

# BoxAir Inverter P Series

Residential air-to-water



Czech (EU)  
product



A tradition  
since 1994



Exported into  
30 countries  
worldwide



7-year  
warranty



Online  
control

# BoxAir Inverter P

**BoxAir Inverter P is the latest heat pump range based on natural refrigerant R290.** This offers even more performance, efficiency and output water temperature up to 75 °C.

The BoxAir Inverter P provides heat and sanitary hot water for small passive new constructions as well as for an intergenerational family residences with a heat loss of up to 18 kW. In the summer months, it can also add as a cooling facility.

The BoxAir Inverter P is also suitable for apartment buildings and communal areas. When the need arises for higher heating capacity, several heat pumps can be connected in a cascade in succession.



**BoxAir  
Inverter P**  
All in one,  
all outside.

## What does R290 refrigerant bring?



R290 or pure propane is a refrigerant with minimal impact on the environment (global warming potential GWP = 3, ozone depletion potential = 0). Despite its purely natural origin it has suitable thermodynamic properties for heat transfer. This is what R290 heat pumps successfully use to allow even higher heating efficiency and higher output temperature water (up to 75 °C). Safety is assured via a hermetically sealed cooling circuit, leak sensor, automatic shutdown pumps and check valves in the line.

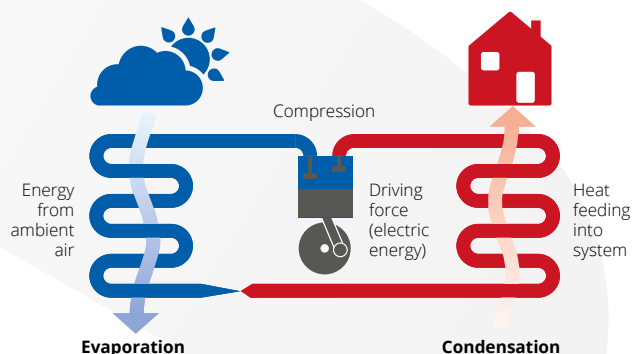


## KEY FEATURES OF THE BoxAir Inverter P SERIES

- High efficiency and future-proofing with near-zero GWP refrigerant R290
- Power from 2 to 25 kW
- Extremely quiet operation according to current EU standards
- All internal components fully serviceable
- High reliability and easy maintenance
- Warranty and after-warranty service directly from the manufacturer
- Reverse cooling mode
- Integrated control system for up to 6 heating circuits
- Online control and monitoring



## AIR-TO-WATER HEAT PUMPS



### ? HOW THEY WORK

Air-to-water heat pumps are based on the principle of extracting heat from the ambient air, the temperature of which can be many degrees Celsius below zero. The heat extracted from the environment is transferred by the heat pump to the heating water that heats the building or is used in the preparation of hot water. **The system achieves seasonal efficiencies of up to 4.5 times higher than those of a conventional electric boiler and thus delivers significant energy savings.**

### 👍 MAIN ADVANTAGES

The major advantages of air-to-water pumps include **relatively low investment costs, quick and easy installation and the easy availability of a primary energy source**: air is everywhere around us.

### ❄️ HEATS IN WINTER, COOLS IN SUMMER

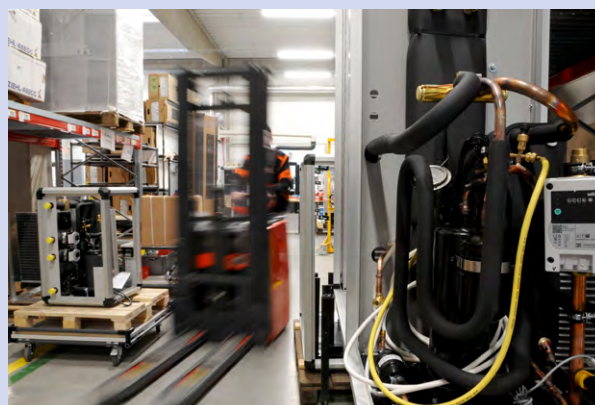
Air-to-water heat pumps are suitable not only for heating and heating hot water or swimming pools all year round, but also for cooling the building in the summer months thanks to the possibility of reverse operation.

### € HEAT PUMPS AND SUBSIDIES

Heat pumps are recognised as a **renewable energy source**. Ask your local distributor if it is possible to obtain subsidies for them.

### MASTER THERM: A CZECH MANUFACTURING TRADITION SINCE 1994

Master Therm is a manufacturer of air-to-water, ground-to-water and water-to-water heat pumps for family and apartment houses and industrial buildings. All technical development and production of Master Therm heat pumps is carried out in the Czech Republic, EU.



More than two-thirds of Master Therm's production are exported abroad, especially to Western Europe. Master Therm also carries out special projects such as heat recovery systems at the IT4Innovations supercomputer centre in Ostrava, Czech Republic, the cooling and recovery of waste heat from particle accelerators at the Institute of Nuclear Physics of the Czech Academy of Sciences or cooling and heat recovery of CEZ Group Energo cogeneration units.





# BoxAir Inverter P

All in one, all outside

Extremely quiet and economical monobloc air-to-water heat pump with R290 refrigerant. Ideal for family houses with thermal loss of up to 18 kW.

## Fans and evaporator

Ultra-quiet fans with smooth speed regulation and an evaporator with directed outflow of the condensate.

## Total safety

Thanks to the low volume of the R290 refrigerant in the system, an integrated refrigerant leak detector, and automatic shutdown of the unit.



## Frequency-controlled compressor with R290 refrigerant and electronically controlled expansion valve

Top technology increase efficiency (heating factor), operational reliability and long lifetime of the equipment. Included is also a built-in speed-controlled circulator pump.

## Resilient all-aluminium cabinet

Aluminium construction of panels with a long-lasting resistance to weathering and corrosion. Default colour setting: anthracite RAL 7016.



**A<sup>++(+)</sup>** energy efficiency



7-year warranty





online control

## Unique Master Therm software for pump control

- Custom application for controlling the cooling circuit and peripherals
- Equithermal MaR (measurement and regulation) system
- Advanced **feedback control of building temperature** based on internal room temperature sensors
- Control via touchscreen terminal or online application
- Includes **remote service monitoring** and diagnostics
- Control of up to 6 heating circuits, including the possibility of connecting a pool or solar panel
- Cooperation with photovoltaics: **in-built connection to PV inverter**
- Smart tariff & Smart Grid: **automatic optimization of heat pump's operation based on future spot electricity prices**



Model		Performance at A7W35	Thermal loss of the object Qz	Seasonal energy efficiency of heating at 35 °C low temperature operation		Seasonal energy efficiency of heating at 55 °C medium temperature operation		Maximum heating / SHW temperature	Order number (according to heating circuit control)	
		kW	kW	SCOP	Class	SCOP	Class	°C	Regulation STANDARD (μPC)	Regulation PLUS (pCOS)
	<b>BoxAir 22 Inverter P</b>	2–7	up to 5	4,24	A++	3,35	A++	75	BA22IP-3-0-1	BA22IP-3-1-1
	<b>BoxAir 26 Inverter P</b>	4–14	up to 10	4,9	A+++	3,66	A++	75	BA26IP-3-0-1	BA26IP-3-1-1
	<b>BoxAir 37 Inverter P</b>	6–20	up to 14	4,37	A++	3,5	A++	75	BA37IP-3-0-1	BA37IP-3-1-1
	<b>BoxAir 45 Inverter P</b>	8–25	up to 18	TBA	TBA	TBA	TBA	75	TBA	TBA



The BoxAir 22IP and BoxAir 26IP models offer even more compact dimensions.

Designed for	single-circuit heating systems	multiple-circuit heating systems
Main heating circuit	yes	yes
Auxiliary heating circuit	–	independently 2 incl. mixing
Space temperature	in 1 zone	in 2 zones
Hot water (SHW)	yes	yes
Selectable	–	up to 6 heating circuits

## KEY FEATURES

- Compact monobloc outdoor thermal air-to-water pump
  - **Easy installation without intervention to the cooling (compressor) circuit and into the existing heating system**
  - Without indoor unit, all accessories including control and circulation pump integrated into the external unit
  - Full serviceability of all components
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- Zero internal noise
  - **Minimised external noise due to ultra-quiet fans** with smooth rotation control
- 
- Use for **heating and cooling of the building** including SHW preparation
  - Smart home integration: online 24/7 monitoring, modbus/BMS, integrated electricity meter, communication with PV inverter and batteries, connection to Smart Grids, etc.
  - Support for connection to a power cascade without the need to use a higher-level MaR (measure and regulation) third-party system
- 
- **Heating water and SHW temperature up to 75 °C**
  - Anti-legionella function from compressor only
  - Outdoor temperature range from -20 °C to +40 °C
  - Integrated bivalent power supply as standard



## Optional equipment

### 7-year warranty on the complete pump

Extended warranty valid from the time of the pump's installation

### Master Therm Online App

Connecting the pump to a central Master Therm server allows the pump to be controlled online from anywhere via the web or app. Includes remote service access.

### Full (active) cooling mode

Reverse pump operation allowing long-term cooling of the interior in summer.

### Room unit for auxiliary heating circuit

Terminal with temperature sensor for placing additional heating circuits in the reference rooms (only for PLUS control).

### Room unit for auxiliary heating circuit with humidity sensor

An extra humidity sensor for eliminating condensation during cooling (only for PLUS control regulation).

### Expansion module for PLUS control

Increases the number of regulated auxiliary heating circuits up to 6 (from the basic 2).

### Integrated electric meter 3x 65 A / 1x 100 A

Built-in electric meter for local measurement of electricity consumption. MID certification.

### RAL colour

Individual colour for pump panels.

### Evaporator with corrosion resistant coating

Increased resistance for applications near the sea, etc.

# BoxAir Inverter P



			BoxAir 22IP	BoxAir 26IP	BoxAir 37IP	BoxAir 45IP
Power range at A7W35		kW	2-7	4-14	6-20	8-25
Thermal loss of the object $Q_z$		kW	up to 5	up to 10	up to 14	up to 18
P-Design			4	7	11	14
Power A7W35 <sup>1</sup>	40 rps (if not defined otherwise)	kW	4,53 (60 rps)	6,01	19,87	TBA
	COP		4,92	5,18	4,65	TBA
Power A2W35	40 rps	kW	2,29	4,64	7,65	TBA
	COP		3,92	4,12	3,72	TBA
Power A-7W35	80 rps	kW	3,27	7,01	10,51	TBA
	COP		2,75	2,72	2,34	TBA
Power A-15W35	90 rps	kW	2,89	6,16	9,20	TBA
	COP		2,29	2,38	2,34	TBA
Seasonal heating energy efficiency at 35 °C low temperature operation	Power <sup>3</sup>	kW	4,10	6,83	10,58	TBA
	SCOP		4,24	4,9	4,37	TBA
	$\eta_s$	%	167	193	172	TBA
	Class		A++	A+++	A++	TBA
Seasonal heating energy efficiency at 55 °C medium temperature operation	Power <sup>3</sup>	kW	3,87	6,74	10,45	TBA
	SCOP		3,35	3,66	3,50	TBA
	$\eta_s$	%	131	144	137	TBA
	Class		A++	A++	A++	TBA
Refrigerant			R290	R290	R290	R290
Electric circuit breaker <sup>2</sup>			16 A"B"	20 A"B"	25 A"B"	32 A"B"
Compressor	Connection		1x 230 V or 3x 400 V	1x 230 V or 3x 400 V	1x 230 V or 3x 400 V	3x 400 V
Weight		kg	120	130	165	165
Mandatory leakage checks according to EP 517/2014			no	no	no	no
Maximum heating water temperature		°C	75	75	75	75
Heating capacity of integrated electric boiler	bivalence mode	kW	4,5	4,5	7,5	7,5
	backup mode (and at temperatures below -20 °C)	kW	4,5 + 4,5	4,5 + 4,5	7,5 + 7,5	7,5 + 7,5
Acoustic performance $L_w$		dB(A)	58	58	62	62
Sound pressure level $L_p$ at a distance from the outdoor unit	1 m	dB(A)	49	49	53	53
	5 m	dB(A)	37	37	41	41
	10 m	dB(A)	31	31	35	35

1 Performance data according to EN 14 511, in accordance with EHPA requirements for the award of the Q quality mark. A7W35 60 Hz - air 7 °C, water 35 °C, compressor frequency 60 Hz.

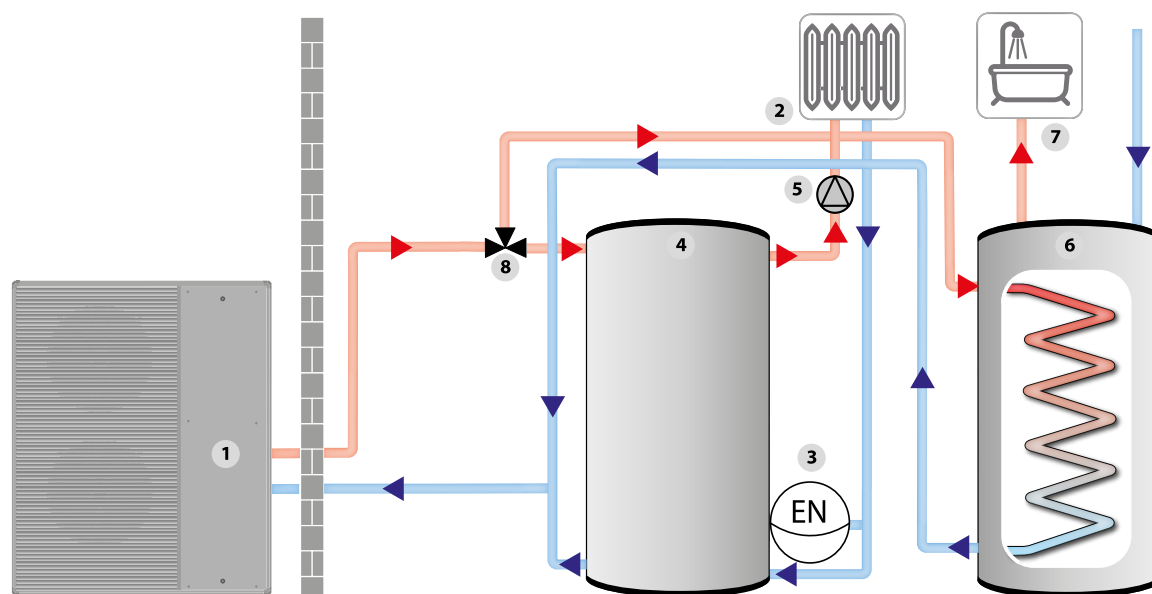
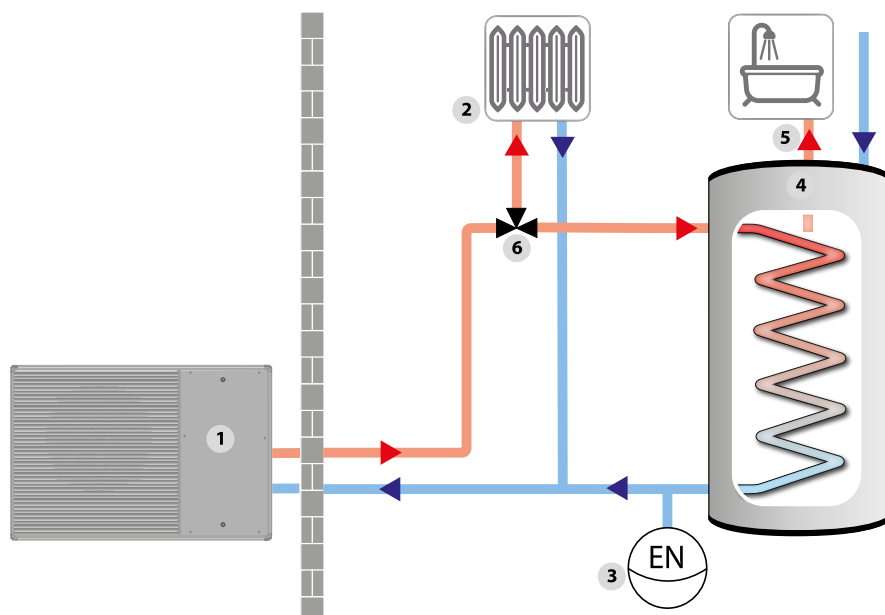
2 Recommended value of electrical protection 3x 400 V, incl. auxiliary integrated electric boiler. The 22IP, 26IP and 37IP units can also be connected to a mains supply of 1x 230 V with a fuse of 40 A "B" (22I) or 50 A "B" (26I, 30I).

3 Design output at an outdoor temperature of -10 °C according to EN 14 825.

## DIRECT CONNECTION OF HEAT PUMP TO HEATING SYSTEM AND HW (HEATING-WATER) TRANSFER MODE

- 1 heat pump
- 2 heating system
- 3 expansion tank
- 4 HW indirect heating storage tank
- 5 HW outlet
- 6 3-way valve

The heat pump (1) is directly connected to the heating system. The heating water temperature varies depending on the outside temperature. When HW heating is required, the heating is interrupted, and the 3-way valve (6) is switched on. By increasing the heating water outlet temperature from the heat pump, the HW storage tank (4) is heated. After the heating of water is finished, the system returns to area heating mode. The scheme is particularly suitable for underfloor heating, exceptional also for systems with a sufficiently sizeable volume of heating water. The possibility for local control of the heating system (control of the heating water flow through the heating system) is limited.

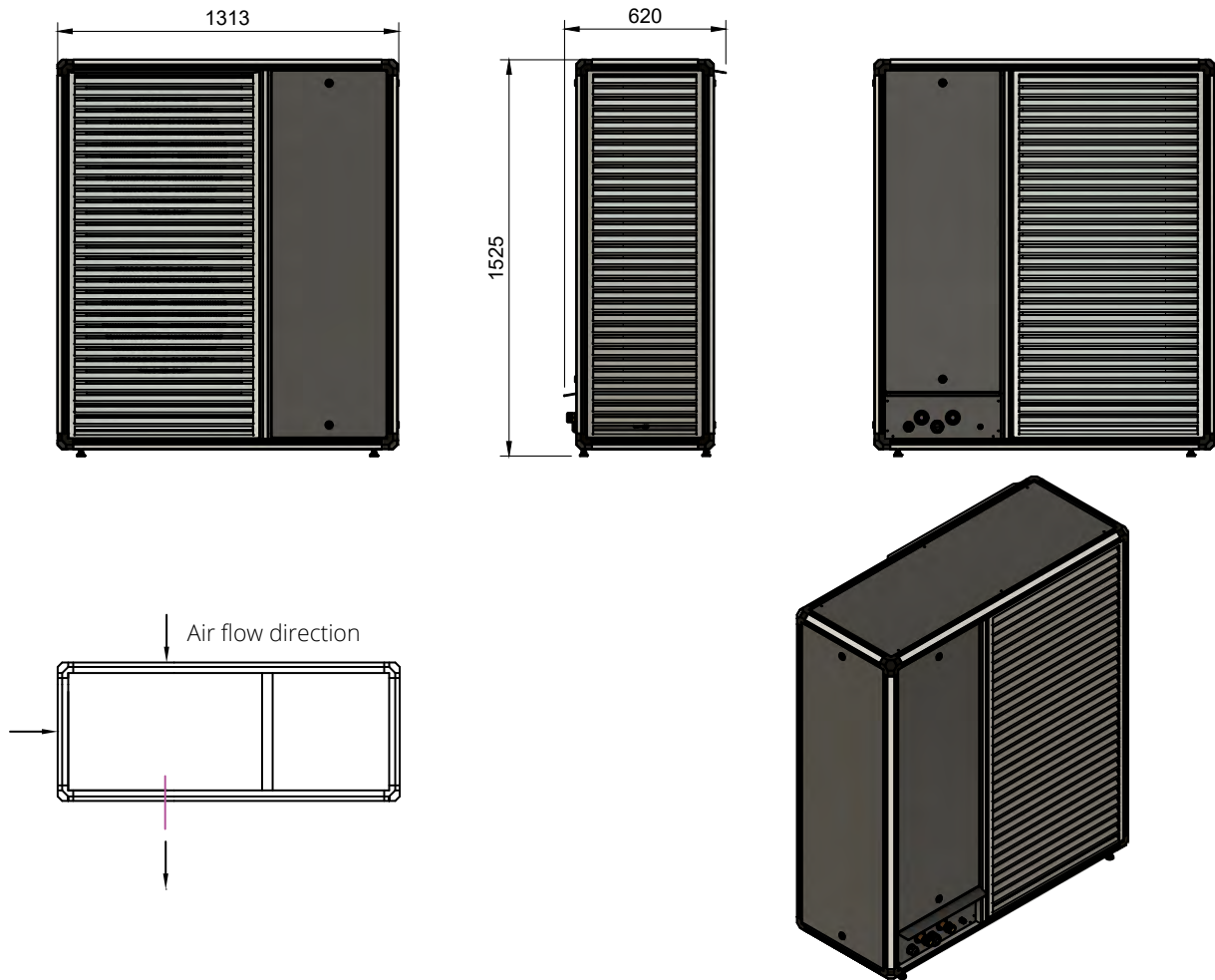


## CONNECTION WITH HEATING WATER ACCUMULATION TANK AND HW HEATING TRANSFER MODE

- 1 heat pump
- 2 heating system
- 3 expansion tank
- 4 storage tank
- 5 heating system PC
- 6 HW indirect heating storage tank
- 7 HW outlet
- 8 3-way valve

The heat pump (1) is connected to the heating system via the storage tank (4), which acts as both heat storage and thermohydraulic distributor. The temperature of the heating water varies depending on the outside temperature. The flow of heating water through the heating system is provided by a circulating pump (5). When HW heating is required, area heating is interrupted, and the 3-way valve (8) is switched on. By increasing the outlet temperature of the heating line from the heat pump, the HW storage tank is heated (6). After HW heating is finished, the system returns to area heating mode.

## DIMENSIONS OF MODELS 37IP AND 45IP



## DIMENSIONS OF MODELS 22IP AND 26IP

