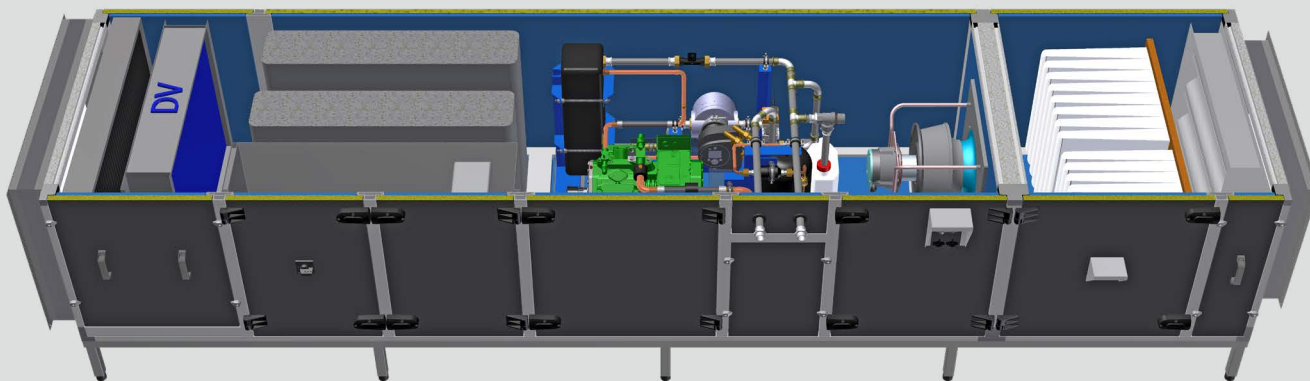


Carnot-Process

RECUPAC

Air-to-water heat pump





RecuPAC

The RecuPAC heat pump produces heat from the exhaust air flow. As long as heat is required, the heat pump operates continuously. The RecuPAC heat pump is normally connected to the hydraulic system via a buffer cylinder. The condensation temperature is always set as low as possible to maximise the COP for heat production.

The RecuPAC heat pump can be easily integrated hydraulically using the built-in internal pump and the 3-way valve. The control of the RecuPAC can also be extended for an external group pump or for a temperature-controlled setpoint shift. This means that the RecuPAC can be used alone or in combination with other heat generators.

The control functions are programmed in the built-in Siemens processor with PLC screen. They are individually parameterised to the system configuration for each installation. It is envisaged that the RecuPAC heat pump will be equipped with remote access via an IP address. This option is recommended because optimisation and readjustment can be carried out easily and with little effort.

The design of the Mountair RecuPAC heat pump is based on the tried and tested S2 unit series. The

housing is designed as a thermally decoupled frame construction. The panels are 42 mm/54 mm thick, thermally decoupled and fitted with high-quality PIR insulation. (Classification T2/TB2/L1/D1). Available as an outdoor unit with a sarnafil roof or as an indoor unit in various configurations .

The heat pump itself is preferably equipped with R134a. (variants with CO2, R32, etc.). Frequency-controlled Bitzer semi-hermetic compressors, combined with electronic expansion valves from Danfoss, enable clean regulation even with fluctuating air volumes and loads. This high-quality RecuPAC heat pump will work for you in continuous operation and provide you with reliable heating energy.

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Unit sizes

Mountair RecuPAC air-to-water heat pump

MONOBLOC	DIMENSIONS	NOMINAL AIR VOLUME	WATER TEMPERATURE	HEAT OUTPUT		POWER CONSUMPTION
Type S2	H x W [mm]	m ³ /h	Tvl/Trl in °C	Q/kW	COP	WP/kW
10/10	720 x 720	1500	60/50 °C	10.5	3.20	3.28
			50/40 °C	9.7	3.90	2.49
			37/28 °C	9.03	4.75	1.9
10/10s	840 x 840	2000	60/50 °C	13.8	3.19	4.32
			50/40 °C	12.94	3.81	3.4
			37/28 °C	11.94	5.06	2.36
10/15	720 x 1080	2500	60/50 °C	17.6	3.20	5.5
			50/40 °C	16.15	3.82	4.23
			37/28 °C	14.67	4.99	2.94
10/15s	840 x 1080	3000	60/50 °C	20.7	3.24	6.39
			50/40 °C	19.4	3.87	5.01
			37/28 °C	17.72	5.03	3.52
12/15	960 x 1080	4200	60/50 °C	28.5	3.23	8.81
			50/40 °C	25.7	3.88	6.63
			37/28 °C	24.4	5.07	4.81
15/15	1080 x 1080	4800	60/50 °C	33	3.32	9.95
			50/40 °C	30.8	3.91	7.87
			37/28 °C	28.6	5.13	5.58
10/20	840 x 1440	5000	60/50 °C	34	3.31	10.28
			50/40 °C	31.6	3.89	8.12
			37/28 °C	29	5.12	5.66
12/20	960 x 1440	6000	60/50 °C	39.6	3.35	11.82
			50/40 °C	38.2	4.02	9.5
			37/28 °C	35.5	5.14	6.9
15/20	1080 x 1440	7000	60/50 °C	47.5	3.34	14.23
			50/40 °C	43.9	4.09	10.74
			37/28 °C	41.1	5.39	7.63
15/25	1080 x 1800	8500	60/50 °C	58.8	3.30	17.82
			50/40 °C	53.6	4.05	13.24
			37/28 °C	50	5.43	9.21
20/20	1440 x 1440	10'000	60/50 °C	68.7	3.33	20.6
			50/40 °C	60.6	3.92	15.44
			37/28 °C	67.7	5.18	13.06

Legends for layout diagram

03M1	Exhaust fan	08Y7	Three-way valve
04M1	Compressor	09B1	Temperature sensor for supply
05A1	Oil monitoring	09B3	Temperature sensor for return flow
05R8	Karter heating	09B5	Temperature sensor inlet (capacitor)
06B1	Low pressure switch	09B7	Fluid flow rate sensor
06B2	High pressure switch	10B1	Pressure sensor - exhaust air channel
07B1	Low pressure sensor	10B2	Differential pressure Fan Air volume measurement A2G
07B2	High pressure sensor	10B8	Differential pressure exhaust air filter
07B5	EXPV intake pressure sensor	11B1	Temperature / humidity sensor - exhaust air
07B6	Intake temperature sensor EXPV	11B2	Temperature / humidity sensor - outgoing air
07B8	Temperature sensor - pressure gas	12Y1	Damper actuator exhaust air
07Y7	EXPV expansion valve		
08M1	Internal pump		



Control strategy

Exhaust air fan operation

1. Constant pressure (VAV)
2. Constant air volume

Heat pump

1. Concept "A"
 - The heat pump heats to a constant supply temperature
 - Fixed setpoint
 - Shifted setpoint 0-10V
2. Concept "B"
 - The heat pump heats up to the switch-off point (setpoint) at full water flow rate. Buffer cylinder is heated at the lowest possible condensation temperature.
 - Maximum COP

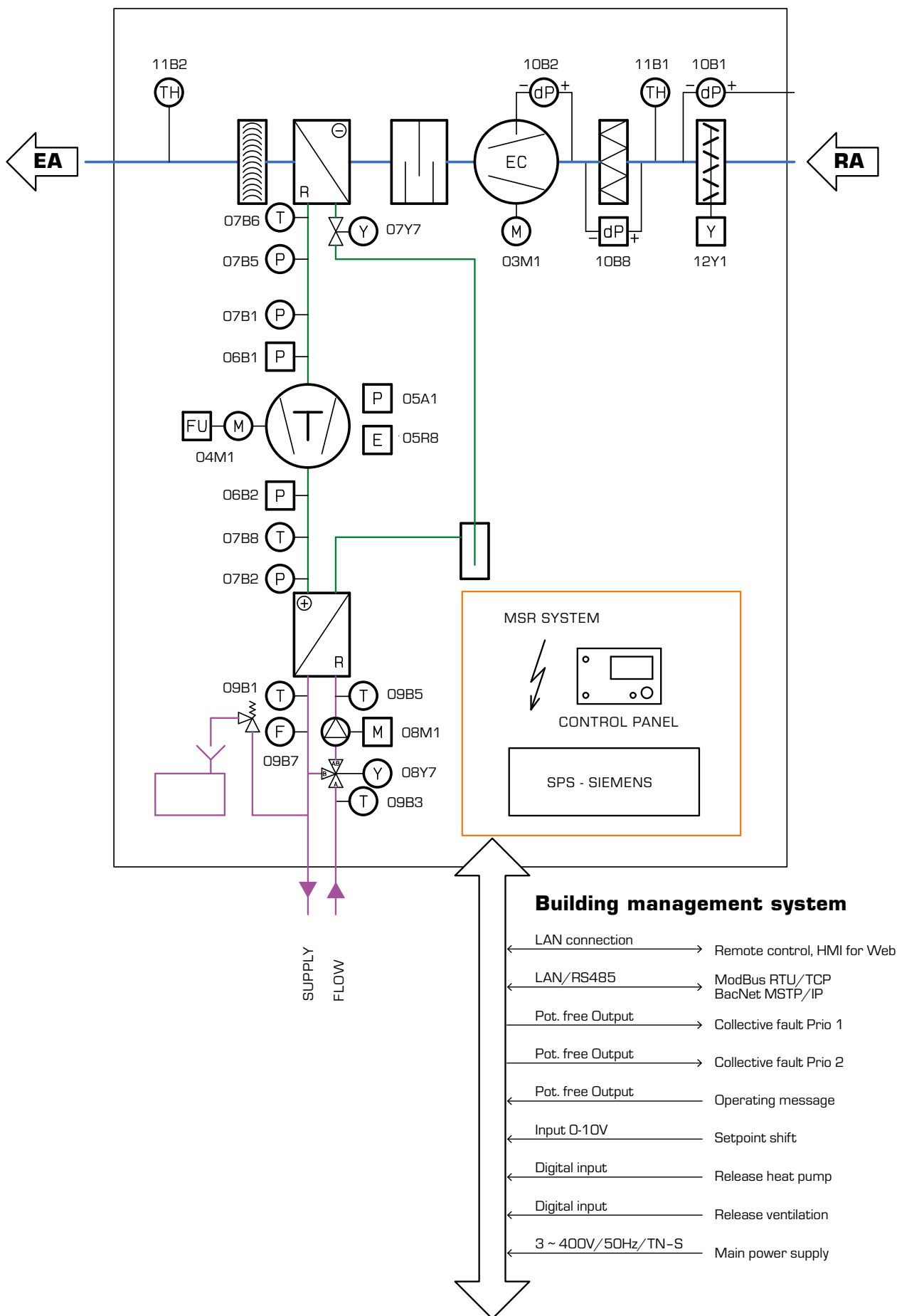
Optional functions

- Remote monitoring
 - HMI
 - ModBus
 - BACnet

Static functions

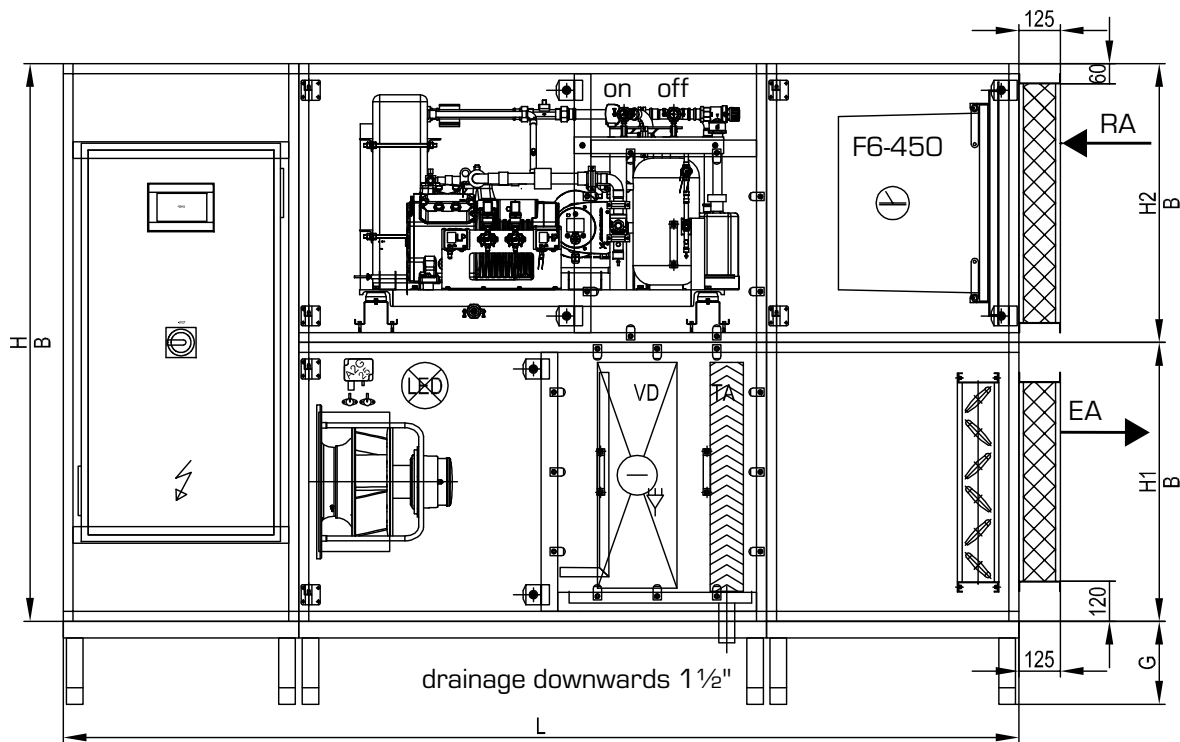
- Operating hours meter
- Energy measurement inlet
- Energy measurement outlet
- COP on average

Layout diagram



Model superposition C

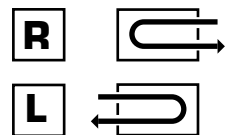
Dimensional drawing and dimensions



MONOBLOC	DIMENSIONS	NOMINAL AIR VOLUME	TOTAL HEIGHT	LENGTH	WEIGHT
Type S2	H1/H2 x W [mm]	m ³ /h	H [mm]	L [mm]	kg
10 / 10	720 x 720	1500	1440	2880	725
10 / 10s	840 x 840	2000	1680	2880	807
10 / 15	H: 720/H2: 840 x 1080	2500	1560	2880	876
10 / 15s	840 x 1080	3000	1680	2880	923
12 / 15	960 x 1080	4200	1920	2880	981
15 / 15	1080 x 1080	4800	2160	2880	1055
10 / 20	840 x 1440	5000	1680	2880	1094
12 / 20	960 x 1440	6000	1920	2880	1179
15 / 20	1080 x 1440	7000	2160	3180	1307
15 / 25	1080 x 1800	8500	2160	3180	1557
20 / 20	1440 x 1440	10'000	2880	3380	1649

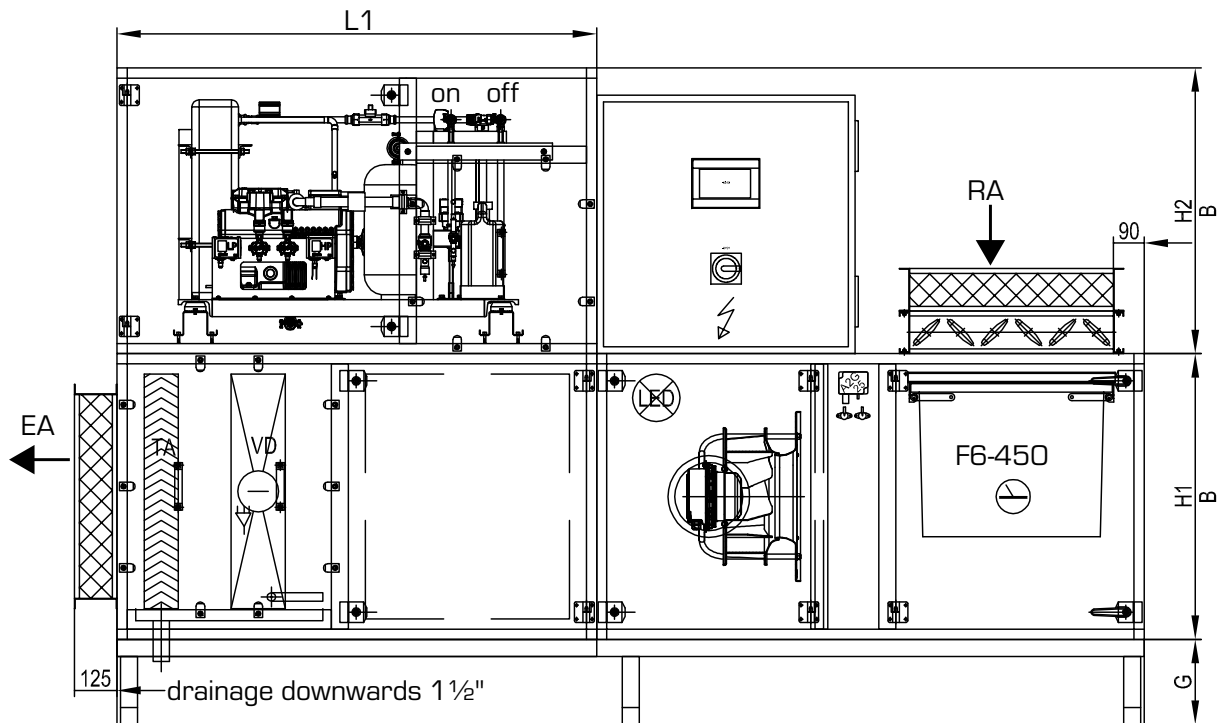
Height of indoor unit console
 Insulation PIR
 Thermal factors housing
 Mechanical factors housing
 Indoor unit

250 mm
 42 / 54 mm
 T2 / TB2
 D1 / L1
 RAL 5012



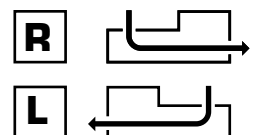
Model superposition L

Dimensional drawing and dimensions



MONOBLOC	DIMENSIONS	NOMINAL AIR VOLUME	TOTAL HEIGHT	LENGTH	WEIGHT	GEWICHT
Typ S2	H1/H2 x W [mm]	m ³ /h	H [mm]	L [mm]	L1 [mm]	kg
10 / 10	720 x 720	1500	1440	3020	1410	662
10 / 10s	840 x 840	2000	1680	3020	1410	701
10 / 15	H: 720/H2: 840 x 1080	2500	1560	3020	1410	761
10 / 15s	840 x 1080	3000	1680	3020	1410	806
12 / 15	960 x 1080	4200	1920	3320	1410	880
15 / 15	1080 x 1080	4800	2160	3470	1410	963
10 / 20	840 x 1440	5000	1680	3120	1410	969
12 / 20	960 x 1440	6000	1920	3420	1410	1074
15 / 20	1080 x 1440	7000	2160	3620	1410	1167
15 / 25	1080 x 1800	8500	2160	3620	1410	1399
20 / 20	1440 x 1440	10'000	2880	4070	1510	1519

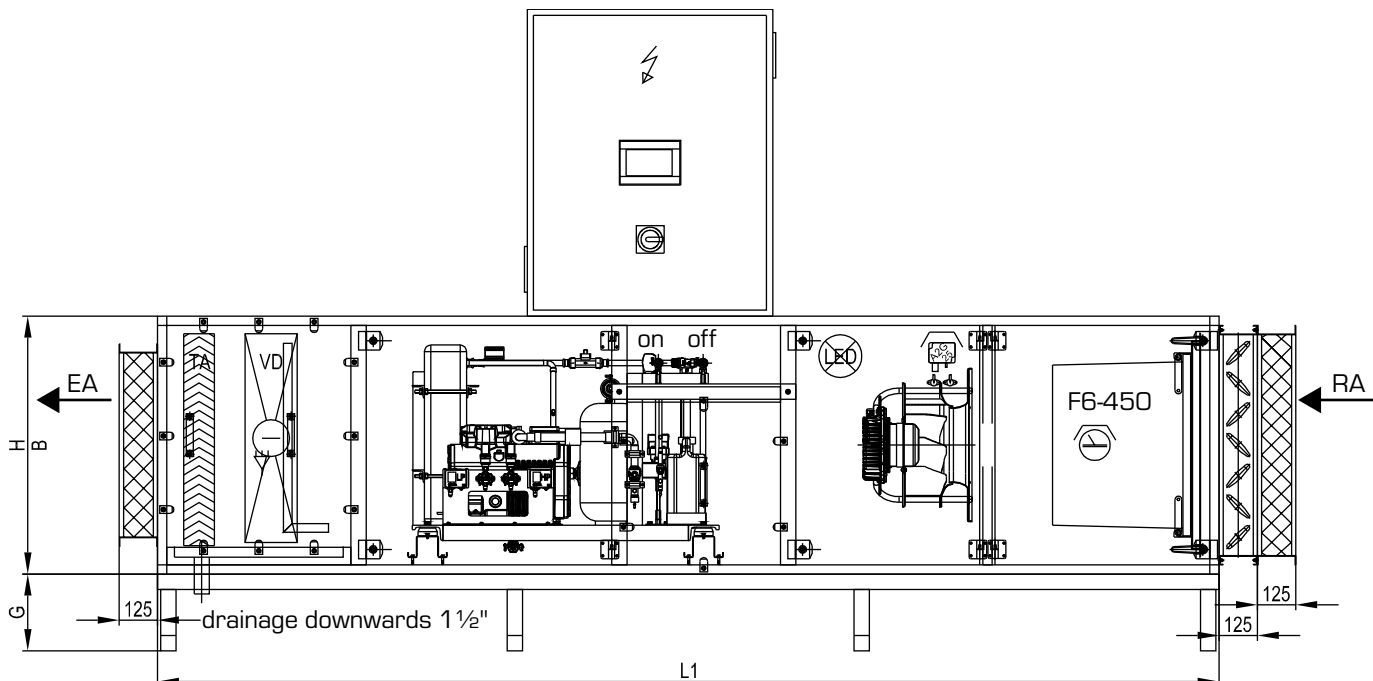
Height of indoor unit console 250 mm
 Insulation PIR 42 / 54 mm
 Thermal factors housing T2 / TB2
 Mechanical factors housing D1 / L1
 Indoor unit RAL 5012



Model Horizontal Indoor unit

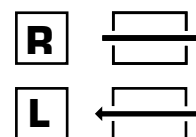
Dimensional drawing and dimensions

Control cabinet mounted (H x W): 1000 x 800 mm



MONOBLOC	DIMENSIONS	NOMINAL AIR VOLUME	LENGTH L1	WEIGHT 1
Type S2	H x W [mm]	m ³ /h	mm	kg
10 / 10	720 x 720	1500	3460	545
10 / 10s	840 x 840	2000	3460	573
10 / 15	720 x 1080	2500	3460	622
10 / 15s	840 x 1080	3000	3460	660
12 / 15	960 x 1080	4200	3460	704
15 / 15	1080 x 1080	4800	3560	776
10 / 20	840 x 1440	5000	3560	795
12 / 20	960 x 1440	6000	3560	866
15 / 20	1080 x 1440	7000	3660	943
15 / 25	1080 x 1800	8500	3660	1136
20 / 20	1440 x 1440	10'000	3860	1232

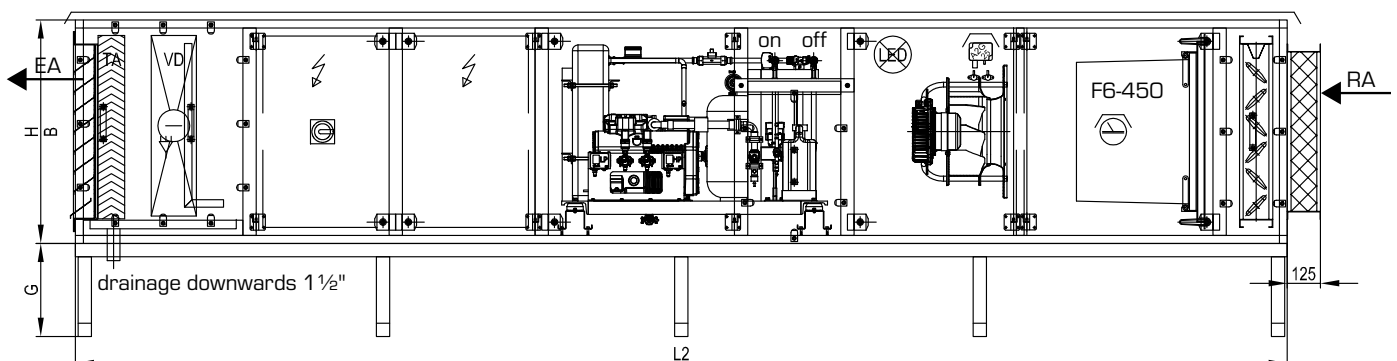
- Console height indoor unit 250 mm
- Console height outdoor unit 350 mm
- PIR insulation 40/35 mm
- Thermal factors - Housing PLSZP1/PLSZN1
- Mechanical factors - Housing PLSZP1/PLSZN1
- Colour of the indoor unit RAL 5012
- Colour of the outdoor unit RAL 7015



Model Horizontal Outdoor unit

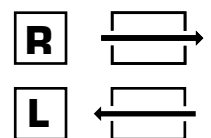
Dimensional drawing and dimensions

Integrated control cabinet incl. Silencer



MONOBLOC	DIMENSIONS	NOMINAL AIR VOLUME	LENGTH L2	WEIGHT 2
Type S2	H x W [mm]	m ³ /h	L2 [mm]	kg
10 / 10	720 x 720	1500	4560	632
10 / 10s	840 x 840	2000	4560	676
10 / 15	720 x 1080	2500	4560	724
10 / 15s	840 x 1080	3000	4560	779
12 / 15	960 x 1080	4200	4560	833
15 / 15	1080 x 1080	4800	4910	931
10 / 20	840 x 1440	5000	4910	961
12 / 20	960 x 1440	6000	4910	1045
15 / 20	1080 x 1440	7000	5010	1132
15 / 25	1080 x 1800	8500	5010	1364
20 / 20	1440 x 1440	10'000	5410	1489

Height of indoor unit console	250 mm
Height of outdoor unit console	350 mm
Insulation PIR	42 / 54 mm
Thermal factors housing	T2 / TB2
Mechanical factors housing	D1 / L1
Colour indoor unit	RAL 5012
Colour of the outdoor unit	RAL 7015



Data sheet

Mountair - Abluftmonoblock											
Typ	S2 10/15 H0840		ca. Gewicht	530 kg		Paneeldicke	42/54 mm		Rahmen	Aluminium roh	
Höhe	840 mm		Höhe Grundrahmen	250 mm		Dämmung	PIR		RAL Rahmen	-	
Breite	1080 mm		verstellbar	+/- 10 mm		Aussen	Blech svz + pv		Anzahl Revisionstüren	3	
Länge	3460 mm		Grundrahmen	verschraubt			RAL 5012		Anzahl Trennstellen	0	
V _{Netto} querschnitt	1.14 m/s		Material	svz		Innen	Blech svz + pv		zusätzliche Schallisolation	nein	
							RAL 5012				

Abluft														
Zone	Volumenstrom [m³/h]		Bezug		Rahmen	Material		Manschette	Material		System	Höhe	Breite	
	3000		20 °C 40 %r.F.		nein			ja	svz		SBM30	720 mm	960 mm	
			°C %r.F.									mm	mm	
	Oktav-Schalleistungspegel, saugseitig		[Hz]		63	125	250	500	1000	2000	4000	8000		
L _{WA, total}	60.9 dBA		[dBA]		30	46	50	53	52	56	55	45		

Klappe										
Hersteller	Zone	Anordnung	Ausführung	Material	Länge	Höhe	Breite	Antrieb	Achse	pro Klappe
Mountair	aussen			Alu	125mm	720mm	960mm	LM24A	innen	8.3 Nm

Luftfilter																	
Fabrikat	Filtertyp		ISO Klasse		Filterrahmen		Aufnahmerahmen		Fläche [m²]	Dp _A [Pa]	Dp _E [Pa]	Dp max					
Unifil	KW7-H-10T		ePM1 70%		Holz		pv		20.0	36	72	250					
610	510	410	305/2	508H	508Q	420H	420Q	305H	305Q	961H	961Q	951H	951Q	941H	941Q	915H	915Q
1					1				Bauart: Tasche		Energy Label 2019: A						

Ventilator mit Direktantrieb													
Hersteller	ebm-papst		Volumenstrom	3000 m³/h		Leistung	0.61 kW		Leistung max.	1.10 kW			
Typ	K3G355-PJ75-01		externer Dp	300 Pa		Strom	1.0 A		Strom max.	1.7 A			
			Gesamtdruck	#BEZUG! Pa		Betriebsfrequenz	50 Hz		Frequenz max.	50 Hz			
Anzahl V.	1st	k	148	Systemwirkungsgrad	66 %		Drehzahlreserve	23 %		Drehzahl max.	2400 min ⁻¹		
Δp _{Düsen} Nenndruck =	411 Pa		Betriebsdrehzahl	1952 min ⁻¹		Nennspannung	3~400 V		SFP 2	0.189 W/(m³/h)			
									Schutzart				
	Oktav-Schalleistungspegel Ventilator		[Hz]		63	125	250	500	1000	2000	4000	8000	
			druckseitig [dB]		62	67	65	69	71	70	69	60	
			saugseitig [dB]		60	67	66	65	62	65	65	56	

Wasser Kondensator		Heizungsbetrieb					
Hersteller	SWEP		Medium 2 Wasser	Medium 1 Freon R134a	Anzahl Platten	30 Stk.	
Typ			Medium eintritt	30.0 °C	T _{Dampf}	63.3 °C	
			Medium austritt	35.0 °C	T _{Kondensator}	40.0 °C	
			Heizleistung	13.2 kW	T _{Unterkühlung}	35.0 °C	
			Volumenstrom	2.286 m³/h	Kälteöl	Oil ISO VG32	
			Druckverlust	19.3 kPa	Massenstrom	242 kg/h	
					VL 1"	RL 1"	
					Nennndruck PN	25 bar	

Kältemaschinensegment		mit integrierter Kältemaschine									
Hersteller	Mountair		Leistung nom.	2.5 kW		Heizleistung	Leistung max.		4.6 kW		
Typ	2DES-3Y-40S		Strom nom.	4.7 A		Min.	6.2 kW		Strom max.	8.6 A	
			Nennspannung	3x400 V		Max.	15.1 kW		Frequenz min.	30 Hz	
			Frequenz	61 Hz		Kühlleistung	Frequenz max.		70 Hz		
			COP	5.19		Min.	5.1 kW		COP nach EN 14511	5.19	
						Max.	12.1 kW				

Verdampfer												
Hersteller	Mountair		Luft Eintritt		20.0 °C	Medium		Freon R134a		Anzahl Rohrreihen	6 RR	30
Typ	AIRSOL®		5.8 g/kg		40 %r.F.	T _{Unter Kühlung}		35.0 °C		Rohrvolumen	11 l	
			Luft Austritt		9.5 °C	T _{Verdampfung}		5.0 °C		Anschlusse	Glatt	
			5.8 g/kg		79 %r.F.	T _{Überhitzung}		12.0 °C		KD 28mm	KK 16mm	
			Kühlleistung		10.7 kW	Kälteöl		Oil ISO VG32		Material WT-Rohre	Cu	
			Kondensatmenge		0 kg/h	Massenstrom		242.1 kg/h		Material Lamellen	Al	
			V _{Netto} Querschnitt		1.6 m/s	dp Kapillaren		47.5 kPa		Nennndruck PN	25 bar	

Tropfenabscheider, ausziehbar										Material Rahmen	V2A(AISI304)	15
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Fortluft												
Zone	Volumenstrom [m³/h]	Bezug		Rahmen	Material	Manschette	Material	System	Höhe	Breite		
	3000	20 °C	40 %r.F.	nein		ja	svz	SBM30	600 mm	840 mm		
		°C	%r.F.							mm		mm
Oktav-Schallleistungspegel, druckseitig		[Hz]		63	125	250	500	1000	2000	4000	8000	
L _{WA, total}	70.0 dBA	[dBA]		33	47	53	61	65	65	63	52	

Request for quotation RecuPAC

Customer

Project manager

Date

Property / Location

Email

System

Phone

Technical specifications

Altitude m. a.s.l. M

Air volume m³/h

External pressure loss Pa

Exhaust air temperature °C

Exhaust air humidity % r. H.

Heating

Output kW

T supply °C

T return flow °C

Pressure loss drain kPa

Installation

Colour Standard inside: RAL5012, blue
 Standard exterior: RAL7015, dark grey

Base frame height mm

Maximum dimensions Length mm

Width mm

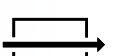
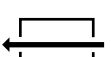
Height mm

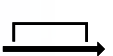
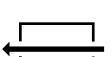
Delivery one-piece: Commissioning in the factory
 multipart: assembly / wiring /
pipework / commissioning on site

Model / Configuration

Superposition (page 6)  

Superposition (page 7)  

Horizontal internal (page 8)  

Horizontal external (page 9)  

Operation

Air volume constant

Pressure constant

Regulierung

"A" Constant supply temperature

"B" Buffer tank / max COP

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