



# ZRT-PDIL / ZRT-PDIL-HP

## PARALLEL DAMPER IN-LINE ZONE TERMINAL

### Description

Aldes Parallel Damper In-Line Zone Terminals (ZRT-PDIL) are designed to introduce flexibility and dynamic control to central supply or exhaust ventilation systems. Used in both large and small systems, the ZRT-PDIL regulates ventilation without the need for individual fans or traditional VAV terminal units.

Each ZRT-PDIL is a two-position, pressure-independent terminal with a control damper to regulate high limit on-demand airflow control and integral passive regulators for automatic air balancing of the continuous and boost airflow setpoints. This unique combination provides flexible control schemes without the need for expensive pneumatic, electronic, or DDC control systems.

The ZRT-PDIL is primarily used for combination low-flow indoor air quality ventilation or make-up air, and on demand high-flow spot ventilation using the same central exhaust or supply fan system. This is achieved by integrating a minimum Constant Airflow Regulator (CAR) in the terminal end panel and in-line with the branch duct. The maximum airflow is controlled by a series of 24 VAC or 120 VAC powered motorized damper(s) and a secondary CAR airflow controller. With the maximum-air motorized control damper completely closed, the continuous CAR allows steady, low-volume airflow control. (Continuous and Boost Constant Airflow Regulators may be CAR-II or CAR3 depending on required airflow. See ZRT-PDIL CFM Range for details).

When other ZRT-PDIL are activated for on-demand control of high flow, the unpowered ZRT-PDIL will maintain the specified continuous rate through the pressure-independent CAR. Opening the ZRT-PDIL's control damper adds its calibrated boost airflow rate to the continuous setpoint.

### Mounting

The ZRT-PDIL/ZRT-PDIL-HP is intended to be installed in-line in a duct system. It is provided with four (4) mounting tabs that are suitable to suspend the unit with threaded rods (not included). See Figure 1. The unit should be installed in a location that provides clearance for the access plate.

### Maintenance

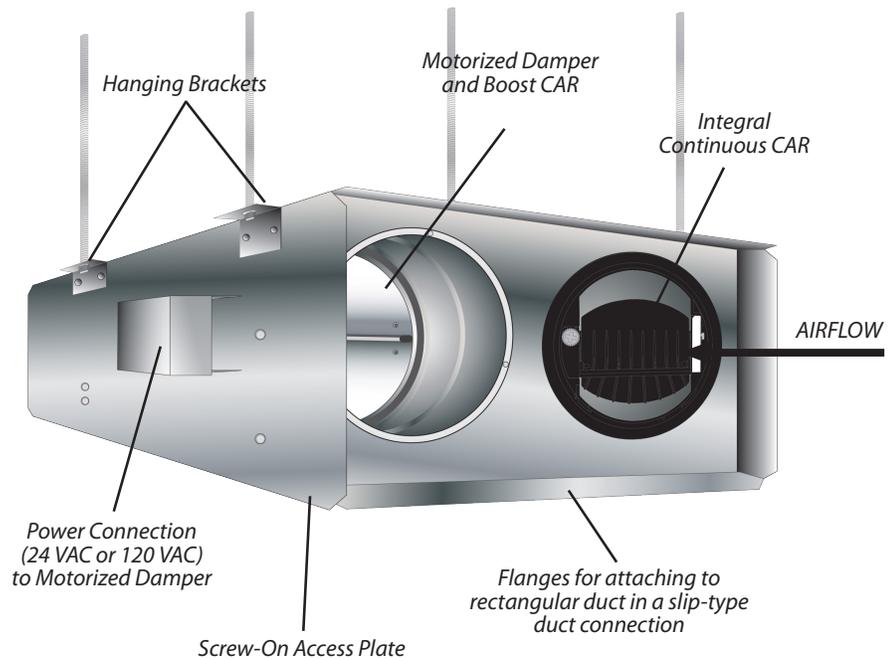
All components of the ZRT-PDIL/ZRT-PDIL-HP are accessible through the opening provided by the access plate.

### AIRFLOW & ZONE CONTROL



### READ AND SAVE THESE INSTRUCTIONS

FIGURE 1 - MOUNTING



### Wiring

ZRT-PDIL/ZRT-PDIL-HP wiring needs to meet all applicable electrical and building codes. If the electrical connection to the damper motor wiring box is not accessible after mounting, there needs to be enough slack (approximately 24") in the electrical wiring leading to the wiring box to allow the damper assembly to be removed through the access opening. This will allow access to the electrical connections from the access opening.

ZRT-PDIL/ZRT-PDIL-HP models are available with 24 VAC or 120 VAC motorized dampers. 120 VAC wiring is shown in Figure 2 and 24 VAC wiring is shown in Figure 3 (next page).

\*U.S. Pat. No. 9,759,442

## Warning

### TO REDUCE THE RISK OF FIRE, ELECTRIC SHOCK, OR INJURY TO PERSONS, OBSERVE THE FOLLOWING:

1. Use this unit only in the manner intended by the manufacturer. If you have any questions, contact the manufacturer.
2. Before servicing or cleaning the unit, switch power off at service panel and lock service panel to prevent power from being switched on accidentally. When the service disconnecting means cannot be locked, securely fasten a prominent warning device, such as a tag, to the service panel.
3. Sufficient air is needed for proper combustion and exhausting of gases through the flue (chimney) of fuel-burning equipment to prevent backdrafting. Follow the heating equipment manufacturer's guidelines and safety standards, such as those published by the National Fire Protection Association (NFPA), and the American Society of Heating, Refrigerating and Air-Conditioning Engineers (ASHRAE), and the local code authorities.
4. In addition to the following manufacturer's instructions, it is necessary to comply with federal, state, and local government codes. Your purchase of this ALDES ventilation system represents an investment in the health and comfort of the occupants, as well as an investment in the protection of the building from the damaging effects of excessive indoor humidity.
5. Installation work and electrical wiring must be done by qualified person(s) in accordance with all applicable codes and standards, including fire-rated construction.
6. When cutting or drilling into wall or ceiling, do not damage electrical wiring and hidden utilities.

## Caution

1. For general ventilating use only. Do not use to exhaust hazardous or explosive materials and vapors.
2. Automatically operated device. To reduce the risk of injury, disconnect from power supply before servicing.

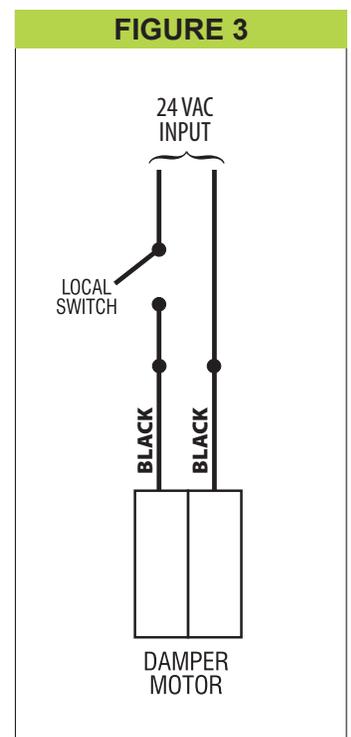
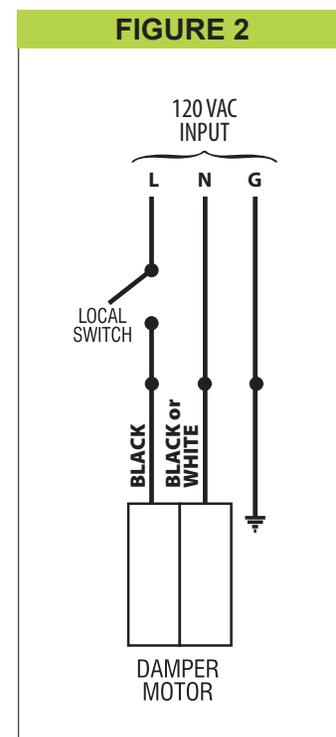
## System Design

Satisfactory performance of a central ventilation system requires:

- Proper integration of all the components, compatible grilles, and wall/roof caps;
- Proper duct design for friction losses;
- Consideration of acoustic and vibration properties of the fan and its mounting;
- Acoustic properties of the grilles;
- Consideration of the mode of operation, whether continuous or automatically controlled by dehumidistat, timer, or occupancy sensor;
- Installation in a heated or unheated space, with consideration for the potential of condensation in the ducting or fan housing.

Inspect the carton upon receipt to ensure the terminal has not been damaged in transit. If damaged, it is the responsibility of the recipient to file a damage claim with the carrier. ALDES is not responsible for damage incurred during shipment.

Note: Prior to installation, inspect the terminal to ensure that damper(s) move freely and that the constant airflow regulators have not shifted during handling. Handle the unit with care to prevent damage to the housing and other components. Store the unit indoors if possible. If outdoor storage is required, protection against moisture and dirt is necessary.



# CAR3

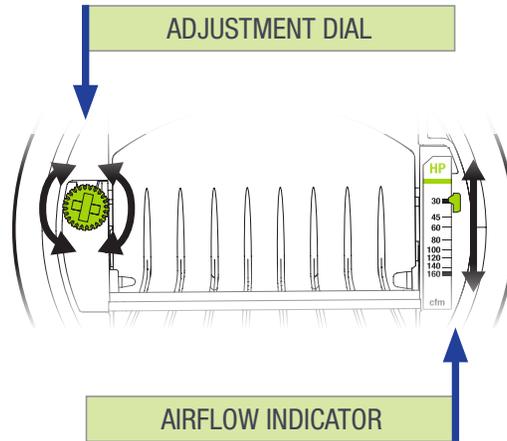
Constant Airflow Regulator

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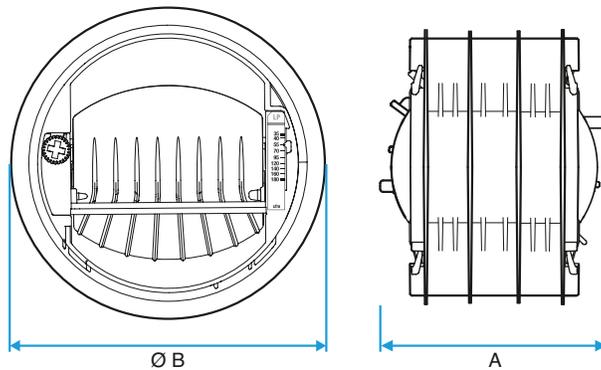
# 1. AIRFLOW SETTING



Airflow rate can be set or adjusted by rotating the dial from either side. The airflow indicator will move to show the selected CFM. The airflow label has multiple defined setpoints, but the unique adjustment mechanism of the CAR3 allows for infinite adjustability between the minimum and maximum limits. Performance charts found in the specifications sheet reflect this data, with the available range (shaded) and marked setpoints (lines). The CAR3 will maintain the airflow accurately to within +/- 10% of the indicated lines below for each marked setpoint. At the higher airflow rates, the minimum pressure required to achieve the selected airflow may exceed 0.12 in. w.g.

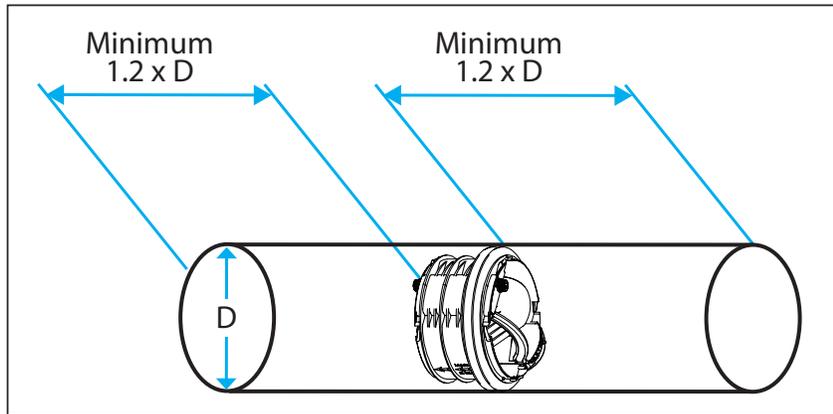
Each diameter has a unique range for both low- and high-pressure variants. The CAR3-L (low-pressure) is designed for systems with pressures between 0.12 and 1.2 in. w.g. (30 to 300 Pa), and CAR3-H (high-pressure) between 0.4 and 2.8 in. w.g. (100 to 700 Pa). Factory calibration of the CAR3 is available on request. Blue color dial = Low-Pressure / Green color dial = High-Pressure.

# 2. DIMENSIONS

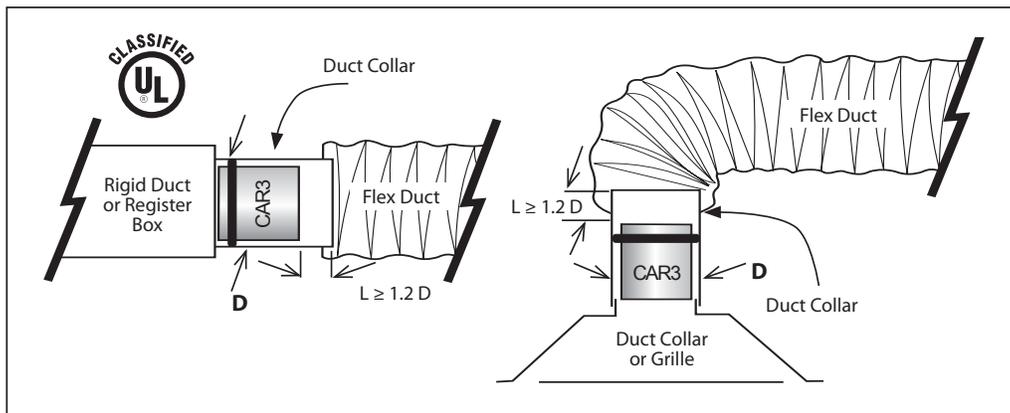


Size	A	Ø B	Low-Pressure (Blue) 0.12-1.2 in. w.g (30-300 Pa)		High-Pressure (Green) 0.4-2.8 in. w.g (100-700 Pa)	
			Airflow	P/N	Airflow	P/N
4" (100 mm)	3"	4.3"	15-85	CAR3L4R4	30-160	CAR3H4R4
5" (125 mm)	3.8"	5.2"	35-180	CAR3L5R5	55-260	CAR3H5R5
6" (150 mm)	4.6"	6.0"	45-260	CAR3L6R6	60-370	CAR3H6R6

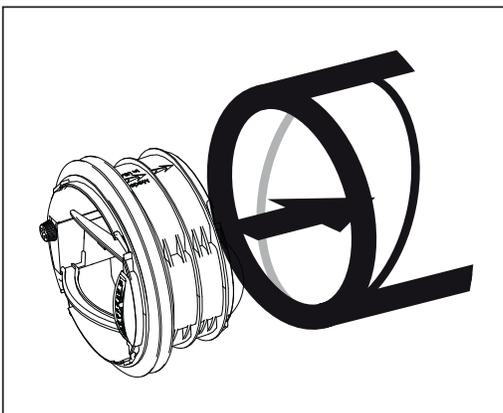
### 3. INSTALLATION



Regulator must be installed in a metallic air duct as pictured above. D represents the regulators maximum outer diameter.



The CAR3 should be installed in accordance with all applicable building and mechanical codes. If installed in a metal duct or duct collar with a flexible duct connector (listed to UL 2043), the CAR3 must be inserted at least 1.2 times the duct diameter from the flexible duct and/or duct connector.



Orient the CAR3 according to the airflow direction indicated on the device. Horizontal or vertical mounting is acceptable.



## 4. MAINTENANCE & WARRANTY

- The CAR3 needs no maintenance when used in normal conditions. The addition of antimicrobial and anti-static additives in the material increases the longevity and reliability of the CAR3. There is no risk of dust deposit or obstruction because the CAR3 has no airways subject to clogging. If the intended application includes air heavily loaded with dust or grease, access to the CAR3 should be possible through the terminal device or with an access panel or door.
- ALDES Ventilation Corporation warrants the CAR3 to be free from manufacturing defects and guarantees the performance within specified limits for a period of seven (7) years when installed in normal environmental air systems for general residential and commercial heating, ventilating and air conditioning. This warranty does not include installation in industrial applications or caustic, noxious or otherwise hazardous airhandling equipment. This warranty is limited to replacement of the product only and does not extend to consequential claims.

## 5. TROUBLESHOOTING

PROBLEM	CAUSE	SOLUTION
<b>AIRFLOW TOO LOW</b>	Insufficient duct pressure.	Check fan ratings. Replace fan if too small Increase fan speed.
	Excessive duct air leakage.	Seal ducts with mastic or tape.
	CAR3 damper not functioning properly.	Check CFM calibration on CAR3. Adjust to proper airflow value.
<b>AIRFLOW TOO HIGH AND/ OR NOISY OPERATION</b>	CAR3 too close to fan.	Add manual damper to reduce pressure across CAR3 to normal operating range.
	Fan at too high a speed.	Lower fan speed.
	CAR3 damper not functioning properly.	Check CFM calibration on CAR3. Adjust to proper airflow value.

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