



**RETAIN THESE INSTRUCTIONS
 FOR FUTURE REFERENCE**

⚠ WARNING

Improper installation, adjustment, alteration, service or maintenance can cause personal injury, loss of life, or damage to property.

Installation and service must be performed by a licensed professional installer (or equivalent) or a service agency.

Remote Outdoor Sensor

To determine if this outdoor temperature sensor (X2658) is compatible with a specific thermostat, see the **Controls** section in the current version of the Lennox Residential Price Book.

This sensor provides outdoor temperature information to the thermostat and electric heat lockout or dual-fuel features when required. The thermostat will detect the outdoor air temperature at the remote sensor and use that information to restrict backup heating equipment operation in mild weather. This temperature information is also used to set the balance point at which the gas or oil heat is allowed to function in a dual-fuel application.

Refer to the thermostat installation instructions and operation manual for the proper use of the outdoor sensor and the required thermostat settings that use the information from the outdoor sensor.

General

These instructions are intended as a general guide and do not supersede local codes in any way. Consult authorities having jurisdiction before installation.

INSTALLATION INSTRUCTIONS

Outdoor Temperature Sensor (X2658)

CONTROLS
 504,941M
 3/2016
 Supersedes 1/2011

TP Technical
 Publications
 Litho U.S.A.

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Shipping and Packing List

Check equipment for shipping damage. If you find any damage, immediately contact the last carrier.

- 1 - Remote outdoor sensor (X2658)
- 2 - Plastic wall anchors
- 2 - Screws

Installation

1. Select an appropriate location for the sensor:
 - Sensor wiring must be run to avoid touching or being close to high voltage wiring and light ballast.

⚠ IMPORTANT

If exposed to high voltage wiring correct resistance readings maybe affected and electrical noise may be generated.

- Choose a protected outdoor location away from direct sunlight or other heat sources (usually on the north side of the building).
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- Ensure that water will neither collect on, nor wash over the sensor.
- Do not locate the sensor near driveways or similar heat-absorbing masses which may reflect stored heat energy onto the sensor and send inaccurate information to the thermostat.
- Locate the sensor away from attic vents, soffit vents, or furnace venting pipes.
- Do not locate the sensor directly above an air conditioner or heat pump.
- Locate the sensor so that wires may be easily routed between the outdoor sensor and the thermostat and that the interconnecting wires do not exceed 150 feet (46 meters) in length.

- Use the sensor housing as a template to mark the location for the two mounting holes or anchors.
- Mark a location half way between the two mounting holes for routing the wires.
- Drill two 3/16" diameter holes for the mounting screws or wall anchors. See figure 1.

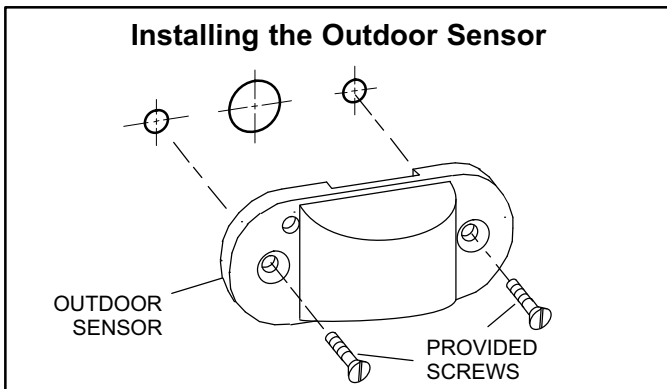


Figure 1

- Between the two mounting holes, drill a hole large enough through which to pass the sensor wires, thermostat wires, and wire nuts. See figure 1.
- If using the plastic wall anchors push the anchors into the holes drilled in step 4.
- Install field-provided wires from the thermostat to the outdoor sensor location. Use 22 gauge minimum solid copper thermostat wire. The maximum length is 150 feet (46m).
- Connect one end of the thermostat wires to the terminals marked "T" on the thermostat subbase. (Remove the thermostat from its subbase by grasping the thermostat at the bottom and rotating it up and outward.) The wires can be connected with either polarity.
- Connect the other end of the wires to the pigtails (with either polarity) of the outdoor sensor using wire nuts. Secure the wire nut to the wire using a few wraps of electrical tape.
- Seal the hole in the wall to eliminate any draft that might affect the sensor.

! IMPORTANT

The sensor will be inaccurate if the hole is not sealed completely.

- Seal the area where the pigtail wire exits the rear of the outdoor sensor housing to prevent water from wicking into the outdoor sensor housing. Apply a generous

bead of sealant to the rear housing in the area where the wire exits the plastic housing. The sealant must be located all around the wire exit area and be of sufficient height to seal the hole drilled in step 5 once the housing is secured to the mounting surface.

- Carefully feed the excess wires into the hole.
- Using the provided screws, attach the sensor to the mounting surface.
- Wipe off any excess sealant that may have oozed out from the sides of the housing.

Specifications

The following are specifications for the X2658 Outdoor Temperature Sensor:

- Two wires AWG#24 PVC 105°C.
- Wire length: 8 inches
- Measurement resolution: 1°F.
- Minimum measurable temperature: -60°F.
- Maximum measurable temperature: 182°F.
- Accuracy $\pm 2^\circ\text{F}$.
- Electrical: 10K ohm + 1% at 77°F (25°C)
- Use 22AWG minimum thermostat wired up to 150 feet.

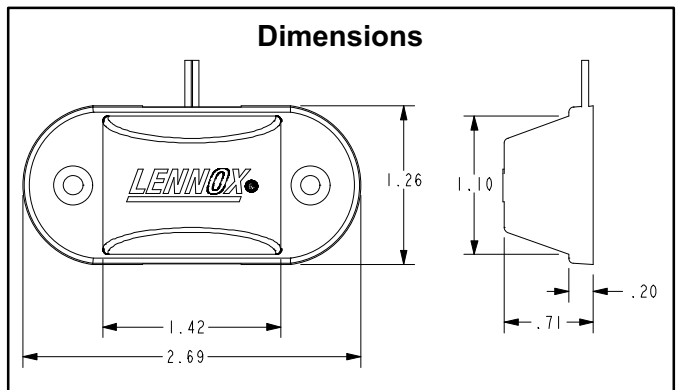


Figure 2

Testing Outdoor Sensor

Through the sensors, the thermostat or control can detect outdoor temperature conditions. As the detected temperature changes, the resistance across the sensor changes. Table 1 shows how the resistance varies as the temperature changes. Sensor resistance values can be checked by ohming across pins shown in table 10.

NOTE — When checking the ohms across a sensor, be aware that a sensor showing a resistance value that is not within stated range may be performing as designed. However, if a shorted or open circuit is detected, then the sensor may be faulty and the sensor harness will need to be replaced.

Table 1. Resistances versus Temperature

Temp °F (°C)	R _{min}	R _{nominal}	R _{max}	Temp °F (°C)	R _{min}	R _{nominal}	R _{max}
-40 (-40)	184.4	191.8	199.6	42 (6)	20.85	21.22	21.60
-38 (-39)	174.7	181.7	188.9	44 (7)	20.01	20.36	20.71
-36 (-38)	165.6	172.1	178.9	46 (8)	19.21	19.53	19.86
-34 (-37)	157.0	163.1	169.4	48 (9)	18.44	18.74	19.05
-32 (-36)	149.0	154.6	160.5	50 (10)	17.71	17.99	18.28
-31 (-35)	141.3	146.6	152.1	51 (11)	17.01	17.27	17.54
-29 (-34)	134.1	139.1	144.2	53 (12)	16.34	16.59	16.84
-27 (-33)	127.3	132.0	136.8	55 (13)	15.70	15.93	16.17
-25 (-32)	120.9	125.3	129.8	57 (14)	15.09	15.31	15.53
-23 (-31)	114.9	118.9	123.1	59 (15)	14.51	14.71	14.91
-22 (-30)	109.2	113.0	116.9	60 (16)	13.95	14.14	14.33
-20 (-29)	103.7	107.3	111.0	62 (17)	13.42	13.59	13.77
-18 (-28)	98.64	102.0	105.4	64 (18)	12.91	13.07	13.24
-16 (-27)	93.81	96.94	100.2	66 (19)	12.42	12.57	12.73
-14 (-26)	89.24	92.17	95.18	68 (20)	11.95	12.10	12.24
-13 (-25)	84.92	87.66	90.48	69 (21)	11.50	11.64	11.77
-11 (-24)	80.84	83.40	86.04	71 (22)	11.08	11.20	11.33
-9 (-23)	76.97	79.37	81.84	73 (23)	10.67	10.78	10.90
-7 (-22)	73.30	75.56	77.87	75 (24)	10.28	10.38	10.49
-5 (-21)	69.83	71.94	74.11	77 (25)	9.900	10.00	10.10
-4 (-20)	66.55	68.52	70.55	78 (26)	9.533	9.633	9.733
-2 (-19)	63.43	65.29	67.19	80 (27)	9.181	9.281	9.381
-0.4 (-18)	60.48	62.22	64.00	82 (28)	8.845	8.944	9.043
1 (-17)	57.68	59.31	60.98	84 (29)	8.522	8.621	8.720
3 (-16)	55.03	56.55	58.12	86 (30)	8.213	8.311	8.410
5 (-15)	52.51	53.94	55.41	87 (31)	7.916	8.014	8.112
6 (-14)	50.12	51.46	52.84	89 (32)	7.632	7.729	7.827
8 (-13)	47.85	49.11	50.40	91 (33)	7.360	7.456	7.553
10 (-12)	45.70	46.88	48.09	93 (34)	7.099	7.194	7.290
12 (-11)	43.66	44.76	45.89	95 (35)	6.848	6.942	7.038
14 (-10)	41.71	42.75	43.81	96 (36)	6.607	6.701	6.795
16 (-9)	39.87	40.84	41.84	98 (37)	6.377	6.469	6.562
17 (-8)	38.12	39.03	39.96	100 (38)	6.155	6.247	6.339
19 (-7)	36.45	37.31	38.18	102 (39)	5.942	6.033	6.124
21 (-6)	34.86	35.67	36.48	104 (40)	5.738	5.827	5.918
23 (-5)	33.36	34.11	34.88	105 (41)	5.542	5.630	5.719
24 (-4)	31.92	32.63	33.35	107 (42)	5.353	5.440	5.528
26 (-3)	30.56	31.22	31.89	109 (43)	5.172	5.258	5.345
28 (-2)	29.26	29.88	30.51	111 (44)	4.998	5.083	5.168
30 (-1)	28.02	28.60	29.19	113 (45)	4.831	4.914	4.999
32 (0)	26.84	27.39	27.94	114 (46)	4.670	4.752	4.835
33 (1)	25.72	26.23	26.75	116 (47)	4.515	4.596	4.678
35 (2)	24.65	25.13	25.62	118 (48)	4.366	4.446	4.527
37 (3)	23.63	24.08	24.54	120 (49)	4.223	4.302	4.381
39 (4)	22.66	23.08	23.51	122 (50)	4.085	4.163	4.241
41 (5)	21.74	22.13	22.53				