transformer.

P374-0XXX Series.

If the common wire is being used for the 24VAC return path 'C', check for continuity, look for a short, a broken wire, or a bad connection. If the equipment is a heat pump, or heat only or cool only, you MUST have a common wire.

If the equipment is gas/electric, the stat will work without a common, but if it goes blank when starting the heating or cooling equipment, add the power stealing resistor (included with the thermostat) by connecting it to the equipment terminals (not at the thermostat!) between W and C if the unit goes blank during a call for cooling and Y and C if the thermostat goes blank during a call for heating.

- 3) **Display goes blank during heating** – The most likely cause is a furnace that is tripping on high limit or some other safety limit. The furnace will shut off the burners AND break the 24 VAC 'R' leg to the thermostat, at that point the thermostat has no power and will go blank. Solution – identify the cause of the limit trips.

4) **Unit running backwards or Unit runs both heat and cool at the same time**

P274-XXXX Series

Cooling on heat demand, heating on cool demand – the heat pump wiring is wrong. Connect to the 'B' terminal on the thermostat for units that require a reversing valve that is active in heating and connect to the 'O' terminal for units that require an active reversing valve while cooling (most Residential Carrier / Bryant / Payne equipment). If the unit is a commercial heat pump, it may not require a heat pump thermostat, disconnect 'O'.

P374-0XXX Series

Cooling on heat demand, heating on cool demand – the heat pump setting is configured incorrectly – go to installer setup (hold FAN for 10 seconds) option 4 and change the heat pump setting. If the unit is a commercial heat pump, it may not require a heat pump thermostat

5) **Buttons don't work P274-2100 Only**

The most likely cause is that the keypad is locked. Temporarily unlock the keypad using the following key press sequence: Mode, Copy Previous Day, Set Time/Temp, and Hold. If this feature needs to be disabled, enter installer setup (Press FAN for 10 seconds) and set option 18 to Off.

6) **Temperature inaccurate**

Calibrate the thermostat. Enter Installer setup (Press the FAN key for 10 seconds). Adjust Option 13 to the desired offset value between +5 and -5 degrees.

7) **Fan doesn't come on with the heat**

Enter Installer setup (Press the FAN key for 10 seconds). Adjust Option 4 (Fan on With W) to ON.

8) **Thermostat doesn't respond to changes in room temperature**

This can happen when there is air passing over the temperature sensor from the wall behind the thermostat. Insulate the hole behind the thermostat with insulation, spray foam, or any other insulating material.

9) **Erratic operation, partial display, or fluctuating temperature**

This can be caused by poor pin connections between the backplate and the thermostat, almost always because the backplate is flexed against an uneven wall. Loosen the screws that attach the backplate to the wall, allowing the backplate to flatten out, then snap thermostat back onto the backplate.

General Tips:

Voltage outputs:

P274-XXXX Series

Measure between C and the specific output. The P274-XXXX series thermostat use relays to switch the 24Vac signals. When the thermostat output is on 24VAC will be present between the output terminal and C.

P374-0XXX Series

To check your voltage outputs you must have a load on the thermostat outputs and measure between R and the specific output. Your readings should be between 0.5 volts and 1.1 volts AC if the output is on, and between 21 and 30 volts if off.

Power Stealing Resistor (P374-0XXX Series):

The resistor that is included with the thermostat should ONLY be used if there is no common wire AND the thermostat is not operating correctly (see item number 2 above in troubleshooting). Otherwise, the resistor is NOT USED.

Remote Room and Outdoor temperature sensors (P274-XXXX Series).

You can validate the thermistor reading of the remote room sensor using a standard volt meter.

Disconnect the sensor from the S1/S2 terminal and use the following chart to check the sensor.

TEMP F°	OHMS	TEMP F°	OHMS	TEMP F°	OHMS	TEMP F°	OHMS
0	85,378	33	31,738	66	13,138	99	5,961
1	82,710	34	30,855	67	12,811	100	5,827
2	80,135	35	30,000	68	12,493	101	5,697
3	77,649	36	29,171	69	12,184	102	5,570
4	75,249	37	28,367	70	11,883	103	5,446
5	72,931	38	27,589	71	11,591	104	5,326
6	70,693	39	26,834	72	11,307	105	5,208
7	68,531	40	26,103	73	11,031	106	5,094
8	66,442	41	25,394	74	10,762	107	4,982
9	64,475	42	24,706	75	10,501	108	4,873
10	62,475	43	24,039	76	10,247	109	4,767
11	60,592	44	23,393	77	10,000	110	4,663
12	58,771	45	22,766	78	9,760	111	4,562
13	57,012	46	22,158	79	9,526	112	4,464
14	55,311	47	21,568	80	9,298	113	4,368
15	53,667	48	20,996	81	9,077	114	4,274
16	52,077	49	20,441	82	8,862	115	4,183
17	50,540	50	19,902	83	8,651	116	4,094
18	49,054	51	19,379	84	8,448	117	4,007
19	47,616	52	18,872	85	8,250	118	3,922
20	46,225	53	18,379	86	8,056	119	3,839
21	44,880	54	17,902	87	7,868	120	3,758
22	43,578	55	17,438	88	7,685	121	3,679
23	42,318	56	16,987	89	7,507	122	3,602
24	41,099	57	16,550	90	7,333	123	3,527
25	39,920	58	16,125	91	7,164	124	3,453
26	38,778	59	15,713	92	7,000	125	3,382
27	37,672	60	15,312	93	6,839	126	3,312
28	36,602	61	14,923	94	6,683	127	3,243
29	35,566	62	14,545	95	6,531	128	3,177
30	34,563	63	14,178	96	6,383	129	3,112
31	33,591	64	13,822	97	6,238	130	3,048
32	32,650	65	13,475	98	6,098		