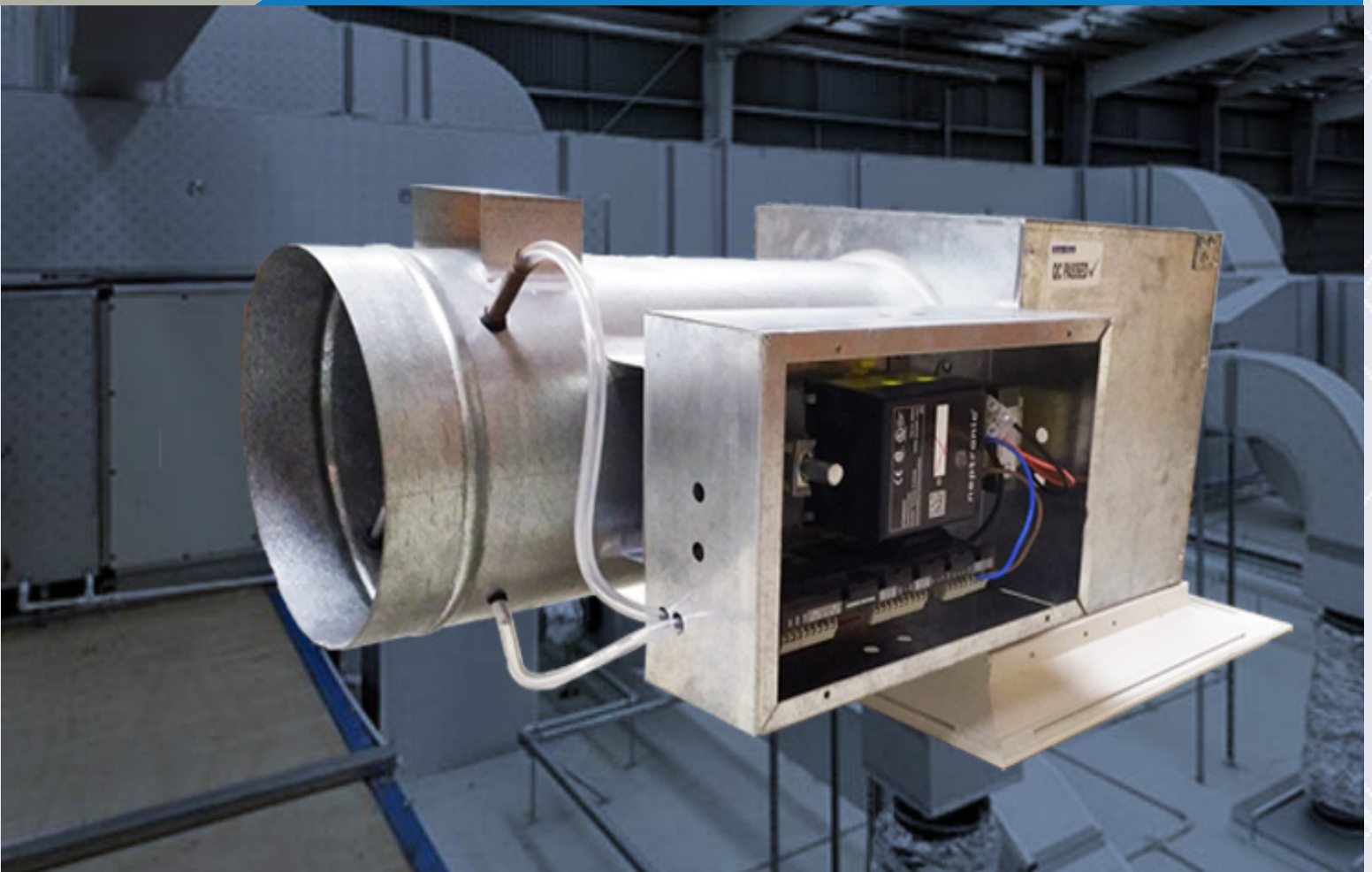


DIFFUSER PRESSURE INDEPENDENT TERMINAL UNITS

We Care For The Air You Breathe



Diffuser Pressure Independent Terminal Unit Index

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DIFFUSER PRESSURE INDEPENDENT TERMINAL UNITS (DPITU)

DESCRIPTION

Flow Tech diffuser pressure independent terminal units are designed to control air volume flow rate for supply air on variable volume system. These units are designed to supply the air flow rate of conditioned air into an occupied zone in response to control signal from a thermostat or building management system. These could also be used as stand alone system.

Flow Tech Diffuser PITUs consist of a casing with circular inlet spigot, rectangular outlet connection. Circular damper blade and cross flow differential pressure sensor for measuring air volume. The casing design and optimized silencer geometry reduce self-generated noise, minimize pressure drop.

Diffuser PITUs also incorporate control components (VAV actuator, transformer) which are factory fitted and calibrated in our in house calibration rig to ensure all DPITU meet the design criteria of our customer. This enable the terminal to monitor desired air flow rate as dictated by the thermostat or input signal of 0-10V and compensate instantly for any changes in supply air pressure that might tend to alter the supply air volume. Net resultant is a pressure independent variable air volume system.

FEATURES

Circular damper blade for better flow management

EDPM gasket on damper blade for low leakage.

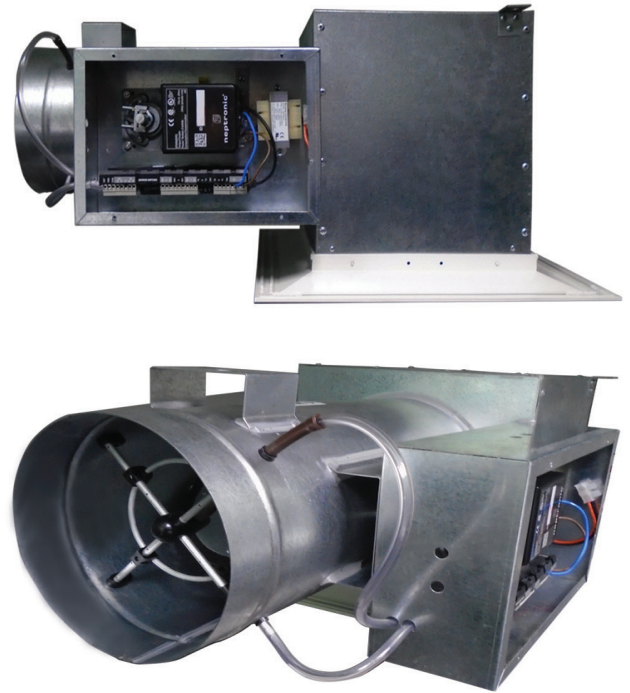
Multi-point averaging inlet differential pressure sensor

Acoustic lining of mineral wool with glass fiber facing suitable for air velocity up to 20m/s.

Shaft indicator for damper position.

Rectangular discharge outlet with clip and drive cleat duct connection.

Control components encased in control panel (optional).



MATERIAL SPECIFICATIONS

Casing

0.9mm (21 gauge) galvanized steel sheet.

Damper Blade

Double-skin 0.9mm thick (21 gauge) galvanized steel sheet each

Acoustic Insulation

25mm thick, 24kg/m³ with black tissue facing meeting UL 181 standard

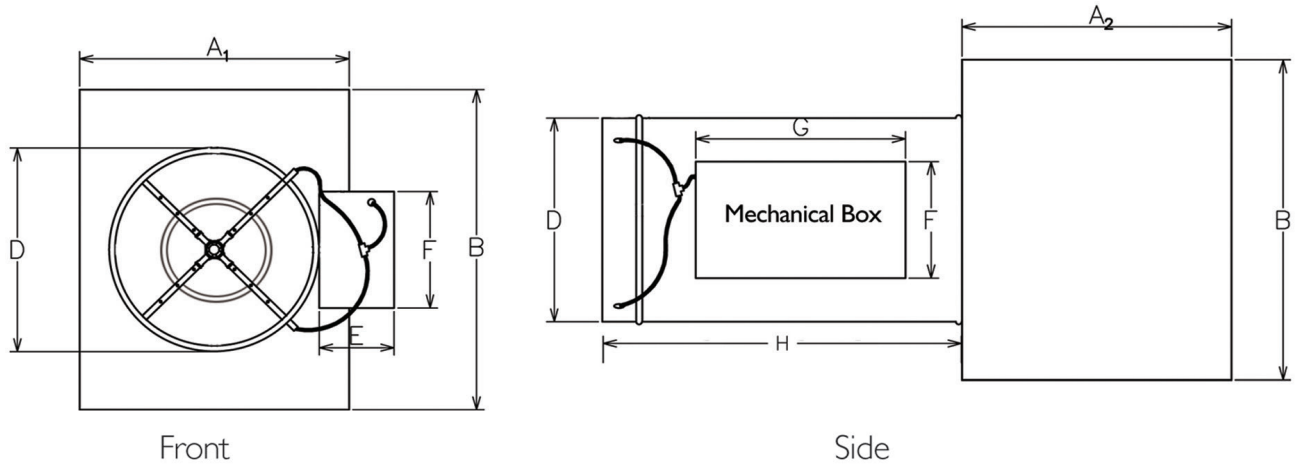
Bearing

Brass Bush 12mm Round

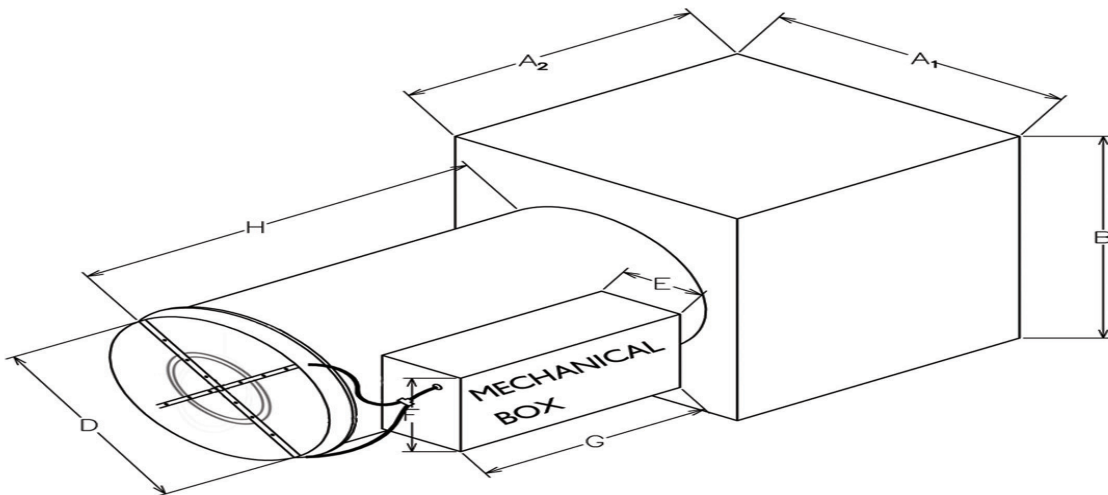
Aluminum Flow Grid

**Material Specifications subject to change as per customer's demand.*

DIFFUSER PRESSURE INDEPENDENT TERMINAL UNIT (DPITU) FRONT AND SIDE VIEW



DIFFUSER PRESSURE INDEPENDENT TERMINAL UNIT (DPITU) ISOMETRIC VIEW



DIFFUSER PRESSURE INDEPENDENT TERMINAL UNIT (DPITU) DIMENSIONAL DATA

Model	D	A_1	A_2	B	E	H	F	G	Diffuser Size
DPITU-15	150	150	150	250	125	500	200	350	150 X 150
DPITU-20	200	225	225	300	125	500	200	350	225 X 225
DPITU-25	250	300	300	350	125	500	200	350	300 X 300
DPITU-30	300	375	375	400	125	600	200	350	375 X 375
DPITU-35	350	450	450	450	125	600	200	350	450 X 450

Right hand control panel as Standard, Left hand control panel available as Optional.

TYPICAL SELECTION GUIDE

Model	Airflow		Δ Pt Basic Unit		Δ Pt w/ Attenuator		Discharge NC Basic Assembly Δ Ps Across Unit			Discharge NC Basic c/w 36" Attenuator Δ Ps Across Unit			Radiated NC Basic Assembly Δ Ps Across Unit		
							0.5" W.G	1.5" W.G	3" W.G	0.5" W.G	1.5" W.G	3" W.G	0.5" W.G	1.5" W.G	3" W.G
	(CFM)	(L/S)	Pa	in W.G	Pa	in W.G	125 Pa	375 Pa	750 Pa	125 Pa	375 Pa	750 Pa	125 Pa	375 Pa	750 Pa
DPITU-15	75	35	12	0.048	13	0.052	-	-	-	-	-	-	-	-	-
	175	83	62	0.249	63	0.253	-	-	22	-	-	20	-	-	21
	275	130	62	0.249	65	0.261	-	-	24	-	-	-	20	24	27
	375	177	82	0.329	87	0.349	-	24	27	-	-	22	-	23	27
	475	224	114	0.458	121	0.486	-	24	30	-	-	25	-	25	29
DPITU-20	150	71	12	0.048	13	0.052	-	-	-	-	-	-	-	-	-
	250	118	17	0.068	19	0.076	-	-	23	-	-	-	-	-	-
	450	212	37	0.149	42	0.169	-	23	30	-	-	22	-	26	30
	650	307	50	0.201	61	0.245	-	23	29	-	-	21	-	22	26
	850	401	62	0.249	81	0.325	-	25	32	-	-	24	22	29	33
DPITU-25	250	118	15	0.060	16	0.064	-	22	31	-	-	22	-	-	25
	450	212	17	0.068	19	0.076	-	-	23	-	-	-	-	-	-
	750	354	50	0.201	55	0.221	-	25	35	-	-	26	-	22	31
	1050	496	72	0.289	82	0.329	-	25	33	-	20	27	-	25	32
	1350	637	75	0.301	91	0.365	-	27	36	-	21	27	-	24	33
DPITU-30	900	425	17	0.068	21	0.084	-	23	31	-	-	23	-	21	28
	1200	567	27	0.108	35	0.141	-	25	32	-	-	26	-	23	30
	1500	708	42	0.169	54	0.217	-	26	34	-	21	28	-	25	31
	1800	850	60	0.241	77	0.309	-	27	35	-	23	30	-	26	33
	2100	992	82	0.329	106	0.426	-	28	35	-	25	31	-	28	34
DPITU-35	1000	472	12	0.048	14	0.056	-	22	31	-	21	29	-	21	28
	1500	708	25	0.100	30	0.120	-	25	34	-	23	31	-	25	32
	2000	944	45	0.181	55	0.221	-	27	36	-	24	32	21	29	35
	2500	1180	67	0.269	82	0.329	-	29	38	-	25	34	24	32	37
	3000	1416	95	0.381	117	0.470	-	30	39	-	26	35	27	35	40

PERFORMANCE NOTES

- Units obtained in accordance with AHRI Standard 880-2011 and ASHRAE Standard 130-1996.
- Airflow is given in Litres/Sec (L/S) and Cubic Feet/min. (CFM)
- Blank spaces indicate NC's less than 20.
X - Indicates Pressure Drop at attenuator more than 65Pa.
- ΔPs is the difference in static pressure from inlet to discharge of the unit.
- ΔPt is the difference in total pressure from inlet to discharge of the unit.
- Pressure is given in Pascals (Pa) and Inches of Water Gauge (in.wg)
- NC values are calculated based on typical attenuation values in Appendix E, AHRI Standard 885-2008, "A Procedure for Estimating Occupied Space Sound Levels in the Application of Air Terminals and Air Outlets". The following chart shows the attenuation deductions that have been used for NC calculations

- ΔPs for terminal units with electric coil is equal to basic unit. Resistance of the coil elements is negligible.

RADIATED SOUND

based on a 5/8" mineral fiber tile ceiling per AHRI 885-2008 typical attenuation values:

Total Deductions	Octave Band Mid Frequency, Hz					
	125	250	500	1000	2000	4000
All Sizes	18	19	20	26	31	36

DISCHARGE SOUND

based on environmental effect, end reflection, flex duct effect, space effect, sound power division and lined duct effect.

Total Deductions	Octave Band Mid Frequency, Hz					
	125	250	500	1000	2000	4000
< 400 CFM	24	28	39	53	59	40
400 - 800 CFM	27	29	40	51	53	39
> 800 CFM	29	30	41	51	52	39

TYPICAL SELECTION GUIDE

NC levels presented in the Typical Selection Guide are based on typical attenuation values as outlined in AHRI standard 885-2008, Appendix E. AHRI Standard 885-2008, Appendix E provides typical sound attenuation values for air terminal discharge sound and air terminal radiated sound. The typical attenuation values are recommended for use by manufacturers to estimate application sound levels.

In product catalogs the end use environments are not known and the factors presented in AHRI Standard 885 - 2008 are provided as typical attenuation values. Use of these values will allow better comparison between manufacturers and give the end user a value which will be expected to be applicable for many types of spaces.

Following is a detailed description of the typical attenuation values used to determine NC levels.

RADIATED SOUND

The typical radiated sound attenuation values for three types of ceilings: TYPE 1 - Glass Fiber; TYPE 2 - Mineral Fiber; TYPE 3 - Solid Gypsum Board.

Since Mineral Fiber tile ceilings are the most common construction used in commercial buildings, the attenuation values in the Typical Selection Guide are based on Type 2 - Mineral Fiber.

The table on the right provides the calculation method for the radiated sound total attenuation values based on AHRI Standard 885-2008.

Total Deductions	Octave Band Mid Frequency, Hz					
	125	250	500	1000	2000	4000
Environmental Effect	2	1	0	0	0	0
Ceiling / Space Effect	16	18	20	26	31	36
Total Attenuation Deduction	18	19	20	26	31	36

The ceiling/space effect assumes the following conditions:

1. 5/8" tile, 20lb/ft³ density
2. The plenum is at least 3 feet deep
3. The plenum space is either wide (over 25ft) or lined with insulation
4. The ceiling has no significant penetration directly under the unit.

DISCHARGE SOUND

The typical discharge sound attenuation values for three sizes of terminal units.

1. Small Box

Defined as a unit with discharge duct of approximately 20 x 20 cm and capacity less than 400 cfm.

2. Medium Box

Defined as a unit with discharge duct of approximately 30 x 30 cm and capacity between 400 - 800 cfm

3. Large Box

Defined as a unit with discharge duct of approximately 40 x 40 cm and capacity of greater than 800 cfm.

For a complete explanation of the attenuation factors and the procedures for calculating room NC levels, please refer to AHRI Standard 885-2008.

Small Box (< 400 CFM)	Octave Band Mid Frequency, Hz					
	125	250	500	1000	2000	4000
Environmental Effect	2	1	0	0	0	0
5 ft. (1.5m) Duct Lining	2	6	12	25	28	18
End Reflection	8	5	2	0	0	0
5 ft. (1.5m), 8 in (200mm) Flex Duct	5	10	18	20	21	12
Space Effect	4	6	7	8	9	10
Sound Power Division	0	0	0	0	0	0
Total Attenuation Deduction	24	28	39	53	58	40

Medium Box (400 - 800 CFM)	Octave Band Mid Frequency, Hz					
	125	250	500	1000	2000	4000
Environmental Effect	2	1	0	0	0	0
5 ft. (1.5m) Duct Lining	2	4	10	20	20	14
End Reflection	9	5	2	0	0	0
5 ft. (1.5m), 8 in (200mm) Flex Duct	6	10	18	20	21	12
Space Effect	5	6	7	8	9	10
Sound Power Division	3	3	3	3	3	3
Total Attenuation Deduction	27	29	40	51	53	39

Large Box (> 800 CFM)	Octave Band Mid Frequency, Hz					
	125	250	500	1000	2000	4000
Environmental Effect	2	1	0	0	0	0
5 ft. (1.5m) Duct Lining	2	3	9	18	17	12
End Reflection	9	5	2	0	0	0
5 ft. (1.5m), 8 in (200mm) Flex Duct	6	10	18	20	21	12
Space Effect	5	6	7	8	9	10
Sound Power Division	5	5	5	5	5	5
Total Attenuation Deduction	29	30	41	51	52	39

DISCHARGE SOUND POWER LEVELS

Model	Sound Power Levels, LW dB, re 10 ⁻¹² Watts																													
	Airflow		125 Pa (0.5" W.G) Octave Band							250 Pa (1.0" W.G) Octave Band							500 Pa (2.0" W.G) Octave Band							750 Pa (3.0" W.G) Octave Band						
	CFM	L/S	2	3	4	5	6	7	2	3	4	5	6	7	2	3	4	5	6	7	2	3	4	5	6	7				
DPTIU-15	75	35	48	44	40	37	35	29	50	47	45	41	41	37	51	49	49	46	47	44	52	50	52	49	51	49				
	175	83	61	57	50	46	42	36	62	59	54	51	48	43	64	62	59	56	54	51	64	63	62	58	58	55				
	275	130	59	54	50	46	42	37	61	58	55	51	49	45	64	62	60	56	55	52	66	64	63	59	59	56				
	375	177	57	56	48	46	41	33	61	60	54	52	47	41	65	65	59	57	54	49	67	68	63	61	57	53				
	475	224	59	57	51	48	42	35	63	62	56	54	49	42	67	67	62	59	55	50	69	70	65	62	59	54				
DPTIU-20	150	71	47	43	36	37	34	27	51	48	41	42	41	35	55	53	47	48	47	43	57	56	50	51	51	47				
	250	118	51	49	41	41	38	34	55	55	48	47	44	41	59	60	55	52	51	48	61	63	59	56	55	52				
	450	212	57	55	48	46	41	37	60	61	55	51	48	45	64	66	61	57	54	52	66	70	65	61	58	56				
	650	306	57	54	48	46	41	34	61	61	55	51	47	44	65	67	62	57	54	52	67	70	66	61	58	56				
	850	400	60	57	51	48	42	39	64	63	58	54	49	46	68	69	65	60	55	53	70	73	70	63	59	58				
DPTIU-25	250	118	51	49	41	41	38	34	55	55	48	47	44	41	59	60	55	52	51	48	61	63	59	56	55	52				
	450	212	56	52	45	44	40	37	60	59	54	51	48	45	64	67	62	58	56	53	67	71	67	65	60	57				
	750	353	60	55	49	48	43	40	64	63	57	55	51	48	69	71	66	62	58	56	71	75	71	67	63	60				
	1050	496	62	56	50	49	44	41	66	64	59	57	51	49	70	72	67	64	59	57	73	76	72	68	64	61				
	1350	637	62	57	54	54	47	44	66	64	61	58	54	51	71	70	67	63	60	47	73	74	71	66	64	63				
DPTIU-30	900	425	56	55	52	48	44	40	61	62	58	54	51	47	66	68	64	60	57	53	69	72	68	64	61	57				
	1200	566	59	57	53	50	46	42	64	63	60	56	52	48	69	70	66	62	59	55	72	73	70	66	63	59				
	1500	708	61	57	55	51	47	43	67	64	61	57	54	50	72	71	68	64	61	57	75	74	71	67	65	60				
	1800	850	63	58	56	53	48	45	68	65	62	59	55	51	74	71	69	65	62	58	77	75	72	69	66	62				
	2100	991	65	59	57	54	50	46	70	65	63	60	56	52	75	72	70	66	63	59	78	76	73	70	67	63				
DPTIU-35	1000	472	55	53	48	46	42	38	62	60	54	53	49	45	68	67	60	59	56	51	72	72	63	63	59	55				
	1500	708	59	55	52	49	45	41	65	63	58	55	52	48	69	70	66	62	59	55	72	73	70	66	63	59				
	2000	944	62	57	56	50	48	43	68	65	62	57	54	50	74	72	68	64	61	57	78	76	71	68	65	61				
	2500	1180	64	59	58	52	49	45	70	66	64	59	56	52	76	73	70	66	62	59	78	76	73	70	67	63				
	3000	1416	65	60	60	53	51	47	71	67	66	60	57	53	78	75	72	67	64	60	82	79	76	71	68	64				

PERFORMANCE NOTES

1. Data obtained in accordance with AHRI Standard 880-2011 and ASHRAE Standard 130-1996.
2. Airflow is given in litres per sec. (L/S) and cubic feet per min. (CFM)
3. Pressure is given in Pascals, Pa; and inches of water gauge, in.wg.
4. Blank spaces indicate sound power levels less than 20.

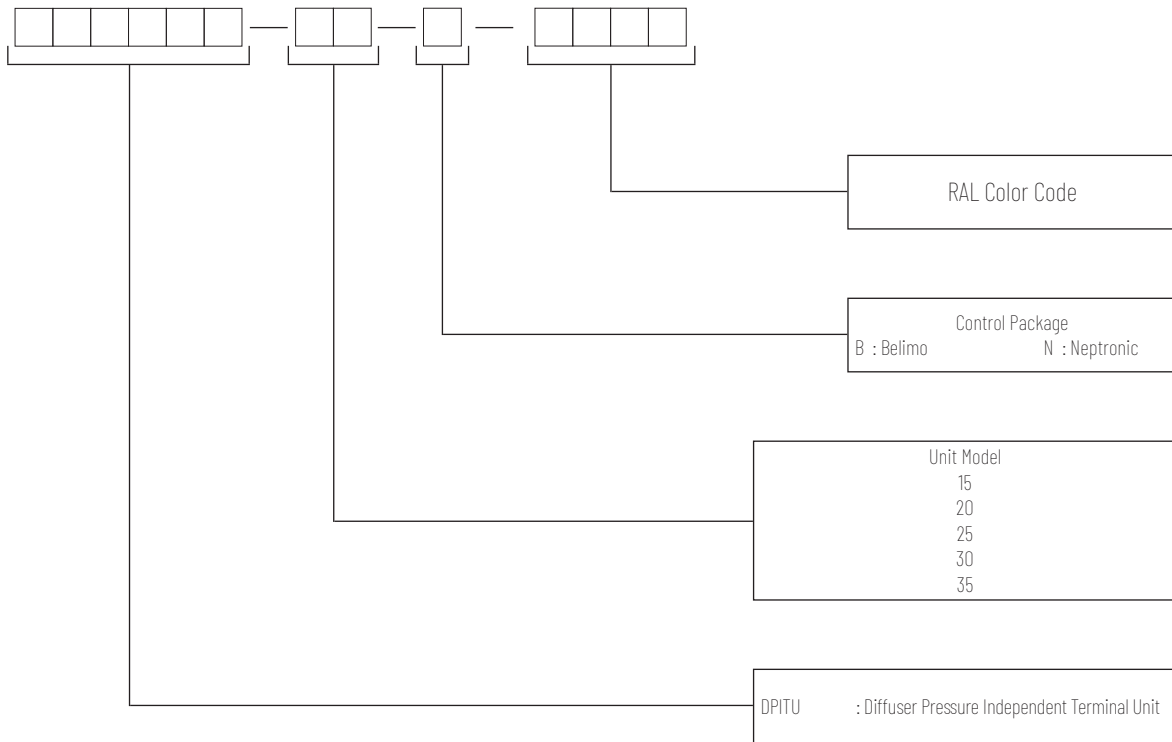
RADIATED SOUND POWER LEVELS

Model	Sound Power Levels, LW dB, re 10 ⁻¹² Watts																													
	Airflow		125 Pa (0.5" W.G) Octave Band							250 Pa (1.0" W.G) Octave Band							500 Pa (2.0" W.G) Octave Band							750 Pa (3.0" W.G) Octave Band						
	CFM	L/S	2	3	4	5	6	7	2	3	4	5	6	7	2	3	4	5	6	7	2	3	4	5	6	7				
DPTIU-15	75	35	44	34	27	22	-	-	45	36	31	26	24	22	47	38	34	30	29	26	48	39	36	32	32	29				
	175	83	51	45	38	31	25	21	52	47	42	35	30	26	54	49	45	40	35	30	56	50	47	42	37	33				
	275	130	58	46	38	31	25	-	60	49	42	36	31	26	62	51	46	40	37	33	63	53	48	43	40	37				
	375	177	55	45	42	34	28	22	58	49	45	39	34	28	62	53	49	43	40	34	64	56	51	46	43	38				
	475	224	57	48	44	36	29	23	60	51	47	41	35	29	64	55	51	45	42	35	65	58	53	48	45	39				
DPTIU-20	150	71	47	35	31	25	20	-	50	39	35	29	26	22	53	43	38	34	32	28	55	45	40	37	36	32				
	250	118	50	37	31	28	22	-	52	42	37	32	26	20	54	47	42	36	30	26	56	50	46	38	33	29				
	450	212	56	43	36	34	28	21	58	48	42	37	32	26	60	53	48	41	36	31	62	56	51	44	39	34				
	650	306	57	46	38	33	27	25	60	51	43	38	33	33	64	56	49	43	40	41	66	58	53	47	43	46				
	850	400	60	49	40	35	29	26	63	54	46	41	35	34	67	59	52	46	41	42	69	62	55	49	45	46				
DPTIU-25	250	118	50	37	31	28	22	-	52	42	37	32	26	20	54	47	42	36	30	26	56	50	43	37	33	29				
	450	212	50	37	32	27	21	-	54	45	39	33	28	26	57	52	46	40	34	33	59	56	50	44	38	37				
	750	353	53	42	36	32	25	21	57	49	43	38	32	28	61	57	50	45	38	35	63	61	55	48	42	39				
	1050	496	55	44	38	33	27	22	58	51	45	40	33	29	62	58	52	46	39	36	64	63	56	50	43	39				
	1350	637	56	46	40	34	30	26	59	52	47	40	35	32	63	59	53	45	40	37	65	62	57	48	42	40				
DPTIU-30	900	425	49	44	37	31	24	20	53	49	43	37	29	25	58	55	50	42	34	30	60	58	53	45	37	33				
	1200	566	52	45	39	34	27	22	56	51	45	40	32	27	61	57	52	45	37	32	63	60	55	48	40	35				
	1500	708	54	47	41	36	30	24	59	52	47	42	35	29	63	58	53	47	40	34	65	61	57	50	43	37				
	1800	850	56	48	42	38	32	26	61	53	48	43	37	31	65	59	54	49	42	36	67	62	58	52	45	39				
	2100	991	58	49	43	40	34	27	62	54	49	45	39	32	66	60	55	50	44	37	69	63	59	53	47	40				
DPTIU-35	1000	472	52	44	35	30	22	-	56	50	40	35	28	22	59	55	45	40	33	28	62	59	48	43	36	31				
	1500	708	56	47	41	34	28	22	60	53	46	40	33	28	64	59	51	45	38	33	66	62	55	48	41	36				
	2000	944	59	49	45	38	32	26	63	55	51	43	37	31	66	61	56	48	42	37	69	64	59	51	45	40				
	2500	1180	61	51	49	40	35	29	65	57	54	46	40	34	69	63	59	51	45	40	71	66	62	54	48	43				
	3000	1416	63	52	51	42	38	31	67	58	57	48	43	36	71	64	62	53	48	42	73	68	65	56	51	45				

PERFORMANCE NOTES

1. Data obtained in accordance with AHRI Standard 880-2011 and ASHRAE Standard 130-1996.
2. Airflow is given in litres per sec. (L/S) and cubic feet per min. (CFM)
3. Pressure is given in Pascals, Pa; and inches of water gauge, in.wg.
4. Blank spaces indicate sound power levels less than 20.

ORDERING SYSTEM



ORDERING EXAMPLE

DPITU - 20B- 9010

Refers to Diffuser Pressure Independent Terminal Unit, Model DPITU-20,
with Belimo Controls actuator and thermostat, Powder Coated to RAL 9010