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DC Inverter heat pumps Gorenje

Product information

Model: **Aerogor ECO Inverter 10 AS**

Type: air-water (split system)

Touchscreen Control unit

English language

Q
European Quality Label for Heat Pumps
≈ehpa

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TECHNICAL SPECIFICATION: Heat pump air-water Aerogor ECO Inverter 10 AS

MODEL	Unit	Aerogor ECO Inverter 10 AS
ErP Energy efficiency class (floor/radiators heating)		A++ / A+
SCOP 35°C (floor heating) EN 14825	kW/kW	3,83
P_{design} for SCOP EN 14825	kW	6,30
Heating capacity* at A2/W35 (EN 14511):	kW	**9,06**
COP* (Coefficient of performance) at A2/W35 (EN 14511):	kW/kW	**3,79**
Heating capacity* at A7/W35 (EN 14511):	kW	**10,12**
COP* (Coefficient of performance) at A7/W35 (EN 14511):	kW/kW	**4,1**
*At 86% or 73 Hz of max. compressor frequency. Maximum compressor frequency at A2-A7/W35 is 85 Hz.		
Heating mode (A7/W35)**; According to EN 14511.		
Heating capacity**	kW	4,57 – 10,67
Rated input power**	kW	0,92 – 3,03
COP - Coefficient of Performance**	kW/kW	3,83 – 5,05
Cooling mode (A35/W7)***; According to EN 14511.		
Cooling capacity***	kW	2,60 – 8,00
Rated input power***	kW	1,10 – 3,50
EER - Energy Efficiency Ratio***	kW/kW	2,30 – 3,22
Voltage	V/Hz/Ph	220-240/50/1
Type of compressor	/	DC inverter (twin rotary)
Max. temperature of heating water	°C	55
Operating range - source temp. in: heating/coooling mode	°C	-25°C to +45°C / 0°C to +65°C
Refrigerant specification		
Type of refrigerant/Refrigerant - mass (factory pre-charged)	type/kg	R410A/1,90
Type of connection/max. distance between outdoor-indoor unit (see details on page 7)	/	Refrigerant connection/20 m
Dimensions of refrigerant pipes connectors	Liquid - Gas	3/8" - 1/2"
Fan		
Fan type	/	Axial
Air flow	m³/h	3100
Rated power	W	60
Water side heat exchanger		
Type	/	Plate heat exchanger
Pressure drop	kPa	30
Dimensions of water piping connection	Inch	G1"
Allowable flow - secondary (water) side		
Min. / Nonimal / Max. water flow	m³/h	1,15/1,44/2,16
Net dimensions and weight		
Indoor unit (WxHxD) (see details on page 6)	mm	512 x 932 x 303,5
Outdoor unit (WxHxD) (see details on page 6)	mm	1056,5 × 765 × 414
Net weight: Indoor unit/Outdoor unit	kg	47/65
SERIAL INTEGRATED COMPONENTS		
Electrical int. flow heater	kW	6 kW (3ph / 2 stages)
Circulation water pump - A energy class	type	Grundfos UPM GEO 25-85 180
3-way diverting valve for DHW tank		External (in delivery)
Fuse for heat pump	A/type	1 X 1p/20A/C
Fuse for electrical flow heater	A/type	3 X 1p/10A/C
Sound power level according to EN12102 (indoor/outdoor)****	dB(A)	45/58 (±1,5 dB)
****See details on page 5		

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Outdoor unit :

Aerogor ECO Inverter 10 AS

Indoor unit - Hydrobox :

Aerogor ECO Inverter 10 AS

7" Touchcsreen control unit

Outdoor unit—description of components:
Type of compressor: Panasonic DC Inverter
Voltage supply—heat pump: 220-240/50/1 [V/Hz/Ph]
Operating range of compressor: 30 - 85 Hz
Type of expansion valves: EEV
Type of fan: 1 x DC fan with speed control
Active cooling with 4-way reversible valve

Indoor unit—description of components:
Type of plate heat exchanger: GEA GBH400
Type of circulating pump: Grundfos UPM GEO 25-85 180
Energy class of circulating pump: A
Safety kit: pressure gauge, air-vent valve, safety valve
Dimension of water connectors: DN 25 (bright diameter)
Control unit and HMI: TLCD 4827 Touch screen
Electrical int. flow heater: 6 kW (2 kW + 4 kW)
                    1st stage: 2 kW
                    2nd stage: 6 kW
Voltage supply –el. flow heater: 380-415/50/3 [V/Hz/Ph]
Serial integrated flow switch

Serial attached components:
1x Three-way diverting valve for system with DHW tank
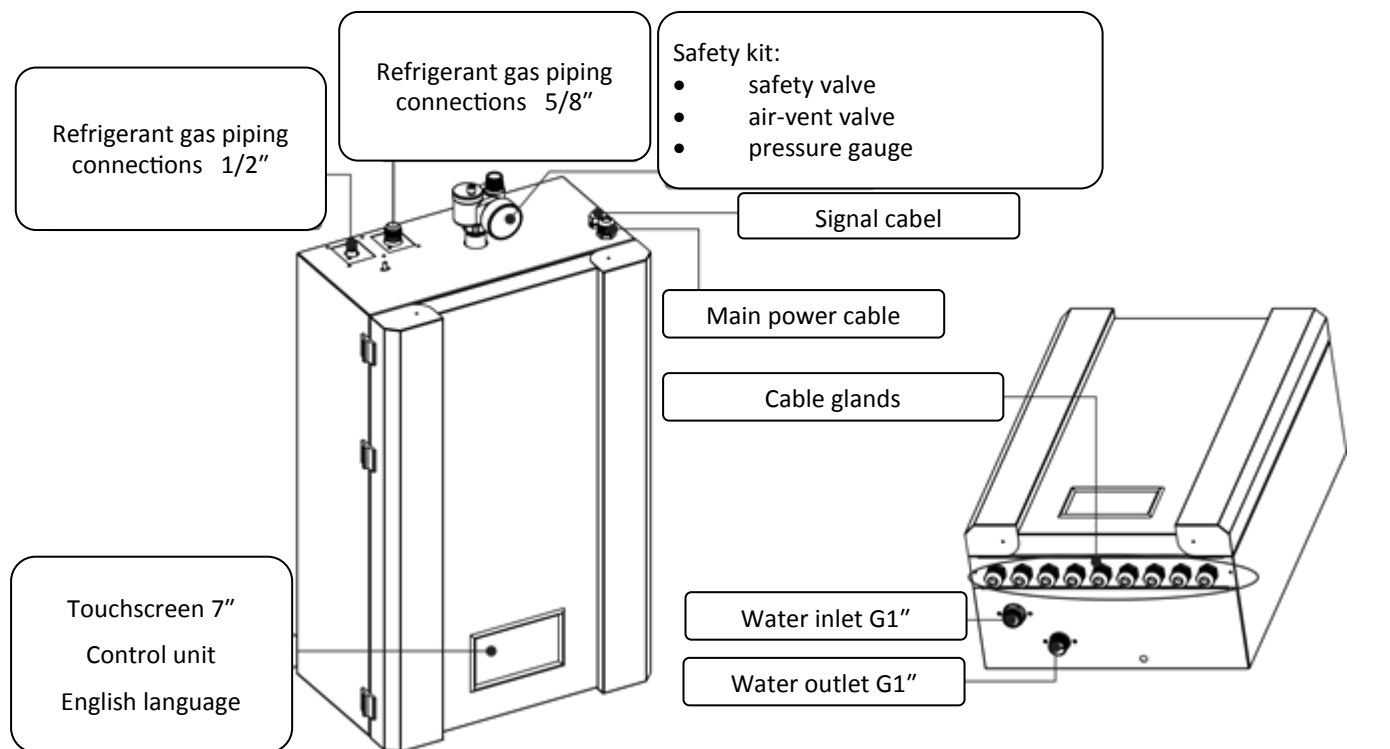1 x Communication cable 20 m (indoor/outdoor unit)
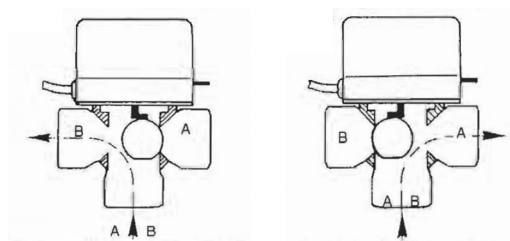**1 x Set for Wi-fi module**
6 x temperature sensors:
- Room temperature sensor (TR)
- Temp. sensor for outlet water temp. or buffer tank (TC)
- Temp. sensor for DHW tank (TW)
- 2 x temp. sensors for mixing heating circuits (TV1, TV2)
- Additional Outdoor ambient sensor (Ta) (enable installation of the Ta sensor on the north part of the house where is minimum influence of the sun)

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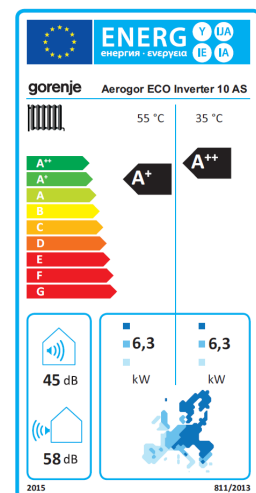
Position of components

Indoor unit: Aerogor ECO Inverter 10 AS

Refrigerant gas piping connections   1/2"

Refrigerant gas piping connections   5/8"

Safety kit:
- safety valve
- air-vent valve
- pressure gauge

Signal cabel

Main power cable

Cable glands

Touchscreen 7"

Control unit

English language

Water inlet G1"

Water outlet G1"

6 kW Electrical back-up heater: 2 kW + 4 kW

Emergency switch

Digital thermostat

Door

Electrical box

Circulation pump A energy class:

Grundfos UPMGEO 25-85 180

3-Way diverting valve

(In delivery)

Attached components for Aerogor ECO Inverter 10 AS

Name	Quantity	Picture
Installation manuals, warranty statement/card	1	
Overflow water pipe	1	
Safety kit	1	
TR – room temperature sensor + extension cable 20 m	1	
TC – sensor for outlet water temperature/buffer tank + extension cable 10 m	1	
TW - temp. sensor for DHW tank + extension cable 10 m	1	
TV1 - temp. sensor for Mixing valve 1 + extension cable 10 m TV2 - temp. sensor for Mixing valve 2 + extension cable 10 m	2	
Communication cable between indoor and outdoor unit 20 m	1	
Indoor unit bracket	1	
Expansion bolts	2	
Ta - additional Outdoor ambient sensor	1	
Set for WI-FI module (adapter, antenna, connection cable)	1	

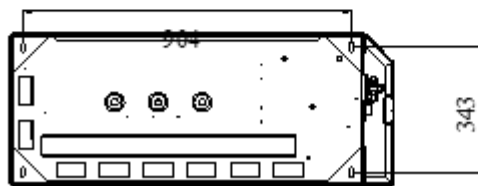## Sound power/pressure levels of heat pump air-water Aerogor ECO Inverter 10 AS

Outdoor unit	Sound power level Lw(A)	Sound pressure level [dB(A)] on distance*						
Model name		*1 m	*2 m	*4 m	*5 m	*8 m	*10 m	*15 m
Aerogor ECO Inverter 10 AS	57,8	49,82	43,80	37,78	35,84	31,75	29,82	26,29

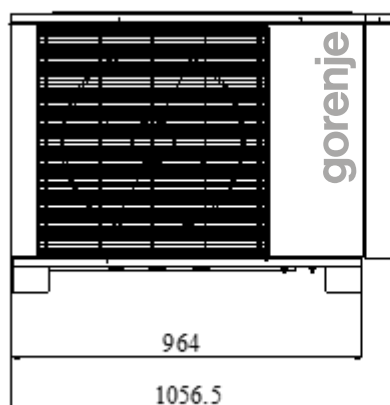 **According to standard EN 12102. Sound measurement according to EN ISO 3744. Measurement precision (standard deviation in dB): +/- 1,5 dB**
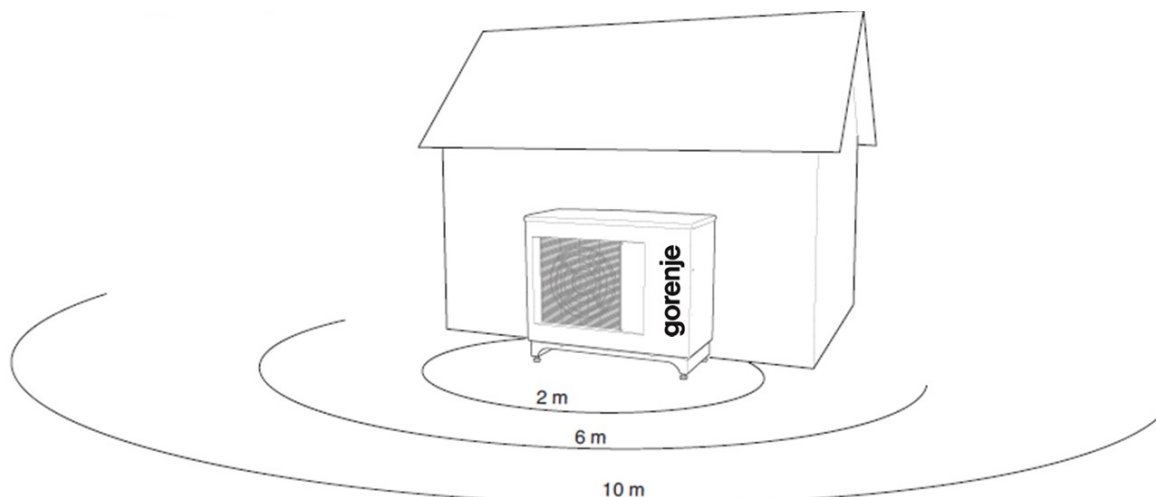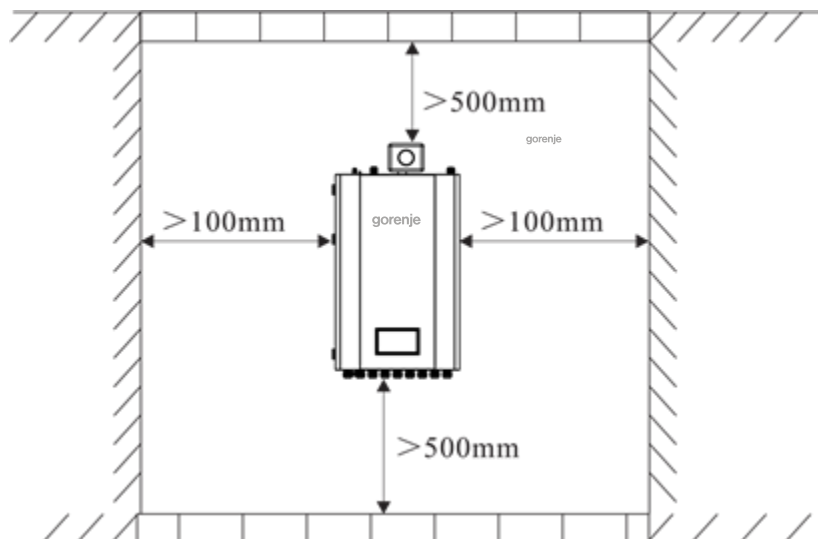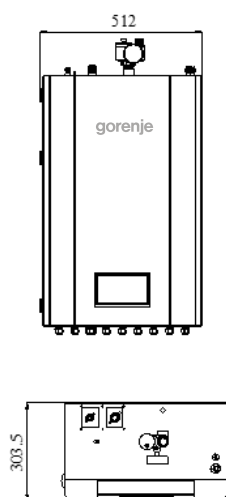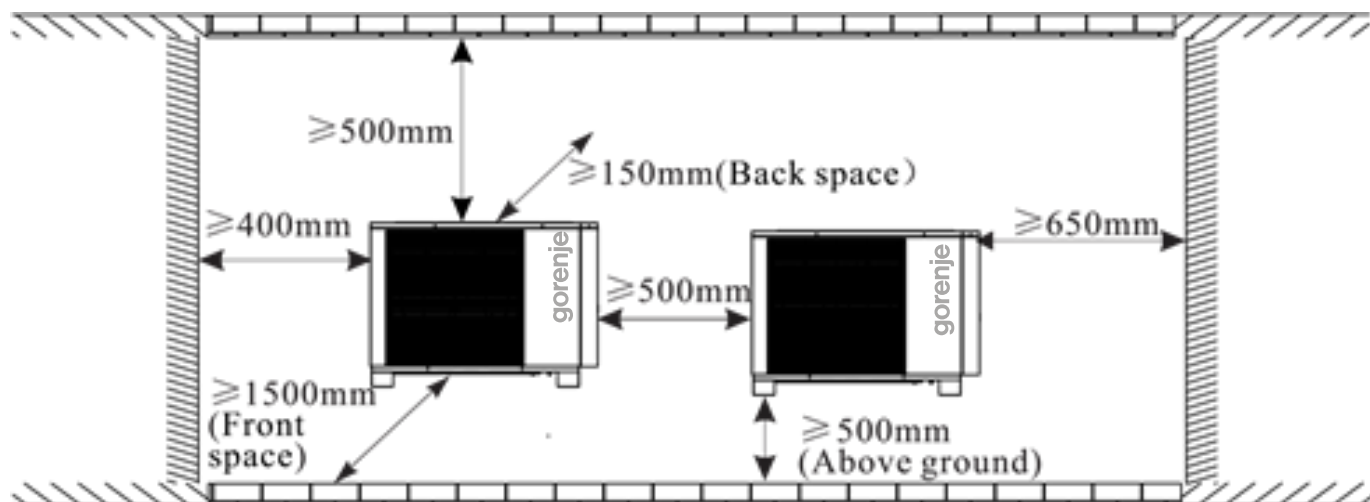
DIMENSIONS OF INDOOR AND OUTDOOR UNIT

Bottom view

904

343

Front view

Side view

964

1056.5

414

765

≥500mm

≥150mm(Back space)

≥400mm

≥650mm

≥500mm

≥1500mm
(Front
space)

≥500mm
(Above ground)

512

932

792

303.5

>500mm

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>100mm

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>100mm

>500mm

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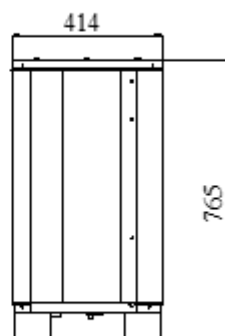
Bivalent or back-mode: 6 kW electrical heater

6 kW Electrical flow heater

Emergency switch

Digital thermostat

Electrical box

88 °C
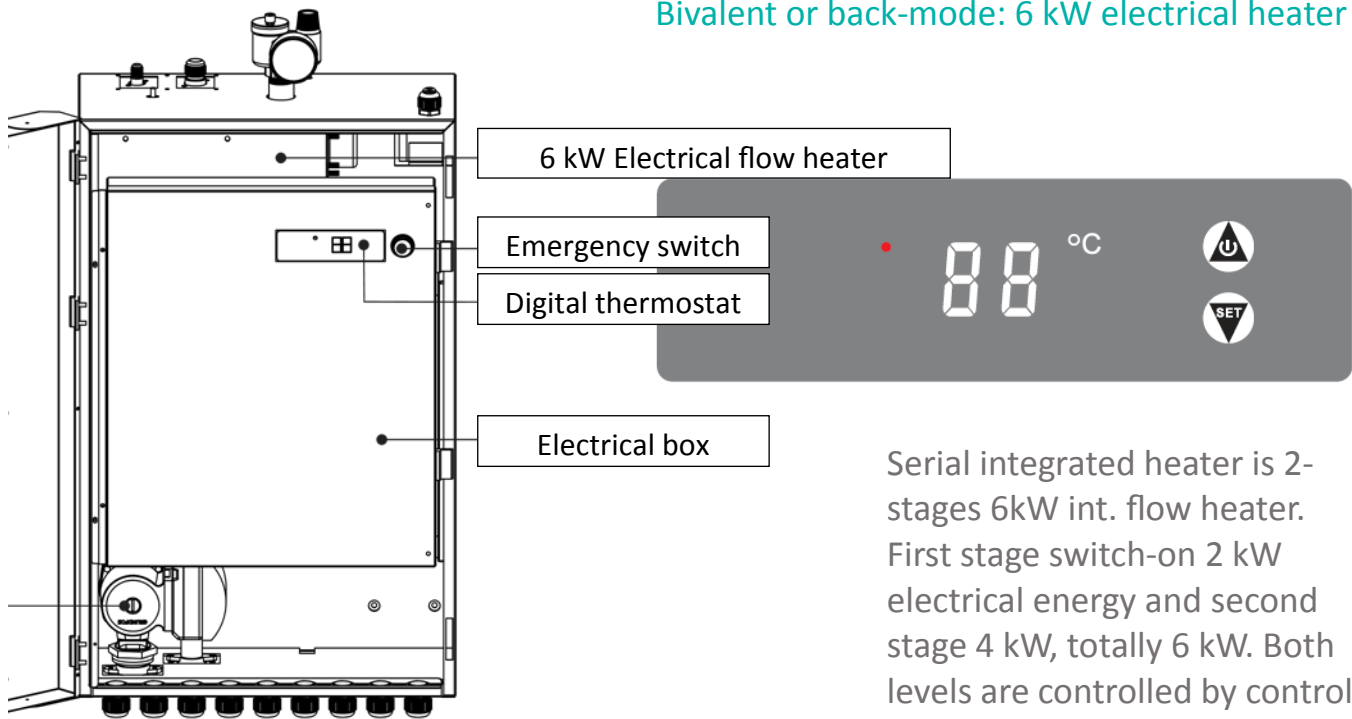
Serial integrated heater is 2-stages 6kW int. flow heater. First stage switch-on 2 kW electrical energy and second stage 4 kW, totally 6 kW. Both levels are controlled by control unit of heat pump and additional digital thermostat.
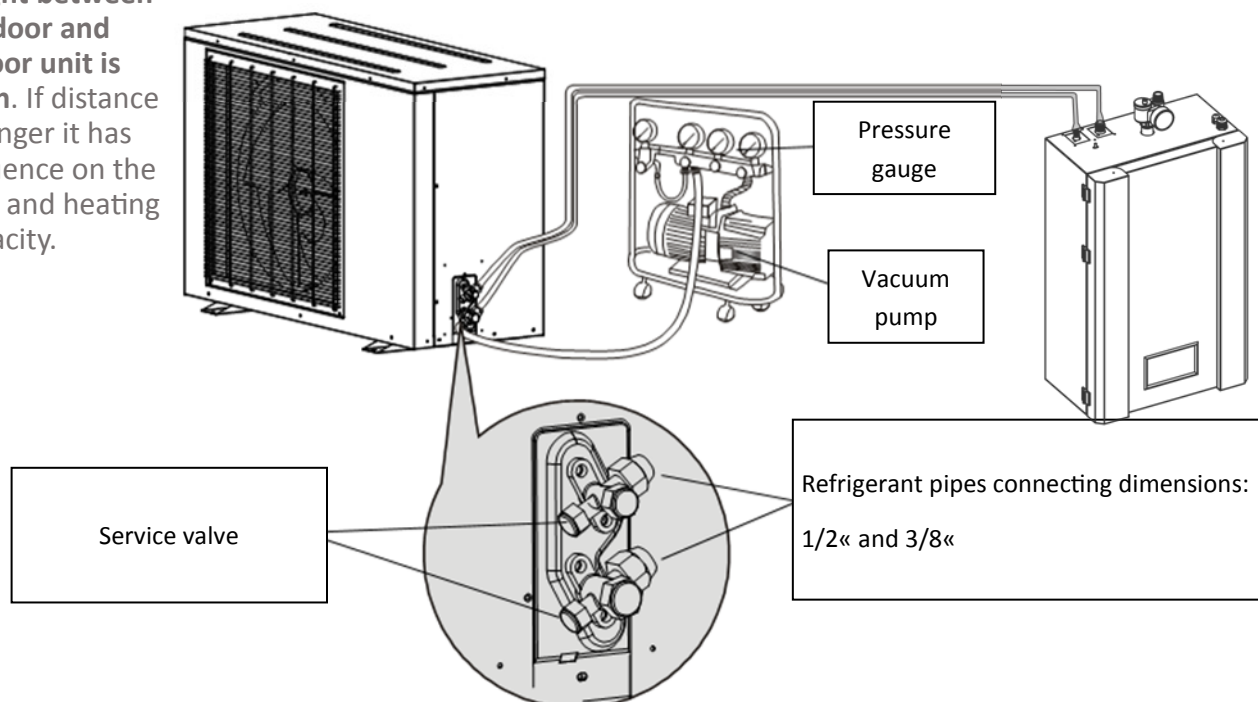
Gas charging for Aerogor ECO Inverter 10 AS

Outdoor unit is pre-charged with 1,90 kg of refrigerant R410A. This volume of refrigerant is enough for a 5 m long refrigerant pipe connection. For every additional meter is oblioga-tory to supplement 40 g refrigerant gas in the system.
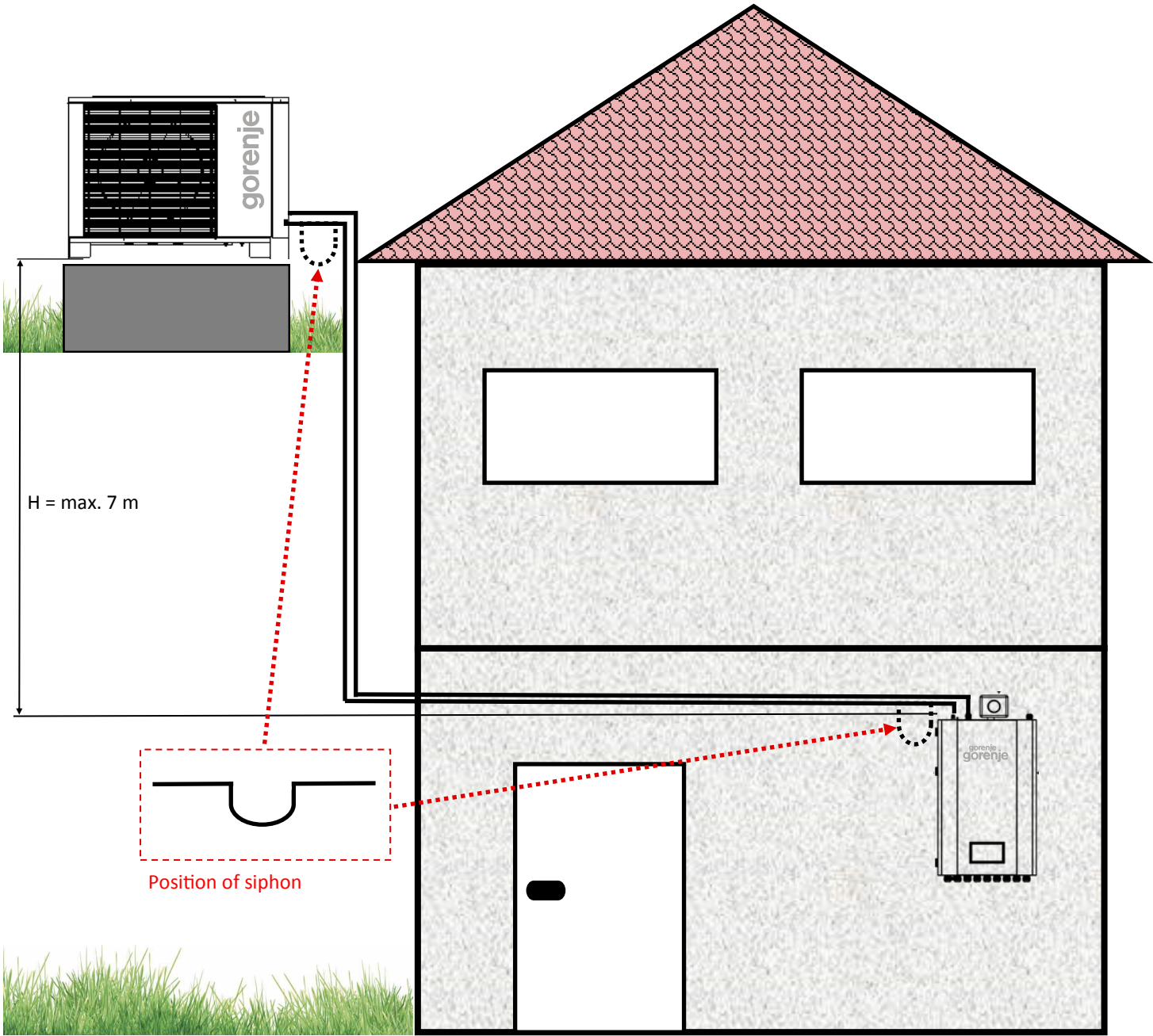
Min. refrigerant pipe lenght: **3 m**

Maximum pipe lenght between outdoor and indoor unit is 20 m. If distance is longer it has influence on the COP and heating capacity.

If refrigerant pipe system is 12 m long, installer need to add 280 g refrigerant gas in the system:

(12 − 5) [m] x 40 [g/m] = 7 [m] x 40 [g/m] = 280 [g]

Pressure gauge

Vacuum pump

Service valve

Refrigerant pipes connecting dimensions: 1/2« and 3/8«

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Height difference between outdoor and indoor unit

H = max. 7 m

Position of siphon

Outdoor unit is above Indoor unit

Maximum height difference is 7 m.

Totally pipe length distance can be maximum 20 m. In case of 7 m height distance between indoor and outdoor unit, horizontal pipe distance can be maximum 11 m. In that case is obligatory to integrated 2 siphons. Each siphons takes 1 m pipe distance.

Outdoor unit is below Indoor unit

Maximum height difference is 5 m.

Totally pipe length distance can be maximum 20 m. In case of 5 m height distance between indoor and outdoor unit, horizontal pipe distance can be maximum 15 m.

Model name	Outdoor unit is above Indoor unit max. height difference [m]/ Number of siphons	Outdoor unit is below Indoor unit max. height diffrenece [m]/ Number of siphons
Aerogor ECO Inverter 10 AS	7 m / 2 siphons	5 m / 0 siphon

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SYSTEM SCHEME 1: buffer tank + DHW tank + 1 mixing HC/CC* + 1 direct HC/CC*

## SYSTEM SCHEME 2: DHW** tank + 1 direct HC/CC*
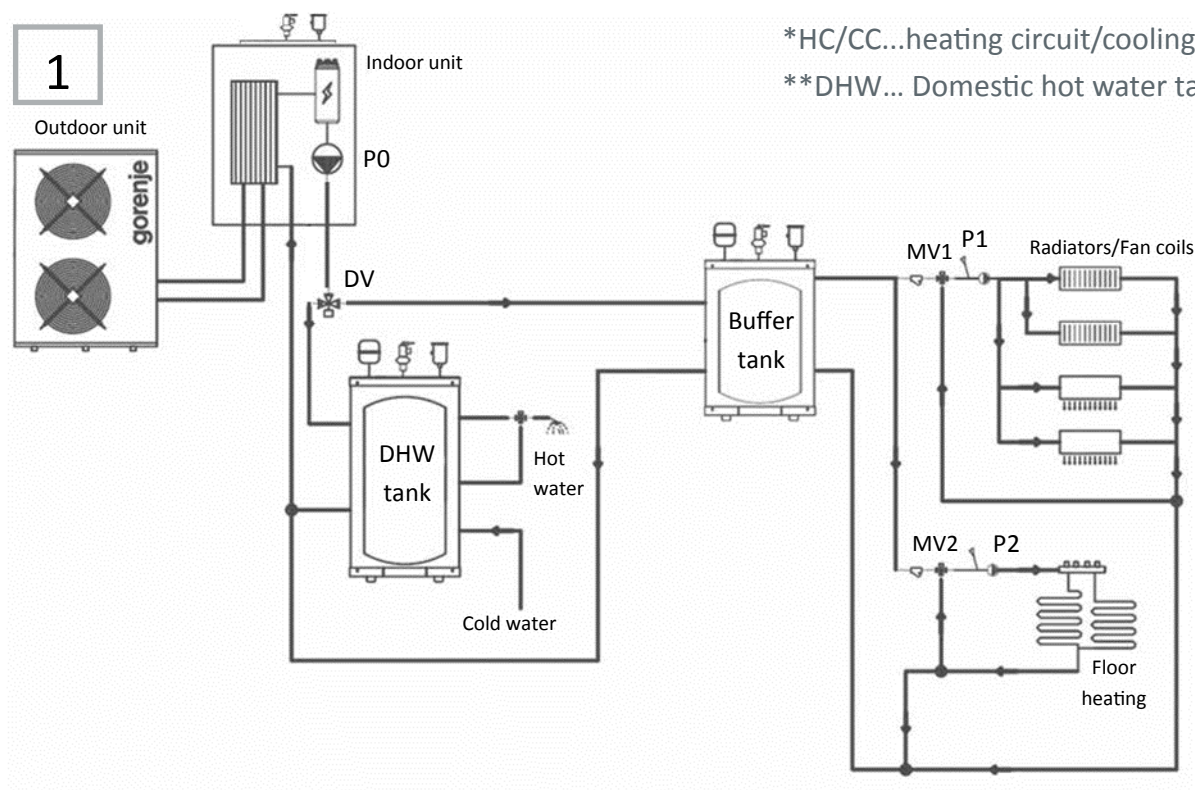
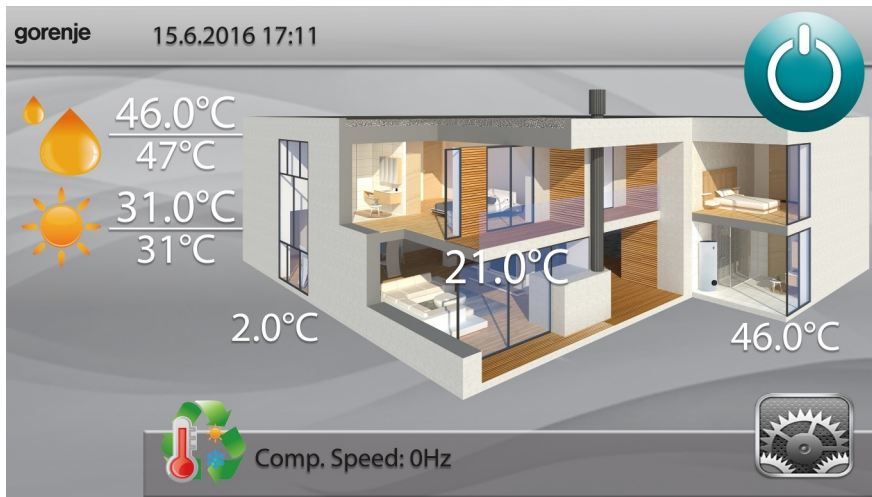*HC/CC...heating circuit/cooling circuit
**DHW... Domestic hot water tank

KEY:

- **DHW... Domestic hot water tank**
- **MV1... Mixing valve 1 for radiators and fan coils**
- **MV2... Mixing valve 2 for floor heating system**
- **DV... 3-way diverting valve for switching between heating/cooling and DHW mode**
- **P0... Circulation pump for DHW tank and heating system (buffer tank or floor heating)**
- **P1... Circulating pump for radiators and fan coils**
- **P2... Circulating pump for floor heating system**

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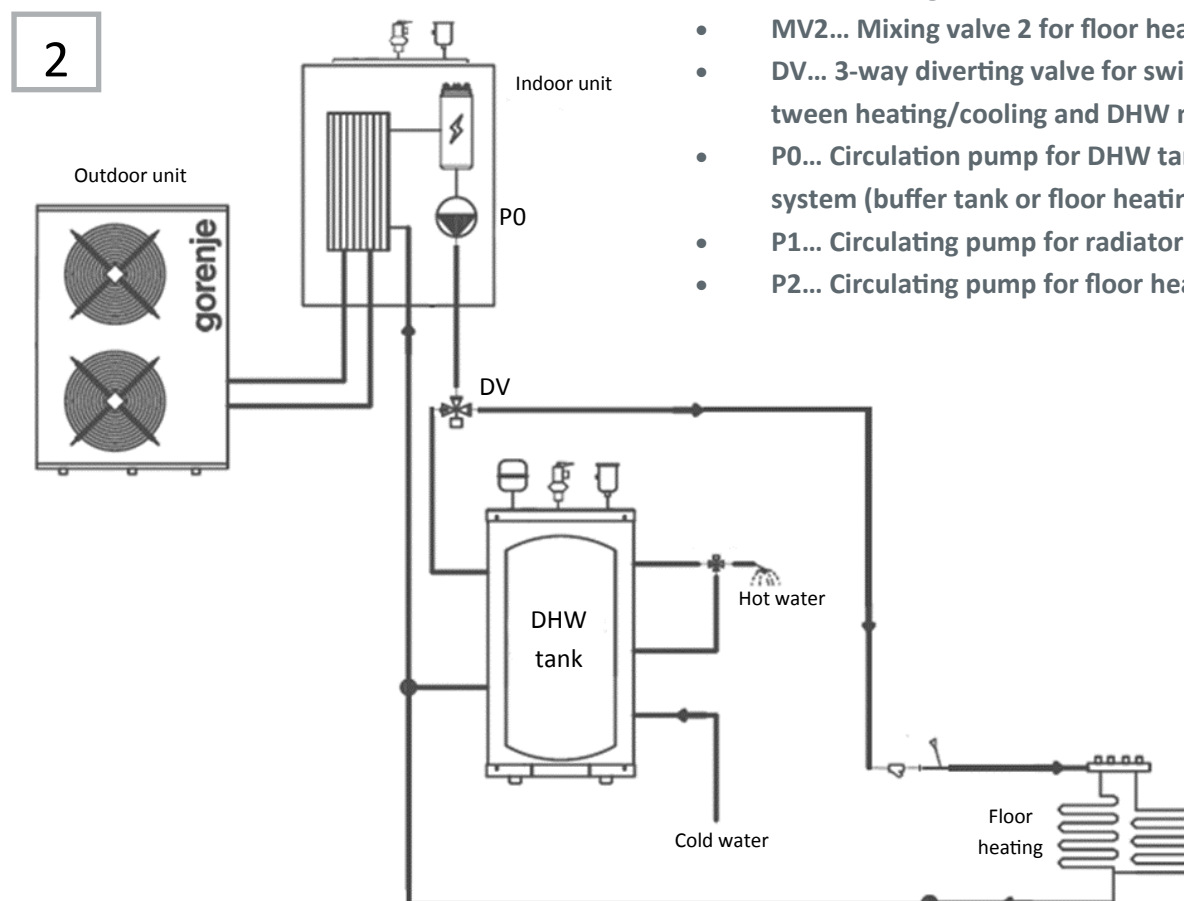
INTELLIGENT ELECTRONIC CONTROL UNIT + VARIABLE SPEED COMPRESSOR

WI-FI Control (Service application)

Wi-Fi

Basic configuration enable regulation of:

- **2 mixing (proportional 24VDC/0-10V, for example ESBE ARA 639)**

or **2 direct** heating circuits

- **3-way diverting valve** (for DHW water tank)
- **Switching ON/OFF 6 kW** electrical flow heater (2 stages working mode)
- **Switching ON/OFF bivalent heating source**
- Anti - legionella function
- Drying (curing) screeds mode
- Sleep function mode—silent mode

**REGULATION OF 2 HEATING/COOLING CIRCUITS**

2 X DIRECT HEATING/COOLING CIRCUITS
or
2 X MIXING HEATNG/COOLING CIRCUITS

DC Inverter compressor is optimal solution for low and medium temperature aplications. ECO mode limitiation enable energy saving during the summer time - it also protect a working envelope of the most important component in heat pump - compressor.
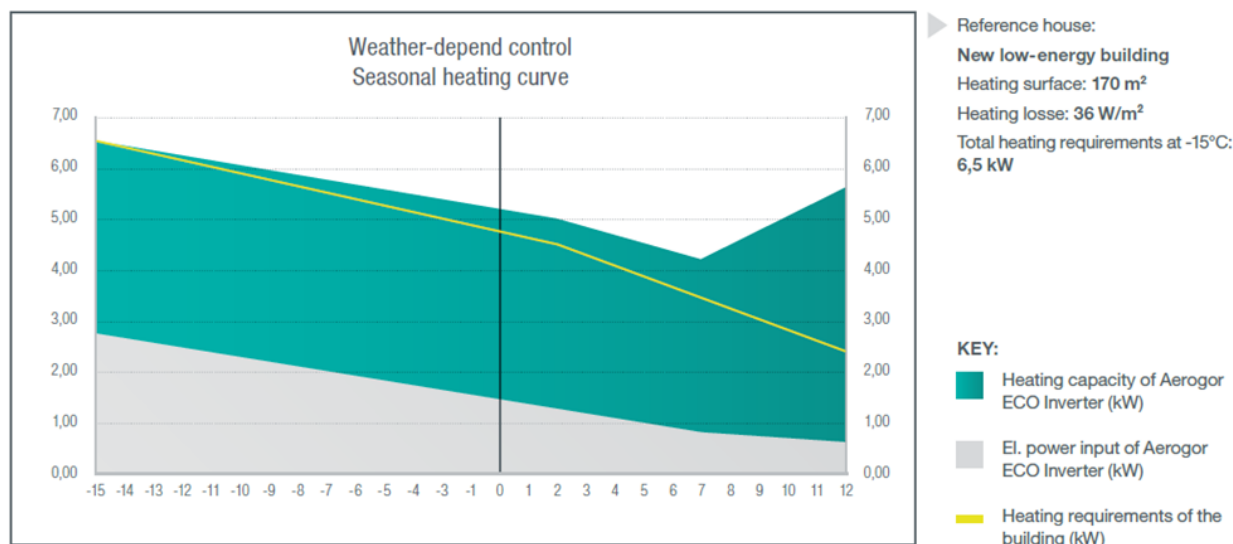
OPERATING RANGE—HEATING MODE: Aerogor ECO Inverter 10 AS
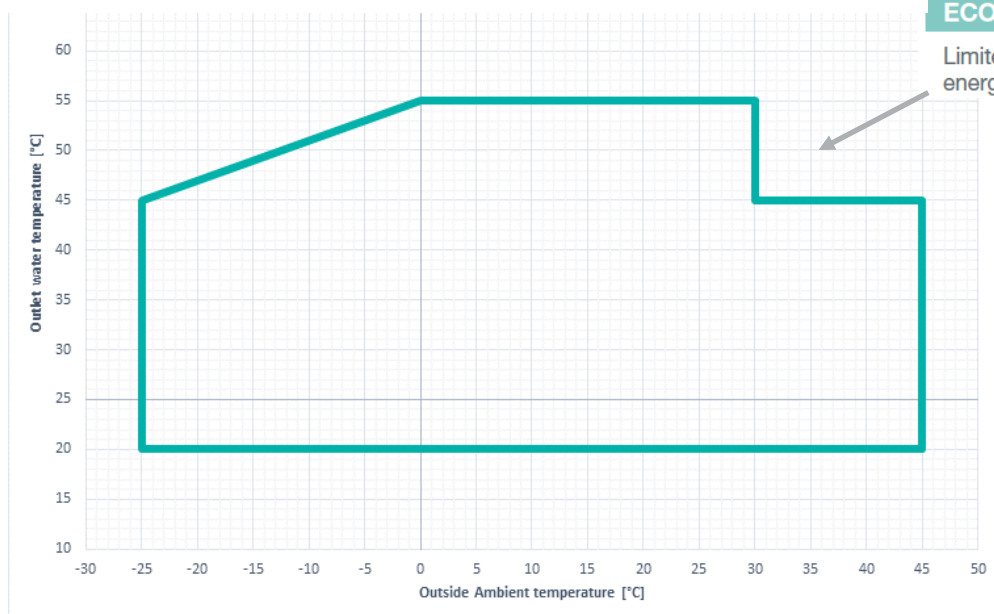
ECO mode:
Limited water temperature for energy saving in summer time.

INTELLIGENT ELECTRONIC CONTROL UNIT + VARIABLE SPEED COMPRESSOR

Weather-depend control
Seasonal heating curve

Reference house:
New low-energy building
Heating surface: 170 m²
Heating losse: 36 W/m²
Total heating requirements at -15°C:
6,5 kW

KEY:

■ Heating capacity of Aerogor ECO Inverter (kW)

■ El. power input of Aerogor ECO Inverter (kW)

— Heating requirements of the building (kW)

Description of heating curve function: The heating curve generates the flow temperature setpoint, which is used to maintain a certain flow temperature depending on the prevailing weather conditions. The heating curve can be adjusted via a number of settings, thus matching heat output and room temperature to individual needs.
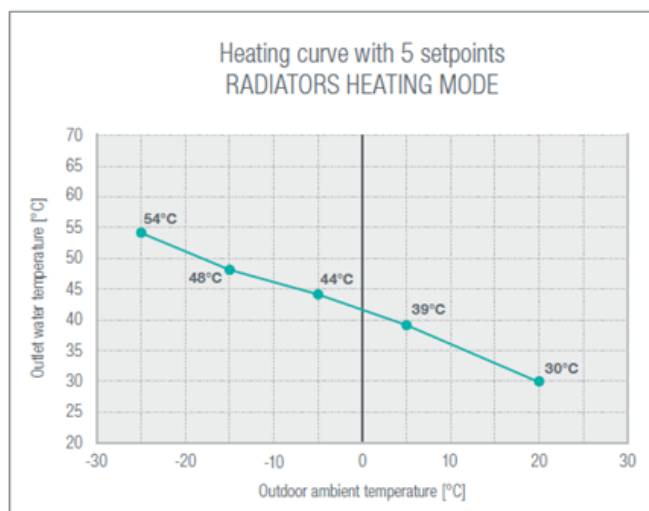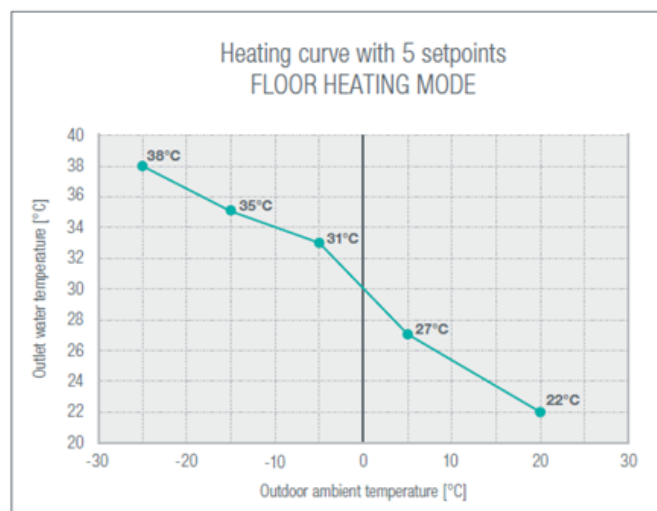
ADJUSTABLE HEATING CURVE

The heating curve depends on the characteristics of the building being heated, which is the only warranty that the heat pump, regardless of the outdoor temperature, will always heat up the water to the lowest acceptable temperature. End user can very easily change or adopt 5 different setpoints of heating curve. The most important are C and D points (outdoor ambient temperature -5°C to 5°C).
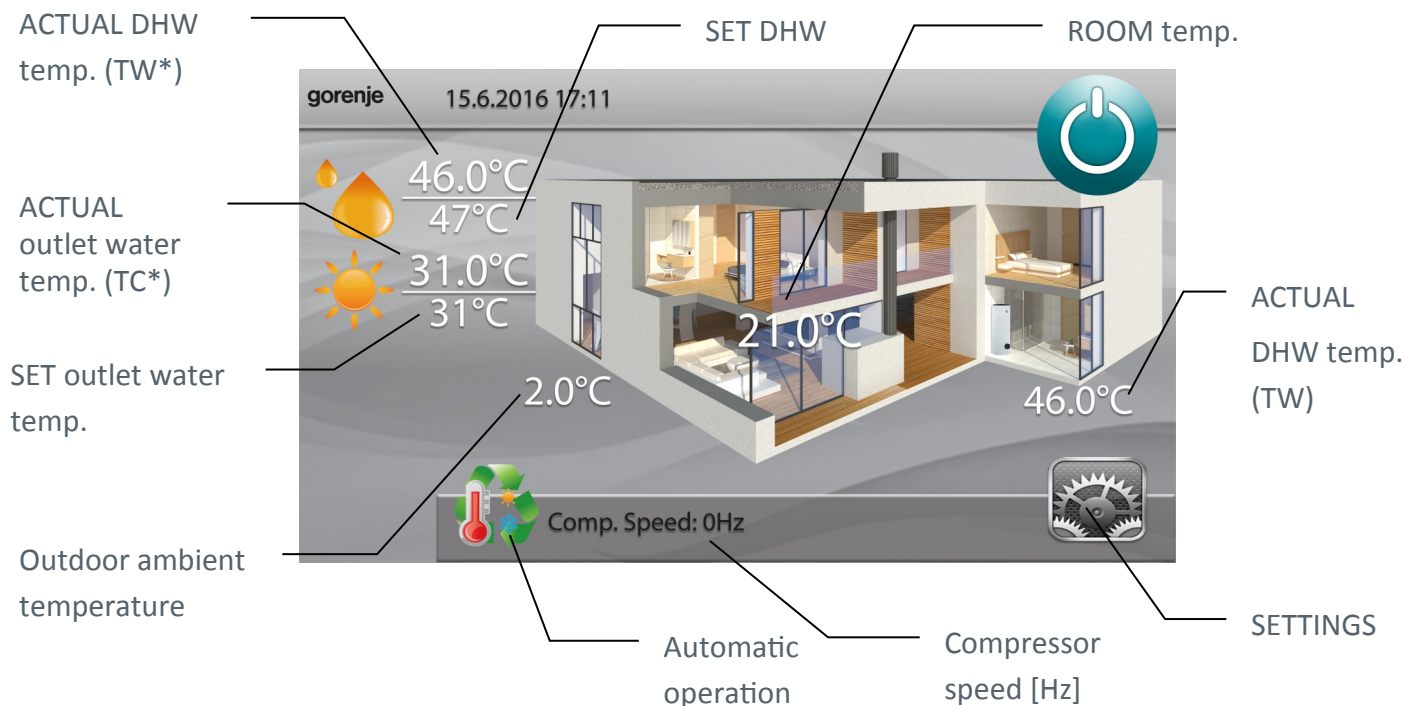
	RADIATORS HEATING SYSTEMS		FLOOR HEATING SYSTEMS	
	Outdoor temperature	Outlet water temperature of heat pump	Outdoor temperature	Outlet water temperature of heat pump
A	-25°C	54	-25	38
B	-15°C	48	-15	35
C	-5°C	44	-5	31
D	5°C	39	5	27
E	20°C	30	20	22

Heating curve with 5 setpoints
FLOOR HEATING MODE

Heating curve with 5 setpoints
RADIATORS HEATING MODE

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INTELLIGENT ELECTRONIC CONTROL UNIT + VARIABLE SPEED COMPRESSOR

ACTUAL DHW temp. (TW*)

ACTUAL outlet water temp. (TC*)

SET outlet water temp.

Outdoor ambient temperature

SET DHW

ROOM temp.

ACTUAL DHW temp. (TW)

SETTINGS

Automatic operation

Compressor speed [Hz]

gorenje   15.6.2016 17:11

46.0°C / 47°C

31.0°C / 31°C

21.0°C

2.0°C

46.0°C

Comp. Speed: 0Hz

*TC temp. sensor.for buffer tank or outlet water

*TW temp. sensor for DHW tank (sanitary water)

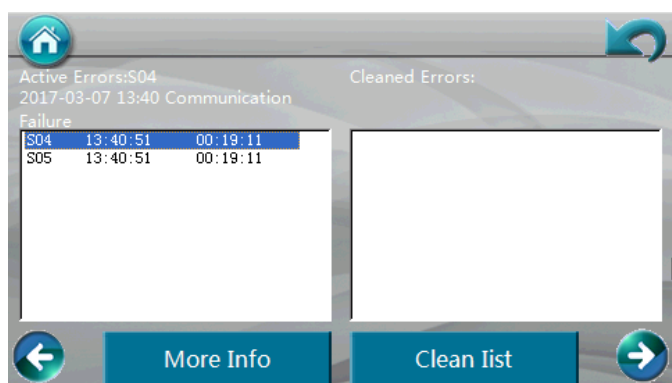## SIMPLE AND EASY DIAGNOSTIC OF THE HEATING SYSTEM AND HEAT PUMP

Hydraulic scheme of the heating system

Room Temp. 20.7   Temp.: 43.3 Set: 45.0   Tv1 31.4   Tv2 22.3
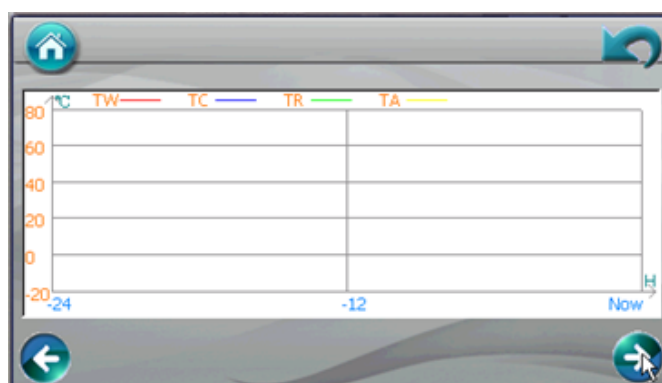Pump speed:1000
Date Lost2:0.1%
Date Lost1:0.3%
EC: 1000000000000000
Temp.: 60.6 Set:
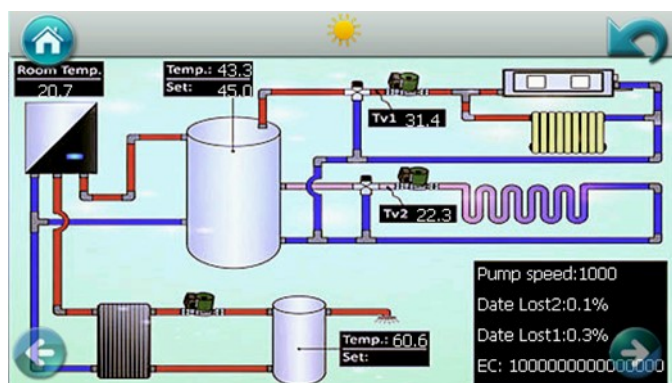
Scheme of heat pump refrigerant system

Tuo 38.8   Ambient Temp. 11.8
Ps 8.6   Ts 7.1   Pd 27.6   Td 57.4   Tp 7.5
Tui 25.0
Tup 7.6   65.0 HZ   9.4 A
Fan 1 speed:640.0
Fan 2 speed:640.0
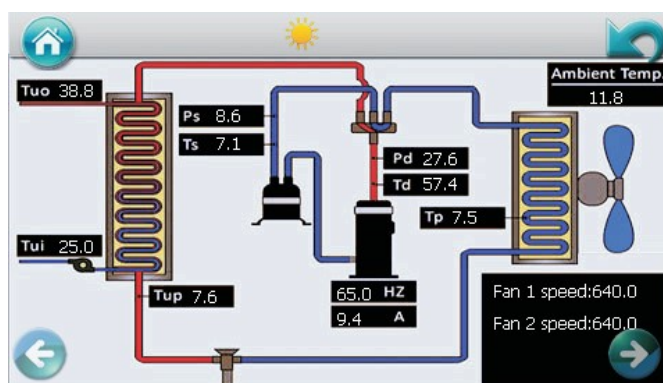
Notes/Errors

Active Errors:S04
2017-03-07 13:40 Communication Failure
S04   13:40:51   00:19:11
S05   13:40:51   00:19:11
Cleaned Errors:

More Info   Clean Iist

Active errors   Error history

24 hours diagnostic graphs

TW   TC   TR   TA
80
60
40
20
0
-20
-24   -12   Now

Modern control unit enable not only regulation of heat pump's operation but also some other special functions:

AUTOMATIC OPERATION - HEATING/COOLING/DHW

Heat pump can operate in 3 different modes: Heating/Cooling/DHW. Intelligent control unit enable automatic switching between:

- heating and cooling mode
- heating and DHW mode
- cooling and DHW mode

SLEEP FUNCTION - SILENT OPERATION MODE

In this mode HEAT PUMP adjusts outlet water temperature or room temperature to **save energy** and lowers the **operation noise by reducing the working speed** of the compressor and fan motor for optimum sleeping comfort.

REDUCED SETPOINT - HOLIDAYS MODE

Serial integrated Vacation Mode allows the users to set the system to operate under minimized vacation settings between the programmed starting and ending time of their vacation periods. System will switch back to normal mode at the ending time of vacation mode properly, so that the occupants will be welcome with proper heating temperature and sanitary hot water, upon returning from their vacations.

ROOM TEMPERATURE COMPENSATION FUNCTION

When the water temperature control function is utilized, users can still connect the room temperature sensor (serial integrated) to allow the intelligent control unit to adjust the outlet water temperature automatically based on the difference between the desired room temperature and the actual room temperature measured.

+30 °C
+20 °C
+10 °C
0 °C
-10 °C
-20 °C
-25 °C

DHW STORAGE FUNCTION

This function enables time setting of DHW mode for 7 days per week and 365 days per year. For example: heat pump heat up the sanitary hot water on the morning time between 5.00 - 7.00 and on the afternoon/evening time between 15.00 - 23.00. It enable energy saving and lower costs on an anual level.
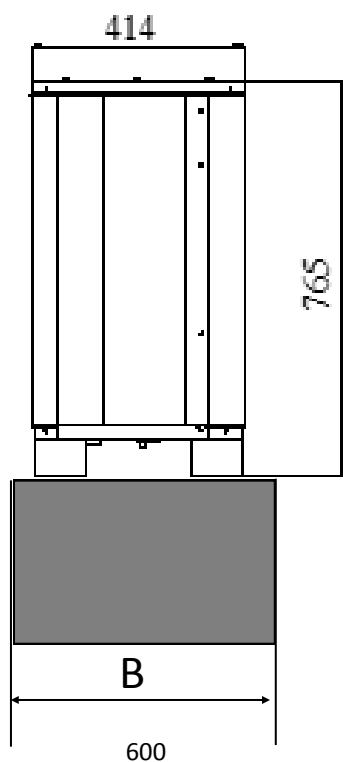
Concrete foundation for heat pump **Aerogor ECO Inverter 10**

Correct

Incorrect

Dimensions of outdoor unit **Aerogor ECO Inverter 10 AS**
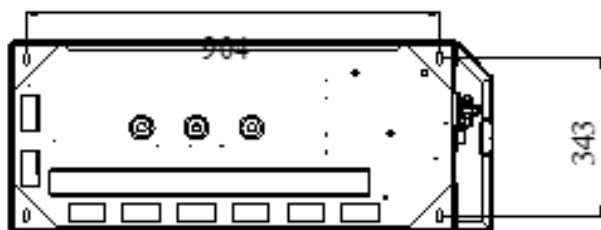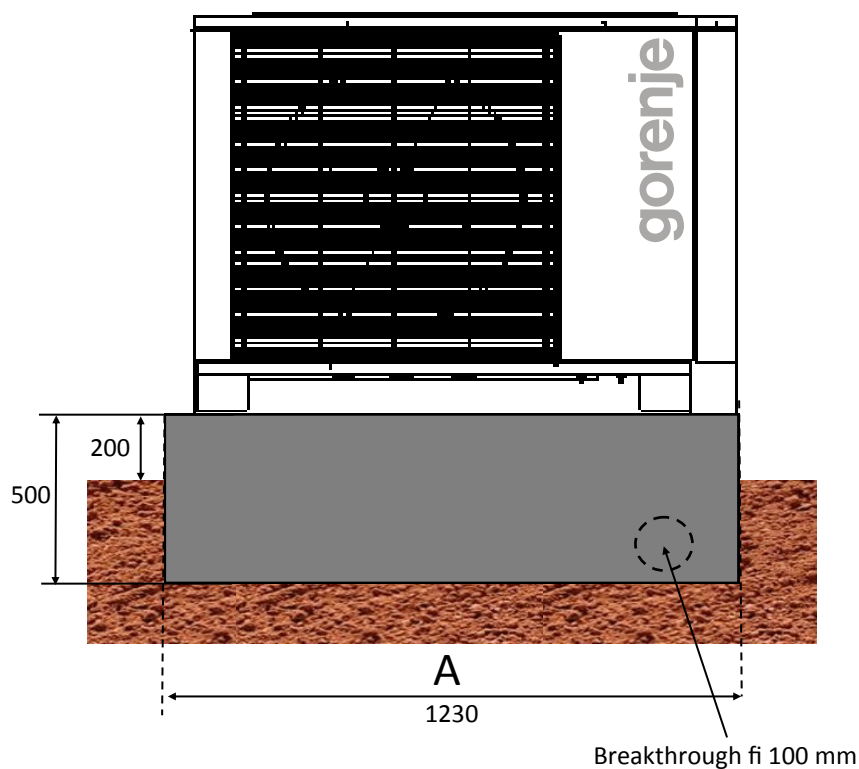

Dimensions in: [mm]

964

1056.5

414

765

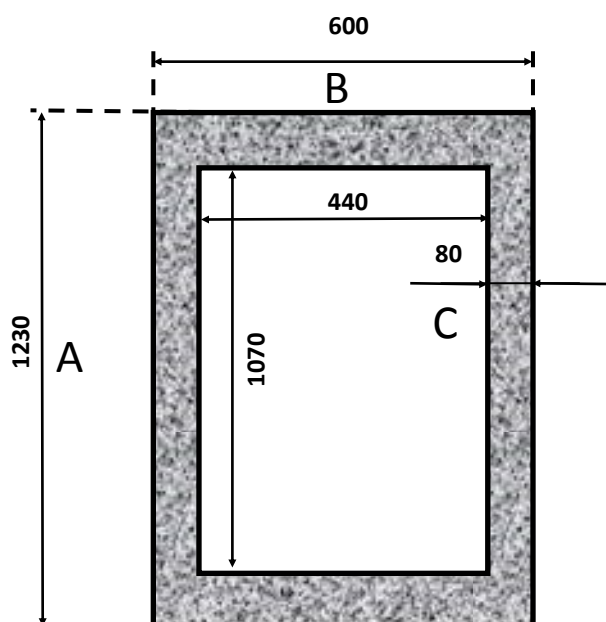# Concrete foundation for heat pump **Aerogor ECO Inverter 10**

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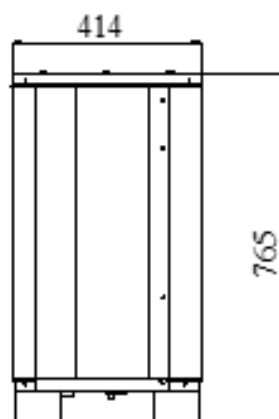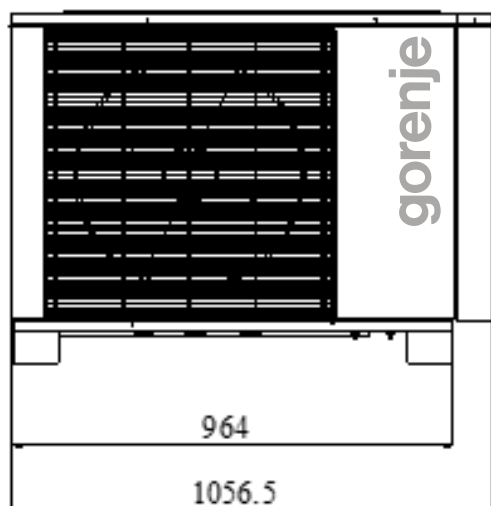
Side view

Outdoor unit of heat pump unit

Front view

414

765

B

600

200

500

A

1230

Breakthrough fi 100 mm

Dimensions in: [mm]

Bird's eye view of concrete foundation

600

B

440

80

C

1070

1230

A

Dimensions of concrete foundation:

A: 1230 [mm]

B: 600 [mm]

C: 80 [mm]

200

250

Fundament

500

80

Concrete foundation for heat pump **Aerogor ECO Inverter 10 AS**

1070

440

600

1230

Breakthrough fi 100 mm
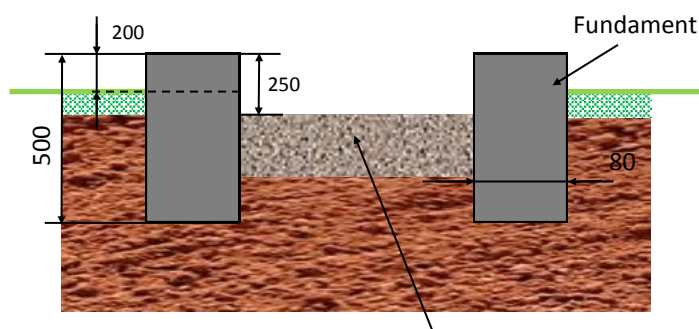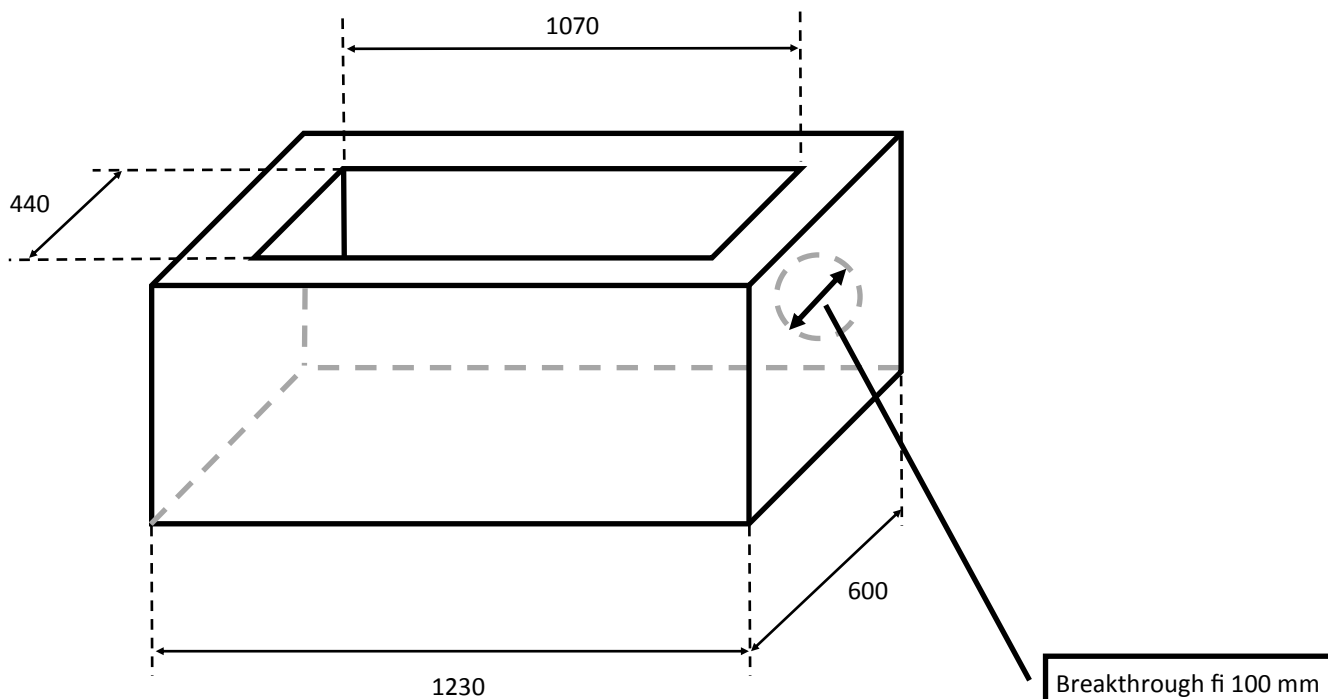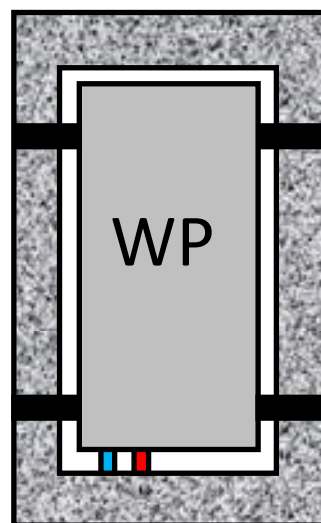
Installation of C profile and legs of heat pump on the concrete foundation

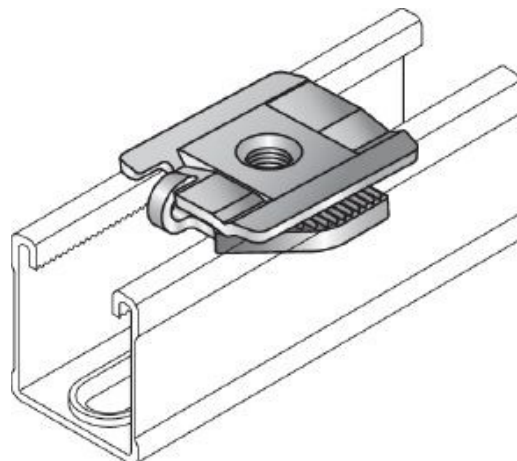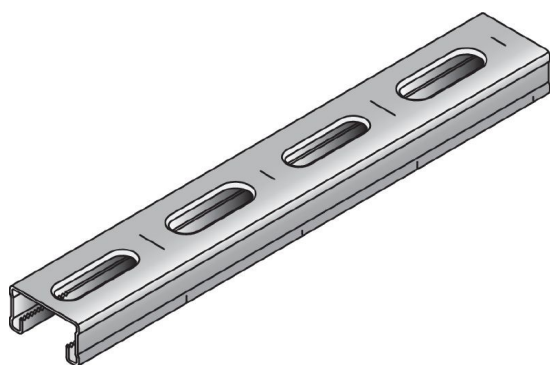Double installation C profile

Bird's eye view

WP
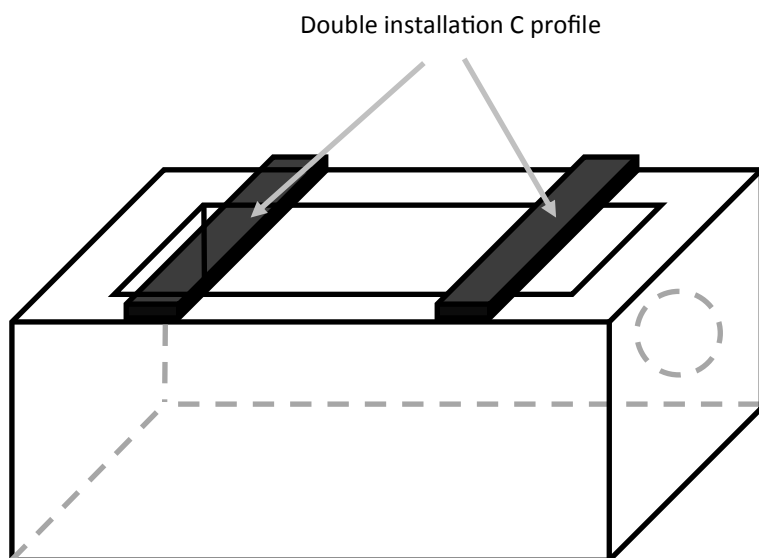
MM-C-16 Double installation profile

MM-S Connector for hose clamp

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Components for long life time and better efficiency

Magnetic dirt separator

Multifunction device with dirt separator and strainer. Specific for the complete cleaning of the hydraulic circuit, to protect continuously generator and components. Main features of dirt separator:

⇒ enable desired water flow in the system

⇒ Optimum water flow enable declarated heating capacity and COP of heat pump

⇒ Enable long life time of heat pump

Position in the installation system:

on return flow
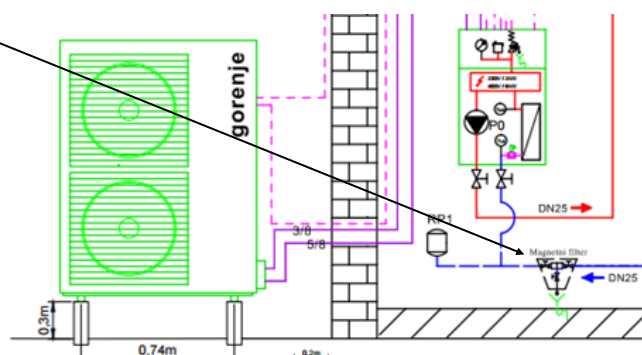
GORENJE D.D.

HVAC (heating, ventilation and air-condition)

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