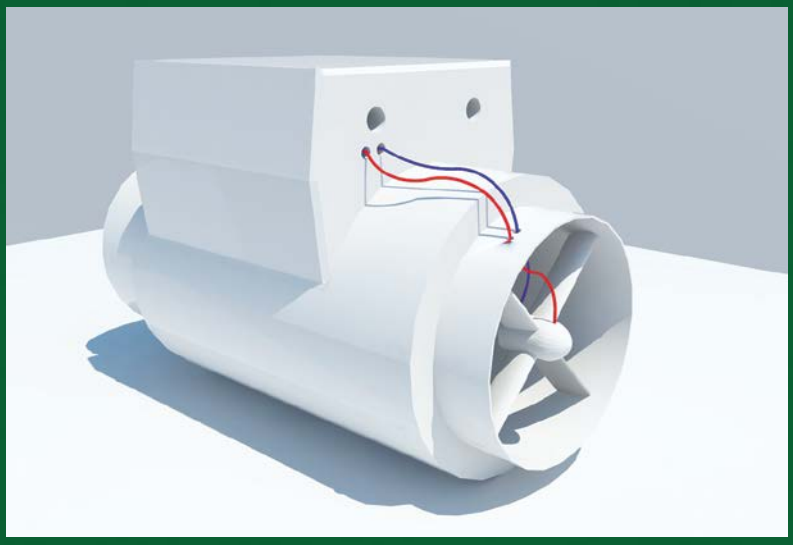
CONNOLS-AIR
AIR TERMINAL UNITS
Engineered for Versatile Application and Energy Conservation



Marina Bay Business District is considered the trendiest and most technologically advance area for business in Singapore. Strategically located at the southern part of Singapore, and lies to the east of the Downtown Core, the district houses the most modern and sophisticated office buildings in the country. With ease in access to almost all types of transportation – not to mention seven rail stations stopping on the different areas of the district.

Connols-Air is proud to be part of the improvement and development of the Marina Bay Business District. Connols-Air supplied thousands of the VAV air terminal units on most of newly erected buildings.

- Marina Bay Finance Centre Tower 1: 2,100 VAV boxes
- Marina Bay Finance Centre Tower 2: 3,000 VAV boxes
- Marina Bay Finance Centre Tower 3: 3,050 VAV boxes
- Asia Square Tower 1: 3,123 VAV boxes
- Asia Square Tower 2: 1,900 VAV boxes
- Ocean Financial Centre: 1,498 VAV boxes
- Marina One: 3,100 VAV boxes

Total: 17,771 VAV boxes

SINGLE DUCT VAV AND CAV UNITS

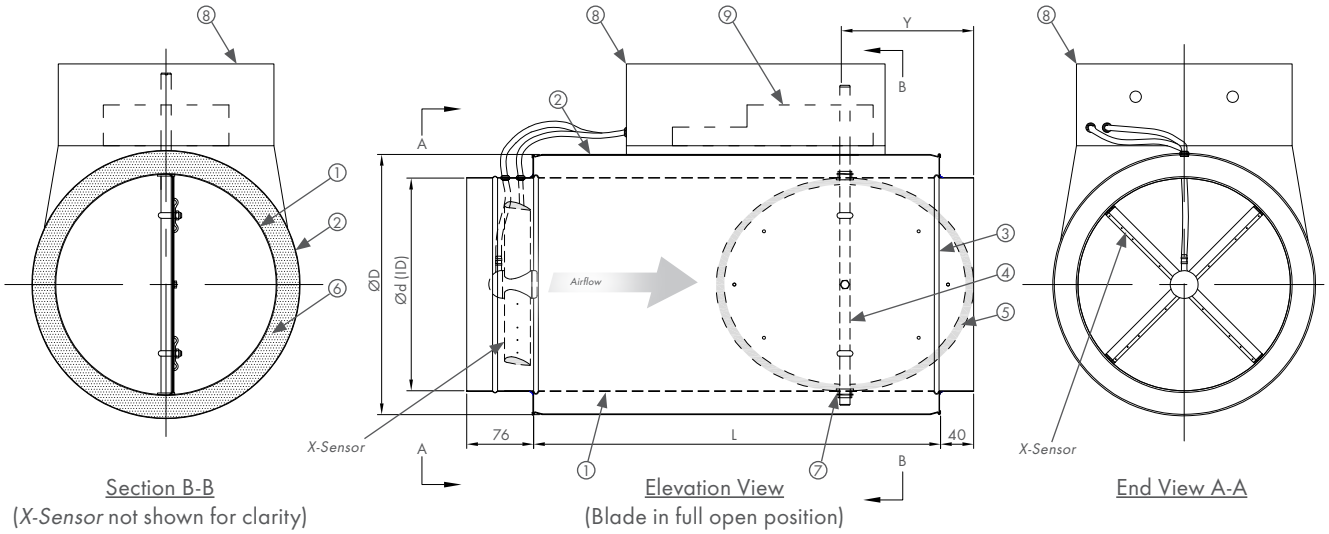
Model V750 - I Pressure Independent VAV	Model V750 - D Pressure Dependent VAV	Model V750 - C Constant Air Volume

Description of Devices

Connols-Air DDC microprocessor based V750 air terminal units are the latest, state-of-the-art, high quality terminal units, which provide good control accuracy and capabilities required in every modern intelligent building of today. The air terminal units are capable of stand-alone operation. However, they may be connected with net-working devices and be integrated with the building automation system, but minimum additional benefit may be derived from it. The air terminal unit consists of an air valve with integrated pressure differential flow sensor, a digital thermostat and BACnet™ compliant DDC controller and is available in the following sizes 5, 6, 7, 8, 10, 12, 14, 16, and 18 covering air flow range up to 7,200 cmh (2,000 l/s).

Features of the Connols-Air Air Terminal Unit

- Double-skin casing construction ensures low radiated noise and absence of fiberglass erosion.
- Double-skin blade with felt seal all round ensures blade rigidity and low air leakage across it when closed.
- Blade is designed to close at 60° so as to provide more linear flow characteristics; hence, more precise modulation of airflow.
- Accurate control of air volumes is possible with accurate multi-point pressure differential flow sensor (*X-Sensor*).
- Low-pressure loss for energy conservation.
- Low generated noise from the aerodynamic *X-Sensor*.



NOMENCLATURE

Item	*Description*	*Material*
1	Inner Casing	0.7mm thk. Galv. Steel
2	Outer Casing	
3	Damper Blade (Double Skin)	1.0mm thk. Galv. Steel
4	Blade Shaft	Ø12mm Aluminum
5	Blade Seal	3.0mm thk. Felt
6	Insultation	25mm thk. 32kg/m³ Fiberglass
7	Bush	Nylon
8	Control Shroud (Optional)	0.55mm Galv. Steel
9	Controller	BACnet DDC

SIZING INFORMATION

Size	*Ød*	*ØD*	*Y*	*L*
5	125	175	125	370
6	150	200	125	370
7	175	225	125	370
8	200	250	125	370
10	250	300	175	470
12	300	350	175	470
14	350	400	225	540
16	400	450	225	540
18	450	500	250	600

Notes:

1. *X-Sensor* : Cross Sensor.
2. Connecting duct internal diameter should be 3mm bigger than Ød.

Air Valve Construction

The air valve is constructed of hot-dip pre-galvanized steel circular double-skin casing of 0.7 mm thick. Its blade is constructed of double-skin galvanized steel plates with felt all around to provide a good seal when it is closed. An optional steel shroud may be provided to house the DDC controller to protect it against dust and damage.

Each air terminal unit valve is equipped with a X-Sensor (Cross sensor), which is a true averaging pressure differential airflow sensor upstream of the damper for accurate determination of air volume. The X-Sensor is constructed of 4 extruded aluminum airfoil shape wings assembled to form a cross, the centre of which is an aerodynamic shape reservoir that receives the pressure signal from each wing and provide the true averaging output signal to the DDC controller. The camber airfoil wing has a surface that is curved causing a lower pressure on it resulting in an amplified signal. For air terminal unit of size 5, 6, 7, 8 and 10, each wing has 6 sensing taps, 3 in front (Hi signal) and 3 on the side (Lo signal). For air terminal unit of size 12, 14, 16 and 18, each wing has 8 sensing taps. The location of each sensing point is determined according to Log-Tchebycheff Rule for circular duct. The centre reservoir is constructed of fire retardant ABS and has two internal compartments one Hi and one Lo. The accuracy of the X-Sensor is less than 5% within the recommended airflow range from 3.5 to 12 m/s. Test data of X-Sensor are available from accredited laboratory for verification.

Features

- Double-skin casing construction ensures low radiated noise and prevent fiberglass erosion.
- Circular casing provides rigidity and prevents drumming.
- Double-skin blade with felt seal all round ensures blades rigidity and low air leakage when closed.
- Blade is designed to close at 60 degree so as to provide a more linear flow characteristic and, hence more precise control of airflow.
- Accurate multi-point pressure differential flow sensor.
- Low-pressure loss and generated noise from the X-sensor.

Electronic Controller and Thermostat

The latest technology in electronic control using microprocessor provides rapid and precise control of desire room temperature. This device is direct digital controller (DDC) and may be used on the air terminal unit for stand-alone pressure independent, pressure dependent and constant air volume operation. Generally, the VAV system provide only cool air to the zone, however, the air terminal unit controller may provide additional outputs for the control of heating system, such as reheat coil for heat mode or morning warm-up mode operation. The heating equipment can be staged resistive heating, staged 2-position (solenoid) valve, or modulated steam hot water.

Connols-Air air terminal units with DDC controller can be networked via a twisted pair via networking devices to form a true integration in the BMS network using industry open communication protocol such as BACnet™.

BACnet™ is designed to allow communication of building automation and control systems for applications such as heating, ventilating, and air-conditioning control, lighting control, access control, and fire detection systems and their associated equipment. The BACnet™ protocol provides mechanisms for computerized building automation devices to exchange in formation, regardless of the particular building service they perform. Detail information our DDC controller and net working system are available in our Engineering Data Sheet.

Accessories

The V750 air terminal units can be coupled with accessories such as hot water coils and electric heaters for reheat. High performance silencers, multiple outlet silencers and multiple outlet plenums are also available to meet low noise requirement. Performance data, dimensions and construction details of each accessory are available in our Engineering Data Sheet.

BACnet™ stands for Building Automation Control network. BACnet™ is a data communication protocol development by ASHRAE, BACnet™ is known as "ANSI/ ASHRAE standard 135-2008" and also as the international standard "ISO 16484-5". BACnet™ is a trademark of ASHRAE Inc.

Performance
X-Sensor

Model: V750-XX-X

Installation Type: Air Measuring Station, *X-Sensor* with integral damper

Operational type: Differential pressure

Manufacturer's conversion formula: $Q = K \times \sqrt{P}$

Optional appurtenances: VAV damper

Size tested is 6, 10 and 14, and certification applies to the following sizes:

VAV terminal units that are AMCA 610 certified		
VAV Size	K	Model Number Example I: Pressure independent C: Constant Air Volume
5	35.1	V750-05-I and V750-05-C
6	54.15	V750-06-I and V750-06-C
7	78.5	V750-07-I and V750-07-C
8	109.1	V750-08-I and V750-08-C
10	175.8	V750-10-I and V750-10-C
12	255.6	V750-12-I and V750-12-C
14	348	V750-14-I and V750-14-C
16	443.1	V750-16-I and V750-16-C
18	563.8	V750-18-I and V750-18-C

OLS Manufacturing Co Pte Ltd. certifies that the V750 X-Sensor with integral damper shown herein is licensed to bear the AMCA seal. The ratings shown are based on tests and procedures performed in accordance with AMCA Publication 611 and comply with the requirements of the AMCA Certified Ratings Program.

NOTES:

- Performance ratings include the effect of integral dampers in the air stream.
- The performance of V750 X-Sensor is AMCA certified to accuracy* of ±3.7% or better in the velocity range of 4m/s to 13m/s.

Performance Data According to AMCA 610-06(R2012) Test Setup Figure 1

Reference Airflow and Percent Accuracy of V750 X-Sensor

Size 6

Det.No.	Q_{ams} (m^3/s)	Q_{ref} (m^3/s)	Diff(m^3/s)	Diff (%)
1	0.226	0.229	-0.003	-1.44
2	0.195	0.198	-0.004	-1.80
3	0.155	0.159	-0.004	-2.58
4	0.120	0.124	-0.005	-3.70
5	0.091	0.090	0.001	1.11
6	0.073	0.070	0.003	3.74

Size 10

Det.No.	Q_{ams} (m^3/s)	Q_{ref} (m^3/s)	Diff(m^3/s)	Diff (%)
1	0.589	0.590	-0.001	-0.19
2	0.499	0.497	0.003	0.57
3	0.390	0.392	-0.002	-0.46
4	0.291	0.294	-0.003	-1.13
5	0.194	0.196	-0.002	-0.84
6	0.144	0.146	-0.002	-1.32

Size 14

Det.No.	Q_{ams} (m^3/s)	Q_{ref} (m^3/s)	Diff(m^3/s)	Diff (%)
1	1.281	1.265	0.016	1.23
2	1.066	1.069	-0.003	-0.32
3	0.865	0.877	-0.012	-1.37
4	0.684	0.684	0.000	0.05
5	0.481	0.486	-0.004	-0.86
6	0.381	0.385	-0.004	-1.03

Airflow Resistance Test

Size 6

Det.No.	Q(m^3/s)	V(m/s)	ΔP_D(Pa)
1	0.229	12.96	55
2	0.198	11.22	40
3	0.159	9.03	26
4	0.124	7.05	15
5	0.090	5.1	7
6	0.070	3.97	4

Size 10

Det.No.	Q(m^3/s)	V(m/s)	ΔP_D(Pa)
1	0.590	12.02	23
2	0.497	10.12	16
3	0.392	7.99	9
4	0.294	6.00	5
5	0.196	3.99	2
6	0.146	2.98	1

Size 14

Det.No.	Q(m^3/s)	V(m/s)	ΔP_D(Pa)
1	1.265	13.15	22
2	1.069	11.11	15
3	0.877	9.11	9
4	0.684	7.11	5
5	0.486	5.05	2
6	0.385	4.00	1

STANDARD NOTATION

Q_{ams} The airflow rate of unit under test

Q_{ref} AMCA airflow rate at test condition use chamber test

Diff (%) % error vs. reference airflow: $\frac{Q_{ams} - Q_{ref}}{Q_{ref}} \times 100\%$

Q Volumetric flow rate

V Velocity

P_{DS} Pressure differential (device+system) at standard air

P_S Pressure differential (system only) at standard air

P_D Pressure Differential (device only) at standard air

PERFORMANCE
GENERATED NOISE OF THE V750 TERMINAL UNIT ONLY

Unit Size	Airflow		Minimum Press. Loss (Pa)	Sound Power Level Lw, dB re 10^{-12} WATTS													
				@125 Pa (0.5"W.G.)							@250 Pa (1.0"W.G.)						
	CMH	L/S		Octave Band Centre Frequencies, Hz							Octave Band Centre Frequencies, Hz						
				125	250	500	1k	2k	4k	NC	125	250	500	1k	2k	4k	NC
5	155	43	+	44	32	33	35	29	20	23	46	38	39	43	38	31	32
	200	56	+	45	34	35	37	31	22	25	46	39	41	45	39	31	34
	250	69	11	48	37	38	38	33	24	26	50	42	42	46	40	34	35
	300	83	17	50	40	40	40	34	26	28	53	45	44	47	42	36	36
	350	97	24	51	43	43	42	36	27	30	56	47	46	48	43	37	37
	400	111	32	53	45	45	44	38	29	32	57	50	48	50	44	38	38
	450	125	40	54	47	47	46	41	33	34	59	51	50	51	45	39	40
	500	139	48	54	47	49	48	43	37	36	59	52	51	53	47	40	42
	530	147	55	58	52	51	51	46	39	40	62	54	54	53	48	42	42
6	250	69	+	41	35	34	35	28	20	23	41	39	39	41	38	31	29
	300	83	+	43	37	36	37	30	23	25	45	41	40	42	39	32	31
	350	97	+	44	39	38	39	31	25	27	48	44	42	43	40	33	32
	400	111	12	45	41	40	41	33	26	29	50	46	43	45	42	35	33
	450	125	15	45	43	42	42	34	27	31	51	48	45	46	43	36	35
	500	139	19	46	45	43	43	35	28	32	52	50	47	47	44	37	36
	550	153	24	46	47	44	45	37	29	33	53	51	48	49	45	38	37
	600	167	29	46	48	45	46	39	31	35	54	53	50	50	45	39	39
	650	181	33	47	48	46	47	40	33	36	54	54	51	51	45	39	40
	700	194	39	47	48	48	49	42	35	37	55	55	52	53	46	40	41
	750	208	44	47	49	49	50	44	37	38	56	55	54	54	47	41	43
7	350	97	+	43	41	38	37	31	23	25	47	46	41	41	41	33	32
	450	125	+	44	43	40	39	33	26	26	48	47	44	43	42	35	33
	550	153	10	45	46	42	41	35	27	29	51	50	46	45	43	36	34
	650	181	14	47	47	44	43	37	30	31	52	53	49	47	44	38	36
	750	208	19	47	49	47	45	40	33	34	54	53	52	50	46	40	39
	850	236	24	49	51	49	47	42	35	37	56	56	55	52	47	42	41
	950	264	32	50	53	51	49	44	37	40	58	58	57	54	48	43	43
	1000	278	35	51	54	52	50	45	38	41	59	59	59	55	49	44	44
8	450	125	+	42	42	37	35	31	24	22	43	46	42	39	40	33	30
	550	153	+	44	44	40	36	32	25	24	48	49	44	41	41	34	32
	650	181	+	46	46	42	38	34	27	26	50	51	46	43	43	36	33
	750	208	+	47	48	44	39	36	28	29	52	52	49	44	44	37	34
	850	236	12	48	49	46	40	37	29	31	53	54	50	46	45	38	35
	950	264	15	49	51	48	42	39	31	32	55	56	51	48	46	38	36
	1050	292	19	49	53	49	43	40	32	33	56	57	53	49	47	39	38
	1150	319	23	50	54	50	45	41	33	35	57	58	54	51	48	40	39
	1250	347	27	50	55	52	47	43	35	36	57	59	56	52	49	41	41
	1350	375	32	50	56	53	48	44	36	38	58	60	57	53	50	42	42
10	750	208	+	40	39	41	38	37	38	29	47	45	45	45	44	48	39
	900	250	+	41	41	43	39	38	39	30	49	46	47	46	45	49	40
	1050	292	+	42	42	45	41	39	40	31	50	48	48	47	45	49	41
	1200	333	+	43	43	47	42	40	40	32	51	49	50	48	46	50	41
	1350	375	+	44	44	48	44	40	41	32	52	50	51	50	47	50	42
	1500	417	11	45	46	50	45	41	41	33	53	52	53	51	48	51	42
	1650	458	14	46	48	51	46	42	42	36	54	53	54	52	48	51	43
	1800	500	16	47	49	53	48	42	42	37	55	55	56	53	49	52	43
	1950	542	19	47	49	54	50	43	42	39	56	56	57	55	50	52	43
	2100	583	23	48	49	56	51	44	42	40	57	56	58	56	51	52	45
12	1100	306	+	38	37	39	40	39	31	30	45	45	43	45	44	46	38
	1200	333	+	39	38	41	41	40	32	30	47	46	44	46	44	46	37
	1400	389	+	41	40	43	43	41	33	31	50	47	46	48	46	46	38
	1600	444	+	43	43	46	44	42	34	32	51	48	48	49	47	46	38
	1800	500	+	45	45	48	45	42	35	33	52	50	50	51	49	47	39
	2000	556	+	46	46	50	45	43	36	35	53	51	52	52	50	47	41
	2200	611	10	47	48	52	46	43	36	36	53	53	53	53	50	47	42
	2400	667	12	48	49	54	47	43	37	38	54	54	55	55	51	47	43
	2600	722	14	49	51	55	48	43	37	40	56	56	57	56	52	47	44
	2800	778	17	50	52	57	49	44	38	42	57	57	58	56	52	48	45
	3000	833	19	51	54	58	51	45	38	43	57	58	59	57	53	48	46
14	1500	417	+	39	37	40	37	36	29	27	45	44	45	43	45	41	36
	1800	500	+	41	39	42	37	37	30	27	47	45	46	44	46	42	37
	2100	583	+	42	42	44	40	39	32	29	50	47	48	46	47	43	38
	2400	667	+	44	44	45	42	41	34	31	51	48	50	47	48	44	38
	2700	750	+	45	45	46	43	42	36	32	52	50	51	49	49	45	39
	3000	833	+	46	47	47	44	43	37	33	52	52	52	50	50	46	40
	3300	917	10	47	48	49	45	44	38	34	52	53	53	51	51	47	41
	3600	1000	12	47	50	51	46	44	38	35	53	55	55	53	51	48	42
	3900	1083	15	48	52	52	48	45	39	37	54	56	56	54	52	49	42
	4200	1167	19	48	53	54	50	46	39	39	55	57	58	55	52	49	44
16	1800	500	+	38	40	39	39	39	32	30	50	50	44	46	47	44	38
	2000	556	+	43	44	39	39	39	32	30	50	50	46	47	48	44	39
	2400	667	+	46	47	42	41	41	34	32	51	52	47	48	48	45	39
	2800	778	+	48	49	44	43	43	36	33	53	54	49	50	50	47	40
	3200	889	+	49	50	46	45	44	37	34	55	55	50	52	51	48	41
	3600	1000	+	51	51	48	46	45	38	35	56	56	52	53	52	49	42
	4000	1111	+	52	53	50	48	46	40	36	58	58	53	55	53	50	43
	4400	1222	+	53	55	51	49	47	41	38	59	60	55	56	54	51	45
	4800	1333	11	54	56	52	51	48	42	39	60	62	58	58	55	52	46
	5200	1444	13	54	56	54	52	49	44	41	61	62	61	59	56	52	48
	5600	1556	16	54	57	55	54	50	45	43	62	63	63	60	56	52	49
18	2200	611	+	46	47	43	43	46	38	36	52	52	47	51	59	49	49
	2700	750	+	49	49	45	45	48	39	38	53	54	50	52	59	49	49
	3200	889	+	50	51	47	47	50	41	40	55	55	52	53	59	51	50
	3700	1028	+	52	52	48	48	51	43	41	56	57	53	54	60	52	51
	4200	1167	+	53	54	50	49	52	44	42	57	58	54	55	60	53	51
	4700	1306	+	54	55	52	50	52	45	43	59	60	56	56	60	53	51
	5200	1444	+	55	57	55	52	52	46	43	60	61	58	58	60	54	51
	5700	1583	+	56	59	58	53	53	47	44	61	63	61	59	60	55	51
	6200	1722	10	57	60	61	55	53	48	47	62	64	63	60	60	55	51
	6700	1861	12	58	62	64	56	54	48	49	63	66	66	61	60	56	51
	7200	2000	15	58	63	65	57	55	49	50	64	67	67	62	61	56	53

Note:

- Test data obtained generally in accordance to BS EN ISO 3741: 2010, BS EN ISO 5135:1999 and related standards.
- NC values are based on 10 dB room absorption in all octave bands.
- All pressure indicated are differential pressure measured across the VAV terminal box.
- "-" represents noise level below 20 dB
- "+" represents pressure loss below 10 Pa.

PERFORMANCE
RADIATED NOISE OF THE V750 TERMINAL UNIT ONLY

Unit Size	Airflow		Minimum Press. Loss (Pa)	Sound Power Level Lw, dB re 10^{-12} WATTS													
				@125 Pa (0.5"W.G.)							@250 Pa (1.0"W.G.)						
	CMH	L/S		Octave Band Centre Frequencies, Hz							Octave Band Centre Frequencies, Hz						
				125	250	500	1k	2k	4k	NC	125	250	500	1k	2k	4k	NC
5	155	43	+	41	29	25	21	-	-	26	43	35	31	29	-	-	27
	200	56	+	42	31	27	23	-	-	28	43	36	33	31	-	-	29
	250	69	11	45	34	30	24	-	-	29	47	39	34	32	20	-	31
	300	83	17	47	37	32	26	-	-	31	50	42	36	33	22	-	32
	350	97	24	48	40	35	28	-	-	33	53	44	38	34	23	-	36
	400	111	32	50	42	37	30	-	-	35	54	47	40	36	24	-	37
	450	125	40	51	44	39	32	21	-	37	55	48	42	37	25	-	38
	500	139	48	51	44	41	34	23	-	38	56	49	43	39	27	-	38
	530	147	55	55	49	43	37	26	-	41	59	51	46	39	28	-	44
6	250	69	+	38	32	25	20	-	-	18	38	36	30	26	-	-	24
	300	83	+	40	34	27	22	-	-	21	42	38	31	27	-	-	25
	350	97	+	41	36	29	24	-	-	23	45	41	33	28	-	-	30
	400	111	12	42	38	31	26	-	-	26	47	43	34	30	21	-	33
	450	125	15	42	40	33	27	-	-	29	48	45	36	31	22	-	35
	500	139	19	43	42	34	28	-	-	31	49	47	38	32	23	-	37
	550	153	24	43	44	35	30	-	-	34	50	48	39	34	24	-	38
	600	167	29	43	45	36	31	-	-	35	51	50	41	35	24	-	41
	650	181	33	44	45	37	32	-	-	35	51	51	42	36	24	-	42
	700	194	39	44	45	38	34	21	-	35	52	52	43	38	25	-	43
	750	208	44	44	46	40	35	23	-	35	53	52	45	39	26	-	43
7	350	97	+	40	37	28	21	-	-	25	44	42	31	25	-	-	31
	450	125	+	41	39	30	23	-	-	28	45	43	34	27	20	-	33
	550	153	10	42	42	32	25	-	-	31	48	46	36	29	21	-	36
	650	181	14	44	43	34	27	-	-	33	49	49	39	31	22	-	39
	750	208	19	44	45	37	29	-	-	35	51	49	42	34	24	-	39
	850	236	24	46	47	39	31	20	-	37	53	52	45	36	25	-	43
	950	264	32	47	49	41	33	22	-	39	55	54	47	38	26	-	45
	1000	278	35	48	50	42	34	23	-	41	56	55	49	39	27	-	46
8	450	125	+	39	38	27	-	-	-	26	40	42	32	23	-	-	31
	550	153	+	41	40	30	20	-	-	29	45	45	34	25	-	-	35
	650	181	+	43	42	32	22	-	-	31	47	47	36	27	21	-	37
	750	208	+	44	44	34	23	-	-	34	49	48	39	28	22	-	38
	850	236	12	45	45	36	24	-	-	35	50	50	40	30	23	-	41
	950	264	15	46	47	38	26	-	-	37	52	52	41	32	24	-	43
	1050	292	19	46	49	39	27	-	-	39	53	53	43	33	25	-	44
	1150	319	23	47	50	40	29	-	-	41	54	54	44	35	26	-	45
	1250	347	27	47	51	42	31	21	-	42	54	55	46	36	27	-	46
	1350	375	32	47	52	43	32	22	-	43	55	56	47	37	28	-	48
10	750	208	+	37	34	30	21	-	-	24	44	40	34	28	21	-	29
	900	250	+	38	36	32	22	-	-	27	46	41	36	29	22	20	31
	1050	292	+	39	37	34	24	-	-	29	47	43	37	30	22	20	32
	1200	333	+	40	38	36	25	-	-	31	48	44	39	31	23	21	34
	1350	375	+	41	39	37	27	-	-	32	49	45	40	33	24	21	35
	1500	417	11	42	41	39	28	-	-	34	50	47	42	34	25	22	37
	1650	458	14	43	43	40	29	-	-	35	51	48	43	35	25	22	38
	1800	500	16	44	44	42	31	-	-	37	52	50	45	36	26	23	40
	1950	542	19	44	44	43	33	20	-	38	53	51	46	38	27	23	41
	2100	583	23	45	44	45	34	21	-	40	54	51	47	39	28	23	42
12	1100	306	+	35	32	28	23	-	-	22	42	40	32	28	21	-	29
	1200	333	+	36	33	30	24	-	-	24	44	41	33	29	21	-	30
	1400	389	+	38	35	32	26	-	-	27	47	42	35	31	23	-	31
	1600	444	+	40	38	35	27	-	-	30	48	43	37	32	24	-	32
	1800	500	+	42	40	37	28	-	-	32	49	45	39	34	26	-	34
	2000	556	+	43	41	39	28	20	-	34	50	46	41	35	27	-	36
	2200	611	10	44	43	41	29	20	-	36	50	48	42	36	27	-	37
	2400	667	12	45	44	43	30	20	-	38	51	49	44	38	28	-	39
	2600	722	14	46	46	44	31	20	-	39	53	51	46	39	29	-	41
	2800	778	17	47	47	46	32	21	-	41	54	52	47	39	29	-	42
	3000	833	19	48	49	47	34	22	-	42	54	53	48	40	30	-	43
14	1500	417	+	36	32	29	20	-	-	23	42	39	34	26	22	-	29
	1800	500	+	38	34	31	20	-	-	26	44	40	35	27	23	-	30
	2100	583	+	39	37	33	23	-	-	28	47	42	37	29	24	-	32
	2400	667	+	41	39	34	25	-	-	29	48	43	39	30	25	-	34
	2700	750	+	42	40	35	26	-	-	30	49	45	40	32	26	-	35
	3000	833	+	43	42	36	27	20	-	31	49	47	41	33	27	-	36
	3300	917	10	44	43	38	28	21	-	33	49	48	42	34	28	-	37
	3600	1000	12	44	45	40	29	21	-	35	50	50	44	36	28	-	40
	3900	1083	15	45	47	41	31	22	-	36	51	51	45	37	29	20	40
	4200	1167	19	45	48	43	33	23	-	38	52	52	47	38	29	20	42
16	1800	500	+	35	34	27	21	-	-	21	47	44	32	28	23	-	34
	2000	556	+	40	38	27	21	-	-	26	47	44	34	29	24	-	34
	2400	667	+	43	41	30	23	-	-	30	48	46	35	30	24	-	36
	2800	778	+	45	43	32	25	-	-	33	50	48	37	32	26	-	38
	3200	889	+	46	44	34	27	20	-	34	52	49	38	34	27	-	39
	3600	1000	+	48	45	36	28	21	-	35	53	50	40	35	28	-	41
	4000	1111	+	49	47	38	30	22	-	37	55	52	41	37	29	20	43
	4400	1222	+	50	49	39	31	23	-	39	56	54	43	38	30	21	45
	4800	1333	11	51	50	40	33	24	-	41	57	56	46	40	31	22	48
	5200	1444	13	51	50	42	34	25	-	41	58	56	49	41	32	22	48
	5600	1556	16	51	51	43	36	26	-	42	59	57	51	42	32	22	49
18	2200	611	+	43	41	31	25	22	-	30	49	46	35	33	35	-	36
	2700	750	+	46	43	33	27	24	-	33	50	48	38	34	35	-	36
	3200	889	+	47	45	35	29	26	-	35	52	49	40	35	35	21	39
	3700	1028	+	49	46	36	30	27	-	36	53	51	41	36	36	22	42
	4200	1167	+	50	48	38	31	28	-	38	54	52	42	37	36	23	43
	4700	1306	+	51	49	40	32	28	-	39	56	54	44	38	36	23	45
	5200	1444	+	52	51	43	34	28	-	42	57	55	46	40	36	24	46
	5700	1583	+	53	53	46	35	29	-	44	58	57	49	41	36	25	49
	6200	1722	10	54	54	49	37	29	-	44	59	58	51	42	36	25	50
	6700	1861	12	55	56	52	38	30	-	48	60	60	54	43	36	26	53
	7200	2000	15	55	57	53	39	31	-	49	61	61	55	44	37	26	54

Note:
- Test data obtained generally in accordance to BS EN ISO 3741: 2010, BS EN ISO 5135:1999 and related standards.
- NC values are based on 10 dB room absorption in all octave bands.
- All pressure indicated are differential pressure measured across the VAV terminal box.
- "-" represents noise level below 20 dB.
- "+" represents pressure loss below 10 Pa.

OLS Manufacturing Pte. Ltd.
3-B Joo Koon Circle, Singapore 629034
Tel: +65 6861 5253
E-mail: enquiry@connols-air.com
www.connols-air.com

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