

BRS

AIR HANDLING UNIT

Singular Model, Sustainable Superiority



BRS Air Handling Unit

General Information and Features

The BRS model thermal-bridge-free air handling units are specially designed units in order to meet the needs of today's rapidly progressing air conditioning technology and to keep the heat losses at minimum level, and to eliminate surface condensation.

The BRS model units are in compliance with DIN EN 1886. The PVC profile acts as a heat barrier between the inner and outer metal surfaces and allow rounded corners and smooth edges to be easily cleaned.

Double skin panels are used in the BRS units. The outer surfaces of the panels are manufactured from epoxy coated painted galvanized steel and the inner surfaces are manufactured from galvanized steel or stainless-steel sheets.



Casing

Double skin panels are filled with 50 mm rockwool insulation (70 kg/m³). EPDM gaskets are used to ensure leak-proof operation. The panels are screwed to the frame from outside and the screws are covered with plastic caps.



● Corner Profile

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TECHNICAL SPECIFICATIONS ACCORDING TO EN 1886:2007

Mechanical Strength (mm x m ³)	D1
	4
Casing Air Leakage (l x s ⁻¹ x m ⁻²)	L1 (-400 Pa)
	0.15
	L1 (+700 Pa)
	0.22
Filter Bypass Leakage (%k)	F9
	0.5
Thermal Transmittance (w x m ² x K ⁻¹)	T2
	0.5 < U ≤ 1.0
Thermal Bridging	TB1
	0.75 < kb < 1.00



BOREAS Air Handling Unit is Eurovent Certified with Mechanical Strength Class D1, Casing Air Leakage Class L1, Thermal Transmittance Class T2, Thermal Bridging Class TB1, and Filter Bypass Leakage Class F9 according to EN 1886.

1. Mechanical Strength: D1

The amount of deflection of the air handling unit frame is measured on the Model Box under a pressure of ±1000 Pa is measured, and the air handling unit is checked for permanent deformation under a pressure of ±25000 Pa.

2. Casing Air Leakage Class: L1

These are tests where the amount of possible air leakage from the air handling unit casing under 400 Pa negative and 700 Pa positive pressure

3. Filter Bypass Leakage Class: F9

Classification is made on the basis of the percentage of the air flow passing unfiltered from the air handling unit filter frame under 400 Pa positive pressure to total air flow.

$$q_{Lr} = q_L + q_{Lf}$$

q_{Lr} : Total Air Leakage

q_L : Casing Air Leakage

q_{Lf} : Air Leakage between the Filter Frame and Casing

4. Thermal Transmittance Class: T2

This is the test and classification for determining the thermal transmittance of the air handling unit casing and panel structure. Tests are carried out by maintaining a temperature difference of 20 K between the air handling unit interior and exterior, and a 0.1 m/s air velocity over the exterior surface.

$$U = \frac{P_{ei}}{A \times \Delta t_{air}} \quad (W \times m^2 \times K^{-1})$$

P_{ei} : Electrical power of the heater and circulation fan

A : Exterior surface area of Model Box

Δt_{air} : The temperature difference between the Model Box interior and exterior

5. Thermal Bridging Class: TB1

This is a test which determines and classifies thermal bridges that may occur between the interior and exterior environment of the air handling unit casing. The calculation is based on those points with the highest temperature on the exterior surface where the temperature difference between the internal and external environment is 20 K. A high class indicates a low condensation risk on the air handling unit casing while a low class indicates a high condensation risk.

$$k_b = \Delta t_{min} / \Delta t_{air} \quad \Delta t_{min} = t_i - t_{maxi} \quad \Delta t_{air} = t_i - t_{aimaxi}$$

t_i : Internal Air Temperature, t_a : External Air Temperature,

t_{max} : Max. Temperature of Exterior Surface

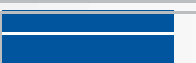
Quick Selection Chart

Modul	Filter Alignment	Quantity			Inner Dimension HxW (mm)	Outer Dimension HxW (mm)	Air Flow (m³/h)					
		1/1	1/2	1/4			V1 (<1.6 m/s)	V2 (<1.6-1.8 m/s)	V3 (<1.8-2.0 m/s)	V4 (<2.0-2.2 m/s)	V5 (<2.2-2.5 m/s)	V6 (<2.5-3.0 m/s)
6x6		1	0	0	612x612	842x712	2157	2427	2697	2966	3371	4045
6x9		1	1	0	612x918	842x1018	3236	3641	4045	4450	5056	6068
6x12		2	0	0	612x1224	842x1324	4315	4854	5393	5933	6742	8090
9x9		1	2	1	918x918	1148x1018	4854	5461	6068	6674	7585	9101
9x12		2	2	0	918x1224	1148x1324	6472	7281	8090	8899	10113	12135
9x15		2	3	1	918x1530	1148x1630	8090	9101	10113	11124	12641	15169
9x18		3	3	0	918x1836	1148x1936	9708	10922	12135	13349	15169	18203
12x12		4	0	0	1224x1224	1454x1324	8629	9708	10787	11866	13484	16180
12x15		4	2	0	1224x1530	1454x1630	10787	12135	13484	14832	16854	20225
12x18		6	0	0	1224x1836	1454x1936	12944	14562	16180	17798	20225	24270
12x21		6	2	0	1224x2142	1454x2242	15102	16989	18877	20765	23596	28316
12x24		8	0	0	1224x2448	1454x2548	17259	19416	21574	23731	26967	32361
15x15		4	4	1	1530x1530	1760x1630	13484	15169	16854	18540	21068	25282
15x18		6	3	0	1530x1836	1760x1936	16180	18203	20225	22248	25282	30338
15x21		6	5	1	1530x2142	1760x2242	18877	21237	23596	25956	29495	35394
15x24		8	4	0	1530x2448	1760x2548	21574	24270	26967	29664	33709	40451
15x27		8	6	1	1530x2754	1760x2854	24270	27304	30338	33372	37923	45507
15x30		10	5	0	1530x3060	1760x3160	26967	30338	33709	37080	42136	50563
18x18		9	0	0	1836x1836	2066x1936	19416	21843	24270	26697	30338	36406
18x21		9	3	0	1836x2142	2066x2242	22652	25484	28316	31147	35394	42473
18x24		12	0	0	1836x2448	2066x2548	25888	29125	32361	35597	40451	48541
18x27		12	3	0	1836x2754	2066x2854	29125	32765	36406	40046	45507	54609
18x30		15	0	0	1836x3060	2066x3160	32361	36406	40451	44496	50563	60676
18x33		15	3	0	1836x3366	2066x3466	35597	40046	44496	48945	55620	66744



V1 (m/s)	V2 (m/s)	V3 (m/s)	V4 (m/s)	V5 (m/s)	V6 (m/s)
1.6	1.8	2	2.2	2.5	3
Velocity classification of Air Handling Units according to EN 13503 standard					

Quick Selection Chart

Modul	Filter Alignment	Quantity			Inner Dimension HxW (mm)	Outer Dimension HxW (mm)	Air Flow (m³/h)					
		1/1	1/2	1/4			V1 (<1.6 m/s)	V2 (<1.6-1.8 m/s)	V3 (<1.8-2.0 m/s)	V4 (<2.0-2.2 m/s)	V5 (<2.2-2.5 m/s)	V6 (<2.5-3.0 m/s)
18x36		18	0	0	1836 x 3672	2066 x 3772	38833	43687	48541	53395	60676	72811
21x21		9	6	1	2142 x 2142	2372 x 2242	26428	29731	33035	36338	41293	49552
21x24		12	4	0	2142 x 2448	2372 x 2548	30203	33979	37754	41529	47193	56631
21x27		12	7	1	2142 x 2754	2372 x 2854	33979	38226	42473	46721	53092	63710
21x30		15	5	0	2142 x 3060	2372 x 3160	37754	42473	47193	51912	58991	70789
21x33		15	8	1	2142 x 3366	2372 x 3466	41529	46721	51912	57103	64890	77868
21x36		18	6	0	2142 x 3672	2372 x 3772	45305	50968	56631	62294	70789	84947
21x39		18	9	1	2142 x 3978	2372 x 4078	49080	55215	61350	67485	76688	92025
21x42		21	7	0	2142 x 4284	2372 x 4384	52856	59463	66070	72677	82587	99104
24x24		16	0	0	2448 x 2448	2678 x 2854	34518	38833	43147	47462	53934	64721
24x27		16	4	0	2448 x 2754	2678 x 2854	38833	43687	48541	53395	60676	72811
24x30		20	0	0	2448 x 3060	2678 x 3160	43147	48541	53934	59328	67418	80902
24x33		20	4	0	2448 x 3366	2678 x 3466	47462	53395	59328	65261	74160	88992
24x36		24	0	0	2448 x 3672	2678 x 3772	51777	58249	64721	71193	80902	97082
24x39		24	4	0	2448 x 3978	2678 x 4078	56092	63103	70115	77126	87643	105172
24x42		28	0	0	2448 x 4284	2678 x 4384	60406	67957	75508	83059	94385	113262



V1 (m/s)	V2 (m/s)	V3 (m/s)	V4 (m/s)	V5 (m/s)	V6 (m/s)
1.6	1.8	2	2.2	2.5	3
Velocity classification of Air Handling Units according to EN 13503 standard					

Unit Components



40 models are available with air flow capacities of 2,000 m³/h and 100,000 m meet a wide range of demand. The unit has a reduced field wiring through flexible automated control solution and is compatible with all



Outer walls of the double walled, thermal bridge free, 50 mm rock wool insulated panels are manufactured from 1-mm-thick galvanized and painted sheet metal, and the inner walls are 0.8 mm galvanized or, on demand, stainless sheet metal.

1



F9 leakage class filter assembly and all types of filter application in G3-F9 range

2



Required flow rate and pressure are supplied by low noise and high efficiency fans and motors

5



Water systems or DX coolers and heaters are selected from Eurovent certified products to provide the best performance.

6



Easy monitoring through rectangular and wide sight glasses and LED lighting

7



The power and control panel are housed within the same casing at the Boreas Air Handling Unit. All methods and applications in the design and manufacturing of the panel are done in accordance with CE instructions. Parts necessary to feed and distribute main power to the air handling unit are located in the 'Power' section. Control card and ports that can easily be integrated with current BMS system via open protocols like KNX, Lon, Bacnet, Modbus, etc. are located in the "Control" section.



Superior energy efficiency through high efficient heat recovery applications

3



Metal casting door hinges that allow adjusting in three axes and locked door handles work without a risk of corrosion between the temperature range of -40°C and +80°C.

4



Low grid resistance hidden gear driven "Anodized" aluminum dampers

8



150-mm-high stands with forklift openings for moving also have eye bolts to be carried with cranes

9



Boreas air handling units are manufactured by automated systems to ensure, control and maintain comfort requirements

10

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