Daikin Altherma low temperature split Technical Data

EAVH-UD6V

Table of contents

EAVH-UD6V

1 Features

1 - 1 EAVH-UD6V

› A combined stainless steel domestic hot water tank of 180 or 230L and heat pump for easy installation
› Inclusion of all hydraulic components means no third party components are required
› PCB board and hydraulic components are located in the front for easy access
› Small installation footprint of 600x600mm
› Energy efficient heating only system based on air to water heat pump technology

Online controller

2 Specifications

1 - 1 EAVH-UD6V

Technical Specifications					EAVH16SU18D6V	EAVH16SU23D6V
Heater capacity	Step 1			kW	2	
	Step 2			kW	2 or 4	
Power input	Nom.			kW	0.21	
Casing	Material				Precoated sheet metal	
Dimensions	Unit	Height		mm	1,650	1,850
		Width		mm	595	
		Depth		mm	625	
	Packed unit	Height		mm	1,820	2,020
		Width		mm	720	
		Depth		mm	740	
Weight	Unit			kg	109	118
	Packed unit			kg	126	135
Packing	Material				Wood / Carton / PE wrapping foil / Metal	
	Weight			kg	16	
Pump	Nr of speeds				PWM	
	Power input			W	179	
Water side Heat exchanger	Water flow rate	Min.		l/min	20.0 (1)	
Expansion vessel	Volume			l	10	
	Max. water pressure			bar	3	
	Pre pressure			bar	1	
Tank	Name				Stainless steel domestic hot water tank 180 l	Stainless steel domestic hot water tank 230 L
	Water volume			l	180	230
	Material				Stainless steel (EN 1.4521)	
	Maximum water temperature			°C	70.0	
	Maximum water pressure			bar	10	
	Insulation	Material			Polyurethane foam	
		Heat loss		kWh/24h	1.4 (2)	1.8 (2)
	Corrosion protection				Pickling	
	Energy efficiency class				B	C
	Standing heat loss			W	56	73
	Storage volume			l	180	220
General	Supplier/ Manufacturer details	Name or trademark			Daikin Europe N.V.	
		Name and address			Daikin Europe N.V. - Zandvoordestraat 300, 8400 Oostende, Belgium	
3-way valve	Coefficient of flow (kV)	Space heating		m^3/h	8	
		Domestic hot water tank		m^3/h	10	
Water circuit	Piping connections diameter			inch	G 1" (female)	
	Piping material				Cu	
	Internal piping diameter			inch	1-1/4"	
	Piping			inch	1"	
	Safety valve			bar	3	
	Manometer				Digital	
	Drain valve / fill valve				No	
	Shut off valve				Yes	
	flowswitch				Yes	
	Air purge valve				Yes	
Water circuit	Total water volume			l	2.5 (3)	
	Minimum water volume in the system for cooling			l	20 (4)	
	Minimum water volume in the system for heating			l	20 (4)	
Water circuit - Domestic hot water side	Piping material				Stainless steel	
	Piping connections	Cold water in / Hot water out		inch	G 3/4" FEMALE	
		Recirculation connection		inch	G 3/4" FEMALE	
Sound power level	Nom.			dBA	44.0 (5)	
Sound pressure level	Nom.			dBA	30.0 (6)	
Operation range	Heating	Ambient	Min.	°C	0 (7)	
			Max.	°C	0 (7)	
		Water side	Min.	°C	0 (7)	
			Max.	°C	0 (7)	
	Indoor installation	Ambient	Min.	°CDB	5	
			Max.	°CDB	35 (8)	
	Cooling	Ambient	Min.	°CDB	0 (7)	
			Max.	°CDB	0 (7)	
		Water side	Min.	°C	0 (7)	
			Max.	°C	0 (7)	
	Domestic hot water	Water side	Min.	°C	0 (7)	
			Max.	°C	0 (7)	
Safety devices	Item	01			Temperature and pressure relief valve: 90-95°C	

2 Specifications

1 - 1 EAVH-UD6V

Electrical Specifications				EAVH16SU18D6V	EAVH16SU23D6V
Power supply	Name			See note 10	
	Voltage range	Min.	%	10	
		Max.	%	10	
IP class	IP			IP X0B	
Electric heater	Power supply	Name		6V3	
		Phase		1~ / 3~	
		Frequency	Hz	50	
		Voltage	V	230	
	Current	Maximum running current	A	26.0	
		Zmax List	Ω	0.22	
		Minimum Ssc value		Equipment complying with EN/IEC 61000-3-12	
	Recommended fuses		A	20.000 (9)	
Wiring connections	Communication cable	Quantity		3	
		Remark		2.5 mm²	
	Electric meter	Quantity		2	
		Remark		Minimum 0.75 mm² (5VDC pulse detection)	
	Preferential kWh rate power supply	Quantity		Power: 2	
		Remark		Power 6.3A (Select diameter and type according to national and local regulations)	
	Domestic hot water pump	Quantity		2	
		Remark		Minimum 0.75 mm² (2A inrush, 1A continuous)	
	For power supply back-up heater	Quantity		Prewired	
	For connection with R6T	Quantity		2	
		Remark		Minimum 0.75 mm²	
	For connection with A3P	Quantity		Depends on thermostat type, cf. installation manual	
		Remark		Voltage: 230V / Max. current: 100mA / Min. 0.75mm²	
	For connection with M2S	Quantity		2	
		Remark		Voltage: 230V / Max. current: 100mA / Min. 0.75mm²	
	For connection with optional FWXV* (demand	Quantity		4	
		Remark		100 mA, minimum 0.75 mm²	

(1)Operation area is extended to lower flow rates only in case the unit operates with heat pump only. (Not in startup, no BUH operation, no defrost operation). |
(2)Based on a dT of 45 K |
(3)ncluding piping + back-up heater; excluding expansion vessel |
(4)Excluding the water in the unit. This minimum water volume is sufficient for most applications. During critical processes extra water may be required. |
(5)Measured with a pressure drop of 10 kPa in the heating system at an operating condition of leaving water 47-55°C in a room with an ambient of 20°C. DB/WB 7°C/6°. |
(6)Value measured in an anechoic room at 1m distance from the unit. It is a relative value, depending on the distance and acoustic environment. The sound pressure level mentioned is measured with a pressure drop of 10 kPa in the heating system at an operating condition of leaving water 47-55°C in a room with an ambient of 20°C. |
(7)Refer to operation range of the unit. |
(8)Depends on operation mode, refer to installation manual. |
(9)4 pole 20 A curve 400V tripping class C (refer to wiring diagram) |
(10)Above mentioned power supply of the hydrobox is for the backup heater only. The switch box and the pump of the hydrobox are supplied via the outdoor unit. The optional domestic hot water tank has a separate power supply.

3 Electrical data

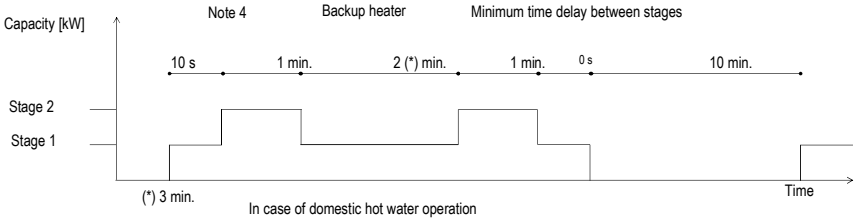
3 - 1 Electrical Data

EAVH-UD6V

Electrical specifications

	Type			6V						9W					
	Capacity setting		[kW]	2 - 4	2 - 6	4 - 6	2-4 (in case of emergency: 2-6)		6	3 - 6	3 - 9	3 - 6 (in case of emergency: 3 - 9)			
	Capacity stage			2	2	2	2	2	1	2	2	2	2		
	Capacity stage 1		kW	2	2	2	2	2	6	3	3	3	3		
	Capacity stage 2		kW	4	6	4	4	6	-	6	9	6	9		
Backup heater	Minimum time delay between stages			Note 4						Note 4					
	Power supply (1)	Phase		1~					3~	3~					
		Frequency	Hz	50						50					
		Voltage	V	230 +-10%						400 +-10%					
	Current	Nominal running current	A	17,4	26,1	26,1	17,4	26,1	15	8,7	13	8,7	13		
		Zmax (backup heater)(2)	Ω							-					
			Complex	-						-					
		Minimum Ssc value	kVA		(3)			(3)		-					

Notes	(1)	The above-mentioned power supply of the hydrobox is for the backup heater only. Booster heater power supply
	(2)	In accordance with EN/IEC 61000-3-11, it may be necessary to consult the distribution network operator to ensure that the equipment is connected only to a supply with Zsys ≤ Zmax.
	(3)	The equipment complies with EN/IEC 61000-3-12.
	EN/IEC 61000-3-11	European/International Technical Standard setting the limits for voltage changes, voltage fluctuations and flicker in public low-voltage supply systems for equipment with rated current ≤ 75 A.
	EN/IEC 61000-3-12	European/International Technical Standard setting the limits for harmonic currents produced by equipment connected to public low-voltage systems with input current > 16 A and ≤ 75 A per phase.
	Zsys	System impedance



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4 Options

4 - 1 Options

EVAH-UD6V

Outdoor combination table for ·EAV(H/X/Z)16S(U)(18/23)DA·

		EPGA11DAV3	EPGA14DAV3	EPGA16DAV3
EAVH16S(18/23)DA*	Heating only indoor unit	o	o	o
EAVX16S(18/23)DA*	Reversible indoor unit	o	o	o
EAVZ16S(18/23)DA*	(Integrated Bizone)	o	o	o
EAVH16SU(18/23)DA*	Heating only indoor unit for the UK	o	o	o

Kit availability for indoor units

Reference	Description		EAV*16S*DA*					
EAVH*	Heating only indoor unit		18 - 6V	18 - 9W	23 - 6V	23 - 9W		
EAVX*	Reversible indoor unit		18 - 6V	18 - 9W	23 - 6V	23 - 9W		
EAVZ*	(Integrated Bizone)		18 - 6V	18 - 9W	23 - 6V	23 - 9W		
EAVH16SU*	Heating only indoor unit for the UK						18 - 6V	23 - 6V
EKRP1HBAA	Digital I/O PCB	*(1) (2)	o	o	o	o	o	o
EKRP1AHTA	Demand PCB	*(3)	o	o	o	o	o	o
BRC1HHDA	Simplified user interface		o	o	o	o	o	o
EKPCCAB4	PC cable	*(4)	o	o	o	o	o	o
KRCS01-1	Remote indoor sensor	*(5)	o	o	o	o	o	o
EKRSCA1	Remote sensor for outdoor	*(5)	o	o	o	o	o	o
BRP069A61	LAN adapter for smartphone control		o	o	o	o	o	o
BRP069A62	LAN adapter for smartphone control		o	o	o	o	o	o
EKCC8-W	Universal centralised user interface		o	o	o	o	o	o
EKHVCONV2	Conversion kit: heating only to reversible.		o	o	o	o		
EKUHWG3D	·G3· kit						o (9)	o (9)
FWXV15AVEB	Heat pump convector	*(6)	o	o	o	o	o	o
FWXV20AVEB	Heat pump convector	*(6)	o	o	o	o	o	o
EKVKHPC	Heat pump convector valve kit		o	o	o	o	o	o
EKRTWA	Wired room thermostat		o	o	o	o	o	o
EKRTR1	Wireless room thermostat		o	o	o	o	o	o
EKRTETS	External sensor room thermostat	*(7)	o	o	o	o	o	o

Kit availability for outdoor units

		EPGA11DAV3	EPGA14DAV3	EPGA16DAV3
EKBPH140L7	Bottom plate heater	o	o	o

Factory-mounted equipment for ·EAV(H/X/Z)16S*DA*·

Description	EAV(H/X/Z)16S*DA*			
Heating only model ·EAVH*·	18 - 6V (8)	18 - 9W (8)	23 - 6V (8)	23 - 9W (8)
Reversible model ·EAVX*·	18 - 6V (8)	18 - 9W (8)	23 - 6V (8)	23 - 9W (8)
(Integrated Bizone)	18 - 6V (8)	18 - 9W (8)	23 - 6V (8)	23 - 9W (8)
Backup heater ·2-4-6kW 1N~230 V·	o	-	o	-
Backup heater ·2-4-6kW 3~230 V·	o	-	o	-
Backup heater ·3-6-9kW 3N~400 V·	-	o	-	o
Domestic hot water tank ·180L·	o	o	-	-
Domestic hot water tank ·230L·	-	-	o	o

Reference	Description	EAVH*	EAVX*
	Only applicable for ·EAVH16S(18/23)* & EAVX16S(18/23)*· models		
BZKA7V3	Bizone kit	o	o

Notes

(1) PCB that provides additional output connections: · ·
- (a) Control external heat source (bivalent operation).
- (b) Output remote ON/OFF signal space heating/cooling
- (c) Remote alarm output

(2) Additional relays to allow bivalent control in combination with an external room thermostat are field-supplied.

(3) PCB to receive up to ·4· digital inputs for power limitation
(4) Data cable for connection with PC.
(5) Only 1 remote sensor can be connected: indoor OR outdoor sensor.
(6) The valve kit is mandatory if a heat pump convector is installed on a reversible model (not mandatory for heating only models).
(7) ·EKRTETS· can only be used in combination with ·EKRTR1·
(8) The backup heater capacity depends on a user interface setting.
(9) This kit is mandatory for the UK models.

Remark

Other combinations than mentioned in this combination table are prohibited.

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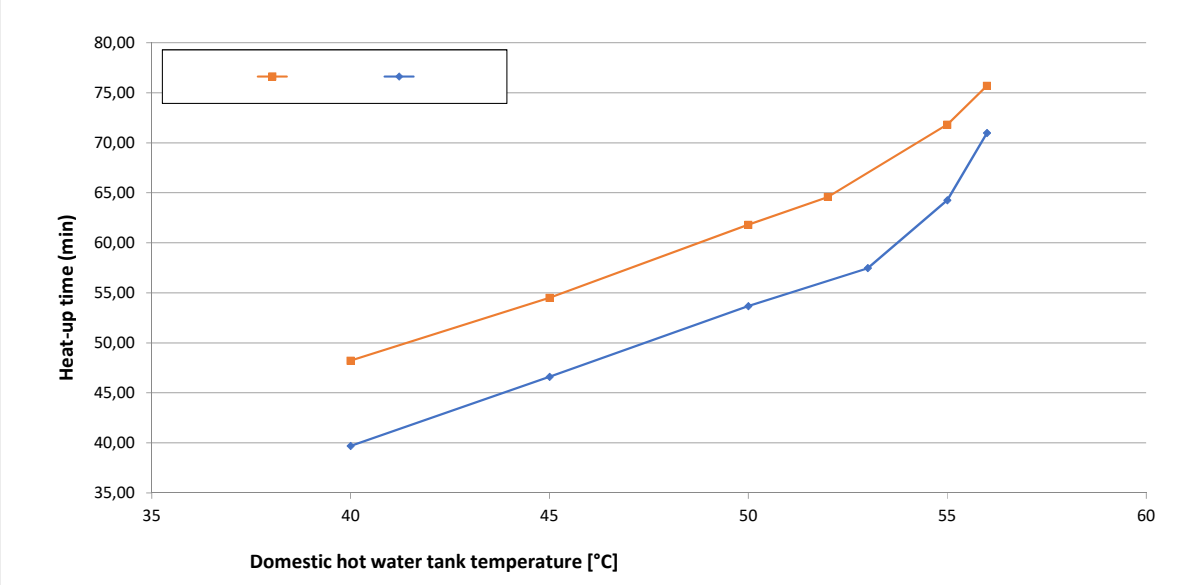
5 Capacity tables

5 - 1 Domestic Hot Water performance

EAVH-UD6V

Heat-up times



Notes

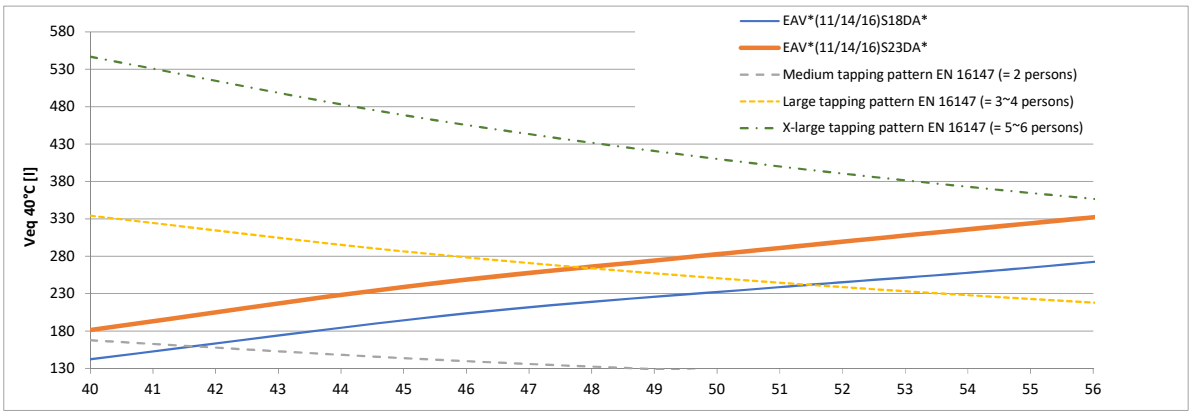
1. Time the indoor unit (**heat pump only operation**) requires to heat up the domestic hot water tank from 10°C to the indicated temperature.

   See the operation range for maximum domestic hot water tank temperature during heat pump only operation.

Model name	Heat-up time domestic hot water tank until 45°C
EAV*(11/14/16)S18DA*	·46· min.
EAV*(11/14/16)S23DA*	·55· min.

Selection guide for the domestic hot water tank volume (1)

Veq 40°C = the amount of water with a temperature of 40°C that can be tapped when the domestic hot water tank is heated to a certain temperature, and the temperature of the cold inlet water is 10°C.



If a higher daily Veq 40°C is required, then additional heat-up cycles are required within 24 hours.

See the operation manual for more information.

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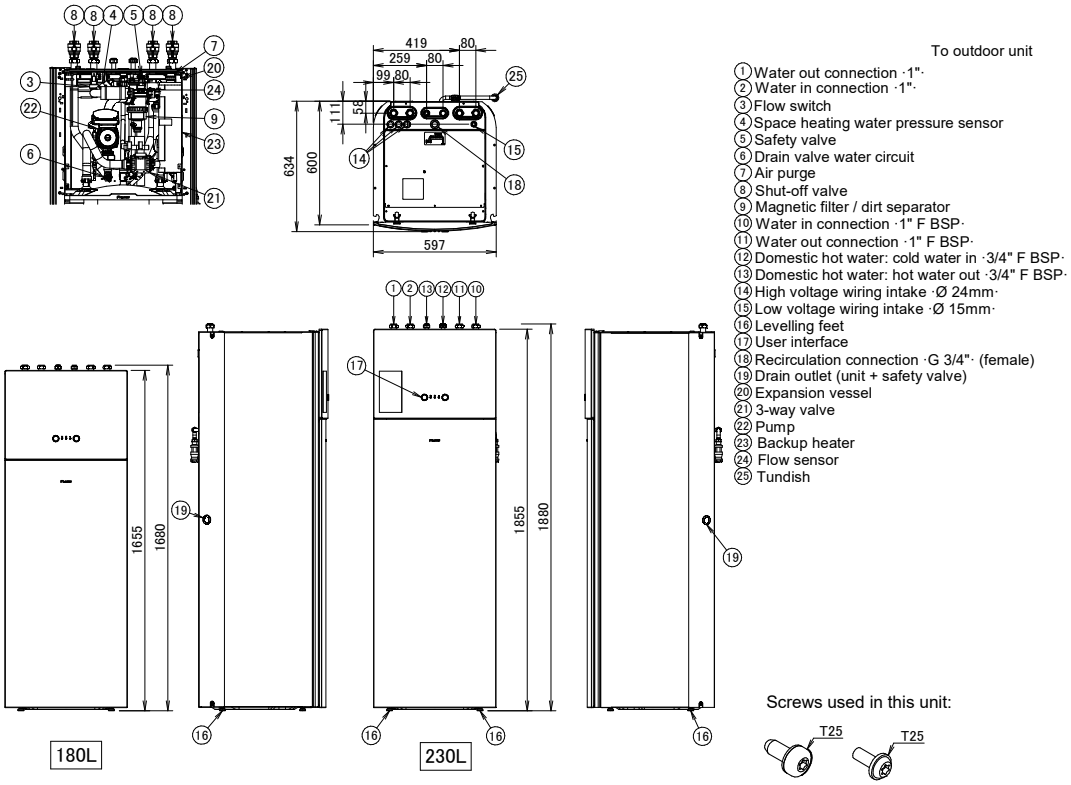
6 Dimensional drawings

6 - 1 Dimensional Drawings

EAVH-UD6V



To outdoor unit

1. Water out connection ·1"·
2. Water in connection ·1"·
3. Flow switch
4. Space heating water pressure sensor
5. Safety valve
6. Drain valve water circuit
7. Air purge
8. Shut-off valve
9. Magnetic filter / dirt separator
10. Water in connection ·1" F BSP·
11. Water out connection ·1" F BSP·
12. Domestic hot water: cold water in ·3/4" F BSP·
13. Domestic hot water: hot water out ·3/4" F BSP·
14. High voltage wiring intake ·Ø 24mm·
15. Low voltage wiring intake ·Ø 15mm·
16. Levelling feet
17. User interface
18. Recirculation connection ·G 3/4"· (female)
19. Drain outlet (unit + safety valve)
20. Expansion vessel
21. 3-way valve
22. Pump
23. Backup heater
24. Flow sensor
25. Tundish

Screws used in this unit:

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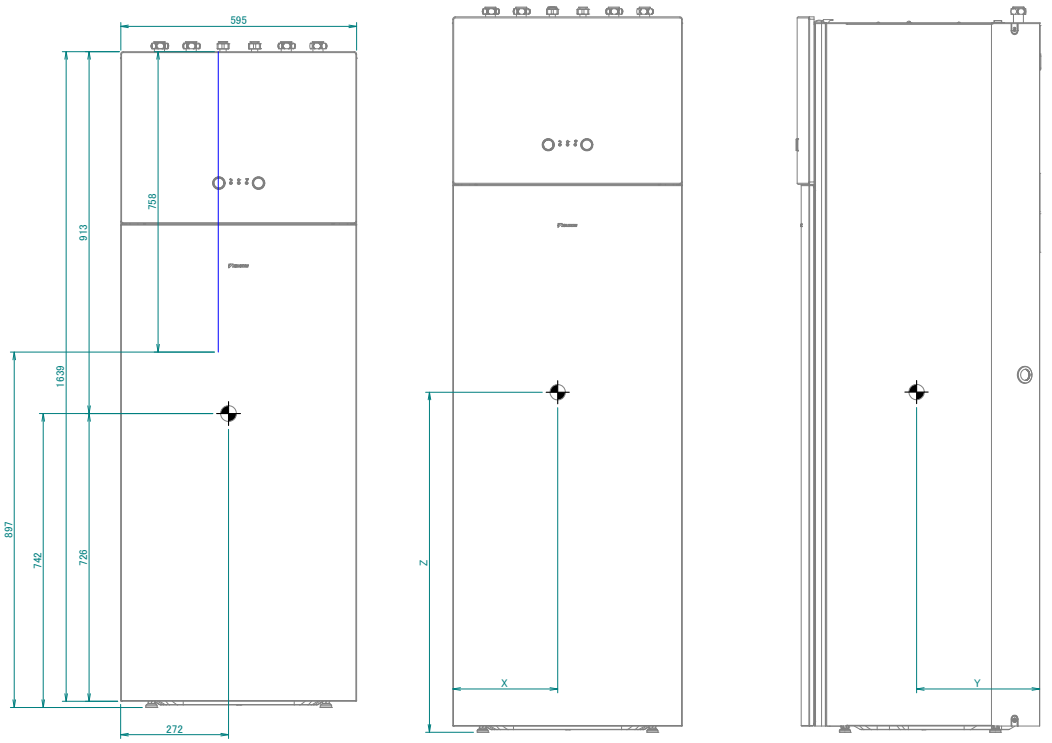
7 Centre of gravity

7 - 1 Centre of Gravity

EAVH-UD6V



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8 Piping diagrams

8 - 1 Piping Diagrams

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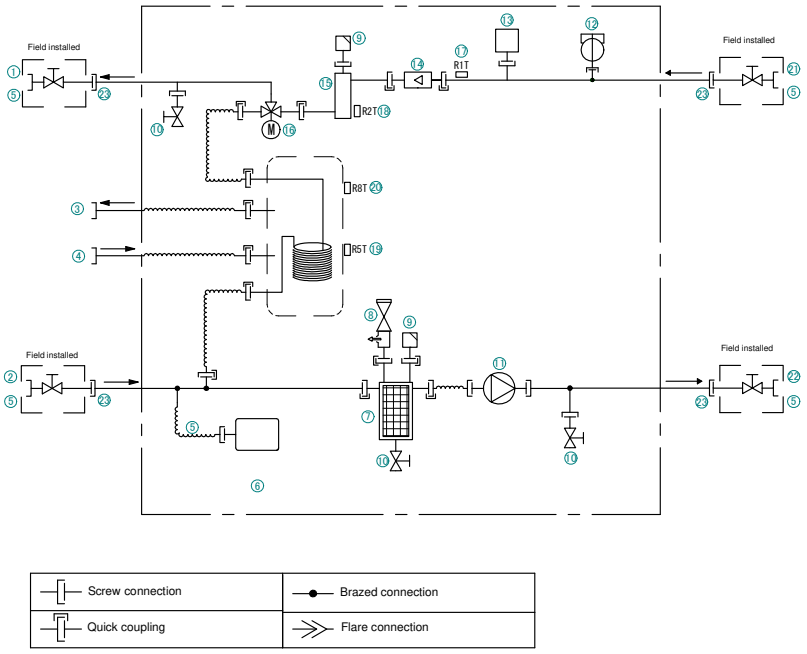

① Space heating - water OUT
② Space heating - water IN
③ Domestic hot water: hot water out ·3/4"·
④ Domestic hot water: cold water in ·3/4"·
⑤ Shut-off valve ·1"· (male-female)
⑥ Expansion vessel
⑦ Magnetic filter / dirt separator
⑧ Safety valve
⑨ Air purge
⑩ Drain valve
⑪ Pump
⑫ Flow switch
⑬ Space heating water pressure sensor
⑭ Flow sensor
⑮ Backup heater
⑯ 3-way valve (space heating/domestic hot water)
⑰ R1T – Inlet water thermistor
⑱ R2T – Outlet water backup heater thermistor
⑲ R5T – Tank thermistor
⑳ R8T – Tank thermistor

Field piping connections

㉑ Water in connection ·1"·
㉒ Water out connection ·1"·
㉓ Screw connection ·1"·

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9 Wiring diagrams

9 - 1 Wiring Diagrams - Single Phase

EAVH-UD6V

NOTES to go through before starting the unit

X1M : Main terminal
X2M : Field wiring terminal for AC
X5M : Field wiring terminal for DC
X6M : BUH Power supply terminal

: Earth wiring
: Field supply
① : Several wiring possibilities
: Option
: Not mounted in switch box
: Wiring depending on model
: PCB

Note 1 : Connection point of the power supply for the BUH should be foreseen outside the unit.

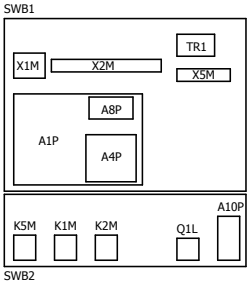
Backup heater power supply
- ☐ 6T1 (3~, 230V, 6kW)
- ☐ 6V (1N~, 230V, 6kW)
- ☐ 6WN/9WN (3N~, 400V, 6/9kW)

User installed options:
- ☐ LAN adapter
- ☐ Remote user interface
- ☐ Ext. indoor thermistor
- ☐ Ext. outdoor thermistor
- ☐ Digital I/O PCB
- ☐ Demand PCB
- ☐ Bottom plate heater

Main LWT:
- ☐ On/OFF thermostat (wired)
- ☐ On/OFF thermostat (wireless)
  - ☐ Ext. thermistor
- ☐ Heat pump convector

Add LWT:
- ☐ On/OFF thermostat (wired)
- ☐ On/OFF thermostat (wireless)
  - ☐ Ext. thermistor
- ☐ Heat pump convector

POSITION IN SWITCH BOX



LEGEND

Translation can be found in the installation manual.

* : optional
\# : field supply

Part n°		Description
A1P		main PCB
A2P	*	On/OFF thermostat (PC=power circuit)
A3P	*	heat pump convector
A4P	*	digital I/O PCB
A8P	*	demand PCB
A9P		status indicator
A10P		MMI PSU PCB
A11P		MMI main PCB
A12P		MMI display PCB
A13P	*	LAN adapter
A14P	*	user interface PCB
A15P	*	receiver PCB (wireless On/OFF thermostat)
B1L		flow sensor
B1PW		water pressure sensor
CN* (A4P)	*	connector
DS1 (A8P)	*	dipswitch
E1H		backup heater element (1 kW)
E2H		backup heater element (2 kW)
E*P (A9P)		indication LED
F1B	#	overcurrent fuse backup heater
F1T		thermal fuse backup heater
F1U, F2U (A4P)	*	fuse 5 A 250 V for digital I/O PCB
FU1 (A1P)		fuse T 5 A 250 V for PCB
FU2 (A10P)		fuse T 1.6 A 250 V for PCB
K1M, K2M		contactor backup heater
K5M		safety contactor BUH
K*R (A1P-A4P)		relay on PCB
M1P		main supply pump
M2P	#	domestic hot water pump
M2S	#	2 way valve for cooling mode
M3S		3 way valve for floorheating /domestic hot water
P1M		MMI display
PC (A15P)	*	power circuit
PHC1 (A4P)	*	optocoupler input circuit
Q1L		thermal protector backup heater
Q4L	#	safety thermostat
Q*DI	#	earth leakage circuit breaker
R1H (A2P)	*	humidity sensor
R1T (A1P)		inlet water thermistor
R1T (A2P)	*	ambient sensor On/OFF thermostat
R1T (A14P)	*	ambient sensor user interface
R2T (A1P)		outlet backup heater thermistor
R2T (A2P)	*	external sensor (floor or ambient)
R5T, R8T		domestic hot water thermistor
R6T	*	external indoor or outdoor ambient thermistor
S1L		flow switch
S1S	#	preferential kWh rate PS contact
S2S	#	electrical meter pulse input 1
S3S	#	electrical meter pulse input 2
S6S-S9S	*	digital power limitation inputs
SS1 (A4P)	*	selector switch
SW1~2 (A12P)		turn buttons
SW3~5 (A12P)		push button
TR1		power supply transformer
X6M	#	BUH power supply terminal strip
X*, X*A, J* X*H*, X*Y		connector
X*M		terminal strip

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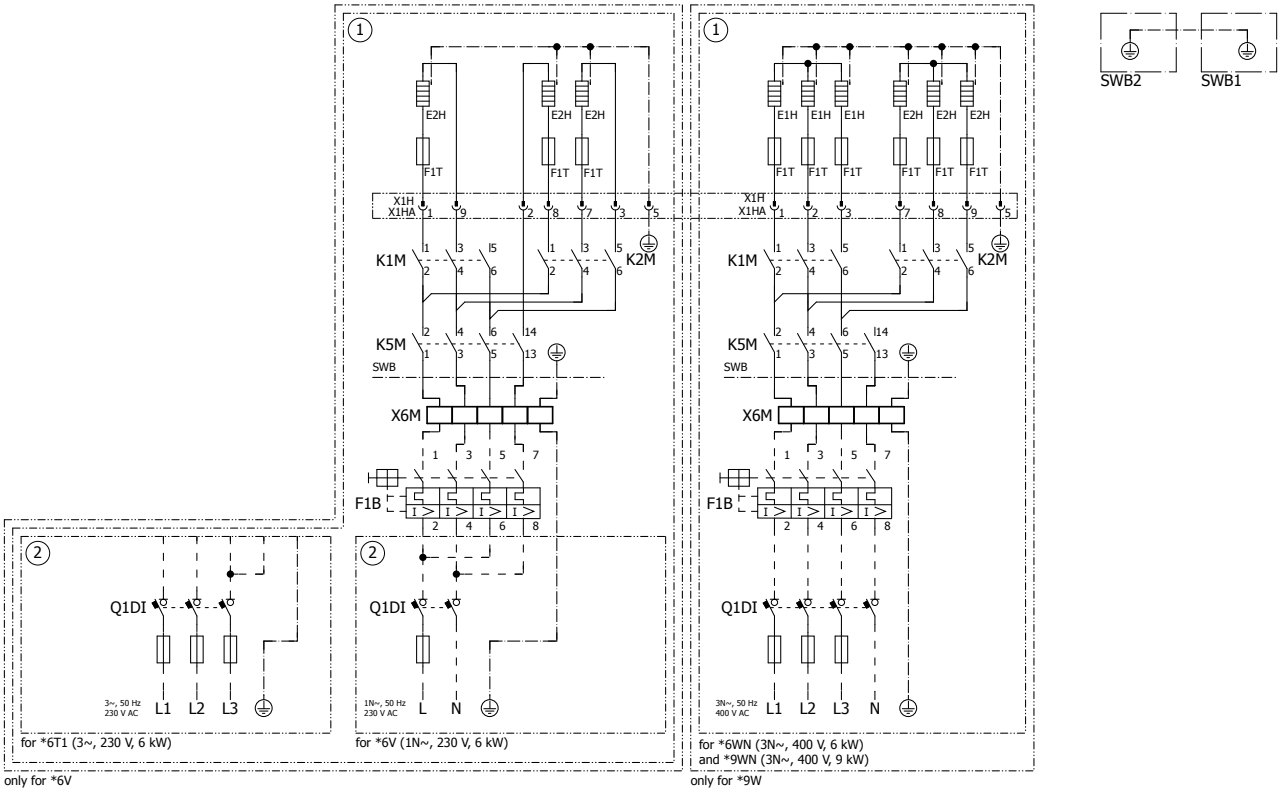
EAVH-UD6V



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9 Wiring diagrams

9 - 1 Wiring Diagrams - Single Phase

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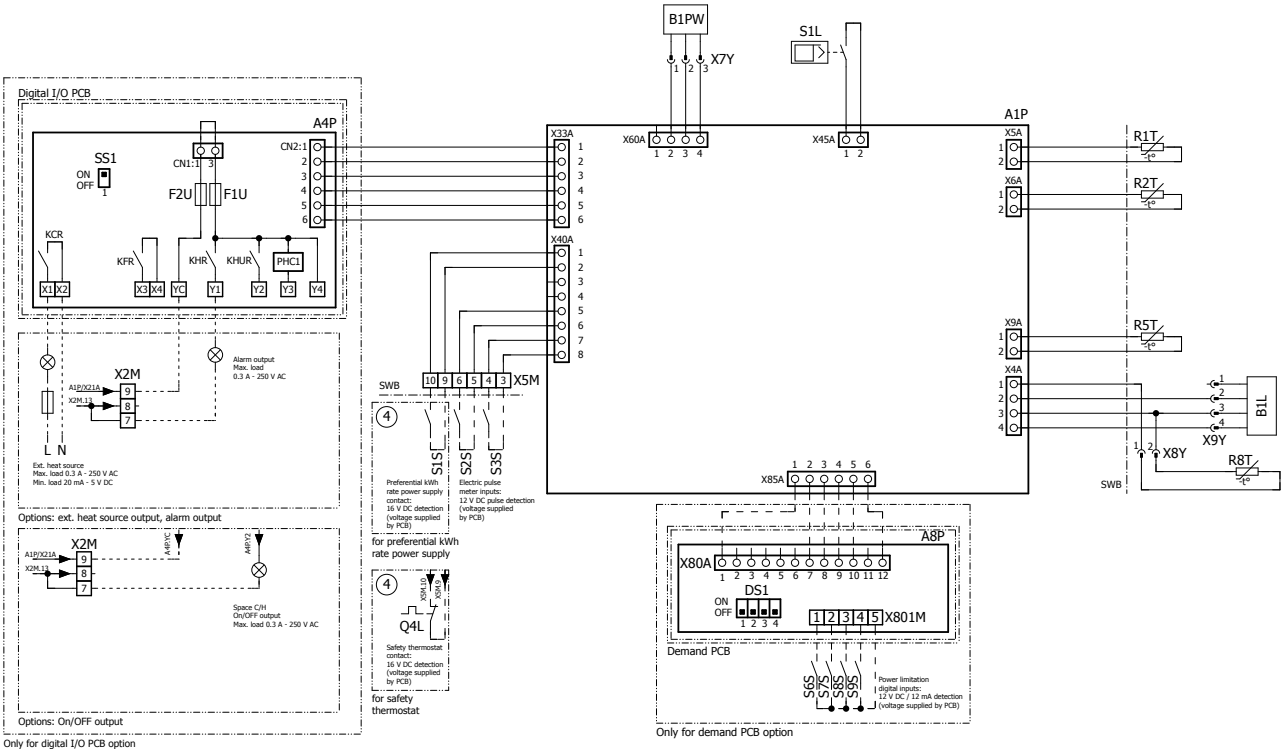

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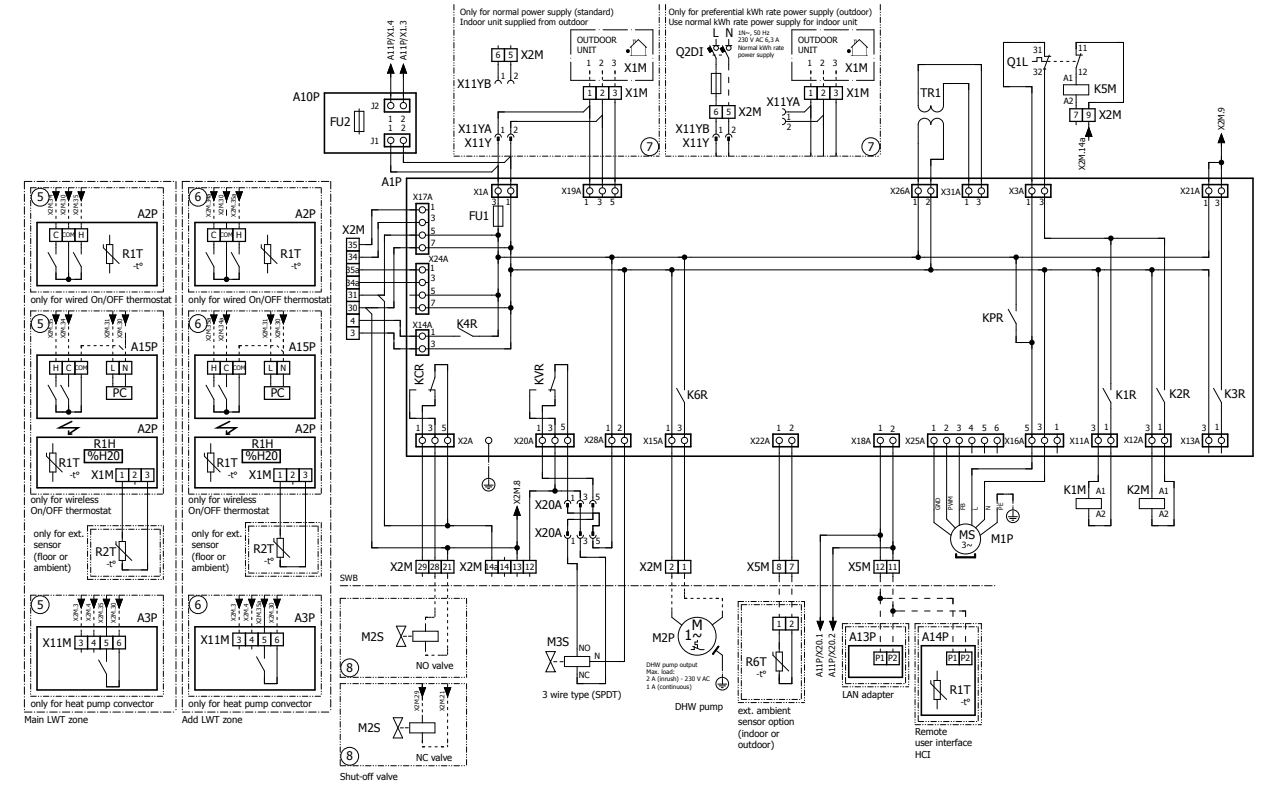

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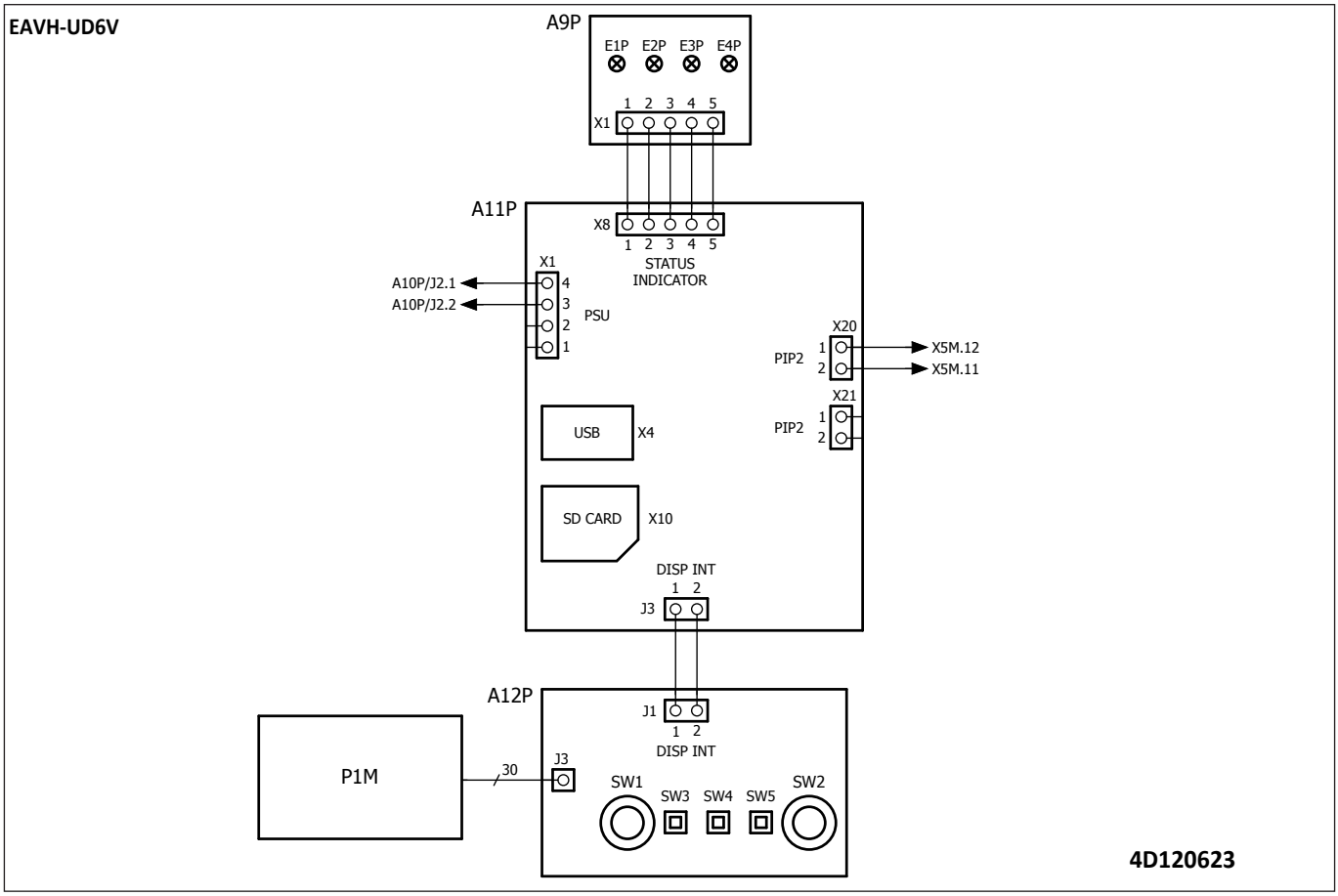
9 Wiring diagrams

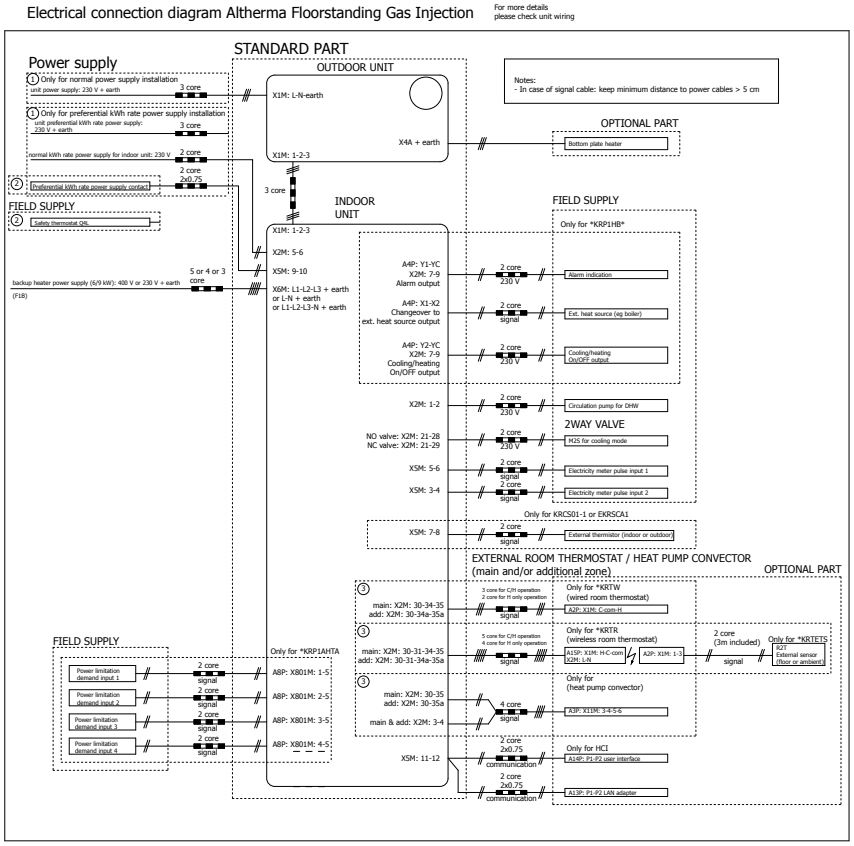
9 - 1 Wiring Diagrams - Single Phase



10 External connection diagrams

10 - 1 External Connection Diagrams

EAVH-UD6V



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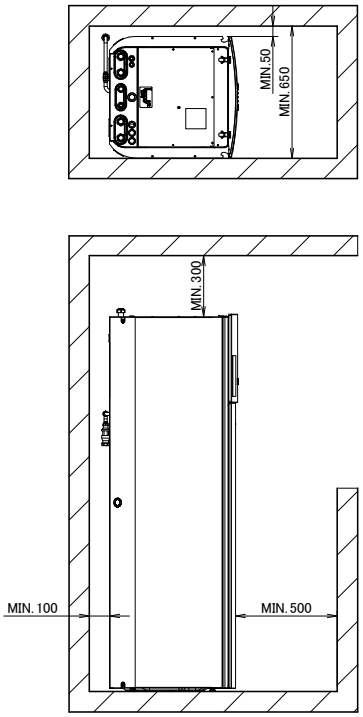
11 Installation

11 - 1 Installation Method

EACH-UD6V



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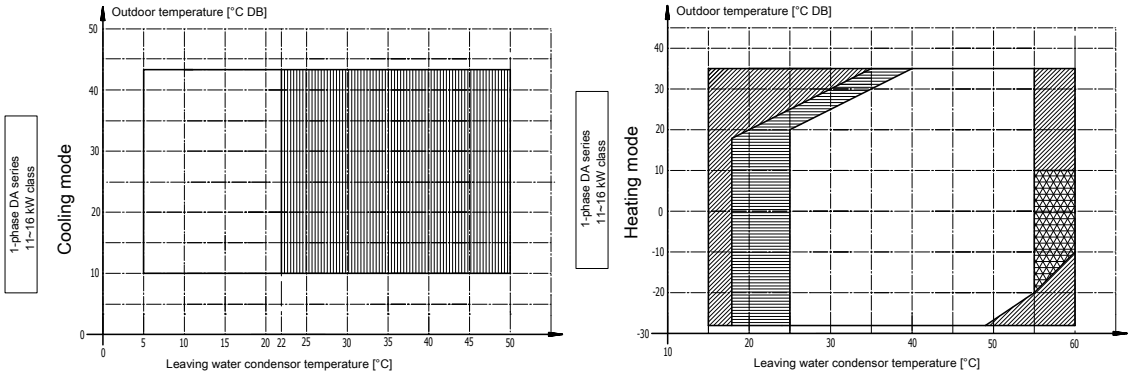
12 Operation range

12 - 1 Operation Range

EAVH-UD6V



Legend

- Backup heater only operation
  No outdoor unit operation
- Outdoor unit operation if setpoint ≥ 25°C
- Pull-down area
- **Outdoor unit operation if setpoint >55°C and ΔT = 8°C (ΔT = outlet temperature – inlet temperature)**

Indoor

DA series Standard

Remark

In restricted power supply mode, the outdoor unit, booster heater and backup heater can only operate separately.

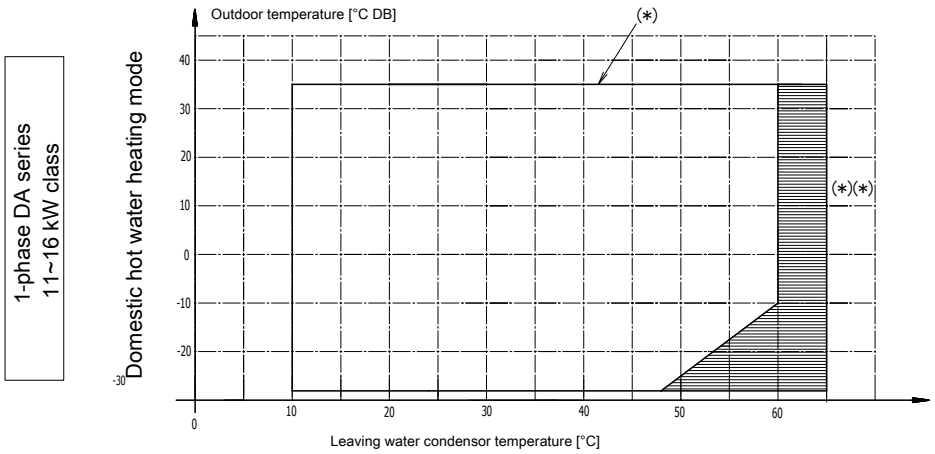
Warning

In areas with low ambient temperatures and high humidity, or in areas with heavy snowfall, remove the suction grille to ensure proper operation.

Non-exhaustive list of areas: Austria, Czech Republic, Denmark, Estonia, Finland, Germany, Hungary, Latvia, Lithuania, Norway, Poland, Romania, Serbia, Slovakia, Sweden, …

3D121180A

EAVH-UD6V



Indoor

DA series Standard

Legend

Backup heater only operation (or booster heater, if part of the system) to reach a tank temperature of 60°C.

(∗) System operation: the system consists of an outdoor unit and indoor unit, and depending on the system, a booster heater and/or a backup heater.

In heat pump only operation, the heat pump can create a maximum domestic hot water temperature up to 56°C (depending on outdoor ambient condition).

(∗)(∗) Tank temperature up to 75°C only possible with booster heater only operation (if available in the system).

Remark

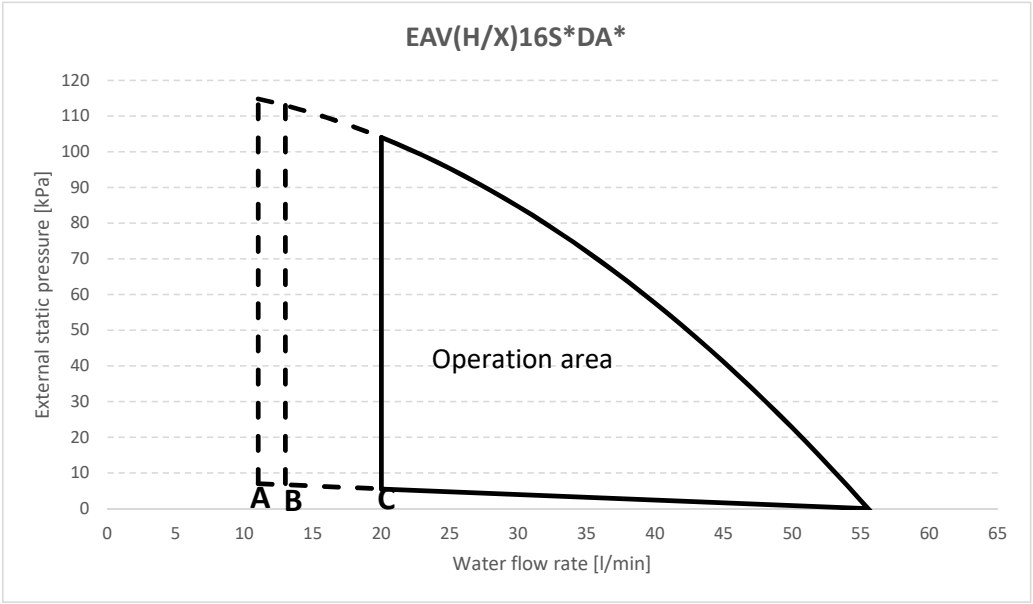
In restricted power supply mode (EKHW* only), the outdoor unit, booster heater and backup heater can only operate separately.

3D121181

13 Hydraulic performance

13 - 1 Static Pressure Drop Unit

EAVH-UD6V



A Minimum water flow rate during normal operation
B Minimum water flow rate during backup heater operation
C Minimum water flow rate during defrost operation

Operation area is extended to lower flow rates only in case the unit operates with heat pump only.
(Not in startup, no BUH operation, no defrost operation.)
See dashed lines

Notes

1. Selecting a flow outside the operating area can damage the unit or cause the unit to malfunction.
   See also the minimum and maximum allowed water flow range in the technical specifications.
2. Water quality must be according to EU directive 98/83 EC.

4D120998

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