KRONOTERM 1976

HEAT PUMPS

DATA SHEET

ESSENTA

DHW heat pump

ESSENTA system

Data Sheet - ESSENTA - EN / 98-25-23-220176-01

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The original documentation is written in Slovenian. All other languages are translations.

Write to **info@kronoterm.com** for any additional questions.

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WELCOME TO THE KRONOTERM FAMILY!

This data sheet describes the technical features of the ESSENTA DHW heat pump system.

DESCRIPTION

ESSENTA is easy to install and use. Simply install it, turn it on, and forget about it. With its simple yet sophisticated design, it provides heating for 300 liters of domestic hot water up to 65 ºC in an efficient (COP(A20) 4,16), economical, environmentally friendly, and straightforward manner. It ensures reliable operation even at air temperatures as low as -10 °C.

Usage

When set to a temperature of 65 °C, it provides more than 500 liters of usable domestic hot water at 40 °C. It is therefore intended for use in households and smaller service and public activities that require domestic hot water for their daily operations (hair and beauty salons, kindergartens etc.).

Air inlet and outlet connections allow up to five different installation configurations. For its operation, ESSENTA can utilize either external or ambient air or waste exhaust air from other devices. With the installation of appropriate valves, it is also possible to switch between the listed sources.

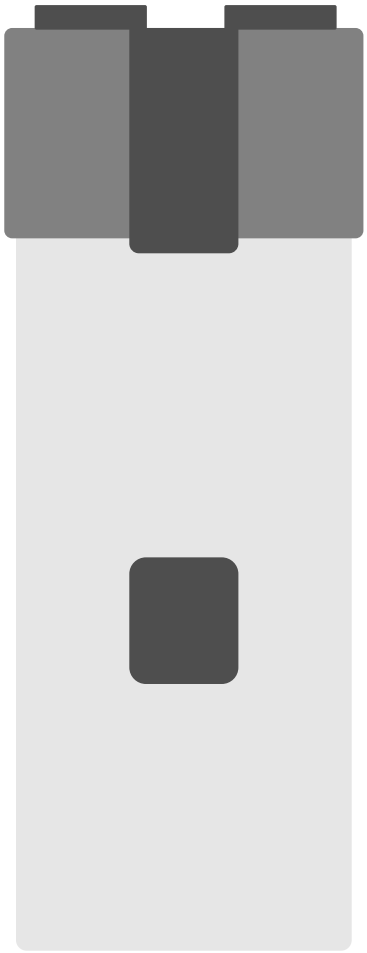
Technology

- **AFT™ – AirFlow Technology** - The aerodynamic design with a separate compressor section allows unobstructed air flow through the evaporator. Reduced air resistence increases fan efficiency, reduces noise, and extends the device's lifespan.
- **SPF™ – Smart Placement Flexibility** - Angular connections and modular design allow placement as close as 20 cm from the wall and adjustment of intake and exhaust from the top or side – ideal for installation in basements and utility rooms.
- **MCS™ – MultiConnect System** - Extended connectivity options with other heat sources (gas, oil, pellets, solar energy), BMS systems, and smart grids.
- **AFA™ – AirFlow Adapt** - The intelligent air source integration system allows for the adjustment of intake and exhaust (spatial or ducted intake) and switching between indoor, outdoor, and waste air. Optimizes flow for quiet and efficient operation in all configurations.
- **IHS™ – Insta Heat System** - Rapid heating with the help of a built-in 1,5 kW heater and boost function for immediate preparation of larger quantities of domestic hot water with temperatures up to 75 °C.
- **NMS™ – Noise Management System** - An advanced system designed to achieve exceptionally low noise levels, combining intelligent heat pump module design, premium insulation materials, and optimized airflow.
- **OHS™ – Optimal Hygiene System** - Comprehensive approach to hot water hygiene – enameled buffer tank, dual magnesium anode, and external condenser to prevent limescale and bacteria buildup. Ensures long lifespan and safety of hot water.
- **SC – SmartCost** - Low electricity consumption and high efficiency, along with the possibility of weekly and daily programming, enable savings in systems with multi-tariff electricity billing.
- **EAS™ – Easy Access System** - Access to the main components of the device is provided from the top through a thoughtfully designed cover, allowing easy service even in rooms with lower ceiling height.
- **Low GWP – Global Warming Potential** - The heat pump has a low environmental impact as it uses an eco-friendly, non-toxic refrigerant propane (R290) with a GWP of 0,02.

NOMENCLATURE

ESSENTA-303 / 1 E D PV P3

ESSENTA	DHW heat pump family designation
30	Tank volume (300 l)
3	Device generation
1	No. of heat exchangers in DHW tank
E	El. heater integrated
D	Defrosting – passive and active
PV	Smart Grid compatibility
P3	Outputs for: - External pump for DHW heating with gas, oil or pelet boiler - Recirculation pump - Air valves for heat source switching



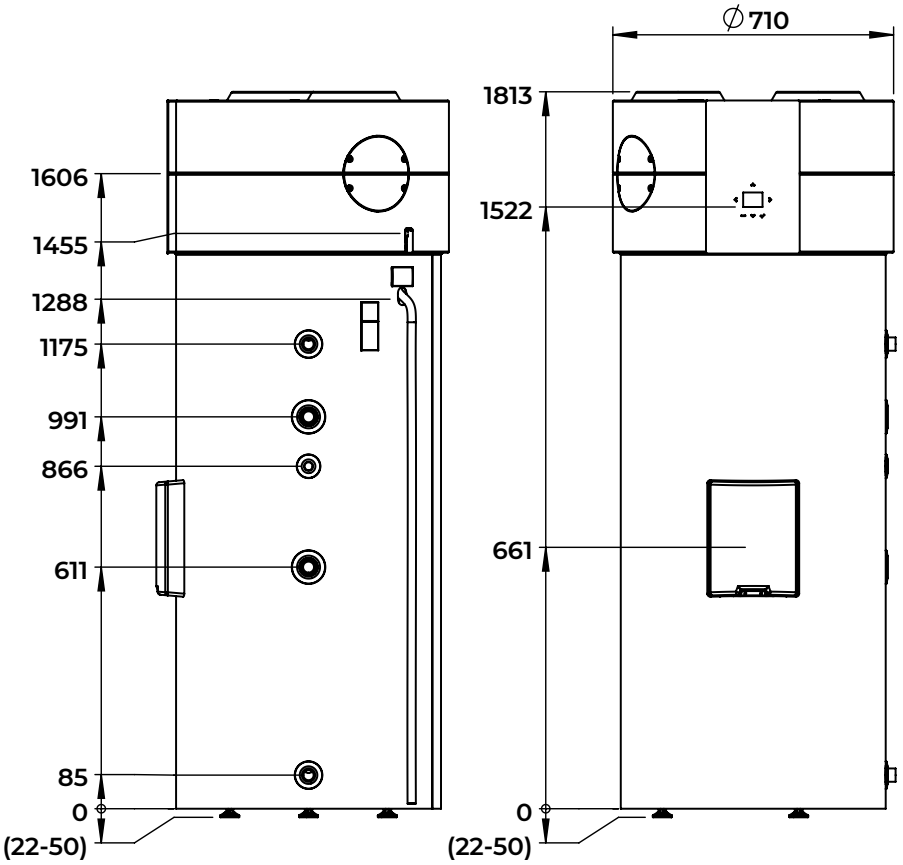
ESSENTA DHW HEAT PUMP

Version
DHW heat pump, 300 l

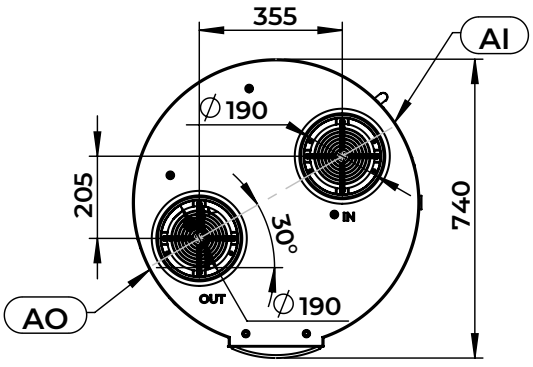
Model marks
ESSENTA-303 / 1 E D PV P3

Description and dimensions

- Robust design, high efficiency and user-friendly operation
- 300-l enamelled DHW tank with closed cell high density PU foam ensures extremely low heat losses
- Various installation methods and configurations with or without air-ducts DN 160
- Four positions of air inlet / outlet connections: 2x top, 2x side
- Suitable for installation in rooms with ceilings at least 2,1 m high
- Flexible air intake configuration includes two closing caps



RIGHT FRONT



TOP

Connections

AI Air inlet 190/160 mm (f)
AO Air outlet 190/160 mm (f)

ESSENTA DHW HEAT PUMP

Primary components

B Heat pump unit

C Control panel
- Display
- Heat pump regulator

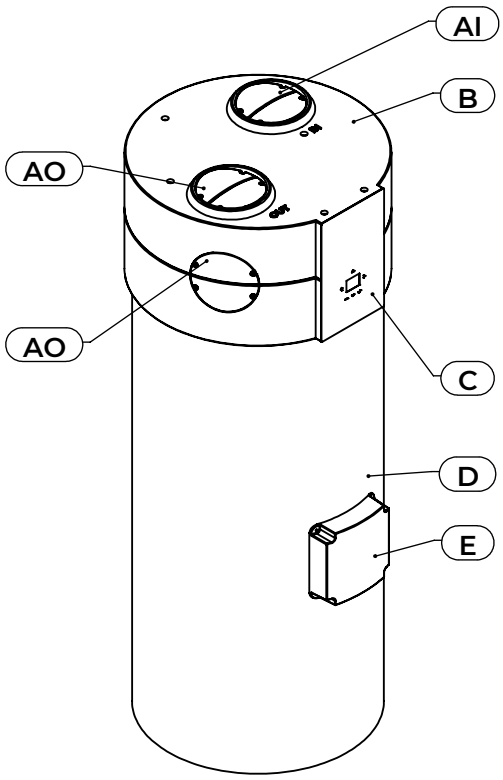
D DHW Tank

E
- Flange
- Electric heater
- Magnesium anode

F Cable conduit
- Power supply
- External pumps and valves
- External temperature sensor
- SG signals

G Temperature sensor channel

H Condensate drain tube



LEFT FRONT

Connections

AI Air inlet 190/160 mm (f)

AO Air outlet 190/160 mm (f)

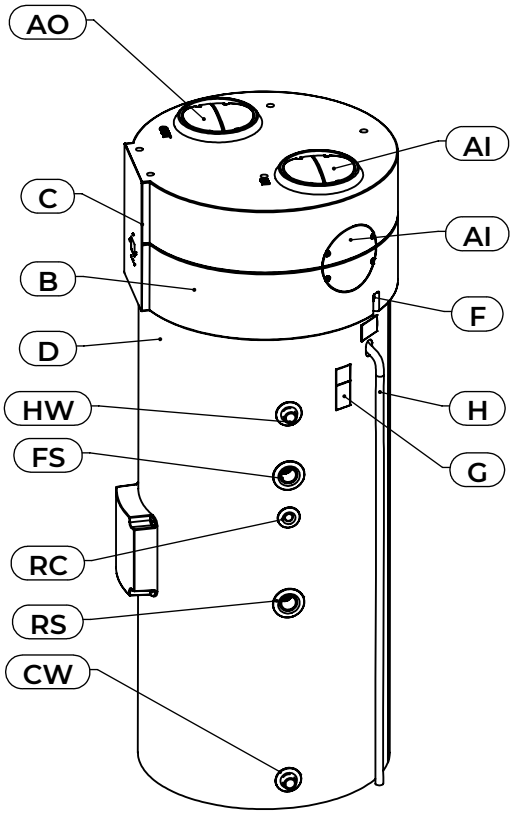
CW Domestic cold water G 1'' ET

FS Heat exchanger for DHW heating with external heat generator – flow G 1'' IT

HW Domestic hot water G 1'' ET

RC Recirculation - domestic water G 3/4'' IT

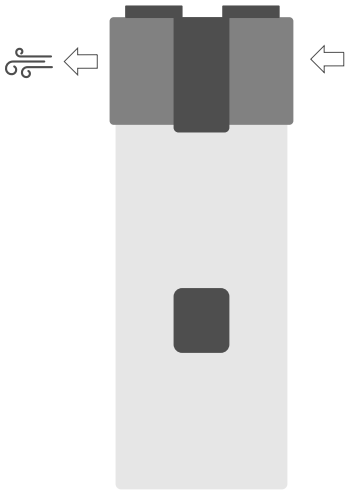
RS Heat exchanger for DHW heating with external heat generator - return G 1'' IT



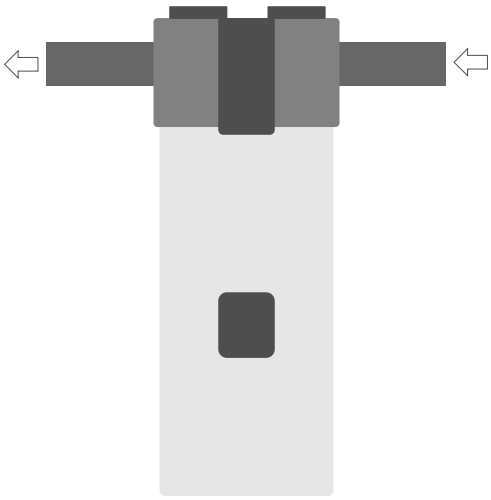
RIGHT

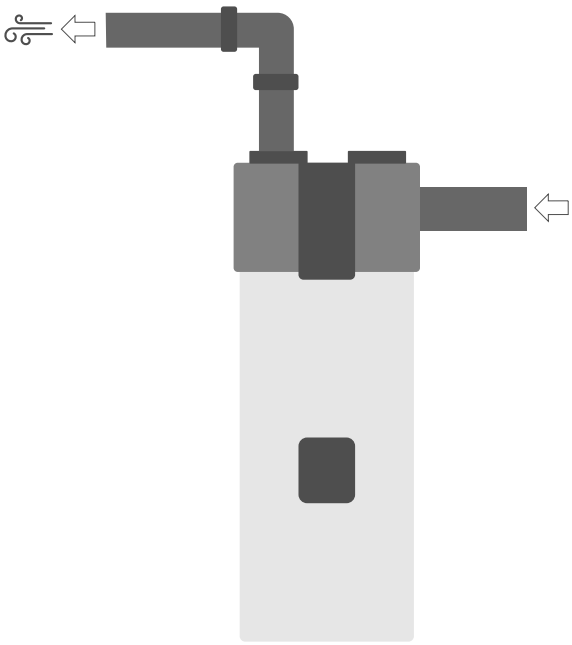
AIR INLET AND OUTLET CONFIGURATION POSSIBILITIES

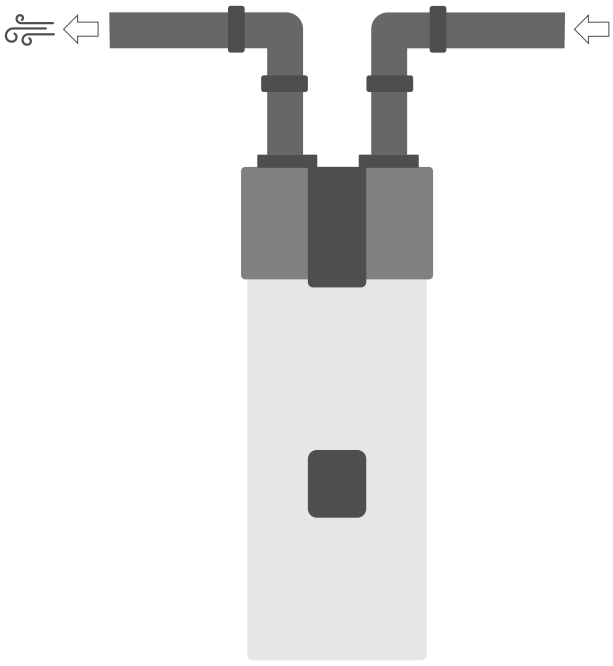
Ambient air configuration

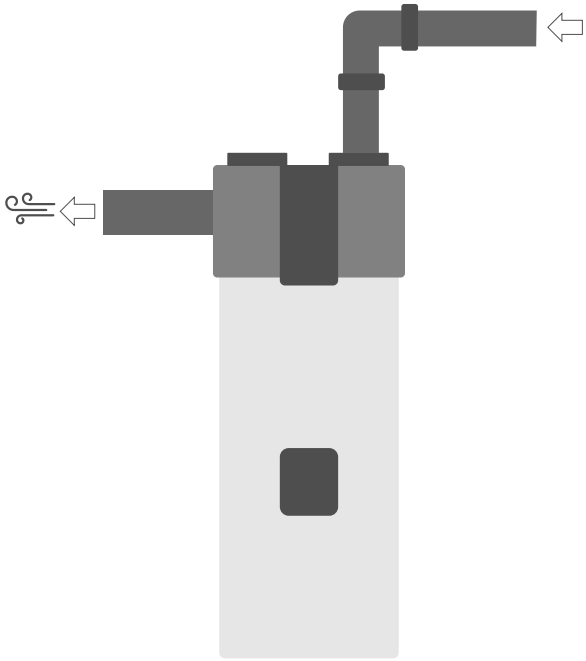


Ducted air configuration



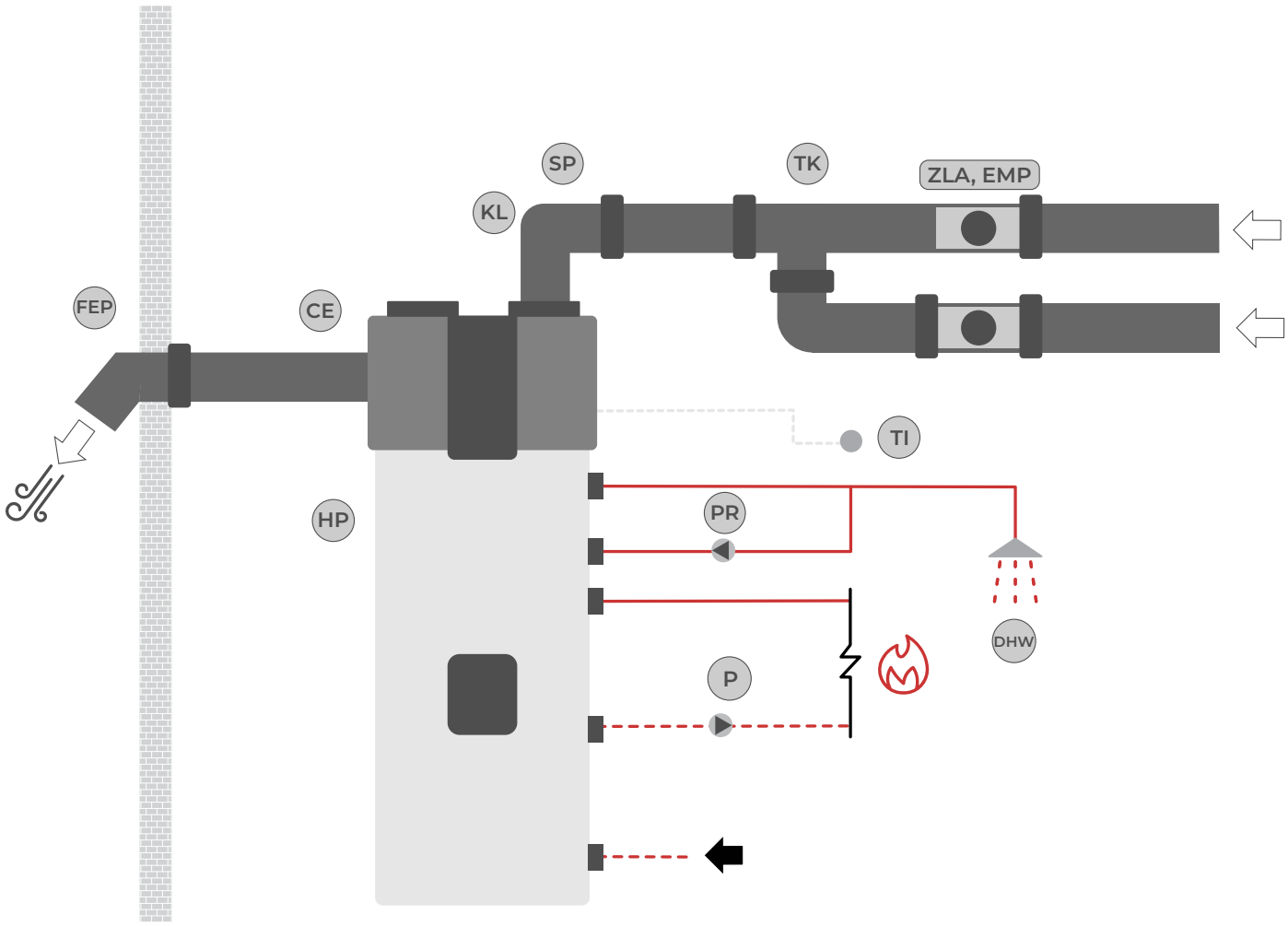






ADDITIONAL EQUIPMENT ESSENTA

Sample installation diagram

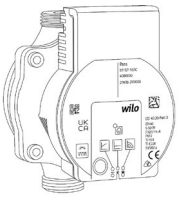


Legend

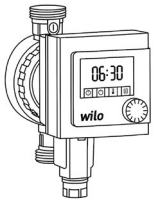
CE	Pipe
FEP	Facade element
HP	Heat pump
KL	Elbow
P	Circulation pump
PR	Circulation pump for domestic water recirculation
SP	Ventilation pipe coupling
TI	Temperature sensor
TK	T-piece
ZLA, EMP	Butterfly valve with drive

ADDITIONAL EQUIPMENT ESSENTA

CIRCULATION PUMP
High-efficiency circulation pump for heating or cooling with communication and power cable and configurable operating mode
- OC_KT_KPL 25-180/8-75/i PWM2 12

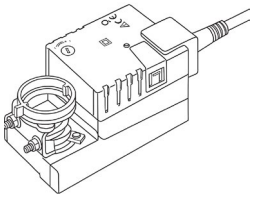


CIRCULATION PUMP FOR DOMESTIC WATER RECIRCULATION
High-efficiency circulation pump for domestic water recirculation, with ball shut-off valve, non-return valve, timer, thermostatic valve and thermal disinfection detection, threaded connection, electrical power 5 - 7 [W], max. flow 0,4 [m3/h], max. pressure 10 [bar]
- OC_STAR-Z NOVA T

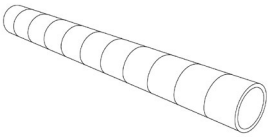


BUTTERFLY VALVE WITH ACTUATOR BRACKET
Shut-off, airtight butterfly valve, with a galvanised sheet metal housing and slats, with a drive bracket 160 [mm]
- ZLA_SKG-A 160

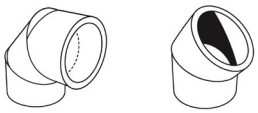
ACTUATOR FOR A BUTTERFLY VALVE FOR BUTTERFLY VALVE
ON/OFF, 230 [V]
- EMP_LM230A



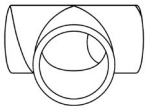
PIPE
Insulated pipe for ventilation, inner diameter 160 [mm], length 2 [m]
- CE_AF 160X2000



ELBOW
Elbow for a ventilation pipe 160 [mm]
- KL_AF 160 – 90 (90°)
- KL_AF 160 – 45 (45°)
- KL_AF 160 – 30 (30°)

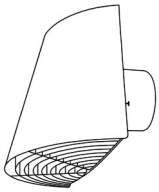


T-PIECE
T-piece for a ventilation pipe 160 [mm]
- TK_AF 160-160-160

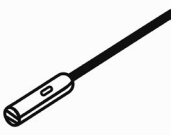


VENTILATION PIPE COUPLING
Coupling for ventilation pipe, 160 [mm]
- SP_AF 160

FACADE ELEMENT
Facade element for ventilation pipe, 160 [mm]
- FEP_160-A (ANTHRACITE)



TEMPERATURE SENSOR
Temperature sensor for the utilisation of heat from a biomass furnace, cable lenght 5 [m]
- TI_NTC ESSENTA



REGULATOR

Model mark
KSM Lite

Description
DHW heat pump regulator

Functional characteristics

- DHW heat pump control
- Domestic water heating (3 modes)
- Boost function
- Defrosting function
- Electrical heater control
- Daily and weekly schedules
- Thermal disinfection (anti-legionella programme)

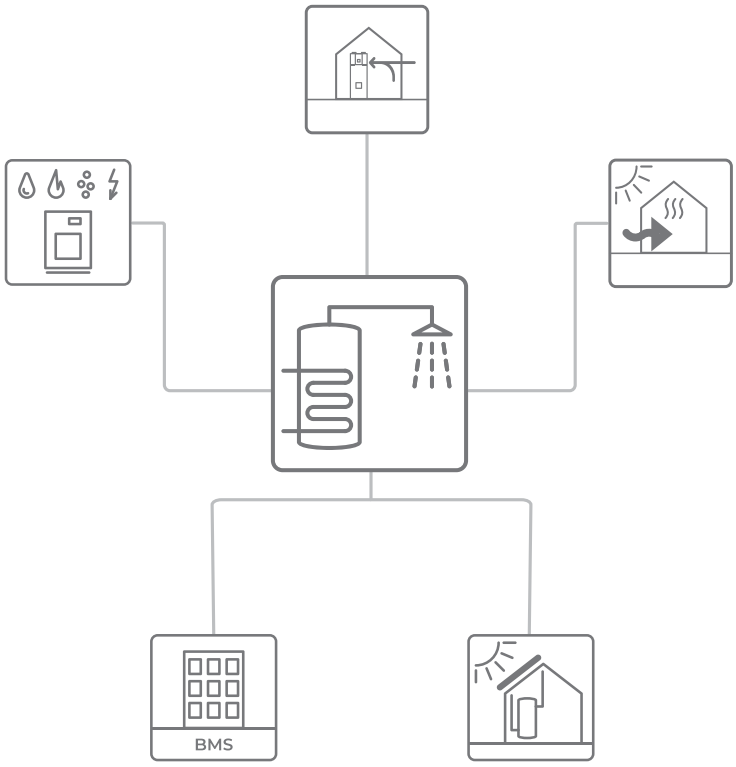
- Control:
  - Output for additional heat generators (gas, oil or pellet boiler). With an additional temperature sensor the utilisation of solar or biomass heat is also possible
  - Air valves for switching between heat sources
  - Output for recirculation pump

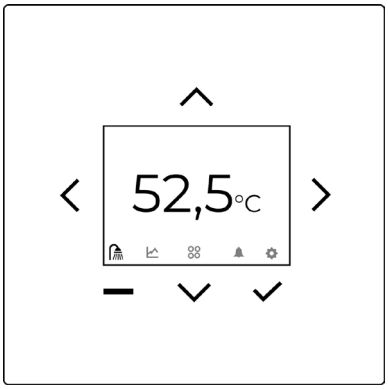
- Connectivity options:
  - BMS via MODBUS RS485 protocol
  - KSM 2 heat pump system regulation*
  - Smart-grid compatible

User interface:

- Intergrated display with function buttons
- Mobile appliaction through bluetooth connection*

*coming soon





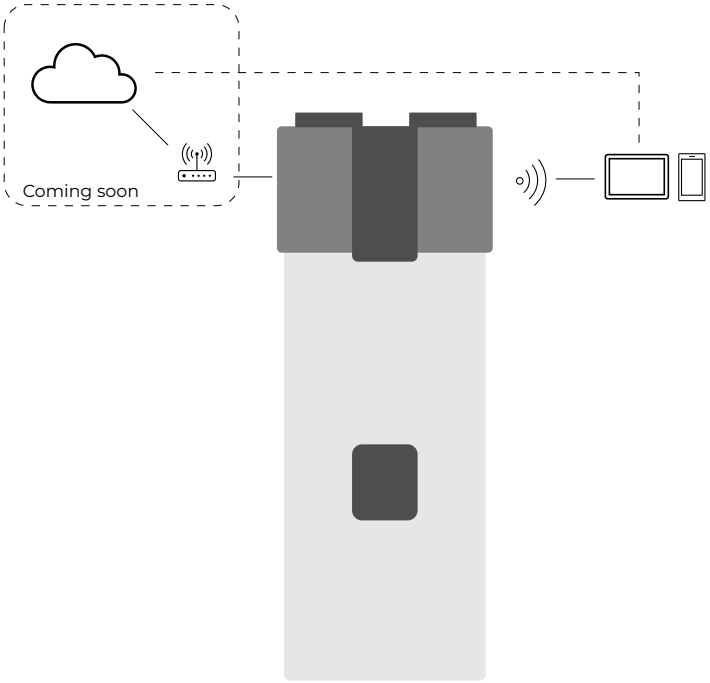
User interface of the DHW heat pump

CLOUD.KRONOTERM

Description

CLOUD.KRONOTERM gives you oversight and control over your heat pump, its consumption and operational costs.

NOTE: The device will be compatible with the new HOME. CLOUD platform, which will be available soon.



TECHNICAL DATA

DEVICE	Unit	ESSENTA 303
Heat source		air
Controller		KSM Lite
Defrosting		Active (hot gas defrost) and passive (air)
El. heater	**kW**	1,5
Air duct fittings	**DN**	160
Air flow - nominal (indoor air installation)	**m³/h**	400
Air flow - nominal (outdoor air installation - duct connection)	**m³/h**	400
Maximum available external pressure drop - nominal flow (duct connection)	**Pa**	207

EFFICIENCY - PERFORMANCE DATA ACCORDING TO EN 16147 AND DELEGATED REGULATION (EU) 812/2013

Load profile		XL
PERFORMANCE DATA FOR INDOOR AIR OPERATION A20/W10-53.5 (AIR INLET AND AMBIENT TEMPERATURE 20 °C) - AVERAGE, COLDER AND WARMER CLIMATE ZONE		
Coefficient of Performance (COPdhw)	**-**	4,16
Heating up time	**h:min**	8:45
Heating up electrical energy consumption	**kWh**	3,38
Stand-by power input (Pes)	**W**	27
Maximum volume of mixed water at 40 °C	**l**	393
Reference hot water temperature	**°C**	53,2
Water heating energy efficieny (ηwh)	**%**	172
Annual electrical energy consumption (AEC)	**kWh/annum**	975
Nominal heating capacity	**kW**	1,57
PERFORMANCE DATA FOR EXHAUST AIR OPERATION A20/W10-53.5 (EXHAUST AIR AND AMBIENT TEMPERATURE 20 °C) - AVERAGE, COLDER AND WARMER CLIMATE ZONE		
Coefficient of Performance (COPdhw)	**-**	3,97
Heating up time	**h:min**	9:08
Heating up electrical energy consumption	**kWh**	3,48
Stand-by power input (Pes)	**W**	25
Maximum volume of mixed water at 40 °C	**l**	399
Reference hot water temperature	**°C**	53,3
Water heating energy efficieny (ηwh)	**%**	163
Annual electrical energy consumption (AEC)	**kWh/annum**	1025
Nominal heating capacity	**kW**	1,52
PERFORMANCE DATA FOR OUTDOOR AIR OPERATION A7/W10-53.5 (AIR INLET 7 °C AND AMBIENT TEMPERATURE 20 °C) - AVERAGE CLIMATE ZONE		
Coefficient of Performance (COPdhw)	**-**	3,61
Heating up time	**h:min**	10:19
Heating up electrical energy consumption	**kWh**	3,87
Stand-by power input (Pes)	**W**	28
Maximum volume of mixed water at 40 °C	**l**	399
Reference hot water temperature	**°C**	53,3
Water heating energy efficieny (ηwh)	**%**	149
Annual electrical energy consumption (AEC)	**kWh/annum**	1127
Nominal heating capacity	**kW**	1,35
PERFORMANCE DATA FOR OUTDOOR AIR OPERATION A2/W10-53.5 (AIR INLET 2 °C AND AMBIENT TEMPERATURE 20 °C) - COLDER CLIMATE ZONE		
Coefficient of Performance (COPdhw)	**-**	2,90
Heating up time	**h:min**	14,29
Heating up electrical energy consumption	**kWh**	4,87
Stand-by power input (Pes)	**W**	30
Maximum volume of mixed water at 40 °C	**l**	386
Reference hot water temperature	**°C**	53,3
Water heating energy efficieny (ηwh)	**%**	119
Annual electrical energy consumption (AEC)	**kWh/annum**	1408
Nominal heating capacity	**kW**	0,94
ENERGY EFFICIENCY CLASS ACCORDING TO EU REGULATION NO. 812/2013		
Energy efficiency class for indoor air condition	**-**	A++
Energy efficiency class for exhaust air condition	**-**	A++
Energy efficieny class for outdoor air condition	**-**	A+

DEVICE	Unit	ESSENTA 303
ELECTRICAL DATA		
Rated voltage	V/Hz	230/50
Max. operation current	A	10,5
Nominal electrical power	W	500*
Max. electrical power	W	2170
Electrical power - electric heater	W	1500
Additional electrical load	W	100
Fuses	A	16
Electrical power cable	mm	/
Protection class	-	IP X1

** max power (without el. heater) at A20W53*

COMMUNICATION		
Connection to BMS		Modbus RTU, RS 485
Mobile app		Bluetooth*
Internet connection		Additional equipment*

** Coming soon*

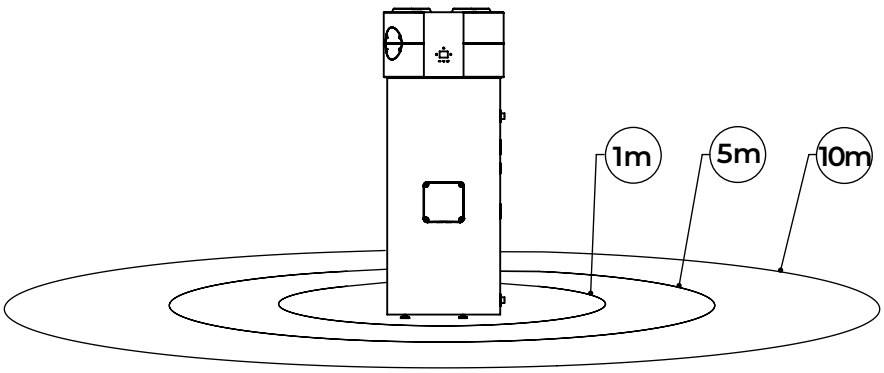
COOLING SYSTEM		
Refrigerant - type		R290
Refrigerant - industrial designation		HC-290 (R290)
GWP (global warming potential)		0,02
Total CO_2 equivalent of charged refrigerant		0,003
Refrigerant - quantity	kg	0,15
Max. refrigerant system operating pressure	MPa	3,1

DIMENSIONS AND WEIGHT - TRANSPORT		
Dimensions (W x H x D)	mm	755 x 1975 x 735
Weight	kg	166
DIMENSIONS AND WEIGHT - NET		
Dimensions (W x H x D)	mm	710 x 1813 x 740
Weight	kg	148
RANGE OF OPERATION		
Water (heat pump only)	°C	65
Water (heat pump + additional el. heater)	°C	75
Air	°C	-10 / 45
DHW- TANK DATA		
Volume	l	290
Maximum allowed operating pressure in the heat exchanger (at 110 °C)	MPa	1,0 (10 bar)
Volume of heat exchanger	l	8
Internal heat exchanger surface	m²	1,2
Pressure, max.	MPa	0,8 (8 bar)
Standby heat losses according to EN12897	kWh/day	2,08
DHW - WATER TANK CONNECTIONS		
Cold and hot water (CW, HW)	''	G 1
DHW recirculation (RC)	''	G 3 / 4
Flow and return, external heat source (FS, RS)	''	G 1
Condensate drain (Φ)	mm	16

SOUND

Description

- Sound power is a characteristic of a sound source and is not related to distance. It describes the total sound energy of an appropriate source that is emitted in all directions.
- Sound pressure depends on the measurement site in the sound field and describes the sound pressure at that location.
- When sound is transmitted through the structure, it is necessary to equip the connection with absorbers or compensators to prevent the transmission of unwanted structural sound.

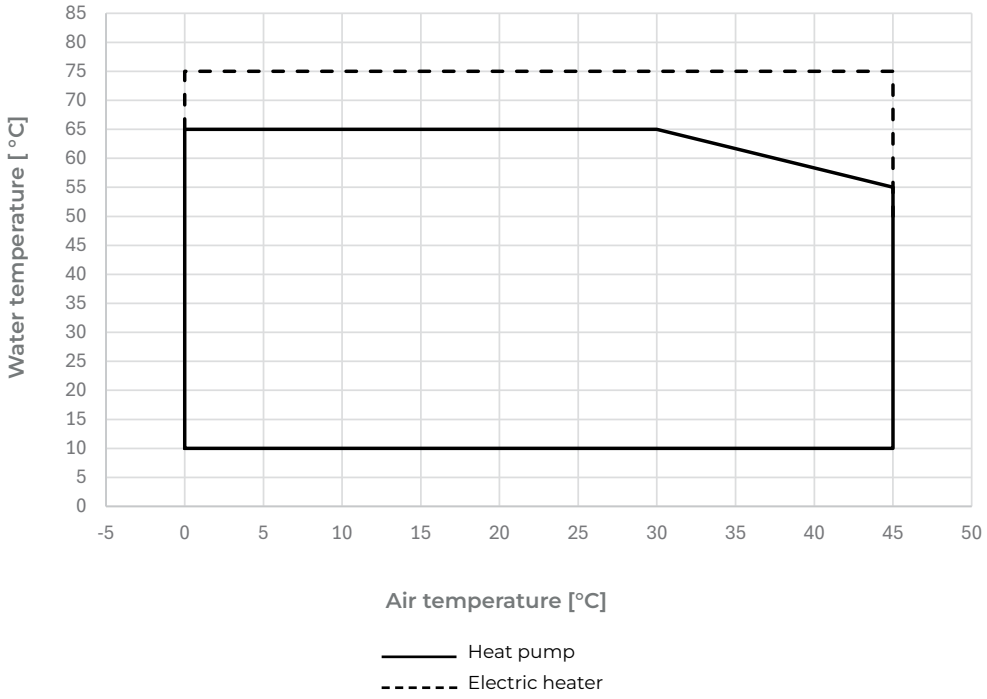


DEVICE	Unit	ESSENTA 303
SOUND POWER LEVEL MEASUREMENT BASED ON EN 12102 / EN ISO 9614-2, ACCURACY CLASS 2		
SOUND POWER AT INDOOR AIR CONDITION		
Sound power level LW at indoor air condition	**dB (A)**	58*
Sound pressure level LW at indoor air condition (with directivity factor Q = 2 and distance 3 m)	**dB (A)**	42*

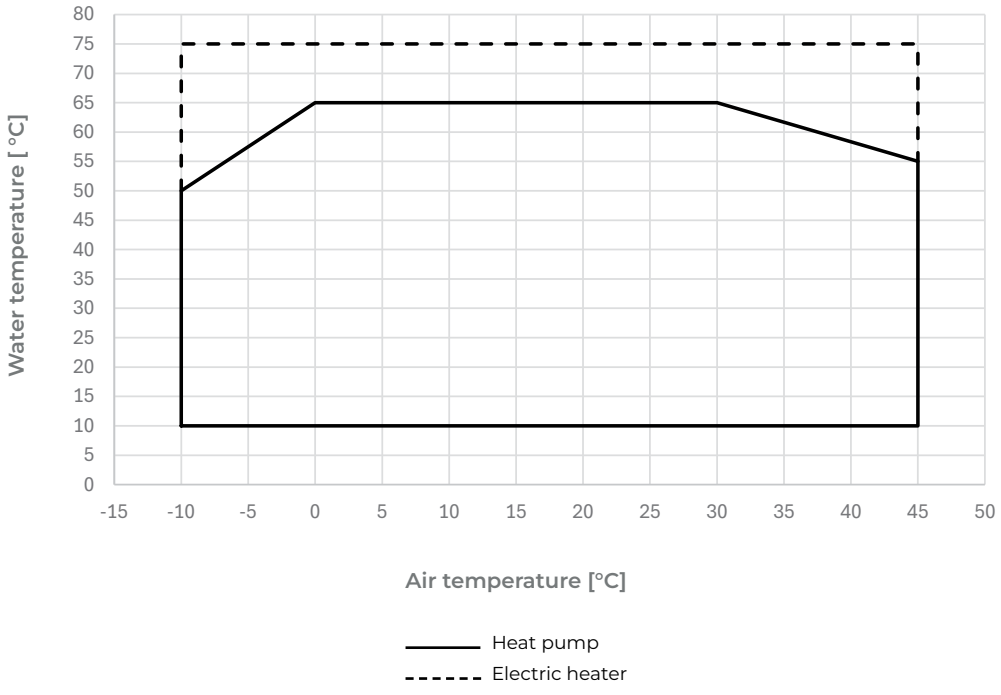
** preliminary*

OPERATING ENVELOPE

Ambient air configuration

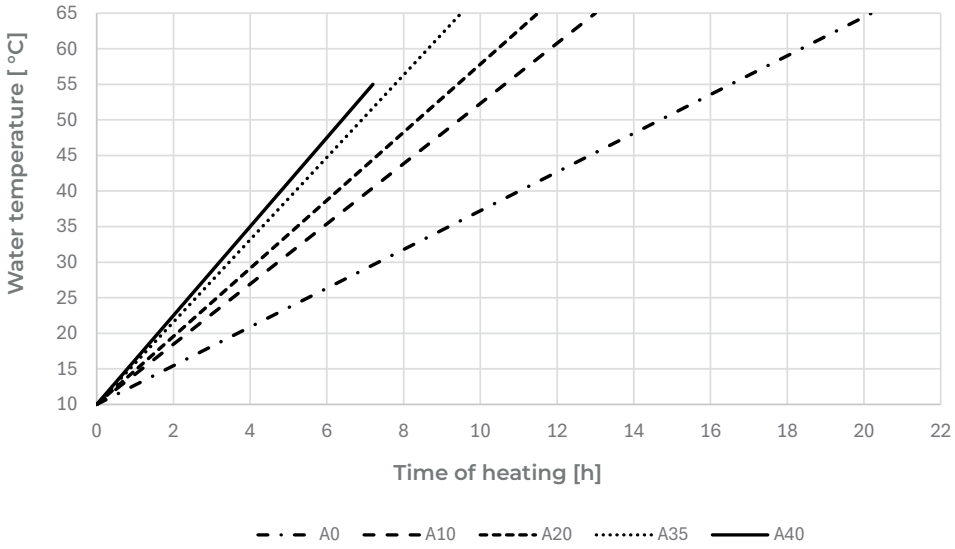


Ducted air configuration

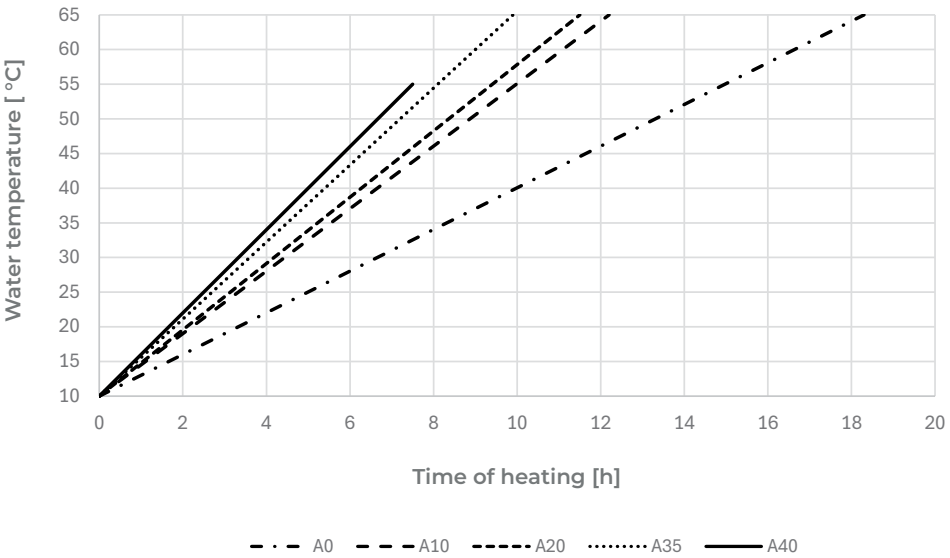


WATER HEATING TIME

Ambient air configuration



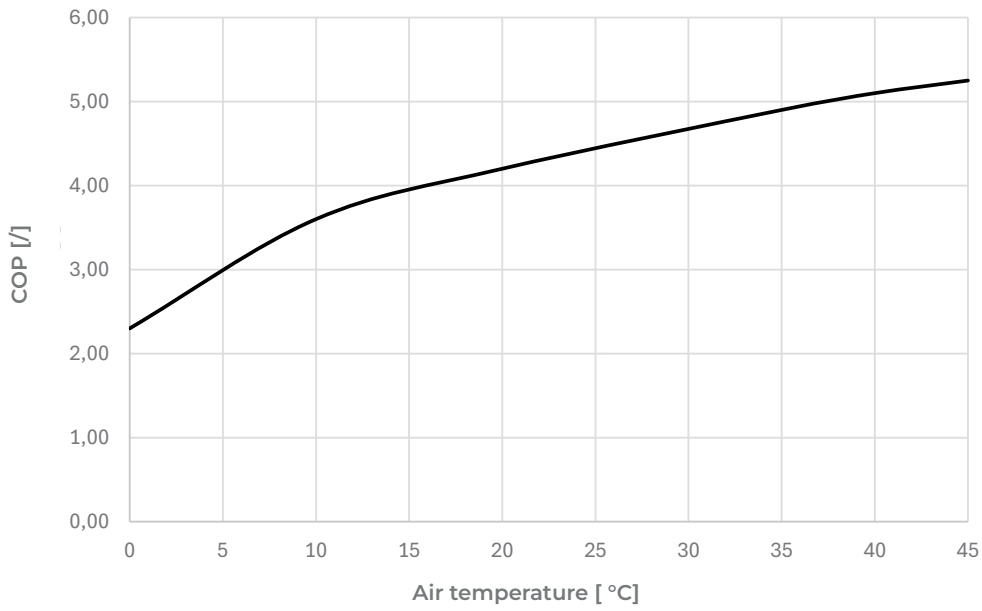
Ducted air configuration
(at an ambient temperature of 20 °C)



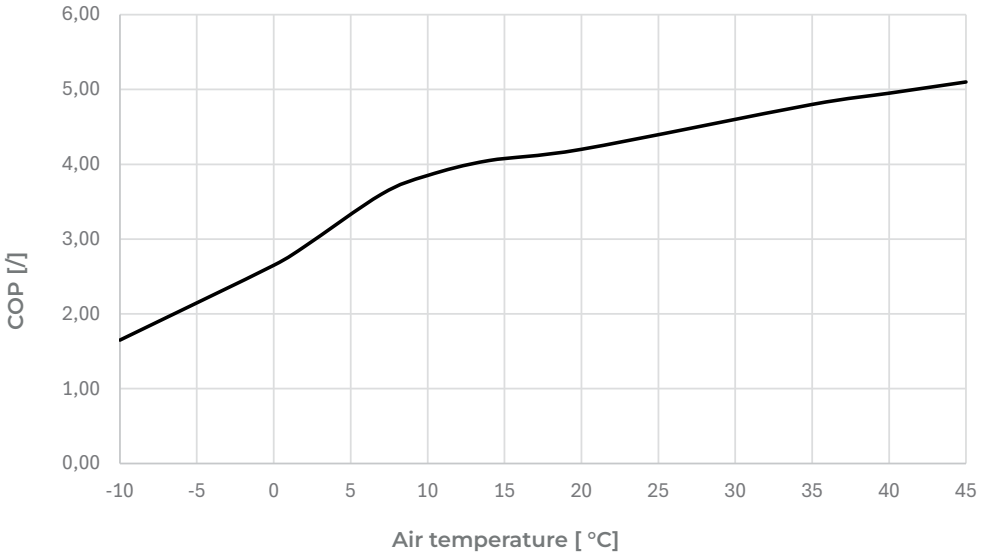
Water heating time shown for heat pump operation only, without electric heater.

EFFICIENCY (COP)

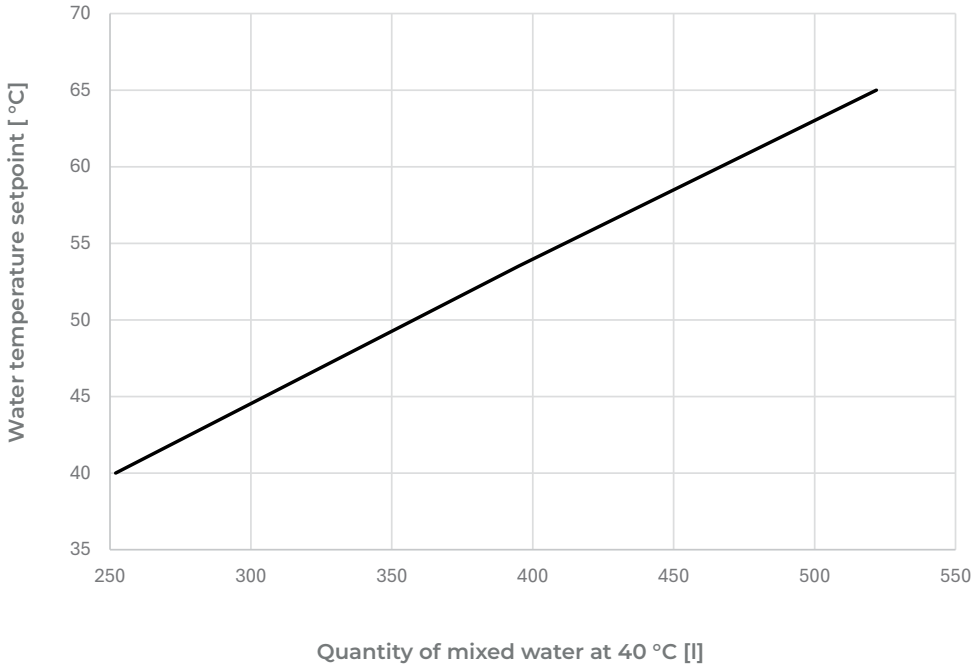
Ambient air configuration



Ducted air configuration

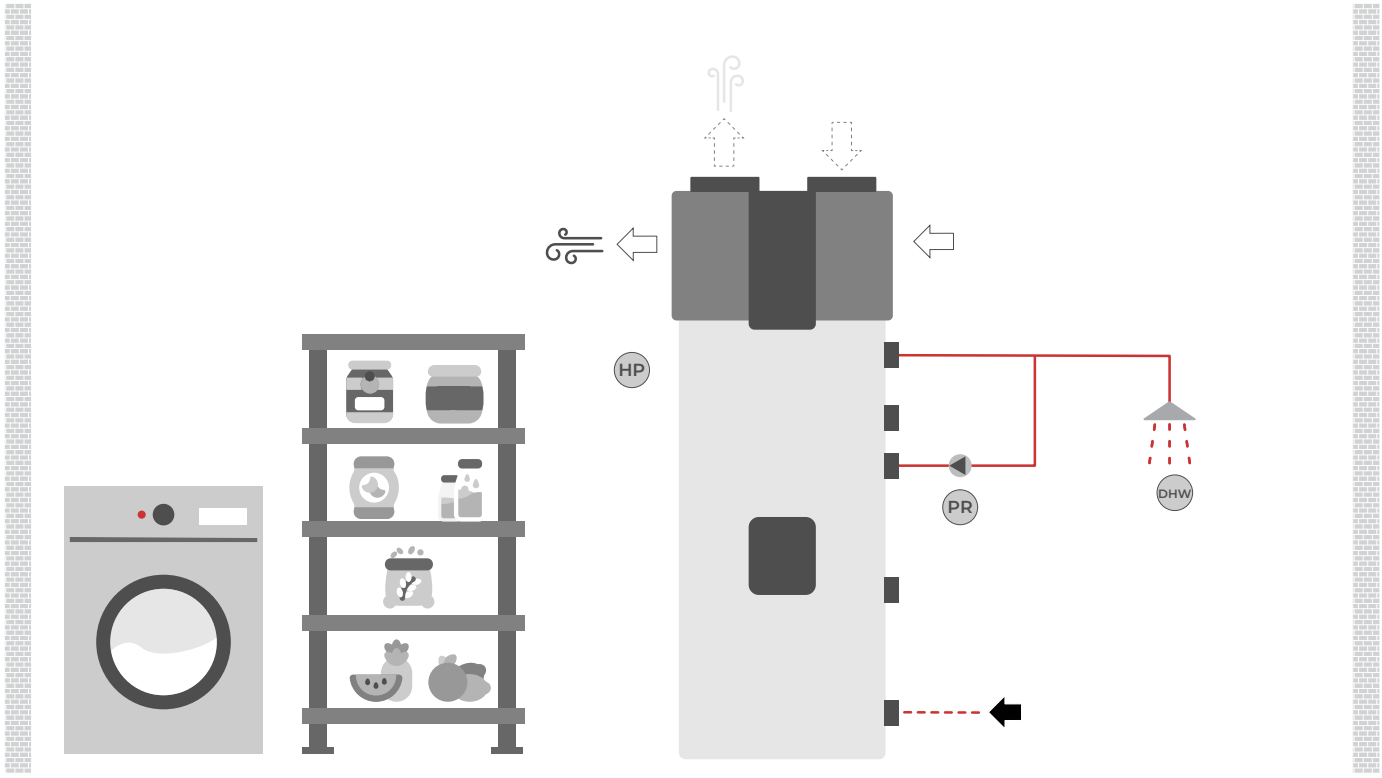


AVAILABLE HOT WATER VOLUME



BASIC INSTALLATION DIAGRAM

Ambient air configuration

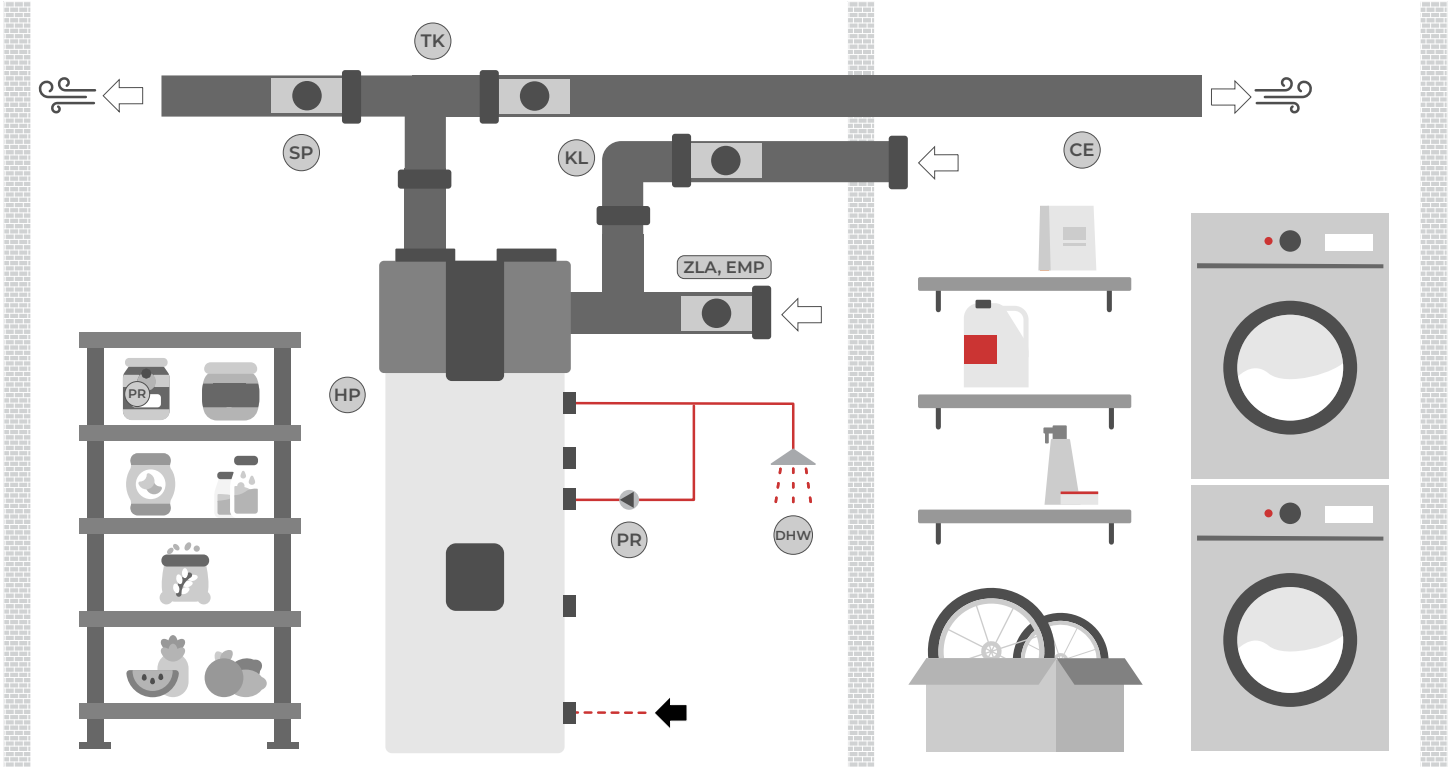


DHW	Domestic hot water
HP	Heat pump
PR	Recirculation pump for domestic hot water

A representative selection of items from the KRONOTERM sales program is shown.
For accurate system planning, please refer to the “Preparing for Installation” section of the instructions or consult your chosen system designer.

BASIC INSTALLATION DIAGRAM

Air source switching



CE	Ventilation pipe
DHW	Domestic hot water
HP	Heat pump
KL	Elbow
PR	Recirculation pump for domestic hot water
SP	Ventilation pipe coupling
TK	T-piece
ZLA, EMP	Butterfly valve with drive

A representative selection of items from the KRONOTERM sales program is shown.
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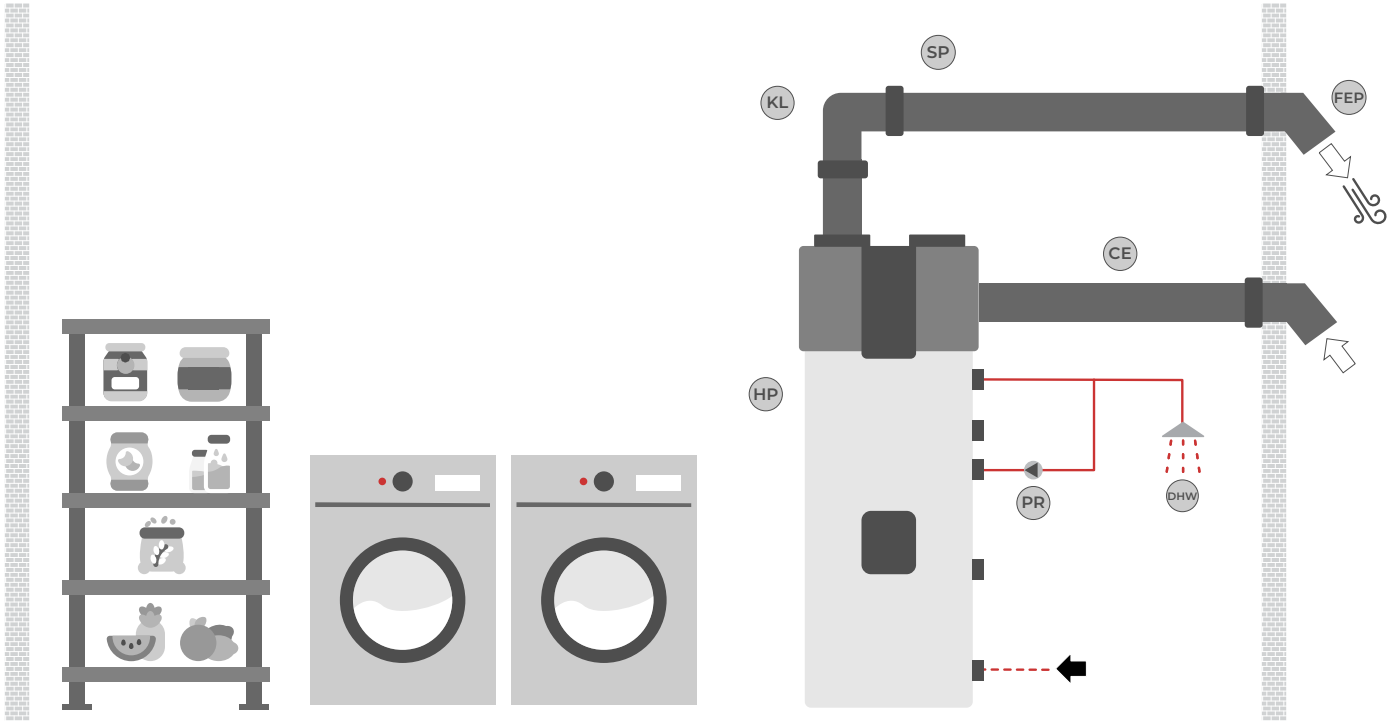
BASIC INSTALLATION DIAGRAM

Ducted air configuration



CE	Ventilation pipe
DHW	Domestic hot water
FEP	Facade element
HP	Heat pump
KL	Elbow
PR	Recirculation pump for domestic hot water
SP	Ventilation pipe coupling

A representative selection of items from the KRONOTERM sales program is shown.
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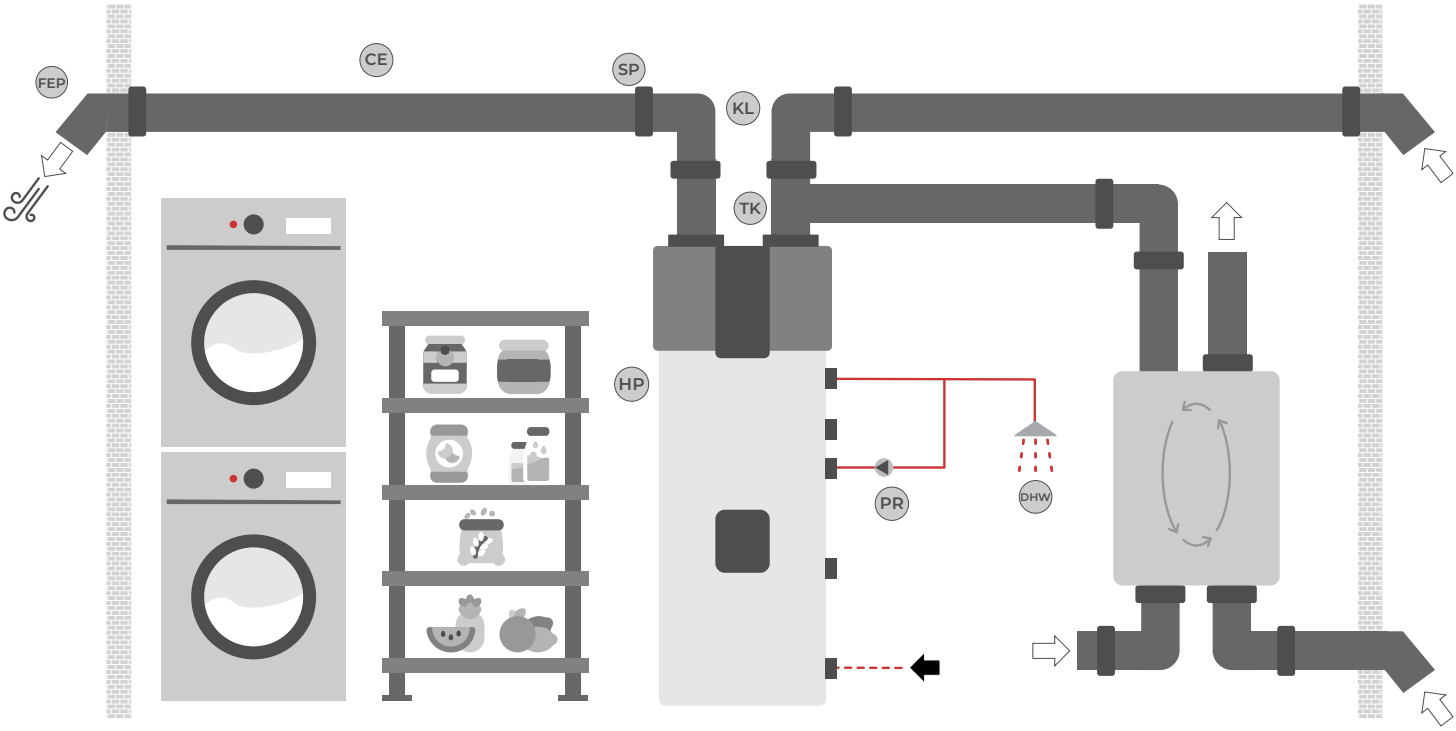
BASIC INSTALLATION DIAGRAM

Exhaust air utilisation from heat recovery



CE	Ventilation pipe
DHW	Domestic hot water
FEP	Facade element
HP	Heat pump
KL	Elbow
PR	Recirculation pump for domestic hot water
SP	Ventilation pipe coupling
TK	T-piece

A representative selection of items from the KRONOTERM sales program is shown.
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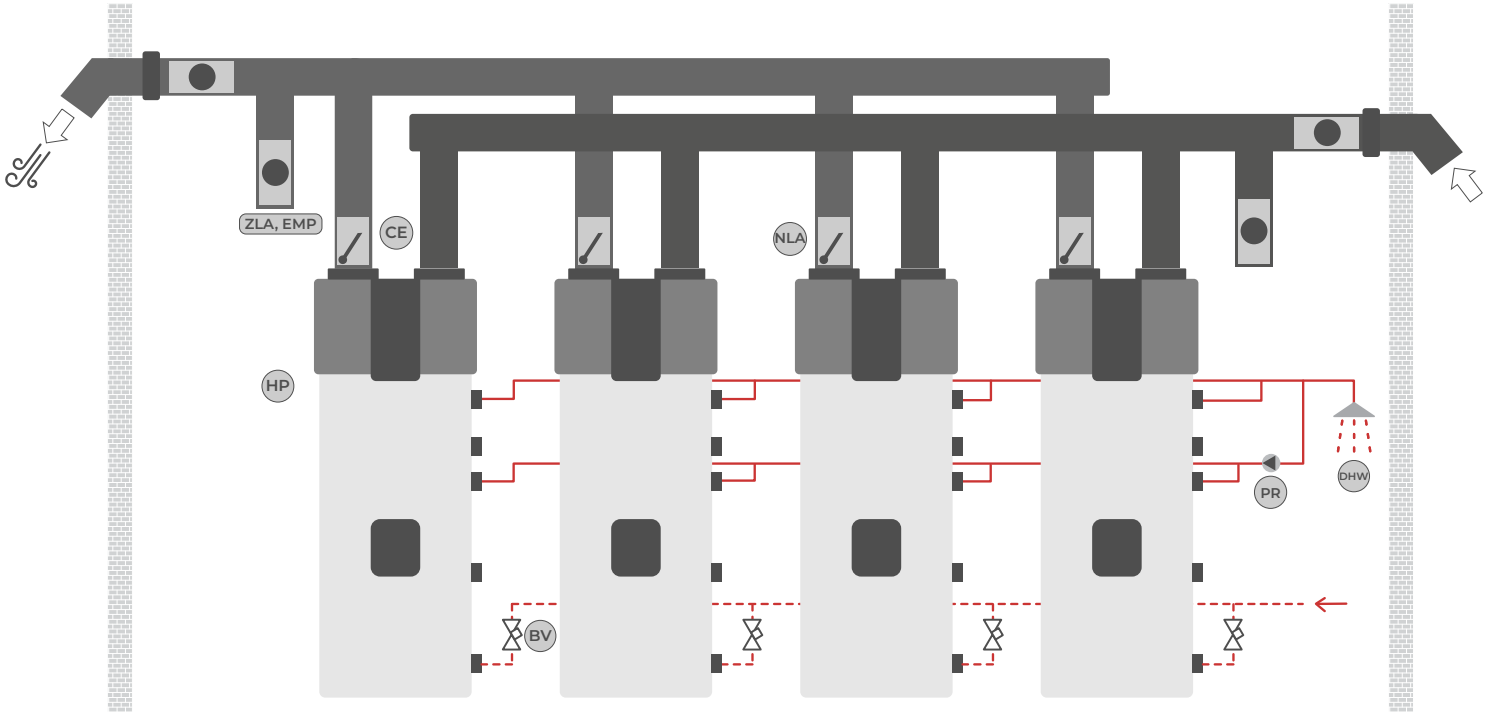
BASIC INSTALLATION DIAGRAM

Cascade connection



BV	Balancing valve
CE	Ventilation pipe
DHW	Domestic hot water
HP	Heat pump
NLA	Check valve
PR	Recirculation pump for domestic hot water
ZLA, EMP	Butterfly valve with drive

A representative selection of items from the KRONOTERM sales program is shown.
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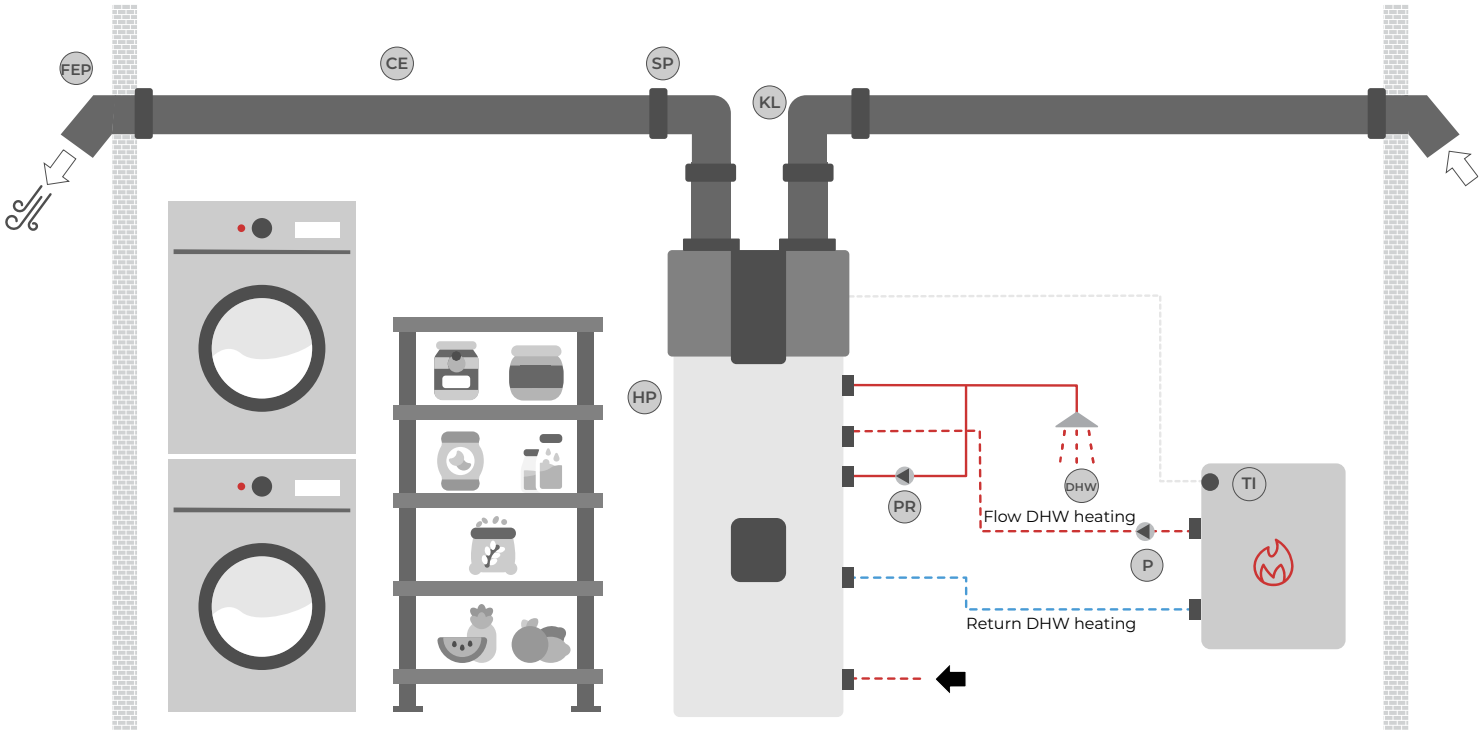
BASIC INSTALLATION DIAGRAM

Biomass furnace connection



CE	Ventilation pipe
DHW	Domestic hot water
FEP	Facade element
HP	Heat pump
KL	Elbow
P	Circulation pump
PR	Recirculation pump for domestic hot water
SP	Ventilation pipe coupling
TI	Temperature sensor

A representative selection of items from the KRONOTERM sales program is shown.
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