

INSTALLATION INSTRUCTIONS Dwyer Remote Mounted Outside Air Sensor Packaged Ventilation/Dedicated Outside Air System (DOAS) model DLV

Remote Mounted Outside Air Sensor



Application

The Dwyer temperature and temperature/humidity sensors are used in conjunction with the Carel controller used on select Model DLV series Packaged Ventilation Units.

The sensors vary by application and are selected and added to the order specifically for the unit(s) as configured. The sensors ship loose with a packing slip identifying the Item Code and Manufacturer part numbers. The part numbers and application of the sensors can be seen in Table 1.1:

Table 1.1 - Outside Air Sensors

Applicable Model Digits	Item Code	Dwyer Part Number	Temp Output	Humidity Output
Digit 7=A, C, R	40318	RHP-301E	PT1000	4-20mA
Digit 7= B	40319	RHP-3011	4-20mA	4-20mA

! WARNING

1. Disconnect power supply before making wiring connections to prevent electrical shock and equipment damage.
2. All units must be wired strictly in accordance with wiring diagram furnished with the unit. Any wiring different from the wiring diagram could result in a hazard to persons and property.
3. All wiring must be done with a wiring material having a temperature rating of at least 105°C.

! CAUTION

As with any mechanical equipment, personal injury can result from contact with sharp sheet metal edges. Be careful when you handle this equipment.

IMPORTANT

1. The use of this manual is specifically intended for a qualified installation and service agency. All installation and service of these kits must be performed by a qualified installation and service agency.
2. These instructions must also be used in conjunction with the Installation and Service Manual originally shipped with the unit, in addition to any other accompanying component supplier literature.

THIS MANUAL IS THE PROPERTY OF THE OWNER.
PLEASE LEAVE IT WITH THE OWNER WHEN YOU LEAVE THE JOB.

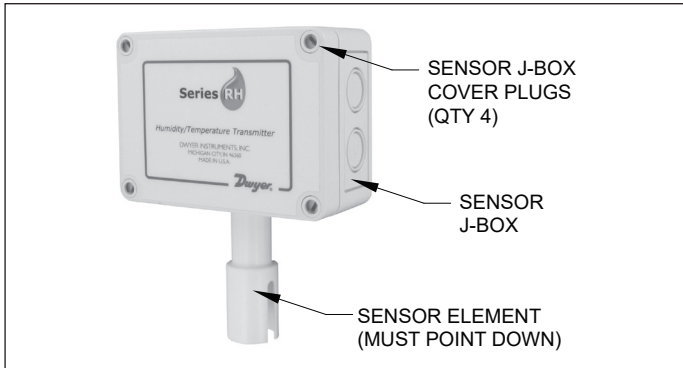
Remote Outside Air Temperature and Temperature/Humidity Sensor Installation

Sensor Installation

For remote mounted sensors, install as described below.

1. Locate the mounting location under an eave, shield, or in an area that is out of the elements and direct sunlight. Avoid locations where severe shock or vibration, excessive moisture or corrosive fumes are present. The sensor should be oriented with the sensor element pointing down to prevent water collection in the sensor cavity, as shown in Figure 2.1. The sensor does not need to be mounted to the unit, but should be nearby.

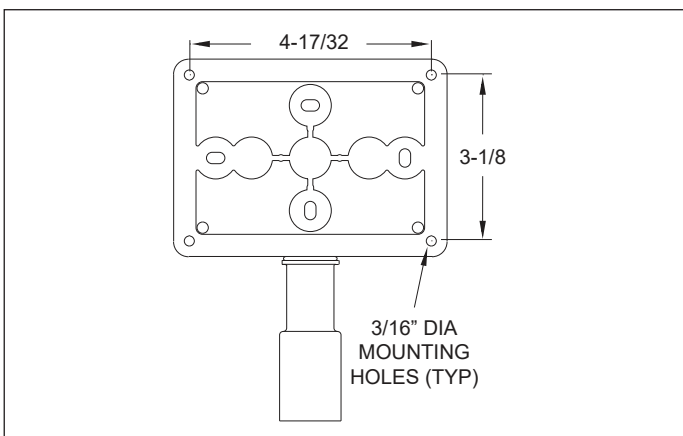
Figure 2.1 - Remote Mounted Sensor



2. Remove the cover plugs from the front cover of the sensor J-box. Position the J-box where it is to be mounted and mark where pilot holes are required to secure the sensor mounting tabs to the mounting surface (refer to Figure 2.2). Remove the sensor and drill 1/8" pilot holes.

Note: As noted in Figure 2.2, the holes in the outside corners where the cover is secured to the J-box are the same holes to be used for mounting the J-box to the mounting surface. This will ensure the box maintains its NEMA rating. If any other holes are used, they must be sealed to prevent water from collecting in the J-box.

Figure 2.2 - Remote Mounted Sensor - Mounting Holes



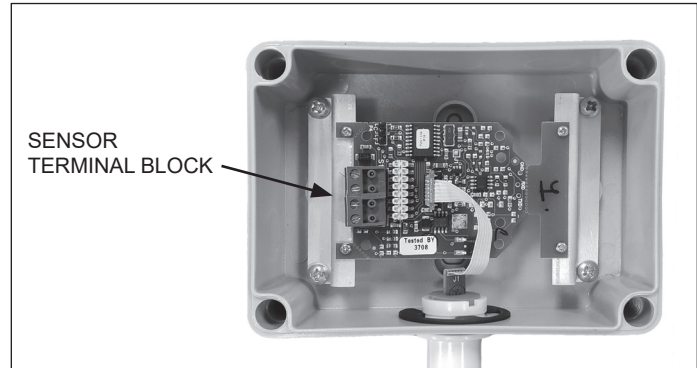
3. Secure the sensor J-box using screws included.
4. Before reinstalling the J-box cover, proceed to the section, "Wiring to the Main Unit Carel Controller".

Wiring to the Main Unit Carel Controller

For sensor to unit wiring, follow the steps described below.

1. Remove a sensor J-box knockout for wiring entry. A bottom knockout is preferred to minimize the potential for water entry. Install a watertight wiring strain relief bushing.
2. Route the control wire that will connect to the unit (minimum 24 AWG, maximum 18 AWG twisted pair shielded cable) into the sensor J-box through the bushing and wire to the terminal block. Refer to Figure 2.3 for location of terminals.

Figure 2.3 - Temp/Humidity Sensor Wiring Terminals



3. At the unit, determine the entry point for the control wiring from the sensor. There is a drill locator dimple on a casing panel near the applicable control panel compartment and identified with a sticker as shown in Figure 2.4. Refer to Table 3.1 to determine if it is near the main unit or energy recovery control panel compartment.

**Figure 2.4
Label for Preferred Entry Location of Control Wiring**



4. Carefully drill and clean/deburr a hole properly sized for a field supplied/installed watertight wiring strain relief bushing. Install the bushing.
5. Route the control wire from the sensor into the unit control panel compartment through the bushing installed in the previous step.
6. Wire to the control terminals on the unit per the wiring diagram on the unit and Table 3.1.
7. Reinstall the cover of the sensor J-box.

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Table 3.1 - Sensor to Unit Terminal Wiring

Sensor Type	Model Digit 7	Terminals		
		Sensor	Unit Control Panel Location	
			Main	Energy Recovery
RHP (Temp & Humidity)	A, C, or R	1	817	-
		2	515	-
		3	825	-
		4	814	-
	B	1	-	847
		2	-	517
		3	-	848

Temperature Sensor Resistance Values

The sensors all include temperature sensing, however the signal is either a PT1000 resistance or a 4-20mA output, as indicated in Table 1.1. For sensors with a PT1000 resistance, see Table 3.2 for the resistance values at various temperatures.

Table 3.2 - Sensor Resistance vs. Temperature

°F	Ω	°F	Ω	°F	Ω
0	930.3	42	1021.7	84	1112.4
2	934.7	44	1026.0	86	1116.7
4	939.0	46	1030.4	88	1121.0
6	943.4	48	1034.7	90	1125.3
8	947.8	50	1039.0	92	1129.6
10	952.1	52	1043.3	94	1133.9
12	956.5	54	1047.7	96	1138.2
14	960.8	56	1052.0	98	1142.5
16	965.2	58	1056.3	100	1146.8
18	969.5	60	1060.6	102	1151.1
20	973.9	62	1065.0	104	1155.4
22	978.3	64	1069.3	106	1159.7
24	982.6	66	1073.6	108	1164.0
26	986.9	68	1077.9	110	1168.3
28	991.3	70	1082.2	112	1172.6
30	995.6	72	1086.6	114	1176.8
32	1000.0	74	1090.9	116	1181.1
34	1004.3	76	1095.2	118	1185.4
36	1008.7	78	1099.5	120	1189.7
38	1013.0	80	1103.8	122	1194.0
40	1017.3	82	1108.1	124	1198.2

For sensors that use a 4-20mA output signal, the output is linear over the range as follows:

- Temperature (RHP-3O11 sensor only): -40 to 140 F
(Temperature = (11.25 x mA) - 85)
- Relative Humidity (all sensors): 0 to 100%
(Relative Humidity = (6.25 x mA) - 25)

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Lennox Industries, Inc. • P.O. Box 799900 • Dallas, TX 75379-9900 • Phone: 1.800.4LENNOX (1.800.453.6669)
www.lennoxcommercial.com