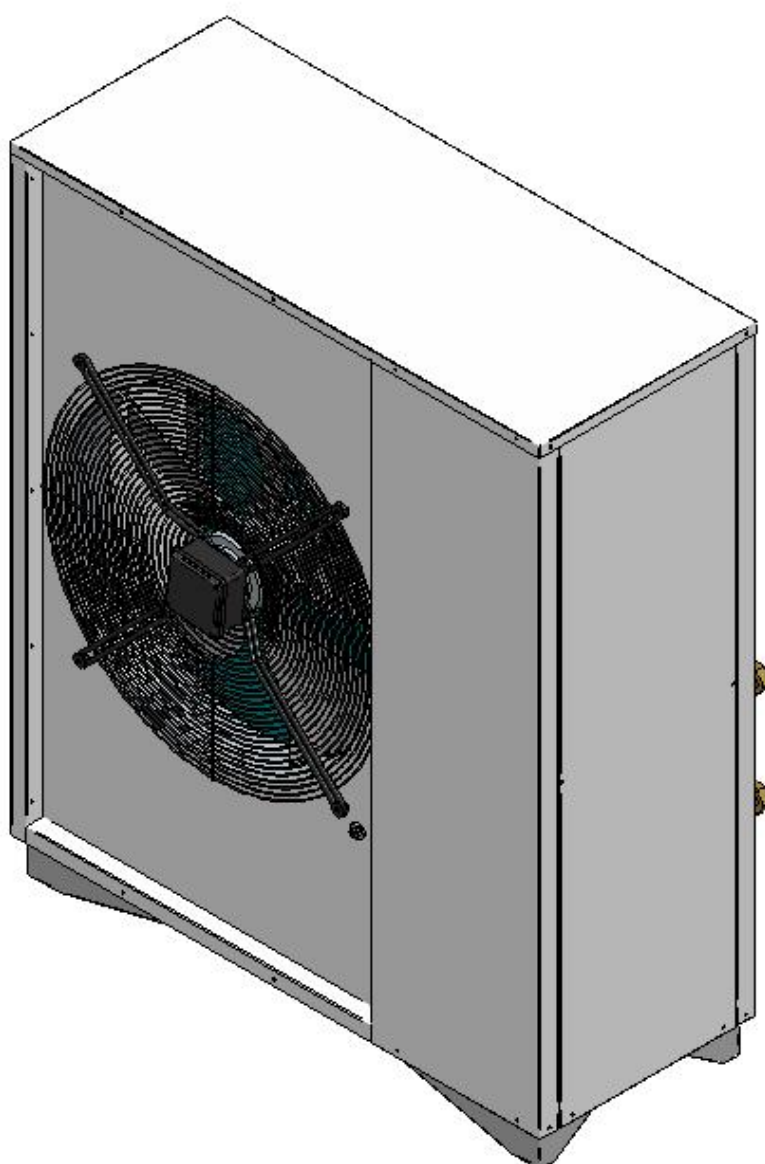
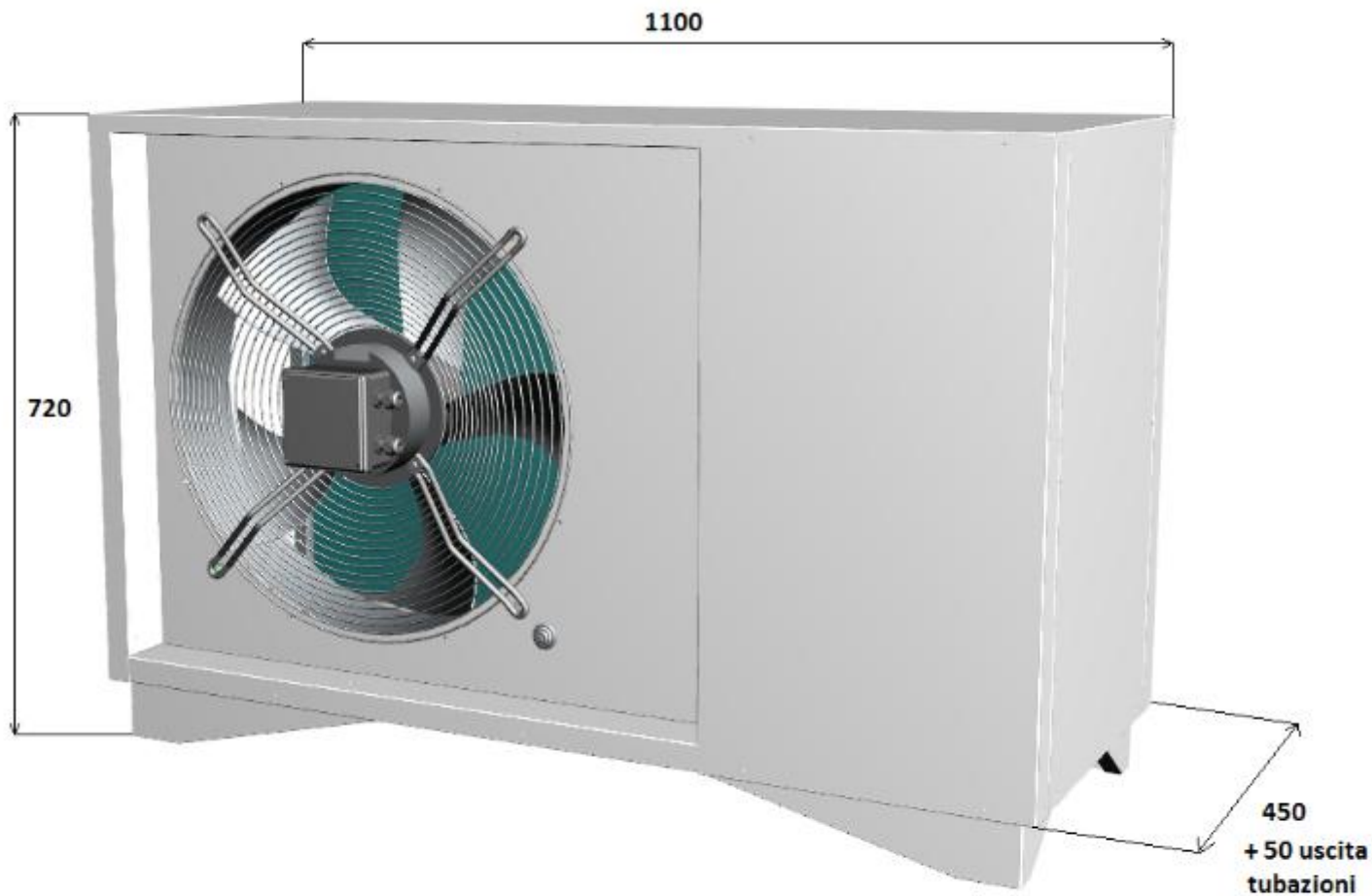


## Reversible inverter air/water heatpump

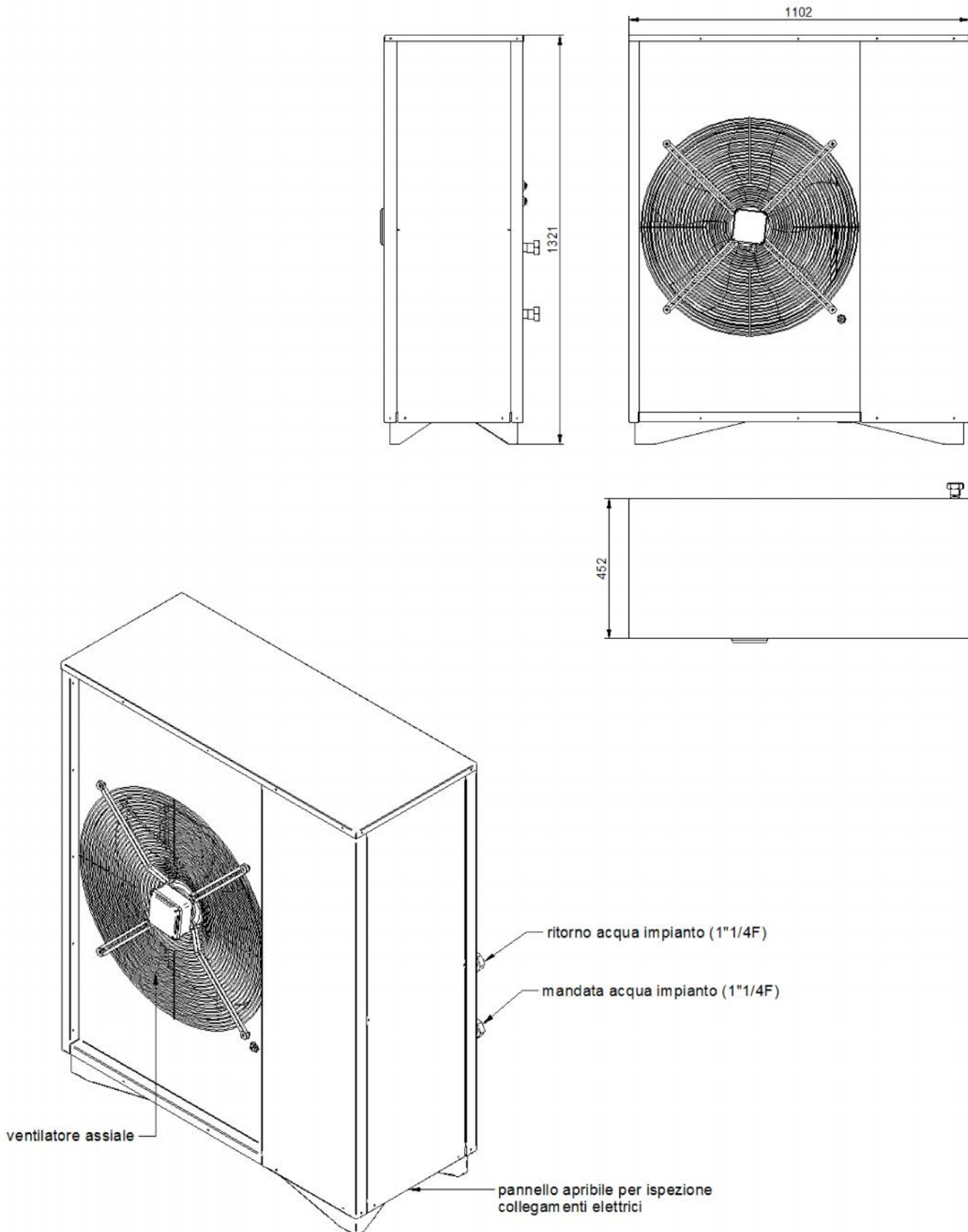
### Hydra



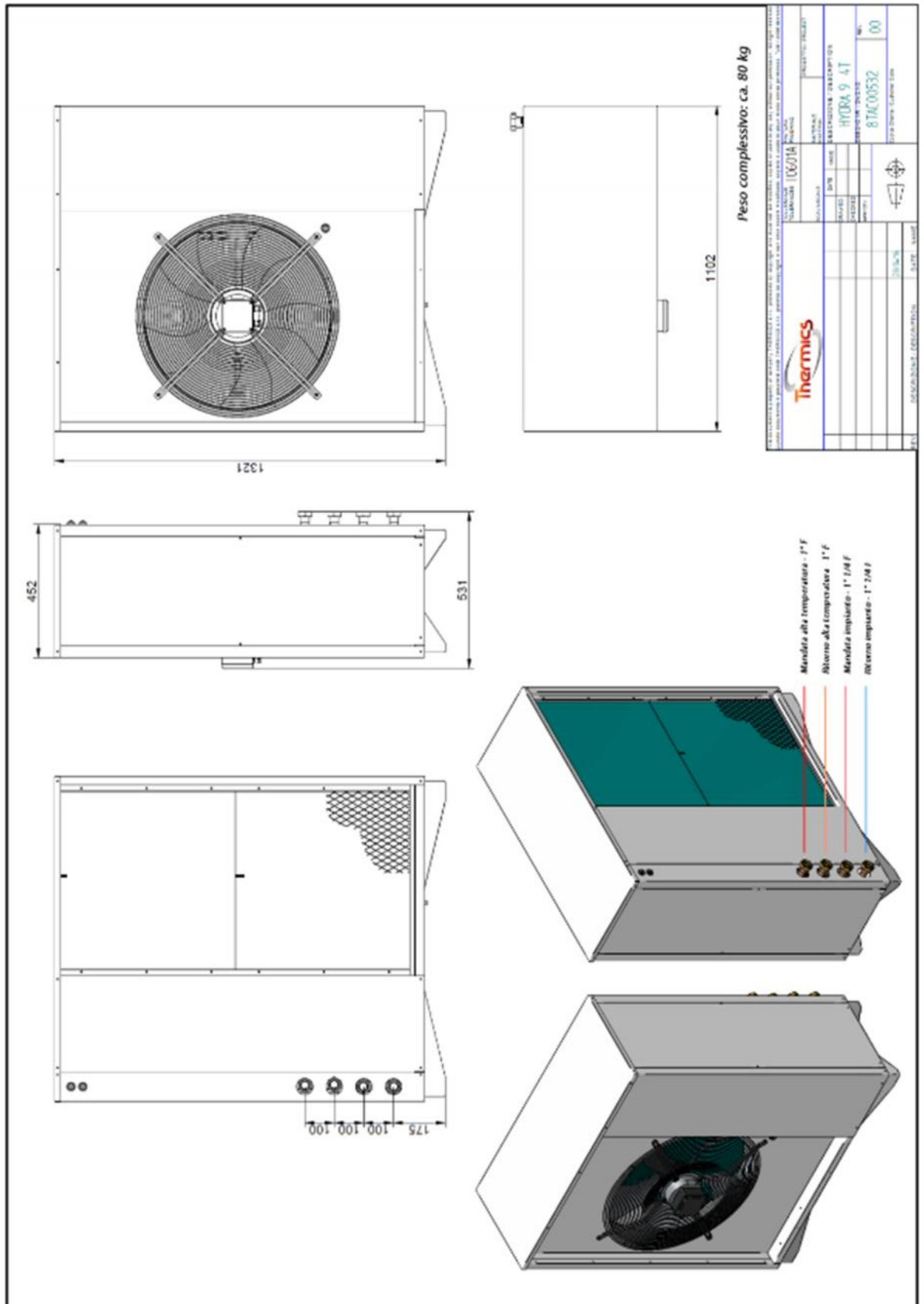
## DIMENSIONS Hydra 6



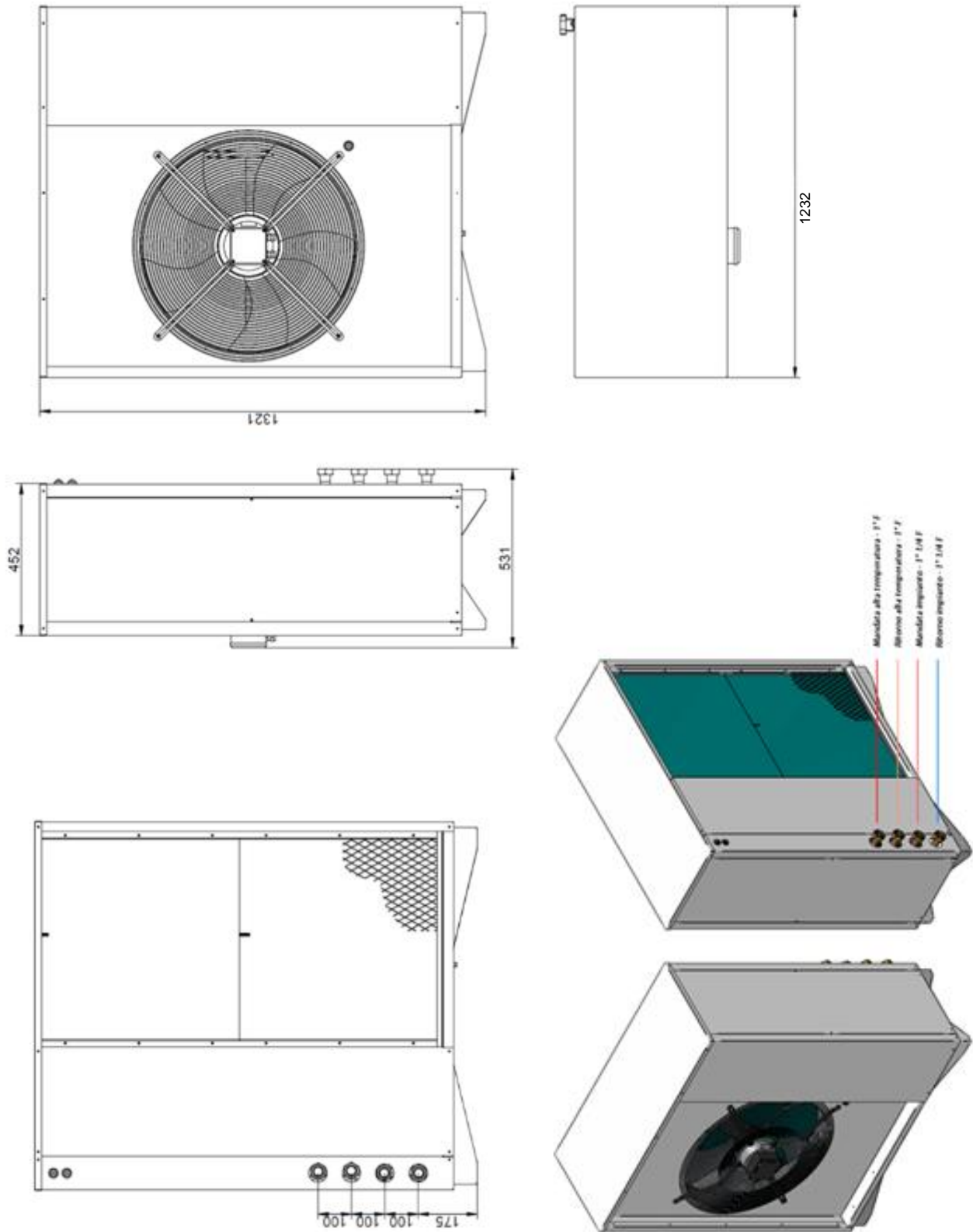
## DIMENSIONS - Hydra 9 2T



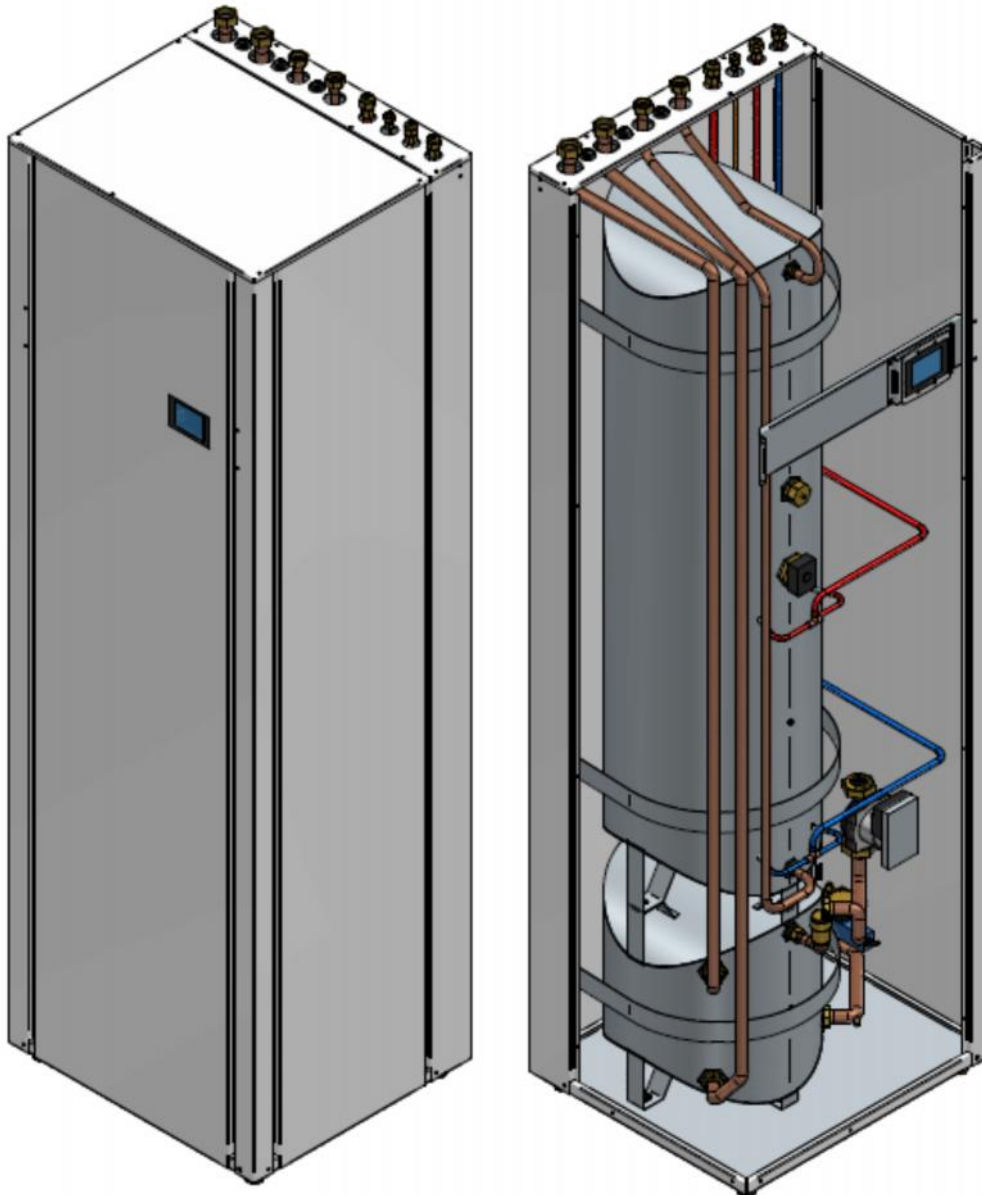
### DIMENSIONS - 4pipes version



## DIMENSIONS - Hydra 12 and Hydra 14



## DIMENSIONS – internal unit - Hydra Split 150 DHW



Internal unit, part of Hydra Split 4T – 150 DHW.

Composition of internal unit:

- DHW 150 liters tank, stainless steel made, stainless steel refrigerant de-superheater/condenser
- 40 liters separation tank for heating-cooling circuit
- Electronic circulation pump from plate HEX to 40 liters separation tank
- Plate HEX refrigerant/water
- Evco controller
- Electrical switch-box
- Touch-screen controller

### REFRIGERANT CONNECTIONS

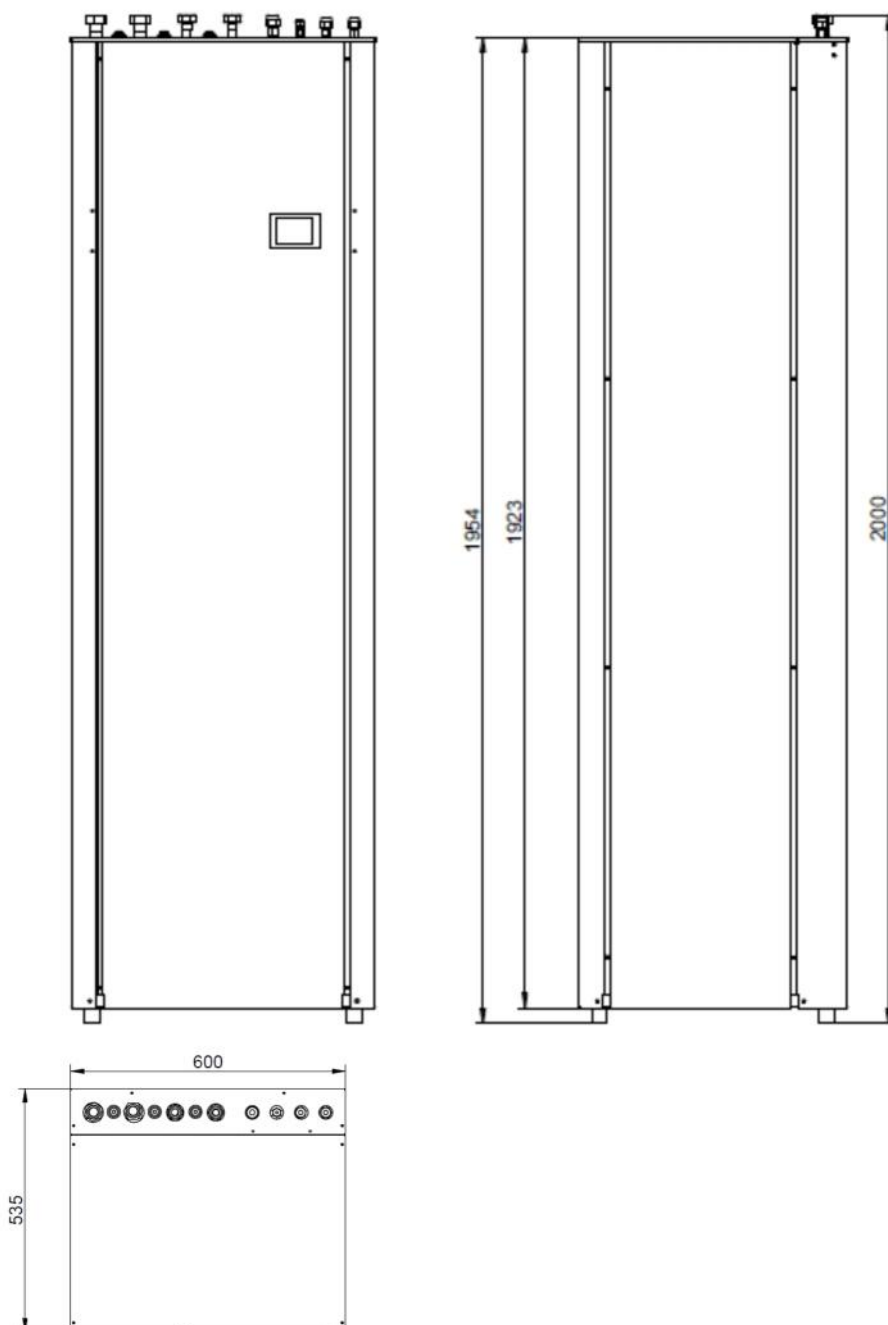
- Hot gas inlet 3/8"
- Hot gas outlet 3/8"
- Evaporation gas suction 5/8"
- Liquid injection inlet 3/8"

### DHW connections

- 3/4" F connections

### HEATING/COOLING CONNECTIONS

- 1" F



## TECHNICAL FEATURES

		<b>HYDRA 6 kW</b>	<b>HYDRA 9 kW</b>	<b>HYDRA 12 kW</b>	<b>HYDRA 14 kW</b>
Electrical supply	V/Hz/Ph	230/50/1+N (Optional 400/50/3+N)	230/50/1+N (Optional 400/50/3+N)	230/50/1+N (Optional 400/50/3+N)	400/50/3+N
Compressor type		Twin-rotary BLDC	Twin-rotary BLDC	Twin-rotary BLDC	Twin-rotary BLDC
N° compressors	Nr	1	1	1	1
Power modulation	%	20÷100	20÷100	20÷100	20÷100
Refrigerant circuits	Nr	1	1	1	1
Refrigerant quantity (R410a)	Kg	1,8	3,0	4,2	5,2
HEX type Refrigerant/water		Brazed plate heat-exchanger	Brazed plate heat-exchanger	Brazed plate heat-exchanger	Brazed plate heat-exchanger
HEX type Refrigerant/air		Fin&tube CU/AL heat-exchanger	Fin&tube CU/AL heat-exchanger	Fin&tube CU/AL heat-exchanger	Fin&tube CU/AL heat-exchanger
N° HEX	Nr	1	1	1	1
Water flow (heating/cooling circuit)	l/h	1200	1650	2200	2550
Max. temperature (heating/cooling circuit)	°C	53	53	53	53
Water connections (heating/cooling circuit)		1"1/4 (F)	1"1/4 (F)	1"1/4 (F)	1"1/4 (F)
Max water pressure	kPa	550	550	550	550
Inertial tank capacity	Litri	optional	optional	optional	optional
Expansion vessel	Litri	Not included	Not included	Not included	Not included
Fan type		Axial	Axial	Axial	Axial
Air volume flow	m <sup>3</sup> /h	0 – 3400	0 – 4000	0 – 5000	0 – 5800
Fan electrical power	W	0 – 135	0 – 160	0 – 200	0 – 230



## WORKING CONDITIONS AND PERFORMANCES

	HYDRA 6 kW	HYDRA 9 kW	HYDRA 12 kW	HYDRA 14 kW
Working temperatures	Input / Output / COP (%)	Input / Output / COP (%)	Input / Output / COP (%)	Input / Output / COP (%)
A-8 / W35	0,5 / 1,4 / 2,7 (33%) 1,0 / 2,8 / 2,8 (66%) 1,5 / 4,1 / 2,7 (100%)	1,0 / 2,7 / 2,7 (33%) 2,0 / 5,6 / 2,8 (66%) 3,0 / 8,1 / 2,7 (100%)	1,2 / 3,4 / 2,8 (33%) 2,4 / 7,0 / 2,9 (66%) 3,2 / 9,0 / 2,8 (100%)	2,1 / 6,1 / 2,9 (33%) 3,1 / 9,3 / 3,0 (66%) 4,7 / 13,6 / 2,9 (100%)
A-5 / W35	0,5 / 1,5 / 3,0 (33%) 1,0 / 3,1 / 3,1 (66%) 1,5 / 4,5 / 3,0 (100%)	1,0 / 3,0 / 3,0 (33%) 2,0 / 6,2 / 3,1 (66%) 3,0 / 9,0 / 3,0 (100%)	1,2 / 3,7 / 3,1 (33%) 2,4 / 7,7 / 3,2 (66%) 3,2 / 9,9 / 3,1 (100%)	2,1 / 6,7 / 3,2 (33%) 3,1 / 10,2 / 3,3 (66%) 4,7 / 15,0 / 3,2 (100%)
A2 / W35	0,5 / 1,8 / 3,6 (33%) 1,0 / 3,7 / 3,7 (66%) 1,5 / 5,4 / 3,6 (100%)	1,0 / 3,6 / 3,6 (33%) 2,0 / 7,4 / 3,7 (66%) 3,0 / 10,8 / 3,6 (100%)	1,2 / 4,4 / 3,7 (33%) 2,4 / 9,1 / 3,8 (66%) 3,2 / 11,8 / 3,7 (100%)	2,1 / 8,0 / 3,8 (33%) 3,1 / 12,1 / 3,9 (66%) 4,7 / 17,9 / 3,8 (100%)
A7 / W35	0,5 / 2,1 / 4,1 (33%) 1,0 / 4,2 / 4,2 (66%) 1,5 / 6,2 / 4,1 (100%)	1,0 / 4,1 / 4,1 (33%) 2,0 / 8,4 / 4,2 (66%) 3,0 / 12,3 / 4,1 (100%)	1,2 / 5,0 / 4,2 (33%) 2,4 / 10,3 / 4,3 (66%) 3,2 / 13,4 / 4,2 (100%)	2,1 / 9,0 / 4,3 (33%) 3,1 / 13,6 / 4,4 (66%) 4,7 / 20,2 / 4,3 (100%)
A12 / W35	0,5 / 2,4 / 4,7 (33%) 1,0 / 4,8 / 4,8 (66%) 1,5 / 7,1 / 4,7 (100%)	1,0 / 5,1 / 5,1 (33%) 2,0 / 10,4 / 5,2 (66%) 3,0 / 15,3 / 5,1 (100%)	1,2 / 6,2 / 5,2 (33%) 2,4 / 12,7 / 5,3 (66%) 3,2 / 16,6 / 5,2 (100%)	2,1 / 10,9 / 5,2 (33%) 3,1 / 16,4 / 5,3 (66%) 4,7 / 24,4 / 5,2 (100%)
A-5 / W50	0,7 / 1,1 / 1,5 (33%) 1,3 / 2,4 / 1,6 (66%) 2,0 / 3,0 / 1,5 (100%)	1,1 / 1,8 / 1,6 (33%) 2,4 / 4,1 / 1,7 (66%) 3,7 / 6,0 / 1,6 (100%)	1,4 / 2,2 / 1,6 (33%) 2,9 / 4,9 / 1,7 (66%) 4,1 / 6,6 / 1,6 (100%)	2,4 / 4,1 / 1,7 (33%) 3,6 / 6,5 / 1,8 (66%) 5,5 / 9,4 / 1,7 (100%)
A2 / W50	0,7 / 1,5 / 2,1 (33%) 1,3 / 2,9 / 2,2 (66%) 2,0 / 4,2 / 2,1 (100%)	1,2 / 2,5 / 2,1 (33%) 2,5 / 5,5 / 2,2 (66%) 3,8 / 8,0 / 2,1 (100%)	1,5 / 3,3 / 2,2 (33%) 3,0 / 6,9 / 2,3 (66%) 4,2 / 9,2 / 2,2 (100%)	2,5 / 5,8 / 2,3 (33%) 3,7 / 8,9 / 2,4 (66%) 5,6 / 12,9 / 2,3 (100%)
A7 / W50	0,8 / 2,1 / 2,6 (33%) 1,4 / 3,8 / 2,7 (66%) 2,1 / 5,5 / 2,6 (100%)	1,3 / 3,4 / 2,6 (33%) 2,6 / 7,0 / 2,7 (66%) 3,9 / 10,1 / 2,6 (100%)	1,6 / 4,3 / 2,7 (33%) 3,2 / 9,0 / 2,8 (66%) 4,3 / 11,6 / 2,7 (100%)	2,6 / 7,3 / 2,8 (33%) 3,9 / 11,3 / 2,9 (66%) 5,8 / 16,2 / 2,8 (100%)
A12 / W50	0,9 / 2,9 / 3,2 (33%) 1,5 / 4,6 / 3,3 (66%) 2,3 / 7,4 / 3,2 (100%)	1,4 / 5,0 / 3,6 (33%) 2,7 / 10,0 / 3,7 (66%) 4,1 / 14,8 / 3,6 (100%)	1,7 / 6,3 / 3,7 (33%) 3,4 / 13,0 / 3,8 (66%) 4,5 / 16,7 / 3,7 (100%)	2,8 / 10,9 / 3,9 (33%) 4,1 / 16,4 / 4,0 (66%) 6,0 / 23,4 / 3,9 (100%)
A35 / W12 (EER)	1,2 / 4,6 / 3,8 (66%) 2,0 / 6,9 / 3,5 (100%)	2,0 / 8,0 / 4,0 (66%) 2,8 / 10,9 / 3,9 (100%)	2,5 / 10,5 / 4,2 (66%) 3,6 / 14,8 / 4,1 (100%)	3,6 / 14,8 / 4,1 (66%) 6,0 / 22,2 / 3,7 (100%)
Electrical supply	230/50/1+N	230/50/1+N	230/50/1+N	400/50/3+N
Compressor speed limits	15 rps ÷ 120 rps			15 rps ÷ 100 rps
Refrigerant	R410a			
Sound power	55 dB (A)	58 dB (A)	60 dB (A)	62 dB (A)
Sound pressure at 1 m	47 dB (A)	50 dB (A)	52 dB (A)	54 dB (A)

## INSTALLATION

Hydra external units have been engineered to allow external installation. External units can withstand wind, snow and rain weather conditions.

### Hydraulic installation

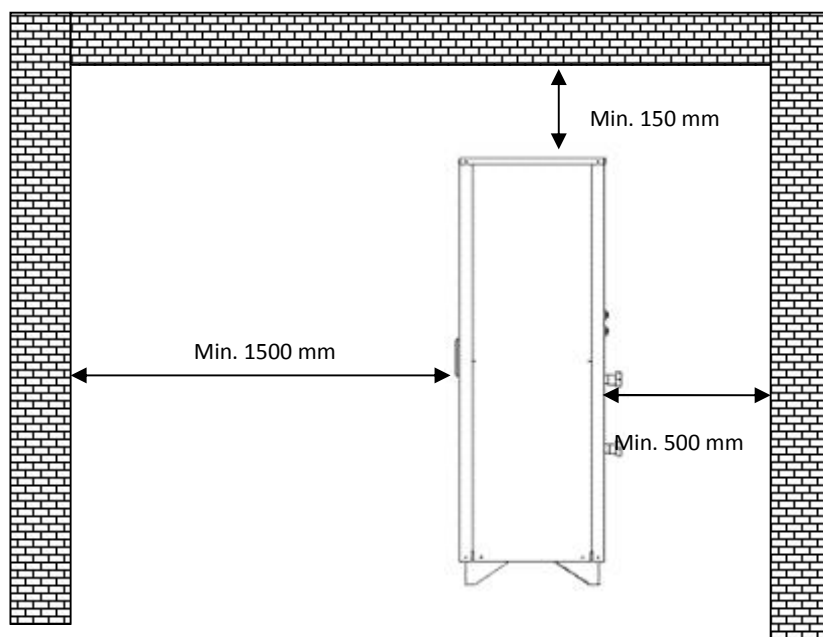
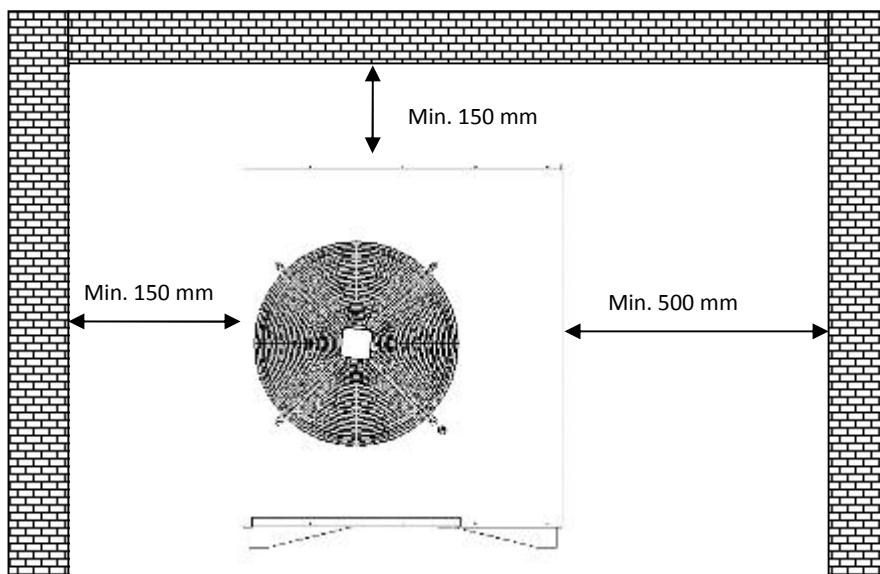
- Every separate circuit must be provided with proper-dimensioned expansion vessel, safety valve, Y-filters and draining/filling connections, with pressure measurement equipment included
- Maximum working pressure of heatpump is given in 5.5 bar
- Take maximum care about system heating/cooling plant, project mass flow and project pressure drops must be considered
- If plant project-flow is higher than heat-pump nominal flow provide a hydraulic separation by means of a separation buffer tank or by means of a plate heat-exchanger.
- Provide auxiliary hydraulic connections on each circuit to allow maintenance operations such as cleaning HEX with external pump

## Heatpump positioning

Please take maximum care to select the proper installation place before positioning the external unit outdoor.

Select the installation place trying to maximize the following aspects:

- Most protected place, the hotter the installation place the better the winter performance will be
- Well ventilate place
- Indoor installation is not allowed except if pre-engineered and/or allowed by Thermics and/or by official commissioning team
  - o Indoor installation can be evaluated with proper fan dimensioning, proper air-ducts for inlet and outlet



## Noise and vibrations

### Positioning recommendations:

- Avoid external unit installation in proximity of sleeping-room's wall and/or window
- Take care about neighbour position

### Vibration reduction:

- Please provide installation of anti-vibration pads
- Try to avoid direct contact between internal unit and floor
- Try to avoid direct mounting of heatpump units on the wall

## Heatpump over-positioning

### In case of possible installation of external unit on:

- Roof level
- Metal-roof
- Façade

### Take particular care to the following:

- Static load calculations
- Antiseismic calculations
- Vibrations transmission on supporting structures
- Proper draining of condensate water

## Condensate draining

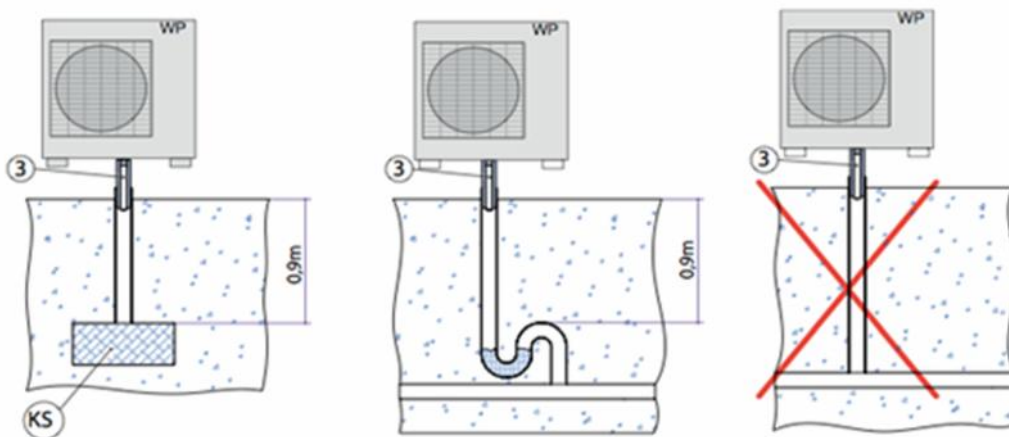
Air-water heatpumps produce large amounts of condensate water during their standard functioning. Take particular care to the draining system and to external unit installation place.

Avoid cold condensate water to become ice on the road or on the pedestrian transit areas.

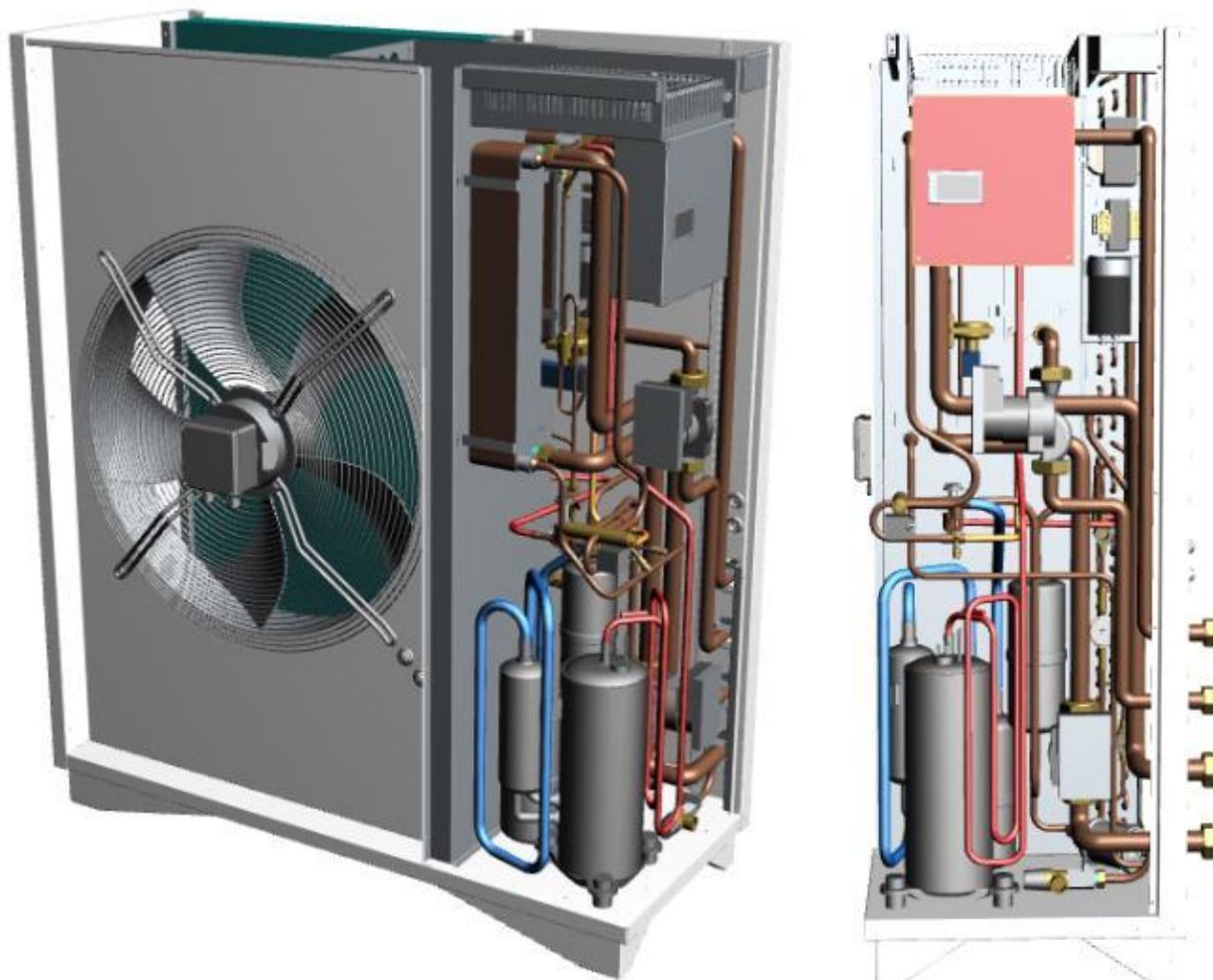
The best drainage connections to waste water grid can be done using a properly dimensioned syphon connection.

Keep all possible antifreeze actions to avoid condensate water to ice during the discharge pattern to the wastewater grid.

Provide the right installation height to allow a good natural flow down of the condensate water.



## EXTERNAL UNIT



## INTERNAL UNIT (only for HYDRA SPLIT – 2/4T)

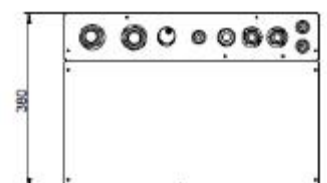
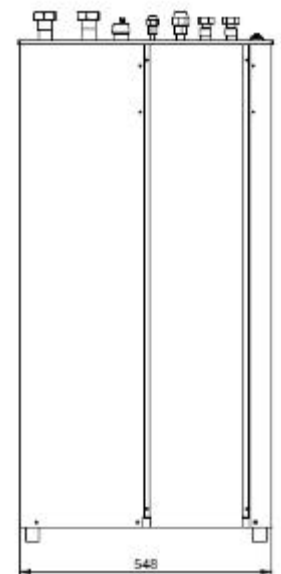
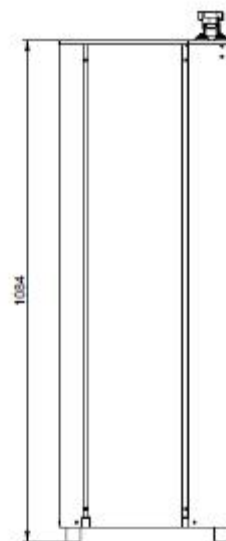
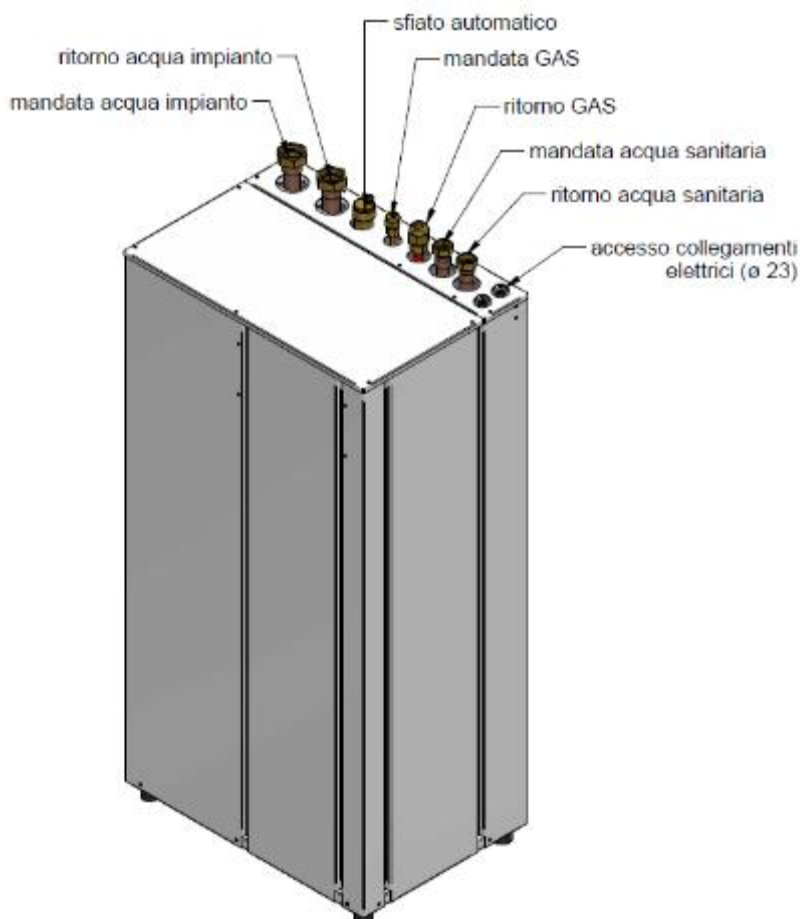
### REFRIGERANT CONNECTIONS

- Mandata gas desurriscaldatore 3/8"
- Ritorno gas desurriscaldatore 3/8"
- Mandata gas (caldo freddo) 5/8"
- Ritorno liquido (caldo-freddo) 3/8"

### HYDRAULIC CONNECTIONS

- High temperature circuit HT 3/4"
- Heating/cooling circuit 1"

INTERNAL UNIT WEIGHT 45 Kg



## ELECTRICAL CONNECTIONS

As represented in the picture below, installer must take care about

- main electrical supply
- touch-screen monitor connection

Auxiliary input-output are available as hard-contacts:

- ALARM contact closes when Error happens
- 4 free contacts normally open are available to manage heatpump remotely
  - o Power: turning on/off the unit
  - o Summer: activating summer mode, the heat-pump goes in cooling mode
  - o Set2: when closed the heatpump targets the second setpoint set
  - o Economy: low consumption and low-noise mode
- Sensors: NTC sensors are usually provided to monitor
  - o Remote DHW tank (NTC-BOILER). Take care to position it in a medium-upper part
  - o Remote buffer tank (NTC-plant). This sensor is usually internally connected to the plate HEX (condenser, evaporator). It can be connected to a remote buffer tank during commissioning.
- Physical power relay.
  - o Able to drive 1500 W electrical heater (230V) or auxiliary charging pump

Display	24V	○	24V	○
	+	○	--	○
Electrical supply 230V/50Hz	TE		○	
Neutral	N		○	
Line	L1		○	
FUSE (1A)	L		○	
ALARM	NO9	○	C9	○
POWER	ID1	○	+12V	○
SUMMER	ID2	○	+12V	○
SET 2	ID3	○	+12V	○
ECONOMY	ID4	○	+12V	○
NTC - Boiler	AI7	○	GND	○
NTC - IN Imp.	AI5	○	GND	○
ELECTRIC HEATER (max1,5kW)	R1	○	N	○

















## LED DISPLAY (installed on external unit)

Evco controller is provided by a led controller with 2 lines and surrounding icons.  
 It is possible to check and/or edit functioning values and parameters using the 6 button keyboard



## Symbols

-  Winter heating mode: heatpump is set in heating mode to get hot water.
-  Summer cooling mode.
-  Compressor: when blinking a countdown is in process, when steady on the compressors is running.
-  Circulation pump: when blinking the speed request is below 50%, when steady the water mas flow is more than 50% of maximum.
-  Fan: when blinking speed request is below 60% of maximum speed, when steady speed request is almost high.
-  Defrosting: when blinking ice is creating on evaporator, when steady defrosting is in action.
-  Hot gas bypass: used for a light defrost and/or to equalize refrigerant pressures.
-  Waiting: if on the system is in OFF mode.
-  Alarm: when active and error/alarm occurred.
-  4-way valve: when steady-on the system is working in summer cooling mode.
-  Set2: when on, a second SET-group is active.
-  Economy: Economy mode is on.
-  Compressor limitation: software is decreasing compressor power due to a higher limitation/protection logic active.
-  Defrosting mode: shows defrosting made with cycle reversal.



High temperature-pump: high-temperature circuit is active. If blinking the pump speed is lower than 50%, when steady the speed is higher than 50%.

## Keyboard



Escape (ESC)



Left button (LEFT): go back to previous view



Increase button (UP): increase value or scroll up a menu



Decrease button (DOWN): decrease value or scroll down a menu



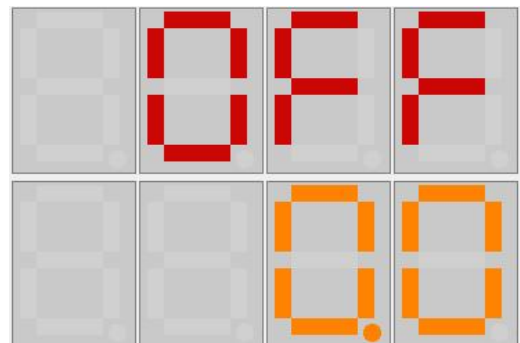
Right button (RIGHT): go to following view



Confirmation key (ENTER): activates edit mode and/or confirms editing.

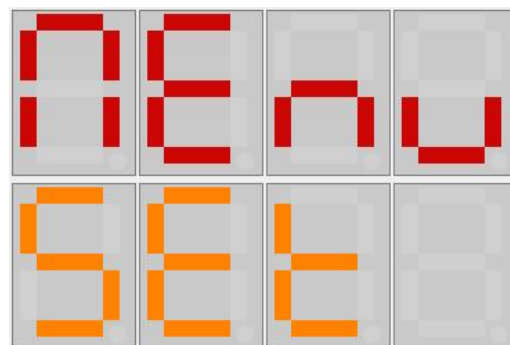
## STARTING SCREEN

Starting screen shows heatpump status and water inlet temperature.



## SECOND SCREEN

Going 1 step on the right, Menu page is showed. Inside Menu page it's possible to surf the sub-menu using UP and DOWN buttons. Enter button can be used to enter inside sub-menus. Inside sub-menus it is possible to surf on the right and left.



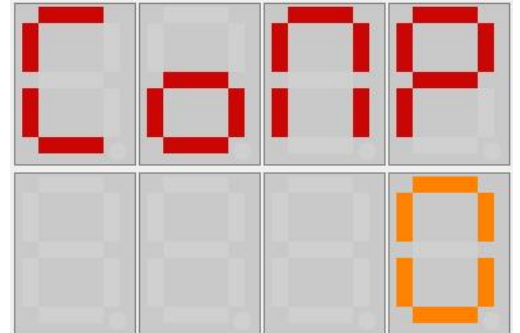
Lev.0	Lev.1	Lev.2	Settings	Default	Units
Set1	ESt	t 25	Water temperature set with outside temperature equal or lower than 25°C.	10,0	°C
		t 35	Water temperature set with outside temperature equal or higher than 35°C.: for intermediate temperatures setpoint will be proportionally calculated.	8,0	°C
		IStE	Summer hysteresis: temperature difference to be summed to SET. This is highest temperature limit. Higher water temperatures will force compressor to maximum, lower value than SET-HYS will cause compressor shutting down.	1,5	°C
	InV	t 10	Winter water set with external temperature higher than 10°C.	41,0	°C
		t -5	Winter water set with external temperature lower than -5°C. For intermediate temperatures setpoint will be proportionally calculated	44,0	°C
		IStI	Winter hysteresis: temperature difference to be summed to SET. This is highest temperature limit. Higher water temperatures will force compressor to off, lower value than SET-HYS will cause compressor running at maximum speed.	2,0	°C
	ACS	ACS1	Drinkable hot water set	10,0	°C
		IStS	DHW hysteresis: temperature difference to be summed to SET. This is highest temperature limit. Higher water temperatures will force compressor to off, lower value than SET-HYS will cause compressor running at maximum allowed speed.	1,5	°C
Set2	ESt	t 25	Water temperature set with outside temperature equal or lower than 25°C.	8,0	°C
		t 35	Water temperature set with outside temperature equal or higher than 35°C.: for intermediate temperatures setpoint will be proportionally calculated.	7,0	°C
	InV	t 10	Winter water set with external temperature higher than 10°C.	43,0	°C
		t -5	Winter water set with external temperature lower than -5°C. For intermediate temperatures setpoint will be proportionally calculated	45,0	°C
	ACS	ACS2	Drinkable hot water set	10,0	°C
tEMP	Cond		Condensation temperature		°C
	EvAP		Evaporation temperature		°C
	bAtt		Air-gas HEX temperature		°C
	AriA		Outdoor air temperature		°C
	In P		Plate HEX inlet temperature		°C

	OutP	Plate HEX outlet temperature		°C
	ScAr	Hot gas compressor outlet		°C
	Sott	Temperature difference between condensation and liquid exit temperature.		°C
	Surr	Temperature difference between evaporation and suction temperature		°C
	ACS	DHW temperature		°C
IMPO	MAXE	Maximum compressor power in summer mode	80	%
	MAXI	Maximum compressor power in winter mode	100	%
	FAnE	Maximum fan speed in summer mode	60	%
	FAnI	Maximum fan speed in winter mode	80	%
	PuMH	Maximum heating pump-speed	100,0	
	PuML	Minimum heating pump-speed	40,0	
	P On	Heating plant pump active in stanby (1=yes)	1	
	GELO	Limit temperature for ice protection	2,0	°C
	tSGC	Count-down before releasing hot-gas defrosting	900	s
	tSIn	Count-down before releasing reversal defrosting	1500	s
	nSFA	Maximum hot-gas defrosting failed attempts	1	
	OnAG	Allow system startup with frost alarm	nO	
	SEtG	Frost-protection water set	10.0	°C
	triF	Reference sensor	tOut	
	AttE	Maximum power in Economy mode	80	%
	ACS	DHW preparation mode activation (if 4pipes version)	On	
	PACS	DHW priority	SI	
	SIM2	Plant sensor positioning (UE= externa unit / remo = remote buffer tank)	UE	
MAXA	Maximum compressor power during DHW preparation	50	%	
ALL	ALHP	High pressure alarm (Hard error)		
	ALLP	Low pressure alarm (this alarm can be temporary)		
	ALFL	Flow-switch alarm: bad water circulation		
	ALbt	Low water temperature during cooling mode		
	AGAS	Refrigerant alarm: refrigerant missing		
	ALSt	Temperature sensor alarm		
	ALSI	Compressor inverter driver alarm		
	ALVE	Fan alarm		
MAnu	SISt	Sistem: when selected REMOTO (remo) command arrives from digital inputs; if set to MANUAL (manu) it is possible to activate it from following parameters	manu	
	StAt	Status: if set to ON, with MANUAL mode activated the heat-pump will start.	OFF	
	StAG	Season: manually set season and functioning mode. InV mode means heating.	InV	
ForZ	ForS	Forces defrosting with cycle reversal.	OFF	
	RitS	Monitoring time countdown before hot-gas defrosting.	900	s
	LonS	Maximum time for hot gas defrosting	220	s
	nSFA	Maximum hot gas defrosting attempts	1	
	tbon	Bonus for quick defrost	60	s

	tArG	Target ON: time between 2 defrostings	0	s
	Sonb	Time On during ice creation	0	s
ProG	ProG	Select different programming ways (SEtt=weekly; Gior=dayly)	OFF	
	Set2	Activates second setpoint (SET 2) according time programme: t_On	tOFF	
	Econ	Activates Economy mode according time programme: t_On	tOFF	
FEri	On 1	Time-on for working-days - 1st time area	6.30	
	OFF1	Time-off for working-days - 1st time area	19.15	
	On 2	Time-on for working-days - 2nd time area	7.00	
	OFF2	Time-off for working-days - 2nd time area	7.00	
	On 3	Time-on for working-days - 3rd time area	7.00	
	OFF3	Time-off for working-days - 3rd time area	7.00	
	OnS2	Activation time for SET2 during working days	7.00	
	OFS2	De-activation time for SET2 during working days	7.00	
	OnEc	Activation time for ECONOMY during working days	7.00	
	OFEc	De-activation time for ECONOMY during working days	7.00	
FEST	On 4	Time-on for holidays - 1st time area	7.00	
	OFF4	Time-off for holidays - 1st time area	7.00	
	On 5	Time-on for holidays - 2nd time area	7.00	
	OFF5	Time-off for holidays - 2nd time area	7.00	
	On 6	Time-on for holidays - 3rd time area	7.00	
	OFF6	Time-off for holidays - 3rd time area	7.00	
	OnS2	Activation time for SET2 during holidays	7.00	
	OFS2	De-activation time for SET2 during holidays	7.00	
	OnEc	Activation time for ECONOMY during holidays	7.00	
	OFEc	De-activation time for ECONOMY during holidays	7.00	
Gior	LuOn	Daily activation time - Monday	5.00	
	LuOF	Daily de-activation time - Monday	19.15	
	MAOn	Daily activation time - Tuesday	7.00	
	MAOF	Daily de-activation time - Tuesday	19.15	
	MEOn	Daily activation time - Wednesday	7.00	
	MEOF	Daily de-activation time - Wednesday	19.15	
	GiOn	Daily activation time - Thursday	7.00	
	GiOF	Daily de-activation time - Thursday	19.15	
	VEOn	Daily activation time - Friday	7.00	
	VEOF	Daily de-activation time - Friday	19.15	
	SAOn	Daily activation time - Saturday	7.00	
	SAOF	Daily de-activation time - Saturday	7.00	
	doOn	Daily activation time - Sunday	7.00	
	doOF	Daily de-activation time - Sunday	7.00	

### THIRD SCREEN-PAGE

Pushig right button from 2nd screen page you get 3rd page with compressor power percentage showed.



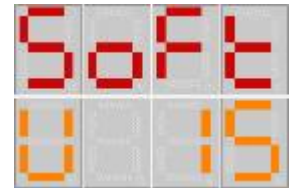
#### 4TH SCREEN PAGE

Con il tasto RIGHT dalla terza schermata si può visualizzare la potenza reale richiesta al ventilatore EC espressa in percentuale.



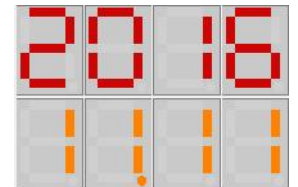
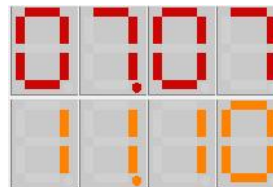
#### 5TH SCREEN PAGE

Software version



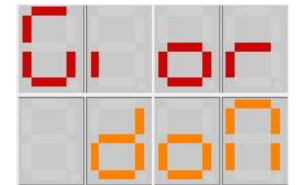
#### 6TH SCREEN PAGE

Actual time and date, followed by year.



#### 7TH SCREEN PAGE

Week day calculated according date



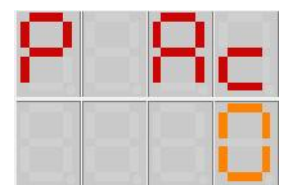
#### 8TH SCREEN PAGE

Code showing activated time programme



#### 9TH SCREEN PAGE

Heating/cooling plant pump speed percentage.



#### 10TH SCREEN PAGE

High temperature pump speed percentage.

