

# ZRT-IL

## ZONE REGISTER TERMINALS

### AIRFLOW & ZONE CONTROL

Made in  
USA

WARRANTY  
3 YEARS

Patent  
pending



## Product Description

Aldes patented Zone Register Terminal (ZRT®)\* are designed to introduce flexibility and demand control to central ventilation systems. The multi-zone ZRT® regulates ventilation without need for individual fans. Each ZRT-IL is a combination grille, register box, control damper, and optional flow regulator(s). This unique combination provides up to four different control schemes without the need for expensive pneumatic, electronic, or DDC control systems. To ensure the proper calibration of the damper assembly, do not exceed 1.0 in. w.g. (250 Pa) of differential pressure across the damper door.

When used in central systems, the ZRT-1 model provides on-off control for on-demand ventilation. This allows fan downsizing and promotes energy savings by minimizing necessary fan horsepower and ventilation-induced heating and cooling loads on the building. The optional Constant Airflow Regulator (CAR3) can be installed in the ZRT-1's extended duct collar to place a maximum flow limit on each terminal when activated. The automatic operation of the CAR3 will provide precise balancing to each terminal, compensating for intermittent use of other ZRTs around the building, as well as factors like stack effect.

The ZRT-2 model is used for combination low-flow continuous indoor air quality ventilation and on-demand high-flow spot ventilation using the same central fan system. This is achieved by integrating a minimum Constant Airflow Regulator (CAR3) directly into the damper assembly. When the ZRT-2 is powered on, the control damper powers open, bypassing the low-flow CAR3 to allow the boost ventilation rate set by the maximum flow CAR3 (when equipped).

## Construction

- Gasketed damper blade ensures a tight seal preventing unwanted air leakage and noise in closed position.
- Constructed of 24-gauge galvanized steel housing for durability. *\*The ZRT-IL-K models are constructed of 18-gauge galvanized steel.*
- 24 VAC, 120 VAC, or 230 VAC actuator motor with spring return damper assembly.
- Optional CAR3 constant airflow regulator.

## Key Features

- Provides on-off control for on-demand ventilation.
- Combination low-flow continuous ventilation and on-demand high-flow spot ventilation using the same central fan system (ZRT-2).

## APPLICATIONS

- Occupancy-based control systems for hotels, dormitories and high-rise residential.
- Large and small commercial systems.
- Intermittent ventilation for bathrooms and kitchens.
- ALDES VentZone Systems.

\*U.S. Pat. No. 7,766,734

## How to Specify Aldes: ZRT-IL

**Step 1:** Reference the model code below and performance details within this specification sheet to select the appropriate ZRT-IL.

**Step 2:** Determine the **SERIES** required for your specific project.  
**NOTE:** The ZRT is available with or without a minimum flow option for application requiring low volume continuous airflows.

The minimum flow control equips a CAR3 to provide a balanced minimum airflow rate. Factory calibration of the minimum flow CAR3 is available on request.

**Step 3:** Select the required **SIZE**.

**Step 4:** Select the required motor based on available **POWER**.

**Step 5:** If equipped, select the **MAXIMUM FLOW CONTROL**.  
**NOTE:** ZRT-IL-1 only available with MAX. The different size models have different airflow ranges. See *Airflow Settings and Performance Data* for additional details. Factory calibration of the maximum flow CAR3 is available on request.

## Model Code Example

**ZRT-IL-K-2-4-24MAX**

### PARENT MODEL

Zone Register Terminal

### CONSTRUCTION

Blank: Standard Housing  
 K: 18 GA Housing

### SERIES

1: No Minimum Flow Control  
 2: With Minimum Flow Control

### SIZE

4: 8" x 8" Box w/ 4" collar  
 6: 10" x 10" Box w/ 6" collar

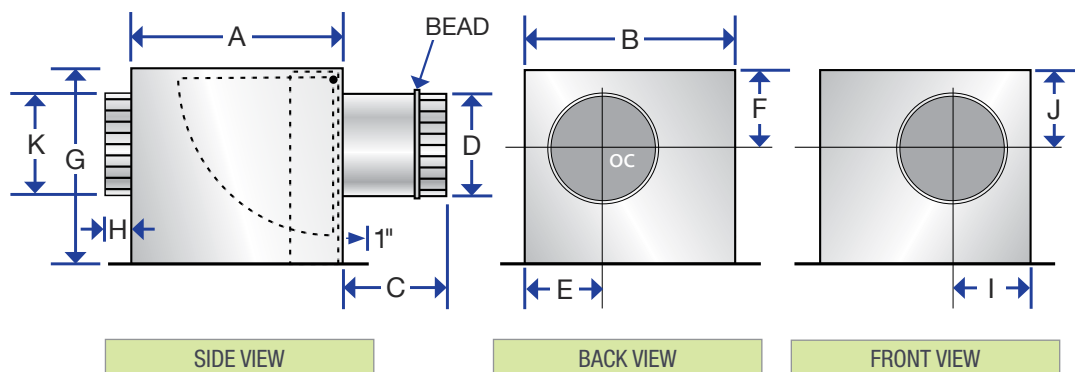
### POWER

24: 24 V/60Hz  
 120: 120 V/60Hz

### MAXIMUM FLOW CONTROL

Blank: No Maximum Flow Control  
 Max: With Maximum Flow Control

## ZRT-IL Dimensions



Size	A	B	C	D	E	F	G	H	I	J	K
4" (100 mm)	8" (203 mm)	8" (203 mm)	4-1/2" (114 mm)	3-7/8" (98 mm)	2-1/2" (64 mm)	3-1/2" (89 mm)	6-1/2" (165 mm)	1-3/4" (44 mm)	2-1/2" (64 mm)	3-1/2" (89 mm)	3-7/8" (98 mm)
6" (150 mm)	10" (254 mm)	10" (254 mm)	5-1/2" (140 mm)	5-7/8" (149 mm)	3-1/2" (89 mm)	4-1/2" (114 mm)	8" (203 mm)	1-3/4" (44 mm)	3-1/2" (89 mm)	4-1/2" (114 mm)	5-7/8" (149 mm)

## Warranty

The entire unit is guaranteed for 3 years, from the date of shipment, against all manufacturing defects, provided the material has been installed & operated per manufacturer's instructions & under normal conditions. Warranty is limited to the repair or replacement of the material upon its return freight paid to our factory. This warranty is not transferable & limited to the original end user.

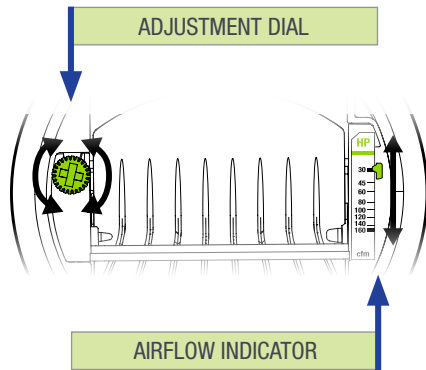
## Maintenance

The ZRT-S needs no maintenance when used in normal conditions.

## Control

The ZRT-IL is a normally-closed, spring-return damper mechanism which can be powered by any on-off control device(s). When powered, the control damper will fully open. Upon disconnecting the power, the ZRT integral spring will return the damper to the closed position. The included confirmation switch can be used to monitor ZRT status, or power other devices. Any on-off control device(s) will signal the damper to open fully, providing maximum ventilation control. Upon disconnecting the power, the ZRT integral spring will return the damper blade to its normally closed position.

Optional Constant Airflow Regulator used to regulate airflows to constant levels in response to duct pressure. Use the CAR3 to control for both maximum and minimum flow rates.



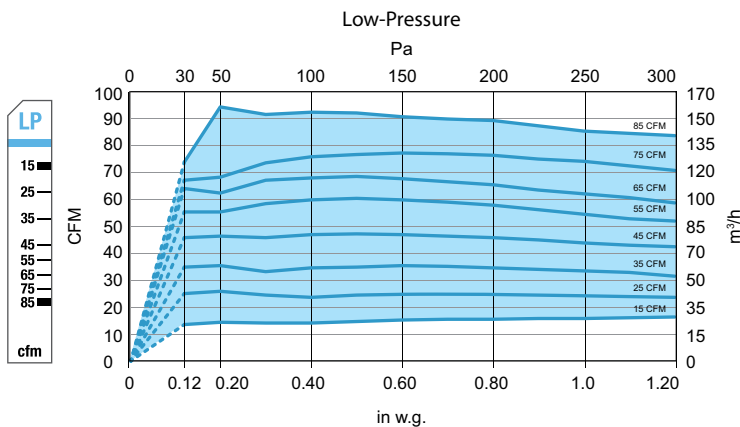
## Airflow Settings & Performance Data

When equipped, the CAR3(s) installed in the ZRT can be factory calibrated, or field set as necessary per the specified airflow rates. The ZRT-2 is equipped with a minimum flow low-pressure, 4" CAR3 (model CAR3L4R4) as standard for both the 4" and 6" ZRTs. When equipped, the maximum flow regulator on the 4" ZRT is a low-pressure, 4" CAR3 (model CAR3L4R4), and the 6" ZRT is a low-pressure, 6" CAR3 (model CAR3L6R6).

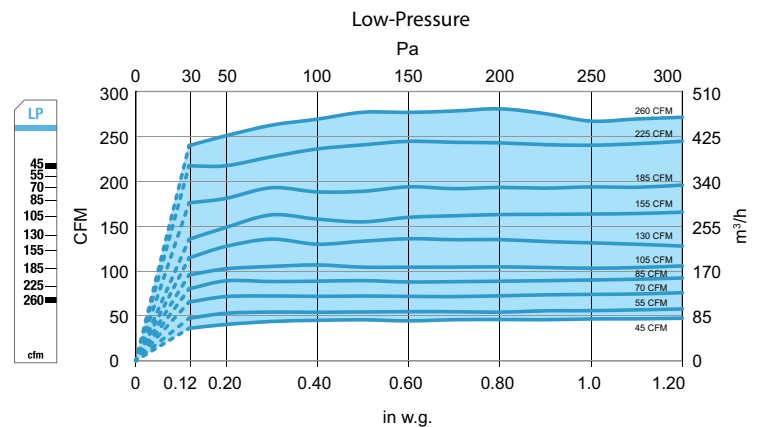
Airflow rate can be set or adjusted by rotating the dial from either side. The airflow indicator will move to show the selected CFM. The airflow label has multiple defined setpoints, but the unique adjustment mechanism of the CAR3 allows for infinite adjustability between the minimum and maximum limits.

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.

**ZRT with CAR3 4" DIAMETER (100 mm)**



**ZRT with CAR3 6" DIAMETER (150 mm)**



Airflow measurements taken at 68°F (20°C) at 1 atmosphere pressure.

## Recommended Specification

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Furnish and install model ZRT-IL In-Line Zone Register Terminals by ALDES North America. The exhaust steel duct collar terminals shall be of sizes and capacities and at locations scheduled on the drawings. The terminal casing shall be minimum 24-gauge G90 galvanized steel with an integral duct collar that allows attachment of both rigid and flexible ducting. The collar shall be sized to allow full insertion of a model CAR3 Constant Airflow Regulator for maximum flow control, but without the regulator extending into attaching duct. There is no exhaust or supply version as you spin them to orient their direction. Just remove exhaust and refer to them as "terminals." All terminals must be listed per UL standards and carry the UL or ETL mark indicating compliance. Each ZRT-IL shall include all necessary mounting brackets and hardware.

The primary air volume mechanism shall be a single-blade damper operated by a long-life 24 VAC, 120 VAC, or 230 VAC disconnecting-type drive motor with normally closed spring-return closure. When fully open, the damper shall rotate out of the air stream on a solid one-piece damper that pivots on permanently lubricated bearings. A permanently fixed perimeter gasket seal shall be provided to prevent air noise and leakage at the closed position. The ZRT-IL must be capable of overcoming a minimum of 1.0 in. w.g. (250 Pa) of differential pressure across the damper door. The entire damper assembly and all operable components shall be accessible or capable of being removed for maintenance or cleaning through the access panel and without disconnecting the duct.

Where indicated on the drawings or schedule, a minimum CAR3 airflow modulating control device shall be incorporated into the damper assembly. The control device shall respond to changes in duct pressure to maintain the specified flow rate at a constant level. Mechanical damper stops for balancing are not acceptable. Where a maximum flow is indicated on the drawings and/or schedule, a model CAR3 Constant Airflow Regulator shall be installed in the terminal's duct collar. Adjustment of airflow setpoint on either the minimum or maximum flow CAR3 shall be possible without removing from the assembly. Installation shall be per all applicable codes and manufacturer's instructions.

## Sequence of Operation

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### ZRT-1:

ALDES North America ZRT-1 provides on-off control for on-demand ventilation systems via a normally closed spring-return actuator. When in the unoccupied mode, power remains off, the damper door shall remain closed and will prevent airflow through the Constant Airflow Regulator. In the occupied mode, the damper will energize and rotate out of the airstream. The optional Constant Airflow Regulator (CAR3L) shall automatically balance the exhaust air flow to the maximum specified CFM rate across a pressure range of 0.12 and 1.2 in. w.g. (30 to 300 Pa).

### ZRT-2:

ALDES North America ZRT-2 provides on-off control for ventilation systems requiring a low volume continuous exhaust and on-demand boost via a normally closed spring-return actuator. When unoccupied, the power will remain off and the minimum flow Constant Airflow Regulator (CAR3L) shall regulate airflow to a specified low volume continuous flow rate across a pressure range of 0.12 and 1.2 in. w.g. (30 to 300 Pa). When occupied, the minimum flow damper shall energize and rotate out of the airstream allowing the maximum flow Constant Airflow Regulator (CAR3L) to automatically balance the exhaust rate to the specified maximum CFM airflow rate.