



AIRFLOW & ZONE CONTROLS

ZRT-3PDIL

Three Parallel Damper In-Line Zone Terminals

PRODUCT SPECIFICATIONS & TECHNICAL DATA

GENERAL

American Aldes patent-pending Three Parallel Damper In-Line Zone Terminals (ZRT-3PDIL) are designed to introduce flexibility and dynamic control to central supply or exhaust ventilation systems. Used in both large and small systems, the ZRT-3PDIL regulates ventilation air without the need for individual fans or traditional VAV terminal units.

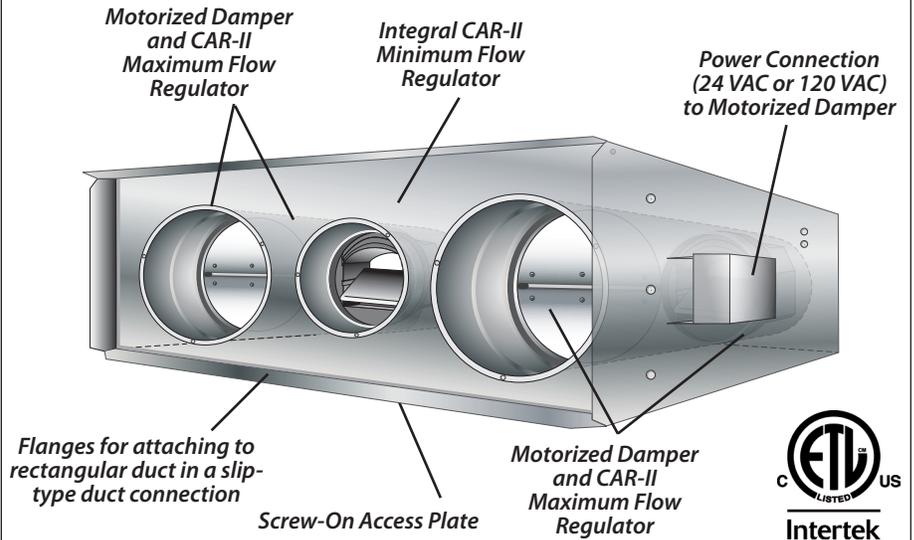
Each ZRT-3PDIL is a three-position, pressure-independent terminal with two control dampers to regulate multiple high-limit on-demand airflow controls and integral passive regulators for automatic air balancing of the minimum and maximum airflow setpoints. This unique combination provides flexible control schemes without the need for expensive pneumatic, electronic, or DDC control systems.

The ZRT-3PDIL is primarily used for combination low-flow indoor air quality ventilation or make-up air, and two on-demand high-flow spot ventilation rates using the same central exhaust or supply fan system. For example, controlling make-up air in response to a bath fan or clothes dryer, plus range hood exhaust. 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 airflows are controlled by a series of 24 VAC or 120 VAC powered motorized damper(s) and a secondary CAR-II airflow controller.

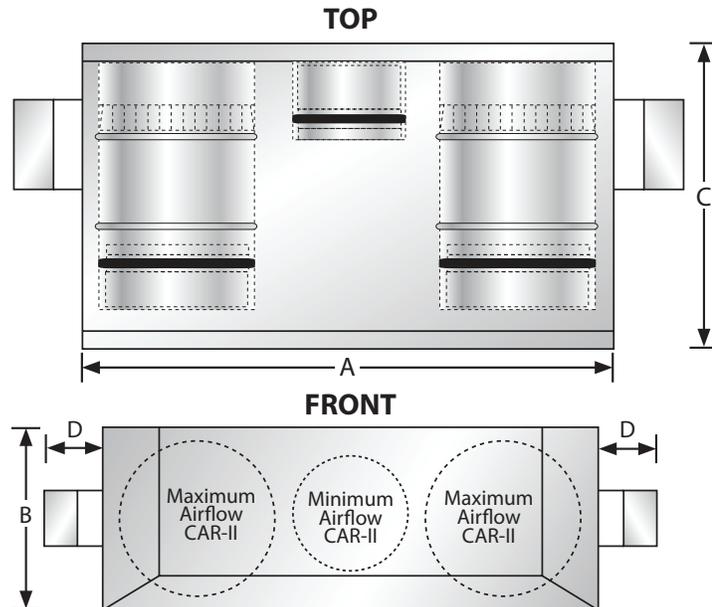
With the maximum-air motorized control dampers completely closed, the factory-calibrated minimum CAR-II allows steady, low-continuous airflow control. (Consult the CAR-II specifications sheet for sizing and specifying information).

When other ZRT-3PDIL are activated for on-demand control of high flow, the unpowered ZRT-3PDIL will maintain the specified low-continuous rate through the pressure-independent CAR-II minimum flow control. Opening the ZRT-3PDIL's control damper adds its calibrated airflow rates to the minimum setpoint, allowing for full maximum-boost ventilation.

ZRT-3PDIL



ZRT-3PDIL Dimensions



SIZE (Duct)	CAR-II Diameter		A	B	C	D
	Min	Max				
28" x 10"	6"	(2) 8"	28"	10"	24-5/8"	3-1/8"
30" x 10"	8"	(2) 8"	30"	10"	24-5/8"	3-1/8"
34" x 12"	8"	(2) 10"	34"	12"	26-5/8"	3-1/8"
36" x 12"	10"	(2) 10"	36"	12"	26-5/8"	3-1/8"

CONSTRUCTION

The ZRT-3PDIL 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 assemblies are provided with long-life 24 VAC or 120 VAC actuator motors with spring return. An optional damper end-switch is available to allow signaling of a remote fan to activation. The gasketed tight-seal damper blade prevents air leakage and noise in the closed position. A solid one-piece damper that pivots on permanently lubricated bearings is used to support the blade assembly and to prevent deflection caused by motor torque and exposure to air velocity. The entire damper and flow regulators assembly can be installed or removed from below the terminal box through a screw-on access plate.

CONTROL

The ZRT-3PDIL 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 go fully open, allowing for maximum ventilation control. Upon disconnecting the power, the damper'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-3PDIL needs no maintenance when used in normal conditions.

Reading the Model Code

MODEL

ZRT-3PDIL = Three Parallel Damper In-Line Zone Terminal

MAXIMUM CFM (BOOST 1)

Use the table on page 3 to select the maximum CFM range that coordinates to the desired minimum CFM setpoint and the duct size.

MINIMUM CFM

Use the table on page 3 to select the desired minimum set point.

Example ZRT - 3PDIL - 28x10 - 24 - 285 / 255 / 50

DUCT SIZE

- 28x10 = 28" x 10"
- 30x10 = 30" x 10"
- 34x12 = 34" x 12"
- 36x12 = 36" x 12"

MOTOR VOLTAGE

- 24 = 24 VAC
- 120 = 120 VAC

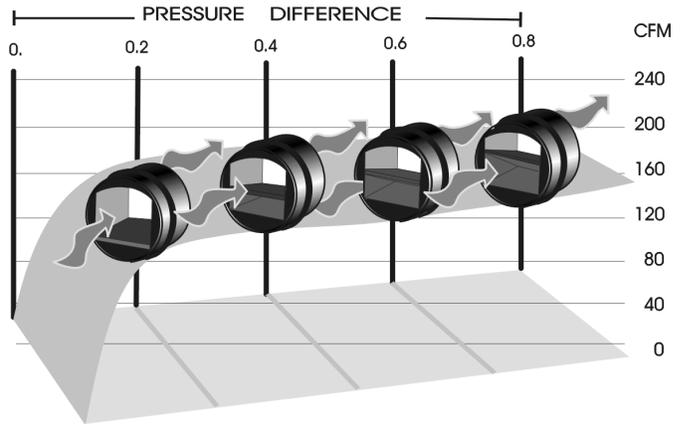
MAXIMUM CFM (BOOST 2)

Use the table on page 3 to select the maximum CFM range that coordinates to the desired minimum CFM setpoint and the duct size.

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-3PDIL CFM Range

MIN CFM SETPOINT	AVAILABLE MAX CFM (BY SIZE)*														
	28 x 10			30 x 10			34 x 12			36 x 12					
	BOOST 1	BOOST 2	TOTAL MAX	BOOST 1	BOOST 2	TOTAL MAX	BOOST 1	BOOST 2	TOTAL MAX	BOOST 1	BOOST 2	TOTAL MAX			
10	20-305	20-305	30-600	20-305	20-305	30-600	20-420	20-420	30-830	20-420	20-420	30-830			
20	30-315	30-315	40-610	30-315	30-315	40-610	30-430	30-430	40-840	30-430	30-430	40-840			
25	35-320	35-320	45-615	35-320	35-320	45-615	35-435	35-435	45-845	35-435	35-435	45-845			
30	40-325	40-325	50-620	40-325	40-325	50-620	40-440	40-440	50-850	40-440	40-440	50-850			
35	45-330	45-330	55-625	40-330	40-330	55-625	45-445	45-445	55-855	45-445	45-445	55-855			
40	50-335	50-335	60-630	50-335	50-335	60-630	50-450	50-450	60-860	50-450	50-450	60-860			
45	55-340	55-340	65-635	55-340	55-340	65-635	55-455	55-455	65-865	55-455	55-455	65-865			
50	60-345	60-345	70-640	60-345	60-345	70-640	60-460	60-460	70-870	60-460	60-460	70-870			
60	70-355	70-355	80-650	70-355	70-355	80-650	70-470	70-470	80-880	70-470	70-470	80-880			
75	85-370	85-370	95-665	85-370	85-370	95-665	85-485	85-485	95-895	85-485	85-485	95-895			
90	100-385	100-385	110-680	100-385	100-385	110-680	100-500	100-500	110-910	100-500	100-500	110-910			
105	115-400	115-400	125-695	115-400	115-400	125-695	115-515	115-515	125-925	115-515	115-515	125-925			
125	135-420	135-420	145-715	135-420	135-420	145-715	135-535	135-535	145-945	135-535	135-535	145-945			
140	150-435	150-435	160-730	150-435	150-435	160-730	150-550	150-550	160-960	150-550	150-550	160-960			
160	170-455	170-455	180-750	170-455	170-455	180-750	170-570	170-570	180-980	170-570	170-570	180-980			
175	185-470	185-470	195-765	185-470	185-470	195-765	185-585	185-585	195-995	185-585	185-585	195-995			
205				215-510	215-510	225-795	210-615	210-615	220-1025	210-615	210-615	220-1025			
235				245-530	245-530	255-825	245-645	245-645	255-1055	245-645	245-645	255-1055			
265				275-560	275-560	285-855	275-675	275-675	285-1085	275-675	275-675	285-1085			
295				305-590	305-590	315-885	305-705	305-705	315-1116	305-705	305-705	315-1116			
325													335-735	335-735	345-1145
355													365-765	365-765	375-1175
380													390-790	390-790	400-1200
410													420-820	420-820	430-1230

* MAX CFM BOOST 1 and 2 represent the airflow range for each motorized damper portion independently. TOTAL MAX CFM represents the airflow range when both motorized dampers are open. Schedule BOOST 1 and 2 independently, as shown on page 2, "Reading the Model Code".

ELECTRICAL SPECIFICATIONS				
MOTOR VOLTAGE	MAXIMUM AIRFLOW DAMPER OPEN (POWERED)		MAXIMUM AIRFLOW DAMPER CLOSED (NOT POWERED)	
24 VAC	0.72 A	12 W	0.00 A	0.0 W
120 VAC	0.16 A	12 W	0.00 A	0.0 W

Typical Specification

Furnish and install model ZRT-3PDIL Three 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 as specified 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 regulators shall be factory calibrated to an airflow rate equal to the maximum specified rate minus the minimum airflow rate. The secondary CAR-II air regulators 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 regulators will become active during central fan operation. The dampers 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 removable 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-3PDIL 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.