



**Inverter EVI Heat Pump Series:  
Efficient and reliable heating and domestic hot water solution**

workable  
-25°C  
outdoor  
temperature



AS10V/L

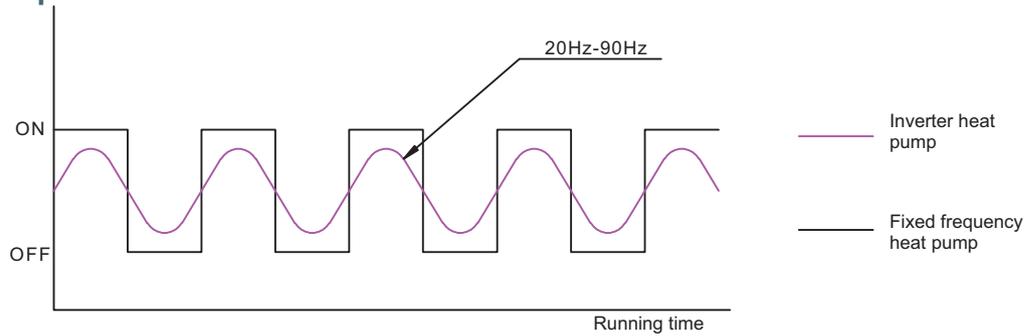


AS20V/L

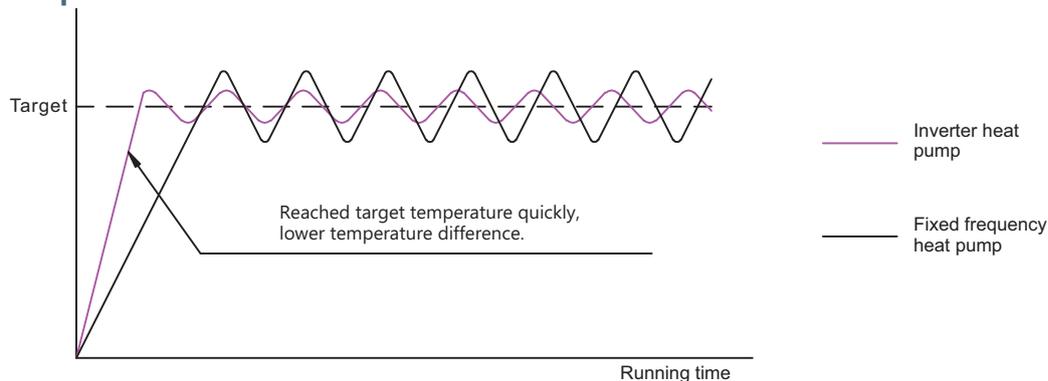
DC inverter EVI heat pump offers a wide heat output . It could adjust heat output automatically according to your house heating requirement . In winter , the inverter compressor and fan motor will runs on high speed to provide more heating when ambient temperature is very low ; If your house need less heating , it will drop running frequency down to 20Hz in which condition the heat pump will consume less electric power .

Heat pump is not just a heating system for new buildings , it can also be integrated into existing buildings that already have heating systems easily . Irrespective of whether you have a gas , oil boiler or solar panels , the heat pump switches on the 2nd heat generator according to demand for keeping lowest heating costs.

## Compressor Control



## Temperature Control



## DC Inverter EVI Heat Pump Advantages:

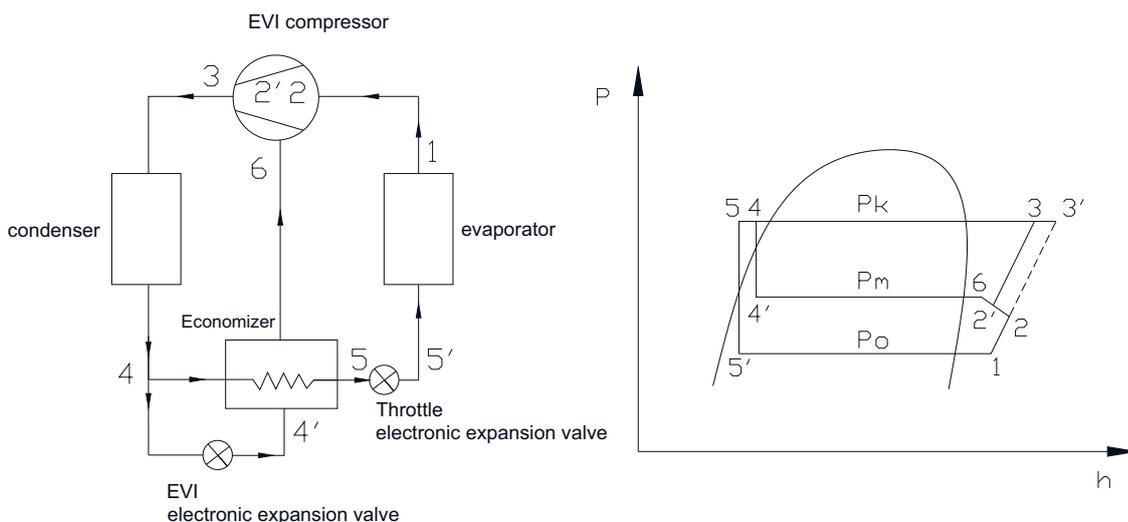
1. Save more than 30% energy than fixed frequency heat pump
2. Soft start to protect your electric network
3. Smooth temperature varies curve
4. Wide heating/cooling output range
5. Can be used in combination with heat generators such as gas ,oil or solar that existing in buildings
6. Intelligent defrosting by reverse circulation
7. Weather compensation function: heating / cooling curve
8. Heating, cooling and domestic hot water
9. SG Ready.
10. Flow feedback Grundfos circulation pump ,saving water flow switch and displaying water flow rate.
11. Delivers higher capacity at low evaporating temperature thereby better responding to heating requirement thanks to EVI compressor.It also results in less supplementary heating to cover the full heating demand on the coldest days.

# EVI Working principle

The compressor contains two injection inlets on the compression room. the compression process is divided into two section. The compressor becomes two stage compression.



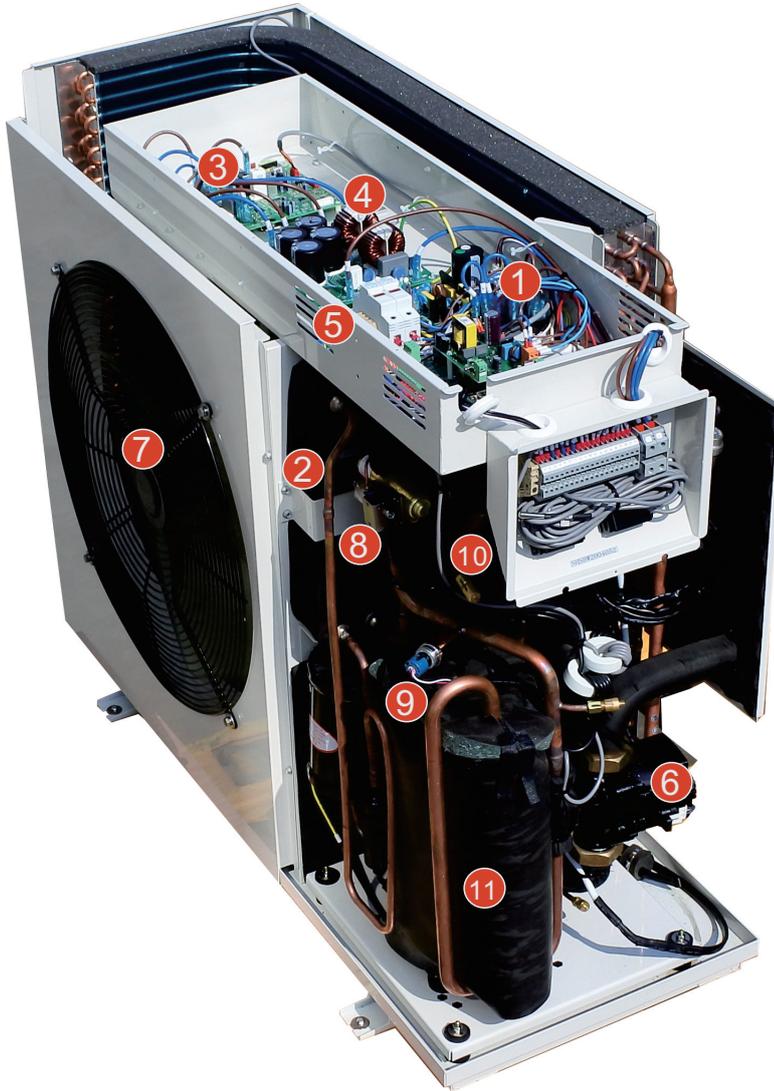
As diagram below, compressor injection – compressing process could be divided into three states.



- 1). Compressor absorb state 1 vapor is compressed into state 2
- 2). State 2 gas in working room is mixed with the injecting gas from injection inlet ,and then injecting, mixing and compressing process goes on at the same time until working room separates from injection inlet. The gas state in working room change to state 2' from state 2 .
- 3). After working room separates from injection inlet, the gas inside is compressed from state 2' to state 3 (3' is normal heat pump).

Heat output increases almost in linear trend following the increase of relative injected gas pressure. When other condition unchanged, the increase of relative injected gas pressure means the increase of quantity of gas injected. Increasing gas injected not only increases gas flow rate in condenser but also increase compressor power consumption. Both of these can increase unit heat output.

## ■ Main Components (AS10V/L)



1 Carel Controller UP3A00200T3S0

2 SWEF Plate Heat Exchanger

3 Sanhua Inverter

4 Sanhua EMC Filter Board

5 Circulation Pump Flow Feedback Board

6 Grundfos Circulation Pump UPM3K 25-75

7 Panasonic EC Fan Motor

8 Sanhua 4 Way Valve

9 High/Low Pressure Transducer

10 Carel Electronic Expansion Valve

11 Highly Twin Rotary EVI Compressor



12

12 Carel PGD1000F00 user interface

## ■ Main Components (AS2oV/L)



1 Carel Controller UP3A00200T3S0

2 SWEF Plate Heat Exchanger

3 Sigriner Step Inverter

4 Sigriner Step EMC Filter Board

5 Circulation Pump Flow Feedback Board

6 Grundfos Circulation Pump UPMXL 25-125

7 Panasonic EC Fan Motor

8 Sanhua 4 Way Valve

9 High/Low Pressure Transducer

10 Carel Electronic Expansion Valve

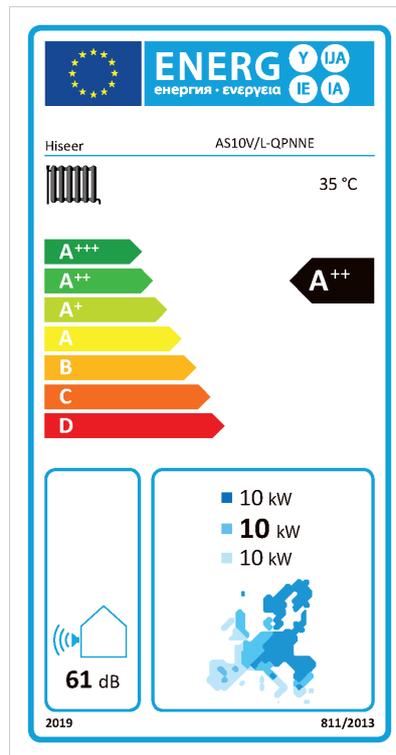
11 Hitachi Scroll Inverter EVI Compressor



12

12 Carel PGD1000F00 user interface

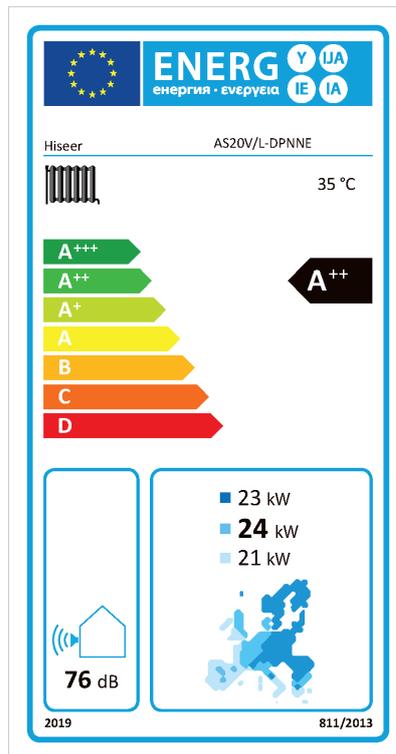
## Energy Label



## Product Fiche

Type	Air to water heat pump	
Model		AS10V/L-QPNNE
Temperature application		35°C
Seasonal space heating energy efficiency class, average climate		A++
Rated heat output ,average climate	[KW]	10
Annual energy consumption , average climate *	[KWh]	4890
Seasonal space heating energy efficiency $\eta_s$ , average climate		172%
SCOP ,average climate		4.38
Sound power level LWA, outdoors	[dB(A)]	61
Rated heat output ,cold climate	[KW]	10
Annual energy consumption , cold climate *	[KWh]	6561
Seasonal space heating energy efficiency $\eta_s$ , cold climate		143%
SCOP ,cold climate		3.64
Rated heat output ,warm climate	[KW]	10
Annual energy consumption , warm climate *	[KWh]	2600
Seasonal space heating energy efficiency $\eta_s$ , warm climate		207%
SCOP ,warm climate		5.24

## Energy Label



## Product Fiche

Type	Air to water heat pump	
Model		AS20V/L-DPNNE
Temperature application		35°C
Seasonal space heating energy efficiency class, average climate		A <sup>++</sup>
Rated heat output ,average climate	[KW]	24
Annual energy consumption , average climate *	[KWh]	11603
Seasonal space heating energy efficiency $\eta_s$ , average climate		167%
SCOP ,average climate		4.25
Sound power level LWA, outdoors	[dB(A)]	76
Rated heat output ,cold climate	[KW]	23
Annual energy consumption , cold climate *	[KWh]	14157
Seasonal space heating energy efficiency $\eta_s$ , cold climate		157%
SCOP ,cold climate		3.99
Rated heat output ,warm climate	[KW]	21
Annual energy consumption , warm climate *	[KWh]	4686
Seasonal space heating energy efficiency $\eta_s$ , warm climate		238%
SCOP ,warm climate		6.02

## ■ Data Sheet

Model Number		AS10V/L		
Heating performance		Min.	Nominal	Max.
Heat output/Power consumption/COP at A7/W35°C	kW	4.09/0.68/6.00	9.60/2.02/4.75	11.56/2.76/4.15
Heat output/Power consumption/COP at A2/W35°C	kW	4.10/0.86/4.51	8.16/2.33/3.50	10.27/2.70/3.80
Heat output/Power consumption/COP at A-7/W35°C	kW	2.87/1.34/2.13	7.44/2.49/2.98	9.05/3.06/2.95
Heat output/Power consumption/COP at A-10/W35°C	kW	2.64/1.35/1.95	7.02/2.53/2.77	8.65/3.22/2.69
Heat output/Power consumption/COP at A-15/W35°C	kW	2.16/1.28/1.67	6.19/2.55/2.42	7.66/3.13/2.45
Heat output/Power consumption/COP at A7/W45°C	kW	3.75/1.00/3.72	9.04/2.43/3.72	10.86/3.25/3.33
Heat output/Power consumption/COP at A2/W45°C	kW	4.19/1.47/2.85	9.13/2.88/3.16	11.55/3.74/3.08
Heat output/Power consumption/COP at A-7/W45°C	kW	3.24/1.81/1.79	7.21/3.12/2.30	8.97/3.88/2.33
Heat output/Power consumption/COP at A-10/W45°C	kW	3.04/1.81/1.68	6.53/3.10/2.11	8.53/3.84/2.22
Heat output/Power consumption/COP at A-15/W45°C	kW	2.65/1.90/1.39	5.88/3.11/1.88	7.57/3.78/1.99
Heat output/Power consumption/COP at A7/W55°C	kW	3.19/1.21/2.62	10.07/3.58/2.81	10.52/3.72/2.81
Cool output/Power consumption/EER at A35/W7°C	kW	2.62/0.94/2.80	7.16/2.67/2.68	7.28/3.20/2.28
Nominal running current at A7/W35	A	8.78		
Max operating current	A	17.2		
Power Supply		230V/50Hz		
Compressor		Mitsubishi Electric twin rotary		
Condenser		Brazen plate heat exchanger		
Nominal flow heating medium	m <sup>3</sup> /h	1.68		
Internal pressure drop at nominal flow	kPa	19		
Nominal air flow	m <sup>3</sup> /h	3000		
Nominal fan output	W	110		
Max outlet heating medium temperature	°C	55		
Refrigerant R410A filling weight	kg	2.7		
Dimensions (HxWxD)	mm	877 x 1085 x 420 (with feet 460)		
Pipe connector		G1'		
Net Weight	kg	100		
plywood packing (HxWxD)	mm	1020X1126X506		
Gross weight	kg	122		
Operating ambient temp. range	°C	Heating -25~35		
		DHW -25~43		
		Cooling 10~45		
Sound power level L <sub>WA</sub>	dB(A)	61		

The above data is tested by EN14511. A7/W35°C means air temp. 7°C, outlet water temp. 35°C

The Sound power level is tested by EN12102

## ■ Data Sheet

Model Number		AS20V/L		
Heating performance		Min.	Nominal	Max.
Heat output/Power consumption/COP at A7/W35°C	kW	10.00/1.78/5.56	21.00/5.00/4.20	23.20/6.56/3.54
Heat output/Power consumption/COP at A2/W35°C	kW	9.54/1.92/4.96	17.77/4.76/3.73	21.11/6.60/3.20
Heat output/Power consumption/COP at A-7/W35°C	kW	7.23/2.12/3.41	17.59/5.48/3.21	21.60/7.44/2.91
Heat output/Power consumption/COP at A-10/W35°C	kW	6.14/2.20/2.79	13.54/4.94/2.74	20.24/7.33/2.78
Heat output/Power consumption/COP at A-15/W35°C	kW	5.39/2.19/2.46	15.77/5.48/2.88	18.49/7.07/2.61
Heat output/Power consumption/COP at A7/W45°C	kW	9.22/2.38/3.88	17.92/5.98/3.01	22.81/8.09/2.82
Heat output/Power consumption/COP at A2/W45°C	kW	8.70/2.59/3.31	19.20/6.83/2.81	23.91/8.81/2.71
Heat output/Power consumption/COP at A-7/W45°C	kW	6.68/2.70/2.47	18.40/7.09/2.58	22.10/9.18/2.41
Heat output/Power consumption/COP at A-10/W45°C	kW	5.74/2.76/2.08	15.99/7.02/2.28	19.75/9.40/2.12
Heat output/Power consumption/COP at A-15/W45°C	kW	5.10/3.04/1.66	16.87/7.18/2.35	18.26/9.05/2.02
Heat output/Power consumption/COP at A7/W55°C	kW	9.15/3.01/3.07	19.44/7.36/2.63	23.34/9.69/2.41
Cool output/Power consumption/EER at A35/W7°C	kW	7.70/2.57/2.99	18.00/6.50/2.77	18.20/9.49/1.92
Nominal running current at A7/W35	A	7.9		
Max operating current	A	18.9		
Max. power consumption	KW	11.8		
Power Supply		380~415V/3Phase/50Hz		
Compressor		Hitachi scoll		
Condenser		Brazed plate heat exchanger		
Nominal flow heating medium	m <sup>3</sup> /h	3.60		
Internal pressure drop at nominal flow	kPa	32		
Nominal air flow	m <sup>3</sup> /h	6000		
Nominal fan output	W	260		
Max outlet heating medium temperature	°C	55		
Refrigerant R410A filling weight	kg	<b>4.8</b>		
Dimensions (HxWxD)	mm	1565X1060X420 (with feet 459)		
Pipe connector		G1' male thread		
Net Weight	kg	170		
plywood packing (HxWxD)	mm	1710X1126X486		
Gross weight	kg	202		
Operating ambient temp. range	°C	Heating -25~35		
		DHW -25~43		
		Cooling 10~45		
Sound power level L <sub>WA</sub>	dB(A)	76		

The above data is tested by EN14511. A7/W35°C means air temp. 7°C, outlet water temp. 35°C

The Sound power level is tested by EN12102

## Rated Speed Performance Curve

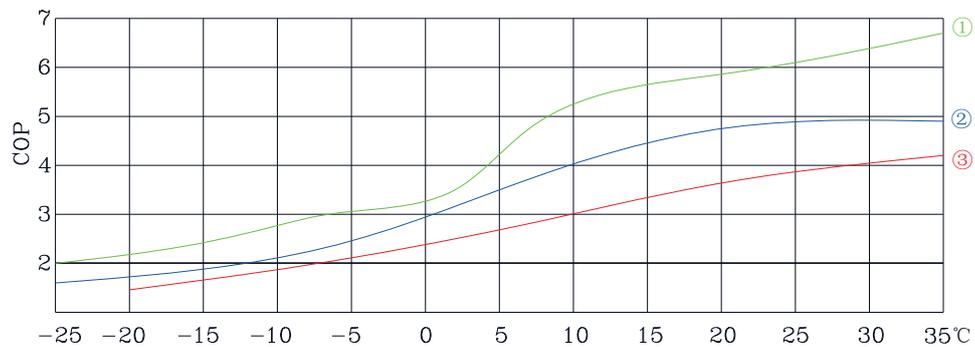
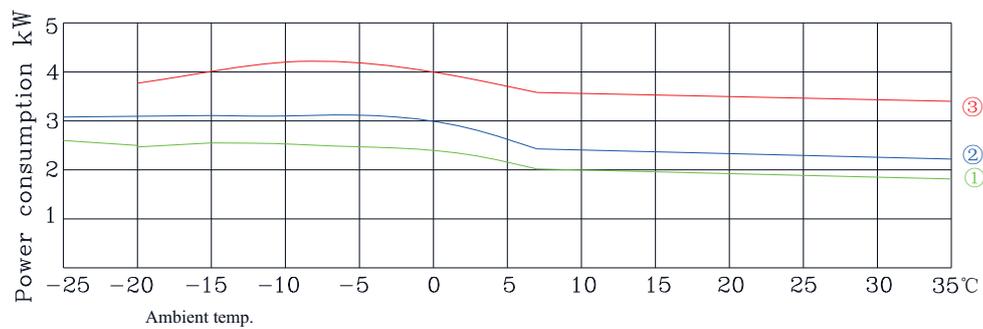
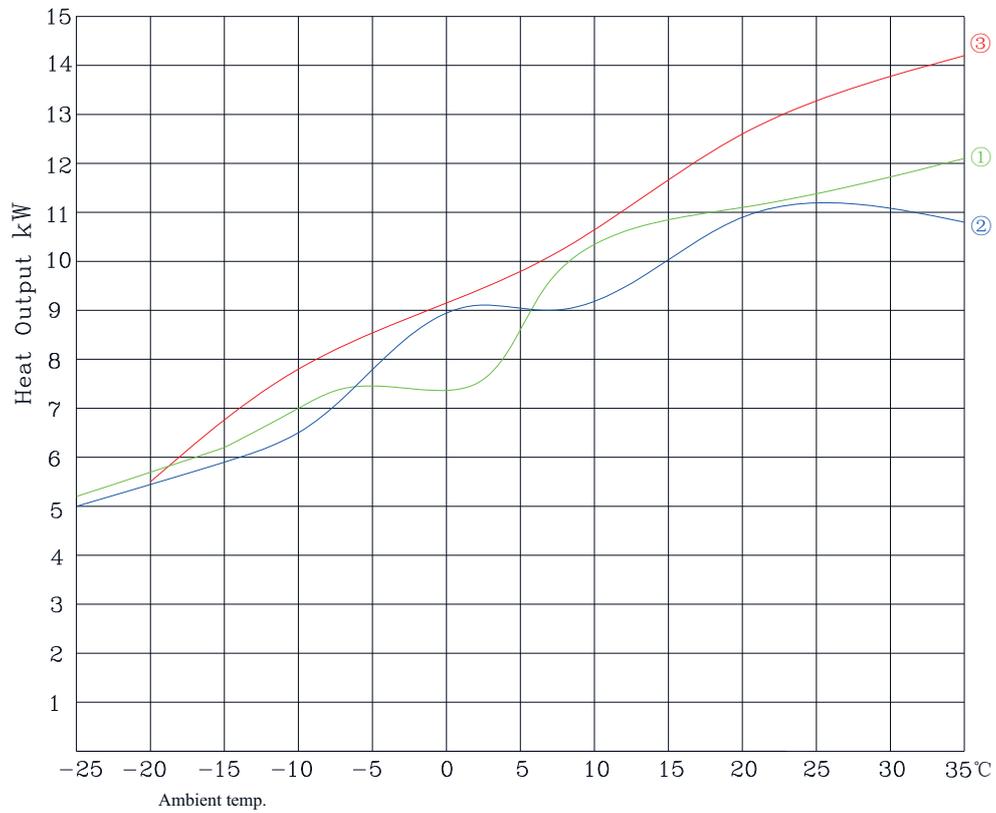
Model:AS10V/L

Heating performance curve

1=Flow temperature 35°C Full load

2=Flow temperature 45°C Full load

3=Flow temperature 55°C Full load

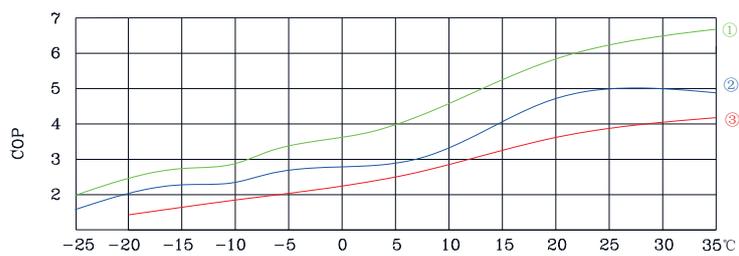
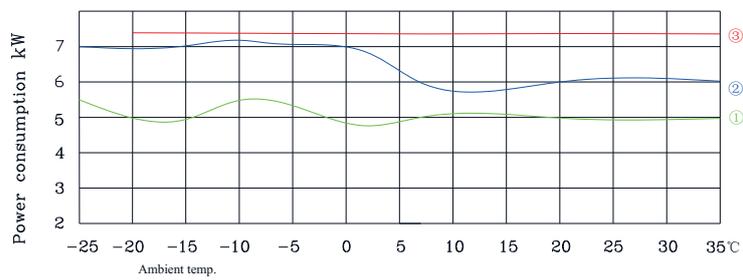
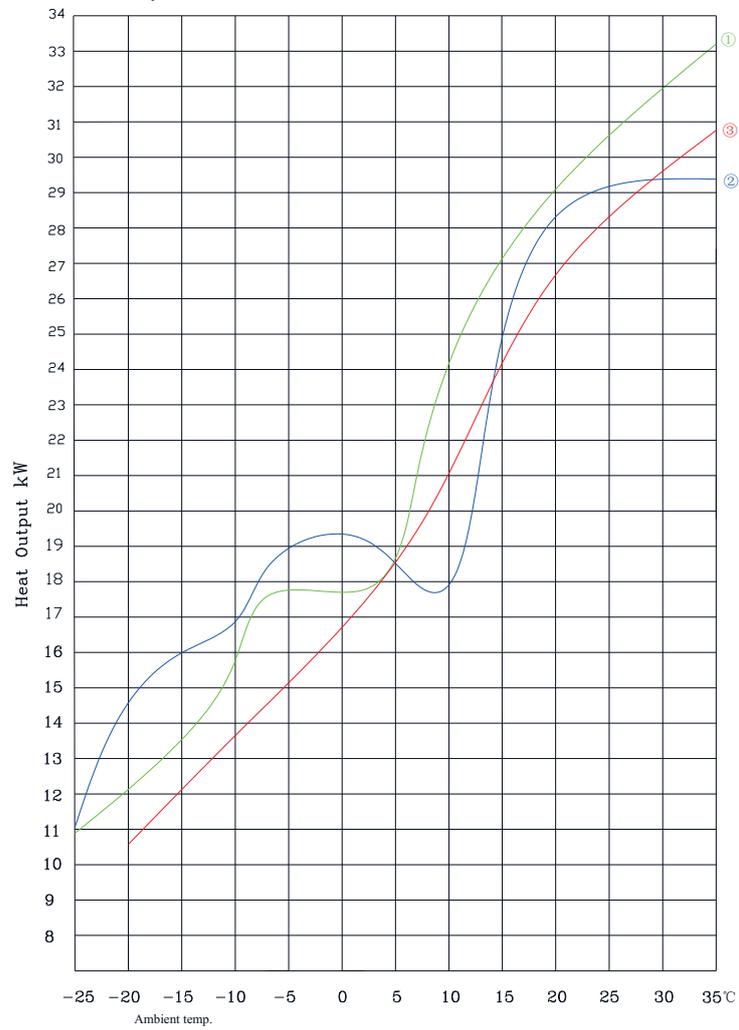


# Rated Speed Performance Curve

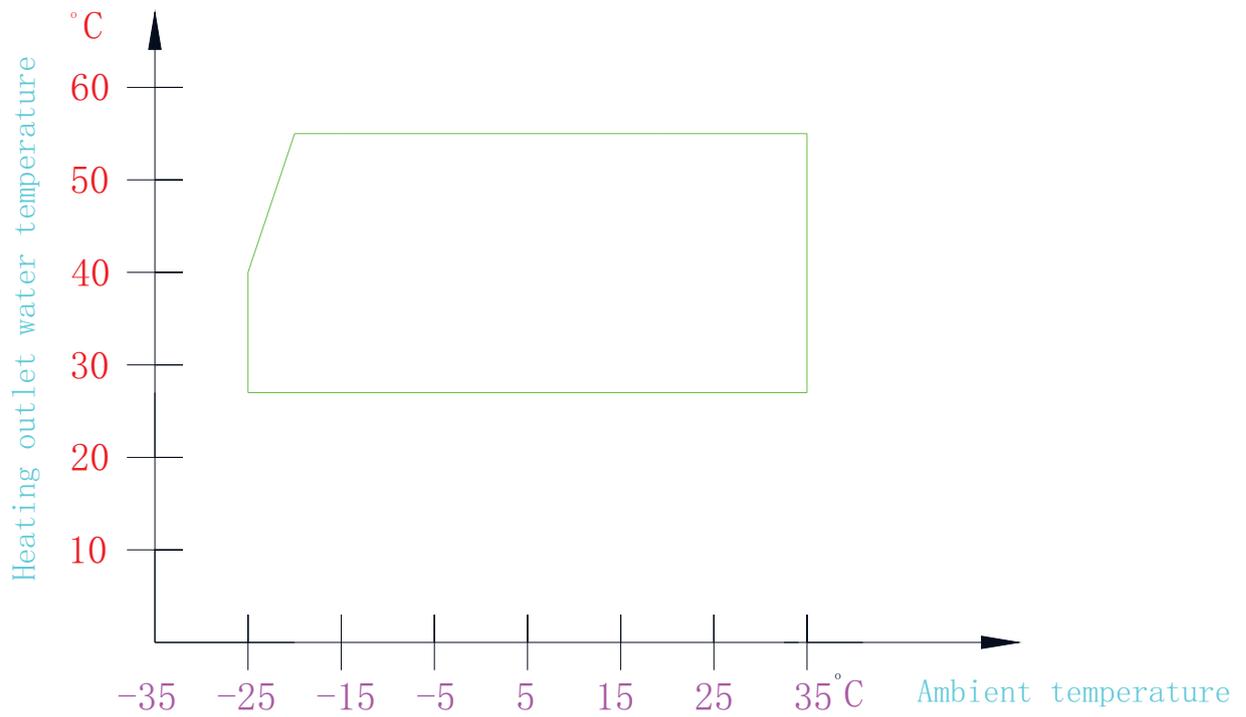
Model: AS20V/L

Heating performance curve

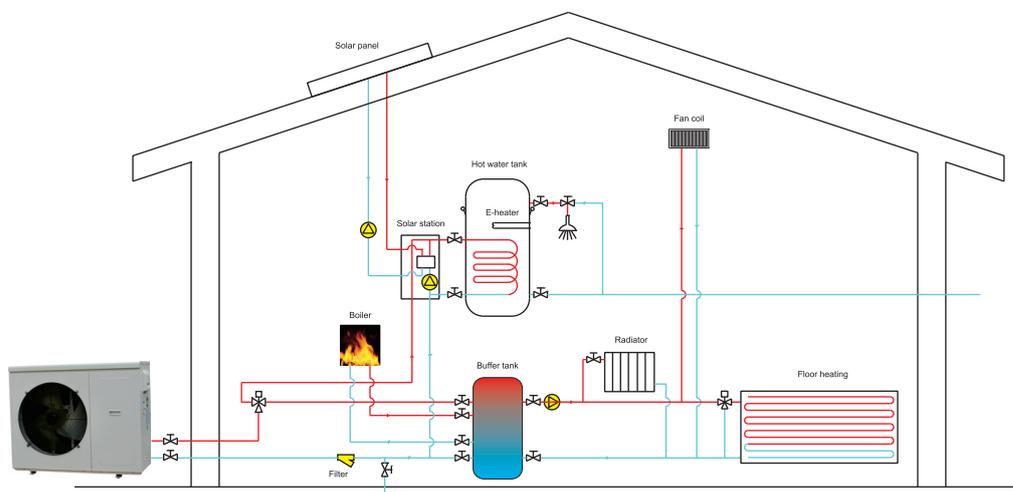
1=Flow temperature 35°C Full load  
 2=Flow temperature 45°C Full load  
 3=Flow temperature 55°C Full load



## Workable Range

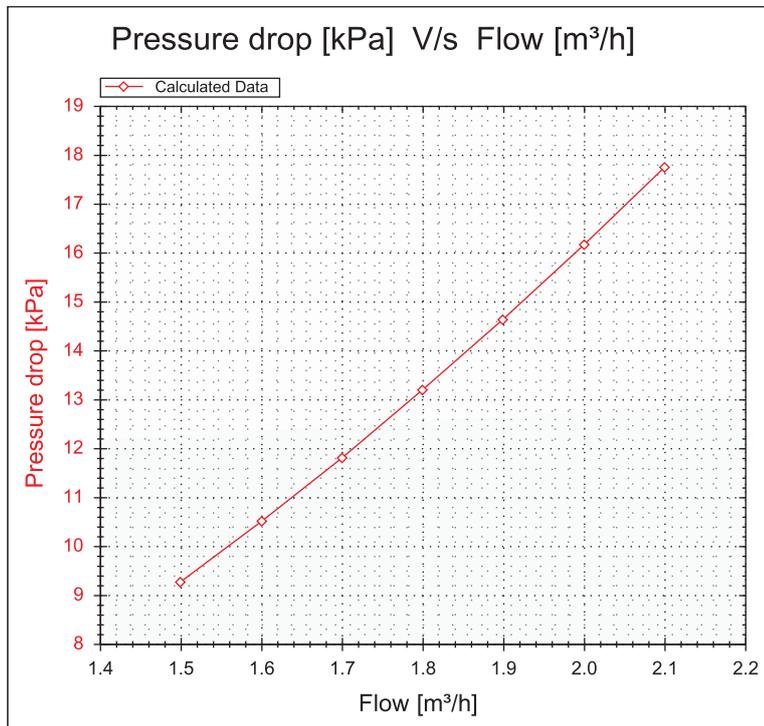


## Typical application

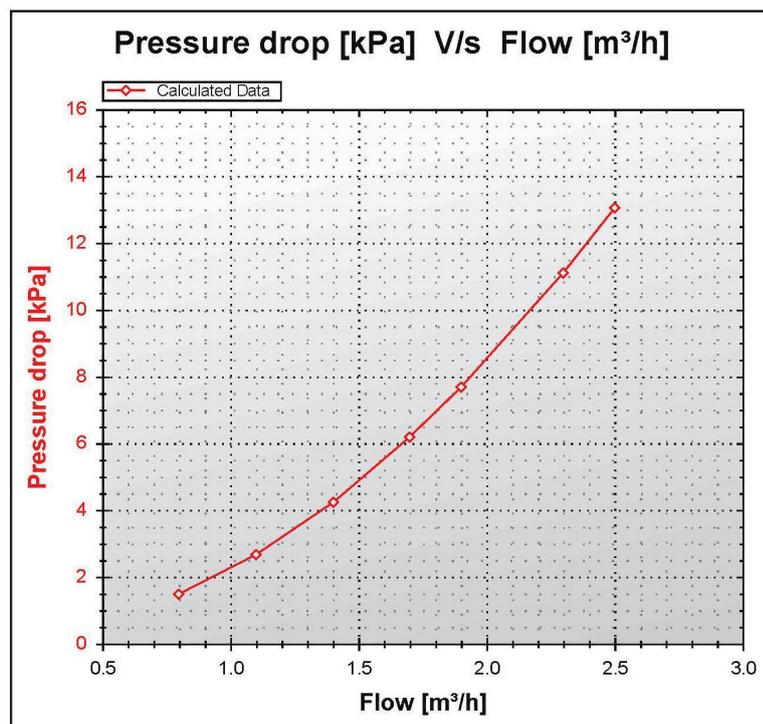


## Pressure Drop Curve

AS10V/L

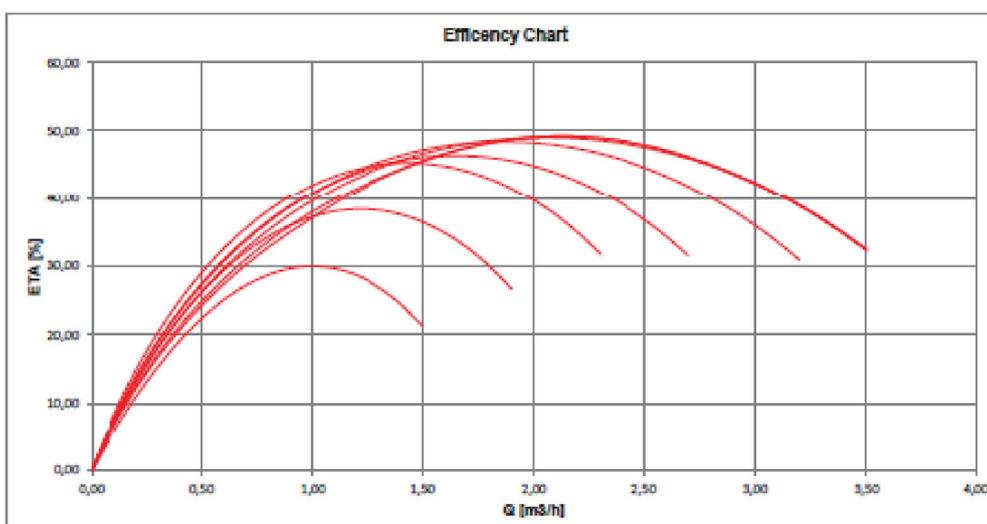
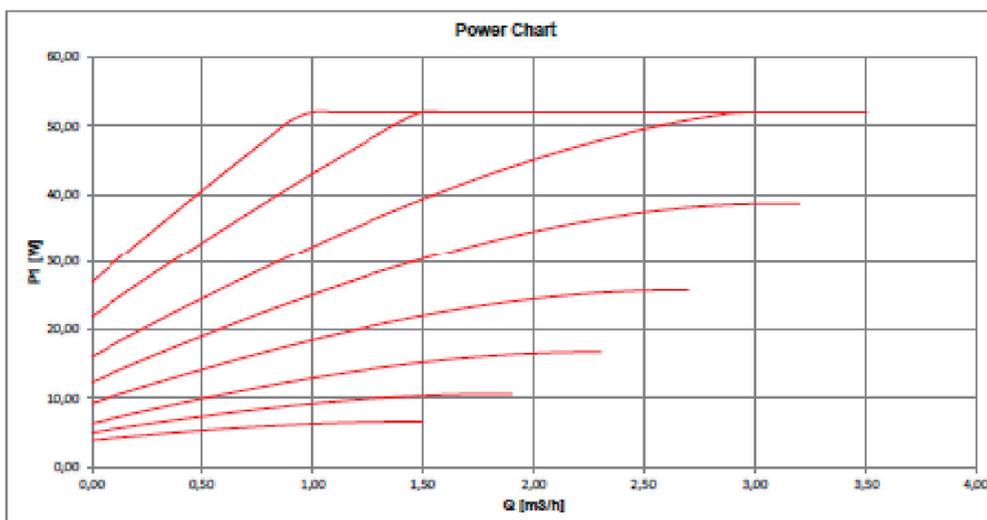
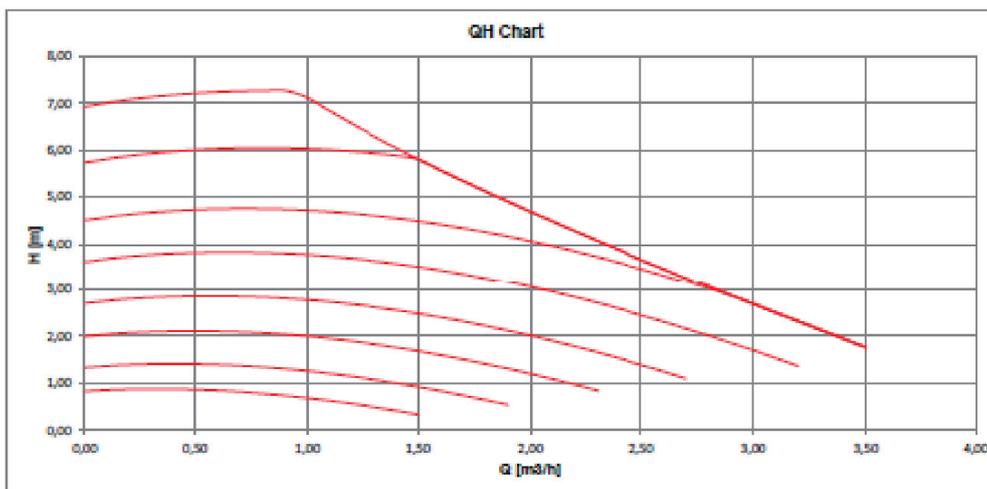


AS20V/L

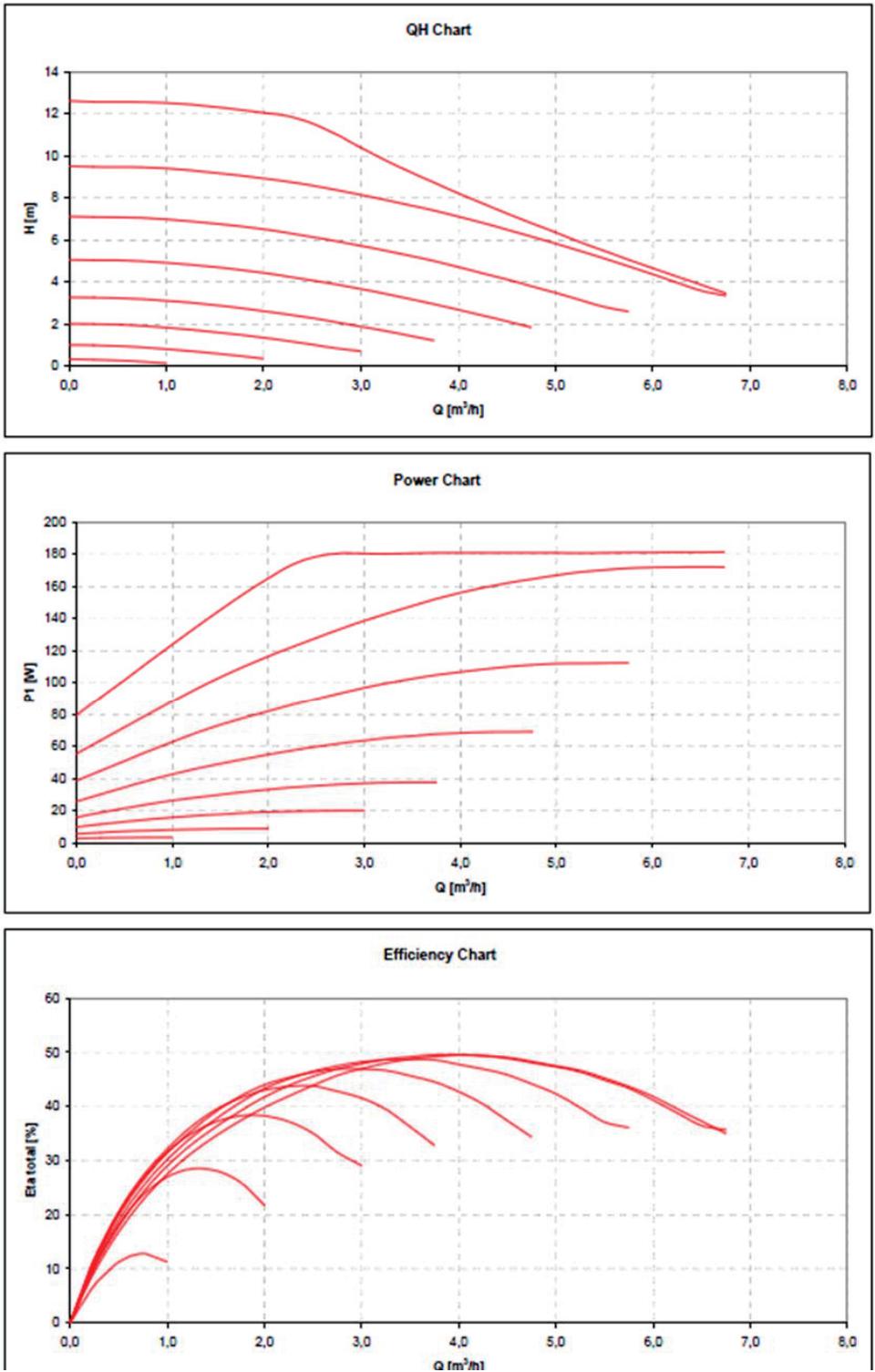


## Internal Pump Grundfos UPM<sub>3</sub>K 25-75 Curve (AS10V/L)

Title Test data UPM3 PWM 7.0m 130  
Product no.



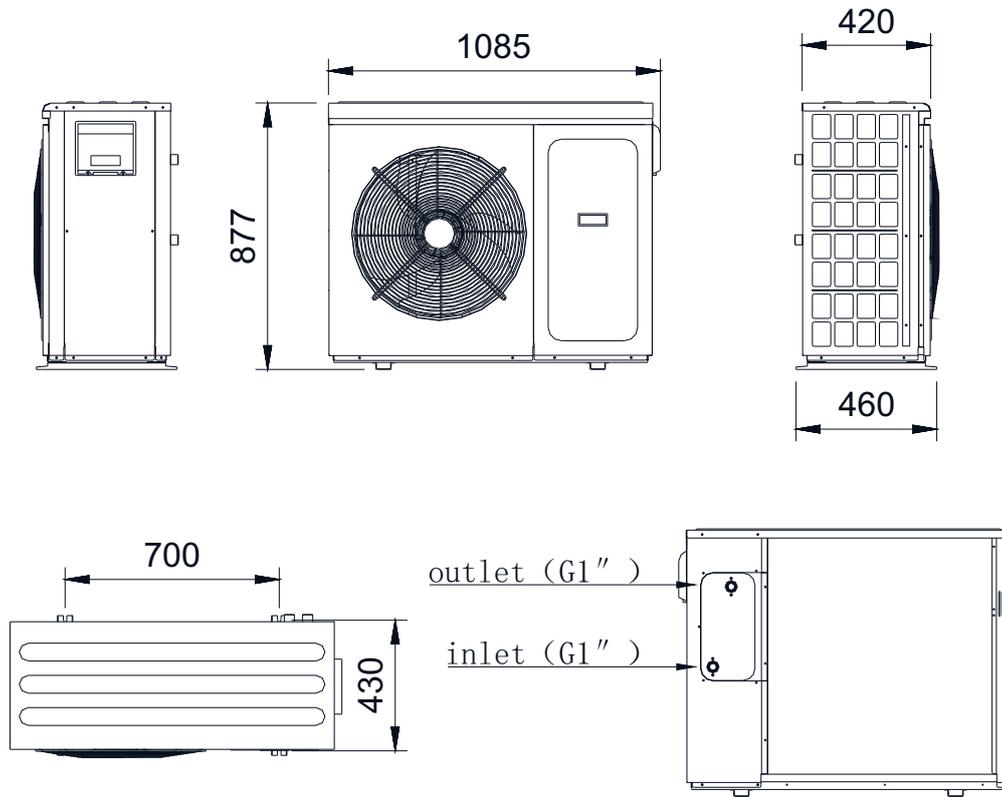
# Internal Pump Grundfos UPMXL GEO 25-125 Curve (AS20V/L)



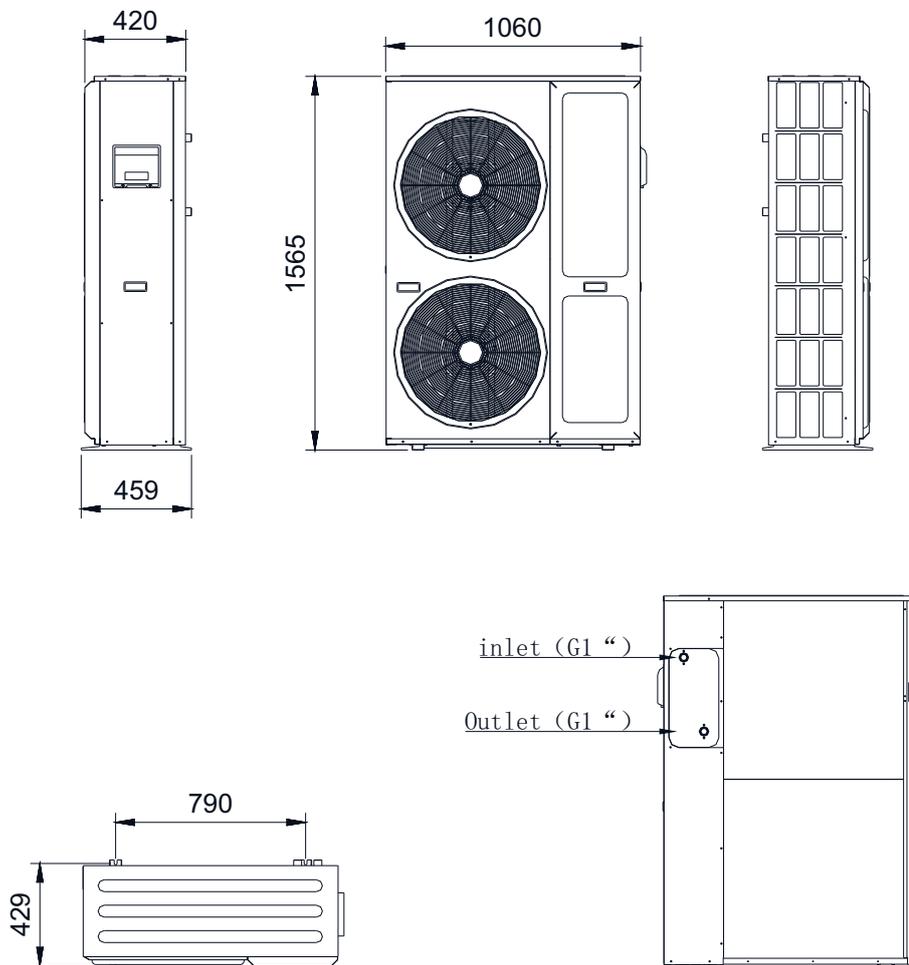
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■ Inverter EVI Air Source Heat Pump Dimension :

AS10V/L



AS20V/L



# Inverter EVI Air Source Heat Pump Ichnography Installation Drawing:

