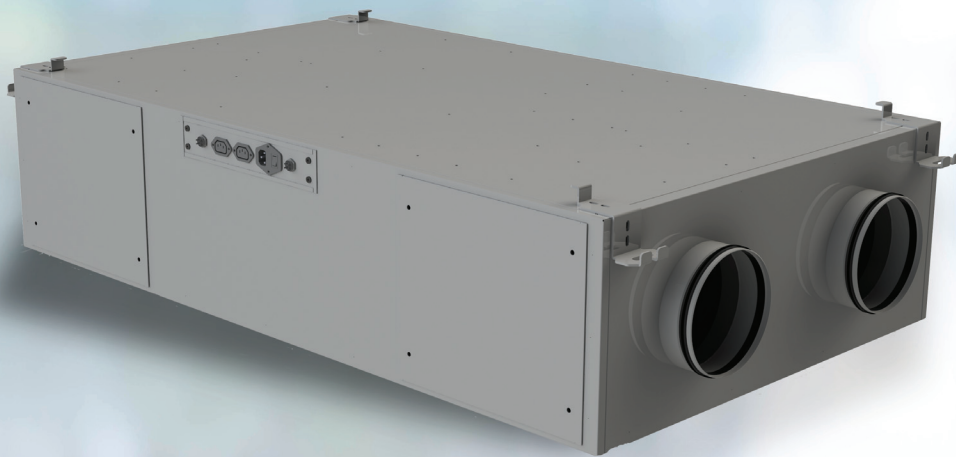


# **BSK BRHR Plus**



## **Commercial Ceiling Type Heat Recovery Units**

[www.bskhavalandirma.com.tr](http://www.bskhavalandirma.com.tr)

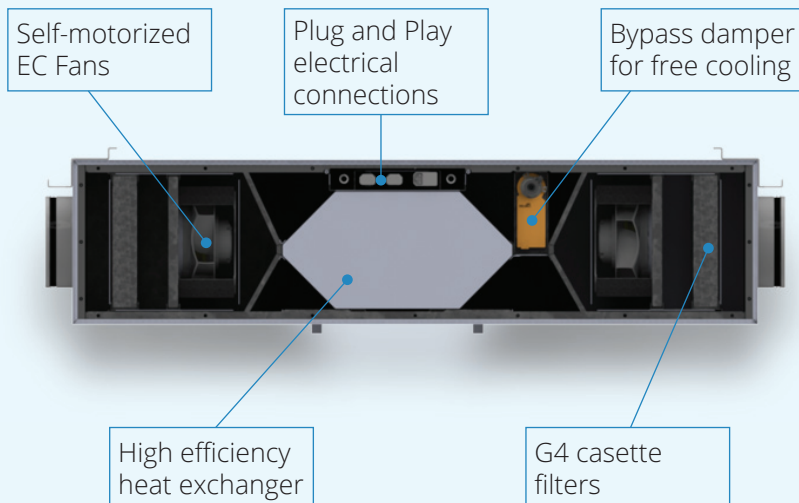




## COMMERCIAL CEILING TYPE HEAT RECOVERY UNITS



Heat recovery units are used to reduce the energy required to heat or cool the buildings. This is done by recovering the residual heat of the exhaust air and transferring it to the supply air by the means of heat exchangers. BSK BRHU Plus units use high thermal efficiency heat exchangers to transfer up to 85% of this heat, back into the ventilation system, significantly improving both the energy efficiency and the air quality of a building.



BRHR Plus range offers coverage from 500 to 4000 m<sup>3</sup>/h across 7 models, designed for commercial applications such as offices and institutions,

Thin, flat profile is perfect for ceiling mounting,

Galvanized steel sheet casing with insulated interior using thermal and acoustic insulation foam for silent operation and maximum efficiency,

Aluminum plated, counter-flow heat exchangers with up to 90% high thermal efficiency,

Self-motorized EC fans with low power consumption and noise levels, and allowing precise % speed control,

G4 grade filters with optional F7 grade upgrades, differential pressure controlled status check for filters,

Easy access side panels to filters and fans for maintenance and repairs,

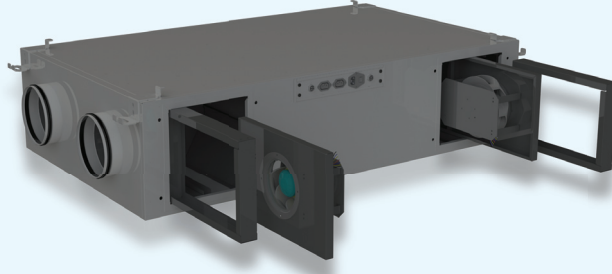
Plug-and-play out of the box, no need to wire internal cables for power or accessories,

Wide range of accessories to choose from, including pre-heater, water heater, electric heater, CO<sub>2</sub> sensor, room humidity sensor, silencers and custom PCBs.

ModBus compatible operation, perfect for building management systems and automatic control,

Extensive control options including free-cooling, boost, and de-frost modes, automated weekly schedules, and temperature or humidity triggered automatic operation.

## OPERATION MODES

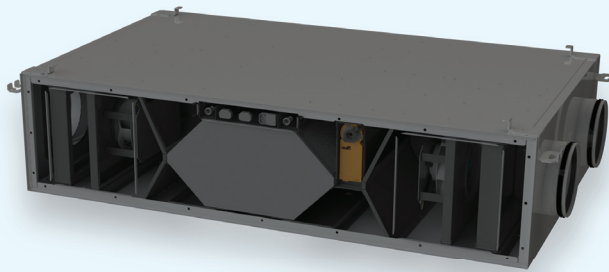


### BOOST MODE

Boost mode makes the BSK Heat Recovery Unit to run at full capacity in order to quickly ventilate the surroundings. This mode can be triggered in various ways. Built-in humidity sensor can detect the humidity level of the returning air and automatically initiate Boost Mode when a set level of humidity is reached to quickly dissipate the moisture to prevent it building up. Alternatively, if an external aspirator is connected to the "boost port" of the device, when the aspirator is turned on, the device also enters Boost Mode to help with the ventilation effort.

### FREE COOLING MODE

On seasonal transitions (spring and autumn) when indoor and outdoor temperature differences are not significant, BSK Heat Recovery Units automatically switch to Free Cooling Mode by opening the built-in bypass vent. The air will pass through this canal without going through the heat exchanger, thus reducing the stress on fans and operate on an even less power. This set temperature can be changed on the digital control panel to a desired level.



### DEFROST MODE

We suggest that you equip a pre-heater for uses below -3°C to avoid freezing inside the unit, however to prevent this from happening when there is no heater attached, our devices automatically enter defrost mode when temperature requirements are not met. Defrost Mode adjusts intake and exhaust air rates to prevent icing and keep the device temperature at a safe level. We strongly advise you to use a pre-heater for climate conditions below -10°C.

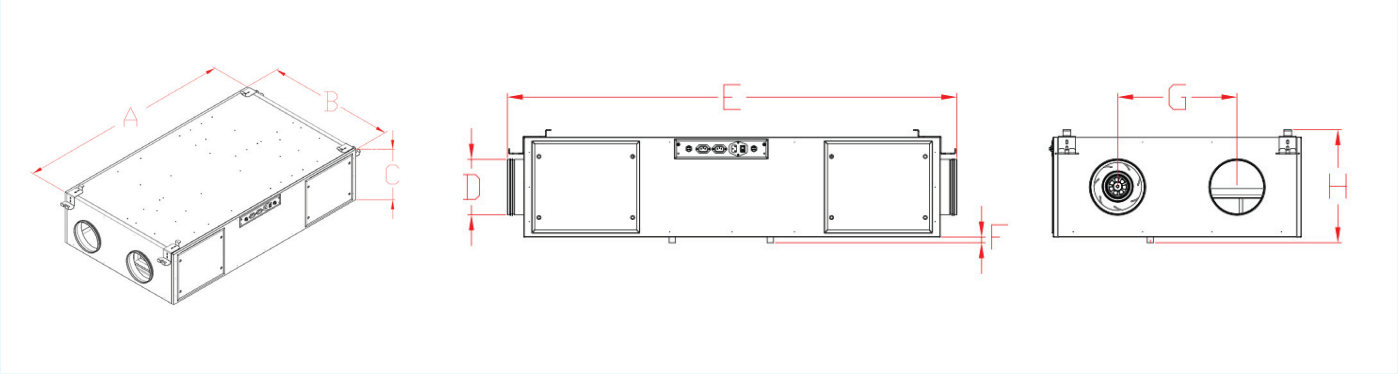
### ModBus COMPATIBLE

BSK Heat Recovery Units use ModBus protocol to connect and communicate with a building management system (BMS). This connection enables the devices to be controlled centrally, report malfunctions or periodic maintenances.

# TECHNICAL SPECIFICATIONS

	Unit	Plus 5	Plus 10	Plus 15	Plus 20	Plus 25	Plus 30	Plus 40
Air Flow	m3/ h	500	1000	1500	2000	2500	3000	4000
Pressure Drop	Pa	150						
Supply Voltage		230V (monophase) 50Hz						
Max Thermal Efficiency	%	85					90	
Heat Exchanger		Hexagonal Aluminum Plated Counter-flow						
Casing type		Galvanized steel sheet						
Fan type		Self-motorized EC fans						
Input Power of Fans	W	105 x 2	240 x 2	300 x 2	370 x 2	480 x 2	605 x 2	790 x 2
Specific Fan Power	W/(m³/s)	750	860	715	670	690	725	715
Filter Class		G4 x 2						
Duct Connection diameter	mm	180	250		300	350		400
Condensation drain	mm	18						
Operating temperatures	°C	-20 to +60						

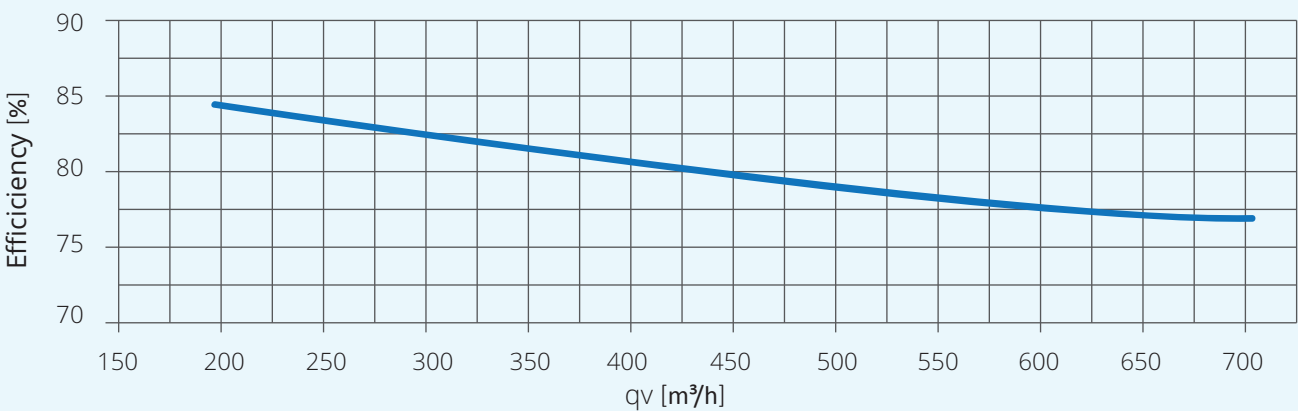
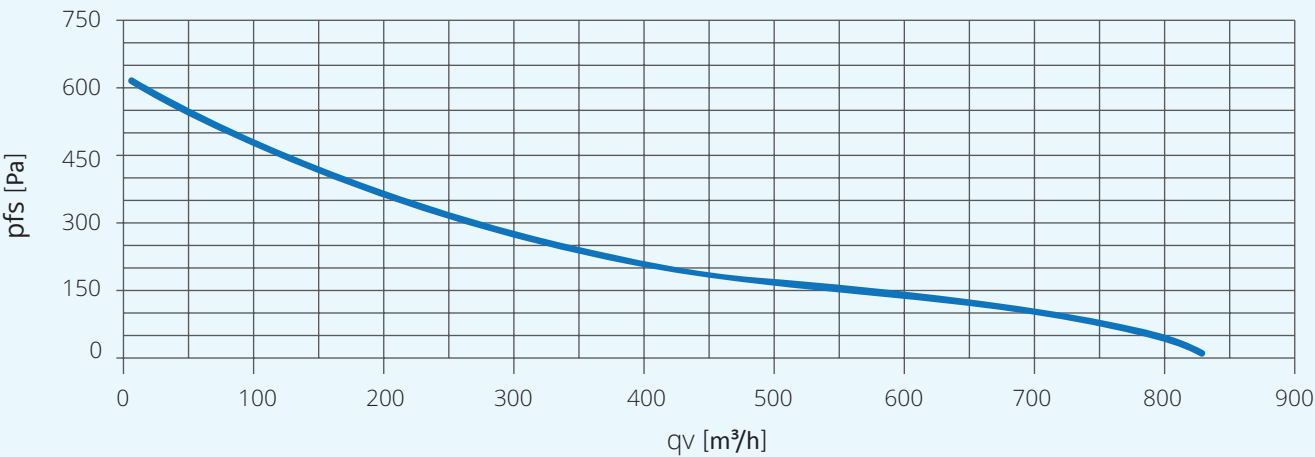
# DIMENSIONS



	A	B	C	D	E	F	G	H
BRHR Plus 5	1355	810	325	180	1465	18	390	367
BRHR Plus 10	1450	1010	380	250	1560	18	490	422
BRHR Plus 15	1500	1250	410	250	1610	18	735	452
BRHR Plus 20	1600	1450	500	300	1710	18	785	542
BRHR Plus 25	1650	1650	500	350	1760	18	810	542
BRHR Plus 30	1800	1650	625	350	1910	18	885	667
BRHR Plus 40	1850	1650	625	400	1910	18	910	667

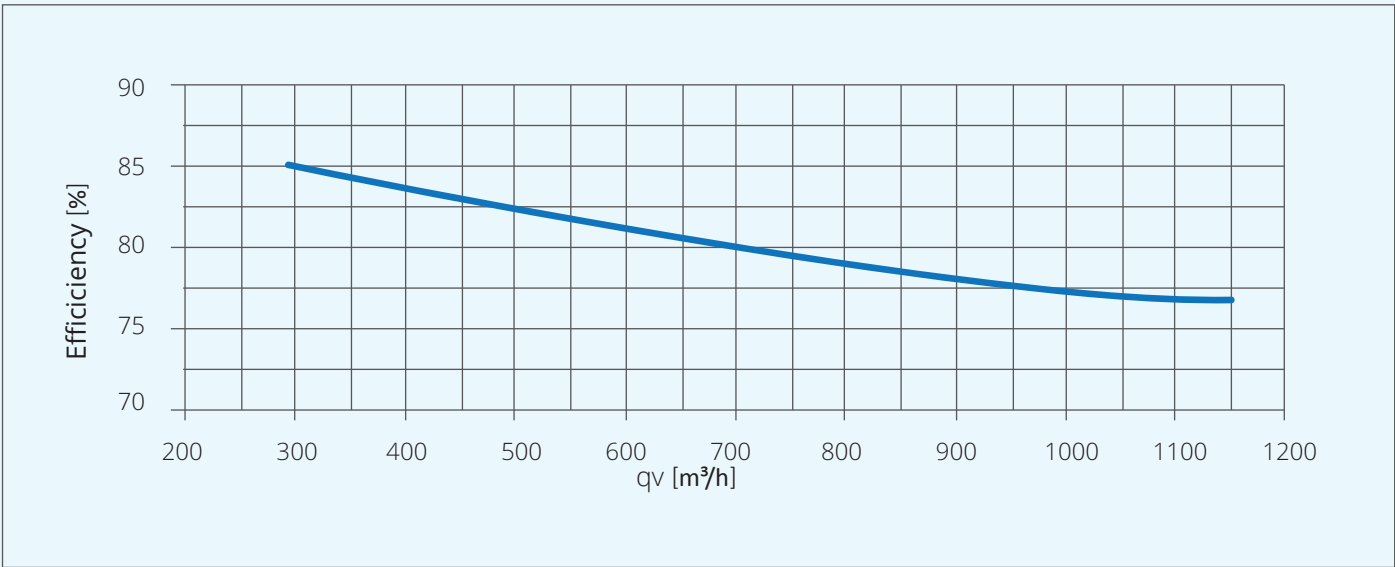
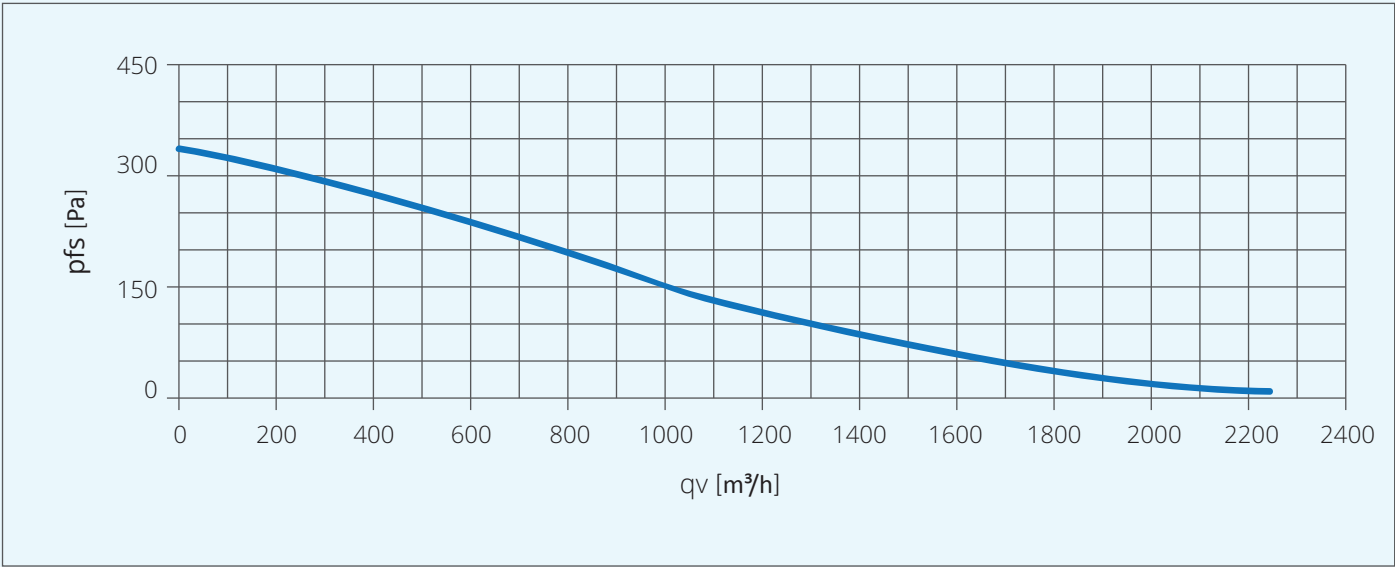
# TECHNICAL GRAPHS

BRHR PLUS 5



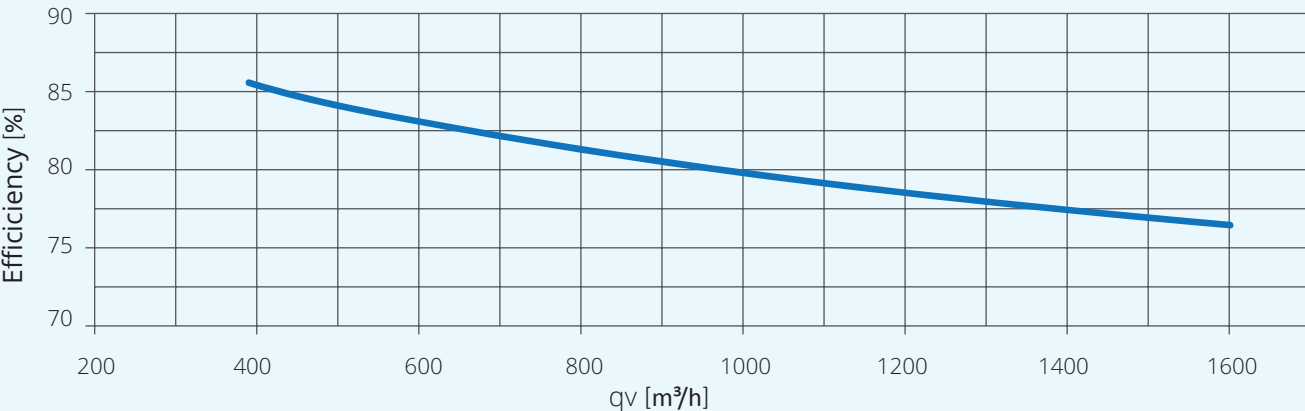
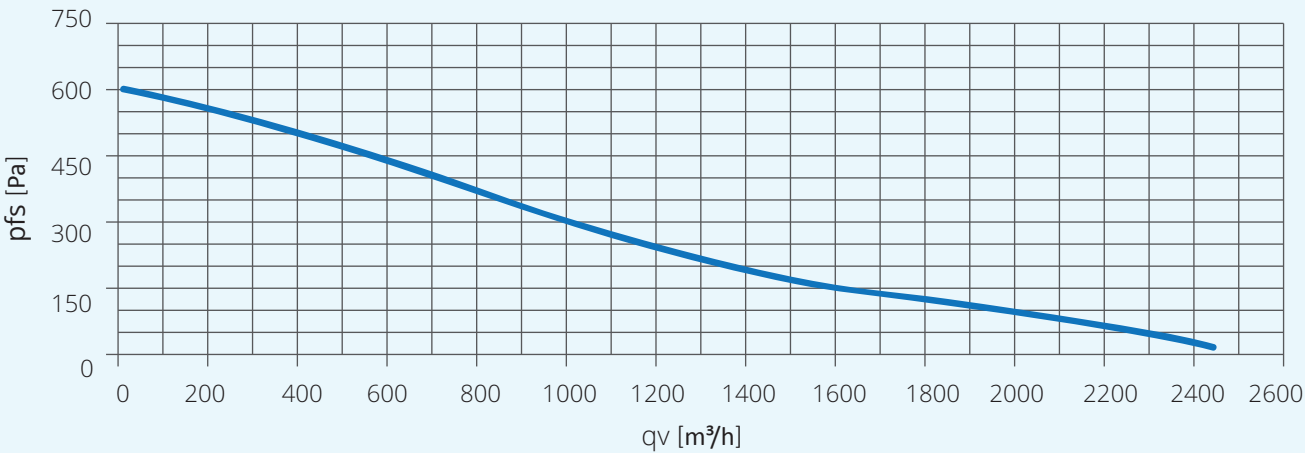
TECHNICAL  
GRAPHS

BRHR PLUS 10



# TECHNICAL GRAPHS

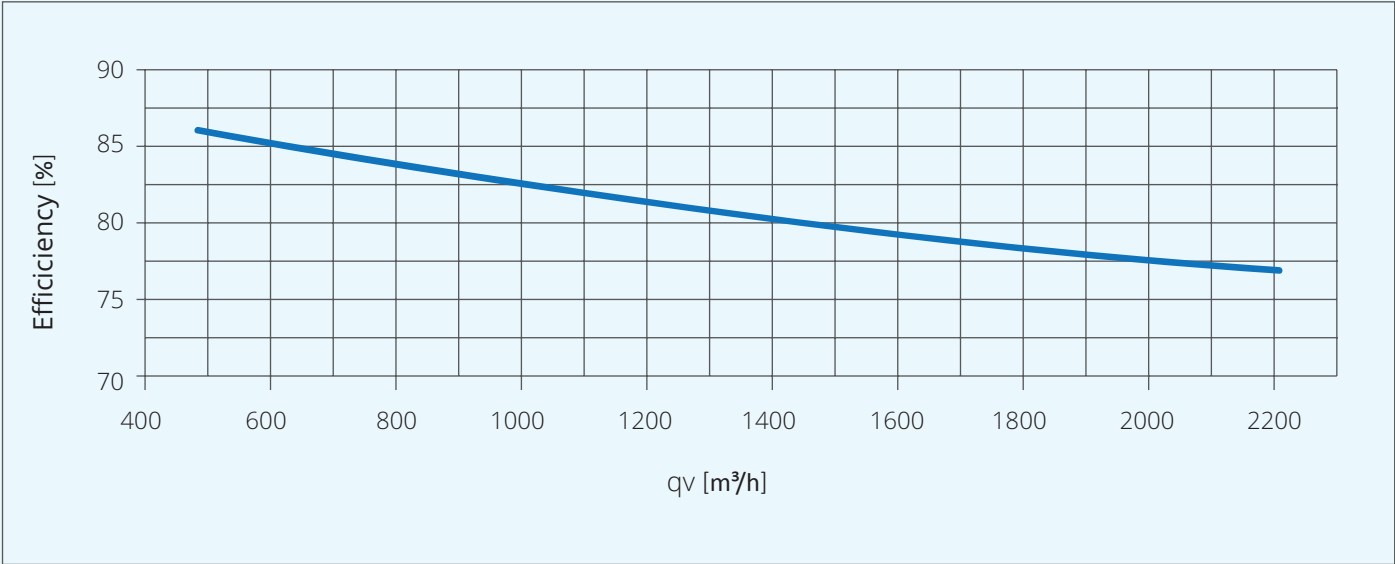
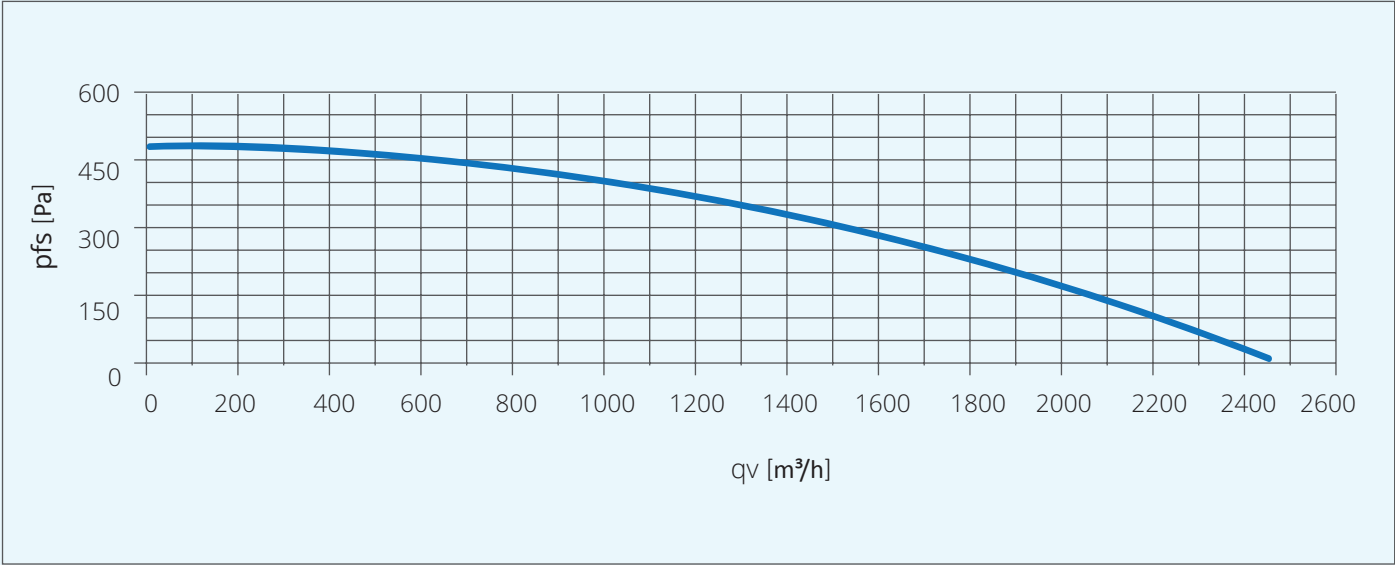
## BRHR PLUS 15





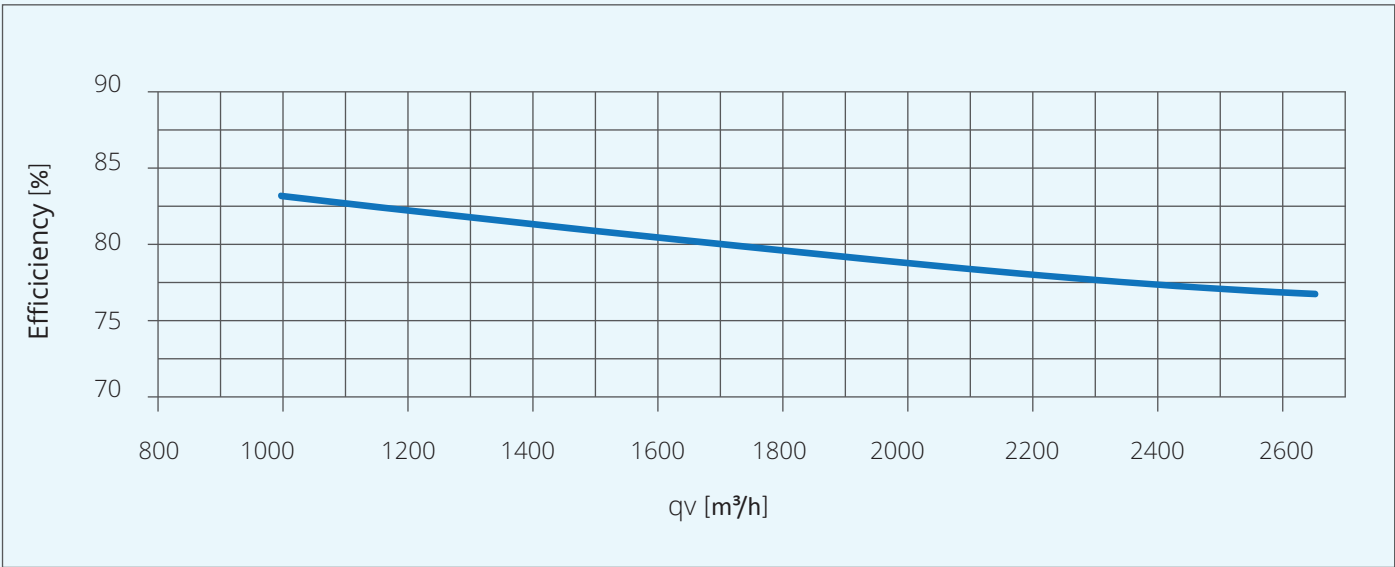
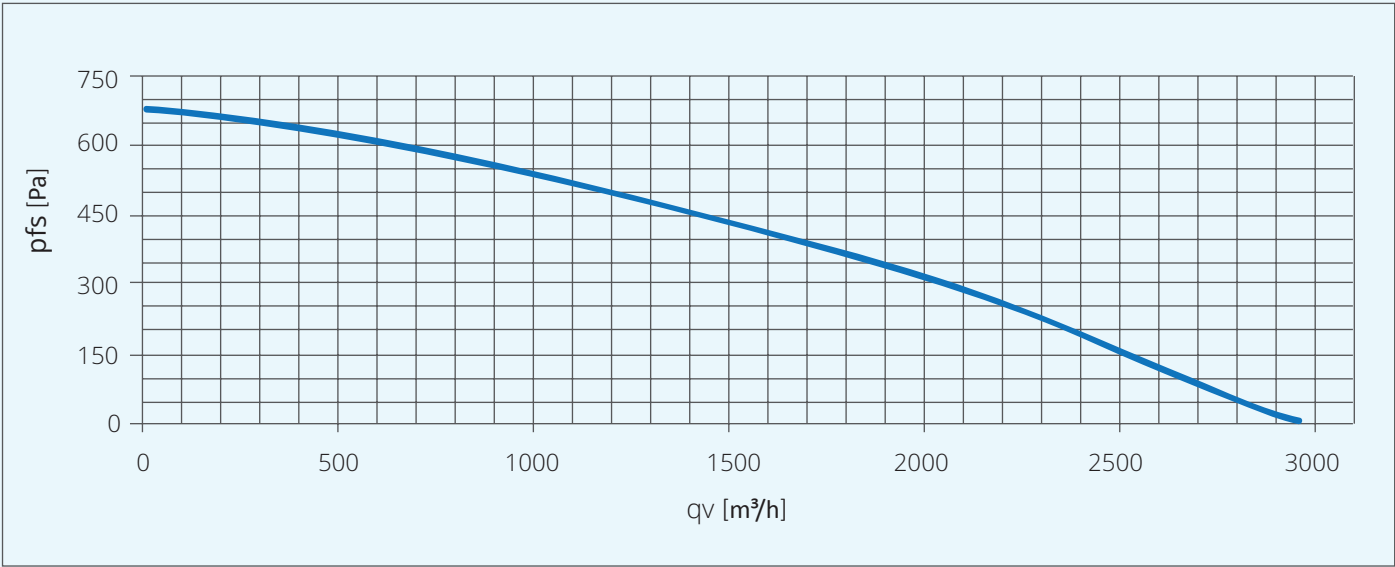
TECHNICAL  
GRAPHS

BRHR PLUS 20



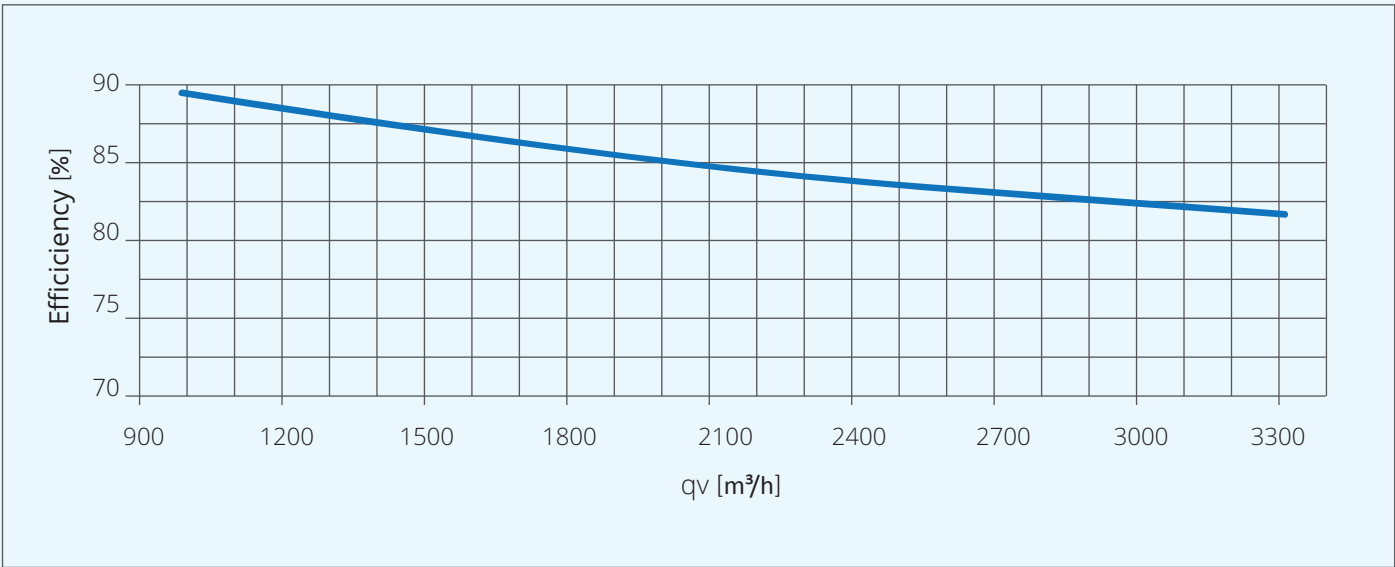
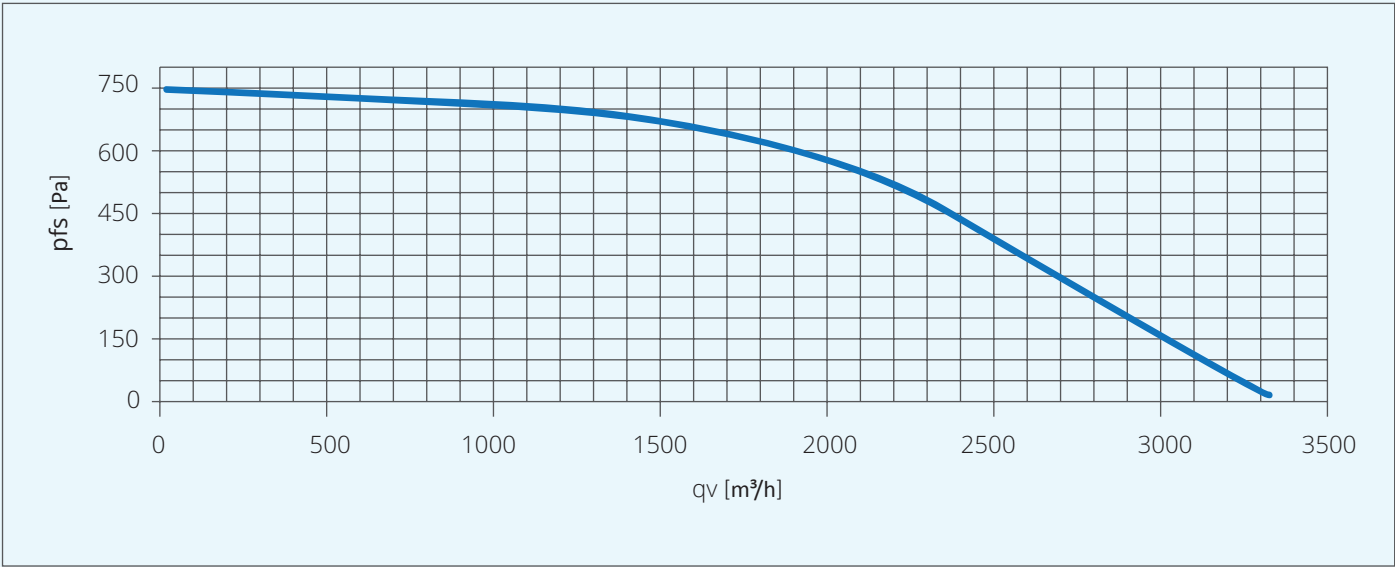
# TECHNICAL GRAPHS

BRHR PLUS 25



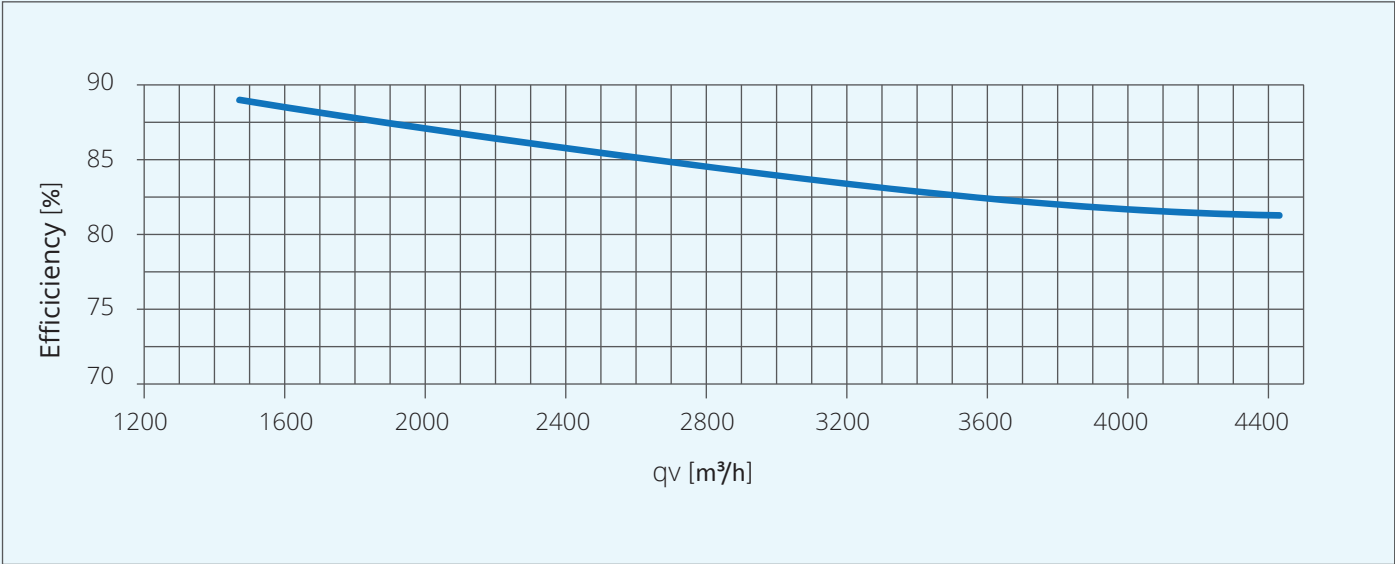
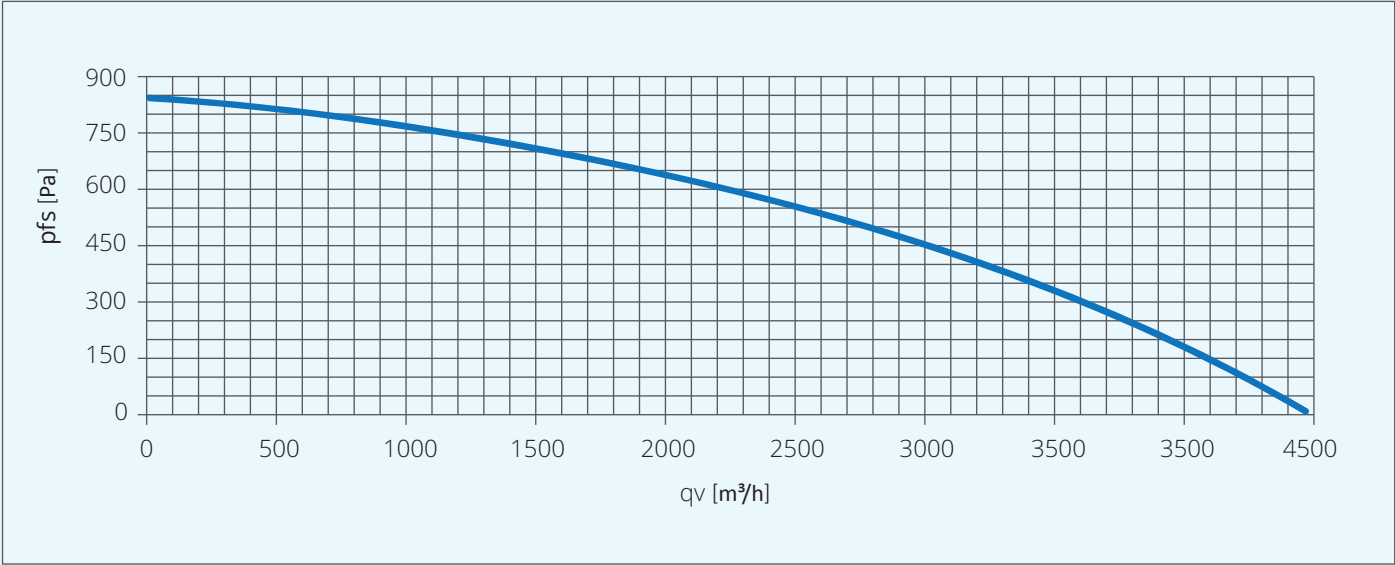
TECHNICAL  
GRAPHS

BRHR PLUS 30



# TECHNICAL GRAPHS

BRHR PLUS 40



## CONTROL FEATURES

BSK heat recovery units can come with different control panel options. Depending on the model you want there may be some functions not available, or different. The manual control panel offers essential features with simple control options. Boost mode and free-cooling mode is automated however the set temperature for free cooling is predefined and cannot be changed by users. Digital control panel offers extended controlling options and supports more accessories to be connected. You can also choose to have a Wi-Fi enabled digital control panel and use our new mobile application to gain access to all the controlling options and can control your device from anywhere.



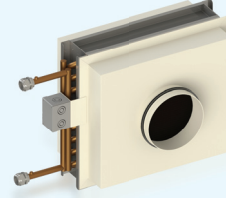
	Manual Control Panel	Digital Control Panel	Mobile Application
Fan level control	•	•	•
Individual Fan control		•	•
Humidity control *	Analog sensor	Digital sensor	Digital sensor
Boost mode	•	•	•
Automatic by-pass damper *	•	•	•
By-pass damper control (on / off)		•	•
F7 Pollen filters *	•	•	•
Filter information (Sensor based) *	Analog sensor	Digital sensor	Digital sensor
Filter information (Time based)		•	•
Fresh air temperature	•	•	•
Return air temperature *		•	•
Pre-heater (on / off) *	•	•	•
Heating coil (on / off) *		•	•
Heating coil (proportional control) *		•	•
Electric after heater		•	•
CO2 control *		•	•
ModBus connection		•	•
Weekly programing		•	•
Wireless control			•
Airflow control *			•
Use statistics			•

“\*” Optional

## ACCESSORIES

### WATER HEATER

Duct type water coils can be equipped, if there is a hot water system present, to the supply air vent in order to further heat the incoming air for a precise control of temperature.

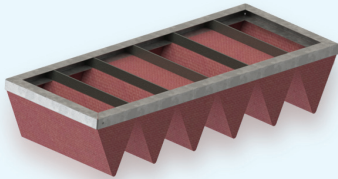


### PRE-HEATER

For subzero weather conditions, an electrical pre-heater should be equipped to prevent ice forming inside the unit. This electrical pre-heater connects to the BSK Heat Recovery Unit's fresh air intake vent and can be controlled from the digital control panel. This electrical heater can also be equipped as an after heater if hot water access is not possible for a water heater.

### CO<sub>2</sub> SENSOR

CO<sub>2</sub> sensor allows automatic control for ventilation rate in crowded venues or houses with fireplaces. When the CO<sub>2</sub> levels rise, the BSK Heat Recovery Unit increases ventilation rate to supply the best air quality.



### F7 FILTER

Standard G2 filters offer good protection against dust and common particles, however additional protection from pollens and other smaller particles may be needed. F7 grade pollen filters are available upon request.

### SILENCER

BSK Heat Recovery Units are designed to be as quiet as possible; however duct type silencer or the flexible silencer can be added to the supply vent to reduce the noise levels even further.



### PLC CONTROLLER

We can add a PLC controller solution for your special use cases when additional control or functions may be needed.

Water Heater		BRHR Plus 5	BRHR Plus 10	BRHR Plus 15	BRHR Plus 20
Water Heater	m <sup>3</sup> /h	500	1000	1500	2000
Inlet Air Temperature	°C	10	10	10	10
Inlet Relative Humd.	%	90	90	90	90
Inlet Water Temperature	°C	90	90	90	90
Coil Capacity	kW	3.6	6.9	10.1	14.4
Coil Air Side Pressure Drop	Pa	16.0	22.0	20.0	18.0
Coil Water Side Pressure Drop	kPa	3.7	17.8	1.7	19.1
Outlet Air Temperature	°C	30.5	29.8	29.3	30.6
Outlet Relative Humd.	%	25.0	26.0	27.1	25.1
Outlet Water Temperature	°C	70.0	70.0	70.0	70.0
Coil Connection Dimension	mm	21.3 / 21.3	21.3 / 21.3	21.3 / 21.3	21.3 / 21.3
Coil Model		25 x 22 3/8 10T 1R 255A 2.1P 1NC	25 x 22 3/8 12T 1R 355A 2.1P 1NC	25 x 22 3/8 14T 1R 530A 1.8P 7NC	25 x 22 3/8 14T 1R 530A 1.8P 7NC

Water Heater		BRHR Plus 25	BRHR Plus 30	BRHR Plus 40
Water Heater	m <sup>3</sup> /h	2500	3000	4000
Inlet Air Temperature	°C	10	10	10
Inlet Relative Humd.	%	90	90	90
Inlet Water Temperature	°C	90	90	90
Coil Capacity	kW	16.7	23.5	30.7
Coil Air Side Pressure Drop	Pa	21.0	42.0	50.0
Coil Water Side Pressure Drop	kPa	7.4	9.5	5.5
Outlet Air Temperature	°C	29.2	32.5	32.0
Outlet Relative Humd.	%	27.3	22.6	23.2
Outlet Water Temperature	°C	70.0	70.0	70.0
Coil Connection Dimension	mm			
Coil Model		25 x 22 3/8 16T 1R 680A 2.1P 4NC	25 x 22 3/8 22T 2R 480A 3.2P 11NC	25 x 22 3/8 22T 2R 580A 3.2P 11NC

Electric Heater		BRHR Plus 5	BRHR Plus 10	BRHR Plus 15	BRHR Plus 20	BRHR Plus 25	BRHR Plus 30	BRHR Plus 40
Electric Heater	m <sup>3</sup> /h	500	1000	1500	1500	2500	3000	4000
Inlet Air Temperature	°C	10	10	10	10	10	10	10
Inlet Relative Humd.	%	90	90	90	90	90	90	90
Coil Capacity	kW	3.6	6.9	10.0	10.0	16.6	23.4	30.5
Coil Air Side Pressure Drop	Pa							
Outlet Air Temperature	°C	30.5	29.8	29.3	29.3	29.2	32.5	32.0
Outlet Relative Humd.	%	28.0	29.3	30.0	30.0	30.4	25.2	25.8

## Unit Code

1. Model	2. Capacity	3. Type	4. Control	5. Bypass	6. Filter FA	7. Filter or rA
BRHR Plus	500	V	D	BY	F7	G4
	500m <sup>3</sup> /h	Vertical Type	Digital Control	With Bypass	F7 filter	G4 filter
	1000	H	M	BN	G4+F7	
	1000m <sup>3</sup> /h	Horizontal Type	Manuel Control	Without Bypass	G4+F7 Filter	
	1500	C				
	1500m <sup>3</sup> /h	Ceiling Type				
	2000					
	2000m <sup>3</sup> /h					
	3000					
	3000m <sup>3</sup> /h					
	4000					
	4000m <sup>3</sup> /h					
Example Code:						
BRHR Plus	500	C	D	BY	F7	G4

## Accessory Codes

1. Model	2. Type	3. Model	4. Size	5. Capacity
BRHR Plus	*A	CO <sub>2</sub>		
	Accessory	CO <sub>2</sub> Sensor		
		PFC	180 - 250 - 300	3.58 - 6.9 - 11.1 - 14.4 -
		Heater	350 - 400 mm	16.7 - 23.5 - 30.7
		WH	180 - 250 - 300	3.56 - 6.85 - 10 - 14.3 -
		Water Heater	350 - 400 mm	16.6 - 23.4 - 30.5
		HS		
		Humidity Sensor		
Example Code:				
BRHR Plus	A	PFC	350	23.5



## NOTES

## NOTES





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