

Article group
2.53



05/2006
GB

Door air curtains

UniLine and UniLine cassette models



KAMPMAN

Quality is our benchmark

Kampmann – the name today is synonymous with innovative and intelligent systems in the fields of heating, cooling and ventilation and, over the last 33 years, the Company has grown into an internationally-renowned group of companies.

Performance and quality are the benchmark for the continued success of Kampmann. Kampmann products are defined by their high performance capability, with guaranteed EN-tested heat outputs, materials fully rated to requirements, first-class workmanship, design-orientated form and shaping and fast delivery times. The quality management system has been documented for many years and is certified by DIN 9001:2000.

Kampmann systems for heating, cooling, ventilating:

- high-output convectors
- underfloor heating and cooling systems
- air handling systems
- door air curtains
- façade heating systems
- air conditioning systems
- radiant ceiling panels
- floor and façade ventilation systems
- fresh air climate with **OXYCELL TECHNOLOGY**

Versatility

The wide product range comprises a mix of standard, non-standard and products tailor-made for specific projects. Kampmann systems are currently proving their reliability and efficiency in industrial, commercial and private buildings around the globe.

Sales

Kampmann places great emphasis on technical discussions and collaboration with architects, project engineers, heating contractors and builders, as well as with wholesalers. In Germany some 50 sales engineers, operating out of six regional offices, and a further 70 sales engineers working in 14 subsidiary offices throughout Europe provide on-the-spot technical assistance.

HQ and production

In addition to the Kampmann headquarters building in Lingen (Ems), there is a second production plant in Gräfenhainichen (Sachsen-Anhalt). The high-quality products are developed, manufactured and sold by a total workforce of over 550 employees in a production area of more than 55,000 m².

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Door air curtains - UniLine and UniLine cassette models 2.53

Universal and compact - suitable for every application

Product description

Uniline door air curtain - cassette model

UniLine door air curtain illustrating air inlet, filter and service flap open



Description

Easy to install and service

The cost-effective model - uniquely designed for use in retail outlets, shops, office buildings and supermarkets - and engineered specifically for these applications:

- water and electrical connections protrude through the top (UniLine) or side (UniLine cassette model) of the unit for ease of connection.
- UniLine is designed for ease of service with an easily-removable inlet grille and large, easy-to-remove filter.
- the bottom panel hinges down for ease of service and maintenance.

The basic unit and casing (including top panel) form a complete unit. The air flow rectifier in the air outlet ensures that there is minimal turbulence in the air stream and directs the air flow evenly.

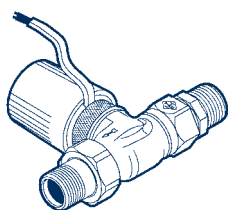
- sealed top panel
- attractive outlet grille and rectifier
- white powdercoated outlet grille (RAL 9016) and white aluminium air flow rectifier (similar to RAL 9006)
- lengths of 1.0/1.5/2.0/2.5 m
- suitable for use with ceiling heights of between 2.3 and 3.0 m
- fans have 5-stage transformer
- extensive range of controls
- cassette model for 625mm suspended ceilings grids
- suitable for use with radio controller (at a surcharge)

Overview				
Model	10	15	20	25
Length [m]	1,0	1,5	2,0	2,5
UniLine	510330	515330	520330	525330
UniLine - cassette model	610330	615330	620330	625330

2.53 Door air curtains - UniLine and UniLine cassette models

Universal and compact - suitable for every application

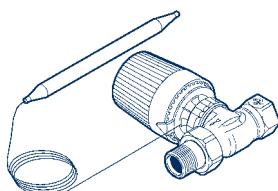
Accessories



Thermoelectric shut-off valve,
type 100912

Thermoelectric shut-off valve, type 100912

- shuts off the heating circuit in summer mode
- available as a 3/4" straight valve body
- currentless connection to 230 V, 50Hz thermoelectric actuator
- suitable for use with 3- or 5-stage summer/winter switch



Leaving air temperature limiting valve,
type 100967

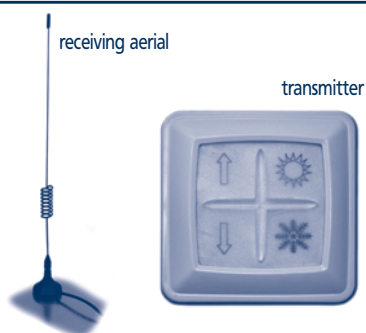
Leaving air temperature limiting valve, type 100967

- to control the leaving air temperature at a constant level
- available as a 3/4" straight valve body
- with thermostatic head and remote sensor with 2 m capillary tube
- temperature range - 20-50 °C

Replacement filter mat

to position in inlet air grille
1 set = 5 filters

Model	10	15	20	25
UniLine	510820	515820	520820	525820
UniLine cassette model	610820	615820	620820	625820

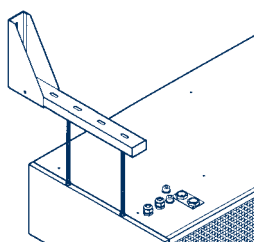


Radio controller, type ____*-W

Radio controller, integral, type ____*-W

UniLine and UniLine cassette door air curtains can be operated via a wire-free, factory-fitted radio controller c/w 230 V plug as well as via a stage controller

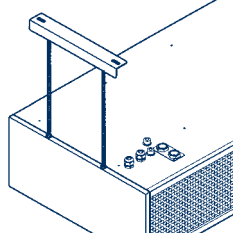
- separate transmitter in plastic housing (RAL 9010), 80x80x15 mm
- simply fix on the wall - no need to run cables
- 3-stage, 3-phase push-button controller
- summer/winter switch (optional)
- receiver fitted to unit
- supplied complete with aerial



Wall brackets,
type 500890

Wall brackets for UniLine, type 500890

- not suitable for use with UniLine cassette models
- sendzimir galvanized steel
- powdercoated white (RAL 9016)
 - 2 no. fixing angles with U-tracks and screws
 - 4 no. M8 x 500 mm threaded rods with nuts
 - 2 no. slide-in bars and 2 no. covers



Ceiling brackets,
type 500895

Ceiling brackets for UniLine, type 500895

- not suitable for use with UniLine cassette models
- sendzimir galvanized steel
- powdercoated white (RAL 9016)
 - 2 no. fixing bars with screws
 - 4 no. M8 x 500 mm threaded rods with nuts

*Insert basic door air curtain type no.

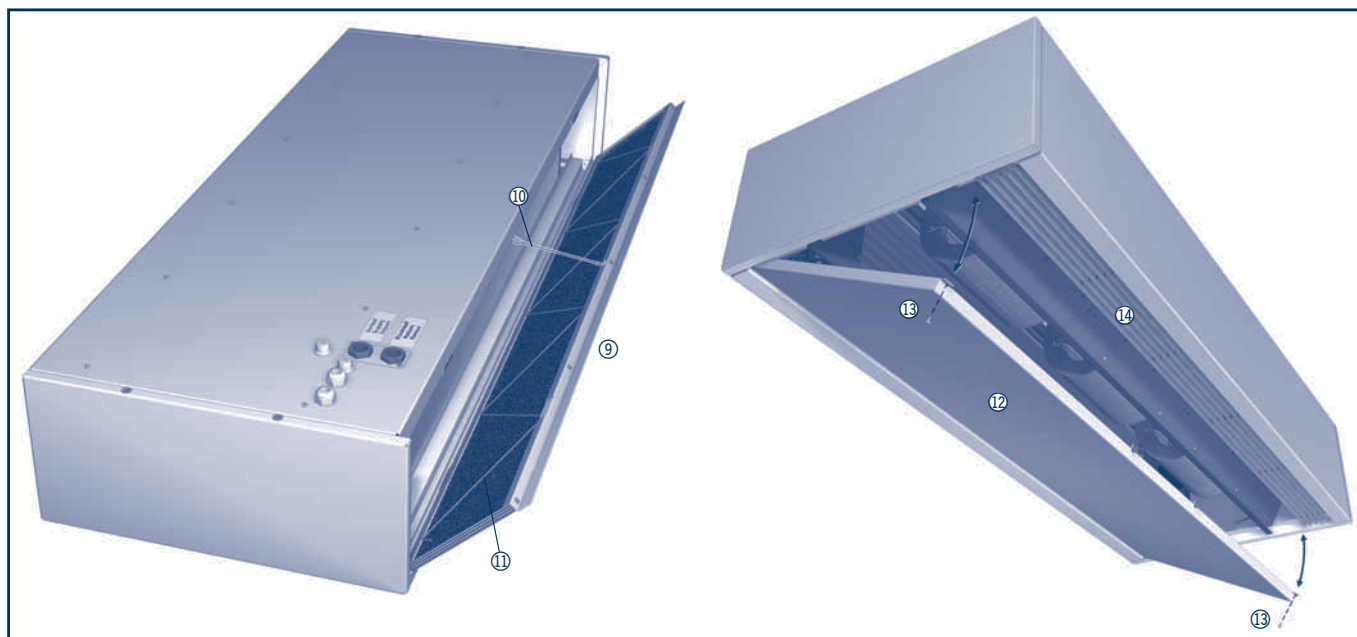
Article no. for DataNorm/EDV entry: 196 000 (insert type no.)
Brackets, replacement filters: 253 000 (insert type no.)

Door air curtains - UniLine and UniLine cassette models 2.53

Universal and compact - suitable for every application

Simple to service and fit valves

Description



Filter change

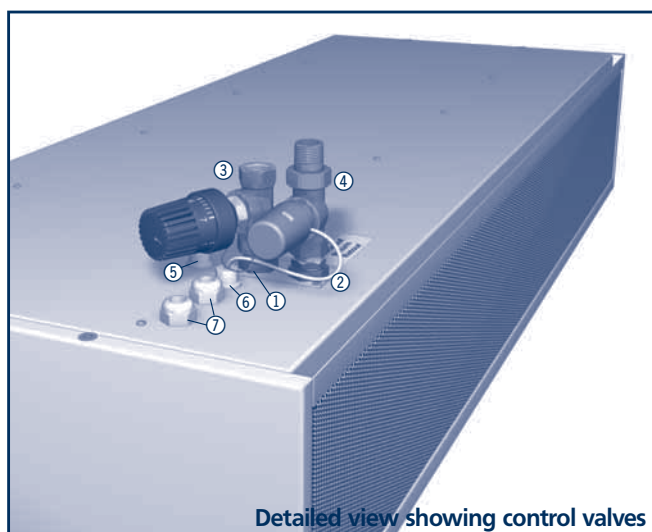
The filter can be cleaned or replaced by unhinging the inlet grille and removing the fixing wire without the need for a special tool. The inlet grille is held in place by a chain when the flap is open.

- ① Flow connection
- ② Return connection
- ③ Leaving air temperature valve, fitted to flow connection (optional accessory)
- ④ Thermoelectric shut-off valve, fitted to return connection (optional accessory)
- ⑤ Entry point for remote sensor for leaving air temperature limiting valve (optional accessory)
- ⑥ Entry point for cable for thermoelectric shut-off valve

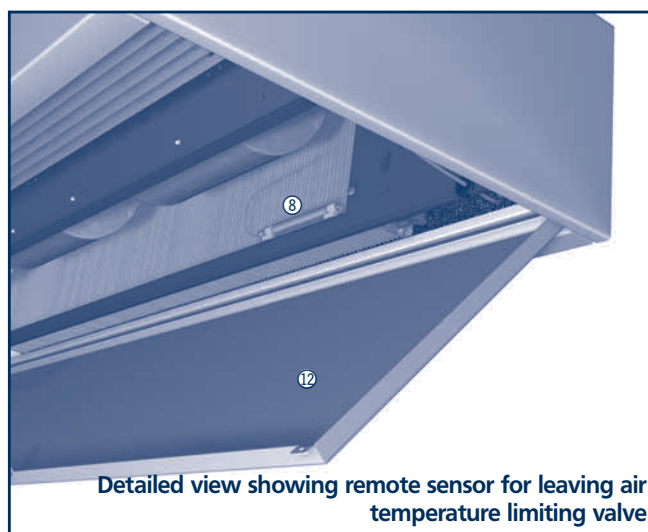
Service flap

The service flap is easy to open and is held in place with fixing screws.

- ⑦ Entry point for electrical connection
- ⑧ Remote sensor for leaving air temperature limiting valve (optional accessory)
- ⑨ Inlet grille with integral filter
- ⑩ Safety chain
- ⑪ Fixing clip for filter
- ⑫ Service flap
- ⑬ Fixing screws for service flap
- ⑭ Outlet air rectifier



Detailed view showing control valves

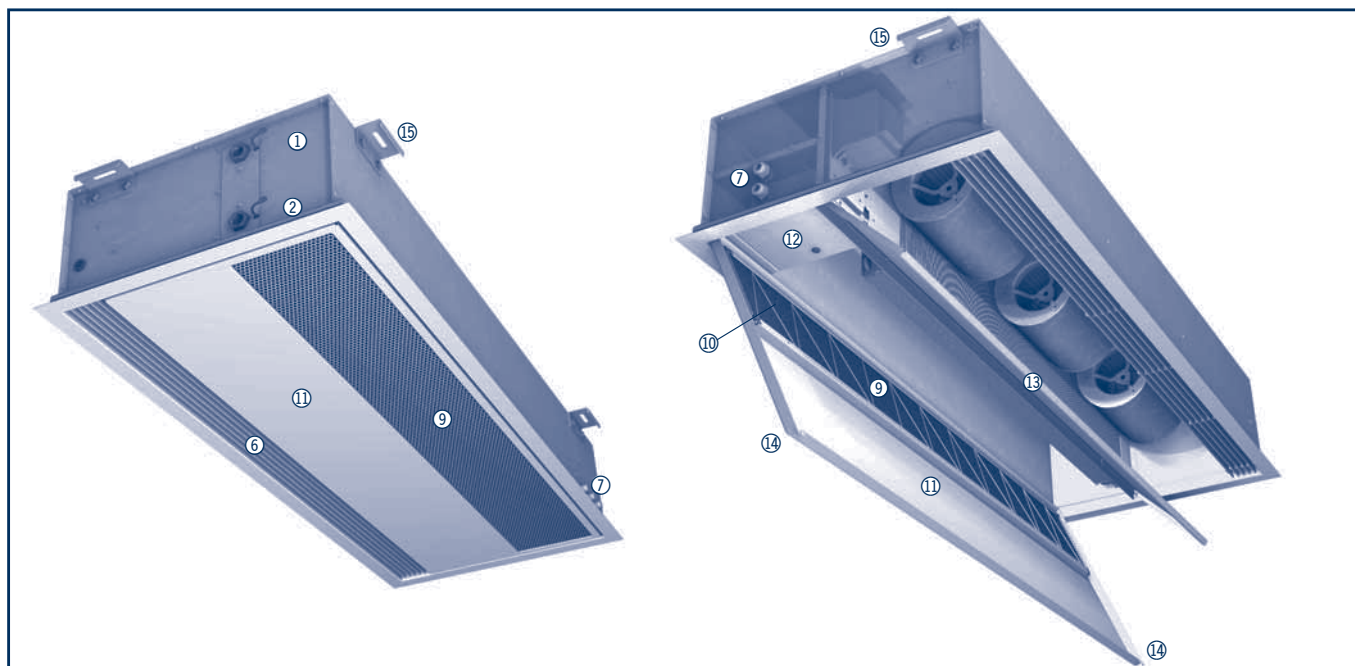


Detailed view showing remote sensor for leaving air temperature limiting valve

2.53 Door air curtains - UniLine and UniLine cassette models

Universal and compact for installation in suspended ceiling

Simple to service and fit control valves



Filter change

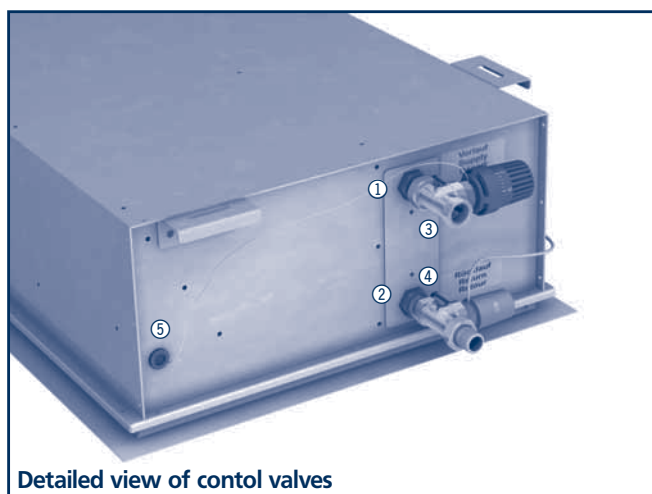
The filter can be cleaned or replaced by unscrewing the service flap (two fixing screws). The flap and integral inlet grille is unhinged and the fixing wire can be removed.

- ① Flow connection with air vent
- ② Return valve with air vent
- ③ Leaving air temperature limiting valve, fitted to flow connection (optional accessory)
- ④ Thermoelectric shut-off valve, fitted to return connection (optional accessory)
- ⑤ Entry point for sensor for leaving air temperature limiting valve (optional accessory)
- ⑥ Outlet air rectifier

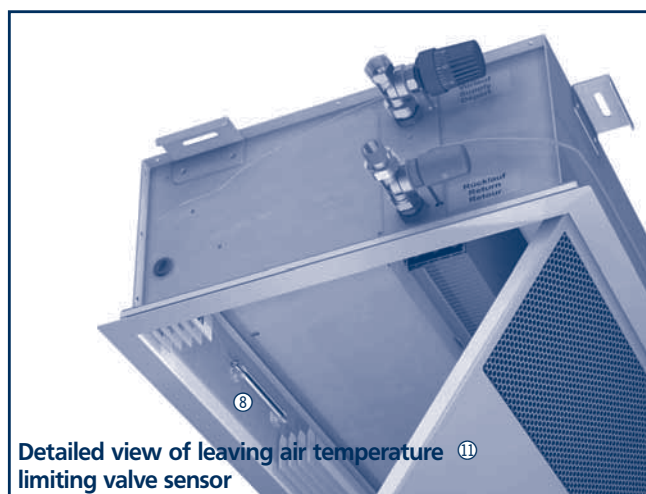
Service flaps

The UniLine cassette model has separate service flaps for fan, heat exchanger and junction box in addition to the external service flap. These flaps can be easily unscrewed and removed.

- ⑦ Side cable entry
- ⑧ Remote sensor for leaving air temperature limiting valve (optional accessory)
- ⑨ Inlet grille with integral filter
- ⑩ Fixing wire for filter
- ⑪ Service flap with integral inlet grille
- ⑫ Service cover for junction box
- ⑬ Service cover for fan
- ⑭ Fixing screws
- ⑮ Bracket



Detailed view of control valves



Detailed view of leaving air temperature limiting valve sensor

3- and 5-stage switches

 3-stage switch, surface-mounted, type 100917	3-stage switch - 0-1-2-3, surface-mounted, type 100917 Housing: white plastic, manufactured by Jung Dimensions: H x W x D: 82 x 82 x 59 mm Protection class: IP 21 Amperage: 10 A 3-stage switch - 0-1-2-3, flush-mounted, type 100918 Fixing: in 55 junction box Cover: white, manufactured by Jung Dimensions: H x W x D: 82 x 82 x 24* mm Amperage: 10 A
 3-stage summer/winter switch, flush-mounted, type 100922	3-stage summer/winter switch - 0-1-2-3, surface-mounted, type 100920 Housing: light/dark grey plastic, insulated Dimensions: H x W x D: 82 x 82 x 125 mm Protection class: IP 55 Amperage: 15 A 3-stage summer/winter switch - 0-1-2-3, flush-mounted, type 100922 Fixing: in 55 junction box Cover: white Dimensions: H x W x D: 82 x 82 x 24* mm Amperage: 15 A
 5-stage switch, flush-mounted, type 100926	5-stage summer/winter switch - 0-1-2-3-4-5, surface-mounted, type 100925 Housing: light/dark grey plastic, insulated Dimensions: H x W x D: 82 x 82 x 125 mm Protection class: IP 55 Amperage: 15 A 5-stage switch - 0-1-2-3-4-5, flush-mounted, type 100926 Fixing: in 55 junction box Cover: white Dimensions: H x W x D: 82 x 82 x 24* mm Amperage: 15 A
 5-stage summer/winter switch, surface-mounted, type 100928	5-stage summer/winter switch - 0-1-2-3-4-5, surface-mounted, type 100928 Housing: light/dark grey plastic, insulated Dimensions: H x W x D: 82 x 82 x 125 mm Protection class: IP 55 Amperage: 15 A 5-stage summer/winter switch - 0-1-2-3-4-5, flush-mounted, type 100929 Fixing: in 55 junction box Cover: white Dimensions: H x W x D: 82 x 82 x 24* mm Amperage: 15 A

*Overall height

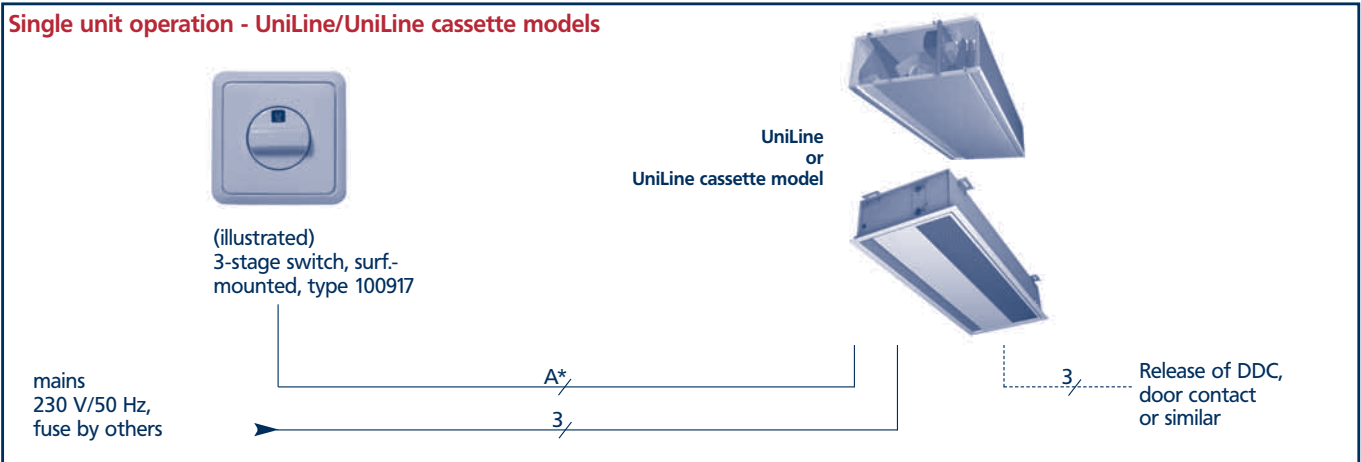
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2.53 Door air curtains - UniLine/UniLine cassette models

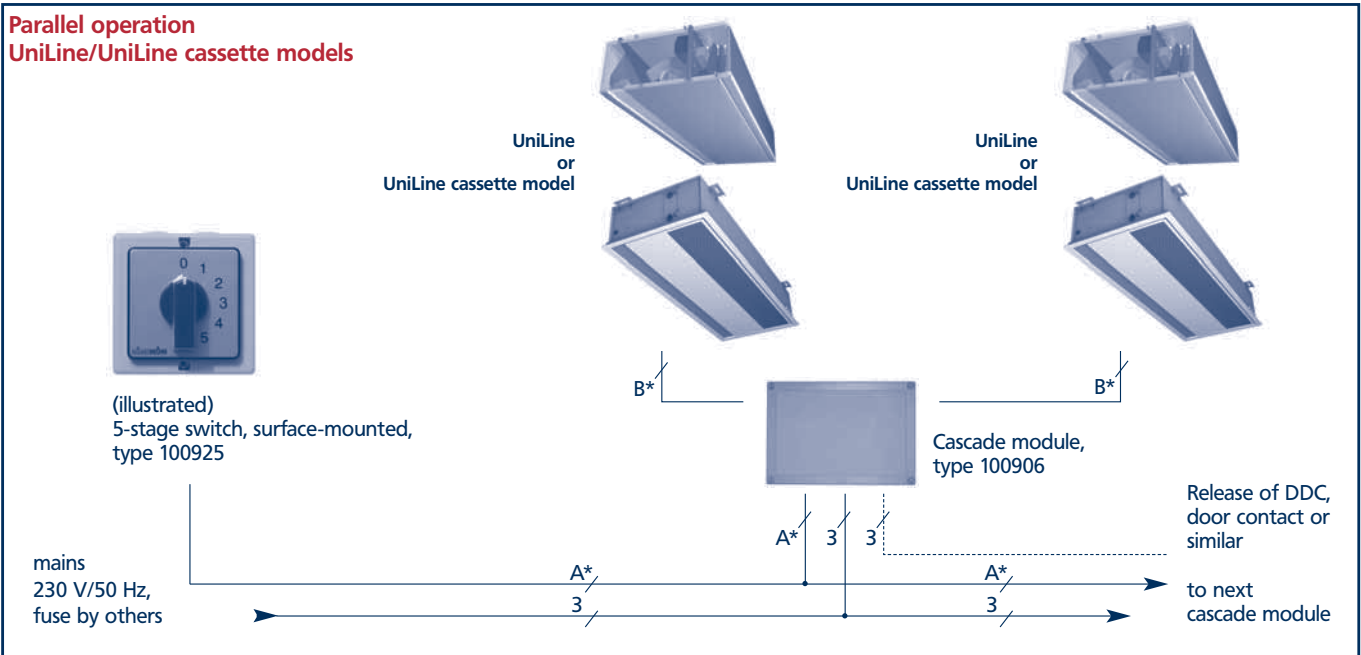
Controls

Wiring · Parallel operation

Single unit operation - UniLine/UniLine cassette models



Parallel operation UniLine/UniLine cassette models



No. of wires incl. fuse

Cable	3-stage switch, type 100917/100918	3-stage summer/winter switch, type 100920/100922	5-stage switch, type 100925/100926	5-stage summer/winter switch, type 100928/100929
A	5	6	8	8
B	6 (9)	7 (10)	9 (12)	9 (12)

Parallel operation

A maximum of two door air curtains can be controlled in parallel using a cascade module type 100906. The groups can be extended using further cascade modules.

Parallel operation using radio control

Every door air curtain is fitted with a receiver. Several door air curtains can be controlled by one sender unit (operating unit).

Cascade module, type 100906

for the parallel operation of two door air curtains. Fit close to door air curtains.

Fitting	wall-mounted housing
Dimensions	H x W x D: 150 x 200 x 75 mm

No. of cascade modules when operating UniLine or UniLine cassette models in parallel mode (max.10)

No. of door air curtains	1	2	3	4	5	6	7	8	9	10
No. of cascade modules when using stage switches	0	1	2	2	3	3	4	4	5	5

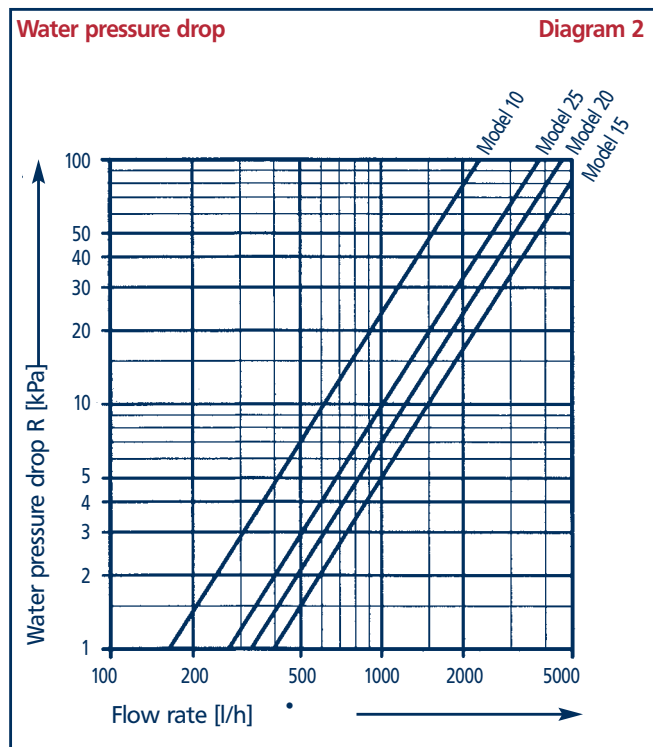
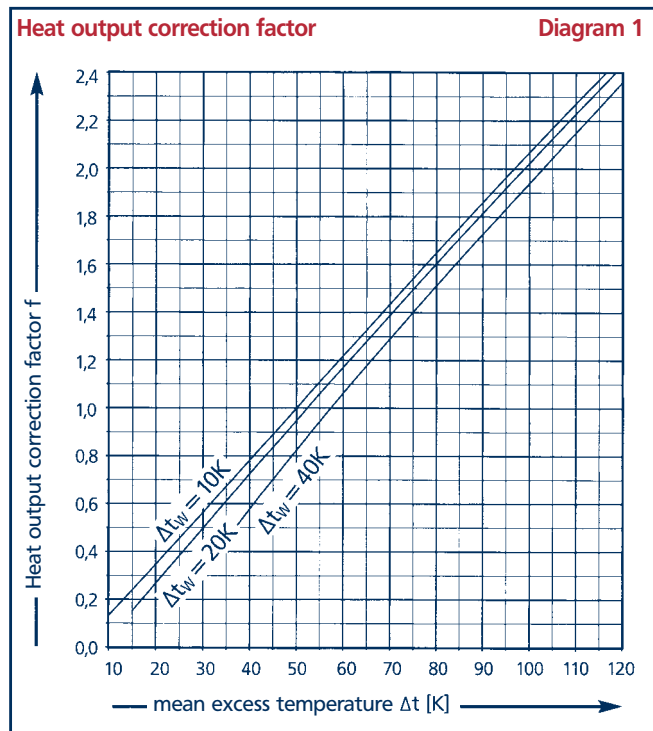
* See table on right for the no. of wires for the cables denoted by a letter; in the diagram above, all other cables show the no. of wires including fuse. The number in brackets indicates the use of a frost protection thermostat (only required in unheated rooms).

Article no. for DataNorm/EDV entry: 196 000 (insert type no.)

Heat output conversion · Water pressure drop · Heat output calculation

Conversion to other water temperatures

The following formulae and heat output correction factors from diagram 1 and water pressure drop figures from diagram 2 can be used to calculate the heat output when using flow and return water temperatures not listed in the technical data tables.



Abbreviations

t_{w1}	[°C]	= flow temperature
t_{w2}	[°C]	= return temperature
Δt	[K]	= mean excess temperature
Δt_w	[K]	= water temperature difference
t_{L1}	[°C]	= entering air temperature
t_{L2}	[°C]	= leaving air temperature
Q	[W]	= heat output
Q_n	[W]	= standard heat output at LPHW 75/65 °C, $t_{L1} = 20$ °C
f	[/]	= heat output correction factor
$\dot{m}$	[l/h]	= water flow rate
R	[kPa]	= water pressure drop
V	[m³/h]	= air volume
C	[Wh/m³K]	= multiplier to calculate leaving air temperature = 0.34 Wh/m³K

Formulae

$\Delta t = \frac{t_{w1} + t_{w2}}{2} - t_{L1}$ (1)	$\dot{m} = \frac{Q}{\Delta t_w} \cdot 0.86$ (4)
$\Delta t_w = t_{w1} - t_{w2}$ (2)	$t_{L2} = t_{L1} + \frac{Q}{V \cdot c}$ (5)
$Q = Q_n \cdot f$ (3)	

Example

given: UniLine door air curtain, model 20, type 520330
 $t_{w1} = 65$ °C, $t_{w2} = 55$ °C, $t_{L1} = 18$ °C

required: heat output Q at fan stage 5
 leaving air temperature t_{L2}
 water pressure drop R

Calculation

$$\Delta t = \frac{t_{w1} + t_{w2}}{2} - t_{L1} \quad (1) \quad \Delta t = \frac{65 + 55}{2} - 18 = 42 \text{ K}$$

$$\Delta t_w = t_{w1} - t_{w2} \quad (2) \quad \Delta t_w = 65 - 55 = 10 \text{ K}$$

from diagram 2: $f = 0.81$

from table on p 15: $Q_n = 24199 \text{ W}$; $V = 2820 \text{ m}^3/\text{h}$
 (LPHW 75/65 °C, $t_{L1} = 20$ °C)

$$Q = Q_n \cdot f \quad (3) \quad Q = 24199 \text{ W} \cdot 0.81 = \underline{\underline{19601 \text{ W}}}$$

$$\dot{m} = \frac{Q}{\Delta t_w} \cdot 0.86 \quad (4) \quad \dot{m} = \frac{19601}{10} \cdot 0.86 = 1686 \text{ l/h}$$

from diagram 2: **model 20 line** where $\dot{m} = 1686 \text{ l/h}$: $R = \underline{\underline{17 \text{ kPa}}}$

$$t_{L2} = t_{L1} + \frac{Q}{V \cdot c} \quad (5) \quad t_{L2} = 18 + \frac{19601}{2820 \cdot 0.34} = \underline{\underline{38.4 \text{ °C}}}$$

Result:

$Q = 19601 \text{ W}$; $t_{L2} = 38.4$ °C; water pressure drop $R = 17 \text{ kPa}$

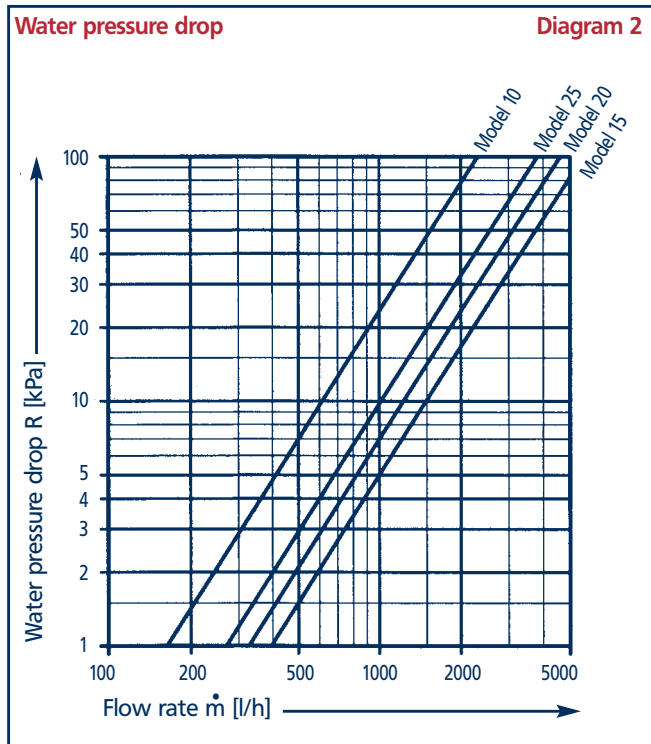
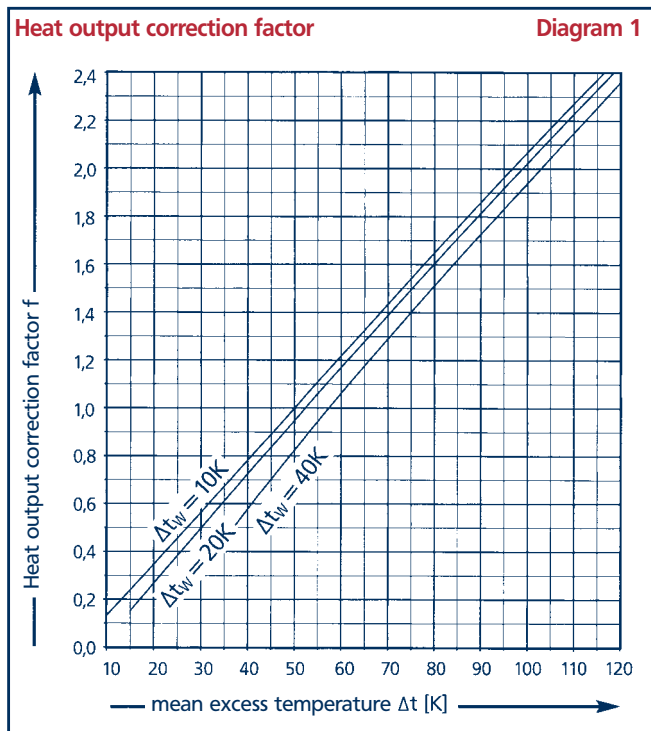
2.53 Door air curtains - UniLine cassette model

Design

Heat output conversion · Water pressure drop · Heat output calculations

Conversion to other water temperatures

The following formulae and heat output correction factors from diagram 1 and water pressure drop figures from diagram 2 can be used to calculate the heat output when using flow and return water temperatures not listed in the technical data tables.



Abbreviations

t_{w1}	[°C]	= flow temperature
t_{w2}	[°C]	= return temperature
Δt	[K]	= mean excess temperature
Δt_w	[K]	= water temperature difference
t_{L1}	[°C]	= entering air temperature
t_{L2}	[°C]	= leaving air temperature
Q	[W]	= heat output
Q_n	[W]	= standard heat o'put at LPHW 75/65 °C, $t_{L1} = 20$ °C
f	[-]	= heat output correction factor
$\dot{m}$	[l/h]	= water flow rate
R	[kPa]	= water pressure drop
V	[m³/h]	= air volume
C	[Wh/m³K]	= multiplier to calculate leaving air temperature = 0.34 Wh/m³K

Calculation

$\Delta t = \frac{t_{w1} + t_{w2}}{2} - t_{L1}$ (1)	$\dot{m} = \frac{Q}{\Delta t_w} \cdot 0.86$ (4)
$\Delta t_w = t_{w1} - t_{w2}$ (2)	$t_{L2} = t_{L1} + \frac{Q}{V \cdot c}$ (5)
$Q = Q_n \cdot f$ (3)	

Example

given:

UniLine cassette model, model 25,
type 625330
 $t_{w1} = 75$ °C, $t_{w2} = 55$ °C, $t_{L1} = 20$ °C

required:

heat output Q at fan stage 5
leaving air temperature t_{L2}
water pressure drop R

Calculation

$$\Delta t = \frac{t_{w1} + t_{w2}}{2} - t_{L1} \quad (1) \quad \Delta t = \frac{75 + 55}{2} - 20 = 45 \text{ K}$$

$$\Delta t_w = t_{w1} - t_{w2} \quad (2) \quad \Delta t_w = 75 - 55 = 20 \text{ K}$$

from diagram 2: $f = 0.84$

from table on p 16: $Q_n = 33853 \text{ W}$; $V = 4000 \text{ m}^3/\text{h}$
(LPHW 75/65 °C, $t_{L1} = 20$ °C)

$$Q = Q_n \cdot f \quad (3) \quad Q = 33853 \text{ W} \cdot 0.84 = \underline{\underline{28437 \text{ W}}}$$

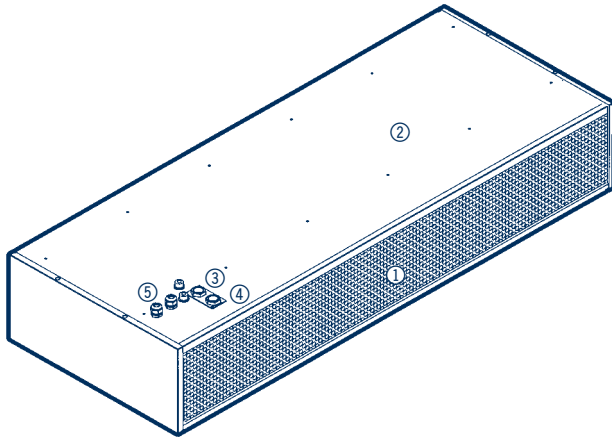
$$\dot{m} = \frac{Q}{\Delta t_w} \cdot 0.86 \quad (4) \quad \dot{m} = \frac{28437}{20} \cdot 0.86 = 1223 \text{ l/h}$$

from diagram 2: **model 25 line where $\dot{m} = 1223 \text{ l/h}$: $R = 12 \text{ kPa}$**

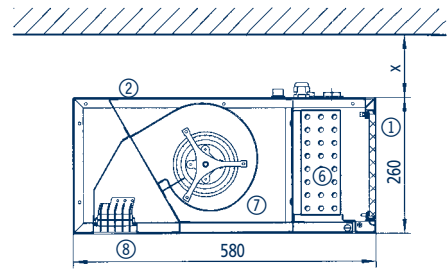
$$t_{L2} = t_{L1} + \frac{Q}{V \cdot c} \quad (5) \quad t_{L2} = 20 + \frac{28437}{4000 \cdot 0.34} = \underline{\underline{40.9 \text{ °C}}}$$

Result:

$Q = 28437 \text{ W}$; $t_{L2} = 40.9$ °C; water pressure drop $R = 12 \text{ kPa}$

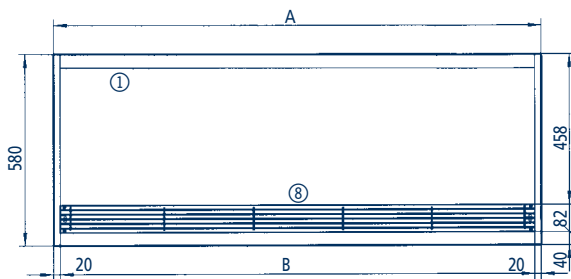


UniLine door air curtain

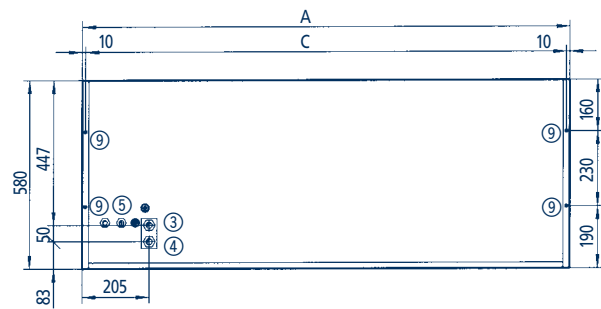


Cross-section through UniLine

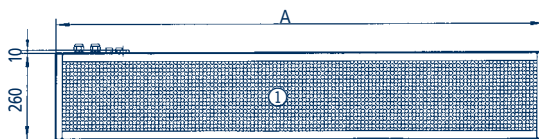
x = space for waterside connection depending on connection type



View from below



View from above



View of inlet grille

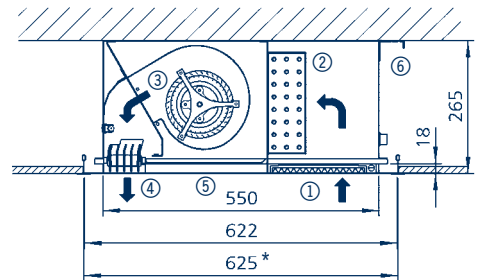
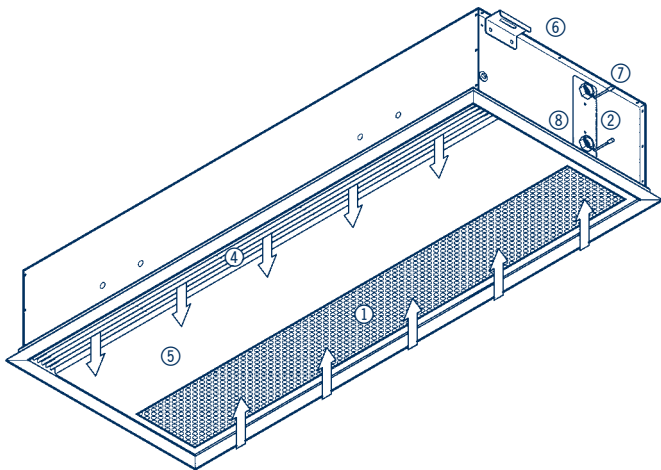
- ① Inlet grille RAL 9006 (similar to white aluminium) with integral filter
- ② Top panel
- ③ 3/4" flow connection
- ④ 3/4" return connection
- ⑤ Openings for electrical connection and sensor (see p. 5)
- ⑥ Copper/aluminium heat exchanger
- ⑦ Radial fan
- ⑧ Outlet air rectifier RAL 9006 (similar to white aluminium)
- ⑨ Fixing points

Model	10	15	20	25
A	1000	1500	2000	2500
B	960	1460	1960	2460
C	980	1480	1980	2480

2.53 Door air curtains - UniLine cassette model

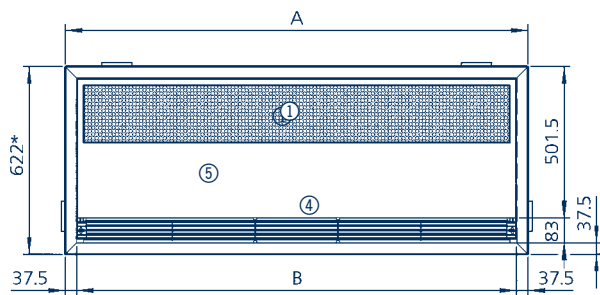
Technical data

Dimensions

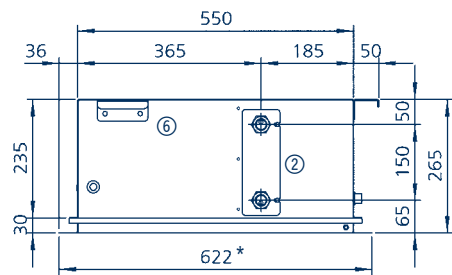


Cross-section through cassette model

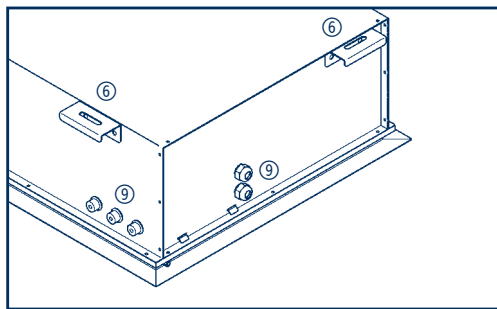
UniLine door air curtain - cassette model



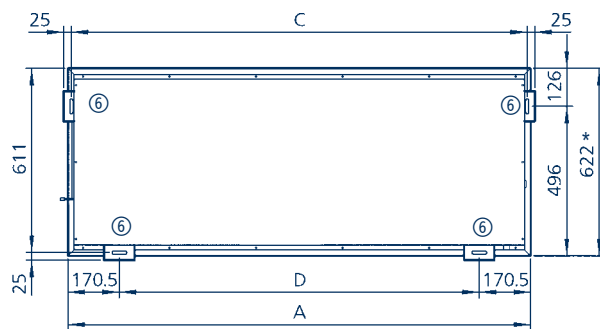
View from below



Side view



View of electrical cable entry



View from above

Model	10	15	20	25
A	1035	1535	2035	2535
B	960	1460	1960	2460
C	1012	1512	2012	2512
D	694	1194	1694	2 x 1097

- ① Inlet grille RAL 9006 (similar to white aluminium) with integral filter
- ② Copper/aluminium heat exchanger
- ③ Radial fan
- ④ Outlet air rectifier RAL 9006 (similar to white aluminium)
- ⑤ Casing in RAL 9016, traffic white
- ⑥ Fixing angles
- ⑦ 3/4" flow connection with air vent
- ⑧ 3/4" return connection with air vent
- ⑨ Cable entry points

*600mm wide units available on request

Door air curtains - UniLine and UniLine cassette models **2.53**

Technical data

Model 10

UniLine door air curtains		Type	510330									
Dimensions (incl. casing)	Length	mm	1000									
	Height	mm	260									
	Depth	mm	580									
Weight		kg	54									
UniLine cassette models		Type	610330									
Dimensions (incl. casing)	Length	mm	1000									
	Height	mm	265									
	Depth	mm	625 (600 on request)									
Weight		kg	52									
Max. discharge height H _{max} ¹⁾		m	2,3 - 3,0									
Max. doorway width		m	1,0									
Water content		l	1,0									
Connections		inch	3/4"									
Fan stage ²⁾			5	4	3	2	1					
Air volume		m³/h	1390	1220	1050	920	600					
Electrical power uptake ³⁾		W	382	299	228	193	113					
Power uptake ³⁾		A	1,82	1,43	1,09	092	0,54					
Sound pressure level (at a distance of 3 m)		dB(A)	57	54	50	47	36					
Water temp.	Ent. air temp. t _{L1} [°C]	Heat outputs										
		Q	t _{L2}	Q	t _{L2}	Q	t _{L2}	Q	t _{L2}	Q	t _{L2}	
		W	°C	W	°C	W	°C	W	°C	W	°C	
LPWW 55/45 °C	14	7083	28,7	6680	29,8	6226	31,1	5829	32,3	4622	36,3	
	16	6638	29,9	6261	30,9	5835	32,2	5463	33,3	4332	37,0	
	18	6194	31,0	5842	32,0	5445	33,2	5098	34,2	4042	37,7	
	20	5751	32,2	5424	33,1	5055	34,2	4733	35,1	3753	38,4	
	22	5308	33,3	5006	34,1	4666	35,1	4368	36,0	3464	39,1	
LPHW 70/55 °C	14	9596	34,0	9050	35,4	8435	37,2	7897	38,8	6262	44,2	
	16	9146	35,1	8626	36,6	8040	38,3	7527	39,8	5968	44,9	
	18	8695	36,3	8201	37,7	7644	39,3	7156	40,7	5674	45,7	
	20	8244	37,4	7775	38,7	7247	40,3	6784	41,7	5380	46,4	
	22	7792	38,6	7348	39,8	6849	41,3	6412	42,6	5085	47,1	
LPHW 70/60 °C	14	10417	35,7	9825	37,3	9157	39,2	8573	40,9	6798	46,7	
	16	9973	36,9	9405	38,4	8767	40,3	8207	41,9	6508	47,5	
	18	9528	38,0	8986	39,5	8376	41,3	7841	42,9	6218	48,3	
	20	9083	39,2	8567	40,7	7985	42,4	7475	43,9	5928	49,1	
	22	8639	40,4	8147	41,8	7594	43,4	7109	44,9	5637	49,8	
LPHW 75/65 °C	14	11527	38,0	10871	39,8	10133	41,9	9486	43,8	7522	50,2	
	16	11083	39,2	10453	40,9	9743	43,0	9121	44,8	7233	51,0	
	18	10639	40,4	10034	42,0	9353	44,0	8756	45,8	6943	51,8	
	20	10195	41,6	9615	43,2	8962	45,1	8390	46,8	6653	52,6	
	22	9750	42,8	9196	44,3	8571	46,2	8024	47,8	6363	53,4	
LPHW 82/71 °C	14	12966	41,0	12229	43,0	11398	45,4	10671	47,5	8462	54,8	
	16	12524	42,2	11812	44,1	11009	46,5	10307	48,6	8173	55,6	
	18	12081	43,4	11394	45,3	10620	47,6	9942	49,6	7884	56,4	
	20	11638	44,6	10976	46,5	10231	48,7	9578	50,6	7595	57,2	
	22	11194	45,8	10558	47,6	9841	49,7	9212	51,6	7305	58,0	
LPHW 90/70 °C		20	11924	45,2	11246	47,1	10482	49,4	9813	51,4	7781	58,1

¹⁾ At average to favourable pressure ratios and conditions

²⁾ When using a 3-stage switch, it may be connected to any terminal on the 5-stage transformer.

³⁾ The measurements given are the maximum outputs in poor conditions. Depending on position, accessories used and the degree of dirt on the filter, the actual figures may be lower.

2.53 Door air curtains - UniLine and UniLine cassette models

Technical data · Heat outputs

Model 15

UniLine door air curtains		Type	515330									
Dimensions (incl. casing)	Length	mm	1500									
	Height	mm	260									
	Depth	mm	580									
Weight		kg	81									
UniLine cassette models		Type	615330									
Dimensions (incl. casing)	Length	mm	1500									
	Height	mm	265									
	Depth	mm	625 (600 on request)									
Weight		kg	78									
Max. discharge height H _{max} ¹⁾		m	2,3-3,0									
Max. doorway width		m	1,5									
Water content		l	1,8									
Connections		inch	3/4"									
Fan stage ²⁾			5		4		3		2		1	
Air volume		m³/h	2130		1880		1610		1400		930	
Electrical power uptake ³⁾		W	565		438		330		275		156	
Power uptake ³⁾		A	2,67		2,07		1,56		1,30		0,74	
Sound pressure level (at a distance of 3 m)		dB(A)	58		55		51		48		37	
Water temp.		Ent. air temp. t _{L1} [°C]	Heat outputs									
			Q	t _{L2}	Q	t _{L2}	Q	t _{L2}	Q	t _{L2}	Q	t _{L2}
			W	°C	W	°C	W	°C	W	°C	W	°C
LPWW 55/45 °C		14	12060	30,4	11074	31,0	9941	31,8	9008	32,6	6692	34,8
		16	11304	31,4	10379	32,0	9318	32,8	8443	33,5	6272	35,6
		18	10548	32,5	9685	33,1	8695	33,8	7878	34,5	5853	36,4
		20	9793	33,5	8992	34,1	8072	34,7	7314	35,4	5434	37,2
		22	9038	34,6	8299	35,1	7450	35,7	6751	36,3	5015	38,0
LPHW70/55 °C		14	16340	36,2	15003	37,1	13469	38,2	12204	39,2	9067	42,2
		16	15574	37,3	14300	38,1	12838	39,2	11632	40,2	8642	43,0
		18	14806	38,3	13595	39,1	12205	40,2	11059	41,1	8216	43,8
		20	14038	39,4	12889	40,2	11571	41,1	10485	42,0	7789	44,6
		22	13267	40,4	12182	41,2	10936	42,1	9909	42,9	7362	45,4
LPHW 70/60 °C		14	17738	38,1	16287	39,0	14622	40,2	13249	41,4	9843	44,6
		16	16981	39,2	15592	40,1	13998	41,3	12683	42,3	9423	45,5
		18	16224	40,3	14897	41,2	13374	42,3	12118	43,3	9003	46,3
		20	15467	41,4	14202	42,2	12750	43,3	11552	44,3	8583	47,1
		22	14710	42,4	13507	43,3	12125	44,3	10987	45,2	8162	48,0
LPHW 75/65 °C		14	19628	40,6	18023	41,7	16180	43,0	14660	44,3	10892	47,8
		16	18873	41,8	17329	42,8	15557	44,1	14096	45,3	10472	48,7
		18	18117	42,9	16635	43,9	14934	45,1	13531	46,3	10053	49,6
		20	17360	44,0	15940	44,9	14310	46,1	12966	47,2	9633	50,5
		22	16603	45,1	15245	46,0	13686	47,1	12401	48,2	9213	51,3
LPHW 82/71 °C		14	22079	44,0	20273	45,2	18200	46,7	16491	48,0	12252	52,1
		16	21326	45,1	19582	46,3	17579	47,7	15928	49,1	11834	53,0
		18	20572	46,2	18889	47,4	16958	48,8	15365	50,1	11415	53,9
		20	19817	47,4	18196	48,5	16335	49,8	14801	51,1	10996	54,8
		22	19062	48,5	17503	49,5	15713	50,9	14237	52,1	10577	55,6
LPHW 90/70 °C		20	20304	48,0	18644	49,2	16737	50,6	15165	51,9	11267	55,6

¹⁾ At average to favourable pressure ratios and conditions

²⁾ When using a 3-stage switch, it may be connected to any terminal on the 5-stage transformer.

³⁾ The measurements given are the maximum outputs in poor conditions. Depending on position, accessories used and the degree of dirt on the filter, the actual figures may be lower.

Door air curtains - UniLine and UniLine cassette models 2.53

Technical data · Heat outputs

Model 20

UniLine door air curtains		Type	520330									
Dimensions (incl. casing)	Length	mm	2000									
	Height	mm	260									
	Depth	mm	580									
Weight		kg	104									
UniLine cassette models		Type	620330									
Dimensions (incl. casing)	Length	mm	2000									
	Height	mm	265									
	Depth	mm	625 (600 on request)									
Weight		kg	100									
Max. discharge height H _{max} ¹⁾		m	2,3-3,0									
Max. doorway width		m	2,0									
Water content		l	2,6									
Connections		inch	¾"									
Fan stage ²⁾			5		4		3		2		1	
Air volume		m³/h	2820		2480		2140		1850		1210	
Electrical power uptake ³⁾		W	757		586		450		368		205	
Power uptake ³⁾		A	3,70		2,80		2,20		1,80		1,00	
Sound pressure level (at a distance of 3 m)		dB(A)	59		56		53		49		39	
Water temp.		Ent. air temp. t _{L1} [°C]	Heat outputs									
			Q	t _{L2}	Q	t _{L2}	Q	t _{L2}	Q	t _{L2}	Q	t _{L2}
			W	°C	W	°C	W	°C	W	°C	W	°C
LPWW 55/45 °C		14	16811	31,2	15372	31,9	13855	32,7	12479	33,5	9123	35,8
		16	15757	32,2	14408	32,9	12986	33,6	11696	34,4	8551	36,5
		18	14703	33,2	13444	33,9	12118	34,6	10914	35,3	7979	37,3
		20	13651	34,2	12482	34,8	11250	35,5	10133	36,1	7408	38,0
		22	12599	35,2	11520	35,7	10384	36,4	9352	37,0	6837	38,7
LPHW 70/55 °C		14	22777	37,3	20827	38,3	18772	39,4	16907	40,4	12360	43,5
		16	21709	38,4	19850	39,3	17892	40,3	16115	41,3	11781	44,3
		18	20639	39,4	18872	40,3	17010	41,2	15321	42,2	11200	45,1
		20	19568	40,4	17892	41,2	16127	42,2	14525	43,1	10619	45,8
		22	18494	41,4	16911	42,2	15242	43,1	13728	44,0	10036	46,5
LPHW 70/60 °C		14	24726	39,3	22609	40,3	20379	41,5	18354	42,7	13418	46,1
		16	23671	40,4	21645	41,4	19509	42,5	17571	43,6	12846	46,9
		18	22616	41,4	20680	42,4	18639	43,5	16788	44,5	12273	47,7
		20	21560	42,5	19714	43,4	17769	44,4	16004	45,4	11700	48,4
		22	20505	43,5	18749	44,4	16899	45,4	15221	46,3	11127	49,2
LPHW 75/65 °C		14	27361	42,0	25018	43,2	22550	44,5	20310	45,7	14848	49,5
		16	26308	43,1	24055	44,2	21682	45,5	19528	46,7	14276	50,3
		18	25254	44,2	23091	45,2	20813	46,4	18746	47,6	13704	51,1
		20	24199	45,2	22127	46,2	19944	47,4	17963	48,6	13132	51,9
		22	23144	46,3	21162	47,2	19074	48,4	17180	49,5	12559	52,7
LPHW 82/71 °C		14	30777	45,5	28142	46,8	25366	48,3	22846	49,7	16702	53,9
		16	29727	46,6	27182	47,9	24500	49,3	22067	50,7	16132	54,8
		18	28676	47,7	26221	48,9	23634	50,3	21287	51,6	15562	55,6
		20	27624	48,8	25259	50,0	22767	51,3	20506	52,6	14991	56,4
		22	26571	49,9	24296	51,0	21899	52,3	19724	53,5	14419	57,3
LPHW 90/70 °C		20	28303	49,5	25880	50,7	23327	52,1	21010	53,4	15359	57,3

¹⁾ At average to favourable pressure ratios and conditions

²⁾ When using a 3-stage switch, it may be connected to any terminal on the 5-stage transformer.

³⁾ The measurements given are the maximum outputs in poor conditions. Depending on position, accessories used and the degree of dirt on the filter, the actual figures may be lower.

2.53 Door air curtains - UniLine and UniLine cassette models

Technical data · Heat outputs

Model 25

UniLine door air curtains		Type	525330									
Dimensions (incl. casing)	Length	mm	2500									
	Height	mm	260									
	Depth	mm	580									
Weight		kg	132									
UniLine cassette models		Type	625330									
Dimensions (incl. casing)	Length	mm	2500									
	Height	mm	265									
	Depth	mm	625 (600 on request)									
Weight		kg	127									
Max. discharge height H _{max} ¹⁾		m	2,3-3,0									
Max. doorway width		m	2,5									
Water content		l	3,5									
Connections		inch	¾"									
Fan stage ²⁾			5		4		3		2		1	
Air volume		m³/h	4000		3450		2980		2620		1660	
Electrical power uptake ³⁾		W	940		800		604		509		287	
Power uptake ³⁾		A	4,75		4,04		3,05		2,58		1,45	
Sound pressure level (at a distance of 3 m)		dB(A)	60		56		52		49		40	
Water temp.		Ent. air t _{l1} [°C]	Heat outputs									
			Q	t _{l2}	Q	t _{l2}	Q	t _{l2}	Q	t _{l2}	Q	t _{l2}
			W	°C	W	°C	W	°C	W	°C	W	°C
LPWW 55/45 °C		14	23518	31,0	21227	31,8	19147	32,6	17466	33,3	12488	35,7
		16	22043	32,0	19896	32,8	17946	33,5	16371	34,2	11705	36,5
		18	20569	33,0	18565	33,7	16746	34,4	15276	35,0	10922	37,2
		20	19096	34,0	17236	34,7	15547	35,3	14183	35,9	10140	38,0
		22	17625	35,0	15908	35,6	14349	36,2	13090	36,8	9359	38,7
LPHW 70/55 °C		14	31864	37,0	28759	38,1	25941	39,2	23665	40,1	16920	43,5
		16	30370	38,1	27411	39,1	24725	40,1	22555	41,0	16126	44,2
		18	28873	39,1	26060	40,1	23507	41,1	21444	41,9	15332	45,0
		20	27374	40,1	24707	41,1	22286	42,0	20330	42,8	14536	45,8
		22	25872	41,1	23352	42,0	21064	42,9	19215	43,7	13738	46,5
LPHW 70/60 °C		14	34591	39,0	31221	40,2	28162	41,3	25690	42,3	18368	46,0
		16	33115	40,1	29889	41,2	26960	42,3	24594	43,3	17584	46,8
		18	31639	41,1	28556	42,2	25758	43,3	23497	44,2	16800	47,6
		20	30162	42,2	27223	43,2	24556	44,2	22401	45,1	16016	48,4
		22	28685	43,2	25890	44,2	23353	45,2	21304	46,1	15232	49,1
LPHW 75/65 °C		14	38276	41,7	34548	42,9	31162	44,2	28427	45,4	20325	49,4
		16	36803	42,7	33218	44,0	29963	45,2	27333	46,3	19542	50,2
		18	35328	43,8	31887	45,0	28762	46,2	26238	47,3	18759	51,0
		20	33853	44,9	30555	46,0	27561	47,2	25142	48,2	17976	51,8
		22	32377	45,9	29223	47,1	26359	48,2	24046	49,2	17192	52,6
LPHW 82/71 °C		14	43056	45,1	38861	46,6	35053	48,0	31977	49,3	22863	53,8
		16	41587	46,2	37535	47,6	33857	49,0	30886	50,3	22083	54,7
		18	40117	47,3	36208	48,7	32660	50,0	29794	51,3	21302	55,5
		20	38645	48,4	34880	49,7	31462	51,1	28701	52,2	20520	56,4
		22	37171	49,5	33550	50,8	30263	52,0	27607	53,2	19738	57,2
LPHW 90/70 °C		20	39595	49,1	35737	50,5	32236	51,8	29406	53,0	21025	57,3

¹⁾ At average to favourable pressure ratios and conditions

²⁾ When using a 3-stage switch, it may be connected to any terminal on the 5-stage transformer.

³⁾ The measurements given are the maximum outputs in poor conditions. Depending on position, accessories used and the degree of dirt on the filter, the actual figures may be lower.

Door air curtains - UniLine and UniLine cassette models 2.53

Specifications

Basic unit with casing · Accessories

Qty.	Article no.	Description	Price each	Total price																																																																											
pc.	253 000 5 10 330	UniLine Door air curtains manufactured from sendzimir galvanized steel; unit and casing (including top panel) form a compact unit; casing components powdercoated RAL 9016, traffic white; inlet grille and outlet rectifier powdercoated white aluminium with metallic effect, similar to RAL 9006, with fixing openings; easily-removable (without tool) filter integrated within inlet grille; rectifier for minimum turbulence; high-output heat exchanger, copper pipes with aluminium fins, max. flow temperature 90 °C and 10 bar operating pressure; with generously-proportioned radial fans, which draw in air on both sides, direct-driven, switched between five stages via a transformer, voltage 230 V, 50 Hz., motor protection via thermal cut-outs, motor protection class IP 44, insulation class B; heat exchanger and electrical connections are made outside top panel of casing; heat exchanger connection: ¾" Horizontal basic unit with casing Dimensions <table><tr><td>model 10:</td><td>L x H x D:</td><td>1000 x 260 x 580 mm</td></tr><tr><td>model 15:</td><td>L x H x D:</td><td>1500 x 260 x 580 mm</td></tr><tr><td>model 20:</td><td>L x H x D:</td><td>2000 x 260 x 580 mm</td></tr><tr><td>model 25:</td><td>L x H x D:</td><td>2500 x 260 x 580 mm</td></tr></table> Technical data <table><tr><td>Fan stage</td><td>5</td><td>4</td><td>3</td><td>2</td><td>1</td><td></td></tr><tr><td>Air volume</td><td>_____</td><td>_____</td><td>_____</td><td>_____</td><td>_____</td><td>m³/h</td></tr><tr><td>Power uptake</td><td>_____</td><td>_____</td><td>_____</td><td>_____</td><td>_____</td><td>W</td></tr><tr><td>Sound pressure level</td><td>_____</td><td>_____</td><td>_____</td><td>_____</td><td>_____</td><td>dB(A)</td></tr><tr><td>Heat output</td><td>_____</td><td>_____</td><td>_____</td><td>_____</td><td>_____</td><td>W</td></tr><tr><td>Air outlet temperature</td><td>_____</td><td>_____</td><td>_____</td><td>_____</td><td>_____</td><td>°C</td></tr><tr><td>Water temp. LPHW</td><td>_____ / _____</td><td></td><td></td><td></td><td></td><td>°C</td></tr><tr><td>Entering air temp.</td><td>_____</td><td></td><td></td><td></td><td></td><td>°C</td></tr><tr><td>Weight</td><td>_____</td><td></td><td>kg</td><td></td><td></td><td></td></tr></table> Type Kampmann, article no. 253 000 5_ _ 330, type 5_ _ 330	model 10:	L x H x D:	1000 x 260 x 580 mm	model 15:	L x H x D:	1500 x 260 x 580 mm	model 20:	L x H x D:	2000 x 260 x 580 mm	model 25:	L x H x D:	2500 x 260 x 580 mm	Fan stage	5	4	3	2	1		Air volume	_____	_____	_____	_____	_____	m³/h	Power uptake	_____	_____	_____	_____	_____	W	Sound pressure level	_____	_____	_____	_____	_____	dB(A)	Heat output	_____	_____	_____	_____	_____	W	Air outlet temperature	_____	_____	_____	_____	_____	°C	Water temp. LPHW	_____ / _____					°C	Entering air temp.	_____					°C	Weight	_____		kg					
model 10:	L x H x D:	1000 x 260 x 580 mm																																																																													
model 15:	L x H x D:	1500 x 260 x 580 mm																																																																													
model 20:	L x H x D:	2000 x 260 x 580 mm																																																																													
model 25:	L x H x D:	2500 x 260 x 580 mm																																																																													
Fan stage	5	4	3	2	1																																																																										
Air volume	_____	_____	_____	_____	_____	m³/h																																																																									
Power uptake	_____	_____	_____	_____	_____	W																																																																									
Sound pressure level	_____	_____	_____	_____	_____	dB(A)																																																																									
Heat output	_____	_____	_____	_____	_____	W																																																																									
Air outlet temperature	_____	_____	_____	_____	_____	°C																																																																									
Water temp. LPHW	_____ / _____					°C																																																																									
Entering air temp.	_____					°C																																																																									
Weight	_____		kg																																																																												
pc.	253 000 500 890	Wall brackets for UniLine door air curtains sendzimir galvanized steel, powdercoated white, RAL 9016, adjustable via telescopic tracks and threaded rods, comprising: 2 no. fixing angles with U-tracks and screws, 4 no. M8 x 500mm threaded rods with nuts, 2 telescopic tracks and 2 no. screw covers; Type Kampmann, article no. 253 000 500 890, type 500 890																																																																													
pc.	253 000 500 895	Ceiling brackets for UniLine door air curtains sendzimir galvanized steel, powdercoated white RAL 9016, for adjustable suspension of door air curtains from the ceiling, comprising 2 no. fixing tracks with screws for fixing to ceiling and 4 no. M 8 x 500 mm threaded rods with nuts; Type Kampmann, article no. 253 000 500 895, type 500 895																																																																													
pc.	253 000 5 10 820	Replacement filter mat for positioning in inlet grille (1 set = 5 mats) Type Kampmann, article no. 253 000 5_ _ 820, type 5_ _ 820 required to complete DataNorm/EDV article no. <table><tr><td>10</td><td>model 10</td></tr><tr><td>15</td><td>model 15</td></tr><tr><td>20</td><td>model 20</td></tr><tr><td>25</td><td>model 25</td></tr></table>	10	model 10	15	model 15	20	model 20	25	model 25																																																																					
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Insert article no. for
DataNorm/EDV entry

2.53 Door air curtains - UniLine and UniLine cassette models

Specifications

Basic unit with casing · Accessories

Qty.	Article no.	Description	Price/each	Total price																																																															
pc.	253 000 6 10 330	Door air curtain - UniLine cassette model manufactured from sendzimir galvanized steel; unit and casing form a compact unit; casing components powdercoated RAL 9016, traffic white; service flap and integral inlet grille powdercoated white aluminium with metallic effect, similar to RAL 9006; air discharge via generously-proportioned filter in inlet grille; outlet air rectifier for minimum turbulence, powdercoated white aluminium with metallic effect (RAL 9006 or similar) with fixing openings; easily-removable (without tool) filter integrated within inlet grille; rectifier for minimum turbulence; high-output heat exchanger, copper pipes with aluminium fins, max. flow temperature 90 °C and 10 bar operating pressure; with generously-proportioned radial fans, which draw in air on both sides, direct-driven, switched between five stages via a transformer, voltage 230 V, 50 Hz, motor protection via thermal cut-outs, motor protection class IP 44, insulation class B; heat exchanger and electrical connections are made outside long side of casing, heat exchanger connection: ¾"; fixed using fixing angles supplied 330 Horizontal basic unit with casing Dimensions model 10: L x H x D: 1000 x 265 x 625 mm model 15: L x H x D: 1500 x 265 x 625 mm model 20: L x H x D: 2000 x 265 x 625 mm model 25: L x H x D: 2500 x 265 x 625 mm Technical data <table><tr><td>Fan stage</td><td>5</td><td>4</td><td>3</td><td>2</td><td>1</td><td></td></tr><tr><td>Air volume</td><td>_____</td><td>_____</td><td>_____</td><td>_____</td><td>_____</td><td>m³/h</td></tr><tr><td>Power uptake</td><td>_____</td><td>_____</td><td>_____</td><td>_____</td><td>_____</td><td>W</td></tr><tr><td>Sound pressure level</td><td>_____</td><td>_____</td><td>_____</td><td>_____</td><td>_____</td><td>dB(A)</td></tr><tr><td>Heat output</td><td>_____</td><td>_____</td><td>_____</td><td>_____</td><td>_____</td><td>W</td></tr><tr><td>Leaving air temperature</td><td>_____</td><td>_____</td><td>_____</td><td>_____</td><td>_____</td><td>°C</td></tr><tr><td>Water temp. LPHW</td><td>_____/_____</td><td>_____</td><td>_____</td><td>_____</td><td>_____</td><td>°C</td></tr><tr><td>Entering air temperature</td><td>_____</td><td>_____</td><td>_____</td><td>_____</td><td>_____</td><td>°C</td></tr><tr><td>Weight</td><td>_____</td><td>_____</td><td>_____</td><td>_____</td><td>_____</td><td>kg</td></tr></table> Type Kampmann, Article no. 253 000 6_ _ 330 type 6 _ _ 330	Fan stage	5	4	3	2	1		Air volume	_____	_____	_____	_____	_____	m³/h	Power uptake	_____	_____	_____	_____	_____	W	Sound pressure level	_____	_____	_____	_____	_____	dB(A)	Heat output	_____	_____	_____	_____	_____	W	Leaving air temperature	_____	_____	_____	_____	_____	°C	Water temp. LPHW	_____/_____	_____	_____	_____	_____	°C	Entering air temperature	_____	_____	_____	_____	_____	°C	Weight	_____	_____	_____	_____	_____	kg		
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	required to complete DataNorm/EDV article no.																																																																		

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Door air curtains - UniLine and UniLine cassette models 2.53

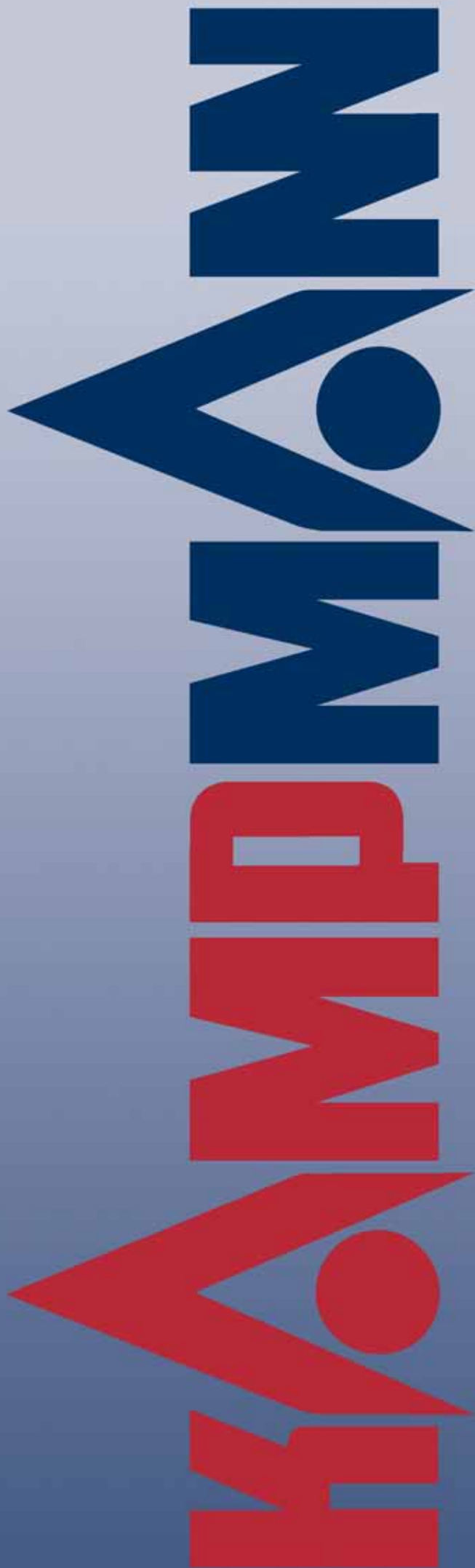
Specifications

Controls accessories

Qty.	Article no.	Description	Price/each	Total price
pc.	196 000 100 917	3-stage switch - 0-1-2-3, surface-mounted, in a white plastic housing, manufactured by Jung; dimensions H x W x D: 82 x 82 x 59 mm protection class: IP 21; breaking capacity: 10 A Type Kampmann, article no. 196 000 100 917, type 100 917		
pc.	196 000 100 918	3-stage switch - 0-1-2-3, surface-mounted, to fit within a 55 back-box, white cover, manufactured by Jung; dimensions H x W x D: 82 x 82 x 24 mm breaking capacity: 10 A Type Kampmann, article no. 196 000 100 918, type 100 918		
pc.	196 000 100 920	3-stage summer/winter switch - 0-1-2-3, surface-mounted, in a light/dark grey plastic housing, insulated; dimensions H x W x D: 82 x 82 x 125 mm protection class: IP 55; breaking capacity: 15 A Type Kampmann, article no. 196 000 100 920, type 100 920	only suitable for use with thermoelectric shut-off valve type 100912	
pc.	196 000 100 922	3-stage summer/winter switch - 0-1-2-3, flush-mounted, fits within a 55 back box, with white cover dimensions H x W x D: 82 x 82 x 24 mm breaking capacity: 15 A Type Kampmann, article no. 196 000 100 922, type 100 922	only suitable for use with thermoelectric shut-off valve type 100912	
pc.	196 000 100 925	5-stage switch - 0-1-2-3-4-5, surface-mounted, in a light/dark grey plastic housing, insulated; dimensions H x W x D: 82 x 82 x 125 mm protection class: IP 55; breaking capacity: 15 A Type Kampmann, article no. 196 000 100 925, type 100 925		
pc.	196 000 100 926	5-stage switch - 0-1-2-3-4-5, flush-mounted, fits within a 55 junction box; with white cover; dimensions H x W x D: 82 x 82 x 24 mm breaking capacity: 15 A Type Kampmann, article no. 196 000 100 926, type 100 926		
pc.	196 000 100 928	5-stage summer/winter switch - 0-1-2-3-4-5, surface-mounted, in light/dark grey plastic housing, insulated, dimensions H x W x D: 82 x 82 x 125 mm protection class: IP 55; breaking capacity: 15 A Type Kampmann, article no. 196 000 100 928, type 100 928	only suitable for use with thermoelectric shut-off valve type 100912	
pc.	196 000 100 929	5-stage summer/winter switch - 0-1-2-3-4-5, flush-mounted, fits within a 55 junction box; with white cover; dimensions H x W x D: 82 x 82 x 24 mm breaking capacity: 15 A Type Kampmann, article no. 196 000 100 929, type 100 929	only suitable for use with thermoelectric shut-off valve type 100912	
pc.	196 000 100 912	Thermoelectric shut-off valve ¾" straight valve body with thread and thermoelectric actuator 230 V, 50 Hz. Type Kampmann, article no. 196 000 100 912, type 100 912		
pc.	196 000 100 967	Leaving air temperature limiting valve ¾" straight valve body with thermostatic head and remote sensor, with 2 m capillary tube, with material to fix sensor in air stream; temperature range: 20 - 50 °C Type Kampmann, article no. 196 000 100 967, type 100 967		
pc.	196 000 100 906	Cascade module for the parallel operation of two door air curtains via a stage switch, accommodated within a wall-mounted housing dimensions: H x W x D: 150 x 200 x 75 mm Type Kampmann, article no. 196 000 100 906, type 100 906		
pc.	196 000 ____*____-W required to complete DataNorm/EDV article no.	Radio controller, integral simple to fit without cabling with push-button 3-stage controller and summer/winter switch with receiver mounted on unit; complete with aerial; Type Kampmann, article no. 196 000 ____*____-W, type ____*____-W		

*Insert basic door air curtain type no.

insert article no. for
DataNorm/EDV entry



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