AIRPRODUCTS®
Technology in Air Control

VARIABLE AIR VOLUME (VAV) TERMINAL

PRODUCT CATALOGUE

CATALOGUE NO.: AP-PIVAV-R5

Pressure Independent Type for Rectangular Duct

Bypass Type

Pressure Independent Type for Flat Oval Duct

AIRPRO ENGINEERS PVT. LTD.
Office no. 502-504, Tropical New Era Business park, B16, Road no.33, Opp. ESIC Hospital, Wagle Estate, Thane (W) - 400604.

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General Information

A variable-air-volume (VAV) system is a single-path system that controls zone temperature by modulating airflow while maintaining constant supply air temperature. VAV terminal units, located at each zone, adjust the quantity of air reaching each zone depending on its load requirements.

AIRPRODUCTS® VAV Terminal units are designed to control the airflow rate of conditioned air into an occupied space in response to a control signal, usually a thermostat. The clean and efficient design of these terminal units result in a system component which has minimal pressure drop reducing fan horsepower requirements, and low noise generation for quiet operation.

Features

- Multiple sizes available to cover wide range of airflow i.e. 85 Cfm to 4000 Cfm.
- All VAV terminal boxes are internally lined with 10 mm thick special acoustic open cell insulation for noise absorption.
- Heavy Duty 22G casing construction
- Highly precise Pitot tube having flow averaging unit at centre
- Round Damper situated at inlet is precisely designed with elastomeric gasket for minimum air-leakage.
- Industry standard round inlet collars sized to accept either flexible or rigid duct.
- Universal Standard BACNet® Protocol for seamless BMS Integration
- Ease of site re-configuration from thermostat
- Airflow leakage on normal shut-off is not more than 3% of maximum air volume at 750 Pa inlet static pressure.

Those are mainly classified based on it's working principle as follows.

- Pressure Independent Type :

A pressure independent terminal unit is equipped with a flow sensing controller that can be set to limit maximum and minimum primary air discharge from terminal unit.

- Bypass Type:

The Bypass terminal unit handles a constant supply of primary air though its inlet. The unit bypasses primary air to the ceiling plenum to meet the needs of conditioned space. This method provides a low first cost with minimum controls, but it is energy insufficient compared to other systems.

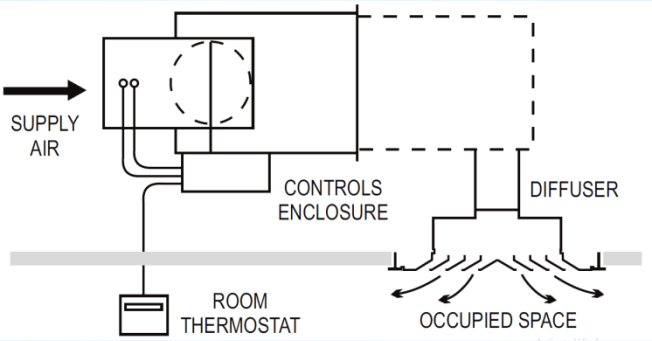
Nomenclature Explained

Airproducts® VAV TERMINAL BOX MODEL	AP -	PI -	SC -	300
Type of control				
PI	Pressure Independent series			
CV	Bypass series			
Type of casing				
SC	Standard casing (Standard CASING) Series			
LC	Integral Attenuator (LONG CASING) Series			
Inlet Dia. Size (mm)				
100	4 " Circular Inlet			
150	6 " Circular Inlet			
200	8 " Circular Inlet			
250	10 " Circular Inlet			
300	12 " Circular Inlet			
350	14 " Circular Inlet			
400	16 " Circular Inlet			

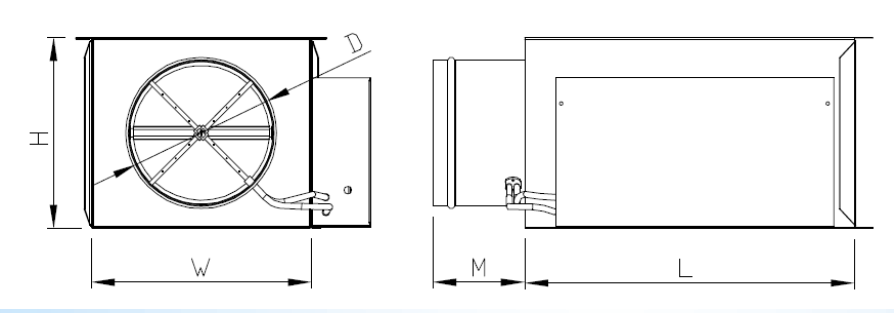
Selection on Airflow range

Inlet Dia. Size(Inch)	AIRFLOW CFM	
	MINIMUM	MAXIMUM
4	50	250
6	85	450
8	170	800
10	260	1300
12	430	2100
14	550	3050
16	740	4000

Pressure Independent Type AP-PI Series



A device is said to be Pressure Independent when the flow rate passing through it is maintained constant regardless of variations in systems inlet pressure. The pressure independent control is achieved with the addition of a flow sensor and flow controller to the VAV box. The controller maintains a preset volume by measuring the flow through the inlet and modulating the damper in response to the flow signal. The preset volume can be varied between calibrated minimum and the maximum limits by the thermostat output.



Inlet Dia. Size(Inch)	Dia. (d)	H	W	L	M
4	100	210	230	400	131
6	150	210	230	400	131
8	200	260	260	400	132
10	250	310	325	400	133
12	300	360	390	550	182
14	350	415	420	580	202
16	400	465	480	610	205

Those are mainly classified based on it's working principle as follows.

❖ Pressure Independent Type :

A pressure independent terminal unit is equipped with a flow sensing controller that can be set to limit maximum and minimum primary air discharge from terminal unit.

Acoustical Data

AP-PI Series

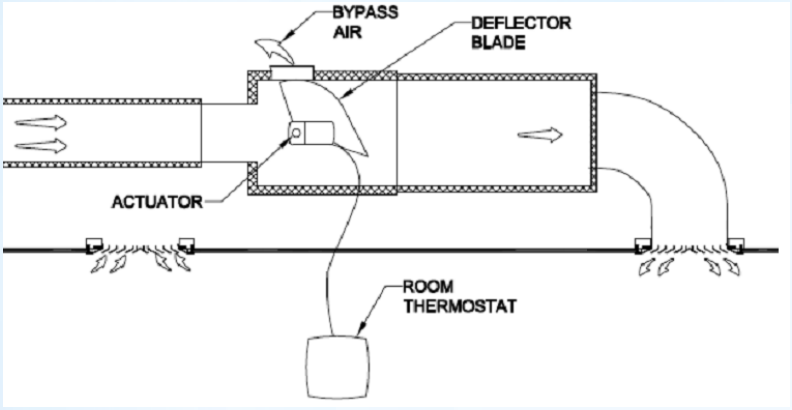
MODEL	AIR VOLUME		125 Pa Differential static pressure											
			Sound pressure levels in dB(A)						Sound pressure levels in dB(A)					
			Box Radiated Noise						Air Regenerated Noise					
	Cfm	L/s	125	250	500	1000	2000	4000	125	250	500	1000	2000	4000
6”	50	24	19	30	28	26	21	<15	34	32	30	27	25	22
	200	94	43	40	35	34	33	25	49	46	40	35	34	31
	325	153	44	40	35	36	35	30	51	57	45	39	36	34
	450	212	45	45	34	33	33	25	56	58	50	42	39	35
8”	100	47	42	30	30	28	25	22	37	41	35	35	34	28
	350	165	42	32	28	23	25	18	55	51	43	39	38	36
	560	264	57	34	33	27	28	20	55	55	48	40	40	39
	800	401	57	46	36	24	28	20	59	60	54	45	44	44
10”	150	71	38	38	35	28	28	19	46	45	39	37	36	34
	650	307	43	32	25	25	26	17	54	51	45	42	41	40
	975	460	55	43	34	30	29	20	57	57	50	44	42	41
	1300	649	50	43	31	33	32	24	60	62	56	47	45	43
12”	200	94	43	35	24	18	<15	<15	42	40	36	27	26	27
	900	425	53	45	35	28	27	22	54	50	45	40	38	37
	1375	649	55	50	40	33	30	24	58	55	50	42	42	40
	2100	991	59	53	45	36	34	28	62	64	57	45	45	44
14”	310	146	32	30	27	20	20	<15	47	44	41	37	35	32
	1390	656	43	41	35	28	31	23	55	50	45	41	40	38
	2250	1061	53	42	40	35	34	30	57	59	49	46	46	42
	3050	1462	53	53	45	38	40	35	64	65	55	49	50	47
16”	400	189	32	27	25	19	20	<15	42	41	36	35	34	33
	1800	849	42	38	32	28	28	22	54	51	43	41	40	38
	2950	1392	54	40	40	35	34	30	59	59	49	45	44	42
	3900	1840	56	54	46	40	41	37	62	63	57	50	48	45

Acoustical Data

AP-PI Series

MODEL	AIR VOLUME		500 Pa Differential static pressure											
			Sound pressure levels in dB(A)						Sound pressure levels in dB(A)					
			Box Radiated Noise						Air Regenerated Noise					
	Cfm	L/s	125	250	500	1000	2000	4000	125	250	500	1000	2000	4000
6”	50	24	33	38	38	34	32	22	42	41	42	43	41	37
	200	94	51	55	49	47	48	39	55	55	54	50	47	45
	325	153	57	60	52	52	53	49	61	63	60	55	53	51
	450	212	59	64	54	54	55	53	67	69	65	59	55	53
8’	100	47	47	38	41	38	38	35	46	50	49	48	46	44
	350	165	60	55	52	47	48	47	62	65	61	58	57	54
	560	264	70	58	55	48	50	48	66	70	65	60	58	56
	800	401	70	60	55	47	49	46	70	74	69	63	59	58
10”	150	71	41	47	44	41	38	32	54	53	56	53	50	46
	650	307	61	60	45	44	47	40	66	69	65	61	58	57
	975	460	71	64	50	47	47	42	70	72	68	62	59	58
	1300	649	77	68	54	49	50	44	72	73	68	64	60	60
12”	200	94	51	45	44	40	36	31	46	47	53	50	49	45
	900	425	67	61	55	49	48	44	62	63	62	58	55	55
	1375	649	70	63	57	50	49	45	67	68	65	61	58	58
	2100	991	74	65	58	52	49	45	70	72	68	63	59	59
14’	310	146	48	49	47	40	34	32	57	56	59	52	50	48
	1390	656	66	59	56	46	44	41	69	66	64	61	58	56
	2250	1061	70	64	56	47	47	42	73	71	67	63	60	59
	3050	1462	72	63	56	49	49	45	75	73	68	64	63	61
16’	400	189	50	50	48	41	35	33	50	54	59	52	51	50
	1800	849	67	57	54	46	45	43	65	64	61	57	56	54
	2950	1392	78	65	58	52	49	43	73	69	64	59	57	56
	3900	1840	88	72	63	60	56	49	79	73	64	62	60	59

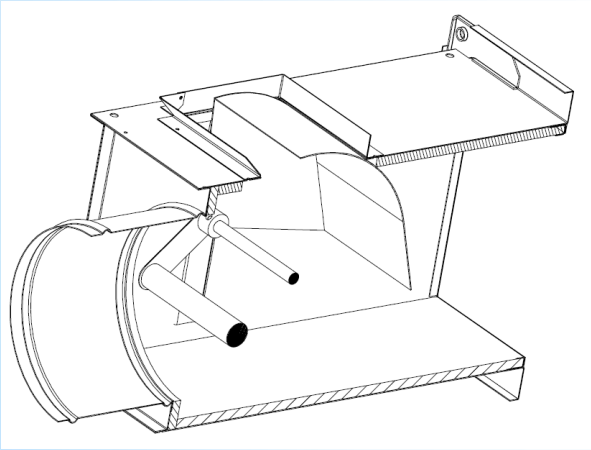
Bypass Type VAV Terminal AP-CV Series



Bypass Terminal Unit (Bypass VAV Box) is a single duct pressure dependent air terminal unit designed for small installations.
The Bypass terminal unit handles a constant supply of primary air though its inlet.
The temperature control is achieved by supplying only enough conditioned air to the room to satisfy room controller need. Any amount of excess air is being bypassed directly to return air plenum.

This method provides a low first cost with minimum controls, but it is energy insufficient compared to other systems.

Construction

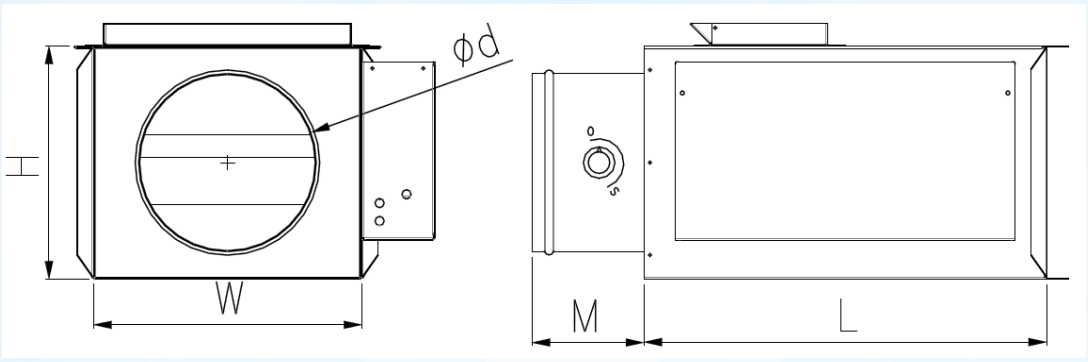


AIRPRODUCTS® Bypass Volume Terminal Unit (Bypass VAV Box) is equipped with an unique type of cylindrical flow diverter for superior control and better performance at lowest torque.

As shown in the diagram, geometry of the damper is a modified cylindrical shape. It is designed in such a way that it diverts flow of air smoothly without producing turbulence in it with smooth modulation of supply air at all positions.

Proper balancing of diverter results lower torque requirement for the operation.

Dimensional Data



Inlet Dia. Size(Inch)	W	H	M	L	AIR FLOW CFM	
					MINIMUM	MAXIMUM
6	275	210	131	450	100	450
8	300	260	132	500	170	800
10	350	325	133	500	260	1300
12	400	380	182	550	430	2100
14	500	450	202	650	550	3050

Acoustical Data

AP-CV Series – Radiated Noise

INLET SIZE	AIR FLOW		Minimum Discharge DPs	Minimum Bypass DPs	Bypass Closed						Bypass Open					
					Sound Power Level (dB)						Sound Power Level (dB)					
	CFM	l/s	Pa	Pa	125	250	500	1000	2000	4000	125	250	500	1000	2000	4000
6	400	189	2.5	35	42	37	33	24	-	-	54	55	52	52	51	37
	300	142	2.5	20	-	34	25	-	-	-	47	48	45	47	37	26
	200	94	2.5	10	-	-	-	-	-	-	-	38	34	32	-	-
	100	47	2.5	2.5	-	-	-	-	-	-	-	34	29	-	-	-
8	700	330	2.5	52	47	41	34	28	26	-	60	59	55	53	48	41
	500	236	2.5	27	43	34	27	-	-	-	52	50	46	43	30	28
	350	165	2.5	13	-	32	-	-	-	-	47	40	37	32	25	-
	200	94	2.5	5	-	-	-	-	-	-	43	30	-	-	-	-
10	1100	519	2.5	107	52	49	46	37	32	23	65	64	62	60	56	52
	800	378	2.5	57	49	43	39	28	26	-	56	55	52	50	46	41
	500	236	2.5	22	43	35	29	-	-	-	47	45	43	41	34	-
	250	118	2.5	5	-	-	-	-	-	-	42	28	-	-	-	-
12	1600	755	2.5	125	48	51	47	37	35	29	69	69	66	63	60	56
	1200	566	2.5	70	43	41	38	29	25	-	61	60	58	56	52	46
	800	378	2.5	32	40	33	29	-	-	-	50	49	49	46	39	31
	400	189	2.5	7.5	-	-	-	-	-	-	44	40	41	35	28	-
14	2100	991	13	125	54	58	56	49	49	41	69	69	67	65	61	57
	1600	755	7.5	72	48	50	49	42	40	29	62	62	60	57	53	48
	1050	496	2.5	30	44	40	38	29	-	-	51	50	50	45	40	31
	560	264	2.5	7.5		31	26	-	-	-	-	37	36	29	-	-
16	2750	1298	15	125	64	63	59	49	46	37	73	73	71	69	65	61
	2050	967	7.5	70	57	54	50	41	36	25	65	65	63	61	56	50
	1375	649	2.5	32	45	41	38	27	-	-	54	53	53	50	44	34
	700	330	2.5	7.5	-	-	-	-	-	-	40	35	33	25	-	-

Acoustical Data

AP-CV Series – Discharge Noise

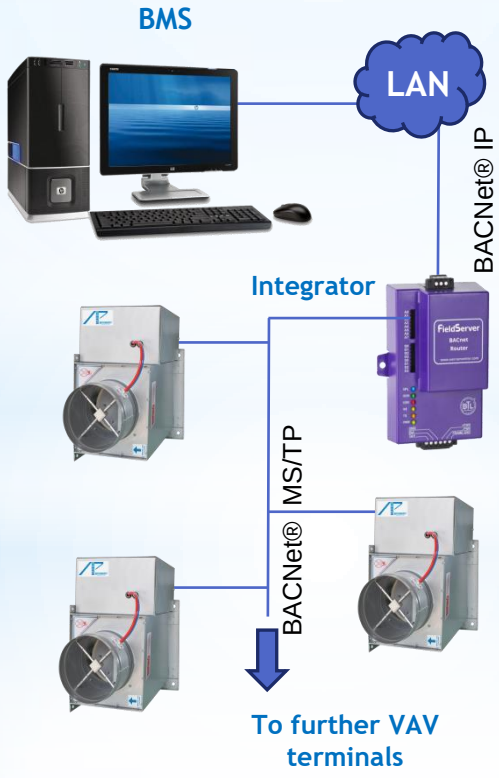
INLET SIZE	AIR FLOW		Minimum Discharge DPs	Minimum bypass DPs	Bypass Closed					
					Sound Power Level (dB)					
	CFM	l/s	pa	pa	125	250	500	1000	2000	4000
6	400	189	2.5	34.9	45	44	41	33	29	26
	300	142	2.5	19.9	43	38	34	25	-	-
	200	94	2.5	10	-	31	24	-	-	-
	100	47	2.5	2.5	-	-	-	-	-	-
8	700	330	2.5	52.3	52	51	47	39	36	33
	500	236	2.5	27.4	45	43	38	29	24	-
	350	165	2.5	12.5	-	34	28	-	-	-
	200	94	2.5	5	-	-	-	-	-	-
10	1100	519	2.5	107	50	50	46	43	37	34
	800	378	2.5	57.3	47	47	36	30	28	22
	500	236	2.5	22.4	44	40	34	28	-	-
	250	118	2.5	5	40	30	-	-	-	-
12	1600	755	2.5	125	49	47	45	43	44	40
	1200	566	2.5	69.7	44	40	38	36	36	29
	800	378	2.5	32.4	40	31	25	-	-	-
	400	189	2.5	7.5	-	-	26	-	-	-
14	2100	991	12.5	125	60	57	54	48	45	36
	1600	755	7.5	72.2	54	49	44	39	34	24
	1050	496	2.5	29.9	47	37	31	24	-	-
	560	264	2.5	7.5	-	31	-	-	-	-
16	2750	1298	14.9	125	66	64	61	56	52	46
	2050	967	7.5	69.7	58	56	51	46	42	34
	1375	649	2.5	32.4	50	45	39	33	27	-
	700	330	2.5	7.5	47	31	-	-	-	-

Performance notes:

1) Discharge sound power is the noise emitted from the unit discharge in to the downstream duct.
2) Radiated sound power is the breakout noise transmitted through the unit casing walls.
3) Sound power levels are in decibles, dB.
4) All sound data listed by octave bands is raw data without any corrections for room absorption or duct attenuation.
5) Dash (-) in data filed indicates sound power level is less than 20 dB or equal to background.
6) Minimum discharge DPs is the static pressure loss through the unit with 100% airflow through discharge outlet.
7) Minimum bypass DPs is the static pressure loss through the unit with 100% airflow through bypass outlet.

ARCHITECTURE SCHEME

Conventional BACNet MS/TP Network



AIRPRODUCTS®
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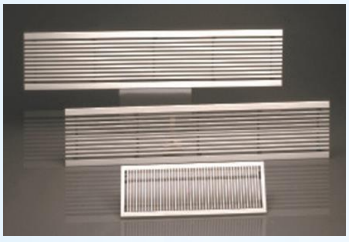
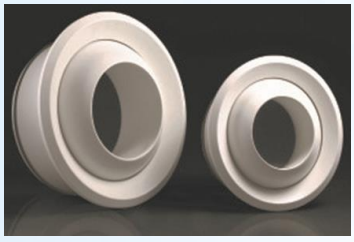
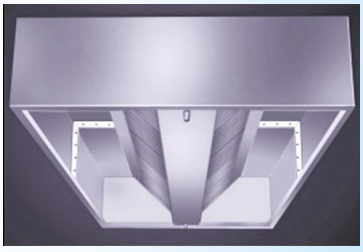
OTHER PRODUCTS

Lets Breath Healthy & Fresh Air by our wide range of Air Distribution Products





- Aluminium Grille
- Diffuser
- Volume Control
- Damper
- Fire Damper
- Hepa Terminal Box
- Jet Nozzle
- Jet Diffuser
- VAV Terminal Box
- Kitchen Hood



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