AIRFLOW & ZONE CONTROLS

ZRT-PDIL

Parallel Damper In-Line Zone Terminals

PRODUCT SPECIFICATIONS & TECHNICAL DATA

GENERAL

American Aldes patent-pending 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.

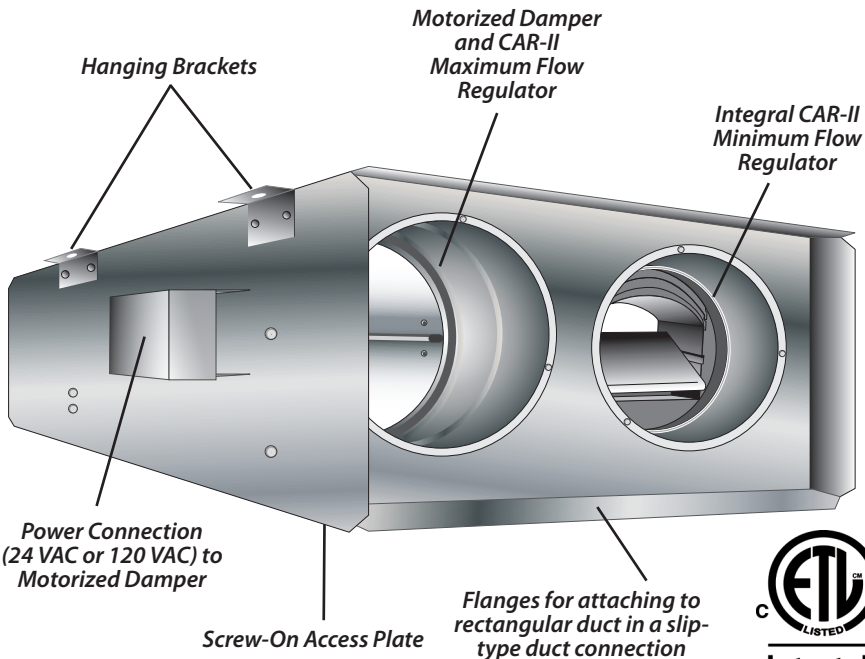
Each ZRT-PDIL is a two-position, pressure-independent terminal with a control damper to regulate high-limit on-demand airflow control and integral passive regulators for automatic air balancing of the minimum and maximum airflow setpoints. This unique combination provides flexible control schemes without 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-II) 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-II airflow controller.

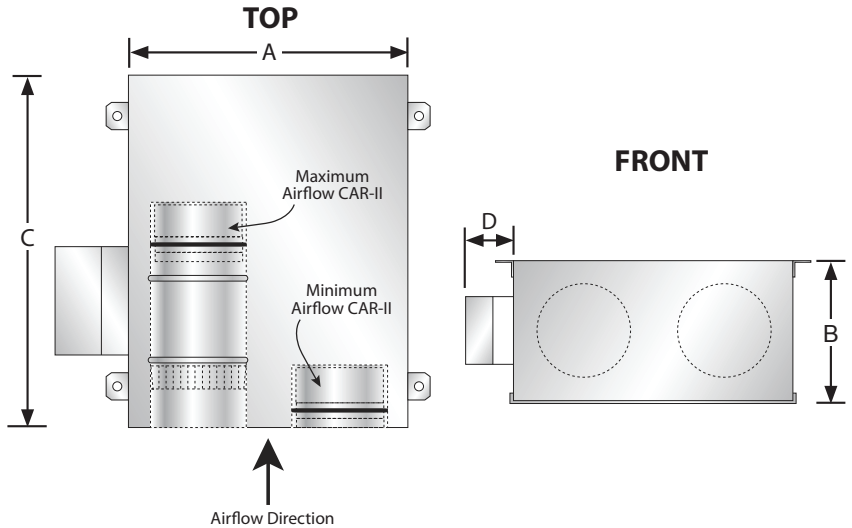
With the maximum-air motorized control damper completely closed, the factory-calibrated minimum CAR-II allows steady, low-continuous airflow control. (Consult the CAR-II specifications sheet for sizing and specifying information).

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

ZRT-PDIL



ZRT-PDIL Dimensions



SIZE (Duct)	CAR-II Diameter		A	B	C	D
	Min	Max				
12" x 6"	4"	4"	12"	6"	19-5/8"	3-1/8"
16" x 8"	6"	6"	16"	8"	21-5/8"	3-1/8"
20" x 10"	8"	8"	20"	10"	23-5/8"	3-1/8"
24" x 12"	10"	10"	24"	12"	25-5/8"	3-1/8"

CONSTRUCTION

The ZRT-PDIL is constructed of a heavy-gauge galvanized steel housing for durability. Units are designed to be installed in shallow plenum spaces and be connected to rigid rectangular duct in a slip-type duct connection.

The damper assembly is provided with a long-life 24 VAC or 120 VAC actuator motor with spring return. A damper end-switch is standard to allow signaling of a remote fan to activation. The gasketed tight-seal damper blade prevents air leakage in the closed position. A solid one-piece damper blade pivots on permanently lubricated bearings. The entire damper and flow regulators assembly can be installed or removed from below the terminal box through the screw-on access plate.

CONTROL

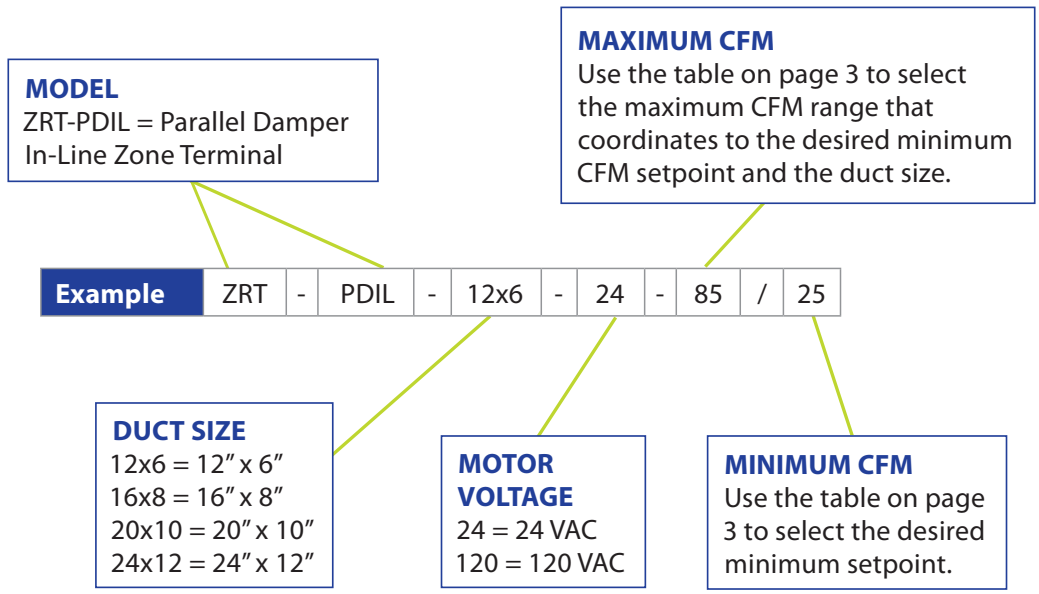
The ZRT-PDIL can be activated using a variety of control options, including on-off or timer switches, dehumidistats, occupancy sensors, or time-clock switches. Any on-off control device(s) will signal the max-flow damper to open fully, allowing for maximum ventilation control. Upon disconnecting the power, the ZRT-PDIL's integral spring will return the blade to its normally closed position.

Airflow control for both maximum and minimum flow rates is achieved using optional, integral, dynamic Constant Airflow Regulators (CAR-II). The CAR-II is an automatic modulating orifice that regulates airflows to constant levels in response to duct pressure. They require no additional power supply and are ideally suited for use in zone-controlled systems where duct pressures can fluctuate in response to the opening and closing of dampers.

MAINTENANCE

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

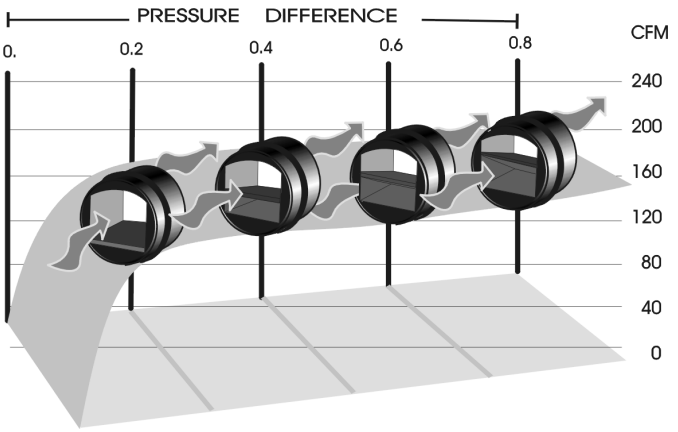
Reading the Model Code



How the CAR-II Works

Constant airflow is achieved by controlling the free area through the device. At minimum static pressure, the aero-wing is parallel to the air stream. As the static pressure increases, the aero-wing lifts, reducing the amount of free area through the regulator.

At the same time, the higher static pressure increases the air velocity, resulting in CONSTANT AIRFLOW. This occurs regardless of pressure differences in the range of 0.2 to 0.8 in. w.g. (50 to 200 Pa). The air velocity in the duct ranges from 60 to 700 ft/min. (0.3 to 3.5 m/s).



ZRT-PDIL CFM Range

MIN CFM SETPOINT	AVAILABLE MAX CFM (BY SIZE)			
	12" x 6"	16" x 8"	20" x 10"	24" x 12"
10	20-70	20-185	20-305	20-420
20	30-80	30-195	30-315	30-430
25	35-85	35-200	35-320	35-435
30	40-90	40-205	40-325	40-440
35	45-95	45-210	45-330	45-445
40	50-100	50-215	50-335	50-450
45	55-105	55-220	55-340	55-455
50	60-110	60-225	60-345	60-460
60	70-120	70-235	70-355	70-470
75		85-250	85-370	85-485
90		100-265	100-385	100-500
105		115-280	115-400	115-515
125		135-300	135-420	135-535
140		150-315	140-435	150-550
160		170-335	170-455	170-570
175		185-350	185-470	185-585
205			215-500	215-615
235			245-530	245-645
265			275-560	275-675
295			305-590	305-705
325				335-735
355				365-765
380				390-790
410				420-820

ELECTRICAL SPECIFICATIONS				
MOTOR VOLTAGE	MAXIMUM AIRFLOW DAMPER OPEN (POWERED)		MAXIMUM AIRFLOW DAMPER CLOSED (NOT POWERED)	
24 VAC	0.36 A	6 W	0.00 A	0.0 W
120 VAC	0.08 A	6 W	0.00 A	0.0 W

Typical Specification

Furnish and install model ZRT-PDIL Parallel Damper In-Line Zone Terminals by American ALDES Ventilation Corporation or approved equal. The 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 duct flange that allows attachment of rectangular rigid ducting in a slip-type duct connection. Each terminal shall include a plurality of integral, pressure-independent Constant Airflow Regulators (CAR-II) that provide the capability of automatically regulating airflow in both a minimum and maximum setting. Each regulator shall respond to changes in duct pressure to maintain specified flow rates at a constant level.

The primary CAR-II minimum air volume regulator shall be factory calibrated to the specified set point and automatically control the amount of air any time the central fan is operating. The secondary CAR-II air volume regulator shall be factory calibrated to an airflow rate equal to the maximum specified rate minus the minimum airflow rate. The secondary CAR-II air regulator shall be located in series with a motorized single-blade damper operated by a long-life 24 VAC or 120 VAC synchronous-drive motor with normally closed spring-return closure. When fully open, the maximum airflow regulator will become active during central fan operation. The damper blade shall rotate 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 entire damper assembly and all operable parts shall be capable of being removed from the terminal housing from below without disconnecting duct or removing the housing. Access to all regulator and damper components shall be through an integral screw-on access plate. All terminals and/or pertinent components must be listed per UL standards and carry the UL, UR or ETL mark indicating compliance. Each ZRT-PDIL shall include all necessary mounting brackets and hardware. Installation shall be per all applicable codes and manufacturer's instructions.

WARRANTY

The entire unit is guaranteed for three (3) years, from date of shipment, against all manufacturing defects, provided the material has been installed and operated per manufacturer's instructions and 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 and is limited to the original end user.

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