

# PRODUCT SPECIFICATION

## R32 Hydrosplit

### IDU

HN1600MB NK0

### ODU

HU121MRB U30 / HU123MRB U30

HU141MRB U30 / HU143MRB U30

HU161MRB U30 / HU163MRB U30



### Features

- Water pipes connects IDU & ODU
- High energy efficiency (SCOP up to 4.60/A+++)
- Hydronic components built into IDU : water pump, expansion tank, air vent
- Excellent performance at low ambient temperature (100% @ -7°C)
- Wide operation range (ambient : -25 ~ 35°C/water side : 15 ~ 65°C)
- Built-in water flow & pressure sensors to monitor real-time water circuit
- Advanced water pump control (optimal flow rate, fixed capacity, fixed flow rate, fixed ΔT)
- Enhanced 2<sup>nd</sup> circuit control logic
- R32 refrigerant with low GWP
- R1 scroll compressor
- Black Fin heat exchanger
- LG ThinQ
- KEYMARK/EHPA certification/MCS/Eurovent certification

### Model Line-up

Category	Unit	Model Name		
		Capacity (kW)		
		12.0	14.0	16.0
1 Phase Model 220 ~ 240V, 1Ø, 50Hz	Outdoor Unit	HU121MRB U30	HU141MRB U30	HU161MRB U30
	Indoor Unit	HN1600MB NK0		
3 Phase Model 380 ~ 415V, 3Ø, 50Hz	Outdoor Unit	HU123MRB U30	HU143MRB U30	HU163MRB U30
	Indoor Unit	HN1600MB NK0		

### Seasonal Energy

Description		Outdoor Unit	HU121MRB U30 HU123MRB U30	HU141MRB U30 HU143MRB U30	HU161MRB U30 HU163MRB U30	
		Indoor Unit	HN1600MB NK0			
Space Heating (according to EN14825)	Average Climate Water Outlet 35°C	SCOP	-	4.60	4.57	4.55
		Seasonal Space Heating Efficiency (η <sub>s</sub> )	%	181	180	179
		Seasonal Space Heating Eff. Class (A+++ to D scale)	-	A+++	A+++	A+++
	Average Climate Water Outlet 55°C	SCOP	-	3.50	3.47	3.45
		Seasonal Space Heating Efficiency (η <sub>s</sub> )	%	137	136	135
		Seasonal Space Heating Eff. Class (A+++ to D scale)	-	A++	A++	A++

### Nominal Capacity and Nominal Power Input

Description		OAT (DB)	LWT (DB)	Outdoor Unit	HU121MRB U30 HU123MRB U30	HU141MRB U30 HU143MRB U30	HU161MRB U30 HU163MRB U30	
				Indoor Unit	HN1600MB NK0			
Nominal Capacity	Heating	7°C	35°C	kW	12.00	14.00	16.00	
			55°C		11.00	11.50	12.00	
		2°C	35°C		11.00	12.00	13.80	
	Cooling	35°C	18°C		12.00	14.00	16.00	
			7°C		12.00	14.00	16.00	
		7°C	35°C		2.38	2.86	3.33	
Nominal Power Input	Heating	7°C	55°C	kW	3.79	4.04	4.29	
			2°C		35°C	3.01	3.31	3.83
		35°C	18°C		2.53	3.26	4.00	
	Cooling	35°C	7°C		4.44	5.38	6.40	
			7°C		35°C	5.04	4.89	4.80
		7°C	55°C		2.90	2.85	2.80	
COP	Heating	7°C	35°C	W/W	3.65	3.63	3.60	
			2°C		35°C	4.75	4.30	4.00
		35°C	18°C		2.70	2.60	2.50	
EER	Cooling	35°C	7°C		W/W			
			7°C					

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## R32 Hydrosplit

### Product Specification (Outdoor Unit)

Technical Specification			Unit	HU121MRB U30	HU141MRB U30	HU161MRB U30	HU123MRB U30	HU123MRB U30	HU143MRB U30
Operation Range (leaving water)	Heating	Min. - Max.	°CDB	-25 ~ 35					
	Cooling		°C	5 ~ 48					
Compressor	Quantity		EA	1					
	Type		-	Hermetic Sealed Scroll					
Refrigerant	Type		-	R32					
	GWP (global warming potential)		-	675					
	Precharged Amount		g	2,100					
	t-CO <sub>2</sub> eq		-	1,418					
Piping Connections	Water Circuit	Inlet	mm (inch)	Male PT 25.4(1)					
		Outlet	mm (inch)	Male PT 25.4(1)					
Rated Water Flow Rate (at LWT 35°C)			LPM	34.5	40.3	46.0	34.5	40.3	46.0
Sound Power Level	Heating	Rated	dB(A)	61	62	63	61	62	63
Sound Pressure Level (at 1m)	Heating	Rated	dB(A)	53	54	55	53	54	55
Dimensions	Unit	W x H x D	mm	950 x 1,380 x 330					
Weight	Unit		kg	91.7					
Power Supply	Voltage, Phase, Frequency		V, Ø, Hz	220 ~ 240, 1, 50			280 ~ 415, 3, 50		
	Rated Running Current	Heating	A	10.6	12.7	14.8	3.5	4.2	4.9
		Cooling	A	11.2	14.4	17.7	3.7	4.8	5.9
Recommended Circuit Breaker			A	40			16		
Wiring Connections	Power Supply Cable (included earth, H07RN-F)		mm <sup>2</sup> x cores	6.0 x 3C			2.5 x 5C		

Note

- Due to our policy of innovation some specifications may be changed without notification.
- Wiring cable size must comply with the applicable local and national codes. And "Electric characteristics" chapter should be considered for electrical work and design. Especially the power cable and circuit breaker should be selected in accordance with that.
- Sound power level is measured on the rated condition in the reverberation rooms by ISO 9614 standard. Therefore, these values can be increased owing to ambient conditions during operation. Sound pressure level is converted values from sound power level as per distance.
- Performances are based on the following conditions (It is according to EN14511):  
Interconnected pipe length is standard length and difference of elevation (outdoor - indoor unit) is 0m.
- This product contains fluorinated greenhouse gases.
- Strainer is accessory provided with the outdoor unit.

### Product Specification (Indoor Unit)

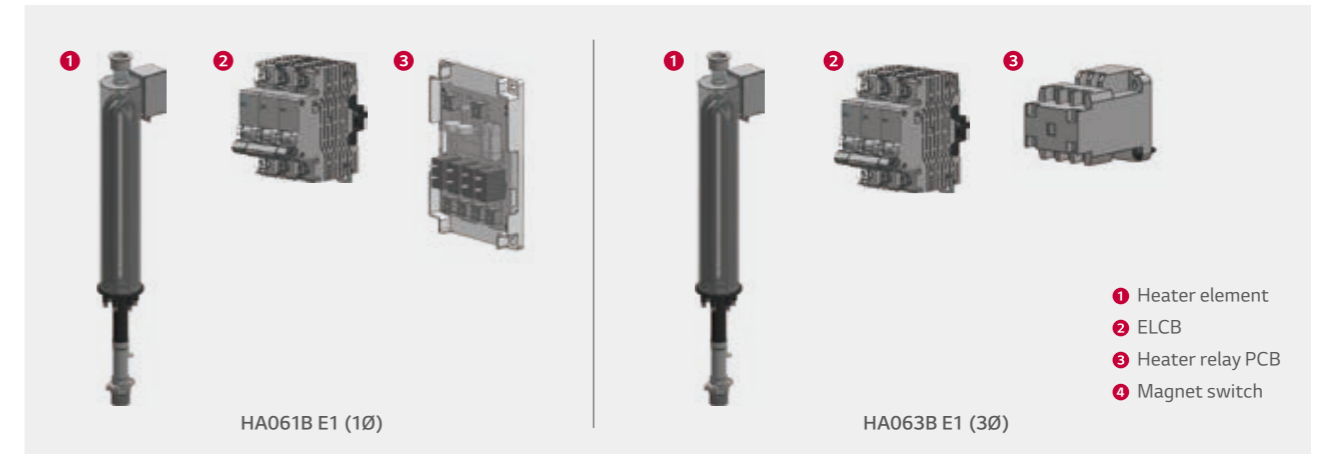
Indoor Unit			Unit	HN1600MB NK0
Operation Range (leaving water)	Heating	Min. - Max.	°C	15 ~ 65
	Cooling	Min. - Max.	°C	5~27 (16~27) <sup>2)</sup>
	DHW <sup>1)</sup>	Min. - Max.	°C	15 ~ 80
Flow Sensor	Measuring Range	Min. - Max.	ℓ/min	5 ~ 80
Water Pressure Sensor	Measuring Range	Min. - Max.	bar(G)	0 ~ 20
Expansion Vessel	Volume		ℓ	8
Safety Valve	Pressure Limit	Upper limit	bar	3
Piping Connections	Water Circuit	Inlet	mm (inch)	Male PT 25.4(1)
		Outlet	mm (inch)	Male PT 25.4(1)
Wiring Connections	Power and Communication Cable (included earth, H07RN-F)		mm <sup>2</sup> x cores	0.75 x 4C
Sound Power Level	Heating	Rated	dB(A)	44
Dimensions	Unit	W x H x D	mm	490 x 850 x 315
Weight	Unit		kg	30.3

1) DHW 58 ~ 80°C operating is available only when the booster heater is operating.

2) When fan coil unit not used.

## Accessory Parts (Optional Accessory)

### Back up Heater<sup>1)</sup>

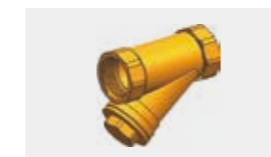


Electrical Specification		HA061B E1	HA063B E1
Back up Heater	Type	-	Sheath
	No. of Heating Coil	EA	2      3
	Max. Power Consumption	kW	3.0 + 3.0      2.0 + 2.0 + 2.0
	Heating Step	Step	2      2
Wiring Connection	Power Supply	V, Ø, Hz	220 ~ 240, 1, 50      380 ~ 415, 3, 50
	Power Cable (included earth, H07RN-F)	mm <sup>2</sup> x cores	4.0 x 3C      2.5 x 4C
	Communication Cable (included earth, H07RN-F)	mm <sup>2</sup> x cores	0.75 x 4C      0.75 x 2C

1) Available from November 2021

## Accessory Parts (Separately Provided)

### Strainer



Technical Specification		Details
Material	Body	Brass
	Mesh	STAINLESS STEEL (STS304)
Mesh Size		30
Connection		PF 1 inch

# PRODUCT SPECIFICATION

## Performance Table for Heating Operation

Maximum Heating Capacity (Including Defrost Effect)

HU121MRB U30 + HN1600MB NKO / HU123MRB U30 + HN1600MB NKO

Outdoor Temperature	LWT 30°C	LWT 35°C	LWT 40°C	LWT 45°C	LWT 50°C	LWT 55°C	LWT 60°C	LWT 65°C
	TC	TC	TC	TC	TC	TC	TC	TC
-25°C DB	9.66	8.85	8.42	8.29	-	-	-	-
-20°C DB	10.13	10.00	9.88	9.75	9.63	-	-	-
-15°C DB	11.50	11.50	11.50	11.50	11.50	11.50	-	-
-7°C DB	12.00	12.00	12.00	12.00	12.00	12.00	12.00	-
-4°C DB	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
-2°C DB	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
2°C DB	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
7°C DB	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
10°C DB	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
15°C DB	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
18°C DB	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
20°C DB	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
35°C DB	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00

HU141MRB U30 + HN1600MB NKO / HU143MRB U30 + HN1600MB NKO

Outdoor Temperature	LWT 30°C	LWT 35°C	LWT 40°C	LWT 45°C	LWT 50°C	LWT 55°C	LWT 60°C	LWT 65°C
	TC	TC	TC	TC	TC	TC	TC	TC
-25°C DB	10.04	9.21	8.76	8.62	-	-	-	-
-20°C DB	11.82	11.25	10.95	10.67	10.59	-	-	-
-15°C DB	12.52	12.90	13.26	12.88	12.81	12.63	-	-
-7°C DB	14.00	14.00	14.00	14.00	14.00	14.00	14.00	-
-4°C DB	14.00	14.00	14.00	14.00	14.00	14.00	14.00	14.00
-2°C DB	14.00	14.00	14.00	14.00	14.00	14.00	14.00	14.00
2°C DB	14.00	14.00	14.00	14.00	14.00	14.00	14.00	14.00
7°C DB	14.00	14.00	14.00	14.00	14.00	14.00	14.00	14.00
10°C DB	14.00	14.00	14.00	14.00	14.00	14.00	14.00	14.00
15°C DB	14.00	14.00	14.00	14.00	14.00	14.00	14.00	14.00
18°C DB	14.00	14.00	14.00	14.00	14.00	14.00	14.00	14.00
20°C DB	14.00	14.00	14.00	14.00	14.00	14.00	14.00	14.00
35°C DB	14.00	14.00	14.00	14.00	14.00	14.00	14.00	14.00

HU161MRB U30 + HN1600MB NKO / HU163MRB U30 + HN1600MB NKO

Outdoor Temperature	LWT 30°C	LWT 35°C	LWT 40°C	LWT 45°C	LWT 50°C	LWT 55°C	LWT 60°C	LWT 65°C
	TC	TC	TC	TC	TC	TC	TC	TC
-25°C DB	10.98	10.00	9.50	9.33	-	-	-	-
-20°C DB	13.43	12.54	12.03	11.78	11.47	-	-	-
-15°C DB	14.23	14.39	14.50	13.95	13.86	13.12	-	-
-7°C DB	16.00	16.00	16.00	16.00	16.00	16.00	16.00	-
-4°C DB	16.00	16.00	16.00	16.00	16.00	16.00	16.00	16.00
-2°C DB	16.00	16.00	16.00	16.00	16.00	16.00	16.00	16.00
2°C DB	16.00	16.00	16.00	16.00	16.00	16.00	16.00	16.00
7°C DB	16.00	16.00	16.00	16.00	16.00	16.00	16.00	16.00
10°C DB	16.00	16.00	16.00	16.00	16.00	16.00	16.00	16.00
15°C DB	16.00	16.00	16.00	16.00	16.00	16.00	16.00	16.00
18°C DB	16.00	16.00	16.00	16.00	16.00	16.00	16.00	16.00
20°C DB	16.00	16.00	16.00	16.00	16.00	16.00	16.00	16.00
35°C DB	16.00	16.00	16.00	16.00	16.00	16.00	16.00	16.00

Note

- DB : Dry Bulb Temperature (°C), LWT : Leaving Water Temperature (°C), LPM : Liters Per Minute (ℓ/min), TC : Total Capacity (kW)
- Direct interpolation is permissible. Do not extrapolate.
- Measuring procedure follows EN-14511.
  - Rated values are based on standard conditions and it can be found on specifications.
  - Above table values may not be matched according to installation condition. Except for rated value, the performance is not guaranteed.
  - In accordance with the test standard (or nations), the rating will vary slightly.
- The shaded areas are not guaranteed continuous operation.

## Performance Table for Cooling Operation

Maximum Cooling Capacity

HU121MRB U30 + HN1600MB NKO / HU123MRB U30 + HN1600MB NKO

Outdoor Temperature	LWT 7°C	LWT 10°C	LWT 13°C	LWT 15°C	LWT 18°C	LWT 20°C	LWT 22°C
	TC	TC	TC	TC	TC	TC	TC
10°C DB	12.00	12.00	12.00	12.00	12.00	12.00	12.00
20°C DB	12.00	12.00	12.00	12.00	12.00	12.00	12.00
30°C DB	12.00	12.00	12.00	12.00	12.00	12.00	12.00
35°C DB	12.00	12.00	12.00	12.00	12.00	12.00	12.00
40°C DB	11.75	12.00	12.00	12.00	12.00	12.00	12.00
45°C DB	11.50	12.00	12.00	12.00	12.00	12.00	12.00

HU141MRB U30 + HN1600MB NKO / HU143MRB U30 + HN1600MB NKO

Outdoor Temperature	LWT 7°C	LWT 10°C	LWT 13°C	LWT 15°C	LWT 18°C	LWT 20°C	LWT 22°C
	TC	TC	TC	TC	TC	TC	TC
10°C DB	14.00	14.00	14.00	14.00	14.00	14.00	14.00
20°C DB	14.00	14.00	14.00	14.00	14.00	14.00	14.00
30°C DB	14.00	14.00	14.00	14.00	14.00	14.00	14.00
35°C DB	14.00	14.00	14.00	14.00	14.00	14.00	14.00
40°C DB	13.75	14.00	14.00	14.00	14.00	14.00	14.00
45°C DB	13.50	14.00	14.00	14.00	14.00	14.00	14.00

HU161MRB U30 + HN1600MB NKO / HU163MRB U30 + HN1600MB NKO

Outdoor Temperature	LWT 7°C	LWT 10°C	LWT 13°C	LWT 15°C	LWT 18°C	LWT 20°C	LWT 22°C
	TC	TC	TC	TC	TC	TC	TC
10°C DB	16.00	16.00	16.00	16.00	16.00	16.00	16.00
20°C DB	16.00	16.00	16.00	16.00	16.00	16.00	16.00
30°C DB	16.00	16.00	16.00	16.00	16.00	16.00	16.00
35°C DB	16.00	16.00	16.00	16.00	16.00	16.00	16.00
40°C DB	15.75	16.00	16.00	16.00	16.00	16.00	16.00
45°C DB	15.50	16.00	16.00	16.00	16.00	16.00	16.00

Note

- DB : Dry Bulb Temperature (°C), LWT : Leaving Water Temperature (°C), LPM : Liters Per Minute (ℓ/min), TC : Total Capacity (kW)
- Direct interpolation is permissible. Do not extrapolate.
- Measuring procedure follows EN-14511.
  - Rated values are based on standard conditions and it can be found on specifications.
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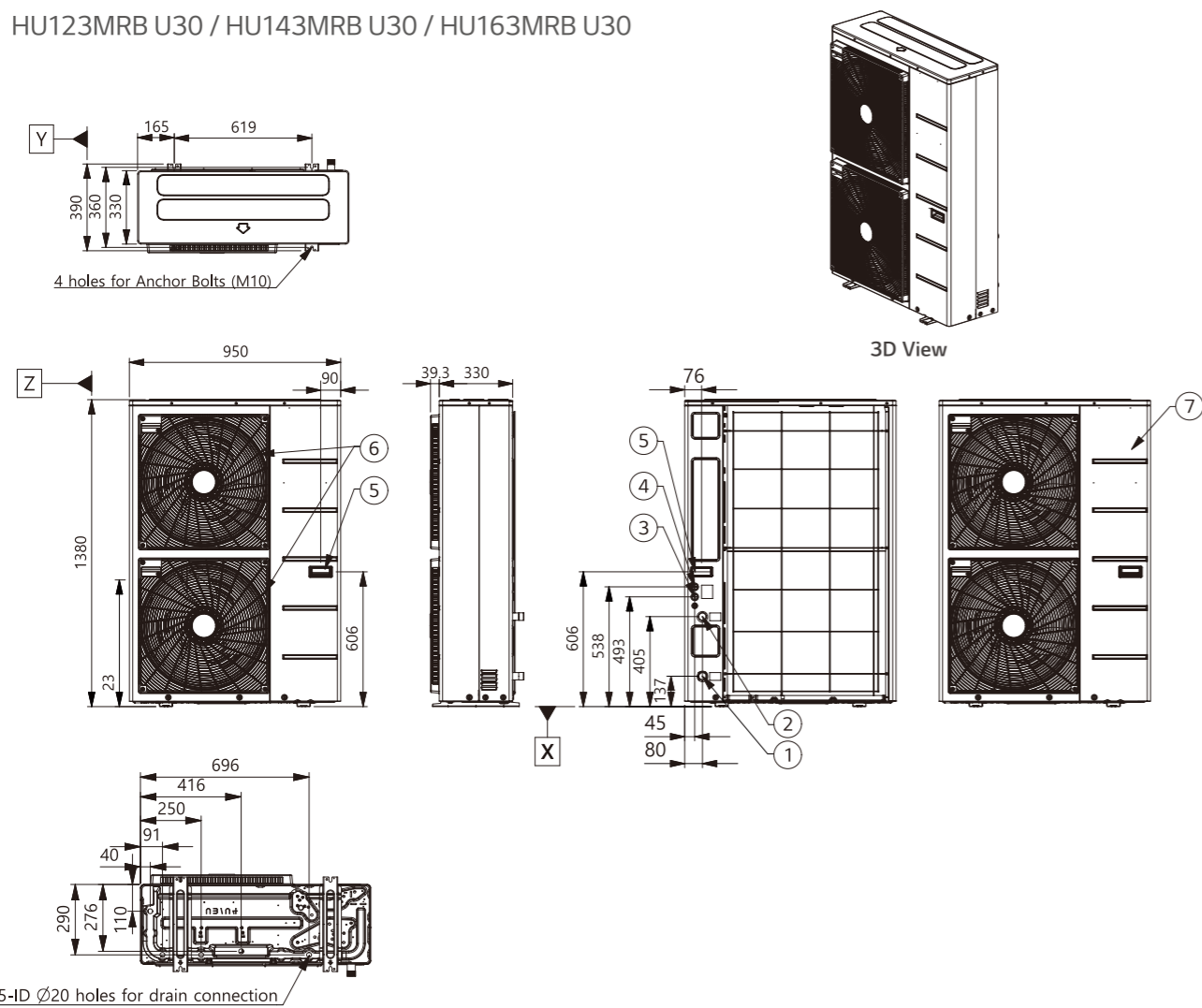
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## Drawings

Category	Unit	Model Name		
		Capacity (kW)		
		12.0	14.0	16.0
1 Phase Model 220 - 240V, 1Ø, 50Hz	Outdoor Unit	HU121MRB U30	HU141MRB U30	HU161MRB U30
	Indoor Unit	HN1600MB NK0		
3 Phase Model 380 - 415V, 3Ø, 50Hz	Outdoor Unit	HU123MRB U30	HU143MRB U30	HU163MRB U30
	Indoor Unit	HN1600MB NK0		

HU121MRB U30 / HU141MRB U30 / HU161MRB U30  
HU123MRB U30 / HU143MRB U30 / HU163MRB U30

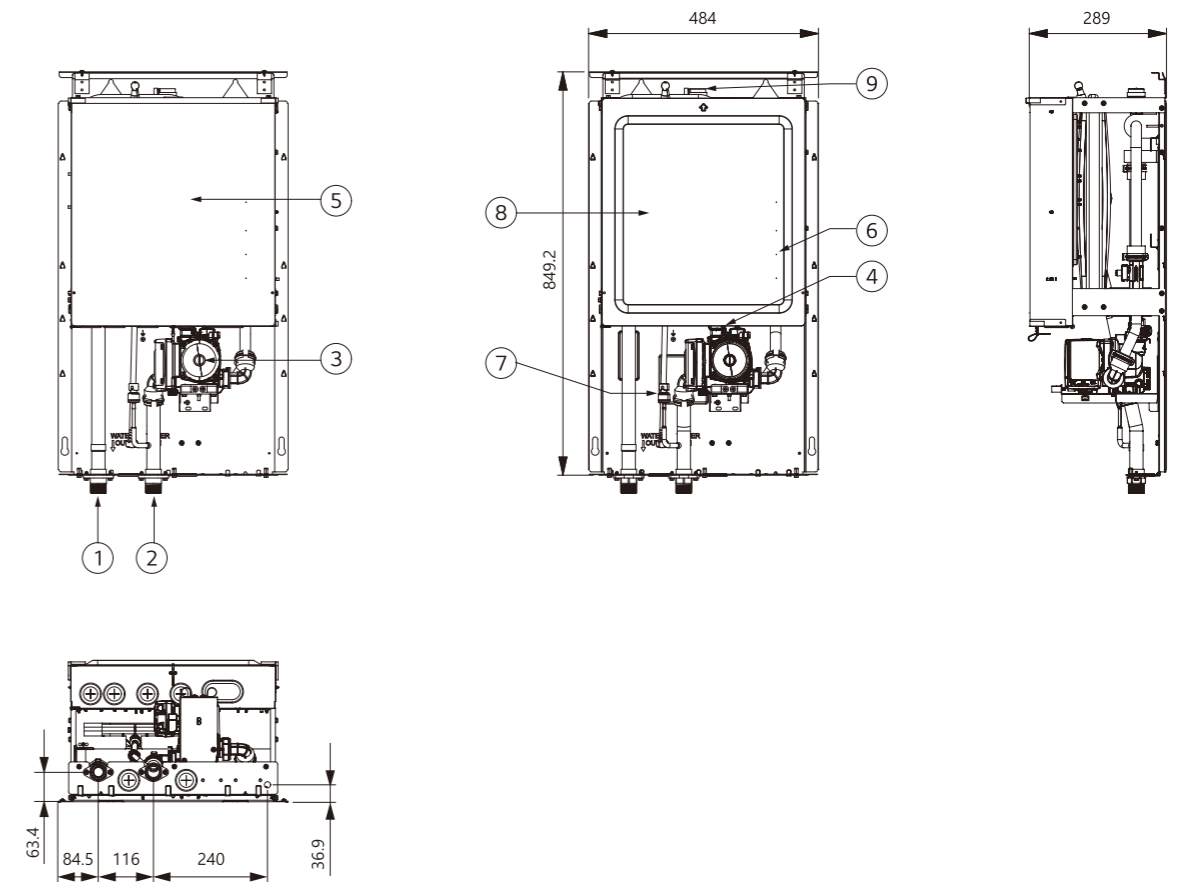
[Unit : mm]



No.	Part Name	Description
1	Entering Water Pipe	Male PT 1 inch
2	Leaving Water Pipe	Male PT 1 inch
3	Unit Power	Power Cable Hole
4	Low Voltage	Communication Cable Hole
5	Handle	-
6	Air Outlet	-
7	Control Box	PCB and terminal blocks

HN1600MB NK0

[Unit : mm]



No.	Part Name	Description
1	Leaving Water Pipe	Male PT 1 inch
2	Entering Water Pipe	Male PT 1 inch
3	Water Pump	GRUNDFOS UPML GEO 20-105 CHBL
4	Safety Valve	Open at water pressure 3 bar
5	Control Box	PCB and Terminal blocks
6	Flow Sensor	SIKA VVX20 5-80 LPM
7	Pressure Sensor	SENSATA 2HMP3-04W 0-2MPa
8	Expansion Tank	Absorbing volume change of heated water
9	Air Vent	Air purging when charging water