DAIKIN

altherma

Heating

Technical Data

Daikin Altherma ground source heat pump

EEDEN14-728A

EGSQH-A9W

TABLE OF CONTENTS

EGSQH-A9W

1 Features

- Ground source heat pump technology uses stable geothermal energy, unaffected by the outside temperature
- Highest seasonal efficiency thanks to our inverter heat pump technology
- Quick and easy installation thanks to factory-fitted piping on top of the unit and reduced overall weight
- Integrated indoor unit: all-in-one floor standing unit including the domestic hot water tank
- User interface with thermostat function for higher comfort, quick commissioning, easy servicing and energy management to control energy consumption and costs

Inverter

2 Specifications

2-1 Technical Specifications					EGSQH10S18A9W
Heating capacity	Min.			kW	3.11 / 2.47
	Nom.			kW	10.2 / 9.29
	Max.			kW	13.0 / 11.9
Capacity control	Method				Inverter controlled
Power input	Nom.			kW	2.34 / 2.82
COP					4.35 / 3.29
Casing	Colour				White
	Material				Precoated sheet metal
Dimensions	Unit	Height		mm	1,732
		Width		mm	600
		Depth		mm	728
	Packed unit	Height		mm	1,930
		Width		mm	700
		Depth		mm	840
Weight	Unit			kg	210
	Packed unit			kg	222
	Operation weight			kg	441
Packing	Material				Wood / Carton / PE wrapping foil
	Weight			kg	12
Tank	Water volume			l	180
	Material				Stainless steel (EN 1.4521)
	Maximum water temperature			°C	60
	Maximum water pressure			bar	10
	Insulation	Material			Polyester
		Heat loss		kWh/ 24h	1.36
	Corrosion protection				Anode
Heat exchanger	Quantity				1
	Material				Stainless steel (EN 1 4521)
	Surface			m²	1.9
	Internal coil volume			l	8.9
3-way valve	Coefficient of flow (kV)	Space heating		m³/h	13
		Domestic hot water tank		m³/h	8
Pump	Type				DC motor
	Nr of speeds				Inverter controlled
	Nominal ESP pump	Heating		kPa	39 / 46
	Power input			W	70
Expansion vessel	Volume			l	10
	Max. water pressure			bar	3
	Pre pressure			bar	1
	Height above unit	Max.		m	12
Compressor	Type				Hermetically sealed swing compressor
	Model				2YC63PXD#C
	Starting method				Inverter driven
Operation range	Installation space	Min.		°C	5
		Max.		°C	30
	Brine side	Min.		°C	-5
		Max.		°C	20
	Heating	Water side	Min.	°C	24 / 24
			Max.	°C	60 / 65
	Domestic hot water	Water side	Min.	°C	25 / 25
			Max.	°C	55 / 60

2 Specifications

2-1 Technical Specifications					EGSQH10S18A9W
Water side Heat exchanger	Type				Brazed plate
	Quantity				1
	Water volume			l	2.3
	Water flow rate	Min.		l/min	8
		Heating	Nom.	l/min	29.2 / 26.6
			Max.	l/min	43
	Insulation material				Green felt
Refrigerant	Type				R-410A
	Charge			kg	1.8
	Control				Electronic expansion valve
	Circuits	Quantity			1
Water circuit - Domestic hot water side	Piping connections	Cold water in / Hot water out	Diameter	mm	22
		Recirculation connection		inch	G 1/2" FEMALE
Refrigerant oil	Type				FVC50K
	Charged volume			l	0.9
Sound power level	Nom.			dBA	46
Sound pressure level	Nom.			dBA	32
Water filter	Diameter perforations			mm	1
	Material				copper - brass - stainless steel
Water circuit	Piping connections diameter			mm	22
	Safety valve			bar	3
	Manometer				Yes
	Drain valve / fill valve				Yes
	Air purge valve				Yes
	Total water volume			l	23
	Heating water system	Water volume	Min.	l	20
Safety devices	Item	01			Thermal cut out
		02			HPS
PED	Category				Category I
	Most critical part	Name			Compressor
		Ps*V		Bar*l	134.6
Brine pump	Type				DC motor
	Nr of speeds				3
	Nominal ESP pump	Heating		kPa	58
	Power input			W	140
Brine heat exchanger	Type				Brazed plate
	Quantity				1
	Brine volume			l	2.3
	Brine flow rate	Min.		l/min	25
		Heating	Nom.	l/min	40.0
			Max.	l/min	54
Brine expansion vessel	Volume			l	10
	Max. brine pressure			bar	3
	Pre pressure			bar	1
	Height above unit	Max.		m	12
Brine filter	Diameter perforations			mm	1
	Material				Copper - brass - stainless steel
Brine circuit	Piping connections diameter			mm	28
	Safety valve			bar	3
	Manometer				yes
	Drain valve / fill valve				Yes
	Total volume			l	8
	System	Volume	Min.	l	20

2 Specifications

2-2 Electrical Specifications				EGSQH10S18A9W
Power supply	Name			9W
	Phase			3~
	Frequency		Hz	50
	Voltage		V	400
	Voltage range	Min.	%	-10
		Max.	%	10
Electric heater	Type			9W
	Current back-up heater	Running current	A	13.0
	Capacity	N° of stages		2
		Stage 1	kW	3
		Stage 2 - normal mode	kW	6
		Stage 2 - emergency mode	kW	9
Electrical power consumption	Standby		W	50
Current	Maximum running current	Heating	A	20.4
	Recommended fuses		A	25
Current - 50Hz	Nominal running current		A	4.8
Wiring connections-Electric meter	Quantity			2
	Remark			Minimum 0.75 mm² (5VDC pulse detection)
Wiring connections-Preferential kWh rate power supply	Quantity			Power: 2
	Remark			Power 6.3A (Select diameter and type according to national and local regulations)
Wiring connections-Power limitation	Quantity			5
Wiring connections-Power limination	Remark			Minimum 0.75 mm² (5VDC pulse detection)
Wiring connections-Domestic hot water pump	Quantity			2
	Remark			Minimum 0.75 mm² (2A inrush, 1A continuous)
Wiring connections-For connection with outdoor ambient sensor R1T	Quantity			2
	Remark			Minimum 0.75 mm²
Wiring connections-For connection with R6T	Quantity			2
	Remark			Minimum 0.75 mm²
Wiring connections-For connection with A3P	Quantity			Depends on thermostat type, cf. installation manual
	Remark			Select diameter & type according to national & local regulations / Voltage: 230V / Max. current: 100mA / Min. 0.75mm²
Wiring connections-For connection with M2S	Quantity			3G
	Remark			Select diameter & type according to national & local regulations / Voltage: 230V / Max. current: 100mA / Min. 0.75mm²
Wiring connections-For connection with user interface	Quantity			2
	Remark			0,75 mm² till 1,25 mm² (max length 500m)
Wiring connections-For connection with optional FWXV* (demand input and output)	Quantity			4
	Remark			100 mA, minimum 0.75 mm²
Notes				Minimum Ssc value: Equipment complying with 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 \>16A and ≤ 75A per phase

Notes

(1) EWB/LWB 0°C/-3°C - LWC 35°C (DT=5°C)

(2) EWB/LWB 0°C/-3°C - LWC 45°C (DT=5°C)

(3) Heatloss according to EN12897

(4) Including piping + PHE + back-up heater; excluding expansion vessel

2 Specifications

(5) Minimum required volume, excluding the volume in the unit

(6) The sound pressure level is measured via a microphone at a 1m distance from the unit. It is a relative value, depending on the distance and acoustic environment.

(7) By back-up heater

(8) By heat pump

(9) By heat pump + back-up heater

(10) LW SETPOINT 15°C ~ 24°C: BUH only, no heatpump operation = commissioning

(11) For more details, see operation range drawing

(12) with 40% propylene glycol

(13) Minimum Ssc value: Equipment complying with 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 \>16A and ≤ 75A per phase

3 Combination table

3 - 1 Combination Table

EGSQH10S18A9W

			Model name	EGSQH10S18AA9W
Options	Digital I/O PCB	Can be used for: - Bi-valent - Remote alarm - Thermo ON/OFF output	EKRP1HBAA	P (*13)
	Demand PCB	Can be used for: - Power limitation (up to 4 digital inputs)	EKRP1AHTA	P
	Remote user interface	Different language versions	EKRUCBL1..7	P
	Remote indoor sensor		KRCS01-1	P
	PC cable	Data cable for connection with PC	EKPCCAB2	P
Heat pump convector			FWXV15AVEB	M (*22)
			FWXV20AVEB	M (*22)
Room thermostat	Wired		EKRTWA	P
	Wireless		EKRTR1	P
	External sensor		EKRTETS	P (*25)
Non Daikin option	Filling kit	For filling the brine circuit	KGSFILL	P

P: Pair combination allowed
M: Multi combination (qty, depend on capacity class)

(*13): Additional relays to allow bivalent control in combination with external room thermostat are field supply
(*22): EKVKHPC to be installed NOT mandatory
(*25): Can only be used in combination with the wireless room thermostat EKRTR(1)

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4 Capacity tables

4 - 1 Heating Capacity Tables

EGSQH10S18A9W

Default (Field setting A-03 = 0)

LWC (°C)	25			35			45			55		
EBE (°C)	CC (kW)	HC (kW)	PI (kW)	CC (kW)	HC (kW)	PI (kW)	CC (kW)	HC (kW)	PI (kW)	CC (kW)	HC (kW)	PI (kW)
-5	7.64	9.24	1.89	6.67	8.74	2.31	5.52	8.10	2.74	4.28	7.33	3.23
0	8.87	10.8	1.92	7.75	10.2	2.34	6.64	9.29	2.82	5.22	8.37	3.36
5	10.9	12.4	1.95	9.50	11.7	2.38	8.16	10.9	2.89	6.61	9.95	3.45
10	12.6	14.0	1.97	11.0	13.2	2.40	9.48	12.04	2.95	7.61	11.0	3.52

Boosted (Field setting A-03 = 1)

LWC (°C)	25			35			45			55		
EBE (°C)	CC (kW)	HC (kW)	PI (kW)	CC (kW)	HC (kW)	PI (kW)	CC (kW)	HC (kW)	PI (kW)	CC (kW)	HC (kW)	PI (kW)
-5	9.13	11.8	2.78	7.98	11.2	3.38	6.60	10.38	4.02	5.34	9.87	4.69
0	10.9	13.8	2.87	9.54	13.0	3.49	8.18	11.88	4.21	6.42	10.7	5.01
5	13.4	15.8	2.90	11.7	14.99	3.54	10.0	14.0	4.31	8.02	12.5	5.01
10	15.6	17.9	2.93	13.6	16.93	3.57	11.7	15.4	4.40	9.12	13.6	5.01

Symbols:

LWC	Leaving water temperature condenser
EBE	Entering brine temperature evaporator
CC	Cooling capacity at maximum allowed frequency of unit
HC	Heating capacity at maximum allowed frequency of unit
PI	Power input at maximum allowed frequency of unit, includes the controller and pumps

Conditions:

CC	Measured according EN14511
HC	Measured according EN 14511 and valid for a dT of 5K
PI	Measured according EN 14511 and valid for a dT of 5K

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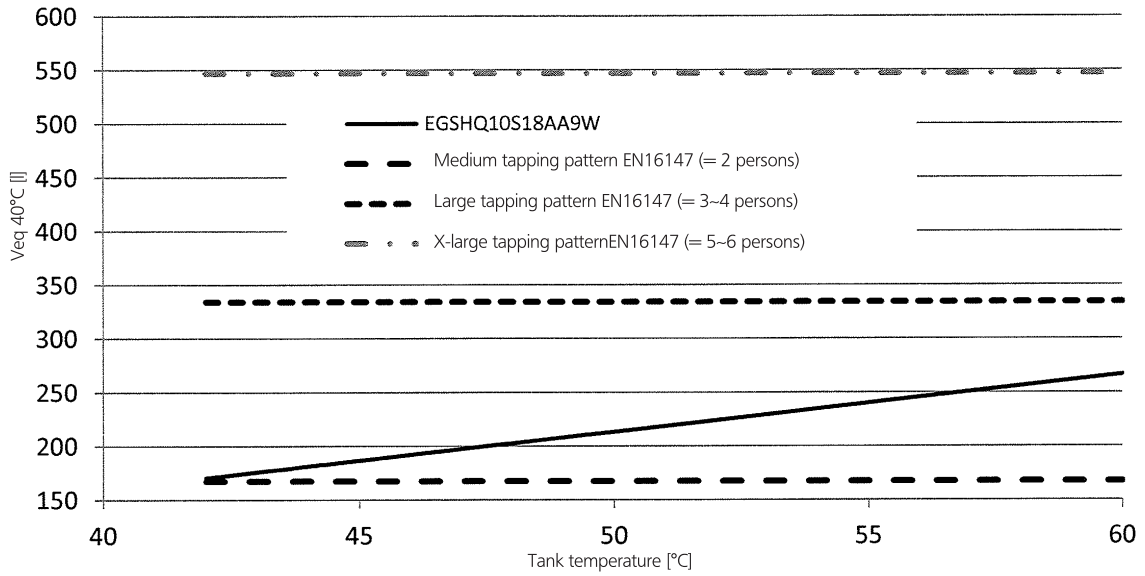
4 Capacity tables

4 - 1 Heating Capacity Tables

EGSQH10S18A9W

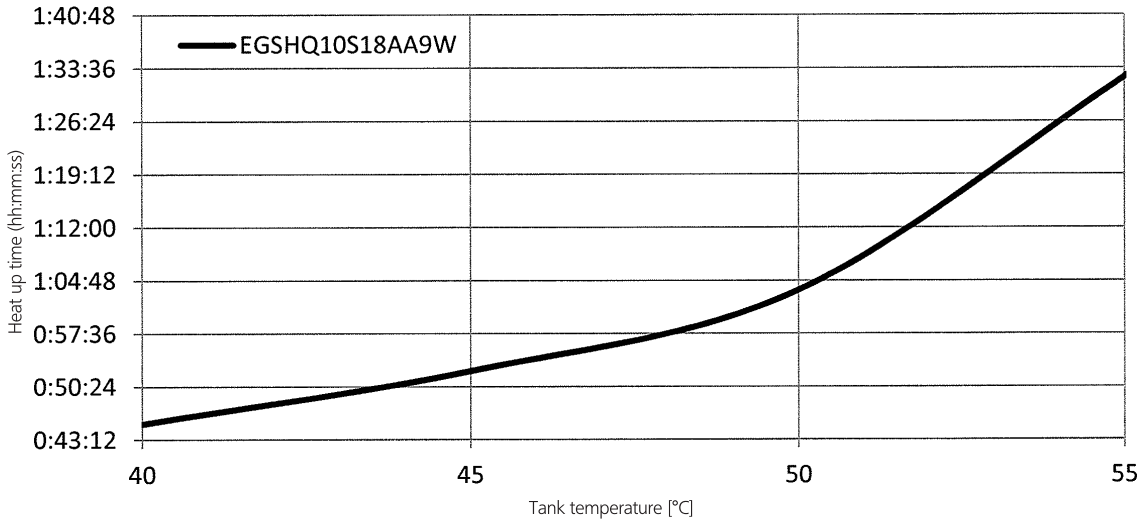
Selection guidance of domestic hot water tank volume

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



If a higher daily Veq 40°C is required then additional heat up cycles are required within 24 hours. Refer to the operation manual for more information.

Heat up times



Valid for brine entering temperature 0°C

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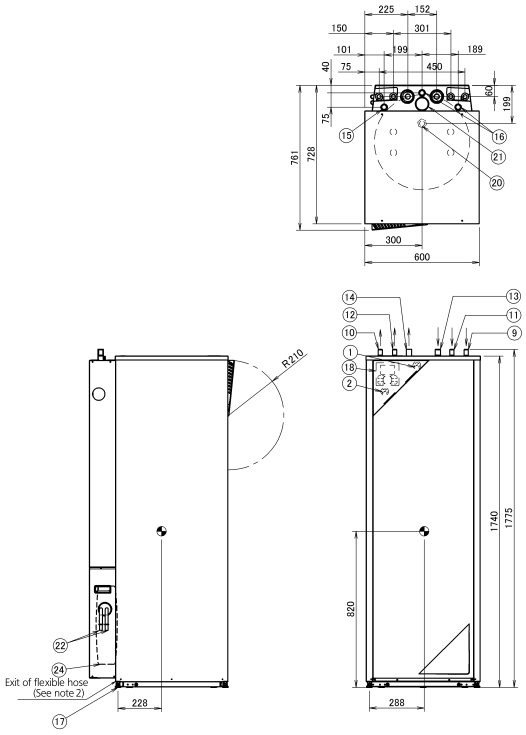
5 Dimensional drawings

5 - 1 Dimensional Drawings

EGSQH10S18A9W



① Pressure gauge brine circuit
② Pressure gauge water circuit
③ Safety valve brine circuit
④ Safety valve water circuit
⑤ Drain valve brine circuit
⑥ Drain valve water circuit
⑦ Water filter brine circuit
⑧ Water filter water circuit
⑨ Water in connection 22mm Straight
⑩ Water out connection 22mm Straight
⑪ Tank in connection 22mm Straight
⑫ Tank out connection 22mm Straight
⑬ Brine in connection 28mm Straight
⑭ Brine out connection 28mm Straight
⑮ Control wiring intake (φ24mm)
⑯ Power supply wiring intake (φ24mm)
⑰ Leveling feet
⑱ User interface (Option EKRUCBL*)
⑲ Drain valve tank circuit
⑳ Recirculation connection G 1/2 Female
㉑ Hole for recirculation piping or option wiring (φ62mm)
㉒ Drain outlet (Unit + Safety valve) See note 2
㉓ Air purge
㉔ Expansion vessel brine circuit
㉕ Expansion vessel water circuit

Notes:
1 Typical field installation is according to local and national regulations. For examples, refer to installer reference guide.
2 A flexible hose is pre-assembled to the drain outlet. The exit of the flexible hose is at the backside of the unit. The flexible hose can be removed.
3 Center of gravity is with empty tank

: Center of gravity

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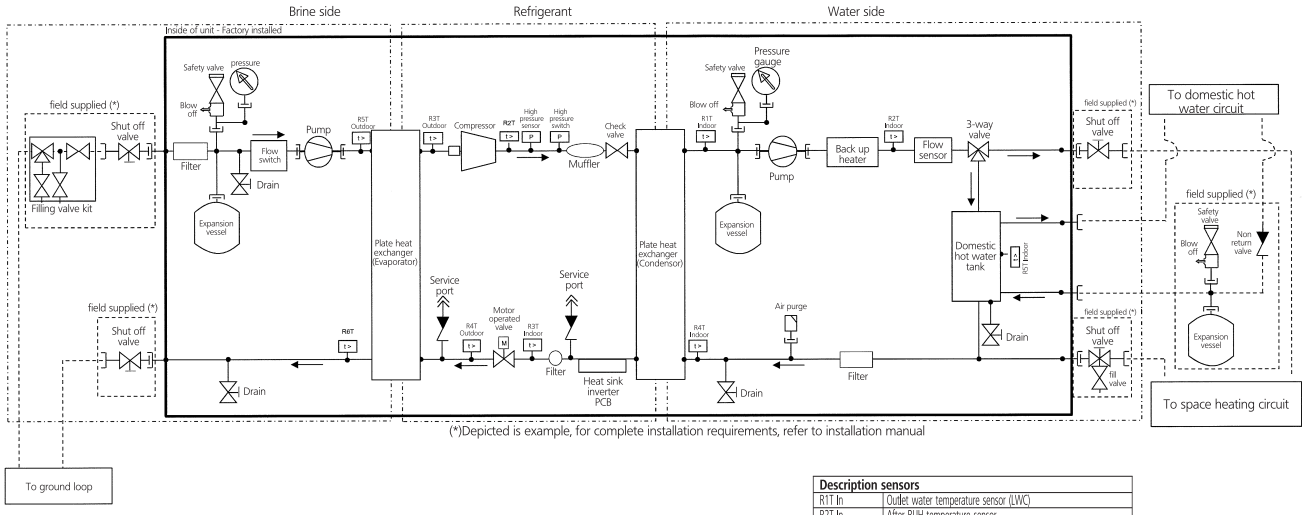
6 Piping diagrams

6 - 1 Piping Diagrams

EGSQH10S18A9W



Description sensors	
R1T In	Outlet water temperature sensor (LWC)
R2T In	After BUH temperature sensor
R3T In	Refrigerant liquid temperature sensor
R4T In	Inlet water temperature sensor (EWC)
R5T In	DHW tank temperature sensor
R1T Out	Ambient air sensor
R2T Out	Discharge sensor
R3T Out	Suction sensor
R4T Out	2 phase sensor (Tx)
R5T Out	Brine entering water
R6T Out	Brine leaving water

Legend:

- Check valve
- Flare connection
- Spinned pipe
- Pinched pipe
- Screw connection
- quick coupling
- Flange connection
- Brazed connection

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7 Wiring diagrams

7 - 1 Wiring Diagrams - Three Phase

EGSQH10S18A9W

NOTES TO GO THROUGH BEFORE STARTING THE UNIT

X1M : Main terminal
X2M : Field wiring terminal for AC
X5M : Field wiring terminal for DC

— - — - : Earth wiring
- - - - - - - - - - : Field supply
15 : Wire number 15
→ **/12.2 : Connection ** continues on page 12 column 2
① : Several wiring possibilities

: Option

: Wiring depending on model

: Not mounted in switchbox

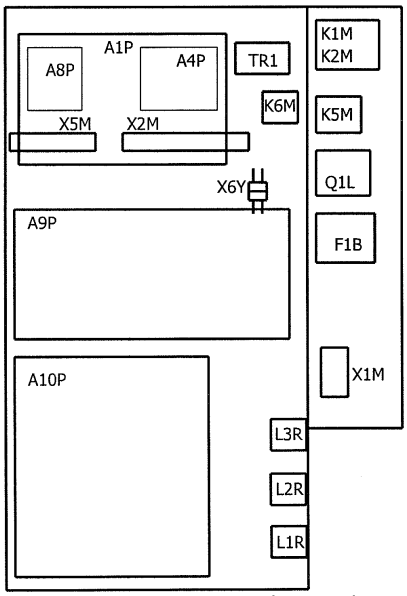
: PCB

User installed options:
- □ Remote user interface
- □ Ext. indoor thermistor
- □ Digital I/O PCB
- □ Demand PCB

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 SWITCHBOX



LEGEND

* : Optional
\# : Field supply

A1P		: Main PCB (hydro)
A2P		: User interface PCB
A3P	*	: ON/OFF thermostat
A3P	*	: Heat pump convector
A4P	*	: Digital I/O PCB
A4P	*	: Receiver PCB (wireless ON/OFF thermostat, PC=power circuit)
A8P	*	: Demand PCB
A9P		: Main PCB (Refrigerant, brine)
A10P		: Main PCB (Inverter)
B1L		: Flow sensor
B1PH		: High pressure sensor
BS1~BS4		: Push button
C1~C4		: Capacitor
CN* (A4P)	*	: Connector
DS1 (A8P)	*	: Dipswitch
DS1 (A9P)		: Dipswitch
DS1 (A10P)		: Dipswitch
E1H		: Backup heater element (1 kW)
E2H		: Backup heater element (2 kW)
F1B		: Overcurrent fuse backup heater
F1U,F2U (A4P)	*	: Fuse (5A, 250V)
F1U,F2U (A9P)		: Fuse (35.5A, 500V)
F3U~F6U (A9P)		: Fuse (T, 6.3A, 250V)
F1U (A1P)		: Fuse (T, 6.3A, 250V)
H1P~H7P		: LED
HAP		: LED
K1E		: Electronic expansion valve
K1M, K2M		: Contactor backup heater
K5M		: Safety contactor BUH
K6M		: Relay
K*R		: Relay on PCB
L1R~L3R		: Reactor
L5R		: Reactor transmission line
M1C		: Motor (compressor)
M1P		: main water supply pump
M2P	#	: Domestic hot water pump
M3P		: Brine supply pump
M2S	#	: Shut off valve
M3S		: 3 way valve for floorheating/domestic hot water tank
PS		: Switching power supply
Q*DI	#	: Earth leakage circuit breaker
Q1L		: Thermal protector backup heater
R1		: Resistor
R1T (A1P)		: Outlet water heat temperature sensor (LWC)
R1T (A2P)		: Ambient sensor user interface
R1T (A3P)	*	: Ambient sensor ON/OFF thermostat
R1T A9P)		: Ambient air sensor
R2T (A1P)		: After BUH temperature sensor
R2T (A3P)	*	: External sensor (floor or ambient)
R2T (A9P)		: Discharge sensor
R3T (A1P)		: Refrigerant liquid temperature sensor
R3T (A9P)		: Suction sensor
R4T (A1P)		: Inlet water temperature sensor (EWC)
R4T (A9P)		: 2 phase sensor (Tx)
R5T (A1P)		: DHW tank temperature sensor
R5T (A9P)		: Brine entering water
R6T (A1P)	*	: External indoor ambient thermistor
R6T (A9P)		: Brine leaving water
R10T		: Heat sink thermistor
R1H (A3P)	*	: Humidity sensor
S1L		: Brine flow switch
S1PH		: High pressure switch
S1S	#	: Preferential kWh rate power supply contact
S2S	#	: Electrical meter pulse input 1
S3S	#	: Electrical meter pulse input 2
S6S-S9S	#	: Digital power limitation inputs
SS1 (A4P)	*	: Selector switch
TR1		: Power supply transformer
V1R, V2R		: IGBT power module
X*H		: Backup heater connector
X*M		: Terminal strip
X*Y		: Connector
Z1C~Z6C		: Noise filter (ferrite core)
Z1F~Z5F		: Noise filter

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7 Wiring diagrams

7 - 1 Wiring Diagrams - Three Phase

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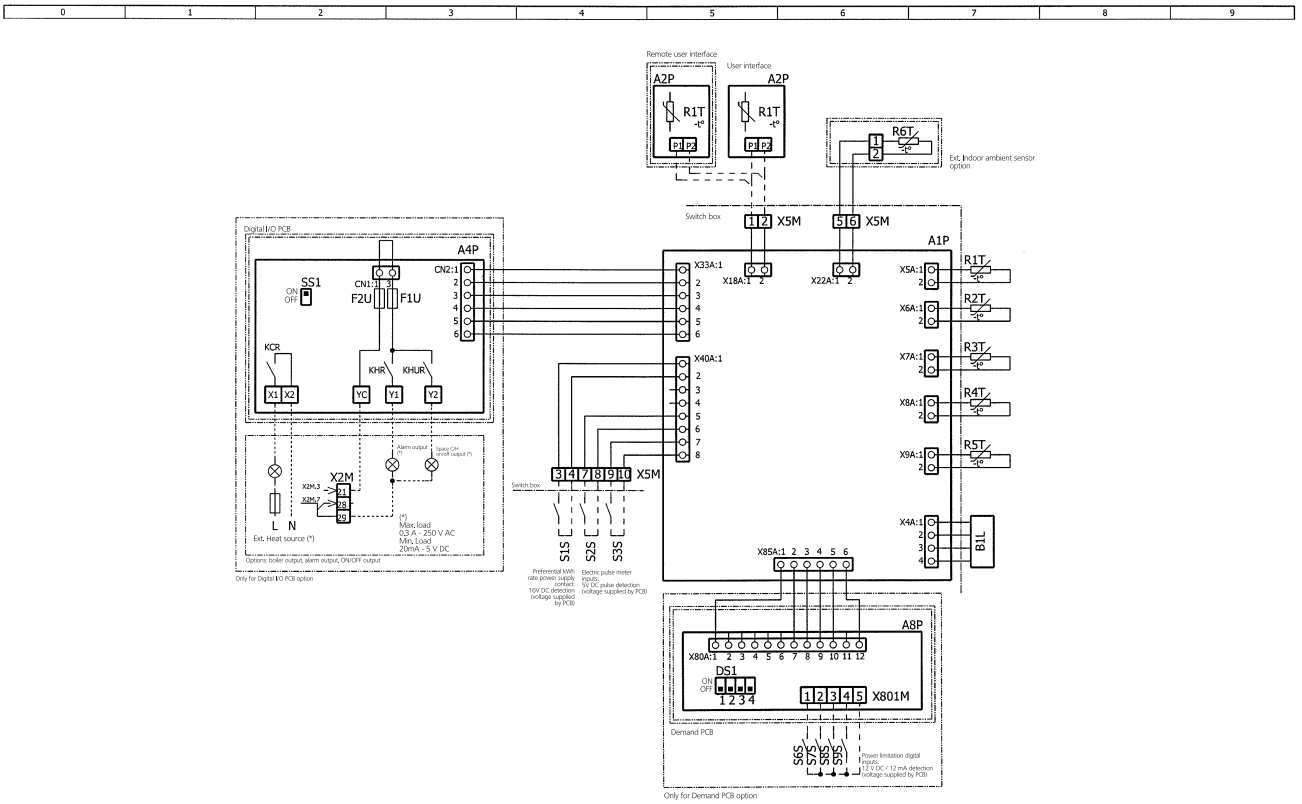

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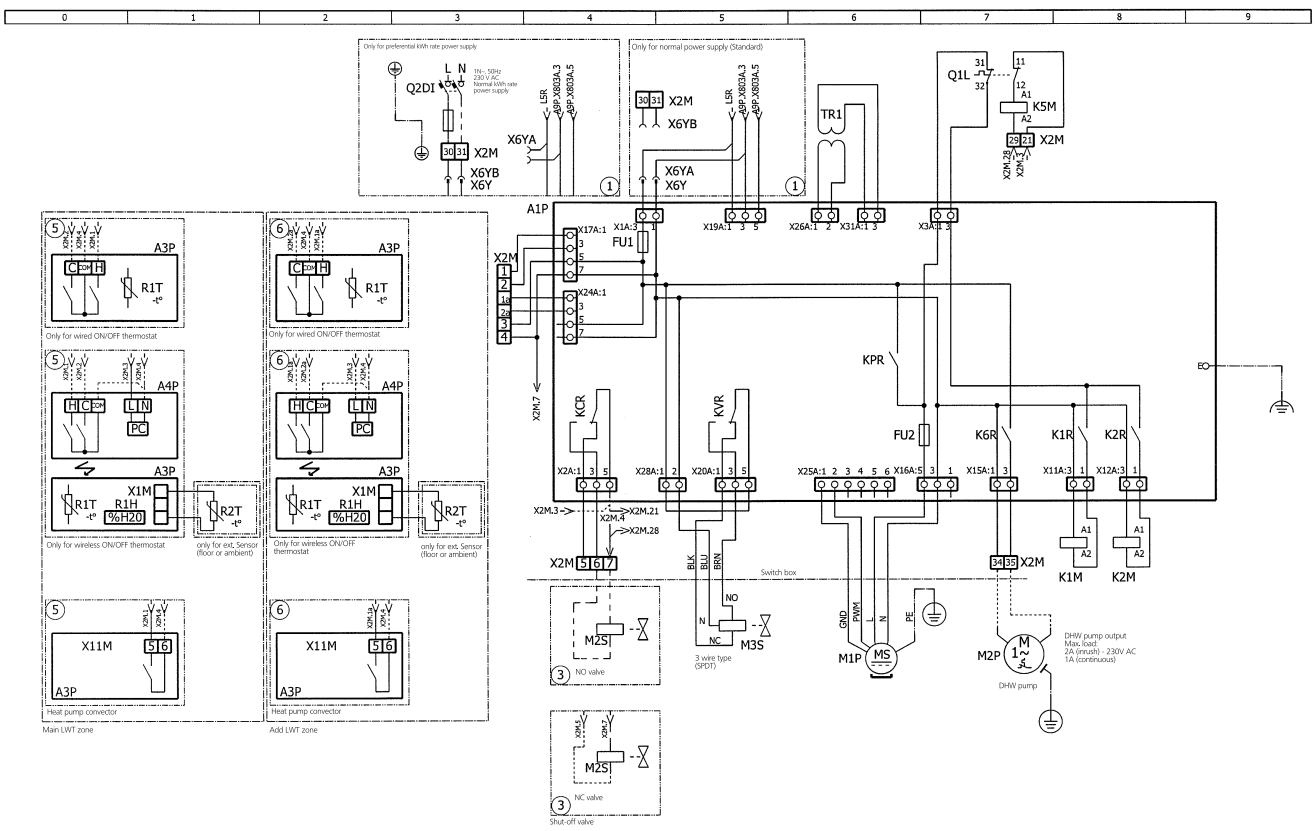
7 Wiring diagrams

7 - 1 Wiring Diagrams - Three Phase

EGSQH10S18A9W



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7 Wiring diagrams

7 - 1 Wiring Diagrams - Three Phase

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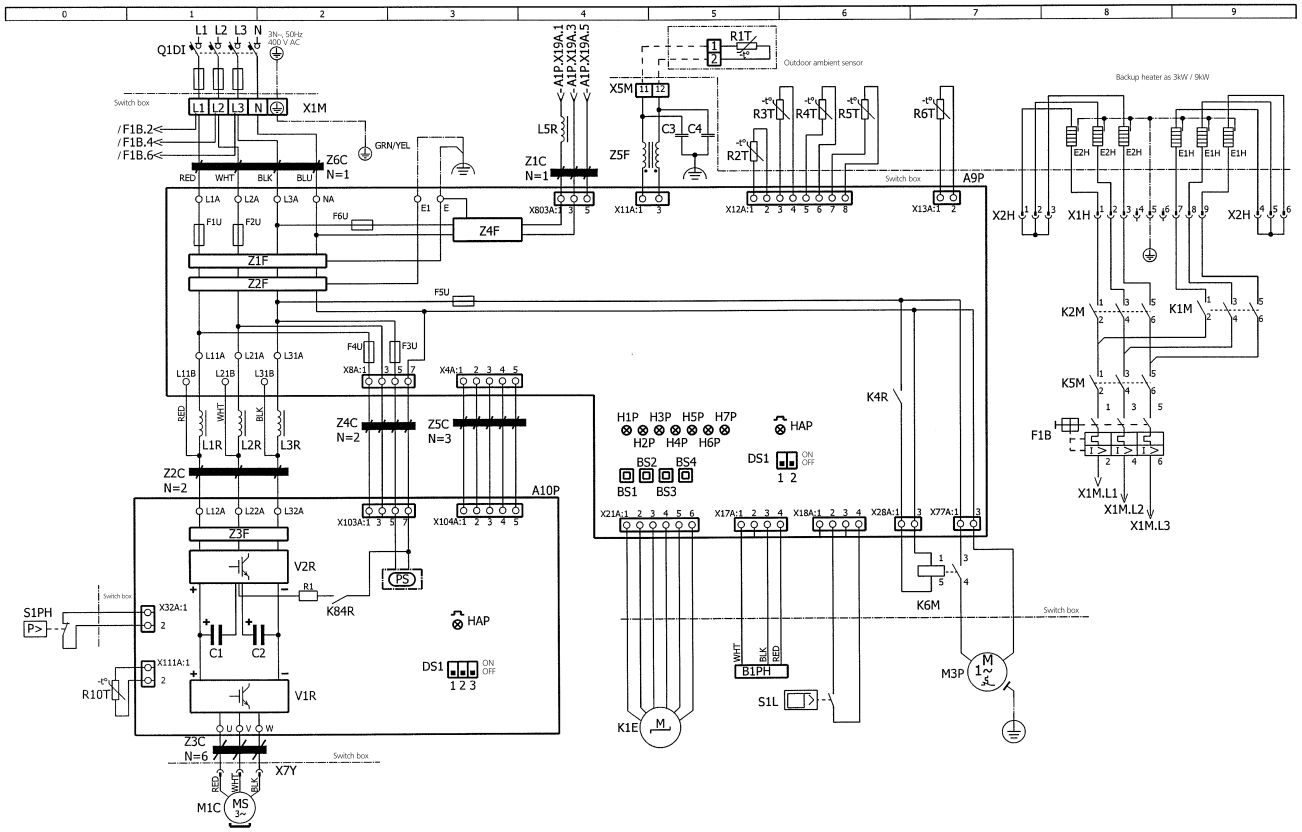


8 External connection diagrams

8 - 1 External Connection Diagrams

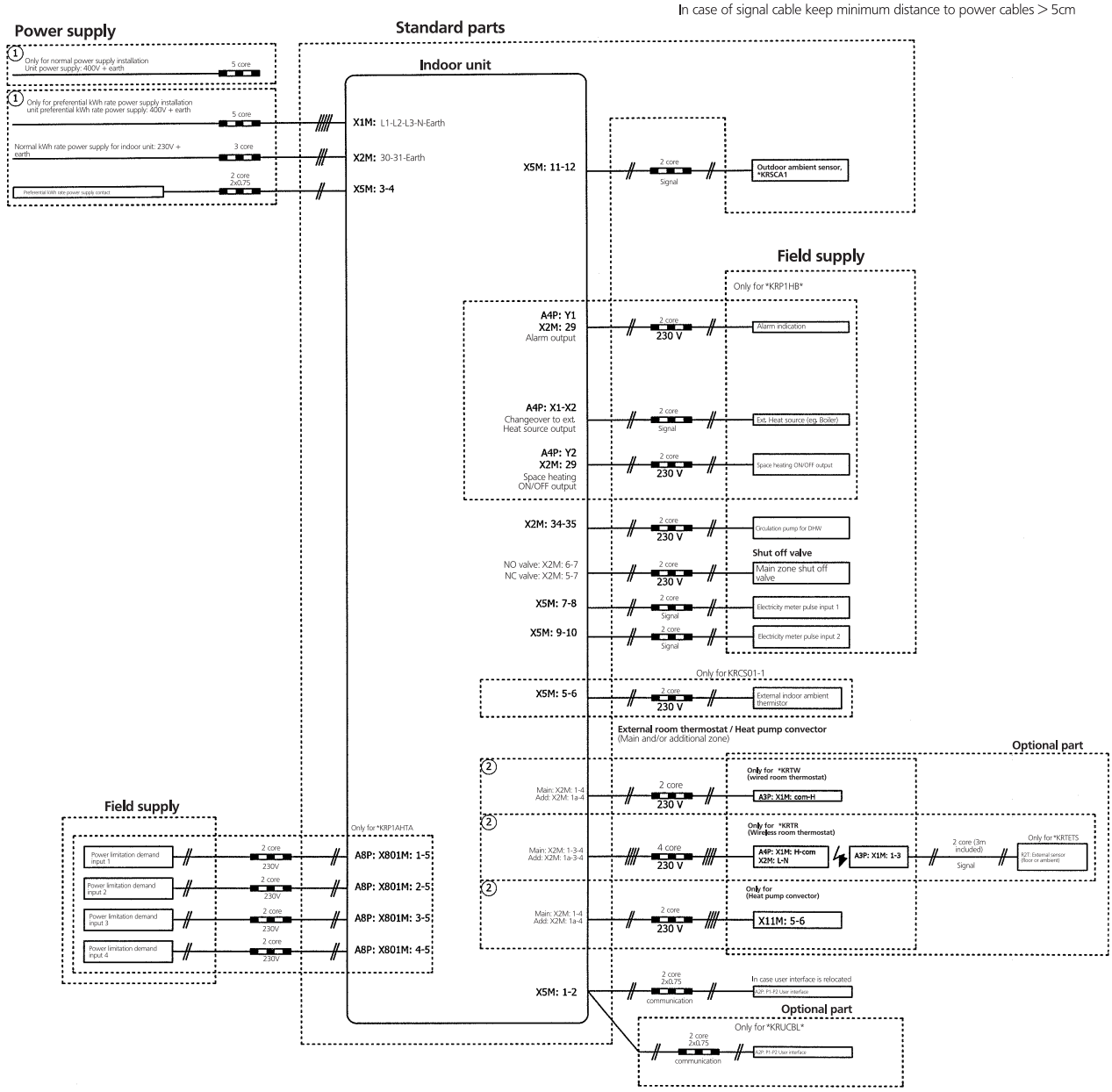
EGSQH10S18A9W

Electrical connection diagram Daikin Altherma Ground Sourced

For more details please check unit wiring diagram

Note:

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



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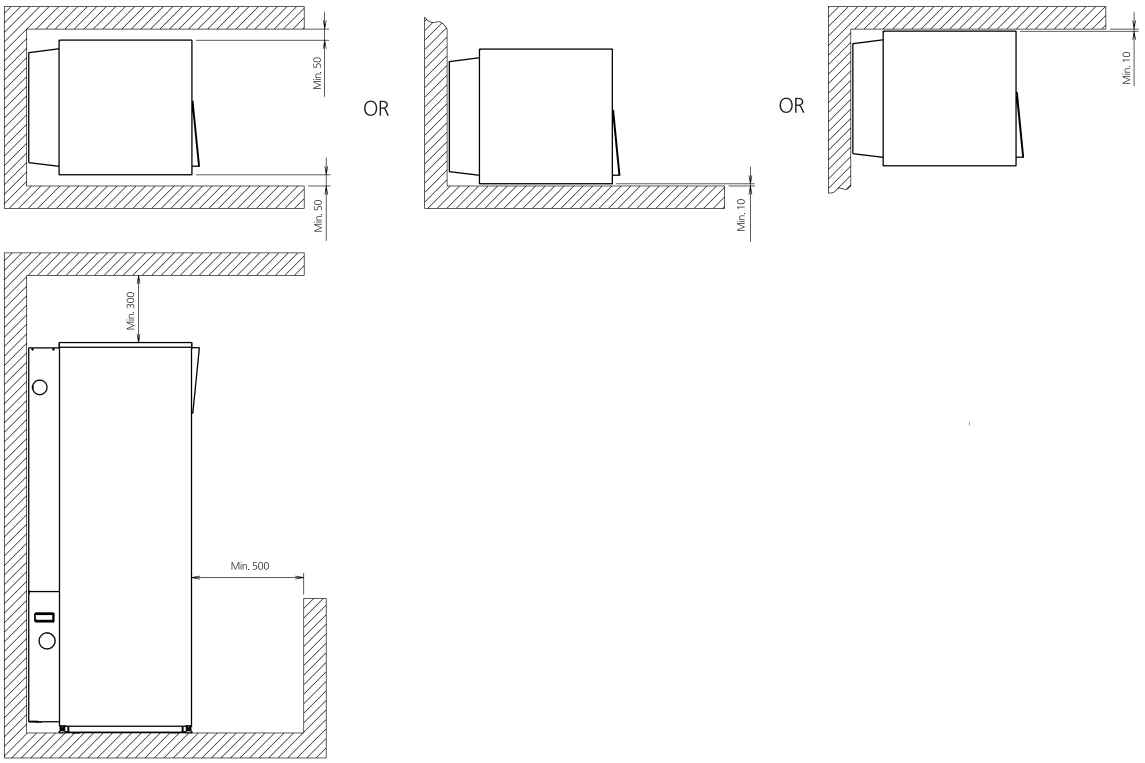
9 Installation

9 - 1 Installation Method

EGSQH10S18A9W



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EGSQH10S18A9W

*Electrical meter specification

- Pulse meter type / voltage free contact for 5 VDC detection by PCB
- Possible number of pulse:
  - 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

- General: it is the responsability of the installer to cover the complete power consumption with electrical meters.
- Required number of electrical meters:

Unit type		EGSQH10S18A9W
		Regular kWh rate power supply
Electrical meter type	1~	-
	3~balanced	1
	3~unbalanced	-
		Benefit kWh rate power supply
Electrical meter type	1~	1
	3~balanced	1
	3~unbalanced	-

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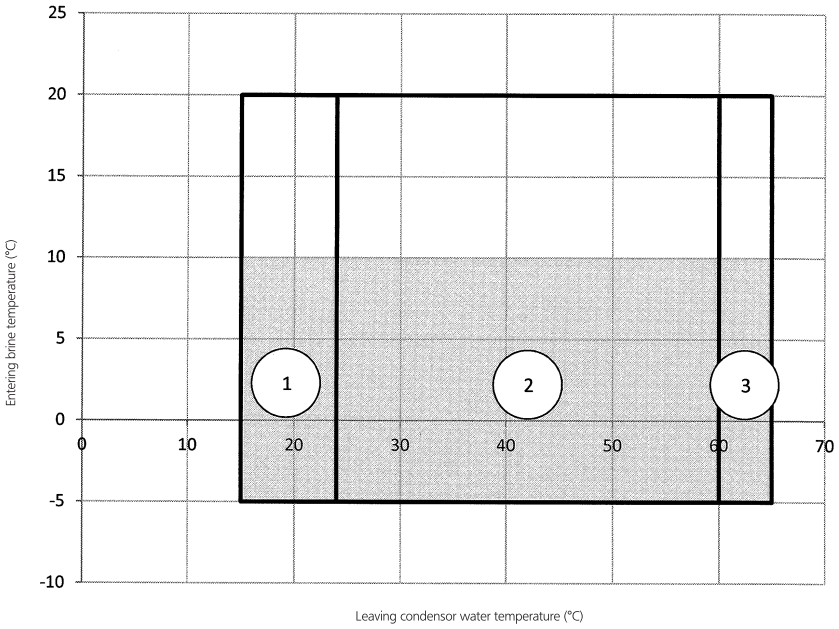
10 Operation range

10 - 1 Operation Range

EGSQH10S18A9W



1 Only backup heater operation if the setpoint is < 24°C

2 Heatpump operation (assisted by backup heater if capacity shortage)

3 Heatpump + backup heater operation

Protect against freezing by adding anti-freeze to brine side (see remark)

Remark:

By default settings, the unit will allow operation with the entering brine temperatures down to -5°C. As a result, the brine freezing temperature may not be higher than -15°C! For water - ethanol mixtures this corresponds to 29% ethanol (by mass), for water - propylene glycol mixtures this corresponds to 40% propylene glycol (by volume).
If the freezing temperature of the medium is higher than -15°C, then protection level of the unit must be increased by field setting.
Refer to the installation manual for instructions on how to set a different freeze temperature of the medium (Tf) in the controller.
The unit will not operate at an entering brine temperature lower then Tf+10K

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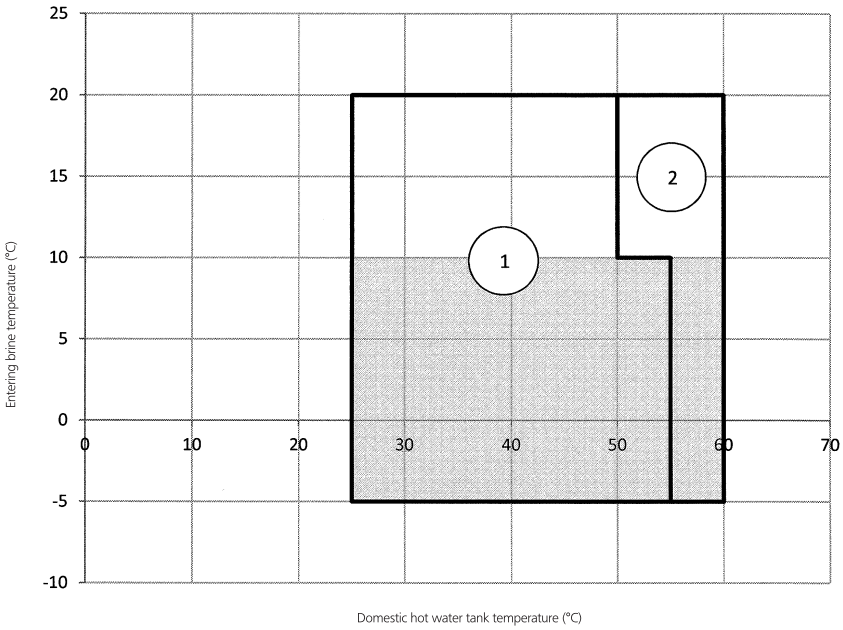

1 Heatpump operation

2 Only backup heater operation

Protect against freezing by adding anti-freeze to brine side (see remark)

Remark:

By default settings, the unit will allow operation with the entering brine temperatures down to -5°C. As a result, the brine freezing temperature may not be higher than -15°C! For water - ethanol mixtures this corresponds to 29% ethanol (by mass), for water - propylene glycol mixtures this corresponds to 40% propylene glycol (by volume).
If the freezing temperature of the medium is higher than -15°C, then protection level of the unit must be increased by field setting.
Refer to the installation manual for instructions on how to set a different freeze temperature of the medium (Tf) in the controller.
The unit will not operate at an entering brine temperature lower then Tf+10K

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11 Hydraulic performance

11 - 1 Static Pressure Drop Unit

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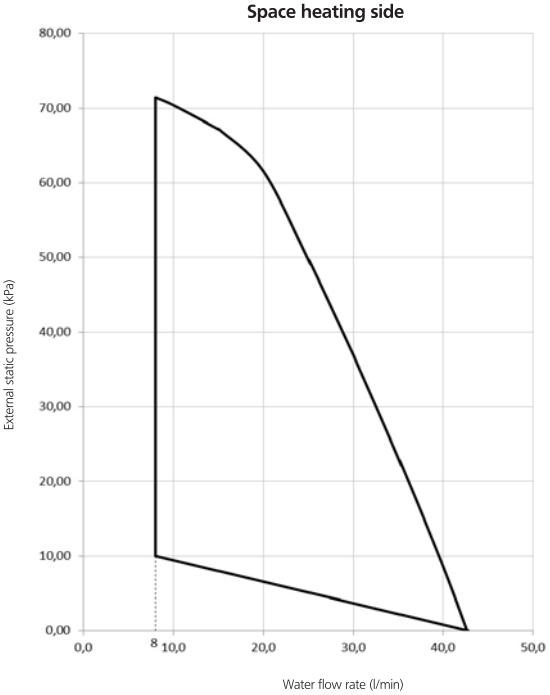
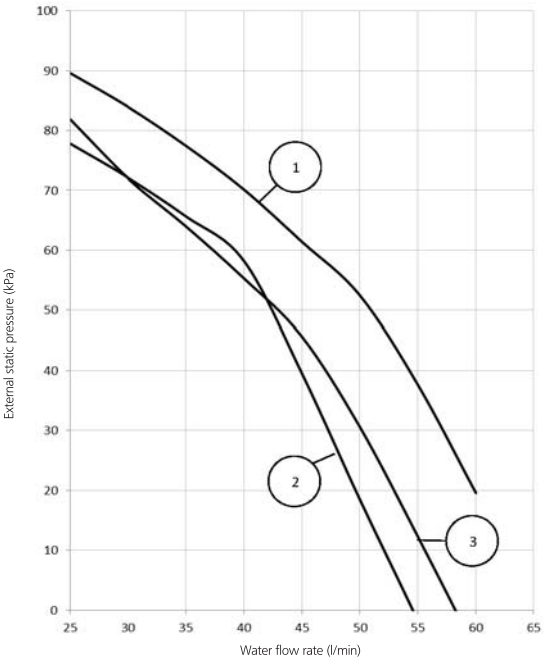
Space heating side



Brine side



1 Water

2 Mixture water / propylene glycol (40 V %) @ Entering brine temperature -5°C

3 Mixture water / ethanol (29 M %) @ Entering brine temperature -5°C

Notes:

1 Selecting a flow outside the area of operation can cause damage or malfunctioning of the unit.

3D081379B

These products are not within the scope of the Eurovent certification program

BARCODE

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