Daikin Altherma high temperature split Technical Data ETVZ16E6V7 / ETVZ16E9W7

TABLE OF CONTENTS
ETVZ16E6V7 / ETVZ16E9W7

1 Features

ETVZ16E6V7, ETVZ16E9W7

Floor standing unit integrated with different temperature zones management

- Integrated indoor unit: all-in-one floor standing unit including the domestic hot water tank
- Inclusion of all hydraulic components means no third party components are required
- The unit's sleek design blends in with other household appliances.
- Bi-zone allows temperature monitoring for 2 zones. Connect underfloor heating to radiators to optimise efficiency
- Quick configuration in 9 steps in a high resolution colour interface wizard

Onecta app
(optional)

2 Specifications

Technical specifications				ETVZ16S18E6V7	ETVZ16S23E6V7
Heater capacity	Step 1		kW	2	
	Step 2		kW	2 or 4	
Power input	Nom.		kW	0.33	
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	120	128
	Packed unit		kg	138	146
Packing	Material			Wood / Carton / PE wrapping foil / Metal	
	Weight		kg	16	
Pump	Type			-	
Pump Additional Zone	Nr of speeds			PWM	
	Power input		W	140	
	Type			Grundfos UPML GEO 25-105	
Pump Main Zone	Nr of speeds			PWM	
	Power input		W	140	
	Type			Grundfos UPML GEO 25-105	
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	
Water Filter Additional Zone	Diameter perforations		mm	0.8	
	Material			Plastic / Stainless steel	
Water filter Main Zone	Diameter perforations		mm	1.0	
	Material			Copper - brass - stainless steel	
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	1.2 (2)	1.4 (2)
Tank	Standing heat loss	S	W	50	58
	Storage volume	V	l	180	220
	Corrosion protection			Pickling	
	Energy efficiency class			B	
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	
3-way valve mixing	Coefficient of flow (kV)	Bypass	m^3/h	13	
		Main zone only	m^3/h	8	
Water circuit	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	
	Total water volume		l	3.5 (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 - space heating side (additional zone)	Air purge valve			Yes	
	Drain valve / fill valve			No	
	Manometer			Yes	
	Piping connections diameter		inch	G 1" (FEMALE)	
	Safety valve		bar	3	
	Shut off valve			Yes	

2 Specifications

Technical specifications					ETVZ16S18E6V7	ETVZ16S23E6V7
Water circuit - space heating side (main zone)	Air purge valve				No	
	Manometer				Yes	
	Piping connections diameter			inch	G 1 (FEMALE)	
	Safety valve			bar	Yes	
	Shut off valve				Yes	
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			Thermal cut out	

Electrical specifications					ETVZ16S18E6V7	ETVZ16S23E6V7
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	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)Including 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°. |

2 Specifications

(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 operatin |
(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.

Technical specifications				ETVZ16S18E9W7	ETVZ16S23E9W7
Heater capacity	Step 1		kW	3	
	Step 2		kW	max. 6 kW	
Power input	Nom.		kW	0.33	
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	120	128
	Packed unit		kg	138	146
Packing	Material			Wood / Carton / PE wrapping foil / Metal	
	Weight		kg	16	
Pump	Type			-	
Pump Additional Zone	Nr of speeds			PWM	
	Power input		W	140	
	Type			Grundfos UPML GEO 25-105	
Pump Main Zone	Nr of speeds			PWM	
	Power input		W	140	
	Type			Grundfos UPML GEO 25-105	
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	
Water Filter Additional Zone	Diameter perforations		mm	0.8	
	Material			Plastic / Stainless steel	
Water filter Main Zone	Diameter perforations		mm	1.0	
	Material			Copper - brass - stainless steel	
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	1.2 (2)	1.4 (2)
Tank	Standing heat loss	S	W	50	58
	Storage volume	V	l	180	220
	Corrosion protection			Pickling	
	Energy efficiency class			B	
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	
3-way valve mixing	Coefficient of flow (kV)	Bypass	m^3/h	13	
		Main zone only	m^3/h	8	
Water circuit	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	
	Total water volume		l	3.5 (3)	
	Minimum water volume in the system for cooling		l	20 (4)	
	Minimum water volume in the system for heating		l	20 (4)	

2 Specifications

Technical specifications					ETVZ16S18E9W7	ETVZ16S23E9W7
Water circuit - space heating side (additional zone)	Air purge valve				Yes	
	Drain valve / fill valve				No	
	Manometer				Yes	
	Piping connections diameter			inch	G 1" (FEMALE)	
	Safety valve			bar	3	
	Shut off valve				Yes	
Water circuit - space heating side (main zone)	Air purge valve				No	
	Manometer				Yes	
	Piping connections diameter			inch	G 1 (FEMALE)	
	Safety valve			bar	Yes	
	Shut off valve				Yes	
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			Thermal cut out	

Electrical specifications					ETVZ16S18E9W7	ETVZ16S23E9W7
Power supply	Name				See note 10	
	Voltage range	Min.		%	10	
		Max.		%	10	
IP class	IP				IP X0B	
Electric heater	Power supply	Name			9W	
		Phase			3~	
		Frequency		Hz	50	
		Voltage		V	400	
	Current	Maximum running current		A	13.0	
	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	Quantity			4	
		Remark			100 mA, minimum 0.75 mm²	

2 Specifications

(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 operatin |
(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

ETBH16E6V7 / ETBH16E9W7 / ETBX16E6V7 / ETBX16E9W7
ETVH16E6V7 / ETVH16UE6V7 /
ETVH16E9W7 / ETVX16E6V7 /
ETVX16E9W7 / ETVZ16E6V7 /
ETVZ16E9W7

* Electrical meter specification

Pulse meter type/voltage-free contact for 5 V DC detection by PCB.

-

- Possible number of pulses
  - ·0.1· pulse/kWh
  - ·1· pulse/kWh
  - ·10· pulse/kWh
  - ·100· pulse/kWh
  - ·1000· pulse/kWh
- Pulse duration
  - minimum On time: ·40ms·
  - Minimum OFF time: ·100ms·
- Measurement type (depending on installation)
  - Single-phase AC meter
  - Three-phase AC meter
    - Balanced loads
  - Three-phase AC meter
    - Unbalanced loads

* Electrical meter installation guideline

- It is the responsibility of the installer to cover the complete power consumption with electrical meters (combination of estimation and metering is not allowed).

- Required number of electrical meters

Outdoor unit type		EPRA(14/16/18)(D/E)A*					
Indoor unit type		ETB(H/X)16(D/E)A*			ETV(H/X/Z)16S*(D/E)A*		
	Backup heater type	6V		9W	6V		9W
	Backup heater power supply	1~ 230V	3~ 230V	3~ 400V	1~ 230V	3~ 230V	3~ 400V
	Backup heater configuration	2 / 4 / 6 kW	6 kW	3 / 6 / 9 kW	2 / 4 / 6 kW	6 kW	3 / 6 / 9 kW
		Normal kWh rate power supply					
Electrical meter type	1~	1	-	-	1	-	-
	3~ balanced	-	-	-	-	-	-
	3~ unbalanced	-	1	1	-	1	1
		Preferential kWh rate power supply					
Electrical meter type	1~	2	1	1	2	1	1
	3~ balanced	-	-	-	-	-	-
	3~ unbalanced	-	1	1	-	1	1

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3 Electrical data

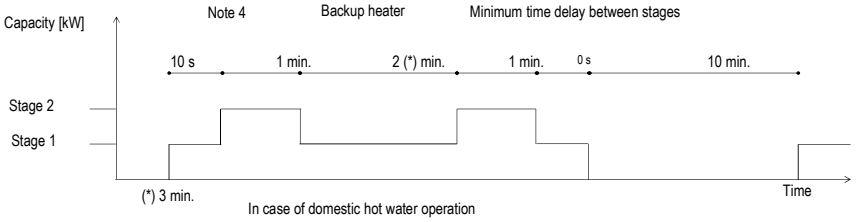
3 - 1 Electrical Data

ETVH16E6V7
ETVH16UE6V7
ETVH16E9W7
ETVX16E6V7
ETVX16E9W7
ETVZ16E6V7
ETVZ16E9W7

Electrical specifications

Backup heater	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**	
	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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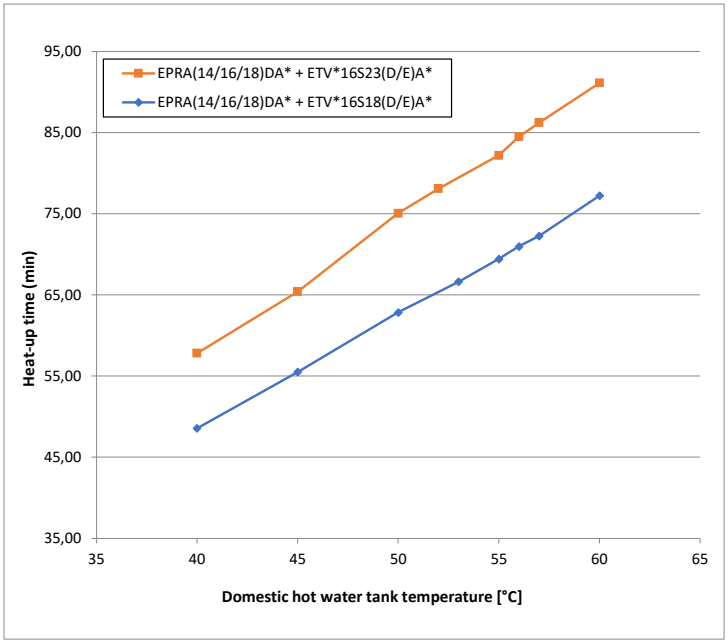
4 Capacity tables

4 - 1 Domestic Hot Water performance

ETVH16E6V7
ETVH16UE6V7
ETVH16E9W7
ETVX16E6V7
ETVX16E9W7
ETVZ16E6V7
ETVZ16E9W7

Heat-up times



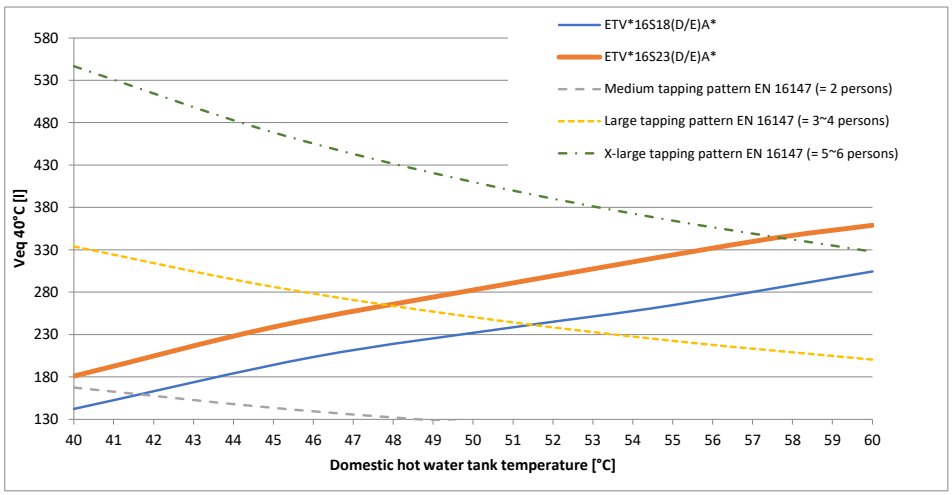
Model name	Heat-up time domestic hot water tank until 45°C
EPRA(14/16/18)DA* + ETV*16S18(D/E)A*	·55· min.
EPRA(14/16/18)DA* + ETV*16S23(D/E)A*	·65· min.

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.

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.

Notes

(1) According to EN16147.

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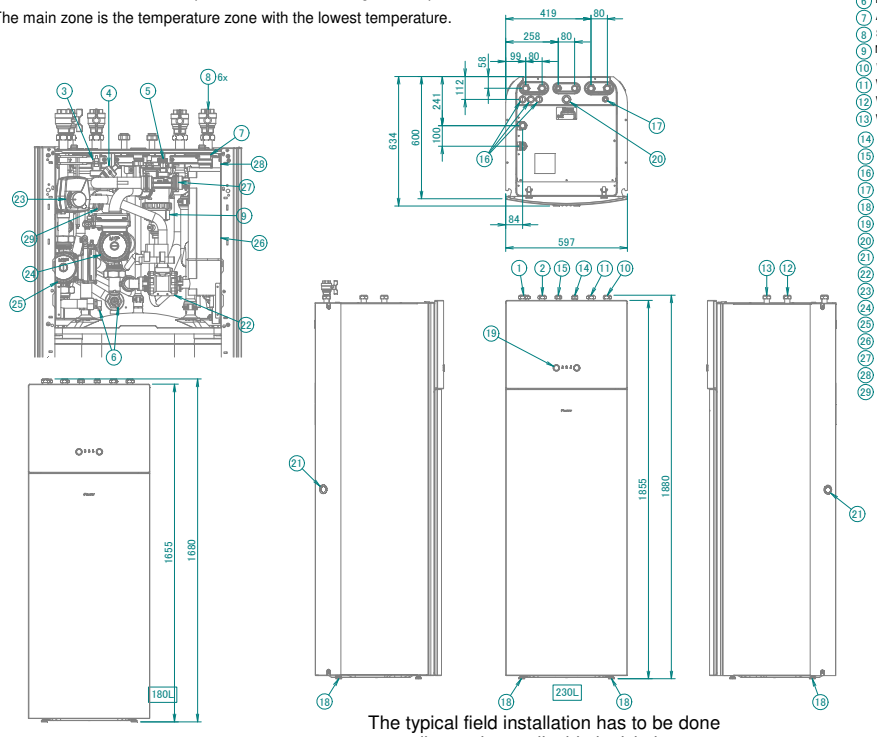
5 Dimensional drawings

5 - 1 Dimensional Drawings

ETVZ16E6V7
ETVZ16E9W7

The additional zone is the temperature zone with the highest temperature.
The main zone is the temperature zone with the lowest temperature.



1. Water out connection ·1"· — To outdoor unit
2. Water in connection ·1"· — To outdoor unit
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 (additional/direct zone)
10. Water IN connection (additional/direct zone) ·1"F BSP· (female)
11. Water OUT connection (additional/direct zone) ·1"F BSP· (female)
12. Water IN connection (main/mixed zone) ·1"F BSP· (female)
13. Water OUT connection (main/mixed zone) ·1"F BSP· (female)
14. Domestic hot water: cold water in ·3/4" F BSP·
15. Domestic hot water: hot water out ·3/4" F BSP·
16. High voltage wiring intake ·Ø 24mm·
17. Low voltage wiring intake ·Ø 15mm·
18. Levelling feet
19. User interface
20. Recirculation connection ·G 3/4"· (female)
21. Drain outlet (unit + safety valve)
22. 3-way valve (space heating/domestic hot water)
23. 3-way valve (mixing valve for the main/mixed zone)
24. Pump (additional/direct zone)
25. Pump (main/mixed zone)
26. Backup heater
27. Flow sensor
28. Expansion vessel
29. Water filter (main/mixed zone)

Screws used in this unit:

The typical field installation has to be done according to the applicable legislation.

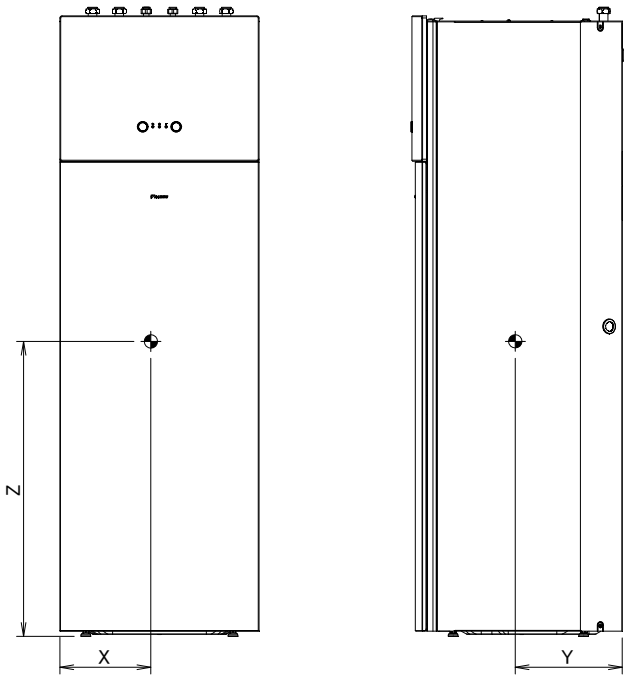
For examples, refer to the installer reference guide.

3D121003B

6 Centre of gravity

6 - 1 Centre of Gravity

ETVH16E6V7
ETVH16UE6V7
ETVH16E9W7
ETVX16E6V7
ETVX16E9W7
ETVZ16E6V7
ETVZ16E9W7



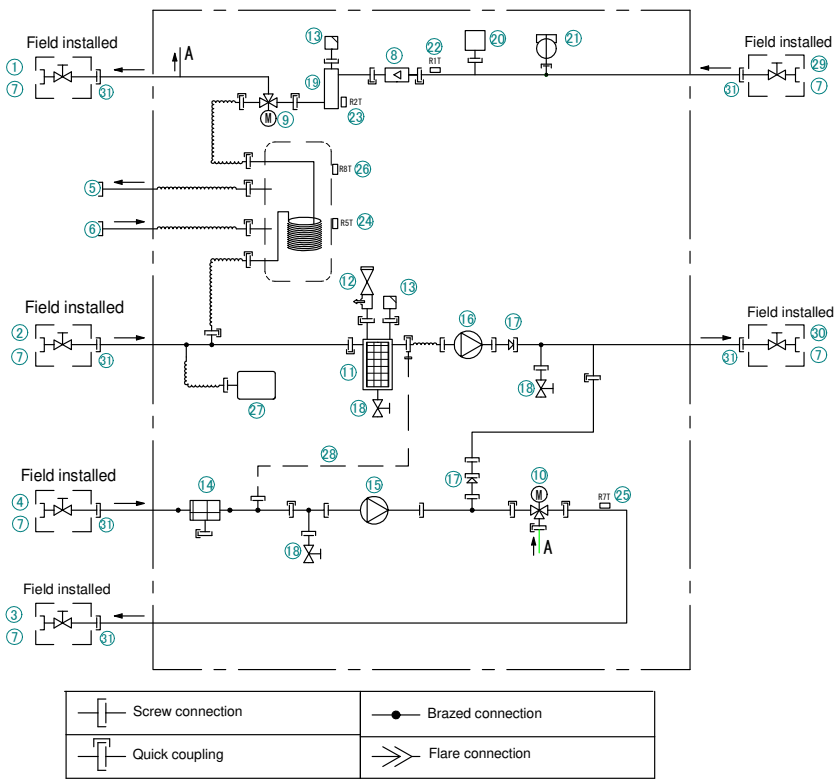
MODEL	X	Y	Z
EAV(H/X)16S18*	327	329	890
EAV(H/X)16S23*	327	329	1015
EAVZ16S18*	311	315	903
EAVZ16S23*	311	315	1028
ETV(H/X)16S18*	327	329	890
ETV(H/X)16S23*	327	329	1015
ETVZ16S18*	311	315	903
ETVZ16S23*	311	315	1028
ETV(H/X)12S18*	327	329	890
ETV(H/X)12S23*	327	329	1015
ETVZ12S18*	311	315	903
ETVZ12S18*	311	315	1028
ETVH12SU18*	327	329	890
ETVH12SU23*	327	329	1015
ETVH16SU18*	327	329	890
ETVH16SU23*	327	329	1015

3D121014D

7 Piping diagrams

7 - 1 Piping Diagrams

ETVZ16E6V7
ETVZ16E9W7



1. Space heating - water OUT (additional/direct zone)
2. Space heating - water IN (additional/direct zone)
3. Space heating - water OUT (main/mixed zone)
4. Space heating - water IN (main/mixed zone)
5. Domestic hot water: hot water out ·3/4"·
6. Domestic hot water: cold water in ·3/4"·
7. Shut-off valve ·1"· (male-female)
8. Flow sensor
9. 3-way valve (space heating/domestic hot water)
10. 3-way valve (mixing valve for the main/mixed zone)
11. Magnetic filter / dirt separator
12. Safety valve
13. Air purge
14. Water filter (main/mixed zone)
15. Pump (main/mixed zone)
16. Pump (additional/direct zone)
17. Check valve
18. Drain valve
19. Backup heater
20. Space heating water pressure sensor
21. Flow switch
22. R1T – Inlet water thermistor
23. R2T – Outlet water backup heater thermistor
24. R5T – Tank thermistor
25. R7T – Water outlet thermistor (main/mixed zone)
26. R8T – Tank thermistor
27. Expansion vessel
28. Capillary tube

Field piping connections

29. Water in connection ·1"·
30. Water out connection ·1"·
31. Screw connection ·1"·

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8 Wiring diagrams

8 - 1 Notes & Legend

ETVZ16E6V7 / ETVZ16E9W7

NOTES to go through before starting the unit

X1M	: Main terminal		: Option
X2M	: Field wiring terminal for AC		
X5M	: Field wiring terminal for DC		: Wiring depending on model
X6M	: BUH Power supply terminal		
X10M	: Smartgrid terminal		: Not mounted in switch box
___ . ___ . ___	: Earth wiring		
_ _ _ _ _ _ _	: Field supply		: PCB
①	: Several wiring possibilities		

NOTES

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

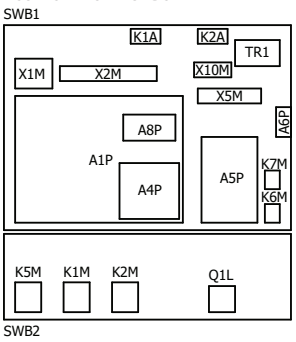
Backup heater power supply
- ☐ 6T1 (3~, 230V, 6kW)
- ☐ 6V3 (1N~, 230V, 6kW)
- ☐ 6WN/9WN (3N~, 400V, 6/9kW)

User installed options:
- ☐ Remote user interface
- ☐ Ext. indoor thermistor
- ☐ Ext. outdoor thermistor
- ☐ Digital I/O PCB
- ☐ Demand PCB
- ☐ Safety thermostat
- ☐ Smartgrid
- ☐ WLAN adapter module
- ☐ WLAN cartridge

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

Part n°		Description
A1P		main PCB
A2P	*	ON/OFF thermostat (PC=power circuit)
A3P	*	heat pump convector
A4P	*	digital I/O PCB
A5P		bizone PCB
A6P		current loop PCB
A8P	*	demand PCB
A9P		status indicator
A11P		MMI main PCB
A14P	*	user interface PCB
A15P	*	receiver PCB (wireless ON/OFF thermostat)
A20P	*	WLAN module
B2L		flow sensor
B1PW		water pressure sensor
CN* (A4P)	*	connector
DS1 (A5P)		dipswitch
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
F1U, F2U (A5P)		fuse T 2 A 250 V for PCB
FU1 (A1P)		fuse T 5 A 250 V for PCB
K1A, K2A	*	high voltage smartgrid relay
K1M, K2M		contactor backup heater
K5M		safety contactor BUH
K6M		relay 3 way valve bypass
K7M		relay 3 way valve flow
K*R (A1P-A4P)		relay on PCB
M1P		additional zone pump
M1S		mixing 3 way valve
M2P	#	domestic hot water pump
M2S	#	2 way valve for cooling mode

Part n°		Description
M3P		main zone pump
M3S		3 way valve for space heating/domestic hot water
P1M		MMI display
PC (A15P)	*	power circuit
PHC1 (A4P)	*	optocoupler input circuit
Q1L		thermal protector backup heater
Q3L, 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
R7T		mixed leaving water thermistor
S1L		flow switch
S1S	#	preferential kWh rate PS contact
S2S	#	electrical meter pulse input 1
S3S	#	electrical meter pulse input 2
S4S	#	smart grid feed-in
S6S-S9S	*	digital power limitation inputs
S10S-S11S	#	low voltage smartgrid contact
SS1 (A4P)	*	selector switch
SW1~2 (A11P)		turn buttons
SW3~5 (A11P)		push button
TR1		power supply transformer
X6M	#	BUH power supply terminal strip
X10M	*	smartgrid power supply terminal strip
X*, X*A, J* X*H*, X*Y		connector
X*M		terminal strip

* : optional #: field supply

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8 Wiring diagrams

8 - 2 Control Circuit

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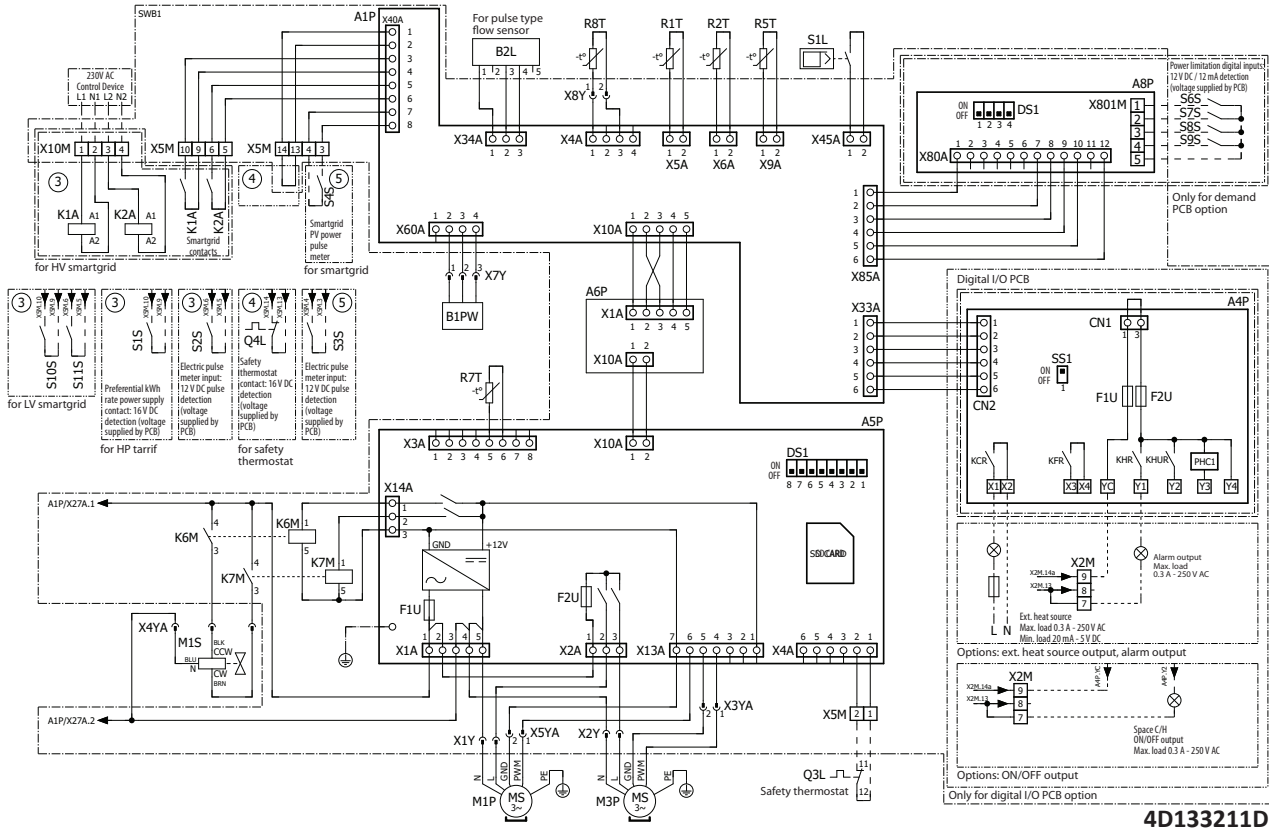
ETVZ16E9W7



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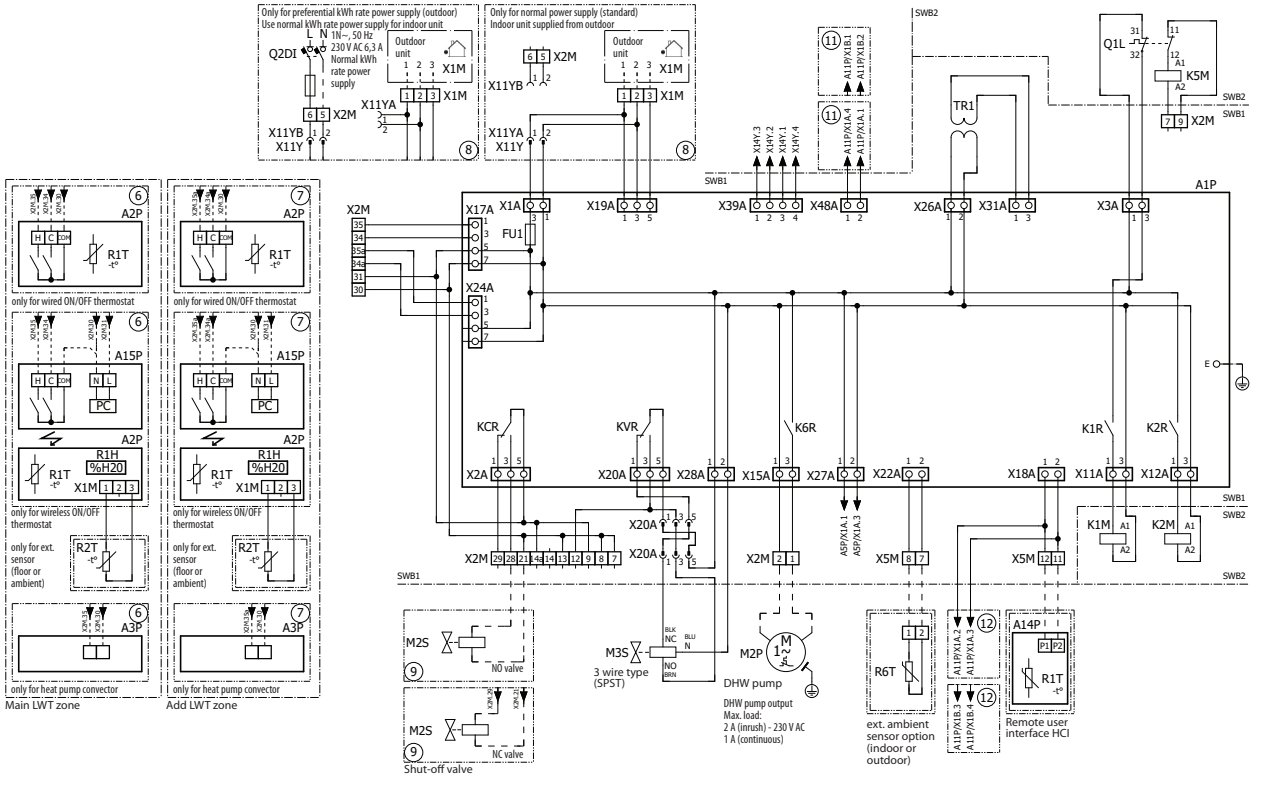
ETVZ16E6V7
ETVZ16E9W7



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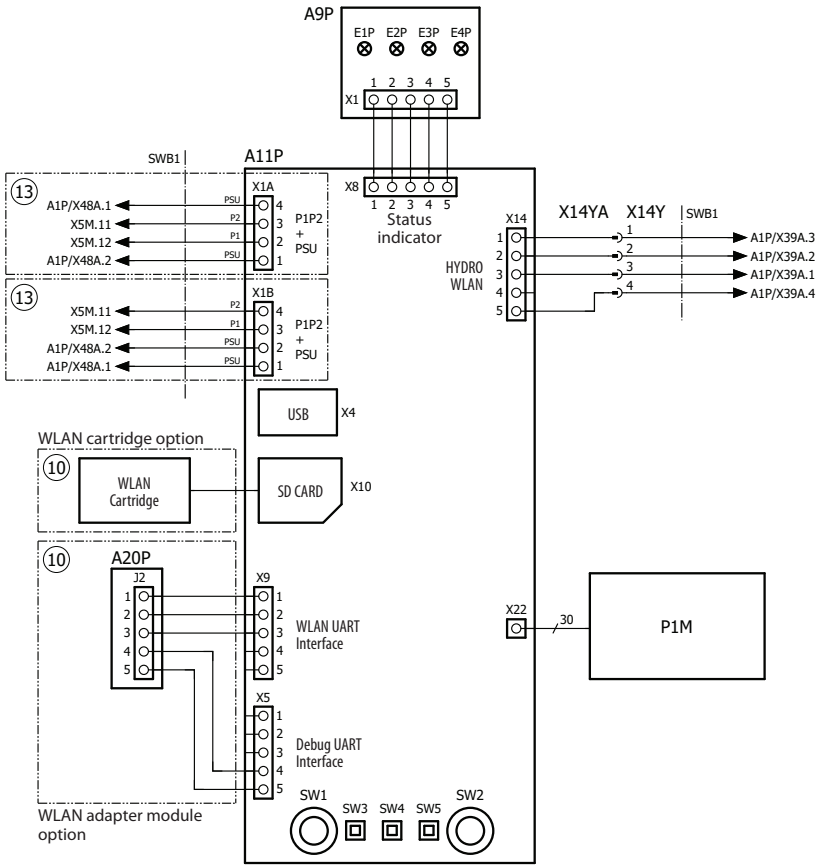
8 Wiring diagrams

8 - 2 Control Circuit

ETVZ16E6V7
ETVZ16E9W7



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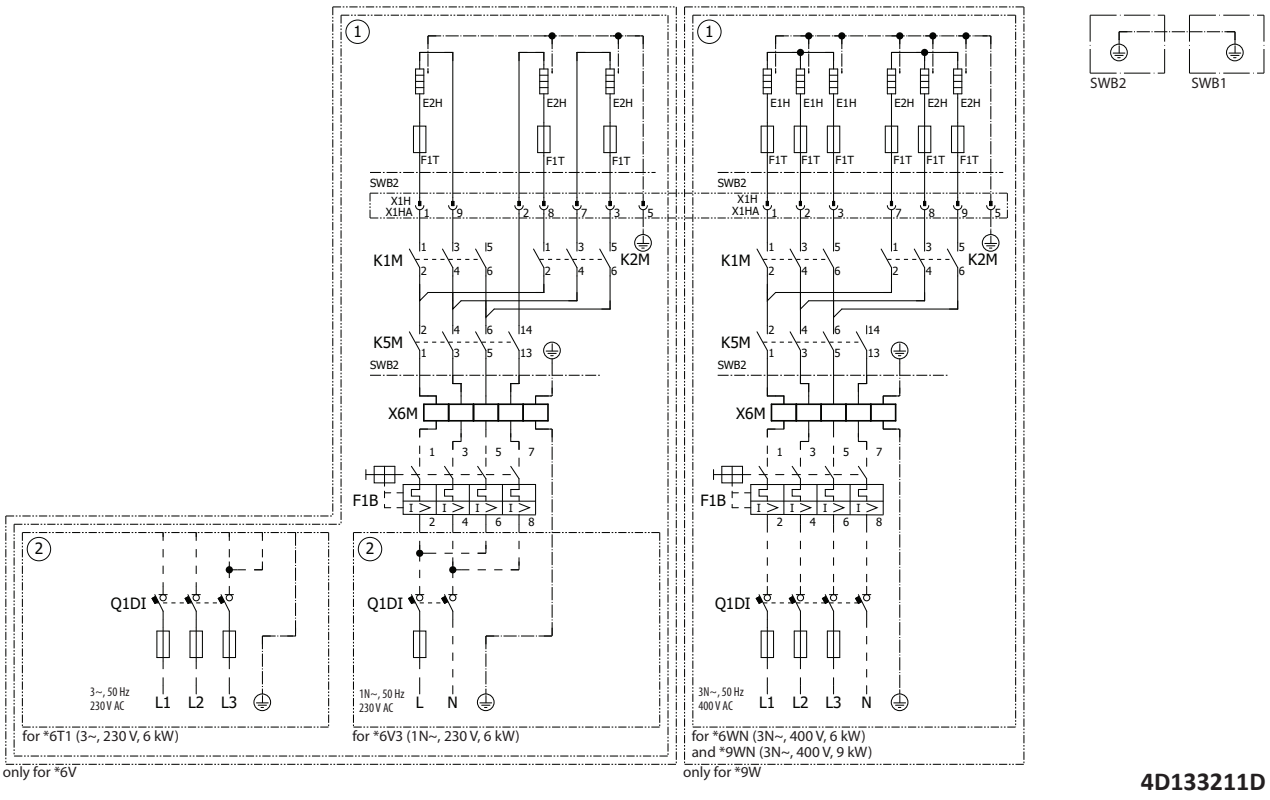
8 Wiring diagrams

8 - 3 Power Supply, Back-up Heater

ETVZ16E6V7 / ETVZ16E9W7



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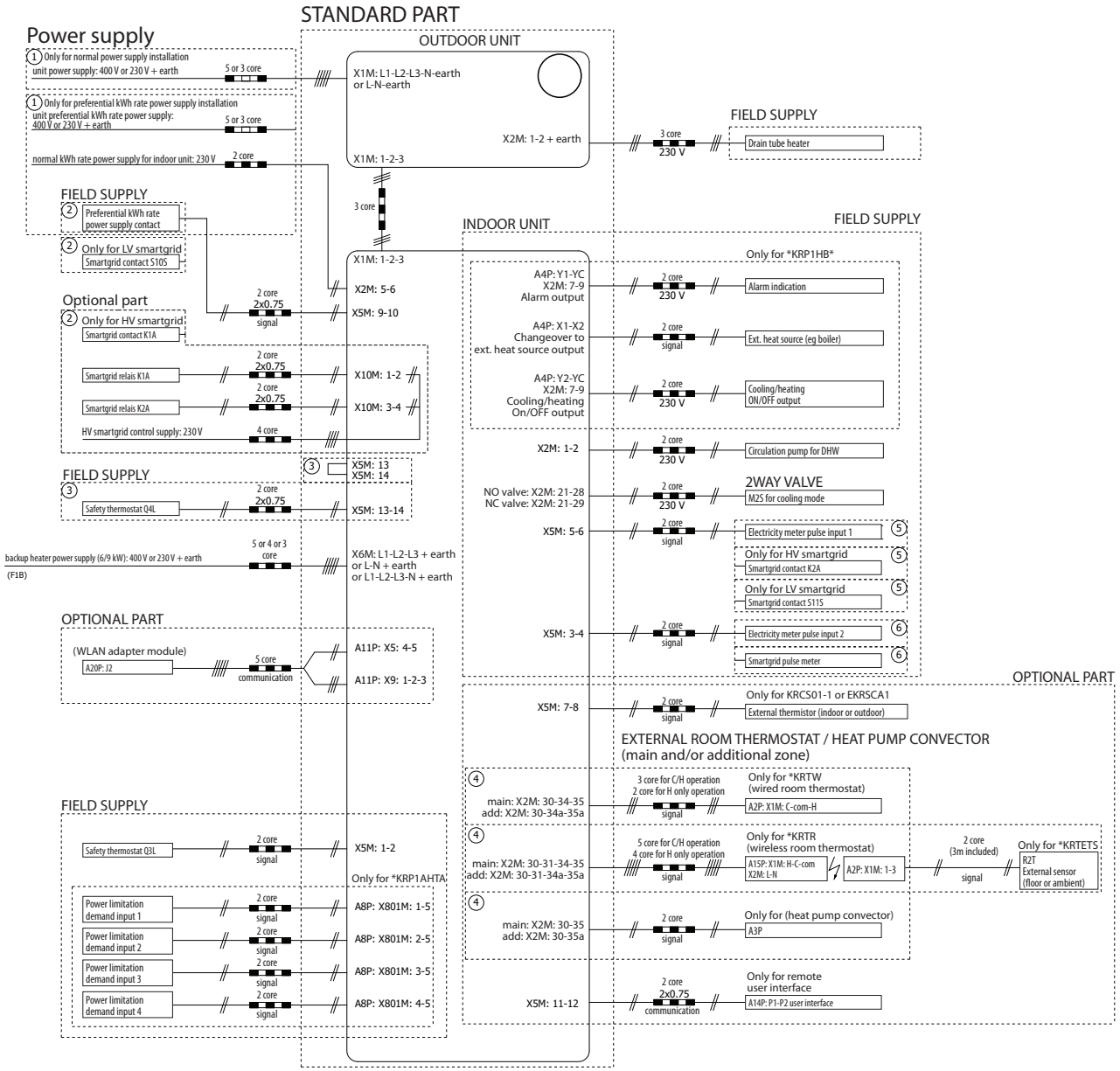
9 External connection diagrams

9 - 1 External Connection Diagrams

ETVZ16E6V7
ETVZ16E9W7



NOTE

- In case of signal cable: keep minimum distance to power cables > 5 cm

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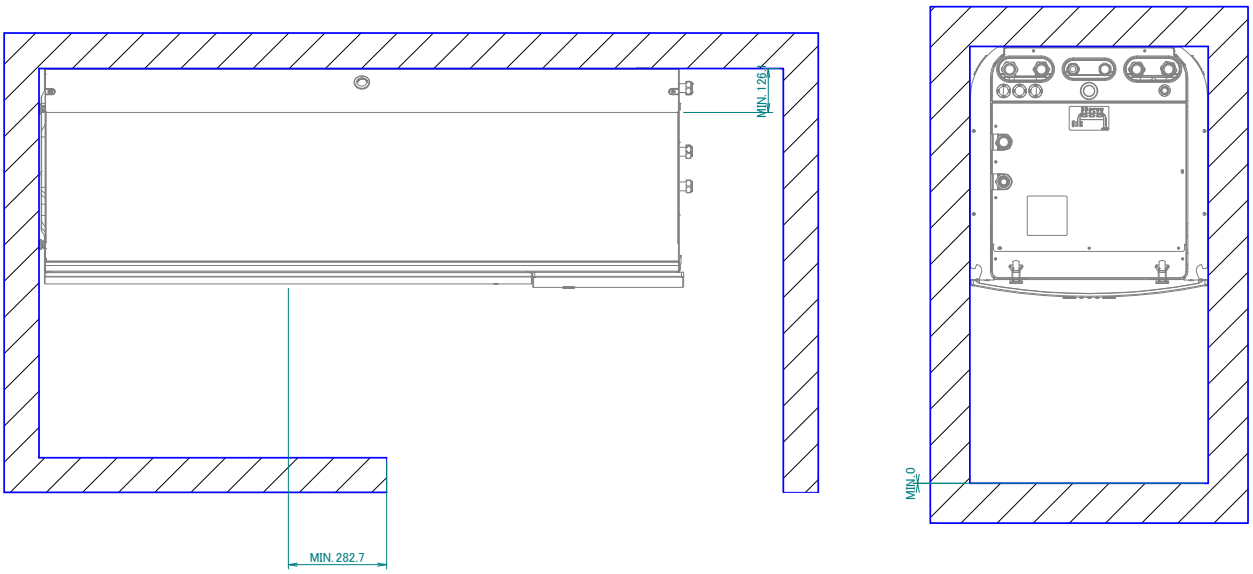
10 Installation

10 - 1 Installation Method

ETVZ16E6V7
ETVZ16E9W7



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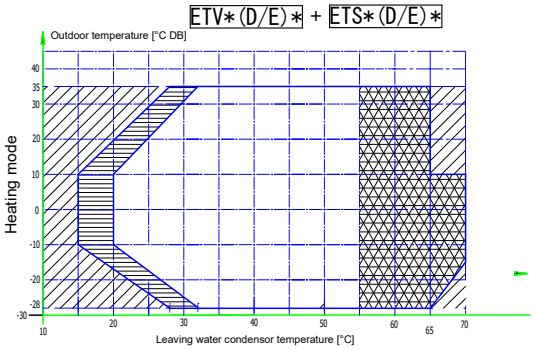
11 Operation range

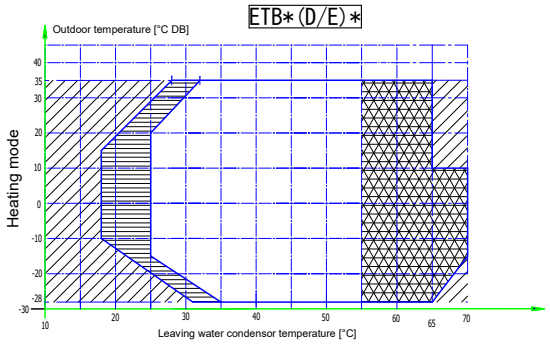
11 - 1 Operation Range

ETBH16E6V7
ETBH16E9W7
ETBX16E6V7
ETBX16E9W7
ETVH16E6V7
ETVH16E9W7
ETVH16UE6V7
ETVX16E6V7
ETVX16E9W7
ETVZ16E6V7
ETVZ16E9W7

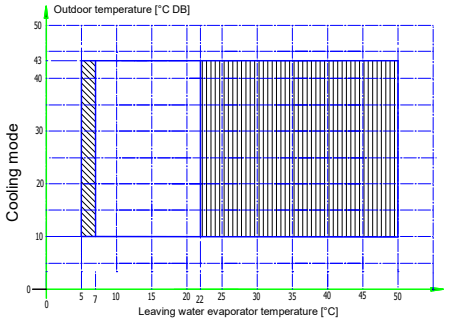
ETV*(D/E)* + ETS*(D/E)*



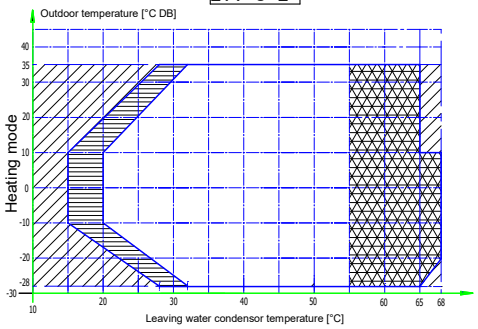
ETB*(D/E)*



ETV*(D/E)* + ETB*(D/E)* + ETS*(D/E)*



ETV*U*E*



Legend

- Backup heater only operation / No outdoor unit operation
- Outdoor unit operation if setpoint ≥ -20-
- Pull-down area
- Outdoor unit operation if setpoint > -55 -°C and ΔT = -10 -°C (ΔT = outlet temperature – inlet temperature)
- In case valve kit -AFVALVE1- is part of the system, then the minimum setpoint is -7 -°C.

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

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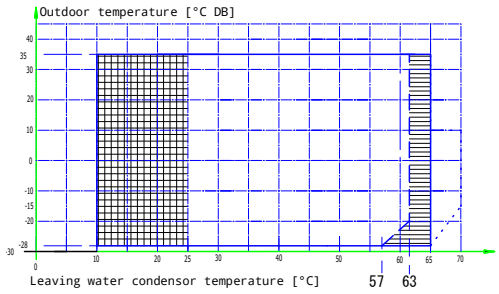
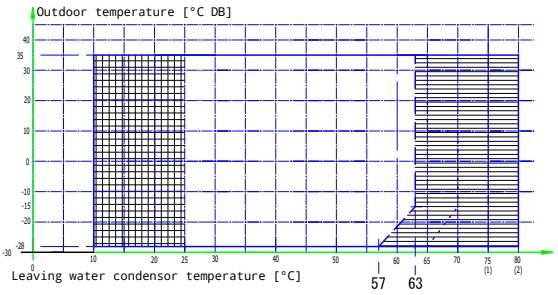
ETBH16E6V7
ETBH16E9W7
ETBX16E6V7
ETBX16E9W7
ETVH16E6V7
ETVH16E9W7
ETVH16UE6V7
ETVX16E6V7
ETVX16E9W7
ETVZ16E6V7
ETVZ16E9W7

Domestic hot water heating mode

ETV*



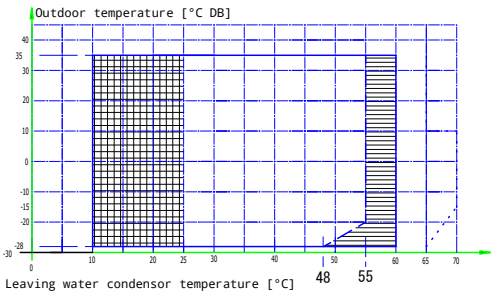
EKHWP* + ETS* + EKHWS*200* / EKHWS*250* / EKHWS*300* + Third-party with identical specifications as -EKHWS*200*-



Legend

- Setpoint [°C] Domestic hot water
- Leaving water temperature [°C]
- Pull-up area
- Booster heater only operation (if a booster heater is part of the system)

(1) Combination of -EKHWS- and -ETB*16*- indoor units / -ETS*16*- indoor units only
(2) Combination of -EKHWP- and -ETB*16*- indoor units



EKHWS*150* / EKHWS*180* + Third-party with identical specifications as -EKHWS*150*-

Remark
1. In restricted power supply mode (-EKHW*- only), the outdoor unit, booster heater and backup heater can only operate separately.
2. Third-party with identical specifications as -EHKWS*150*-
   - Coil surface >-1.05-m2
   Tank thermistor: top part of heat pump coil. Small overlap.
3. Third-party with identical specifications as -EKHWS*200*-
   - Coil surface >-1.8-m2
   Tank thermistor: top part of heat pump coil. Small overlap.

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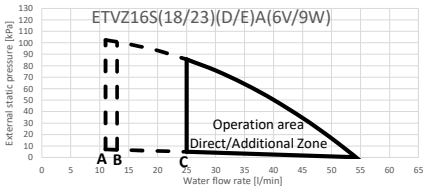
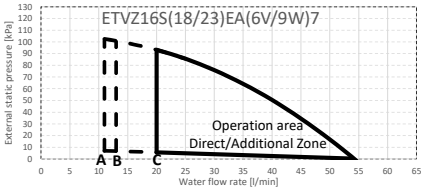
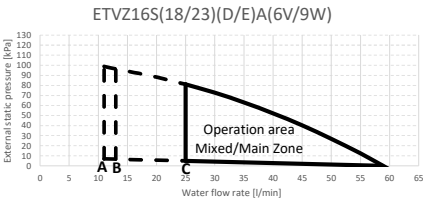
12 Hydraulic performance

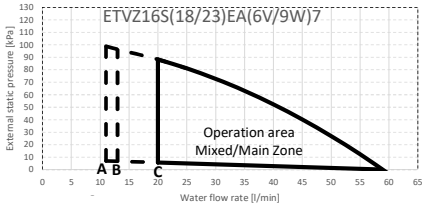
12 - 1 Static Pressure Drop Unit

ETVZ16E6V7 / ETVZ16E9W7









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.

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C Minimum water flow rate during defrost operation

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Daikin Europe N.V. Naamloze Vennootschap · Zandvoordestraat 300 · 8400 Oostende · Belgium · www.daikin.eu · BE 0412 120 336 · RPR Oostende (Responsible Editor)

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