AIRFLOW & ZONE CONTROLS

ZRT-3PDIL-HP

High-Pressure 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-HP) 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-HP regulates ventilation air without the need for individual fans or traditional VAV terminal units.

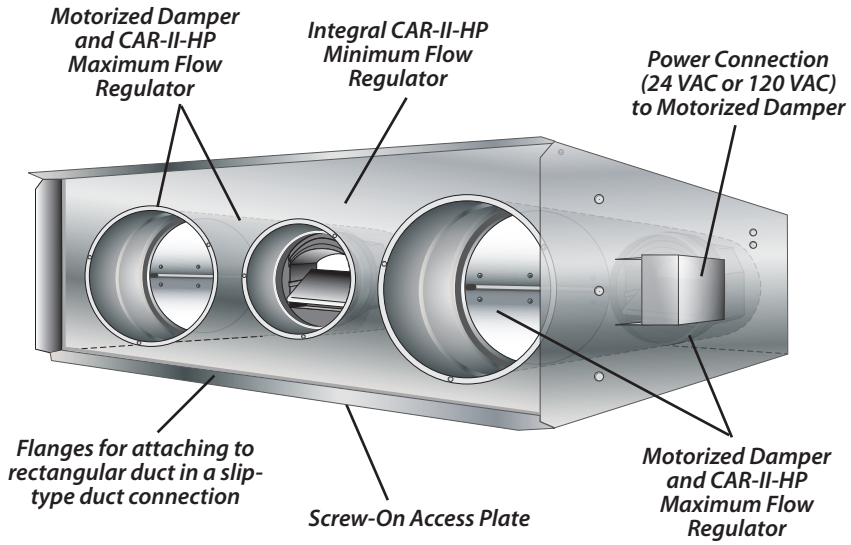
Each ZRT-3PDIL-HP is a three-position, pressure-independent terminal with two control dampers to regulate multiple high-limit on-demand airflow controls and integral passive regulators for automatic air balancing of the minimum and maximum airflow setpoints. This unique combination provides flexible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

The ZRT-3PDIL-HP 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 High-Pressure Constant Airflow Regulator (CAR-II-HP) 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-HP airflow controller.

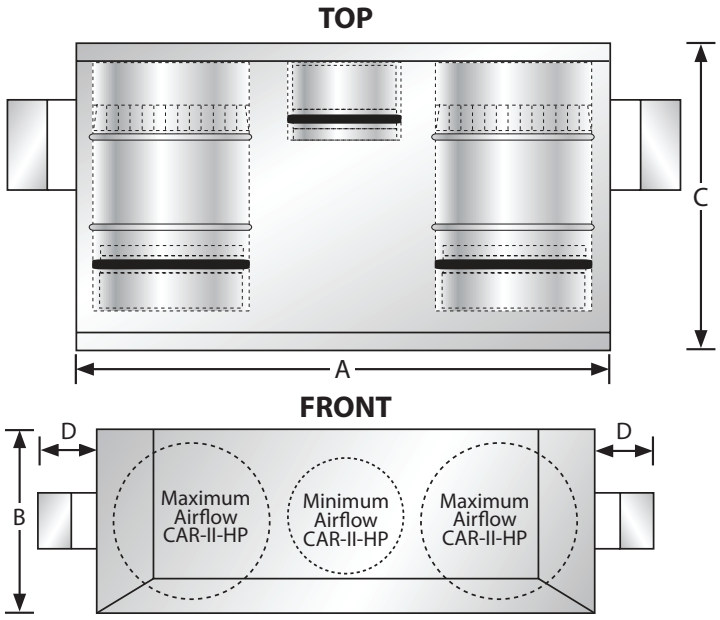
With the maximum-air motorized control dampers completely closed, the factory-calibrated minimum CAR-II-HP allows steady, low-continuous airflow control. (Consult the CAR-II-HP specifications sheet for sizing and specifying information).

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

ZRT-3PDIL-HP



ZRT-3PDIL-HP Dimensions



SIZE (Duct)	CAR-II-HP 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-HP 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-HP 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-HP). The CAR-II-HP 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-HP needs no maintenance when used in normal conditions.

Reading the Model Code

MODEL
ZRT-3PDIL-HP = High-Pressure 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	-	HP	-	28x10	-	24	-	150	/	195	/	75

DUCT SIZE
28x10 = 28" x 10"
30x10 = 30" x 10"
34x12 = 34" x 12"
36x12 = 36" x 12"

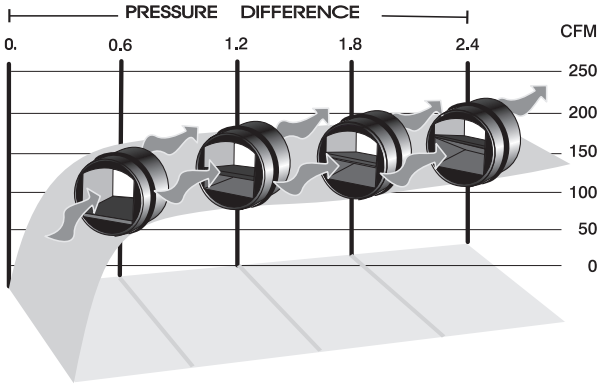
MOTOR VOLTAGE
24 = 24 VAC
120 = 120 VAC

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-HP 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 0.6 to 2.4 in. w.g. (150 to 600 Pa).



ZRT-3PDIL-HP 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
30	60-500	60-500	90-970	60-500	60-500	90-970	60-735	60-735	90-1440	60-735	60-735	90-1440
45	75-515	75-515	105-985	75-515	75-515	105-985	75-750	75-750	105-1455	75-750	75-750	105-1455
60	90-530	90-530	120-1000	90-530	90-530	120-1000	90-765	90-765	120-1470	90-765	90-765	120-1470
75	105-545	105-545	135-1015	105-545	105-545	135-1015	105-780	105-780	135-1485	105-780	105-780	135-1485
90	120-560	120-560	150-1030	120-560	120-560	150-1030	120-795	120-795	150-1500	120-795	120-795	150-1500
120	150-590	150-590	180-1060	150-590	150-590	180-1060	150-825	150-825	180-1530	150-825	150-825	180-1530
180	210-650	210-650	240-1120	210-650	210-650	240-1120	210-885	210-885	240-1590	210-885	210-885	240-1590
205	235-675	235-675	265-1145	235-675	235-675	265-1145	235-910	235-910	265-1615	235-910	235-910	265-1615
235	265-705	265-705	295-1175	265-705	265-705	295-1175	265-940	265-940	925-1645	265-940	265-940	295-1645
265	295-735	295-735	325-1205	295-735	295-735	325-1205	295-970	295-970	325-1675	295-970	295-970	325-1675
300	330-770	330-770	360-1240	330-770	330-770	360-1240	330-1005	330-1005	360-1710	330-1005	330-1005	360-1710
355				385-825	385-825	415-1295	385-1060	385-1060	415-1765	385-1060	385-1060	415-1765
415				445-885	445-885	475-1355	445-1120	445-1120	475-1825	445-1120	445-1120	475-1825
470				500-940	500-940	530-1410	500-1175	500-1175	530-1880	500-1175	500-1175	530-1880
525										555-1230	555-1230	585-1935
580										610-1285	610-1285	640-1990
650										680-1355	680-1355	710-2060
705										735-1410	735-1410	765-2115

* 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-HP High-Pressure 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 High-Pressure Constant Airflow Regulators (CAR-II-HP) 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-HP 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-HP 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-HP 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-HP 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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