



AIR TECH
SYSTEMS

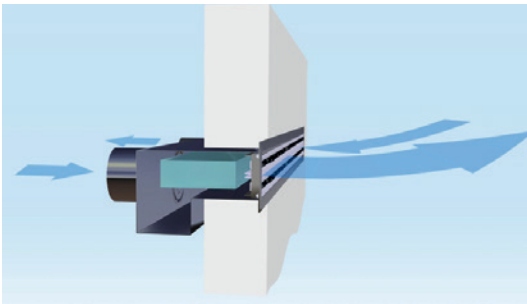
Technical Brochure

LTG Air Diffusers

Linear Air Diffusers

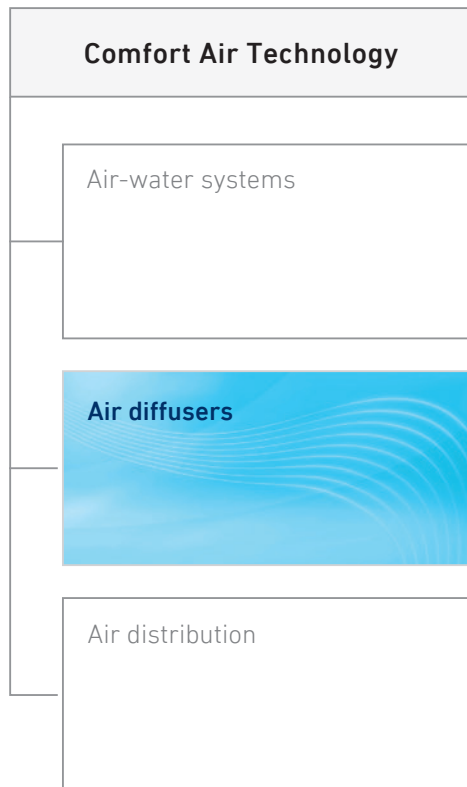
LWmodule

silent
module



Wall-mounted

Technical brochure • Wall-mounted linear air diffusers *LWmodule*



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Notes:

Dimensions stated in this brochure are in mm.

Dimensions stated in this brochure are subject to General Tolerances according to DIN ISO 2768-vL.

Length tolerance : $\leq 1.5 \text{ m} \pm 1.5 \text{ mm}$;
 $\geq 1.5 \text{ m} \pm 2.0 \text{ mm}$.

Straightness and twist tolerances for extruded aluminium profiles according to DIN EN 12020-2.

The surface finishes meet standard indoor use requirements, i.e. room climate requirements according to DIN EN ISO 7730. Other finishes meeting special use requirements are available on request.

The actual tender documentations are available in word format at your local dealership or at www.LTG.net.



LTG planning tools – we support you!

Visit the download area on our website www.LTG.net with helpful tools, such as dimensioning programs, streaming videos and product information!

Also available: Our product overviews about air diffusers, air-water systems and air distribution products.

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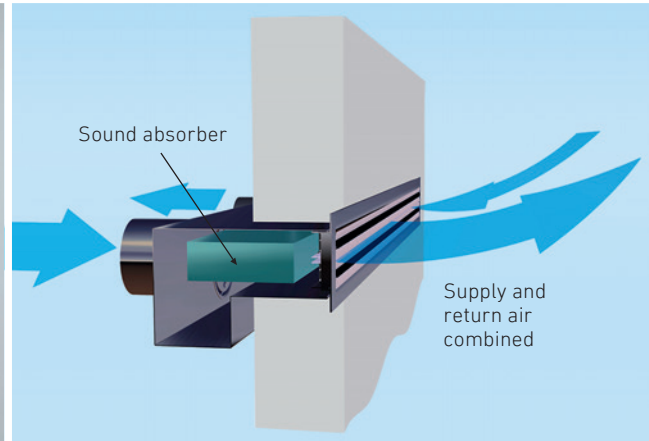
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Technical brochure • Wall-mounted linear air diffusers *LWmodule*

Wall-mounted linear air diffuser

silent
module

LWmodule



LTG's wall-mounted linear air diffuser *LWmodule* provides both supply and return air diffusion in a single device. It is not only attractive in appearance, but also for outstanding efficiency.

Advantages

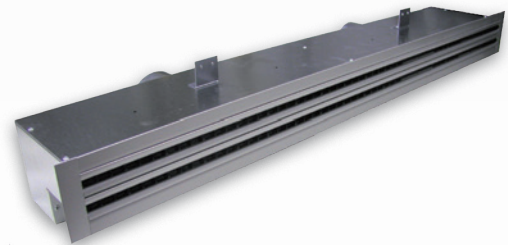
Effective: Optimal ventilation always provides clean, fresh air.

Quiet operation: Integrated sound absorber for high cross-talk sound attenuation.

Flexible: Variable box shapes for different wall installation conditions – each easy to mount and easy to maintain

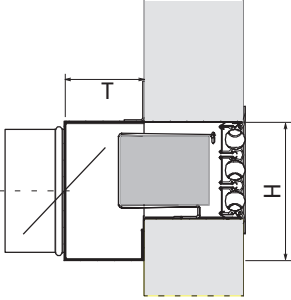
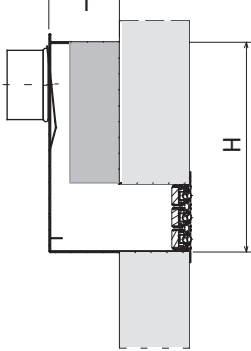
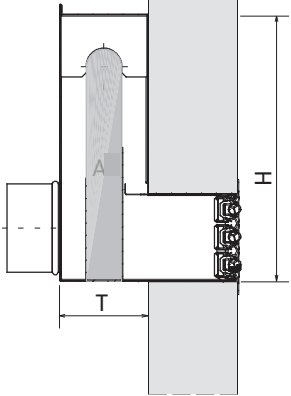
Individual: Tangential, mixed or displacement ventilation – completely based on individual needs and preferences.

Low maintenance: Minimal staining of the adjacent surfaces, thanks to patented LTG System Clean®



Technical brochure • Wall-mounted linear air diffusers LWmodule

Product overview

Type of plenum box	Standard	Plenum box type L	Plenum box type T
			
Special characteristics	For low to medium requirements for cross-talk sound attenuation, low structural height	For medium to high requirements for cross-talk sound attenuation	For high requirements for cross-talk sound attenuation
Versions	Combination: LWK-.. supply air/return air Single diffuser: LWE-.. supply air or return air		
Length of combination LWK [mm] (standard)	550 • 800 • 1000 • 1200		
Length of single diffuser LWE [mm] (standard)	550 • 700 • 800 • 900 • 1000 • 1100 • 1200		
Plenum box height H [mm]	121 con Ø 100 141 con Ø 125	311	311
Plenum box depth T [mm]	81	100	100
Diffuser type	LW-../12clean - Adjustable diffuser elements - With additional gap in border profile to reduce staining in the vicinity (LTG System Clean) LW-../12style - Completely in metal, non-inflammable - With additional gap in border profile to reduce staining in the vicinity (LTG System clean) - Slim design for the highest architectonic standards LW-../20classic - Adjustable diffuser elements		
Max. supply air flow rate at 35 dB(A) [m³/(hxm)]	LW-../12clean : 70...240 • LW-../12style : 70...160 • LW-../20classic : 110...260		
Border profile width [mm]	LW-../12clean : 48...160 • LW-../12style : 48...129 • LW-../20classic : 48...160		
Number of slot rows	LW-../12clean : 1...4 • LW-../12style : 1...3 • LW-../20classic : 1...4		
Integrated splitter sound absorber	■	■	■
Spigot diameter	DN 100 DN 125	DN 100	DN 100
Integrated throttling device	Throttling device (perforated plate) integrated in the connecting spigot	Throttling device (perforated plate) with swivel arm integrated in the connecting box	Sliding throttling device (perforated plate) integrated in the connecting box

■ = standard

Technical brochure • Wall-mounted linear air diffusers LWmodule

Views of unit



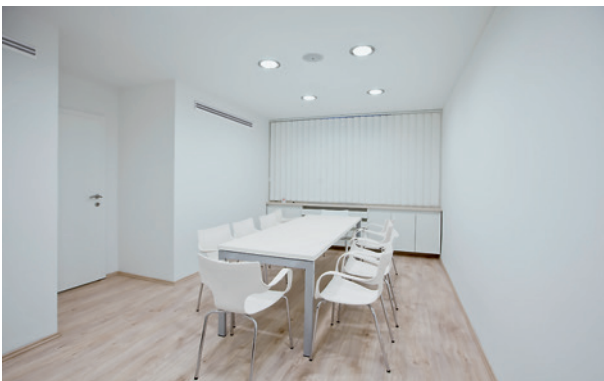
Type LW-.../12clean/...

Application

Mechanical ventilation of interiors.

Installation, placement

Horizontal mounting in walls or ceiling paneling; as an air diffusion combination for supply air and return air (LWK), or separately as individual diffusers for supply air or return air (LWE).



Installation example

Function

Due to the highly inductive mixture of supply air jets with room air, speeds and temperature differences within the wall vicinity are rapidly reduced. The "mixing air" zone creates a displacement flow, travelling close to the floor toward the facade and ascending from there, in both summer and winter, together with the heated air, then flowing back along the ceiling to the return air in the corridor wall. It is a prerequisite, however, that the supply air flow is introduced to the room at a ΔT lower than the room air temperature all year round.



Mixed displacement air flow

Another possible form is tangential flow, with the air flowing along the ceiling.



Tangential air flow

The flow form can be determined by means of the dimensioning tool.

Due to high induction characteristics, any short-circuit between supply and return air is insignificant. The size of the mixed air zone depends on the type of diffuser element used, the supply air flow rate, and the supply air temperature.

The diffuser combination is factory-set to provide thermal comfort also for workplaces underneath the diffuser for the specified field of application.

Technical brochure • **Wall-mounted linear air diffusers LWmodule**

Characteristics

Type LWK

- Supply and return air diffuser in one building axis
 - Arrangement next to one another
 - shared front linear diffuser
 - Linear diffuser easy to retrofit by attachment using clips
 - Air connections at back
- Shared air connection box with integrated and optimally designed separation between supply air and return air flows

Types LWK and LWE

- Linear diffuser variable with differing standard lengths
- Attractive design
 - Surface optionally anodised or painted
 - Air baffle elements in a range of standard colours
- High ventilation effectivity
 - Displacement ventilation with good air change rate of the occupied zone
 - Workplaces possible in the vicinity of diffusers
- Low flow noise of air diffusers thanks to flow-optimised air baffle elements
- Very high cross-talk sound attenuation between adjacent rooms thanks to various plenum box designs with integrated splitter sound attenuators
- Subsequently settable throttling device integrated in connection box

Technical brochure • Wall-mounted linear air diffusers LWmodule

Specification

Types LWK and LWE consists of cylindrical slot nozzles with flow-smooth inside and profile contour, contained by aerodynamically **matched** aluminum profiles.

Profile surface

Aluminum natural anodised or painted similar to RAL. Painted sections are suitable for "typical environment" normal-use. For use in wet environments, such as swimming pool areas, anodised profiles are recommended.

Surface of slot nozzles

Type 12clean e 20classic: white, grey and black.

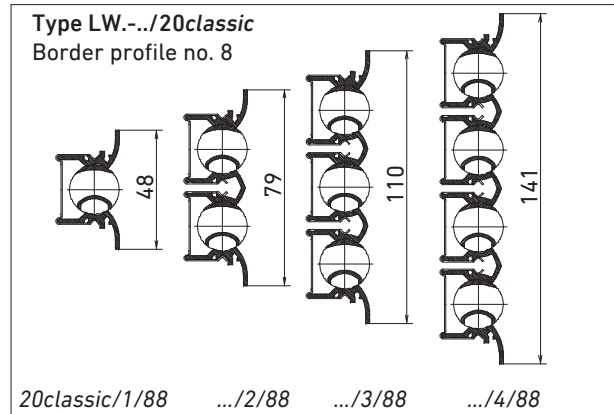
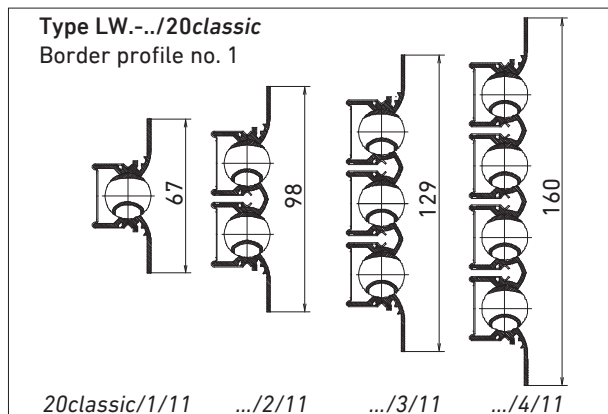
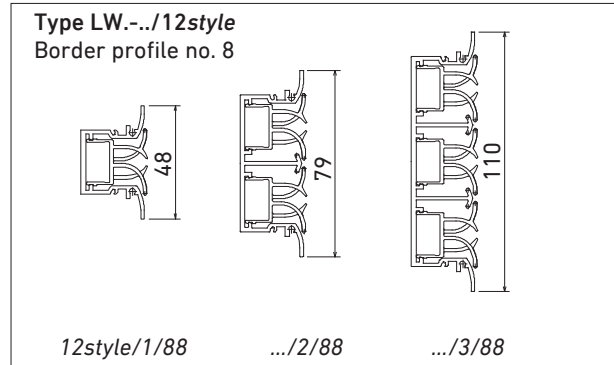
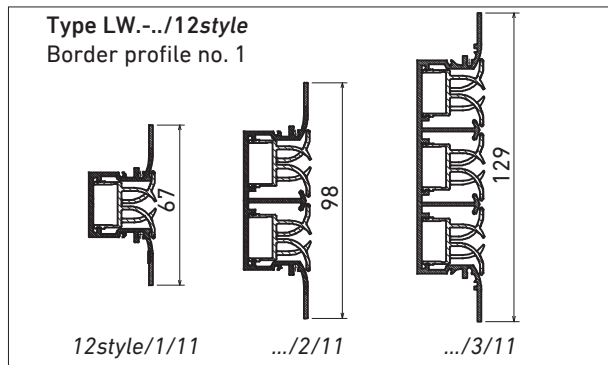
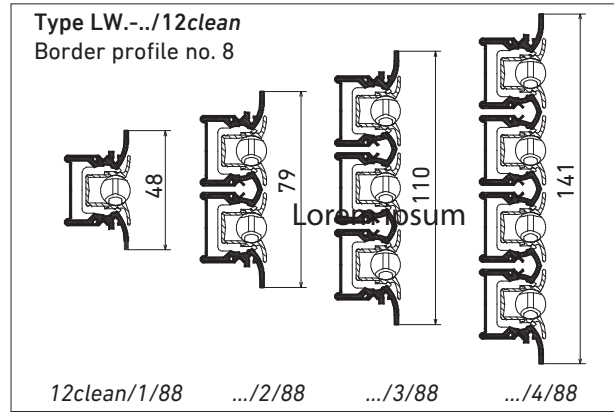
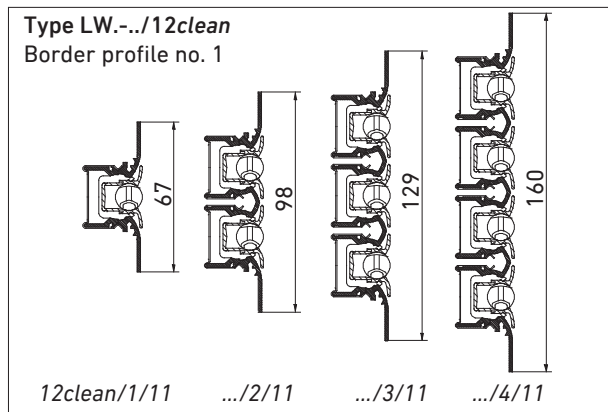
Type 12style: Aluminum natural anodised or painted similar to RAL.

Individual wall fitting is realised using two different edge profiles.

Installation

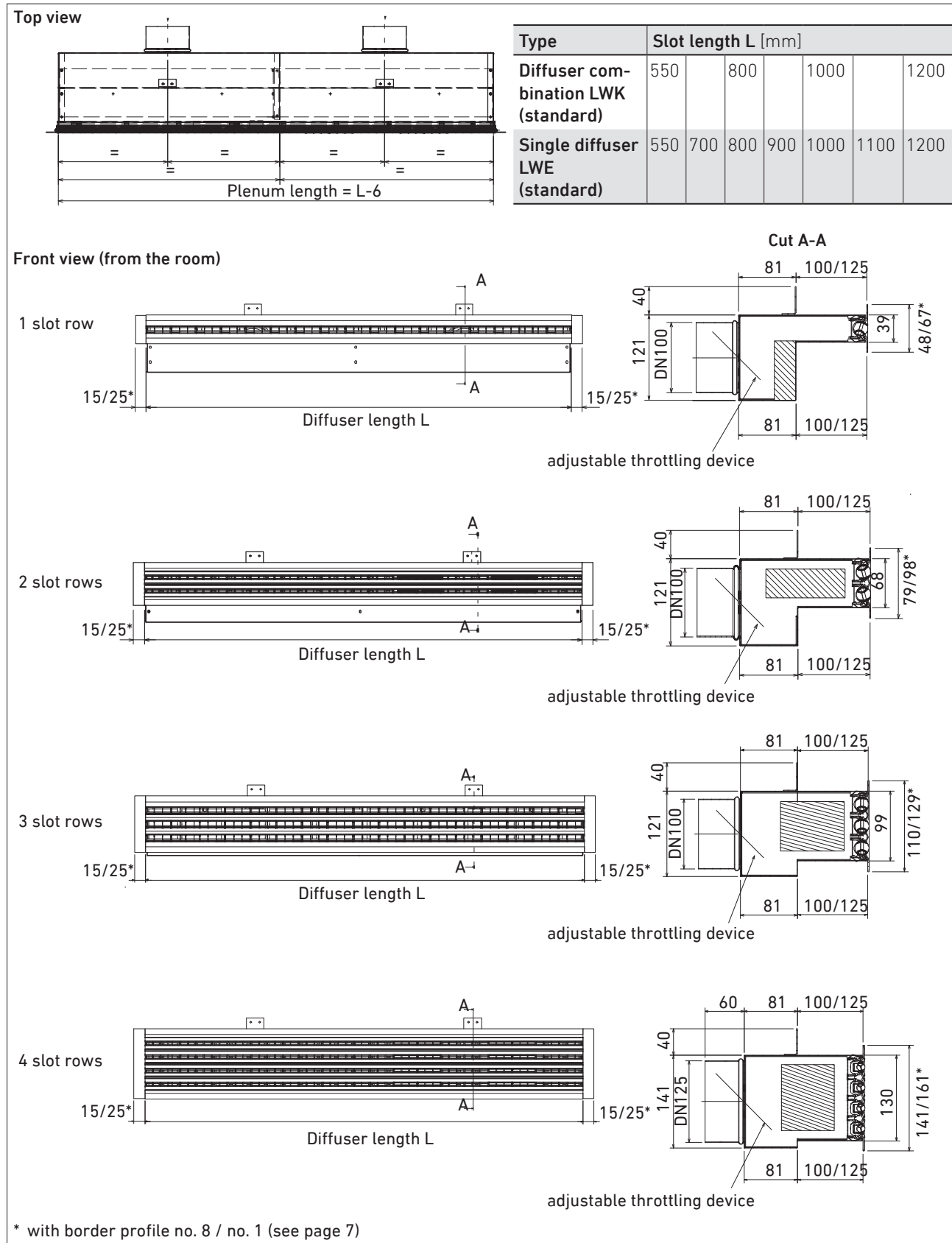
- Wall cutout: For dimensions see fitting instructions
- Pushed through from the corridor towards the room. Fixed using two angles on the corridor wall.
- Diffuser elements are simply clipped in from the room side.
- Note: Do not plaster right up to the box on the longitudinal side!

Border profiles



Technical brochure • Wall-mounted linear air diffusers LWmodule Type LW-../.../S/..., with standard plenum box

Dimensions size 1000



Technical brochure • Wall-mounted linear air diffusers *LWmodule* Type LW-../.../S/..., with standard plenum box and sound absorber

Evaluated normalised edge level difference $D_{n,f,w}$

Plenum box length 544 mm (LWE) / 994 mm (LWK)

Type LW-../.../S	$D_{n,f,w}$ for sound path			$D_{n,e,w}$	
	Supply air LWK/LWE	Return air LWK LWE [dB]		Return air LWK	LWE
12clean/2	63	58	57	43	42
12clean/3	58	59	57	42	40
12clean/4	55	56	54	43	41
12style/2	63	58	57	43	42
12style/3	58	59	57	42	40
20classic/2	56	56	55	43	42
20classic/3	55	62	60	42	40
20classic/4	55	56	54	42	40

$D_{n,f,w}$ [dB]

Normalised edge level difference for a sound path with identical air diffusers between adjacent rooms, solely through ventilation system. This takes into account transmission attenuation $D_{t,SR}$ from the transmitting room to the air diffuser, the branching attenuations (2 x) into the air lines of $3 + 5 = 8$ dB, the transmission attenuation $D_{t,ER}$ from the air diffuser to the receiving room, and the normalised room attenuation at 10 m^2 Sabin, corresponding to 4 dB room attenuation in the reverberant field:

$D_{n,e,w}$ [dB]

Normalised sound level difference for the sound path from the room through the open return diffuser into the adjacent room, e.g. corridor (suspended ceiling) with 10 m^2 Sabin in the receiving room. The value in brackets characterises the reference area as an area of the wall cutout.

Spectrum of sound insulation dimensions on request.

Transmission attenuation $D_{t,ER}$ in the receiving room

Plenum box length 544 mm (LWE) / 994 mm (LWK)

Type LW-../.../S	$D_{t,ER}$ in the receiving room							
	65	125	250	500	1000	2000	4000	8000
12clean/2	26	21	15	19	13	15	17	19
12clean/3	23	18	13	15	16	17	22	25
12clean/4	23	17	11	12	12	15	15	13
12style/2	26	21	15	19	13	15	17	19
12style/3	23	18	13	15	16	17	22	25
20classic/2	26	21	14	16	12	14	17	17
20classic/3	24	19	12	14	13	15	20	19
20classic/4	23	17	11	10	11	14	15	13

$D_{t,ER}$ [dB]

Transmission attenuation in the receiving room for the air diffuser-room sound path according to DIN EN ISO 7235.

Further technical data, selection

Thermal, acoustic and energy data for all sizes and models can be determined using our dimensioning tool.

Thermal comfort

- Risk of draughts for maximum cooling case
- Maximum room air velocity

Acoustics

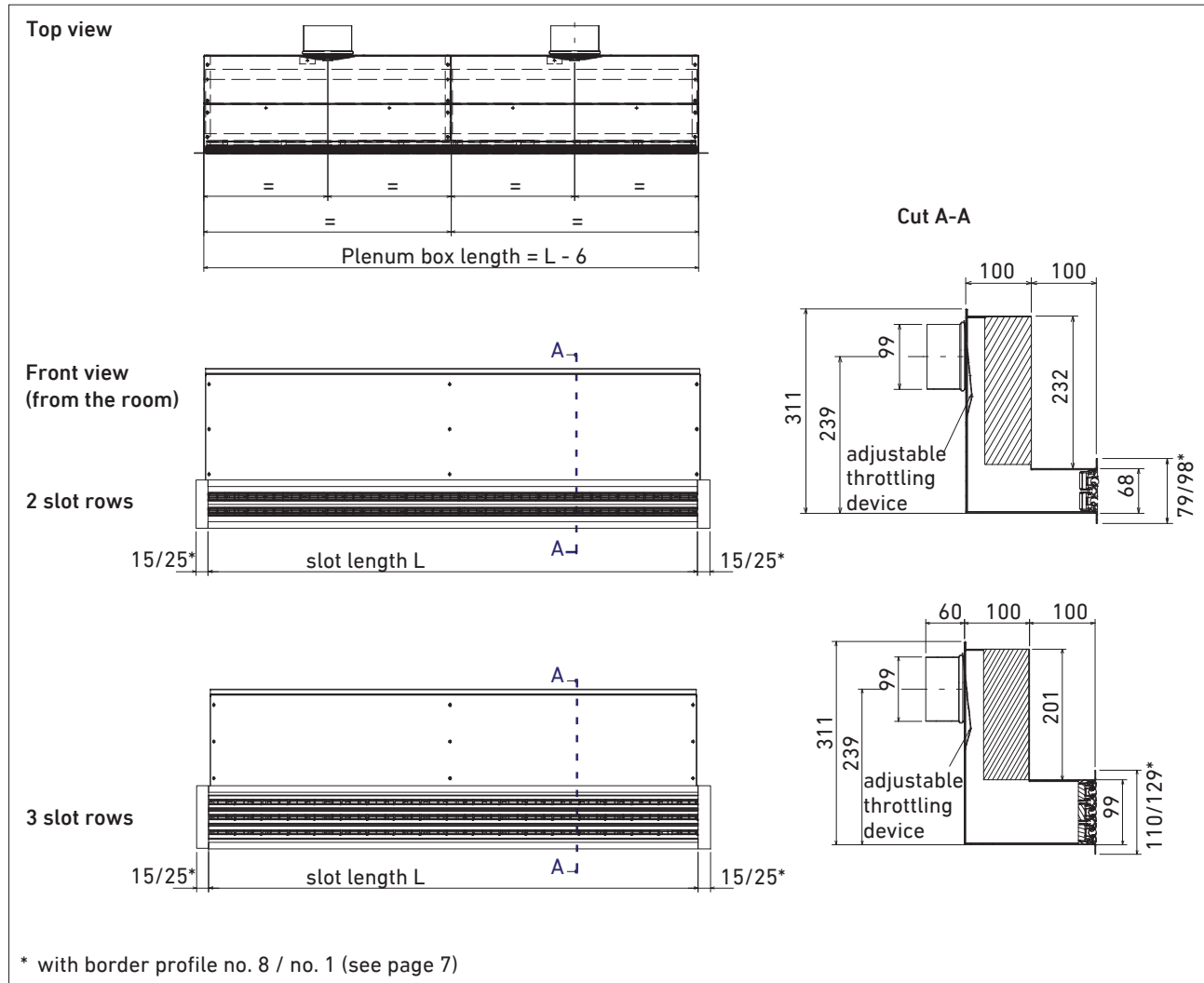
- Sound power level
- Sound pressure level
- Evaluated edge level difference $D_{n,f,w}$ (air path to adjacent room)
- Normalised edge level difference $D_{n,e,w}$ (air path to corridor)

Pressure loss

The dimensioning tool is available for download from our website www.LTG.net.

Technical brochure • Wall-mounted linear air diffusers LWmodule Type LW-../.../L/..., with plenum box type L

Dimensions size 1000



Type	Slot length L [mm]						
Diffuser combination LWK (standard)	550		800		1000		1200
Single diffuser LWE (standard)	550	700	800	900	1000	1100	1200

Technical brochure • Wall-mounted linear air diffusers *LWmodule* Type LW.-../.../L/..., with plenum box type L and sound absorber

Evaluated normalised edge level difference D_n

Plenum box length 544 mm (LWE) / 994 mm (LWK)

Type LW.- ../.../L	D _{n,f,w} für Schallweg			D _{n,e,w}	
	Supply air LWK/LWE	Return air		Return air	
	LWK	LWE	LWK	LWE	
[dB]					
12clean/2	72	68	67	52	51
12clean/3	63	65	63	49	47
12style/2	72	68	66	52	50
12style/3	63	65	63	47	45
20classic/2	66	66	65	51	50
20classic/3	57	62	60	49	47

$D_{n,f,w}$ [dB]

Normalised edge level difference for a sound path with identical air diffusers between adjacent rooms, solely through ventilation system. Taken into account:

- the transmission attenuation $D_{t,SR}$ from the transmitting room to the air diffuser,
- the branching attenuations (2 x) into the air lines of $3 + 5 = 8$ dB,
- the transmission attenuation $D_{t,ER}$ from the air diffuser into the receiving room, and
- the normalised room attenuation at 10 m² Sabin, corresponding to 4 dB room attenuation in the reverberant field.

$D_{n,e,w}$ [dB]

Normalised sound level difference for the sound path from the room through the open return diffuser into the adjacent room, e.g. corridor (suspended ceiling) with 10 m² Sabin in the receiving room. The value in brackets characterises the reference area as an area of the wall cutout.

Spectrum of sound insulation dimensions on request.

Transmission attenuation $D_{t,ER}$ in the receiving room

Plenum box length 544 mm (LWE) / 994 mm (LWK)

Type LW.- ../.../L	$D_{t,ER}$ in the receiving room							
	65	125	250	500	1000	2000	4000	8000
	[Hz]							
12clean/2	31	22	22	25	26	29	30	37
12clean/3	31	23	18	20	21	24	26	27
12style/2	31	22	22	25	26	29	30	37
12style/3	31	23	18	20	21	24	26	27
20classic/2	27	20	21	23	25	26	29	32
20classic/3	29	23	17	19	19	21	17	9

$D_{t,ER}$ [dB]

Transmission attenuation in the receiving room for the air diffuser-room sound path according to DIN EN ISO 7235.

Further technical data, design

Thermal, acoustic and energy data for all sizes and models can be determined using our dimensioning tool.

Thermal comfort

- Risk of draughts for maximum cooling case
- Maximum room air velocity

Acoustics

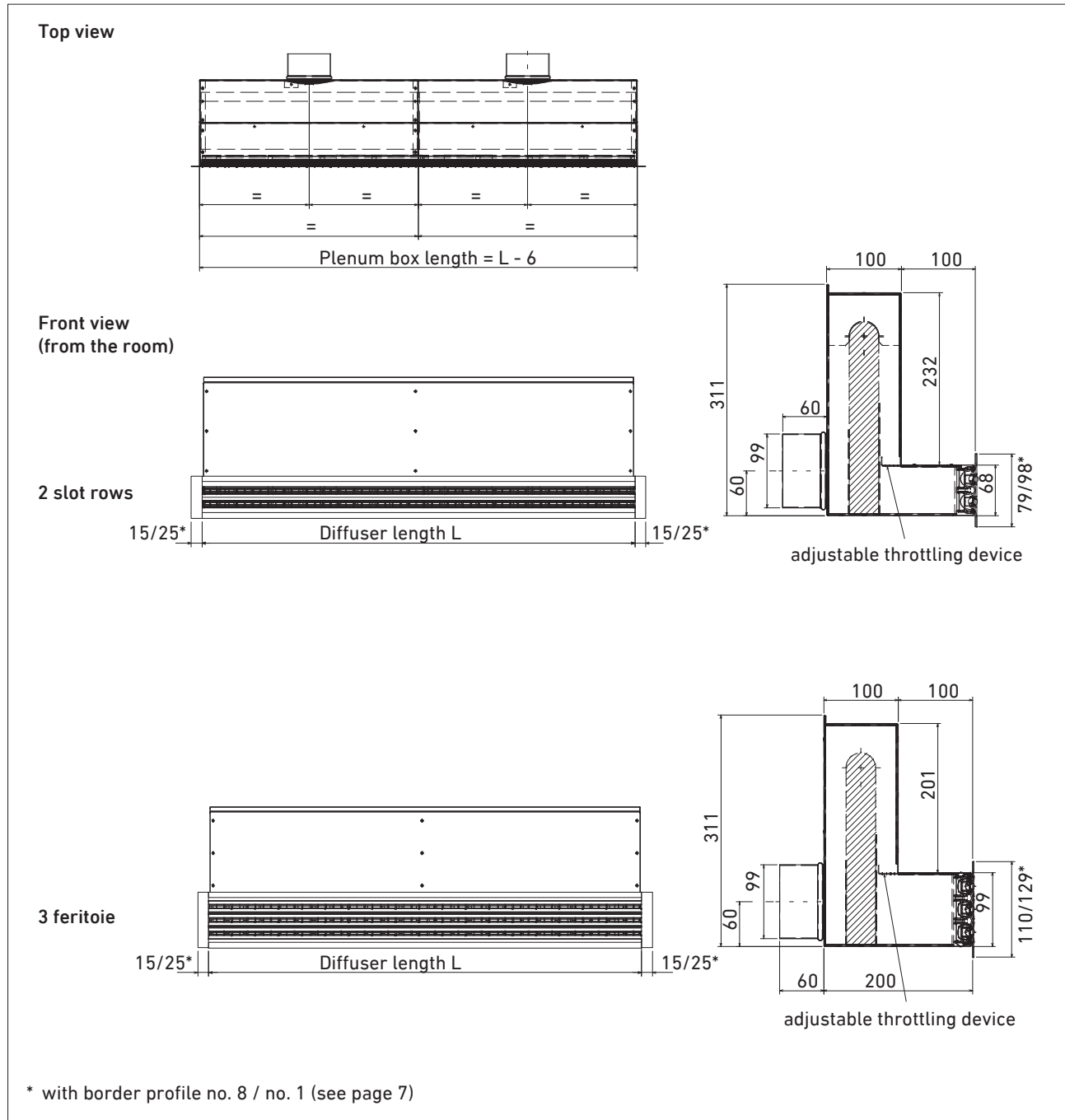
- Sound power level
- Sound pressure level
- Evaluated edge level difference $D_{n,f,w}$ (air path to adjacent room)
- Normalised edge level difference $D_{n,e,w}$ (air path to corridor)

Pressure loss

The dimensioning tool is available for download from our website www.LTG.net.

Technical brochure • Wall-mounted linear air diffusers LWmodule Type LW-../.../T/..., with plenum box type T

Dimensions size 1000



Type	Slot length L [mm]						
Diffuser combination LWK (standard)	550		800		1000		1200
Single diffuser LWE (standard)	550	700	800	900	1000	1100	1200

Technical brochure • Wall-mounted linear air diffusers *LWmodule* Type LW-../.../T/..., with plenum box type T and sound absorber

Evaluated normalised edge level difference $D_{n,f,w}$

Plenum box length 544 mm (LWE) / 994 mm (LWK)

Type LW-.../.../T	D _{n,f,w} for sound path			D _{n,e,w}	
	Supply air LWK/LWE	Return air LWK LWE		Return air LWK LWE	
	[dB]				
12clean/2	71	66	65	51	50
12clean/3	63	65	63	52	50
12style/2	71	66	64	51	49
12style/3	63	65	63	51	49
20classic/2	64	64	63	50	49
20classic/3	59	63	61	52	50

$D_{n,f,w}$ [dB]

Normalised edge level difference for a sound path with identical air diffusers between adjacent rooms, solely through ventilation system. This takes into account transmission attenuation $D_{t,SR}$ from the transmitting room to the air diffuser, the branching attenuations (2 x) into the air lines of $3 + 5 = 8$ dB, the transmission attenuation $D_{t,ER}$ from the air diffuser to the receiving room, and the normalised room attenuation at 10 m^2 Sabin, corresponding to 4 dB room attenuation in the reverberant field.

$D_{n,e,w}$ [dB]

Normalised sound level difference for the sound path from the room through the open return diffuser into the adjacent room, e.g. corridor (suspended ceiling) with 10 m^2 Sabin in the receiving room. The value in brackets characterises the reference area as an area of the wall cutout.

Spectrum of sound insulation dimensions on request.

Transmission attenuation $D_{t,ER}$ in the receiving room

Plenum box length 544 mm (LWE) / 994 mm (LWK)

Type LW-../.../T	$D_{t,ER}$ in the receiving room							
	65	125	250	500	1000	2000	4000	8000
	[Hz]							
12clean/2	28	27	22	21	30	36	39	41
12clean/3	24	22	18	18	28	31	32	36
12style/2	28	27	22	21	30	36	39	41
12style/3	24	22	18	18	28	31	32	36

$D_{t,ER}$ [dB]

Transmission attenuation in the receiving room for the air diffuser-room sound path according to DIN EN ISO 7235.

Further technical data, design

Thermal, acoustic and energy data for all sizes and models can be determined using our dimensioning tool:

Thermal comfort

- Risk of draughts for maximum cooling case
- Maximum room air velocity

Acoustics

- Sound power level
- Sound pressure level
- Evaluated edge level difference $D_{n,f,w}$ (air path to adjacent room)
- Normalised edge level difference $D_{n,e,w}$ (air path to corridor)

Pressure loss

The dimensioning tool is available for download from our website www.LTG.net.

Technical brochure • Wall-mounted linear air diffusers *LWmodule*





Nomenclature, ordering code

LWK - ZA / 12clean / 2 / 11 / LM / 9010 / 1000 / S / OE / / S / 100 / K / SDA / 100
 (1) (2) (3) (4) (5) (6) (7) (8) (9) (10) (11) (12) (13) (14) (15) (16)








(1)	Series	LW	= Linear diffusers <i>LWmodule</i> for installation in walls
(2)	Type	E	= Single diffuser for supply air or return air
		K	= Combination for supply air and return air
(3)	Function	Z	= Supply air (single diffuser only)
		A	= Return air (single diffuser only)
		ZA	= Supply/return air (diffuser combination only, view from the room: supply air = left side, return air = right side)
		AZ	= Return/supply air (diffuser combination only, view from the room: return air = left side, supply air = right side)
(4)	Linear diffuser type	12clean	= 12 <i>clean</i>
		12style	= 12 <i>style</i>
		20classic	= 20 <i>classic</i>
(5)	Number of slot rows	1	= 1 slot row (with standard plenum box only)
		2	= 2 slot rows
		3	= 3 slot rows
		4	= 4 slot rows (type 12 <i>clean</i> and 20 <i>classic</i> only, with standard plenum box only)
(6)	Border profile	11	= Border profile 1 on both sides
		88	= Border profile 8 on both sides
(7)	Border profile surface	LM	= painted, matt
		LG	= painted, glossy
		E6	= anodised, unbrushed
		R	= raw
		SX	= special surface
(8)	Border profile colour	= RAL shade = painted / EV1 = natural anodised
		SX	= special colour / special anodically oxidised shade
(9)	Slot length	= Slot length in mm
(10)	Slot nozzles colour (not for LDBstyle)	S	= RAL 9011 graphite black
		W	= RAL 9010 pure white
		G	= RAL 9007 aluminium grey
		SX	= RAL (special colour, on request only)
(11)	End caps	OE	= Without end caps, for flush mounting
		ME	= End caps both sides (end angles)
(12)	Plenum box type	S	= Standard plenum box (normal requirements for cross-talk sound attenuation)
		L	Plenum box type L (medium requirements for cross-talk sound attenuation)
		T	= Plenum box type T (for high requirements for cross-talk sound attenuation)
(13)	Wall thickness	100	= For wall thickness 100 mm
		125	= For wall thickness 125 mm
(14)	Splitter / Sound absorber	—	= without
		K	= with
(15)	Connection type	DLU	= Throttling device DLU (with bayonet spigot)
		SDA	= with bayonet spigot (without throttling device)
(16)	Connecting spigot diameter	100	DN 100
		125	= DN 125

Product overview • LTG Air Diffusers

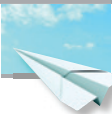
LTG air diffusers for ceiling, wall or floor

	Ceiling	Wall	Floor
Linear diffuser	 LDB	 <i>LWmodule</i>	 LDU and LDU-W
Transfer air device	_____	 LDO-T	_____

Applied / Customized Solutions

	Circular air diffuser LDR for curved design variations
	Linear diffuser LDB 12/M for railway technology
	Design-integrated ceiling jet diffusers DSA/MSA
	Linear diffuser LDBhome for residential applications
	Industrial diffuser ILQsf for demand-controlled ventilation
	Displacement air diffuser ILD for halls
	Displacement wall & step diffuser BLQ

Engineering Services

	LTG Engineering Services Comfort Air Technology
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**AIR TECH
SYSTEMS**

Comfort Air Technology

Air-Water Systems
Air Diffusers
Air Distribution

Process Air Technology

Fans
Filtration Technology
HumidificationTechnology

Engineering Services

Laboratory Test & Experiment
Field Measurement & Optimisation
Simulation & Expertise
R&D & Start-up

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