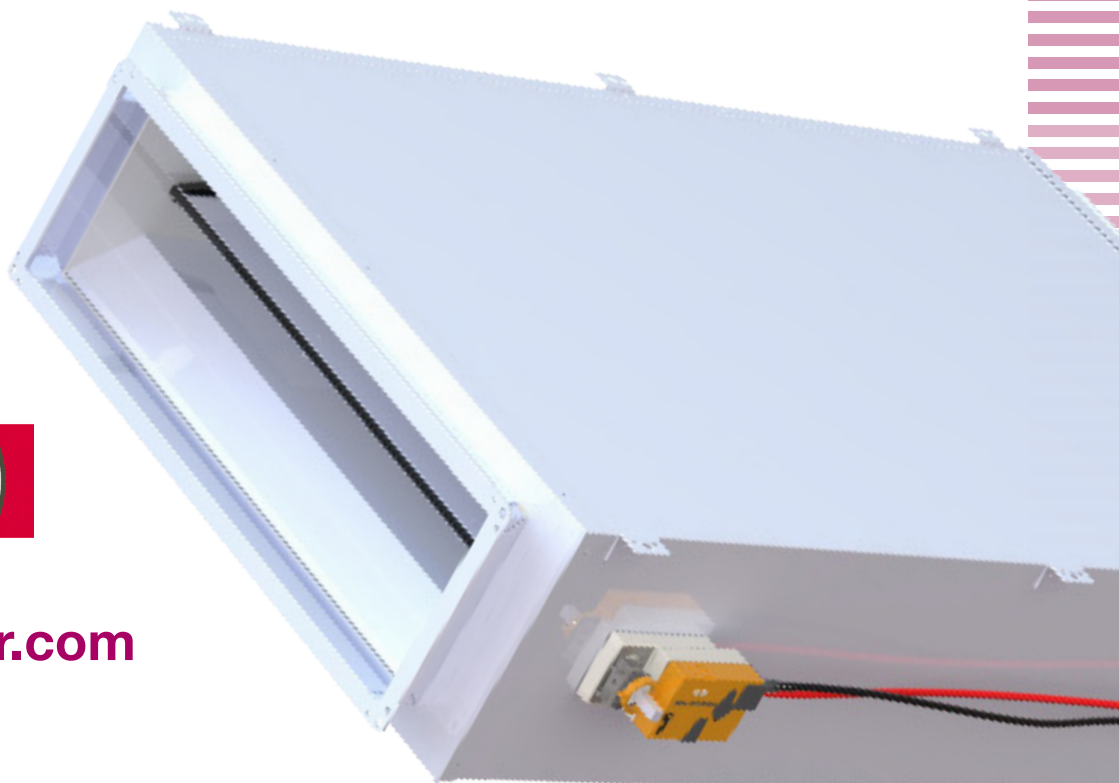


KOOLAIR

KLV

Terminal units

VAV/VAC



ISO 9001

BUREAU VERITAS
Certification

Sistema de Gestión



www.koolair.com

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General characteristics



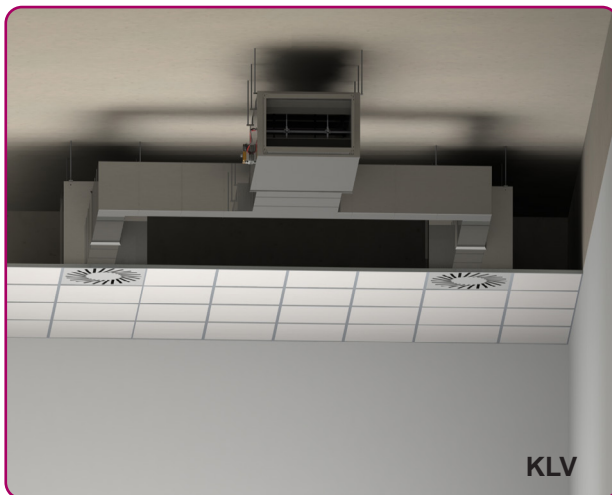
KLV

Description

A variable, constant air flow, and pressure control terminal unit by KOOLAIR. KLV model, with high acoustic performance, rectangular connection at both ends of the unit, available in 6 nominal sizes, with a total external length of 1290 mm. The unit internally integrates a differential pressure sensor for measuring the instantaneous air flow rate, an aerodynamic profile damper, insulation, an optimised internal sound attenuator, and a proportional regulator-servomotor (brand to be determined).

Manufactured with galvanised steel sheet housings, with interior farmacoterapéutico fibreglass insulation, and black glass fabric coating on the face exposed to the air to prevent erosion and particle drag; it is not harmful to health, and prevents micro-organisms culture. Fire rating of A2-s1,d0. Compact design to install in false ceilings with limited space, with rectangular connection at the box inlet and outlet. Blade and housing seal compliant with EN 1751, class 4 and C respectively. Optimal precision in flow measurement, even with duct features connected directly to the unit inlet.

Variable air volume systems allow users to control the specific supply and return air flow, depending on thermal demand and/or air quality in the building. Provides high control precision, even in unfavourable conditions. Optimised for air flow velocities of 0.7 to approximately 8 m/s, and for demanding acoustic requirements. Unit valid for both air supply (KLV) and return (KLVR).



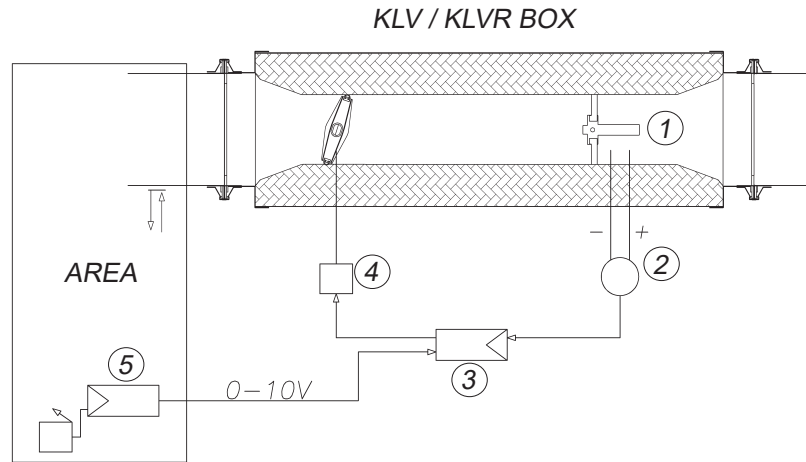
KLV

Control and Operation

The operation of the KLV control components (accessories) is as follows:

1. Cross or differential pressure measurement sensor, specially designed and located inside the unit to obtain the air flow rate with high value-reading precision.
2. A differential pressure probe or transducer that converts the pressure difference into an electronic signal to control the air flow.
- 3./4. Regulator and electric servomotor that receives electronic flow reading signals corresponding to the differential pressure measured inside the unit and the flow demand from the room regulator (temperature and/or air quality). This device returns the flow reading as important information to highlight.
5. Depending on the signals (analogue or digital) received, the electric servomotor acts on the axis of the damper to regulate up to the requested flow.

Control and Operation



Advantages

- Sealing in compliance with EN 1751, class C for the housing and classification 4 for the closing blade.
- It offers the possibility of direct connection to duct features (elbow, intersection,...), without affecting the precision of the air flow measurement. Thanks to this important feature, this unit can be adapted to space-limited installation environments.
- Rectangular connection of the same dimensions at both ends of the unit. The connection of each box size corresponds to commercial or common rectangular duct dimensions on the market.
- Low unit noise level.
- Simple unit installation and commissioning.

Control Accessories

Compact Controller: Compact unit which comprises a regulator, differential pressure transducer and air flow control servomotor.

Universal Controller: Unit which comprises a regulator, differential pressure transducer and servomotor for special applications. Air flow and pressure control.

In both cases, these control devices are parametrised during the manufacturing process in KOOLAIR's own calibration lines, where project values are configured (maximum and minimum flow rate for example) and the constant to convert the differential pressure measurement to an air flow reading.

Additional or Optional Accessories

Water reheat coil (-W). Specific sizing based on project needs; consult technical dept. By default or standard, that is, when not subject to a specific coil calculation, it is manufactured and supplied with 2 rows of tubes.

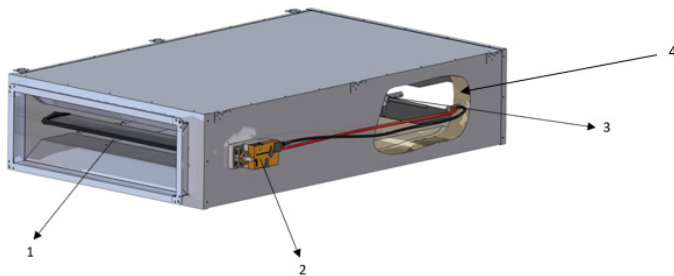
Electric reheat coil (-E). Specific sizing based on project needs; consult technical dept.

Additional silencer (-PAK) for greater regenerated noise attenuation, for areas with high perceived sound level restrictions.

Additional exterior insulation (-D) to reduce radiated noise for areas with high perceived sound level restrictions. Additional noise attenuation due to this optional accessory is between -2 and -4 dB(A) depending on air flow, box size and differential pressure.

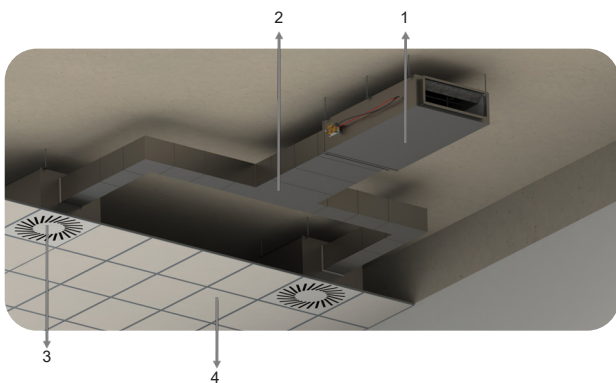
Dimensions

KLV Unit Components



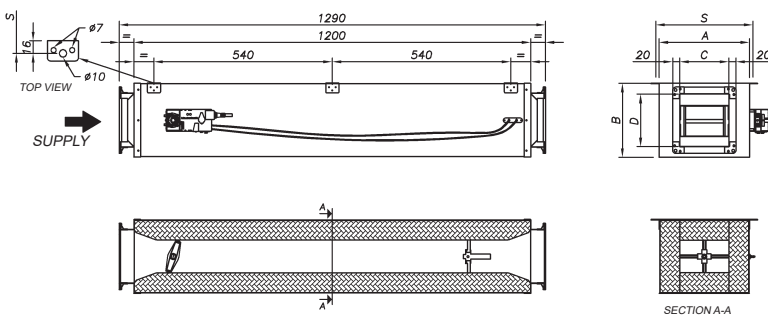
1. Control damper
2. Control component (servomotor/regulator)
3. Differential pressure cross-shaped sensor
4. Noise attenuating section

Installation View of the Box



1. KLV VAV/VAC terminal unit
2. Duct distribution
3. Diffusion terminal unit
4. False ceiling

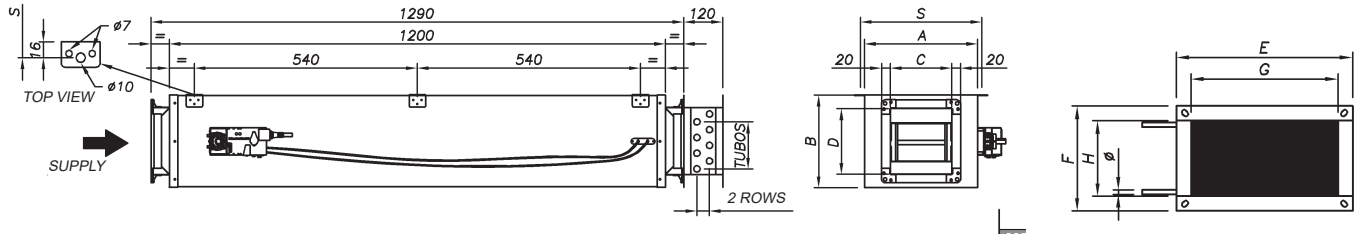
KLV. Air supply



KLV model	A	B	C	D	S
125	270	220	150	160	302
160	420	220	300	160	452
200	520	260	400	200	552
250	720	260	600	200	752
315	820	360	700	250	852
400	870	360	750	300	902

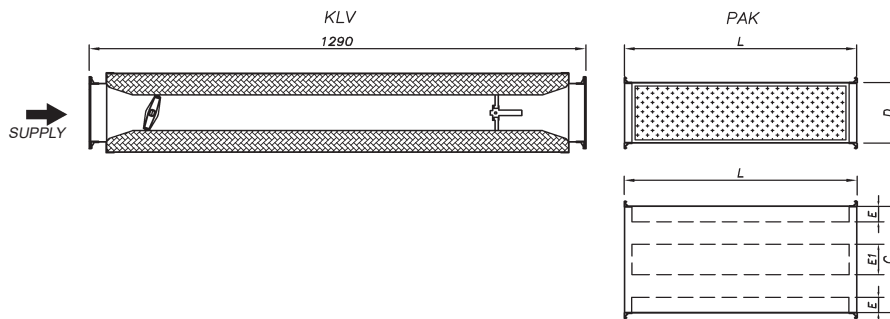
Dimensions

KLV. Air supply and battery



BATTERY										
KLW Model	A	B	C	D	S	E	F	G	H	TUBE
125	270	220	150	160	302	240	214	180	154	6T Ø3/8"
160	420	220	300	160	452	360	214	300	154	6T Ø3/8"
200	520	260	400	200	552	500	254,5	400	194,5	6T Ø1/2"
250	720	260	600	200	752	700	254,5	600	194,5	6T Ø1/2"
315	820	360	700	250	852	820	304	700	244	4T Ø5/8"
400	870	360	750	300	902	850	384	750	324	8T Ø5/8"

KLV+PAK. Air supply and PAK silencer



KLV+PAK / KLV+PAK				PAK Type 1					PAK Type 2				
SIZE	C	D	E	E1	No. Inner baffles	L	Qmax (m³/h)	CODE	E1	No. Inner baffles	L	Qmax (m³/h)	CODE
125	150	160	50	0	0	600 - 1000	330	PAK-150x160xL-0/0/50 (Qmax 330 m3/h)					Not available
160	300	160		50	1		800	PAK-300x160xL-1/50/75 (Qmax 700 m3/h)	0	0	1300	PAK-300x160xL-0/0/200 (Qmax 1300 m3/h)	
200	400	200		100	1		1150	PAK-400x200xL-1/100/100 (Qmax 1200 m3/h)	50	1	2000	PAK-400x200xL-1/50/125 (Qmax 2300 m3/h)	
250	600	200		200	1		1500	PAK-600x200xL-1/200/150 (Qmax 1700 m3/h)	100	1	3500	PAK-600x200xL-1/100/200 (Qmax 3400 m3/h)	
315	700	250		200	1		3000	PAK-700x250xL-1/200/200 (Qmax 3000 m3/h)	100	2	5000	PAK-700x250xL-2/100/133 (Qmax 4500 m3/h)	
400	750	300		100	2		3000	PAK-750x300xL-2/100/150 (Qmax 4000 m3/h)	50	2	6500	PAK-750x300xL-2/50/183 (Qmax 6500 m3/h)	

Dimensions

KLVR. Air return

KLVR model	A	B	C	D	S
125	270	220	150	160	302
160	420	220	300	160	452
200	520	260	400	200	552
250	720	260	600	200	752
315	820	360	700	250	852
400	870	360	750	300	902

KLVR+PAK. VAV box for return and PAK silencer

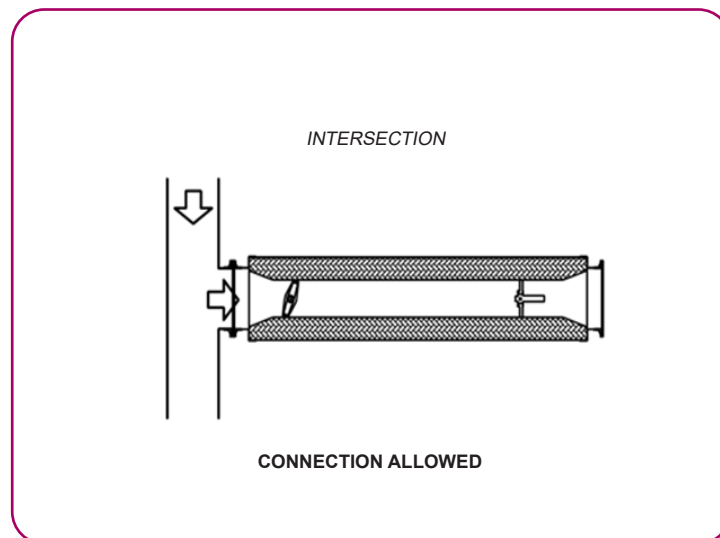
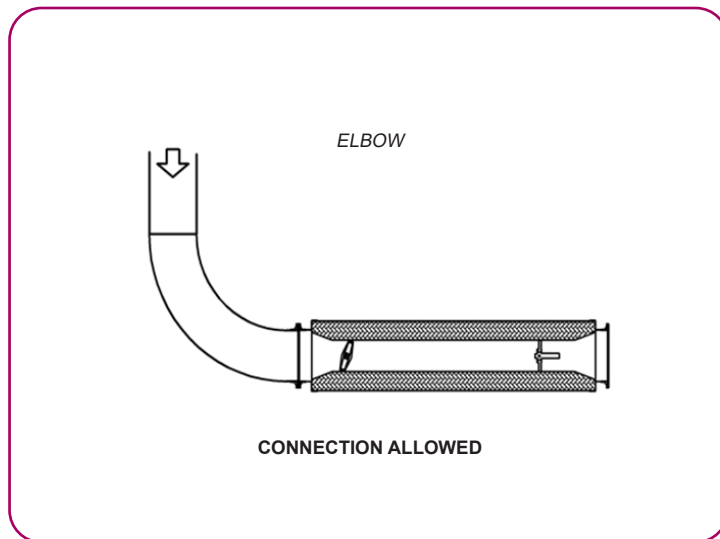
KLV+PAK / KLVR+PAK				PAK Type 1				PAK Type 2					
SIZE	C	D	E	E1	No. Inner baffles	L	Qmax (m³/h)	CODE	E1	No. Inner baffles	L	Qmax (m³/h)	CODE
125	150	160	50	0	0	600 - 1000	330	PAK-150x160xL-0/0/50 (Qmax 330 m³/h)	Not available				
160	300	160		50	1		800	PAK-300x160xL-1/50/75 (Qmax 700 m³/h)	0	0	1300	PAK-300x160xL-0/0/200 (Qmax 1300 m³/h)	
200	400	200		100	1		1150	PAK-400x200xL-1/100/100 (Qmax 1200 m³/h)	50	1	2000	PAK-400x200xL-1/50/125 (Qmax 2300 m³/h)	
250	600	200		200	1		1500	PAK-600x200xL-1/200/150 (Qmax 1700 m³/h)	100	1	3500	PAK-600x200xL-1/100/200 (Qmax 3400 m³/h)	
315	700	250		200	1		3000	PAK-700x250xL-1/200/200 (Qmax 3000 m³/h)	100	2	5000	PAK-700x250xL-2/100/133 (Qmax 4500 m³/h)	
400	750	300		100	2		3000	PAK-750x300xL-2/100/150 (Qmax 4000 m³/h)	50	2	6500	PAK-750x300xL-2/50/183 (Qmax 6500 m³/h)	

Installation

There is no need to connect with a straight section of duct before and after the box, without affecting the accuracy of air flow measurement.

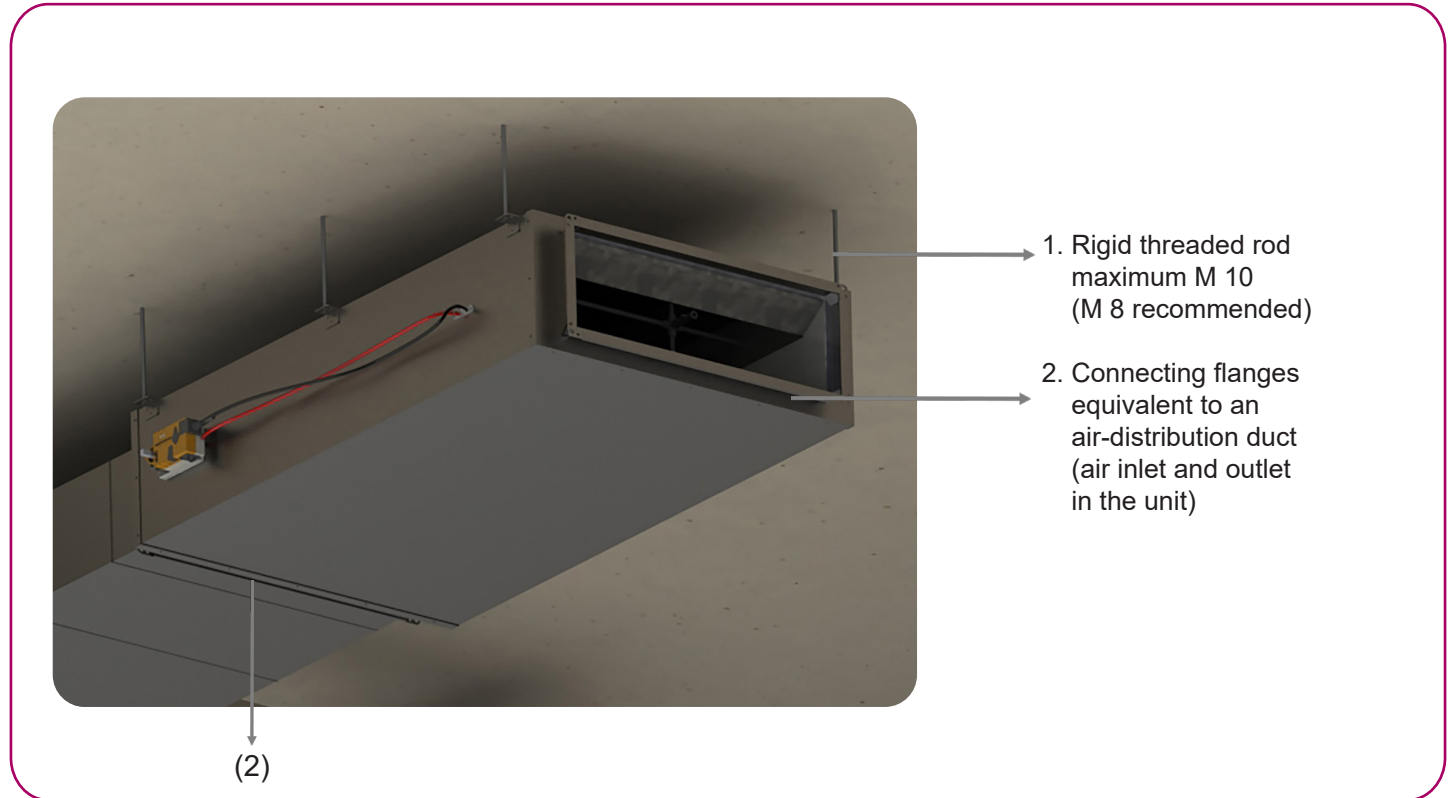
The accuracy of the air flow measurement is optimal for all types of installations, thanks to the design and location of the differential pressure sensor. In the following image, a curved section (elbow) is shown before the KLV or KLVR terminal unit, a situation allowed while maintaining a minimum error tolerance in the air flow measurement, that is, the flow measurement would be equivalent to the situation of having a straight section of duct at the air inlet of the unit. There is no need to connect with a straight section of duct before and after the box, without affecting the accuracy of air flow measurement.

The following image shows a direct connection of a duct intersection to the KLV or KLVR terminal unit, a situation allowed while maintaining a minimum error tolerance in the air flow measurement, that is, the flow measurement would be equivalent to the situation of having a straight section of duct at the air inlet of the unit.



Installation

The KLV units include 6 hanging brackets on the two upper longitudinal sides of the box, as shown in the following photograph:



These brackets have a hole ($\varnothing 10$ and $\varnothing 7$ mm) where the rigid threaded rods are fixed with a locknut, previously fixed to the slab or structure of the premises for the suspension of the unit. It is important to allow the necessary space to access the side of the regulator/servomotor for maintenance, changing the maximum/minimum flow setpoint in the installation itself, ...

The weights of the KLV unit by size, without considering the reheat coil, are indicated below.

Model	Weight (Kg)
125	24,5
160	31,5
200	39,5
250	49,5
315	63,5
400	67

Selection Tables/Symbology

The following tables include all the technical data necessary to correctly select the KLV and KLVR terminal units.

Definition of the technical parameters and symbols used in the following selection tables.

Symbols

Size: Nominal dimensions of the unit.

ΔP_{st} : Static pressure differential in Pa (measured at the inlet and outlet of the unit) generated by the given damper position.

L_{PA} : Sound pressure level of the noise generated by the air flow, in dB(A), for a given ΔP_{st} in Pa, considering an installation and local attenuation of 10 dB/oct.

L_{PA} : Sound pressure level of radiated noise, in dB(A), for a given ΔP_{st} in Pa, considering an installation and local attenuation of 10 dB/oct.

ΔP_{min} : Pressure drop of the unit, in Pa, to be considered in the calculation of all the pressure drops in the installation. It corresponds to a 100% open damper and a given air flow.

63, 125, ... Hz: Octave frequency band in Hz. Sound power values are provided in dB per octave band.

L_{WA} : Sound power level of the noise generated by the air flow, in dB(A) and NR, for a given ΔP_{st} in Pa.

L_{WA} : Sound power level of radiated noise, in dB(A) and NR, for a given ΔP_{st} in Pa.

Table 1 and 5 (Generated noise KLV and KLVR) and Table 3 and 7 (Radiated noise KLV and KLVR)

These tables show, for each box size and at a given difference in static pressure and air flow, the sound pressure values of generated and radiated noise of the KLV (supply) and KLVR (return) models. Sound pressure level in dB(A), considering an installation and local attenuation of -10 dB(A).

Table 2 and 6 (KLV and KLVR generated noise sound spectrum) and Table 4 and 8 (KLV and KLVR radiated noise sound spectrum)

These tables show, for each box size and at a given difference in static pressure and air flow, the sound power values per octave band in dB of generated and radiated noise of the KLV (supply) and KLVR (return) models. They also provide the global sound power values on an NR and dB(A) weighting scale.

Attenuation table

In this table the following values are indicated for each size: Attenuation of the KLV and KLVR box, expressed in dB per frequency octave band. The value information to apply this sound reduction to the installation's own noise (machine, duct speed, CCF,...) emitted before the box, that is, it acts as a silencer inserted in the duct network.

Selection Tables

Table 1 - Regenerated noise KLV

KLV	Regenerated Noise			L _{PA} [dBA] a ΔP _{st} [Pa]										
	Size	Q [m ³ /h]	Q [l/s]	ΔP _{min} [Pa]	50	100	200	300	400	500	600	700	800	900
125	81	23	2	9	12	14	15	16	17	17	18	18	19	19
	162	45	7	18	20	23	24	25	25	26	27	27	27	28
	324	90	27	27	29	31	32	33	34	35	35	36	36	36
	486	135	60	32	34	36	37	38	39	40	40	41	41	41
	648	180	106	35	38	40	41	42	43	43	44	44	45	45
160	162	45	1	12	16	19	22	23	24	25	26	27	27	28
	324	90	5	20	24	27	29	31	32	33	34	34	35	36
	648	180	20	28	32	35	37	39	40	41	42	42	43	43
	972	270	46	33	36	40	42	43	45	45	46	47	48	48
	1296	360	82	36	39	43	45	47	48	49	50	50	51	51
200	216	60	1	10	14	18	21	22	24	25	26	27	27	28
	576	160	8	21	25	29	31	33	34	36	36	37	38	39
	1152	320	32	28	32	37	39	41	42	43	44	45	46	46
	1728	480	72	33	37	41	43	45	46	48	48	49	50	51
	2304	640	127	36	40	44	46	48	50	51	52	52	53	54
250	324	90	1	11	15	20	23	25	27	28	29	30	31	32
	864	240	9	21	26	30	33	35	37	38	39	40	41	42
	1728	480	37	28	33	38	41	43	44	45	47	48	48	49
	2592	720	84	32	37	42	45	47	48	50	51	52	53	53
	3456	960	150	35	40	45	48	50	51	53	54	55	55	56
315	567	158	1	9	16	22	25	28	30	31	33	34	35	36
	1260	350	3	17	23	29	33	35	37	39	40	41	42	43
	2520	700	12	23	29	36	39	42	44	45	47	48	49	50
	3780	1050	26	27	33	39	43	45	47	49	50	51	53	53
	5040	1400	46	30	36	42	46	48	50	52	53	54	55	56
400	925	257	1	14	21	28	32	34	37	38	40	41	42	43
	2268	630	3	22	29	35	39	42	44	46	48	49	50	51
	3024	840	5	24	31	38	42	45	47	49	50	52	53	54
	4536	1260	12	28	35	42	46	48	51	52	54	55	56	57
	6040	1678	22	31	37	44	48	51	53	55	56	58	59	60

Selection Tables

Table 2.1 - Regenerated noise sound spectrum KLV

KLV Size	Regenerated Noise		Sound spectrum (Hz) - L_{WA} [dBA / NR] a $\Delta P_{st} = 100$ Pa									
	Q [m ³ /h]	Q [l/s]	63	125	250	500	1000	2000	4000	8000	dBA	NR
125	81	23	23	25	23	18	12	9	12	17	22	22
	162	45	32	34	31	27	21	18	20	25	30	31
	324	90	40	43	40	35	29	26	29	34	39	40
	486	135	45	48	45	40	34	31	34	39	44	45
	648	180	49	51	49	44	38	35	38	43	48	48
160	162	45	27	29	27	22	16	13	16	21	26	27
	324	90	35	37	35	30	24	21	24	29	34	34
	648	180	43	45	43	38	32	29	32	37	42	42
	972	270	48	50	47	42	36	34	36	41	46	47
	1296	360	51	53	50	46	40	37	40	45	49	50
200	216	60	26	28	25	20	14	12	14	19	24	25
	576	160	36	38	36	31	25	22	25	30	35	36
	1152	320	44	46	43	39	33	30	32	37	42	43
	1728	480	48	50	48	43	37	34	37	42	47	48
	2304	640	51	54	51	46	40	37	40	45	50	51
250	324	90	27	29	26	22	16	13	16	21	25	26
	864	240	37	39	36	32	26	23	26	31	36	36
	1728	480	44	46	44	39	33	30	33	38	43	43
	2592	720	48	50	48	43	37	34	37	42	47	48
	3456	960	51	53	51	46	40	37	40	45	50	51
315	567	158	27	29	26	22	16	13	16	21	26	26
	1260	350	34	37	34	29	23	20	23	28	33	34
	2520	700	41	43	40	36	30	27	30	35	39	40
	3780	1050	45	47	44	40	34	31	33	38	43	44
	5040	1400	47	50	47	42	36	33	36	41	46	47
400	925	257	32	34	32	27	21	18	21	26	31	32
	2268	630	40	42	40	35	29	26	29	34	39	39
	3024	840	43	45	42	38	32	29	31	36	41	42
	4536	1260	46	48	46	41	35	32	35	40	45	46
	6040	1678	49	51	48	44	38	35	37	42	47	48

Selection Tables

Table 2.2 - Regenerated noise sound spectrum KLV

KLV	Regenerated Noise		Sound spectrum (Hz) - L_{WA} [dBA / NR] a $\Delta P_{st} = 300$ Pa									
	Size	Q [m ³ /h]	Q [l/s]	63	125	250	500	1000	2000	4000	8000	dBA
125	81	23	27	29	26	22	16	13	15	20	25	26
	162	45	35	37	35	30	24	21	24	29	34	35
	324	90	44	46	43	39	33	30	33	38	42	43
	486	135	49	51	48	44	38	35	38	43	47	48
	648	180	52	55	52	47	41	38	41	46	51	52
160	162	45	33	35	32	28	22	19	22	27	32	32
	324	90	41	43	40	36	30	27	30	35	39	40
	648	180	49	51	48	44	38	35	37	42	47	48
	972	270	53	56	53	48	42	39	42	47	52	53
	1296	360	57	59	56	51	45	43	45	50	55	56
200	216	60	32	34	32	27	21	18	21	26	31	31
	576	160	43	45	42	38	32	29	32	37	41	42
	1152	320	50	53	50	45	39	36	39	44	49	50
	1728	480	55	57	54	50	44	41	43	48	53	54
	2304	640	58	60	57	53	47	44	47	52	56	57
250	324	90	35	37	34	30	24	21	23	28	33	34
	864	240	45	47	44	40	34	31	34	39	43	44
	1728	480	52	54	51	47	41	38	41	46	51	51
	2592	720	56	58	56	51	45	42	45	50	55	55
	3456	960	59	61	59	54	48	45	48	53	58	58
315	567	158	37	39	36	31	25	23	25	30	35	36
	1260	350	44	46	44	39	33	30	33	38	43	43
	2520	700	51	53	50	45	39	37	39	44	49	50
	3780	1050	54	57	54	49	43	40	43	48	53	54
	5040	1400	57	59	57	52	46	43	46	51	56	56
400	925	257	43	45	43	38	32	29	32	37	42	42
	2268	630	51	53	50	46	40	37	40	45	49	50
	3024	840	53	56	53	48	42	39	42	47	52	53
	4536	1260	57	59	57	52	46	43	46	51	56	56
	6040	1678	60	62	59	54	48	46	48	53	58	59

Selection Tables

Table 2.3 - Regenerated noise sound spectrum KLV

KLV Size	Regenerated Noise		Sound spectrum (Hz) - L_{WA} [dBA / NR] a $\Delta P_{st} = 500$ Pa									
	Q [m ³ /h]	Q [l/s]	63	125	250	500	1000	2000	4000	8000	dBA	NR
125	81	23	28	30	28	23	17	14	17	22	27	28
	162	45	37	39	36	32	26	23	26	31	35	36
	324	90	45	48	45	40	34	32	34	39	44	45
	486	135	51	53	50	45	39	37	39	44	49	50
	648	180	54	56	54	49	43	40	43	48	53	53
160	162	45	36	38	35	30	25	22	24	29	34	35
	324	90	43	46	43	38	32	29	32	37	42	43
	648	180	51	54	51	46	40	37	40	45	50	51
	972	270	56	58	55	51	45	42	45	50	55	55
	1296	360	59	61	59	54	48	45	48	53	58	59
200	216	60	35	37	35	30	24	21	24	29	34	35
	576	160	46	48	45	41	35	32	35	40	44	45
	1152	320	53	56	53	48	42	39	42	47	52	53
	1728	480	58	60	57	53	47	44	47	52	56	57
	2304	640	61	63	61	56	50	47	50	55	60	60
250	324	90	38	41	38	33	27	24	27	32	37	38
	864	240	48	51	48	43	37	34	37	42	47	48
	1728	480	56	58	55	50	45	42	44	49	54	55
	2592	720	60	62	59	55	49	46	48	53	58	59
	3456	960	63	65	62	58	52	49	51	56	61	62
315	567	158	41	43	41	36	30	27	30	35	40	40
	1260	350	48	51	48	43	37	35	37	42	47	48
	2520	700	55	57	55	50	44	41	44	49	54	54
	3780	1050	59	61	58	54	48	45	48	52	57	58
	5040	1400	61	64	61	56	50	48	50	55	60	61
400	925	257	48	50	48	43	37	34	37	42	47	47
	2268	630	56	58	55	51	45	42	45	50	54	55
	3024	840	58	61	58	53	47	44	47	52	57	58
	4536	1260	62	64	62	57	51	48	51	56	61	61
	6040	1678	64	67	64	59	53	51	53	58	63	64

Selection Tables

Table 3 - Radiated noise KLV

KLV	Radiated Noise			L _{PA} [dBA] a ΔP _{st} [Pa]										
	Size	Q [m³/h]	Q [l/s]	ΔP _{min} [Pa]	50	100	200	300	400	500	600	700	800	900
125	81	23	2	13	17	21	24	25	27	28	29	29	30	31
	162	45	7	19	23	27	30	31	33	34	35	35	36	37
	324	90	27	25	29	33	35	37	38	40	40	41	42	43
	486	135	60	28	32	36	39	41	42	43	44	44	45	46
	648	180	106	31	35	39	41	43	44	45	46	46	47	48
160	162	45	1	15	20	24	26	28	29	30	31	32	33	34
	324	90	5	20	24	29	31	33	34	35	36	37	38	38
	648	180	20	25	29	34	36	38	39	40	41	42	43	43
	972	270	46	28	32	36	39	41	42	43	44	45	46	46
	1296	360	82	30	34	39	41	43	44	45	46	46	47	48
200	216	60	1	15	20	24	26	28	29	31	32	32	33	34
	576	160	8	22	26	30	33	34	36	37	38	39	39	40
	1152	320	32	26	31	35	37	39	40	42	42	43	44	45
	1728	480	72	29	33	37	40	42	43	44	45	46	47	47
	2304	640	127	31	35	39	42	44	45	46	47	48	49	49
250	324	90	1	16	20	24	27	29	30	31	32	33	34	34
	864	240	9	21	26	30	33	34	36	37	38	39	39	40
	1728	480	37	25	30	34	36	38	40	41	42	43	43	44
	2592	720	84	28	32	36	39	41	42	43	44	45	46	46
	3456	960	150	29	34	38	40	42	44	45	46	47	47	48
315	567	158	1	9	15	21	24	27	28	30	31	32	33	34
	1260	350	3	16	22	28	31	34	36	37	39	40	41	42
	2520	700	12	22	28	34	38	40	42	44	45	46	47	48
	3780	1050	26	26	32	38	41	44	46	47	49	50	51	52
	5040	1400	46	29	35	41	44	46	48	50	51	52	53	54
400	925	257	1	15	21	27	30	32	34	36	37	38	39	40
	2268	630	3	23	29	35	38	40	42	44	45	46	47	48
	3024	840	5	26	31	37	40	43	45	46	47	48	49	50
	4536	1260	12	29	35	41	44	46	48	50	51	52	53	54
	6040	1678	22	32	37	43	46	49	51	52	53	55	56	56

Selection Tables

Table 4.1 - Radiated noise sound spectrum KLV

KLV	Radiated Noise		Sound spectrum (Hz) - L_{WA} [dBA / NR] a $\Delta P_{st} = 100$ Pa									
	Size	Q [m³/h]	Q [l/s]	63	125	250	500	1000	2000	4000	8000	dBA
125	81	23	35	37	31	24	17	12	11	12	27	25
	162	45	41	43	37	30	23	18	17	18	33	31
	324	90	47	49	43	36	29	24	23	24	39	36
	486	135	51	52	46	39	32	27	26	27	42	40
	648	180	53	54	49	42	34	29	29	30	45	42
160	162	45	38	39	34	26	19	14	13	14	30	27
	324	90	43	44	38	31	24	19	18	19	34	32
	648	180	48	49	43	36	29	24	23	24	39	37
	972	270	51	52	46	39	32	27	26	27	42	40
	1296	360	53	54	48	41	34	29	28	29	44	42
200	216	60	38	39	34	26	19	14	13	14	30	27
	576	160	44	46	40	33	26	21	20	21	36	34
	1152	320	49	50	44	37	30	25	24	25	41	38
	1728	480	51	53	47	40	33	28	27	28	43	41
	2304	640	53	55	49	42	35	30	29	30	45	43
250	324	90	38	40	34	27	20	15	14	15	30	28
	864	240	44	45	40	32	25	20	20	21	36	33
	1728	480	48	49	44	36	29	24	24	24	40	37
	2592	720	50	52	46	39	32	27	26	27	42	40
	3456	960	52	53	48	40	33	28	28	28	44	41
315	567	158	33	34	29	22	14	9	9	10	25	22
	1260	350	40	42	36	29	22	17	16	17	32	30
	2520	700	47	48	42	35	28	23	22	23	38	36
	3780	1050	50	52	46	39	32	27	26	27	42	40
	5040	1400	53	54	49	41	34	29	29	29	45	42
400	925	257	39	41	35	28	21	16	15	16	31	29
	2268	630	47	49	43	36	29	24	23	24	39	37
	3024	840	50	51	45	38	31	26	25	26	41	39
	4536	1260	53	55	49	42	35	30	29	30	45	43
	6040	1678	56	57	51	44	37	32	31	32	47	45

Selection Tables

Table 4.2 - Radiated noise sound spectrum KLV

KLV Size	Radiated Noise		Sound spectrum (Hz) - L_{WA} [dBA / NR] a $\Delta P_{st} = 300$ Pa									
	Q [m³/h]	Q [l/s]	63	125	250	500	1000	2000	4000	8000	dBA	NR
125	81	23	42	43	38	30	23	18	18	18	34	31
	162	45	48	49	43	36	29	24	23	24	40	37
	324	90	54	55	49	42	35	30	29	30	45	43
	486	135	57	58	53	46	38	33	33	34	49	46
	648	180	60	61	55	48	41	36	35	36	51	49
160	162	45	44	46	40	33	26	21	20	21	36	34
	324	90	49	51	45	38	31	26	25	26	41	39
	648	180	54	56	50	43	36	31	30	31	46	44
	972	270	57	59	53	46	39	34	33	34	49	47
	1296	360	59	61	55	48	41	36	35	36	51	49
200	216	60	45	46	40	33	26	21	20	21	36	34
	576	160	51	52	47	39	32	27	27	28	43	40
	1152	320	56	57	51	44	37	32	31	32	47	45
	1728	480	58	60	54	47	40	35	34	35	50	48
	2304	640	60	61	56	49	41	36	36	37	52	49
250	324	90	45	47	41	34	27	22	21	22	37	34
	864	240	51	52	47	39	32	27	26	27	43	40
	1728	480	55	56	50	43	36	31	30	31	46	44
	2592	720	57	58	53	46	38	33	33	34	49	46
	3456	960	59	60	54	47	40	35	34	35	50	48
315	567	158	42	44	38	31	24	19	18	19	34	32
	1260	350	50	51	45	38	31	26	25	26	41	39
	2520	700	56	57	52	44	37	32	32	33	48	45
	3780	1050	60	61	55	48	41	36	35	36	51	49
	5040	1400	62	64	58	51	44	39	38	39	54	52
400	925	257	48	50	44	37	30	25	24	25	40	38
	2268	630	56	58	52	45	38	33	32	33	48	46
	3024	840	59	60	54	47	40	35	34	35	50	48
	4536	1260	62	64	58	51	44	39	38	39	54	52
	6040	1678	65	66	60	53	46	41	40	41	56	54

Selection Tables

Table 4.3 - Radiated noise sound spectrum KLV

KLV Size	Radiated Noise		Sound spectrum (Hz) - L_{WA} [dBA / NR] a $\Delta P_{st} = 500$ Pa									
	Q [m³/h]	Q [l/s]	63	125	250	500	1000	2000	4000	8000	dBA	NR
125	81	23	45	46	41	33	26	21	21	21	37	34
	162	45	51	52	47	39	32	27	26	27	43	40
	324	90	57	58	52	45	38	33	32	33	48	46
	486	135	60	62	56	49	42	37	36	37	52	49
	648	180	63	64	58	51	44	39	38	39	54	52
160	162	45	48	49	43	36	29	24	23	24	39	37
	324	90	53	54	48	41	34	29	28	29	44	42
	648	180	57	59	53	46	39	34	33	34	49	47
	972	270	60	62	56	49	42	37	36	37	52	50
	1296	360	62	64	58	51	44	39	38	39	54	52
200	216	60	48	49	43	36	29	24	23	24	39	37
	576	160	54	56	50	43	36	31	30	31	46	43
	1152	320	59	60	54	47	40	35	34	35	50	48
	1728	480	61	63	57	50	43	38	37	38	53	51
	2304	640	63	65	59	52	45	40	39	40	55	53
250	324	90	48	50	44	37	30	25	24	25	40	38
	864	240	54	55	50	42	35	30	30	31	46	43
	1728	480	58	59	54	46	39	34	34	35	50	47
	2592	720	60	62	56	49	42	37	36	37	52	50
	3456	960	62	63	58	50	43	38	38	38	54	51
315	567	158	47	48	42	35	28	23	22	23	38	36
	1260	350	54	55	50	42	35	30	30	31	46	43
	2520	700	60	62	56	49	42	37	36	37	52	50
	3780	1050	64	65	60	52	45	40	40	41	56	53
	5040	1400	67	68	62	55	48	43	42	43	58	56
400	925	257	53	54	48	41	34	29	28	29	44	42
	2268	630	60	62	56	49	42	37	36	37	52	50
	3024	840	63	64	59	51	44	39	39	39	55	52
	4536	1260	66	68	62	55	48	43	42	43	58	56
	6040	1678	69	70	65	57	50	45	45	46	61	58

Selection Tables

Table 5 - Regenerated noise KLVR

KLVR	Regenerated Noise			L _{PA} dB(A) a ΔP _{st} [Pa]										
	Size	Q [m ³ /h]	Q [l/s]	ΔP _{min} [Pa]	50	100	200	300	400	500	600	700	800	900
125	81	23	3	6	9	12	13	15	16	16	17	18	18	18
	162	45	10	11	14	17	19	20	21	22	23	23	24	24
	324	90	40	17	20	23	25	26	27	28	28	29	29	30
	486	135	91	20	23	26	28	29	30	31	32	32	33	33
	648	180	162	23	26	29	30	32	33	33	34	35	35	36
160	162	45	2	8	11	15	18	19	21	22	22	23	24	24
	324	90	9	13	17	21	23	25	26	27	28	29	30	30
	648	180	36	19	23	27	29	31	32	33	34	35	35	36
	972	270	80	22	26	30	32	34	35	36	37	38	39	39
	1296	360	143	25	29	32	35	36	38	39	40	40	41	42
200	216	60	2	8	13	17	19	21	23	24	25	26	26	27
	576	160	13	16	21	25	28	29	31	32	33	34	34	35
	1152	320	54	22	26	31	33	35	36	38	39	39	40	41
	1728	480	121	25	30	34	37	38	40	41	42	43	43	44
	2304	640	216	28	32	36	39	41	42	43	44	45	46	47
250	324	90	2	9	14	19	22	24	26	27	28	29	30	31
	864	240	17	17	22	27	30	32	34	35	36	37	38	39
	1728	480	69	23	28	33	36	38	39	41	42	43	44	44
	2592	720	155	27	31	36	39	41	43	44	45	46	47	48
	3456	960	276	29	34	39	42	44	45	47	48	49	49	50
315	567	158	2	8	14	19	23	25	27	28	30	31	32	33
	1260	350	8	14	20	26	29	32	33	35	36	37	38	39
	2520	700	34	20	26	32	35	37	39	41	42	43	44	45
	3780	1050	76	24	29	35	38	41	43	44	45	46	47	48
	5040	1400	135	26	32	37	41	43	45	46	48	49	50	51
400	925	257	2	13	19	25	29	32	34	35	37	38	39	40
	2268	630	12	20	27	33	36	39	41	43	44	45	46	47
	3024	840	22	23	29	35	39	41	43	45	46	48	49	50
	4536	1260	49	26	32	39	42	45	47	48	50	51	52	53
	6040	1678	86	29	35	41	45	47	49	51	52	53	54	55

Selection Tables

Table 6.1 - Regenerated noise sound spectrum KLVR

KLVR	Regenerated Noise		Sound spectrum (Hz) - L_{WA} [dBA / NR] a $\Delta P_{st} = 100$ Pa									
	Size	Q [m³/h]	Q [l/s]	63	125	250	500	1000	2000	4000	8000	dBA
125	81	23	24	25	21	14	7	3	8	14	19	20
	162	45	30	31	27	20	13	9	13	20	24	25
	324	90	36	36	32	26	18	14	19	25	30	31
	486	135	39	40	36	29	22	18	22	29	33	34
	648	180	41	42	38	31	24	20	25	31	36	37
160	162	45	27	28	24	17	10	6	11	17	21	22
	324	90	33	34	29	23	15	12	16	23	27	28
	648	180	38	39	35	28	21	17	22	28	33	34
	972	270	42	43	38	32	25	21	25	32	36	37
	1296	360	44	45	41	34	27	23	28	34	39	40
200	216	60	28	29	25	18	11	7	12	18	23	24
	576	160	36	37	33	26	19	15	20	26	31	32
	1152	320	42	43	39	32	25	21	25	32	36	37
	1728	480	45	46	42	35	28	24	29	35	40	41
	2304	640	48	49	44	38	30	27	31	38	42	43
250	324	90	30	31	27	20	13	9	13	20	24	25
	864	240	38	39	35	28	21	17	21	28	32	33
	1728	480	44	45	40	34	26	23	27	34	38	39
	2592	720	47	48	44	37	30	26	31	37	41	42
	3456	960	49	50	46	39	32	28	33	39	44	45
315	567	158	29	30	26	19	12	8	13	19	24	25
	1260	350	36	37	32	26	19	15	19	26	30	31
	2520	700	41	42	38	32	24	20	25	31	36	37
	3780	1050	45	46	42	35	28	24	28	35	39	40
	5040	1400	47	48	44	37	30	26	31	37	42	43
400	925	257	35	36	31	25	17	14	18	25	29	30
	2268	630	42	43	39	32	25	21	26	32	37	38
	3024	840	45	45	41	35	27	23	28	34	39	40
	4536	1260	48	49	45	38	31	27	31	38	42	43
	6040	1678	50	51	47	40	33	29	34	40	45	46

Selection Tables

Table 6.2 - Regenerated noise sound spectrum KLVR

KLVR	Regenerated Noise		Sound spectrum (Hz) - L_{WA} [dBA / NR] a $\Delta P_{st} = 300$ Pa									
	Size	Q [m ³ /h]	Q [l/s]	63	125	250	500	1000	2000	4000	8000	dBA
125	81	23	29	30	26	19	12	8	12	19	23	24
	162	45	35	35	31	25	17	13	18	24	29	30
	324	90	40	41	37	30	23	19	24	30	35	36
	486	135	44	44	40	34	26	22	27	33	38	39
	648	180	46	47	43	36	29	25	29	36	40	41
160	162	45	33	34	30	23	16	12	17	23	28	29
	324	90	39	40	36	29	22	18	22	29	33	34
	648	180	45	46	41	35	27	24	28	34	39	40
	972	270	48	49	45	38	31	27	31	38	42	43
	1296	360	50	51	47	40	33	29	34	40	45	46
200	216	60	35	36	32	25	18	14	19	25	29	30
	576	160	43	44	40	33	26	22	27	33	38	39
	1152	320	49	50	46	39	32	28	32	39	43	44
	1728	480	52	53	49	42	35	31	36	42	47	48
	2304	640	55	55	51	45	37	33	38	44	49	50
250	324	90	38	38	34	28	20	16	21	27	32	33
	864	240	46	47	42	36	28	25	29	36	40	41
	1728	480	51	52	48	41	34	30	35	41	46	47
	2592	720	55	56	51	45	38	34	38	45	49	50
	3456	960	57	58	54	47	40	36	41	47	52	53
315	567	158	38	39	35	28	21	17	22	28	33	34
	1260	350	45	46	41	35	28	24	28	35	39	40
	2520	700	51	51	47	41	33	29	34	40	45	46
	3780	1050	54	55	51	44	37	33	37	44	48	49
	5040	1400	56	57	53	46	39	35	40	46	51	52
400	925	257	45	45	41	35	27	23	28	34	39	40
	2268	630	52	53	49	42	35	31	36	42	46	47
	3024	840	54	55	51	44	37	33	38	44	49	50
	4536	1260	58	59	54	48	41	37	41	48	52	53
	6040	1678	60	61	57	50	43	39	44	50	55	56

Selection Tables

Table 6.3 - Regenerated noise sound spectrum KLVR

KLVR	Regenerated Noise		Sound spectrum (Hz) - L_{WA} [dBA / NR] a $\Delta P_{st} = 500$ Pa									
	Size	Q [m ³ /h]	Q [l/s]	63	125	250	500	1000	2000	4000	8000	dBA
125	81	23	31	32	28	21	14	10	15	21	26	26
	162	45	37	38	33	27	20	16	20	27	31	32
	324	90	42	43	39	33	25	21	26	32	37	38
	486	135	46	47	42	36	29	25	29	36	40	41
	648	180	48	49	45	38	31	27	32	38	43	44
160	162	45	36	37	33	26	19	15	20	26	31	32
	324	90	42	43	39	32	25	21	25	32	36	37
	648	180	48	48	44	38	30	26	31	37	42	43
	972	270	51	52	48	41	34	30	34	41	45	46
	1296	360	53	54	50	43	36	32	37	43	48	49
200	216	60	38	39	35	28	21	17	22	28	33	34
	576	160	46	47	43	36	29	25	30	36	41	42
	1152	320	52	53	49	42	35	31	36	42	46	47
	1728	480	55	56	52	45	38	34	39	45	50	51
	2304	640	58	59	54	48	41	37	41	48	52	53
250	324	90	41	42	38	31	24	20	25	31	36	37
	864	240	49	50	46	39	32	28	33	39	44	45
	1728	480	55	56	52	45	38	34	39	45	49	50
	2592	720	58	59	55	48	41	37	42	48	53	54
	3456	960	61	62	57	51	44	40	44	51	55	56
315	567	158	42	43	39	32	25	21	26	32	37	38
	1260	350	49	50	46	39	32	28	32	39	43	44
	2520	700	55	56	51	45	38	34	38	45	49	50
	3780	1050	58	59	55	48	41	37	42	48	53	53
	5040	1400	60	61	57	51	43	39	44	50	55	56
400	925	257	49	50	46	39	32	28	33	39	44	45
	2268	630	57	57	53	47	39	35	40	46	51	52
	3024	840	59	60	56	49	42	38	42	49	53	54
	4536	1260	62	63	59	52	45	41	46	52	57	58
	6040	1678	65	66	61	55	47	44	48	55	59	60

Selection Tables

Table 7 - Radiated noise KLVR

KLVR	Radiated Noise			L _{PA} dB(A) a ΔP _{st} [Pa]										
	Q [m³/h]	Q [l/s]	ΔP _{min} [Pa]	50	100	200	300	400	500	600	700	800	900	1000
125	81	23	3	6	12	19	22	25	27	29	30	31	32	33
	162	45	10	10	16	23	26	29	31	33	34	35	36	37
	324	90	40	14	20	27	30	33	35	37	38	39	40	41
	486	135	91	16	23	29	33	35	37	39	40	41	43	43
	648	180	162	18	24	31	34	37	39	40	42	43	44	45
160	162	45	2	9	15	21	25	27	29	31	32	33	34	35
	324	90	9	14	20	26	29	32	33	35	36	38	39	39
	648	180	36	18	24	30	33	36	38	39	41	42	43	44
	972	270	80	20	26	32	36	38	40	42	43	44	45	46
	1296	360	143	22	28	34	38	40	42	44	45	46	47	48
200	216	60	2	10	16	22	25	28	29	31	32	33	34	35
	576	160	13	16	22	28	31	34	36	37	39	40	41	42
	1152	320	54	21	27	32	36	38	40	42	43	44	45	46
	1728	480	121	23	29	35	39	41	43	44	46	47	48	49
	2304	640	216	25	31	37	40	43	45	46	48	49	50	51
250	324	90	2	11	17	23	26	28	30	32	33	34	35	36
	864	240	17	18	23	29	33	35	37	38	39	41	42	42
	1728	480	69	22	28	34	37	40	41	43	44	45	46	47
	2592	720	155	25	31	37	40	42	44	46	47	48	49	50
	3456	960	276	27	33	38	42	44	46	47	49	50	51	52
315	567	158	2	13	19	24	27	30	31	33	34	35	36	37
	1260	350	8	19	24	30	33	35	37	38	40	41	42	42
	2520	700	34	24	29	35	38	40	42	43	45	46	47	47
	3780	1050	76	27	32	38	41	43	45	46	47	49	49	50
	5040	1400	135	29	34	40	43	45	47	48	50	51	51	52
400	925	257	2	16	21	26	29	32	33	35	36	37	38	39
	2268	630	12	22	28	33	36	38	40	41	43	44	44	45
	3024	840	22	25	30	35	38	40	42	43	45	46	47	47
	4536	1260	49	27	33	38	41	43	45	46	48	49	50	50
	6040	1678	86	30	35	40	43	45	47	49	50	51	52	52

Selection Tables

Table 8.1 - Radiated noise sound spectrum KLVR

KLVR	Radiated Noise		Sound spectrum (Hz) - L_{WA} [dBA / NR] a $\Delta P_{st} = 100$ Pa									
	Size	Q [m³/h]	Q [l/s]	63	125	250	500	1000	2000	4000	8000	dBA
125	81	23	30	33	26	18	12	8	7	7	22	20
	162	45	34	37	30	22	16	12	11	11	26	24
	324	90	38	41	34	26	20	16	15	15	30	28
	486	135	40	43	37	28	23	18	17	18	33	30
	648	180	42	44	38	30	24	20	19	19	34	32
160	162	45	33	36	29	21	15	11	10	10	25	23
	324	90	37	40	34	25	20	15	14	15	30	27
	648	180	42	44	38	29	24	20	18	19	34	31
	972	270	44	47	40	32	26	22	21	21	36	34
	1296	360	46	48	42	34	28	24	23	23	38	35
200	216	60	34	36	30	21	16	12	10	11	26	23
	576	160	40	42	36	28	22	18	17	17	32	29
	1152	320	44	47	41	32	27	22	21	22	37	34
	1728	480	47	49	43	35	29	25	24	24	39	37
	2304	640	49	51	45	36	31	27	26	26	41	38
250	324	90	35	37	31	22	17	13	12	12	27	24
	864	240	41	44	38	29	23	19	18	18	33	31
	1728	480	46	48	42	34	28	24	23	23	38	35
	2592	720	49	51	45	36	31	27	25	26	41	38
	3456	960	50	53	47	38	33	28	27	28	43	40
315	567	158	36	39	33	24	19	14	13	14	29	26
	1260	350	42	45	38	30	24	20	19	19	34	32
	2520	700	47	50	43	35	29	25	24	24	39	37
	3780	1050	50	52	46	38	32	28	27	27	42	39
	5040	1400	52	54	48	40	34	30	29	29	44	42
400	925	257	39	41	35	27	21	17	16	16	31	28
	2268	630	45	48	42	33	28	23	22	23	38	35
	3024	840	48	50	44	35	30	26	24	25	40	37
	4536	1260	50	53	47	38	33	28	27	28	43	40
	6040	1678	53	55	49	40	35	31	29	30	45	42

Selection Tables

Table 8.2 - Radiated noise sound spectrum KLVR

KLVR	Radiated Noise		Sound spectrum (Hz) - L_{WA} [dBA / NR] a $\Delta P_{st} = 300$ Pa									
	Size	Q [m ³ /h]	Q [l/s]	63	125	250	500	1000	2000	4000	8000	dBA
125	81	23	40	43	36	28	22	18	17	17	32	30
	162	45	44	47	40	32	26	22	21	21	36	34
	324	90	48	50	44	36	30	26	25	25	40	38
	486	135	50	53	47	38	32	28	27	28	43	40
	648	180	52	54	48	40	34	30	29	29	44	41
160	162	45	42	45	39	30	25	20	19	20	35	32
	324	90	47	49	43	35	29	25	24	24	39	36
	648	180	51	54	47	39	33	29	28	28	43	41
	972	270	54	56	50	41	36	32	30	31	46	43
	1296	360	55	58	52	43	38	33	32	33	48	45
200	216	60	43	45	39	31	25	21	20	20	35	32
	576	160	49	52	46	37	31	27	26	26	41	39
	1152	320	54	56	50	41	36	32	30	31	46	43
	1728	480	56	59	53	44	38	34	33	33	49	46
	2304	640	58	61	54	46	40	36	35	35	50	48
250	324	90	44	46	40	31	26	22	21	21	36	33
	864	240	50	53	47	38	32	28	27	27	43	40
	1728	480	55	57	51	43	37	33	32	32	47	44
	2592	720	58	60	54	45	40	36	34	35	50	47
	3456	960	60	62	56	47	42	37	36	37	52	49
315	567	158	45	48	41	33	27	23	22	22	37	35
	1260	350	51	53	47	38	33	29	28	28	43	40
	2520	700	56	58	52	43	38	34	33	33	48	45
	3780	1050	59	61	55	46	41	37	35	36	51	48
	5040	1400	61	63	57	48	43	39	37	38	53	50
400	925	257	47	50	44	35	29	25	24	24	39	37
	2268	630	54	56	50	41	36	32	31	31	46	43
	3024	840	56	58	52	44	38	34	33	33	48	45
	4536	1260	59	61	55	47	41	37	36	36	51	48
	6040	1678	61	64	57	49	43	39	38	38	53	51

Selection Tables

Table 8.3 - Radiated noise sound spectrum KLVR

KLVR	Radiated Noise		Sound spectrum (Hz) - L_{WA} [dBA / NR] a $\Delta P_{st} = 500$ Pa									
	Size	Q [m³/h]	Q [l/s]	63	125	250	500	1000	2000	4000	8000	dBA
125	81	23	45	47	41	32	27	23	22	22	37	34
	162	45	49	51	45	36	31	27	25	26	41	38
	324	90	53	55	49	40	35	31	29	30	45	42
	486	135	55	57	51	43	37	33	32	32	47	44
	648	180	57	59	53	44	39	35	33	34	49	46
160	162	45	47	49	43	35	29	25	24	24	39	36
	324	90	51	54	48	39	33	29	28	28	43	41
	648	180	56	58	52	43	38	33	32	33	48	45
	972	270	58	61	54	46	40	36	35	35	50	48
	1296	360	60	62	56	48	42	38	37	37	52	49
200	216	60	47	50	44	35	29	25	24	24	39	37
	576	160	53	56	50	41	36	31	30	31	46	43
	1152	320	58	60	54	46	40	36	35	35	50	48
	1728	480	61	63	57	48	43	39	37	38	53	50
	2304	640	62	65	59	50	45	40	39	40	55	52
250	324	90	48	50	44	36	30	26	25	25	40	37
	864	240	54	57	51	42	37	32	31	32	47	44
	1728	480	59	62	55	47	41	37	36	36	51	49
	2592	720	62	64	58	49	44	40	39	39	54	51
	3456	960	64	66	60	51	46	42	41	41	56	53
315	567	158	49	52	45	37	31	27	26	26	41	39
	1260	350	55	57	51	42	37	33	32	32	47	44
	2520	700	60	62	56	47	42	38	37	37	52	49
	3780	1050	63	65	59	50	45	41	39	40	55	52
	5040	1400	65	67	61	52	47	43	41	42	57	54
400	925	257	51	54	47	39	33	29	28	28	43	41
	2268	630	58	60	54	45	40	36	35	35	50	47
	3024	840	60	62	56	48	42	38	37	37	52	49
	4536	1260	63	65	59	50	45	41	40	40	55	52
	6040	1678	65	67	61	53	47	43	42	42	57	54

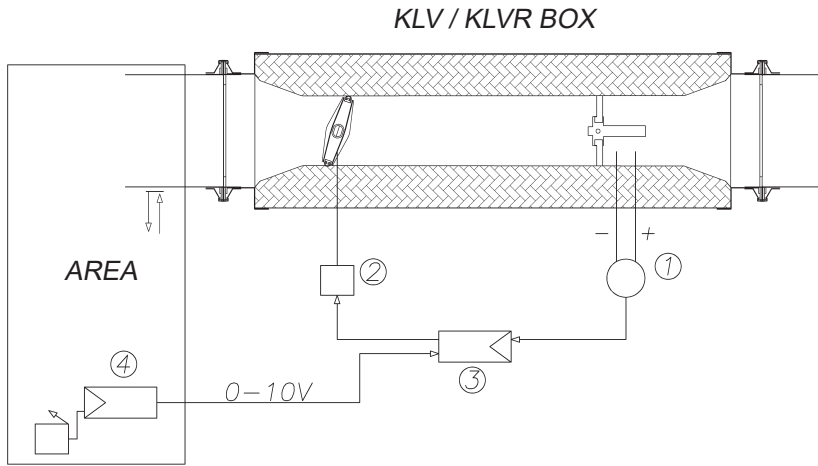
Selection Tables

Attenuation Table KLV

KLV	Octave band [Hz]							
Size	63	125	250	500	1000	2000	4000	8000
125	6	12	21	32	38	34	29	24
160	2	5	15	25	34	39	30	26
200	3	6	16	30	37	36	31	26
250	4	8	15	26	34	36	28	23
315	3	6	11	17	27	26	20	16
400	2	5	10	16	21	17	11	12

Operating Modes

1. Individual operation



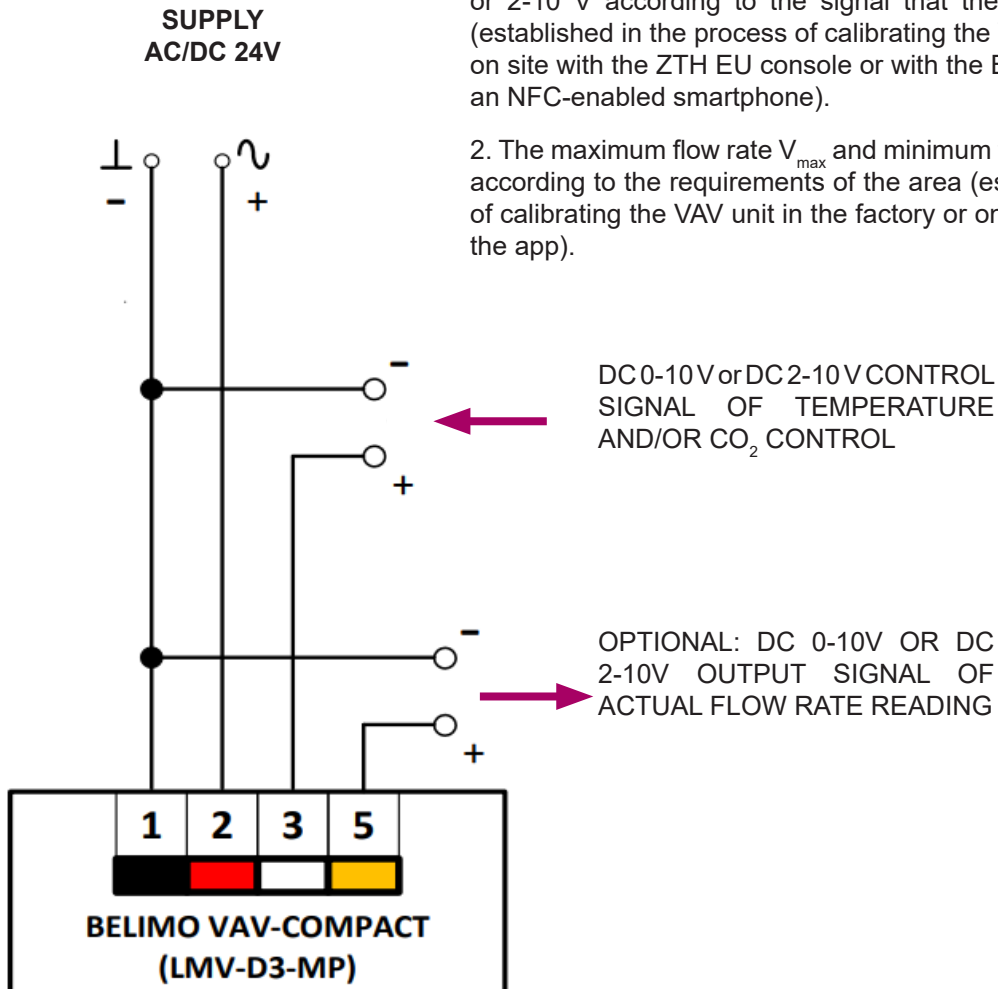
- 1. Differential pressure transformer
- 2. Actuator
- 3. Air flow controller
- 1+2+3 Compact controller
- 4. Room regulator (temperature and/or CO₂)

Usual and basic operating mode in variable flow installations, where the room regulator demands flow directly from the controller (regulator+servomotor) through proportional control signals 0-10 V or 2-10 V, depending on the deviation between the temperature or air quality setpoint and the actual measurement in the premises. The servomotor acts on the damper to adapt to the required flow rate.

The connection diagram for the compact controller LMV-D3-MP model associated with this operating mode is shown below.

Operating Modes

1. Individual operation



IMPORTANT:

1. The operating mode on the LMV-D3-MP can be set to DC 0-10 or 2-10 V according to the signal that the controller is to receive (established in the process of calibrating the VAV unit in the factory or on site with the ZTH EU console or with the Belimo assistant app and an NFC-enabled smartphone).

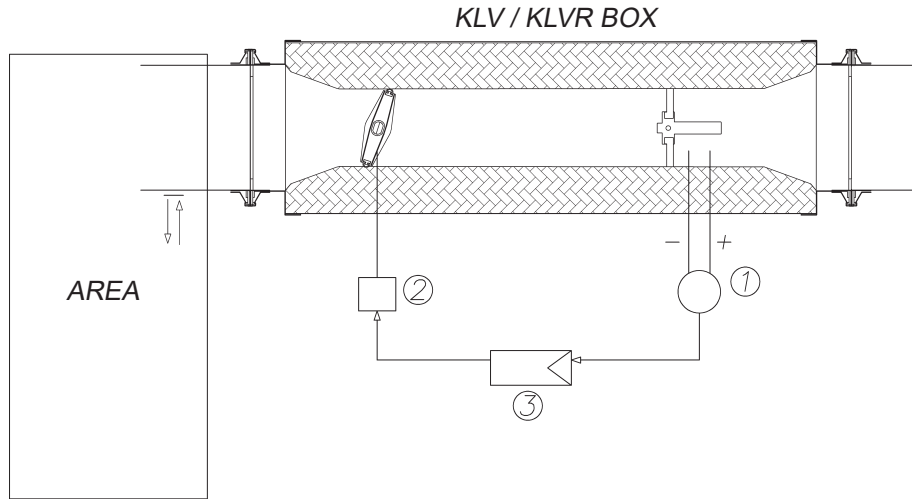
2. The maximum flow rate V_{max} and minimum flow rate V_{min} must be set according to the requirements of the area (established in the process of calibrating the VAV unit in the factory or on site with the ZTH EU or the app).

DC 0-10V or DC 2-10V CONTROL SIGNAL OF TEMPERATURE AND/OR CO₂ CONTROL

OPTIONAL: DC 0-10V OR DC 2-10V OUTPUT SIGNAL OF ACTUAL FLOW RATE READING

Operating Modes

2. Constant air flow regulation. Override control (constant + closing)



Completely autonomous operating mode, without the need for an associated room regulator or proportional flow demand command signals, where the unit is required to regulate to a certain constant flow rate value that can be modified on site. This must be highlighted in the order, so that specific factory calibration may be carried out. It also makes the override control for closing the damper possible. Solution where specific 0-10 or 2-10 V command signals are not required, it is only necessary to power the servomotor at 24 V and comply with a specific connection diagram, depending on the operating mode (information provided by Koolair's Commercial or Technical Department).

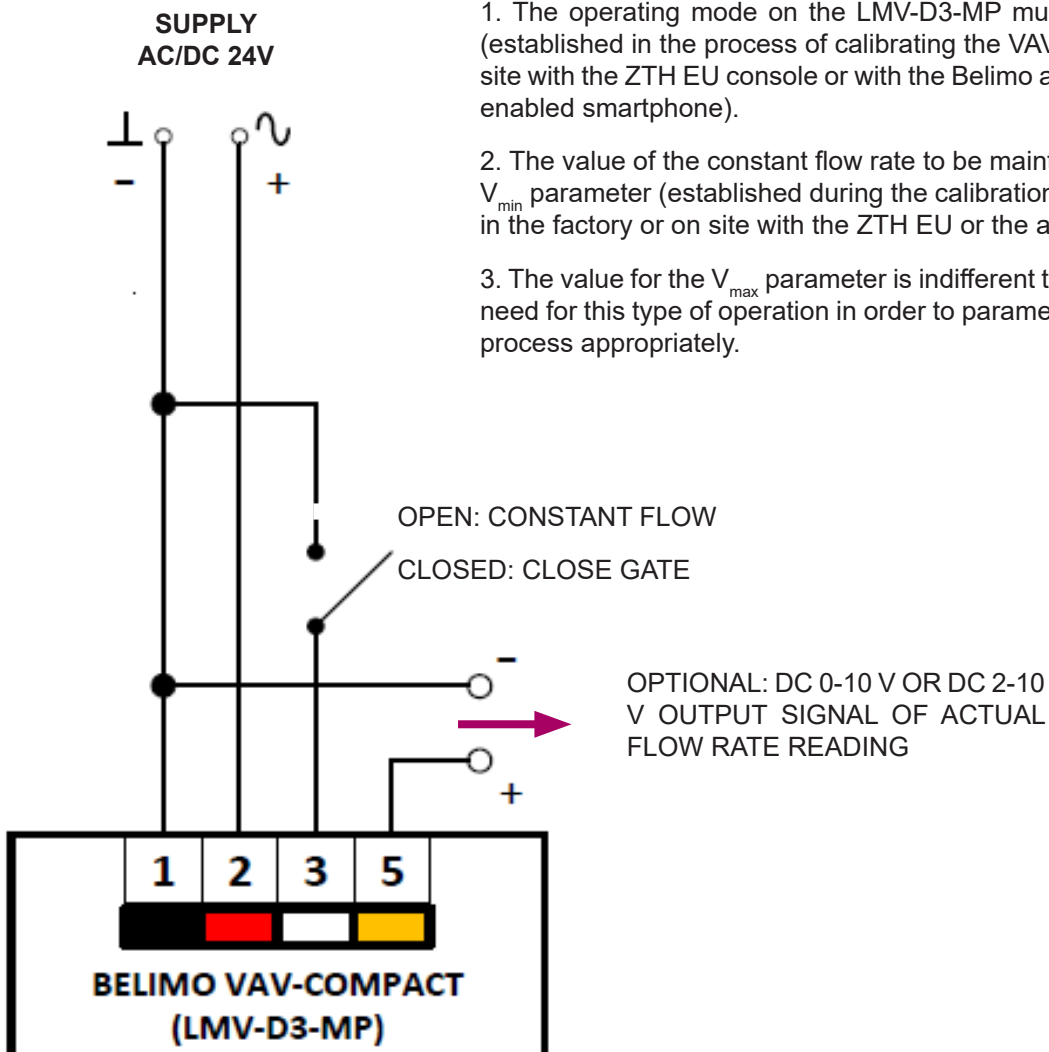
The connection diagram for the compact controller LMV-D3-MP model associated with this operating mode is shown below.

Operating Modes

2. Constant air flow regulation. Override control (constant + closing)

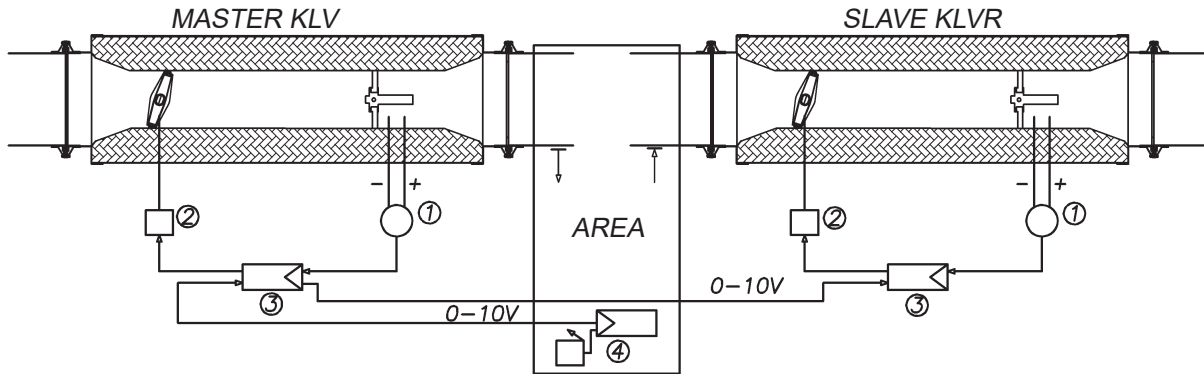
IMPORTANT:

1. The operating mode on the LMV-D3-MP must be set as DC 2-10 V (established in the process of calibrating the VAV unit in the factory or on site with the ZTH EU console or with the Belimo assistant app and a NFC-enabled smartphone).
2. The value of the constant flow rate to be maintained must be set in the V_{min} parameter (established during the calibration process of the VAV unit in the factory or on site with the ZTH EU or the app).
3. The value for the V_{max} parameter is indifferent to indicate on request the need for this type of operation in order to parameterise the manufacturing process appropriately.



Operating Modes

3. Master slave operation



Situation where the supply unit (master) is connected to the return unit (slave), sending the instantaneous flow-rate reading to the slave, so that it returns the same air-flow rate or in the same proportion as the supply box. Normally, this operating mode is carried out with the connection of a supply unit and a return unit of the same size.

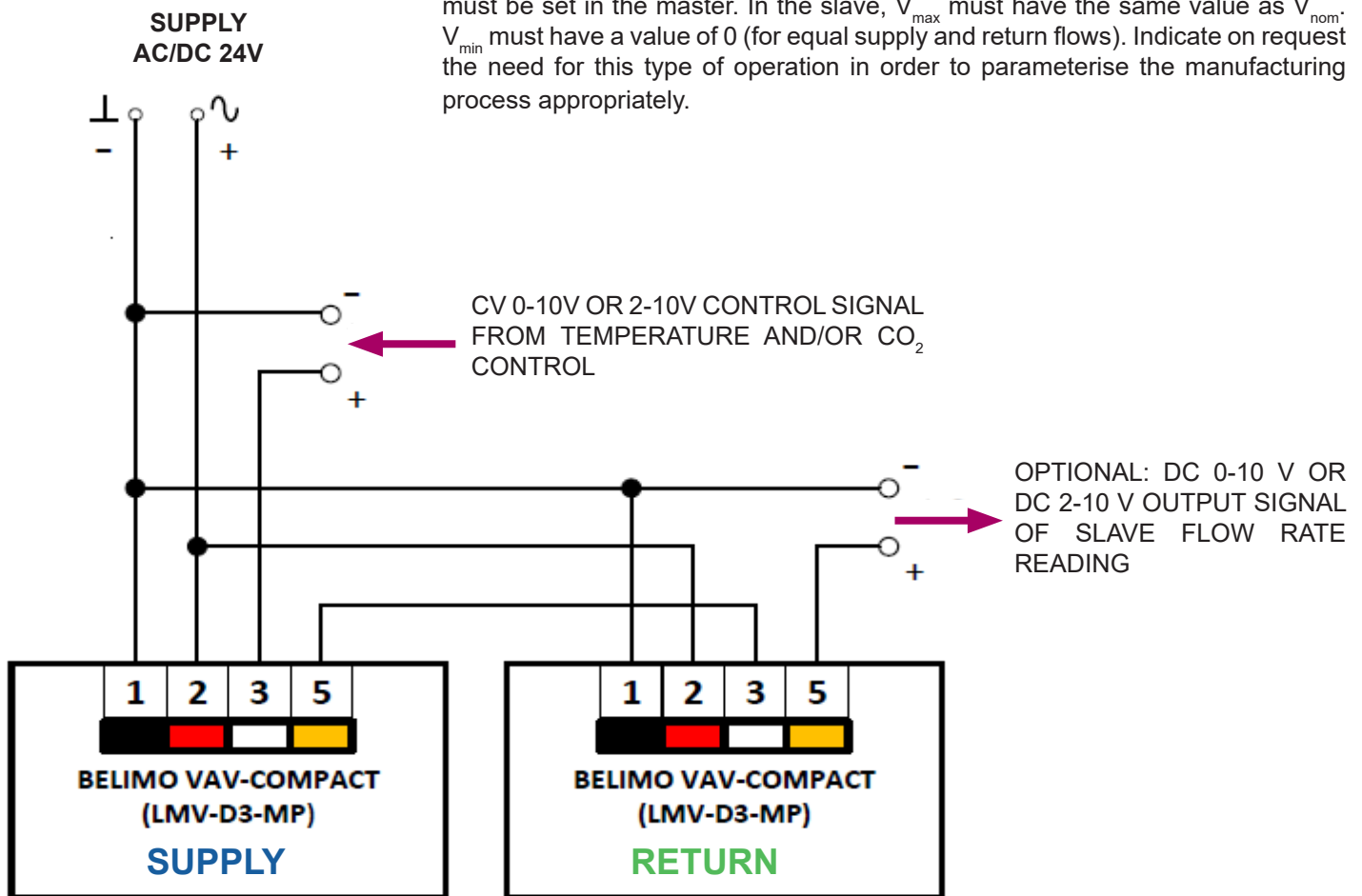
The connection diagram for the compact controller LMV-D3-MP model associated with this operating mode is shown below.

Operating Modes

3. Master slave operation

IMPORTANT:

1. The operating mode on the LMV-D3-MP (DC 0-10 V or DC 2-10 V) must be the same on the master and the slave.
2. The supply and return units must be of the same size and have the same nominal flow rate V_{nom} (established in the manufacturing process of the VAV unit).
3. The maximum V_{max} and minimum V_{min} flow rates to be maintained in the room must be set in the master. In the slave, V_{max} must have the same value as V_{nom} . V_{min} must have a value of 0 (for equal supply and return flows). Indicate on request the need for this type of operation in order to parameterise the manufacturing process appropriately.



Selection Example

For a correct selection of VAV terminal units, KLV and KLVR models, it is necessary to know a series of initial data related to the design conditions of the installation. Below is a selection example, to provide a better understanding of the use of technical data tables (tables 1 to 8):

- Design conditions:
 - Maximum unit air flow rate: 640 m³/h
 - VAV box selection in supply network: KLV model
 - Type of office premises, maximum permitted sound pressure level: 40 dB(A)
 - Maximum allowable pressure drop (ΔP_{min}) of the unit: 45 Pa.
 - Maximum working static pressure difference in the box (ΔP_{st}): 100 Pa

To select the appropriate box size, Tables 1 and 3 must be referred to, with a unit flow rate of 640 m³/h, considering the aforementioned restrictions on the technical parameters; the result would be the KLV-160 model, as it is the smallest size of unit that meets the requirements for the described installation, with the following technical features:

KLV-160 – Maximum flow rate 640 m³/h

Pressure drop, ΔP_{min} = 20 Pa

Generated noise sound pressure, L_{PA} = 32 dB(A), considering a local and installation-specific attenuation of -10 dB(A)

Radiated noise sound pressure, L_{PA} = 29 dB(A), considering a local and false-ceiling-specific attenuation of -10 dB(A)

Based on the results obtained, the suitability of the selected VAV box model and size is confirmed; the use of an additional silencer (PAK) is not necessary to meet the required generated noise level, and neither is any additional exterior insulation (-D) to respect the requested radiated noise level.

Codification

KLV - 125 - A - W - 1000 - PAK 1- LMV-D3-MP I* - Q_{max} - Q_{min} - 10V

1 2 3 4 5 6 7 8 9

1. Series:

KLV - Air supply unit
KLVR - Air return unit

2. Size:

125 - Duct 150 x 160 mm
160 - Duct 300 x 160 mm
200 - Duct 400 x 200 mm
250 - Duct 600 x 200 mm
315 - Duct 700 x 250 mm
400 - Duct 750 x 300 mm

3. Insulation:

D - Exterior insulation
S - Without exterior insulation

4. Coil:

W - Water reheat coil
E - Electrical reheat coil
****** - Without battery

5. Silencer length:

600 mm
1000 mm

6. Type of silencer:

PAK 1
PAK 2 (not available model 125)

7. Actuator box:

Mot. control LMV-D3-MP (0 v -10 V) R*
Mot. control LMV-D3-MP (0 v -10 V) L*
Mot. control LMV-D3-MP (2 v -10 V) R*
Mot. control LMV-D3-MP (2 v -10 V) L*
Mot. control NMV-D3-MP (0 v -10 V) R*
Mot. control NMV-D3-MP (0 v -10 V) L*
Mot. control NMV-D3-MP (2 v -10 V) R*
Mot. control NMV-D3-MP (2 v -10 V) L*
Mot. control LMV-D3-KNX (0 v -10 V) R*
Mot. control LMV-D3-KNX (0 v -10 V) L*
Mot. control NMV-D3-KNX (0 v -10 V) R*
Mot. control NMV-D3-KNX (0 v -10 V) L*
Mot. control LMV-D3-MOD (Modbus RTU, MP-Bus, 0/2...
10 V) R*
Mot. control LMV-D3-MOD (Modbus RTU, MP-Bus, 0/2...
10 V) L*
Mot. control NMV-D3-MOD (Modbus RTU, MP-Bus, 0/2...
10 V) R*
Mot. control NMV-D3-MOD (Modbus RTU, MP-Bus, 0/2...
10 V) L*
Mot. control GLB-181.1E (0 v -10 V) R*
Mot. control GLB-181.1E (0 v -10 V) L*
* Following the direc. of air to the left (-L) or to the right (-R)
Without control on the right following the direction of the air
Without control on the left following the direction of the air
Control as per not

8. Maximum-minimum flow rate

Q_{max} - Maximum flow rate (m³/h)
Q_{min} - Minimum flow rate (m³/h)

9. Control signal:

0-10 V 2-10 V
Constant flow - closing override
2 positions: minimum flow - maximum flow

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