



Aqu@Scop Split

Air-to-Water DC **Inverter** Split Heat Pumps

Models 005, 008, 012 & 014



2 to 16 kW



DC INVERTER



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Strength Points

- Most efficient heating technology with variable speed compressor.
- Gaining of sustainable renewable thermal energy from ambient outdoor air.
- Use of **DC Inverter technology** in both compressor and outdoor fan motor to **adapt the unit capacity** to the building heat demand.
- **Energy saving** : By avoiding compressor start-up and shutdown phases, DC Inverter enables unit to run continuously while modulating the compressor output in relation to the set temperature on part load.
- **Silent running** : Most of the time, unit is running at reduced speed.
- **Quick reach of set temperature** : DC Inverter starts with maximum speed to reach set temperature as quick as possible. Once the temperature setpoint is reached, the inverter will reduce and adapt speed according to the capacity needed only.
- Variable capacity : from 30 to 110% of nominal capacity.
- Great accuracy in maintaining the desired water temperature setpoint.
- Unit optimized in heating mode for radiator, fan coil and floor applications.
- High feed water temperature for domestic hot water (DHW).
- High efficiency COP values (unit designed and developed to meet Ecodesign Lot 1 and Ecolabel requirements) :
 - Air : 2 °C / Water : 35 °C, COP > 3.1
 - Air : 7 °C / Water : 35 °C, COP > 4.1
- High performance at partial load; high SCOP and SEER values measured according to new standard EN14825 and EN14511.
- Bi-flow electronic expansion valve ensures **optimized filling of refrigerant** in evaporator.
- Outdoor coil with **blue fins (hydrophilic coated fins)**, facilitating the flow of condensates and providing corrosion protection to maintain performance levels and increase the life time.
- Wide operating limits :
 - Min. outdoor ambient temperature of -15 °C
 - Max. leaving water temperature of 55 °C

● Outdoor unit (ODU 1) - Aqu@Scop Split 005



● Outdoor unit (ODU 2) - Aqu@Scop Split 008



● Outdoor units (ODU 3 & 4) - Aqu@Scop Split 012 & 014



● Indoor units (IDU 1 & 2) - Aqu@Scop Split 005 to 014



Specifications

General

The new family **Aqu@Scop Split R410A** covers a capacity range from **2 to 16 kW**, developed in **4 different sizes**.

This system is composed by an outdoor unit connected, through refrigerant pipes, to an indoor hydronic module that can be fitted in an hydraulic circuit to cover space heating and domestic hot water requirement of the building.

To satisfy different application, hydronic module has been developed in **heating/cooling versions** with auxiliary back-up electrical heater (optional) for "stand alone" application.

The outdoor unit uses the inverter technology "**DC sinewave**" that permits to achieve a continuous variable capacity depending on building load, an important advantage considering that heat pumps run 95% of the time in part load conditions. This implements a higher seasonal efficiency SCOP, reduced CO₂ emission and lower yearly operating cost with a higher comfort.

The outdoor unit has been optimized for heating application, in order to reach high COP level higher than Ecolabel requirements for radiator, fan coil and floor heating applications.

The feed water temperature of the heat pump to the system can be chosen between 35 °C (LT), 45 °C and 55 °C (MT). Defrost algorithm optimization and blue fin coil on whole range are other 2 key factors that permits very high performances also at lower outdoor ambient temperature, down to -15 °C. The system is optimized for average climate at +2 °C ambient.

- The outdoor unit is available in **4 sizes** (capacity at nominal point A7W35) :
ODU 1 (5.3 kW), **ODU 2** (8.1 kW), **ODU 3** (12 kW), **ODU 4** (14.5 kW).
- The indoor unit is available in **2 sizes** : **IDU 1 and IDU 2**.

Depending on matching indoor and outdoor units, the following system combinations are possible :

	IDU 1	IDU 2
ODU 1	●	
ODU 2	●	
ODU 3		●
ODU 4		●

Outdoor unit

Cabinet and structure :

The unit cabinet and structure are made of galvanized steel elements assembled through tropicalized steel screws.

All the galvanized steel parts are protected by polyester enamel, which makes the unit corrosion-proof and weatherproof.

Compressor :

Compressor is DC Inverter rotary (size 005), twin rotary (size 008) and scroll (sizes 012 & 014) type equipped with internal motor protection.

Compressor is mounted on rubber vibration isolators and packed into sound insulation jacket, in order to eliminate vibration transmissions and noise.

Motor is of direct start type, cooled by suction gas.

Air/Refrigerant heat exchanger :

Coil is made of copper tubes arranged in staggered rows and mechanically expanded into aluminium finned pack composed of blue fins.

Fans :

Fans are direct coupling propeller type, equipped with plastic aerodynamic blades to ensure better balance, enhance air exchange process and generate very low sound level, Lw (power) < 64 dBA.

Each fan is provided with a plastic safety guard.

Motors are DC Inverter type equipped with thermal protection.

A fan speed controller is provided to allow the unit to operate with ambient temperature from -15 to +45 °C.

Refrigerant circuit :

Each unit is supplied with an electronic expansion valve (EEV) and a reversing valve as well as other refrigerant components as shown in the functional diagrams (see section "Refrigerant flow diagrams").

The outdoor unit is burst-pressure safe and is in conformity with EC standard EN 378.

The unit is equipped with advanced driver and EEV software to eliminate inefficient superheat on the outdoor coil, to better control the variable refrigerant flow at full and part load conditions, and to increase the gain of free heat from the ambient.

The unit is shipped with full refrigerant charge to eliminate refrigerant charging on site.

The refrigerant charge is lower than 3 kg to satisfy the European F-Gas regulation.

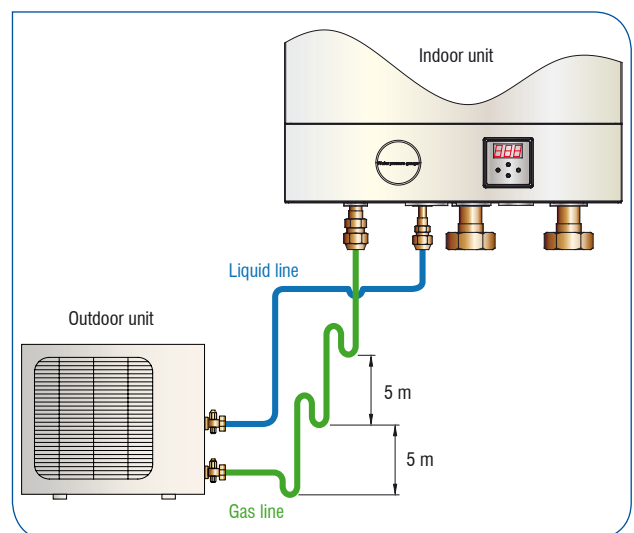
Length of refrigerant pipes

The units are pre-charged at the factory for pipe lengths between 3 m and 12.5 m.

Pipe lengths can then be extended up to 25 m for the outdoor units ODU1, and 30 m for other models, in accordance with the additional refrigerant charge table (refer to the table "Physical Data").

	ODU 1	ODU 2	ODU 3	ODU 4
Maximum pipe length (m)	25	30	30	30
Maximum height difference (m)	10	15	15	15

The units can operate correctly up to a maximum height difference of 5 m between the modules. If the height difference exceeds 5 m, a siphon must be incorporated in the gas line every 5 m.



Specifications (continued)

Indoor unit

Hydraulic connections are located at bottom side.

Cables leave the unit at the bottom side also.

Main components in the hydraulic module are :

- Water pump (3 speed),
- Brazed plate heat exchanger,
- Control,
- Indoor room temperature sensor,
- Entering water temperature sensor,
- Leaving water temperature sensor,
- Water pressure gauge,
- Water safety valve,
- Auto relief gas valve.

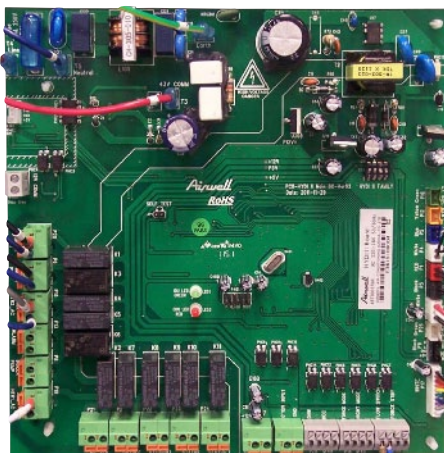
Control features

The management system control board is fitted inside indoor unit and communicate with outdoor unit through an interface board HYDI-2.

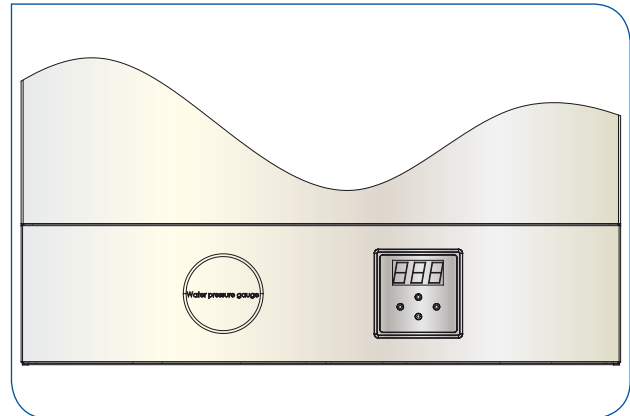
This system control can manage following feature :

- PID control on leaving water temperature,
- Manage priority between domestic hot water and heating system need driving a 3 way water valve included into the IDU,
- Advanced user interface display,
- Manage diagnostic and logging for both IDU and ODU units,
- Hybrid configuration possible.

Interface board HYDI-2



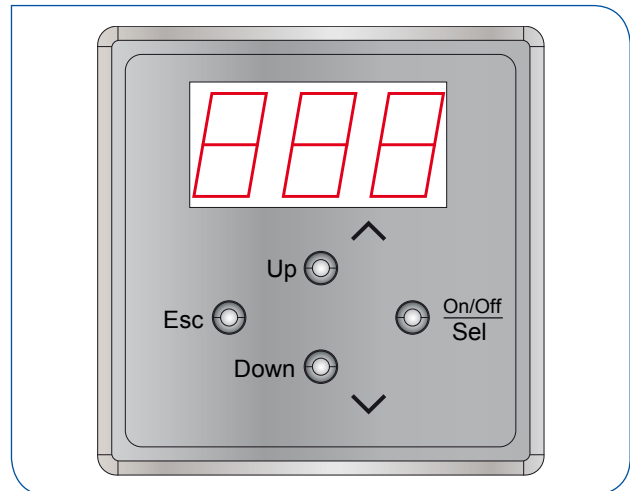
User interface



The front part of the instrument acts as a system interface to perform all the operations associated with its use, and notably to :

- Set the operating values,
- Manage alarm situations,
- Check the state of the inputs/outputs.

Keypad

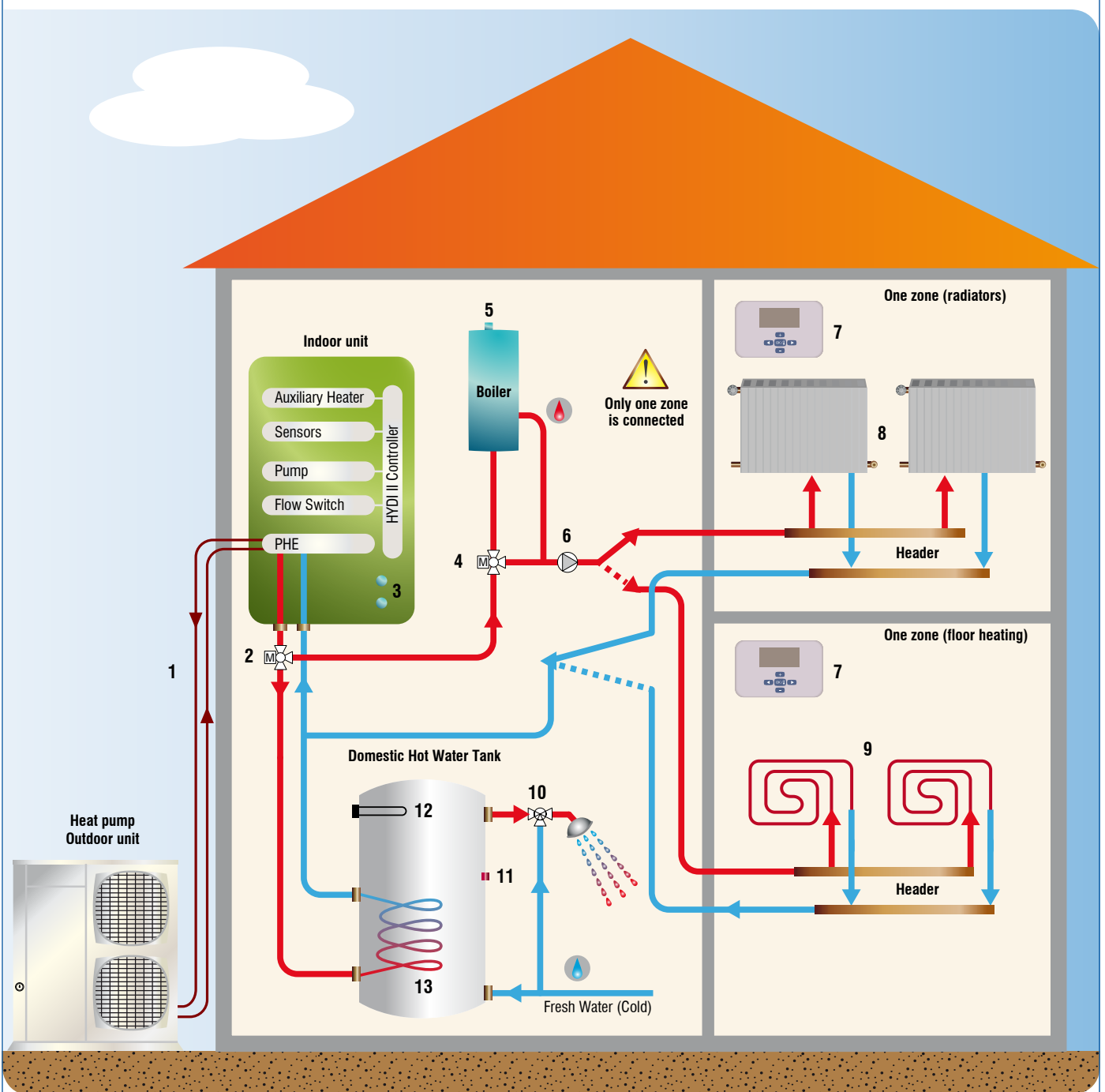


On/Off - Sel	Power On/Off or to confirm the selection
Esc	To go back to the previous step in the menu or stop the current setting
Up	To scroll up through the menu or set the values
Down	To scroll down through the menu or set the values

Options and accessories

- Room thermostat,
- Domestic hot water tank,
- In line electric heater.
- Water tank.
- Decantation filter.
- Anti-vibration pads.
- 3-way valve for domestic hot water.
- Hydraulic protection kit.

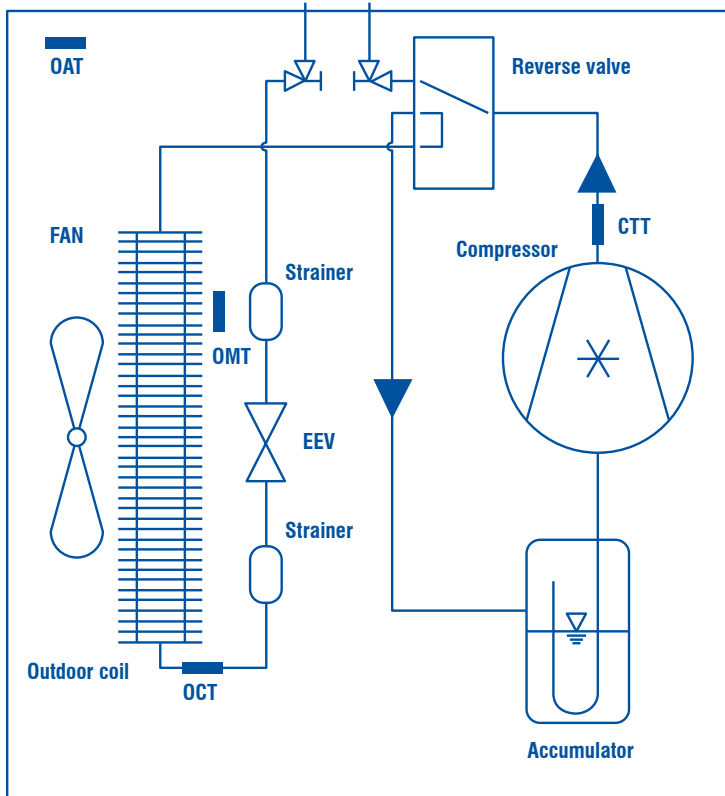
Example of Standard Installation



1	Refrigerant pipes	8	Radiators
2	Flow diversion 3-way valve	9	Floor heating loops
3	HCC/DHW buttons	10	Mixing valve
4	Boiler by-pass valve	11	Sensor 2
5	Boiler On/Off	12	Booster heater
6	Boiler pump	13	Domestic hot water tank heat exchanger
7	Room thermostat (wired controller)	PHE	Plate heat exchanger

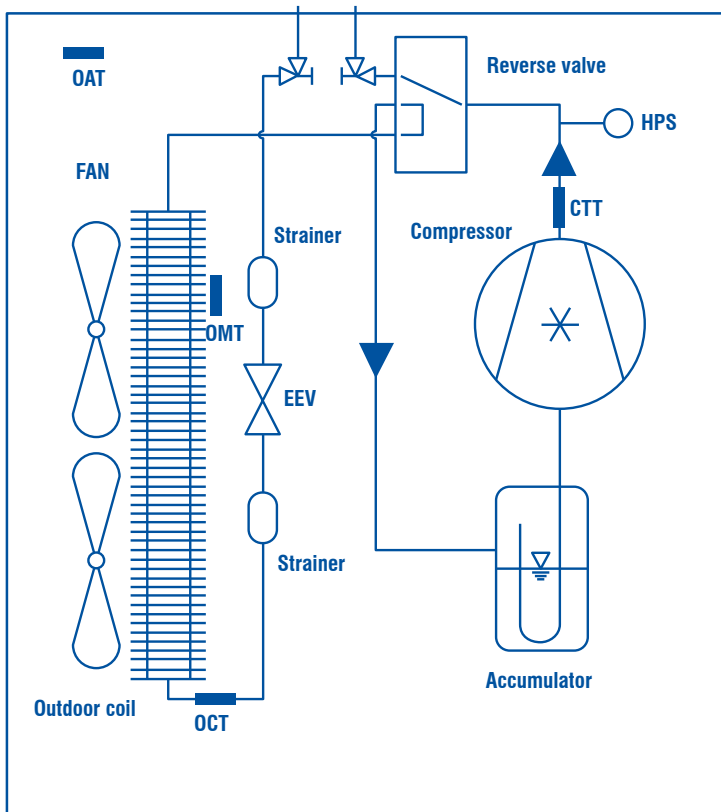
Refrigerant Flow Diagrams of Outdoor Units

ODU 1 and ODU 2 - Refrigerant flow direction in heating mode



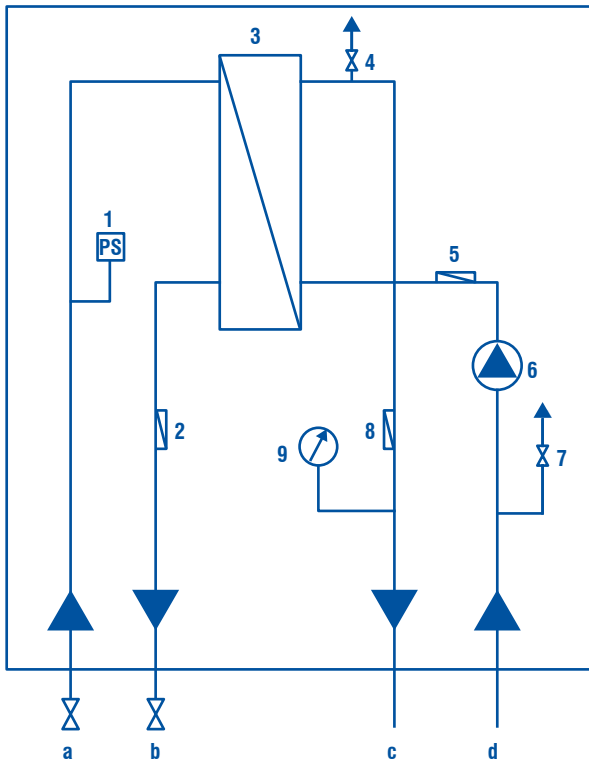
OCT	Outdoor coil temperature
OMT	Outdoor coil middle temperature
OAT	Outdoor air temperature
CTT	Compressor discharge temperature

ODU 3 and ODU 4 - Refrigerant flow direction in heating mode



OCT	Outdoor coil temperature
OMT	Outdoor coil middle temperature
OAT	Outdoor air temperature
CTT	Compressor discharge temperature
HPS	High pressure switch

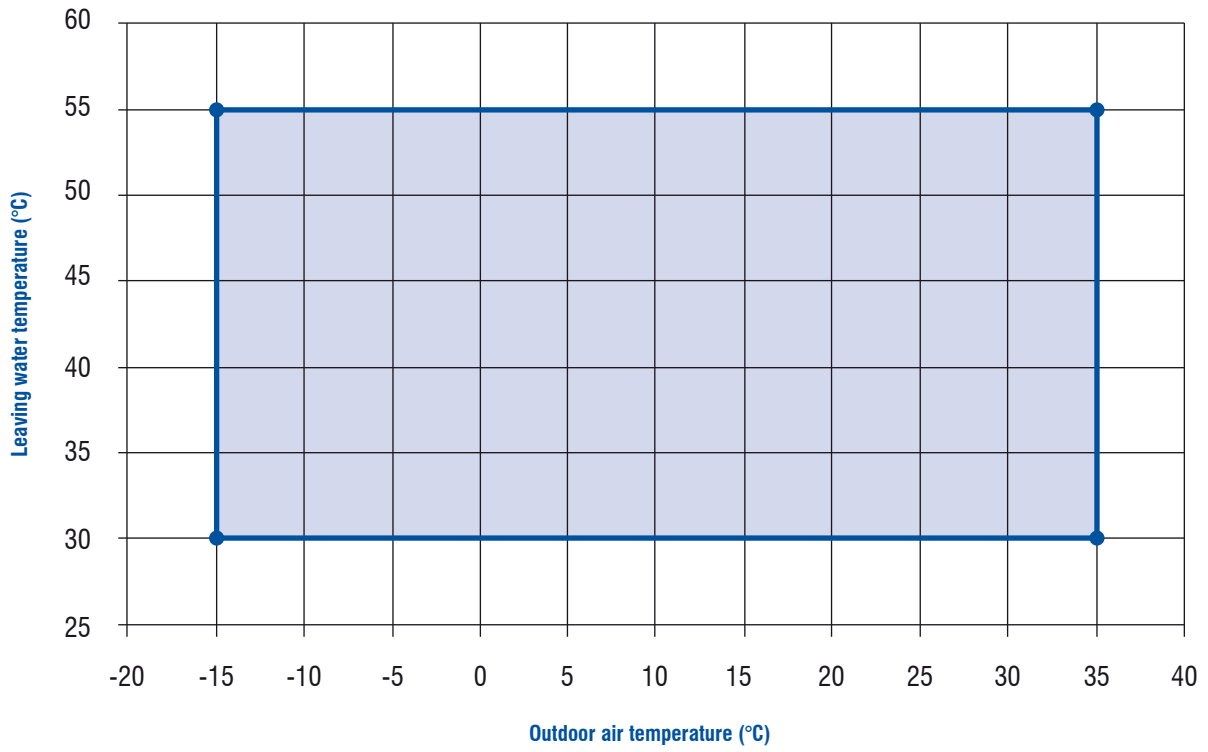
Refrigerant and Water Flow Diagrams of Indoor Units



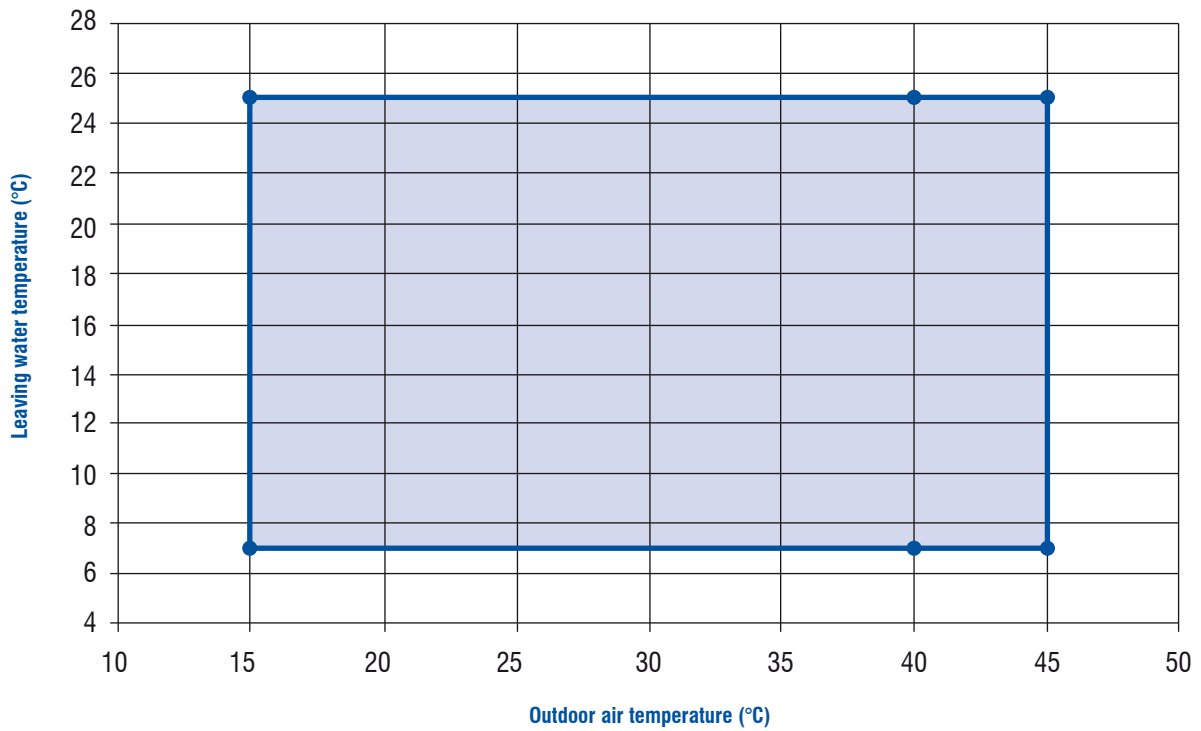
1	High pressure sensor
2	IRT (Indoor Room Temperature Sensor)
3	BPHE (Brazed Plate Heat Exchanger)
4	Auto relief gas valve
5	EWT (Entering Water Temperature Sensor)
6	Water pump
7	Safety valve (3 bar)
8	LWT (Leaving Water Temperature Sensor)
9	Water pressure gauge
a	Refrigerant (gas)
b	Refrigerant (liquid)
c	Outlet water
d	Inlet water

Operating Limits

Heating mode



Cooling mode



Physical Data - Outdoor Units

MODELS		AQU@SCOP SPLIT 005	AQU@SCOP SPLIT 008	AQU@SCOP SPLIT 012	AQU@SCOP SPLIT 014
OUTDOOR UNIT		ODU 1	ODU 2	ODU 3	ODU 4
Heating capacity	kW	1.2 – 5.7	2.0 – 9.5	5.3 -13.5	6.0 – 16.0
Heating capacity at nominal point A 7/W 35	kW	5.30	8.10	12.00	14.50
COP (according to EN 14511) at A 7/W 35		4.25	4.10	4.40	4.30
Cooling capacity	kW	2.4-5.0	3.0-9.0	5.3-13.5	8-15
Cooling capacity at nominal point A 35/W 18	kW	4.40	8.60	12.0	14.0
EER at A35/W18		3.61	3.62	3.80	3.61
SOUND POWER					
Outdoor unit (according to DIN EN 12102) at A 7/W 35	dB(A)	59	62	63	64
LIMITS OF USE (HEATING)					
Max leaving water temperature at A 2 °C	°C	55	55	55	55
Max leaving water temperature at A -15 °C	°C	55	55	55	55
Min. outdoor air temperature	°C	-15	-15	-15	-15
Max. outdoor air temperature at W 55	°C	35	35	35	35
LIMITS OF USE (COOLING)					
Max. outdoor air temperature	°C	45	45	45	45
Min. outdoor air temperature	°C	15	15	15	15
Min. leaving water temperature at A 40	°C	5	5	5	5
Max. leaving water temperature at A 40	°C	25	25	25	25
UNIT					
Domestic hot water		Temperature at A2 inside tank > 50 °C heat pump only			
Voltage heat pump		230 V / 1/50 Hz			
Compressor		DC Inverter			
Expansion valve		Electronic expansion valve			
Factory refrigerant charge R410A	g	1200	2150	2950	2950
Max. distance between units (as nominal refrigerant charge)	m	12.5 (single length)			
Min. distance between units (as nominal refrigerant charge)	m	3.0 (single length)			
Max. distance between units	m	25	30	30	30
Max. height difference between units	m	10	15	15	15
Condensate flow		Bottom			
Outdoor evaporator coil		Hydrophilic fins			
Outdoor fan speed		Variable			
DIMENSIONS AND WEIGHT					
Max. dimensions (height x length x depth)	mm	610 x 870 x 290	865 x 1040 x 340	1255 x 900 x 340	1255 x 900 x 340
Weight (including refrigerant)	kg	60	70	110	110
CONNECTIONS REFRIGERANT SIDE					
Liquid line		1/4"	3/8"	3/8"	3/8"
Discharge line		1/2"	5/8"	5/8"	5/8"
CONFORMITY WITH STANDARDS					
Standards		RoHS conform EN 14511 EN 14825 Ecodesign Lot 1 EN 60335-1, EN60335-2-40, EN 378			

A : Source side outdoor air temperature.

W : Sink side water temperature.

Physical Data - Indoor Units

MODELS		AQU@SCOP SPLIT 005 & 008		AQU@SCOP SPLIT 012 & 014	
		IDU 1		IDU 2	
REFRIGERANT LINKING PIPES					
Suction pipe	inches	5/8		5/8	
Liquid pipe	inches	3/8		3/8	
HYDRAULIC LINKS					
Inlet water	inches	1" 1/4			
Outlet water	inches	1" 1/4			
DIMENSIONS & WEIGHT					
Width	mm	430		430	
Depth (1)	mm	260		260	
Height (2)	mm	877		877	
Weight	kg	32		35	

(1) Including controller keypad.

(2) Including fixation flange and refrigerant and water connections.

Electrical Data - Outdoor Units

MODELS		AQU@SCOP SPLIT 005	AQU@SCOP SPLIT 008	AQU@SCOP SPLIT 012	AQU@SCOP SPLIT 014
OUTDOOR UNIT		ODU 1	ODU 2	ODU 3	ODU 4
OUTDOOR UNIT					
Power supply		1/N/PE/230 V~/50 Hz	1/N/PE/230 V~/50 Hz	1/N/PE/230 V~/50 Hz	1/N/PE/230 V~/50 Hz
CONTROL UNIT (ODU)					
Voltage, control unit / electronics		1/N/PE/230 V~/50 Hz	1/N/PE/230 V~/50 Hz	1/N/PE/230 V~/50 Hz	1/N/PE/230 V~/50 Hz
Max. power control unit	W	150	150	150	150
Max. power consumption internal fans	W	65	70	130	130
Fuse (internal)	A	3.5	3.5	3.15	3.15
HEAT PUMP					
Power supply		1/N/PE/230 V~/50 Hz	1/N/PE/230 V~/50 Hz	1/N/PE/230 V~/50 Hz	1/N/PE/230 V~/50 Hz
Rated current (Nominal A7/W35)	A	5	9	10	15
Starting current	A	10.5	15	10	10
Power input - Maximum	kW	1.5	3.1	4.6	5.8
Circuit breaker rating	A	20	25	25	32
Fuse	A	20	25	25	32
Cable section	mm ²	3 x 2.5	3 x 2.5	3 x 4	3 x 6
Max. cable length	m	25	25	25	30
Heating power input - Nominal (A2/W35)	kW	0.92	1.87	2.24	3.25
Heating power input - Nominal (A7/W35)	kW	0.96	1.95	2.34	3.43
Cooling power input - Nominal (A35/W7)	kW	1.08	2.40	2.69	3.72
Cooling power input - Nominal (A35/W18)	kW	1.13	2.63	2.80	4.23

Electrical Data - Indoor Units

MODELS		AQU@SCOP SPLIT 005 & 008		AQU@SCOP SPLIT 012 & 014	
		IDU 1		IDU 2	
Rated voltage control unit/PCB		1/N/PE 230 V/50 Hz			
Fuse protection power supply	A	2		2	
Recommended power cable	mm ²	1.5		1.5	

Performance Data

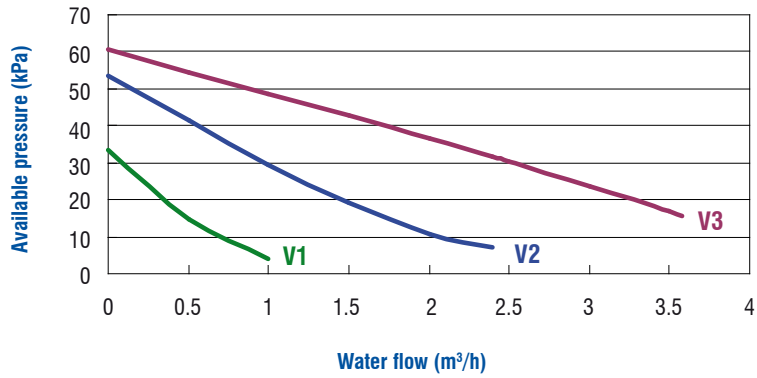
MODELS			AQU@SCOP SPLIT 005	AQU@SCOP SPLIT 008	AQU@SCOP SPLIT 012	AQU@SCOP SPLIT 014
A7W35	Nominal heating capacity	kW	5.30	8.10	12.00	14.50
	Nominal COP		4.25	4.10	4.40	4.30
	Total power input	kW	1.25	1.98	2.73	3.37
	Capacity range min - max.	kW	1.2 - 5.7	2 - 9.5	5.3 - 13.5	6.0 - 16.0
A2W35 *	Heating capacity	kW	3.50	6.20	9.00	11.00
	COP		3.15	3.20	3.25	3.20
A-7W35 *	Heating capacity	kW	3.50	5.89	8.91	9.41
	COP		2.65	2.32	2.55	2.50
A12W35	Heating capacity	kW	5.65	8.46	12.6	15.66
	COP		4.51	4.39	4.71	4.58
A-15W35 *	Heating capacity	kW	1.66	3.35	4.5	5.82
A7W55	Heating capacity	kW	3.63	5.92	9.12	12.08
	COP		2.71	2.16	2.61	2.39
A2W55	Heating capacity	kW	2.63	5.05	7.14	8.57
	COP		2.09	1.94	2.11	2.06
A-7W55 *	Heating capacity	kW	2.03	3.77	5.02	6.51
	COP		1.68	1.54	1.56	1.53
A12W55	Heating capacity	kW	3.98	6.55	10.0	13.43
	COP		2.95	2.37	2.87	2.67
A7W45	Heating capacity	kW	4.41	6.73	10.17	12.97
	COP		3.51	2.95	3.53	3.10
A35W18	Nominal cooling capacity	kW	4.40	8.60	12.00	14.00
	Nominal EER		3.61	3.62	3.80	3.61
A35W7	Cooling capacity	kW	4.00	6.20	7.50	10.10
	EER		2.80	2.80	2.80	2.60

Note : All data measured according to EN 14511 with pump included.

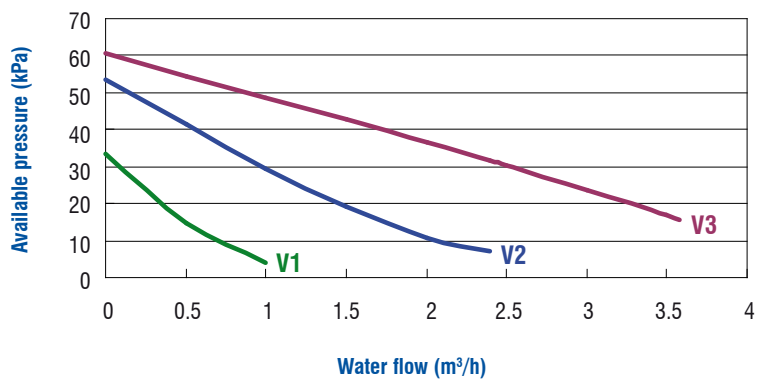
* : With deicing.

Heat Pump Available Pressure Curves

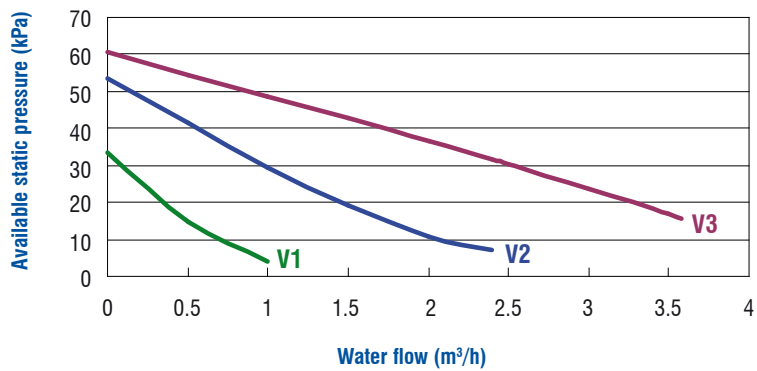
Aqu@Scop Split 005



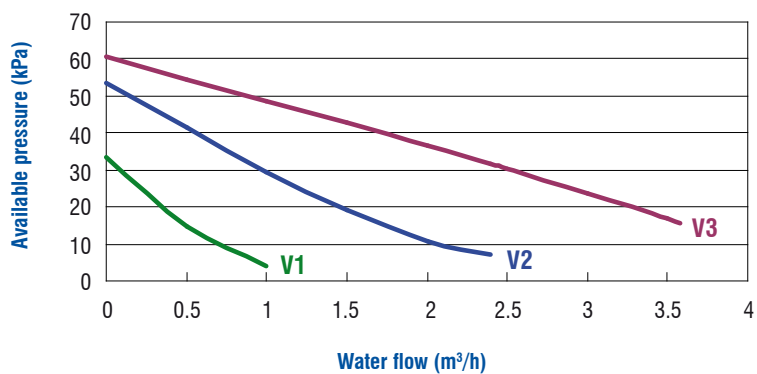
Aqu@Scop Split 008



Aqu@Scop Split 012



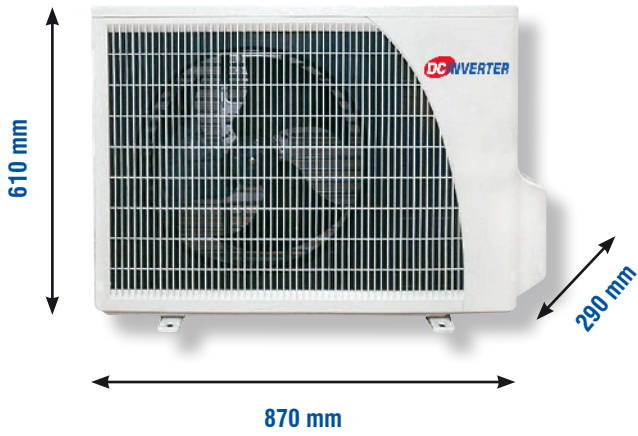
Aqu@Scop Split 014



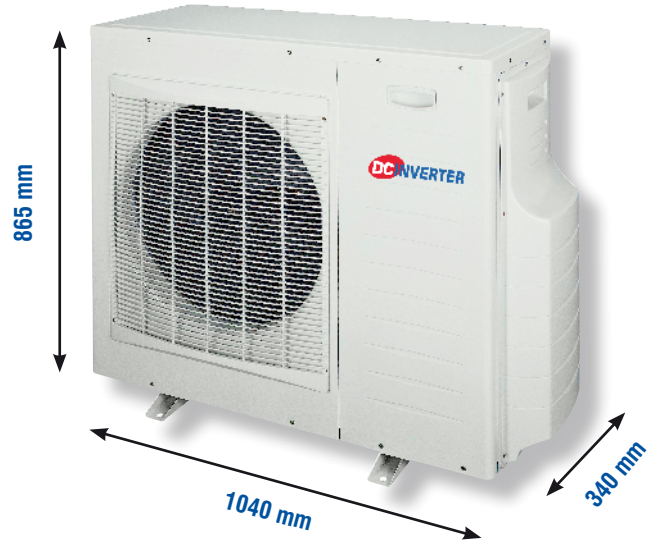
Dimensions

Outdoor units - ODU 1 to 4

ODU 1 - AQU@SCOP SPLIT 005



ODU 2 - AQU@SCOP SPLIT 008

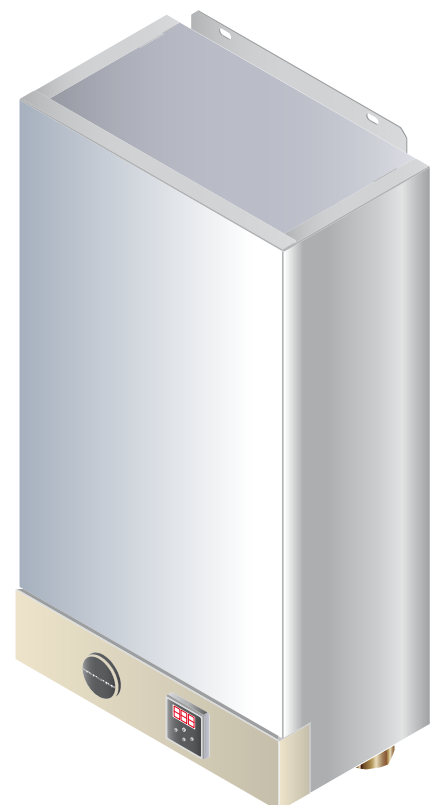
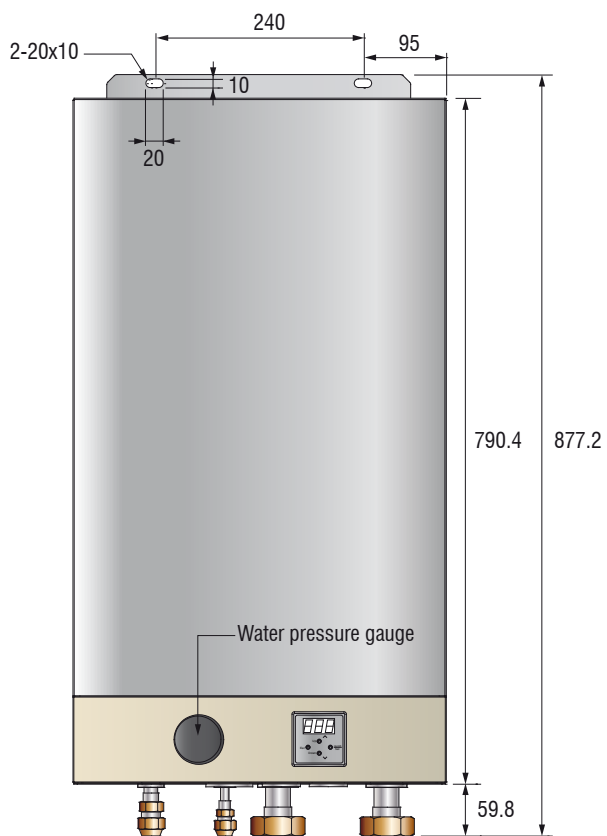
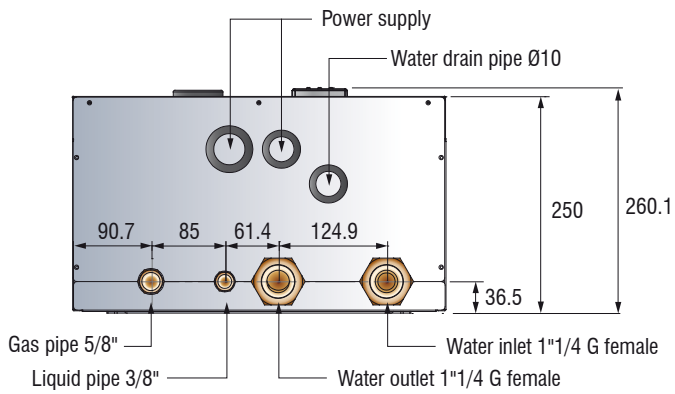


ODU 3 & 4 - AQU@SCOP SPLIT 012 & 014

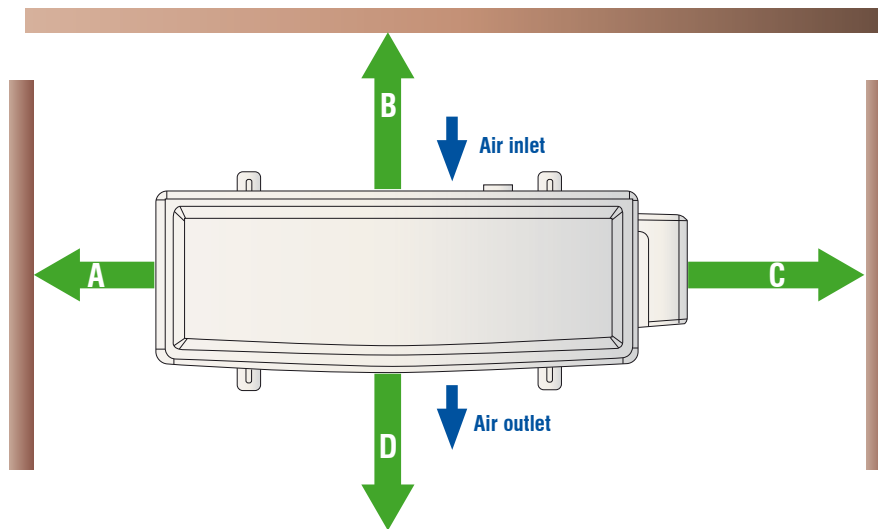


Dimensions (continued)

Indoor units - IDU 1 & 2 - AQU@SCOP SPLIT 005 to 014

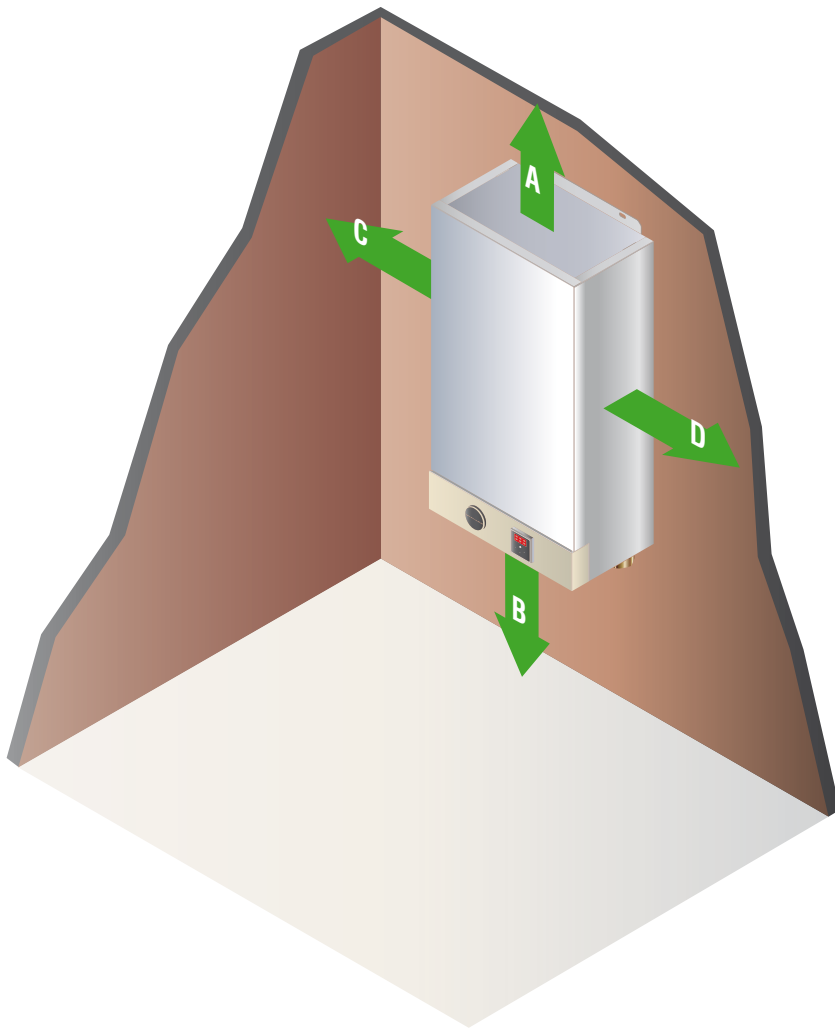


Minimum Clearances - Outdoor Units



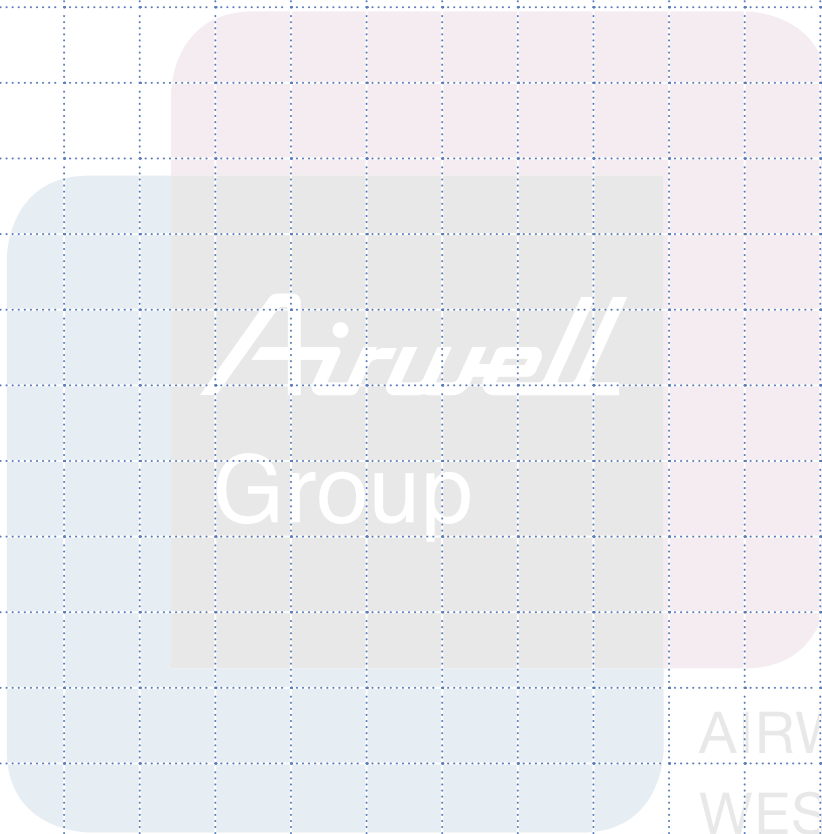
Models	Dimensions in mm			
	A	B	C	D
AQU@SCOP SPLIT 005	≥ 100	≥ 100	≥ 300	≥ 1000
AQU@SCOP SPLIT 008	≥ 100	≥ 100	≥ 300	≥ 1000
AQU@SCOP SPLIT 012	≥ 100	≥ 200	≥ 300	≥ 1000
AQU@SCOP SPLIT 014	≥ 100	≥ 200	≥ 300	≥ 1000

Minimum Clearances - Indoor Units

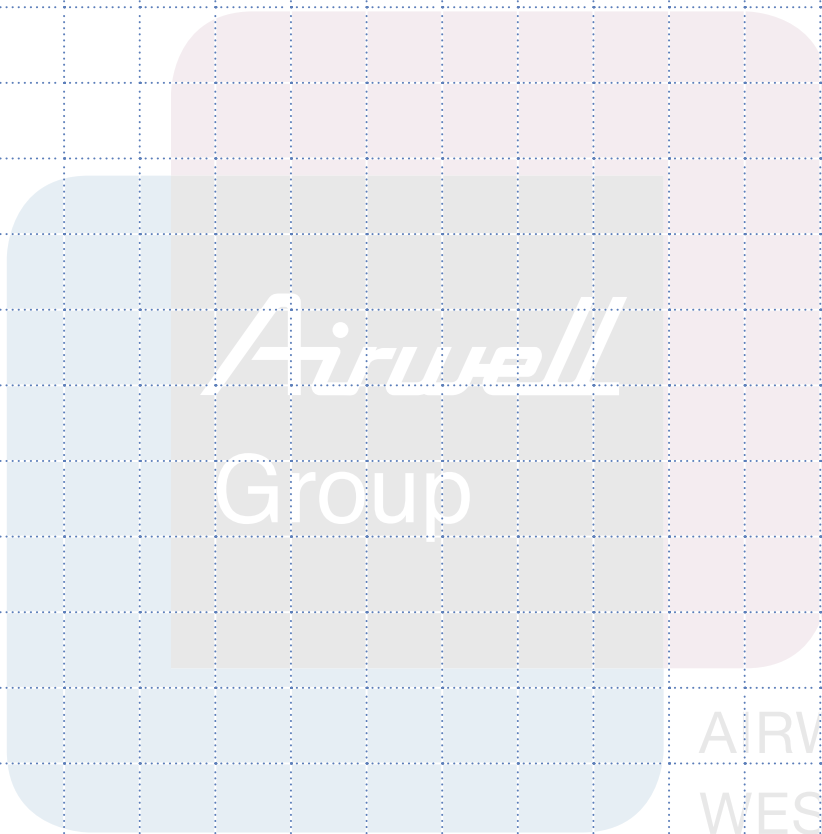


Dimensions in mm			
A	B	C	D
150	1100	100	100

Note : The clearance dimensions B, C and D are not obligatory for correct heat pump operation, however they are necessary for cleaning and maintenance operations



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Ref. : **EDM AQSP-A.1GB/10.12** - Supersedes : None

As part of our ongoing product improvement programme, the technical data and colours of our products are subject to change without prior notice. Non contractual photos.