

# technical data



Altherma

**R-410A**

# EKHBH/X016AB

EKHBH016AB

EKHBX016AB

TECHNICAL SPECIFICATIONS							
Outdoor units				ERHQ011AAV3			
Nominal input (Indoor only)				W 230			
Casing	Colour			RAL9010			
	Material			Epoxy polyester painted galvanised steel			
Dimensions	Packing	Height	mm	1225			
		Width	mm	660			
		Depth	mm	610			
	Unit	Height (1)	mm	922			
		Width	mm	502			
		Depth	mm	361			
Weight	Machine weight		kg	55			
	Gross Weight		kg	65			
Packing	Material			EPS			
	Material			Wood			
	Material			Carton			
	Material			PP (Straps)			
	Weight		kg	10			
Main components	Pump	Type		Water cooled			
		Nr. of speed		2			
		Nominal ESP unit	Heating	kPa	52.5	52.5	
			Cooling	kPa	55.9		
		Power input		W	210		
		Water side Heat exchanger	Type		Brazed plate		
	Qty		1				
	Water volume		l	1.01			
	Water flow rate Min.		l/min	16			
	Water flow rate Nom.		Heating (3)	l/min	32.1	32.1	
			Cooling (2)	l/min	28.7		
	Water flow rate Max.		l/min	58			
	Insulation material		Polyurethane foam				
	Expansion vessel	Volume		l	10		
		Max. water pressure		bar	3		
		Pre pressure		bar	1		
	Water filter	Diameter perforations		mm	1		
		Material		Brass			
	Water circuit	Piping connections diameter		inch	1-1/4" MBSP		
		Piping		inch	1-1/4"		
Safety valve		bar	3				
Manometer		Yes					
Drain valve / Fill valve		Yes					
Shut off valve		Yes					
Air purge valve		Yes					
Total water volume (6)		l	5.5				
Refrigerant Circuit		Gas side diameter		mm	15.9		
	Liquid side diameter		mm	9.52			
Sound Level	Sound Pressure (5)		dB(A)	28			
	Sound Power		dB(A)				
Operation range	Ambient	Heating	°C	-20~35	-20~35		
		Cooling	°C	10~46			
	Waterside	Heating (5)	°C	15~55	15~55		
		Cooling	°C	5~22			
Outdoor units				ERHQ014AAV3			
Nominal input (Indoor only)				W 230			
Casing	Colour			RAL9010			
	Material			Epoxy polyester painted galvanised steel			
Dimensions	Packing	Height	mm	1225			
		Width	mm	660			
		Depth	mm	610			
	Unit	Height (1)	mm	922			
		Width	mm	502			
		Depth	mm	361			
Weight	Machine weight		kg	55			
	Gross Weight		kg	65			
Packing	Material			EPS			
	Material			Wood			
	Material			Carton			
	Material			PP (Straps)			

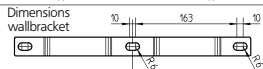
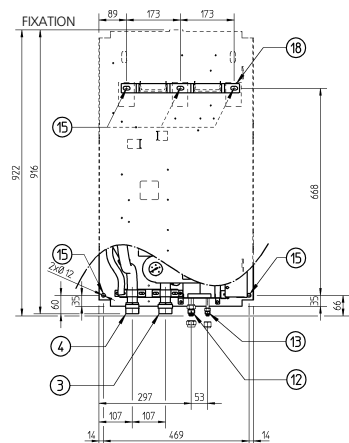
	Weight		kg	10		
Main components	Pump	Type		Water cooled		
		Nr. of speed		2		
		Nominal ESP unit	Heating	kPa	43.5	43.5
			Cooling	kPa		49.1
		Power input		W	210	
	Water side Heat exchanger	Type		Braze plate		
		Qty		1		
		Water volume		l	1.01	
		Water flow rate Min.		l/min	16	
		Water flow rate Nom.	Heating (3)	l/min	40.1	40.1
			Cooling (2)	l/min		35.8
		Water flow rate Max.		l/min	58	
	Insulation material		Polyurethane foam			
	Expansion vessel	Volume		l	10	
Max. water pressure		bar	3			
Pre pressure		bar	1			
Water filter	Diameter perforations		mm	1		
	Material		Brass			
Water circuit	Piping connections diameter		inch	1-1/4" MBSP		
	Piping		inch	1-1/4"		
	Safety valve		bar	3		
	Manometer			Yes		
	Drain valve / Fill valve			Yes		
	Shut off valve			Yes		
	Air purge valve			Yes		
	Total water volume (6)		l	5.5		
Refrigerant Circuit	Gas side diameter		mm	15.9		
	Liquid side diameter		mm	9.52		
Sound Level	Sound Pressure (5)		dB(A)	28		
	Sound Power		dB(A)			
Operation range	Ambient	Heating	°C	-20~35	-20~35	
		Cooling	°C		10~46	
	Waterside	Heating (5)	°C	15~55	15~55	
		Cooling	°C		5~22	
Outdoor units			ERHQ016AAV3			
Nominal input (Indoor only)			W	230		
Casing	Colour		RAL9010			
	Material		Epoxy polyester painted galvanised steel			
Dimensions	Packing	Height	mm	1225		
		Width	mm	660		
		Depth	mm	610		
	Unit	Height (1)	mm	922		
		Width	mm	502		
		Depth	mm	361		
Weight	Machine weight		kg	55		
	Gross Weight		kg	65		
Packing	Material		EPS			
	Material		Wood			
	Material		Carton			
	Material		PP (Straps)			
	Weight		kg	10		
Main components	Pump	Type		Water cooled		
		Nr. of speed		2		
		Nominal ESP unit	Heating	kPa	35.0	35.0
			Cooling	kPa		46.8
		Power input		W	210	
	Water side Heat exchanger	Type		Braze plate		
		Qty		1		
		Water volume		l	1.01	
		Water flow rate Min.		l/min	16	
		Water flow rate Nom.	Heating (3)	l/min	45.9	45.9
			Cooling (2)	l/min		37.6
		Water flow rate Max.		l/min	58	
	Insulation material		Polyurethane foam			
	Expansion vessel	Volume		l	10	
Max. water pressure		bar	3			
Pre pressure		bar	1			
Water filter	Diameter perforations		mm	1		
	Material		Brass			
Water circuit	Piping connections diameter		inch	1-1/4" MBSP		

	Piping	inch		1-1/4"	
	Safety valve	bar		3	
	Manometer			Yes	
	Drain valve / Fill valve			Yes	
	Shut off valve			Yes	
	Air purge valve			Yes	
	Total water volume (6)	l		5.5	
Refrigerant	Gas side diameter	mm		15.9	
Circuit	Liquid side diameter	mm		9.52	
Sound Level	Sound Pressure (5)	dBA		28	
	Sound Power	dBA			
Operation range	Ambient	Heating	°C	-20~35	
		Cooling	°C	-20~35	
	Waterside	Heating (5)	°C	15~55	
		Cooling	°C	5~22	
Notes	(1) With option kit EKHBDP installed: Height=936mm				
Notes	(2) Tamb 35°C - LWE 7°C (DT=5°C)				
Notes	(3) DB/WB 7°C/6°C-LWC 35°C(DT=5°C)				
Notes	(4) The sound pressure level is measured via a microphone at 1m from the unit. It is a relative value, depending on the distance and acoustic environment. The sound pressure level mentioned is valid for pump medium speed.				
Notes	(5) 15°C-25°C: BUH only, no Heatpump operation=during commissioning.				
Notes	(6) Including piping+PHE+backup heater/excluding expansion vessel.				
<b>ELECTRICAL SPECIFICATIONS</b>					
Electric heater	Type			3V3	
	Power Supply	Phase	1~		
		Frequency	Hz	50	
		Voltage	V	230	
	Current	Running Current	A	13	
		Zmax	List	No requirements	
			Text		
		Zmax electric heater + booster heater (EKHWS* Models)	List		
		Text	0.25 + j0.15		
	Voltage Range	Minimum	-10%		
		Maximum	+10%		
Wiring Connections	For power supply backup heater	Quantity of wires	3G		
		Type of wires	Select diameter and type according to national and local regulations		
Electric heater	Type			6V3	
	Power Supply	Phase	1~		
		Frequency	Hz	50	
		Voltage	V	230	
	Current	Running Current	A	26	
		Zmax	List		
			Text	0.25 + j0.15	
		Zmax electric heater + booster heater (EKHWS* Models)	List		
		Text	0.15 + j0.09		
	Voltage Range	Minimum	-10%		
		Maximum	+10%		
Wiring	For power	Quantity of wires	3G		

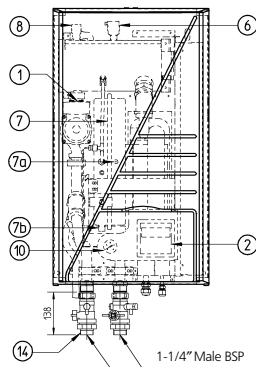
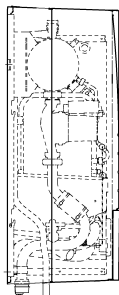
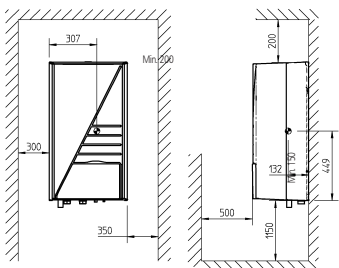
	Connections	supply backup heater	Type of wires	Select diameter and type according to national and local regulations	
Electric heater	Type			6WN	
	Power Supply	Phase		3~	
		Frequency	Hz	50	
		Voltage	V	400	
	Current	Running Current		A	8.7
		Zmax	List	No requirements	
			Text		
		Zmax electric heater + booster heater (EKHWS* Models)	List	No requirements	
			Text		
	Voltage Range	Minimum		-10%	
		Maximum		+10%	
	Wiring Connections	For power supply backup heater	Quantity of wires		4G
Type of wires			Select diameter and type according to national and local regulations		
Electric heater	Type			6T1	
	Power Supply	Phase		3~	
		Frequency	Hz	50	
		Voltage	V	230	
	Current	Running Current		A	15.1
		Zmax	List	Out of scope	
			Text		
		Zmax electric heater + booster heater (EKHWS* Models)	List	Out of scope	
			Text		
	Voltage Range	Minimum		-10%	
		Maximum		+10%	
	Wiring Connections	For power supply backup heater	Quantity of wires		4G
Type of wires			Select diameter and type according to national and local regulations		
Electric heater	Type			9WN	
	Power Supply	Phase		3~	
		Frequency	Hz	50	
		Voltage	V	400	
	Current	Running Current		A	13
		Zmax	List	No requirements	
			Text		
		Zmax electric heater + booster heater (EKSWW* Models)	List	No requirements	
			Text		
	Voltage Range	Minimum		-10%	
		Maximum		+10%	
	Wiring Connections	For power supply backup heater	Quantity of wires		4G
Type of wires			Select diameter and type according to national and local regulations		
Electric heater	Type			9T1	
	Power Supply	Phase		3~	
		Frequency	Hz	50	
		Voltage	V	230	
	Current	Running Current		A	22.6
		Zmax	List	Out of scope	
Text					

	Zmax electric heater +	List Text	Out of scope
Voltage Range	Minimum		-10%
	Maximum		+10%
Wiring Connections	For power supply backup	Quantity of wires	4G
		Type of wires	Select diameter and type according to national and local regulations
Wiring Connections	Connection type		For power supply connection to Optional Warm Water Tank + Q2L
	Quantity of wires		3G
	Type of wires		Select diameter and type according to national and local regulations
			For more details of the voltage range and current refer to installation manual EKHBH/X016AB*
	Connection type		For connection with R5T
	Quantity of wires		Wire included in option EKHWS*
	Type of wires		Wire included in option EKHWS*
	Connection type		For connection with A3P
	Quantity of wires		Depends on thermostat type, refer to installation manual EKHBH/X016AB*
	Type of wires		Select diameter and type according to national and local regulations
			Voltage: 230V/Maximum current: 100mA/Minimum 0,75 mm <sup>2</sup>
	Connection type		For connection with M2S
	Quantity of wires		3G
	Type of wires		Select diameter and type according to national and local regulations
			Voltage: 230V/Maximum current: 100mA/Minimum 0,75 mm <sup>2</sup>
	Connection type		For connection with M3S
Quantity of wires		3G or 4G	
Type of wires		Select diameter and type according to national and local regulations	
		Voltage: 230V/Maximum current: 100mA/Minimum 0,75 mm <sup>2</sup>	

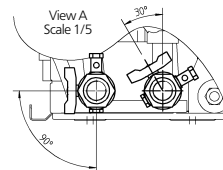
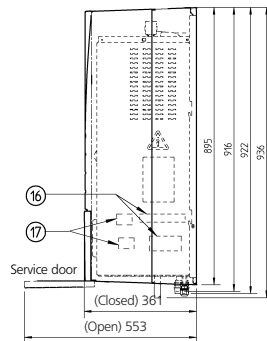
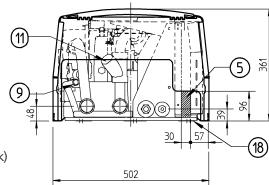
# EKHBH016AB



## Minimum space for service & ventilation



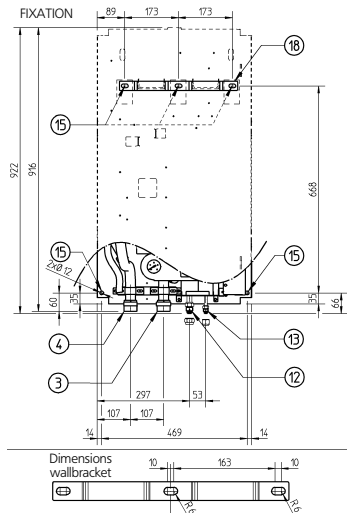
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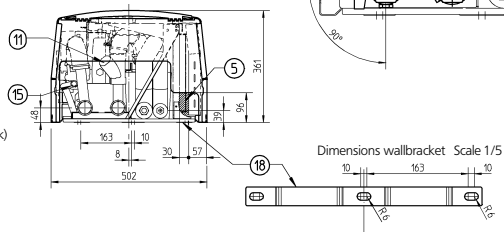
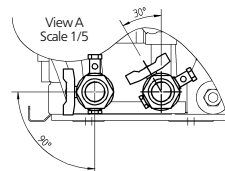
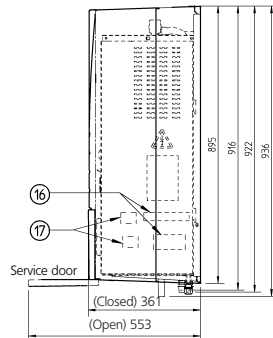
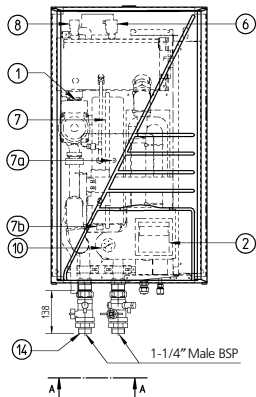
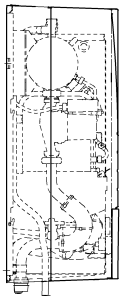
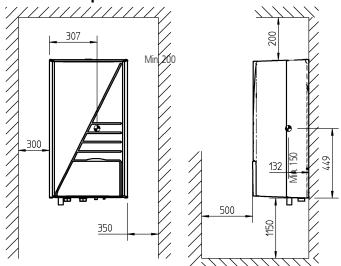
- ⊕ Center of gravity
- ① Pump + switch for speed setting
- ② Remocon
- ③ Water IN connection: 1 1/4" M BSP
- ④ Water OUT connection: 1 1/4" M BSP
- ⑤ Power supply intake (+ sanitary warm water tank)
- ⑥ Air purge
- ⑦ Expansion vessel+⑦a nipple+⑦b Drain
- ⑧ Blow off valve
- ⑨ Blow off drain (flexible hose  $\phi$  20)
- ⑩ Pressure gauge
- ⑪ Water filter
- ⑫ Suction pipe connection  $\phi$  15.9 flare connection
- ⑬ Liquid pipe connection  $\phi$  9.52 flare connection
- ⑭ Shut off valves with drain/fill valve (accessory delivered with unit)
- ⑮ Holes for fixation
- ⑯ Switchbox terminals
- ⑰ Switchbox terminals option sanitary warm water tank
- ⑱ Wallbracket



# EKHBX016AB



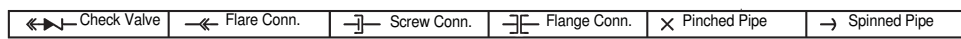
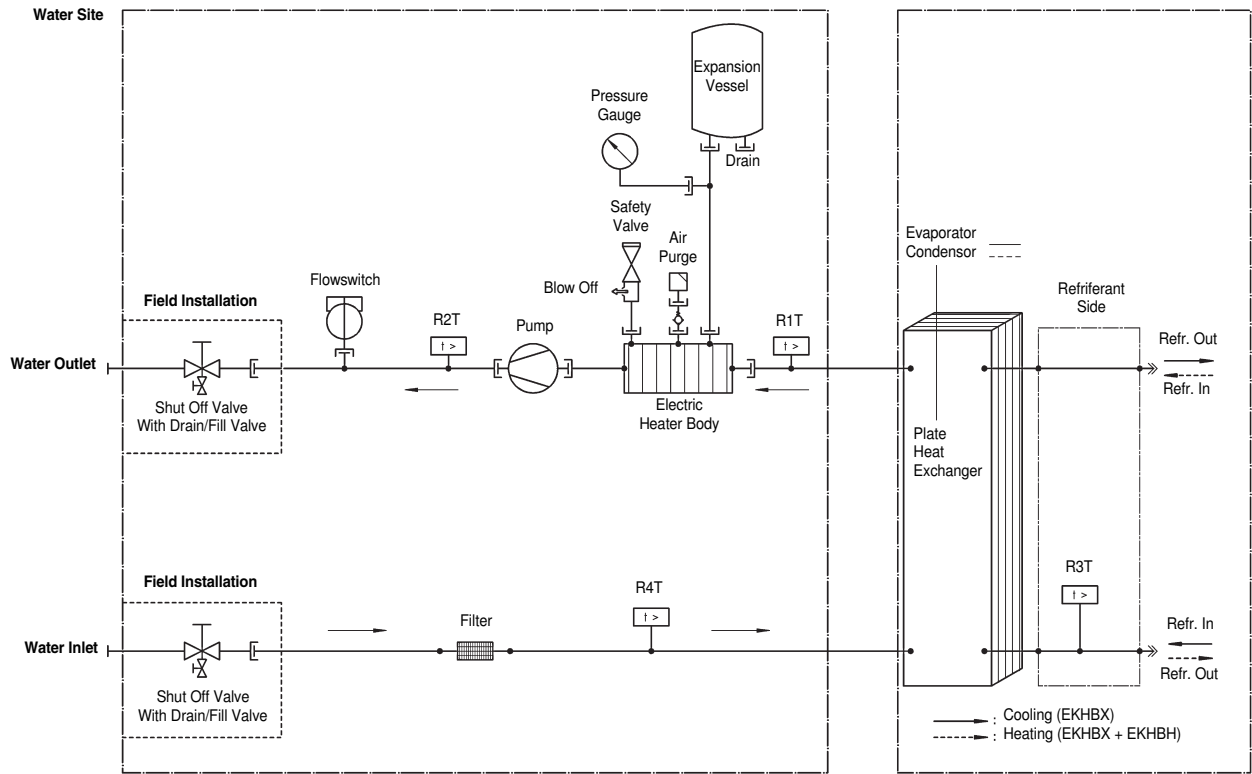
## Minimum space for service & ventilation



- ☉ Center of gravity
- ① Pump + switch for speed setting
- ② Remocon
- ③ Water IN connection: 1 1/4" M BSP
- ④ Water OUT connection: 1 1/4" M BSP
- ⑤ Power supply intake (+ sanitary warm water tank)
- ⑥ Air purge
- ⑦ Expansion vessel+⑧nipple+⑨Drain
- ⑧ Blow off valve
- ⑩ Blow off drain (flexible hose  $\phi$  20)
- ⑪ Pressure gauge
- ⑫ Water filter
- ⑬ Suction pipe connection  $\phi$  15.9 flare connection
- ⑭ Liquid pipe connection  $\phi$  9.52 flare connection
- ⑮ Shut off valves with drain/fill valve (accessory delivered with unit)
- ⑯ Holes for fixation
- ⑰ Switchbox terminals
- ⑱ Switchbox terminals option sanitary warm water tank
- Ⓜ Wallbracket

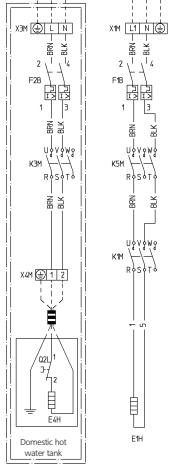
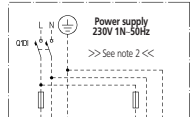




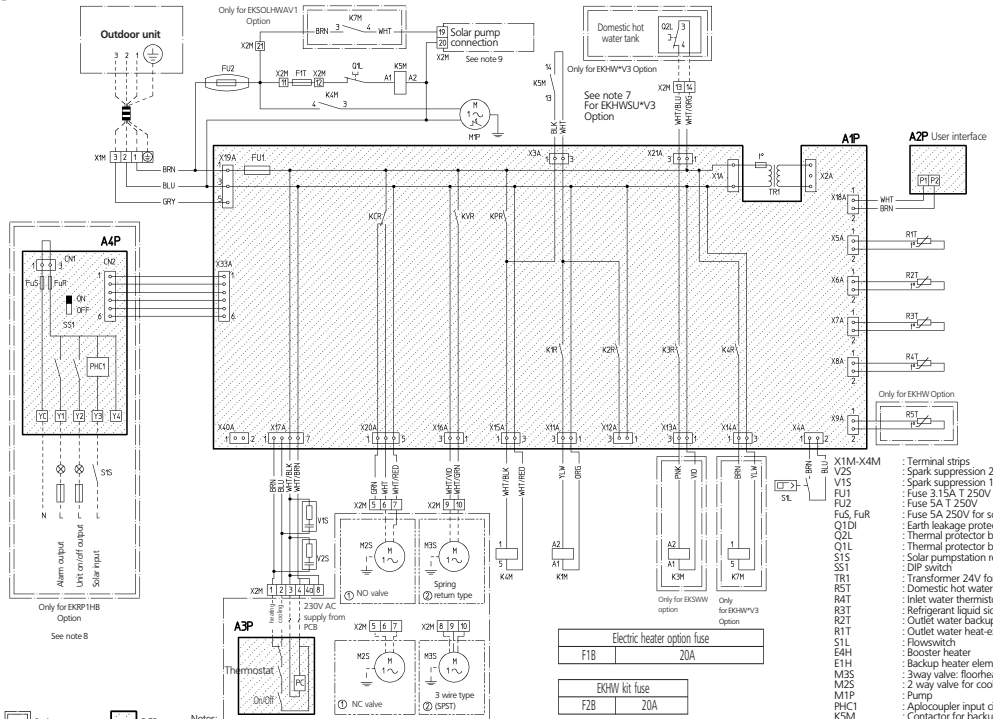
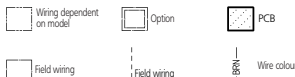


Thermistor	Description
R4T	Inlet water Thermistor
R3T	Refrigerant Liquid Side Thermistor
R2T	Outlet Water Backup heater Thermistor
R1T	Outlet Water Heat-exchanger Thermistor

# EKHBH(X)016AB3V3



See note 7  
For EKHSU\*V3 Option



**Notes:**

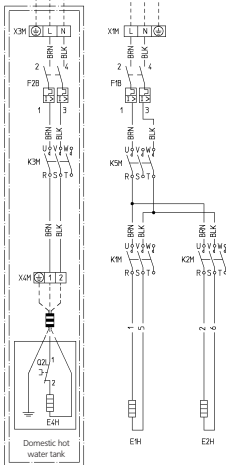
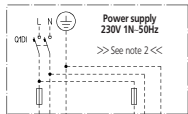
- This wiring diagram only applies to the indoor unit.
- Use one and same dedicated power supply for indoor unit, outdoor unit and EKHW option.
- Field wiring** No/No normal/open/normal closed SPST - single pole single throw.
- Terminal strip** **Connector** **Terminal** **Protective earth**
- Do not operate the unit by short-circuiting any protection device.
- BLK: Black / WHT: White / RED: Red / BLU: Blue / PINK: Pink / YLV: Yellow  
BRN: Brown / GRY: Grey / GRN: Green / ORG: Orange / VIO: Violet
- For EKHSU\*V3, refer to option manual
- Option PCB works with an external 230V AC power supply unit.
- For EKSOHWA1, refer to option manual

Electric heater option fuse	
F1B	20A

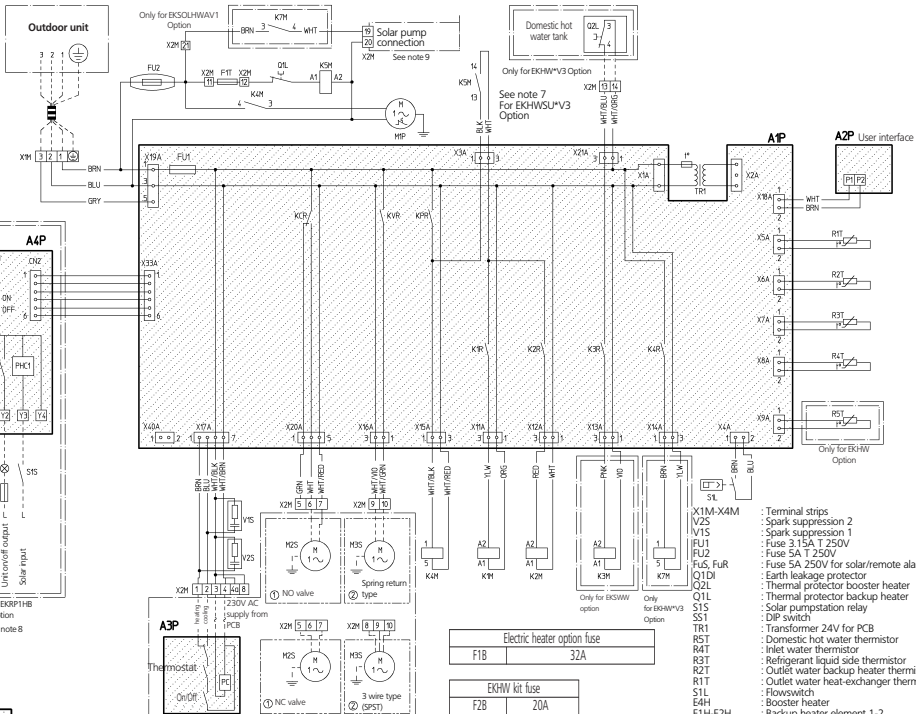
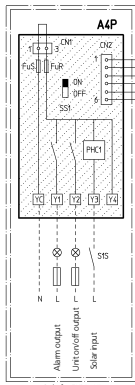
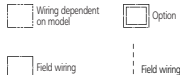
EKHW kit fuse	
F2B	20A

- X1M-X40M : Terminal strips
- V2S : Spark suppression 2
- V1S : Spark suppression 1
- F1U : Fuse 3 15A T 250V
- FU2 : Fuse 5A T 250V
- FuS, FuR : Fuse 5A 250V for solar/remote alarm PCB
- Q1D1 : Earth leakage protector
- Q2L : Thermal protector booster heater
- Q1L : Thermal protector backup heater
- S1S : Solar pumpstimation relay
- DIP : DIP switch
- TR1 : Transformer 24V for PCB
- RST : Domestic hot water thermistor
- R4T : Inlet water thermistor
- R3T : Refrigerant liquid side thermistor
- R2T : Outlet water backup heater thermistor
- R1T : Outlet water heat-exchanger thermistor
- S1L : Flowswitch
- E4H : Booster heater
- E1H : Backup heater element 1
- M5S : 3 way valve: floorheating/domestic hot water
- M2S : 2 way valve for cooling mode
- M1P : Pump
- PHC1 : Apicoopler input circuit
- K5M : Contactor for backup heater all-pole disconnection
- K7M : Relay for solar pump
- K4M : Pump Relay
- K3M : Contactor booster heater
- K1M : Contactor backup heater Step 1
- F2B : Fuse booster heater
- F1B : Fuse backup heater
- F1T : Thermal fuse Back up heater
- A4P : Solar/remote alarm PCB
- A3P : User interface (PC-power circuit)
- A2P : User interface PCB
- A1P : Main PCB

# EKHBH(X)016AB6V3



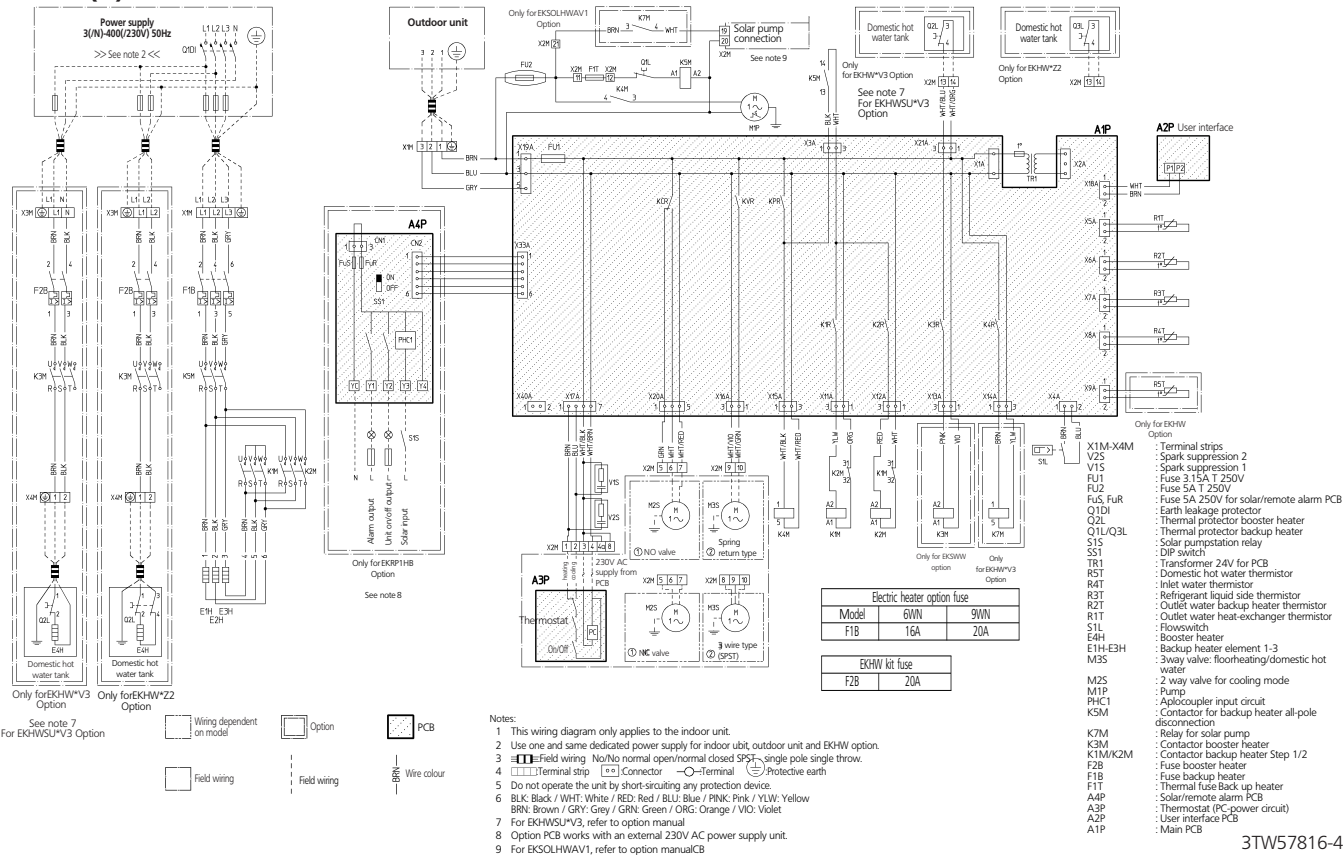
See note 7  
 For EKHW\*V3 Option



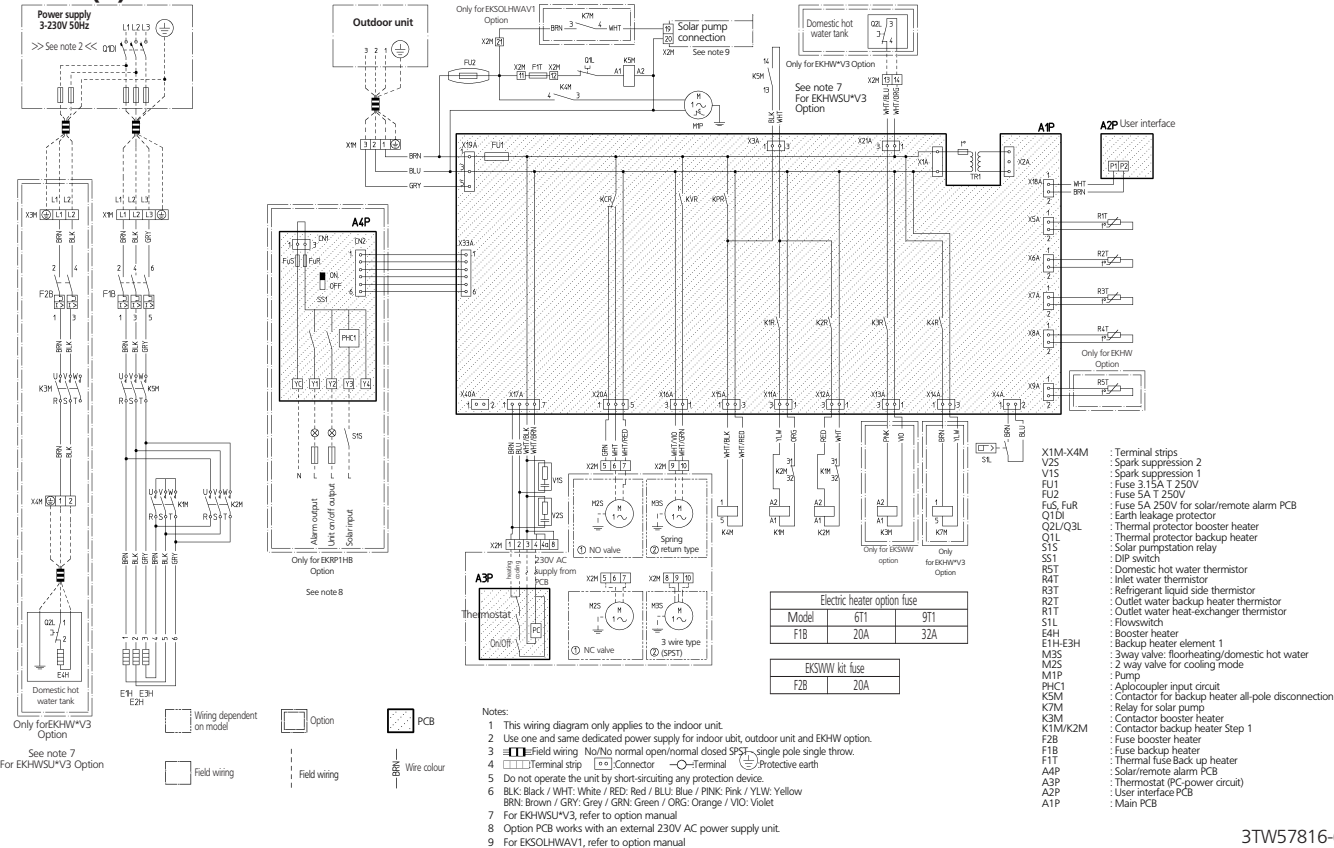
### Notes:

- This wiring diagram only applies to the indoor unit.
- Use one and same dedicated power supply for indoor unit, outdoor unit and EKHW option.
- Field wiring No/No normal open/normal closed SPST - single pole single throw.
- Terminal strip -> Connector -> Terminal -> Protective earth
- Do not operate the unit by short-circuiting any protection device.
- BLK: Black / WHT: White / RED: Red / BLU: Blue / PINK: Pink / YLW: Yellow  
 BRN: Brown / GRY: Grey / GRN: Green / ORG: Orange / VIO: Violet
- For EKHW\*V3, refer to option manual
- Option PCB works with an external 230V AC power supply unit.
- For EKSLHWAV1, refer to option manual

# EKHBH(X)016AB6WN/9WN



# EKHBH(X)016AB6T1/9T1



# Electrical connection diagram Altherma

## Standard parts

For more details please check unit wiring diagram

### Power supply

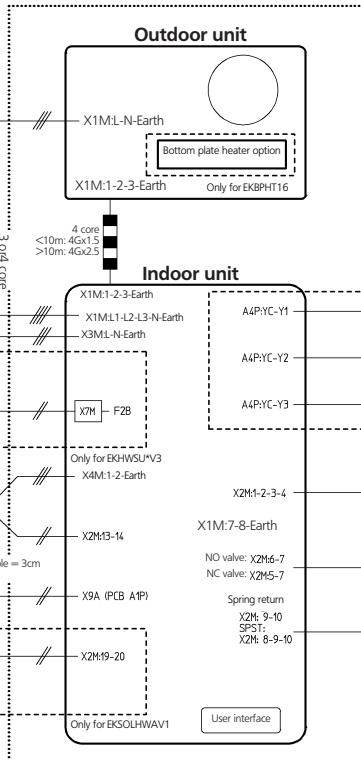
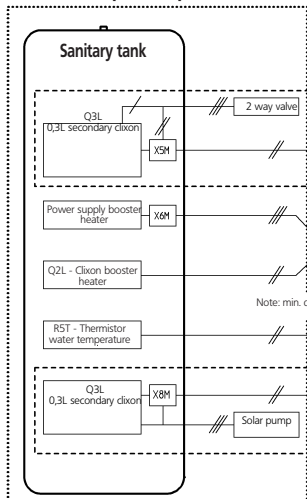
Unit power supply: 230V + earth

Backup heater power supply (3/6/9kW): 400V or 230V + earth

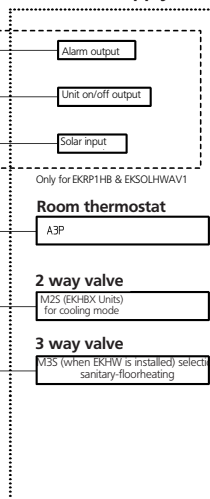
Optional power supply

Booster heater power supply (3kW): 400V or 230V + earth

### Optional parts



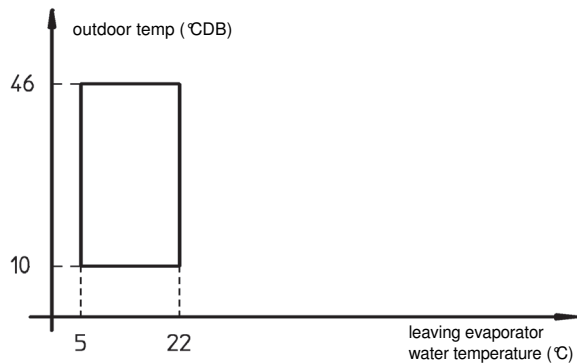
### Field supply



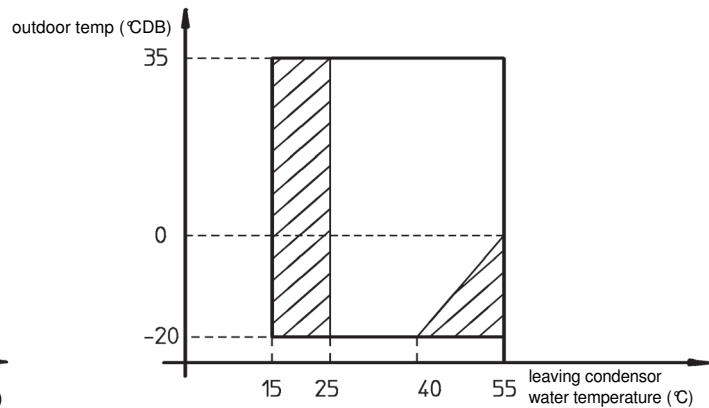
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COOLING MODE

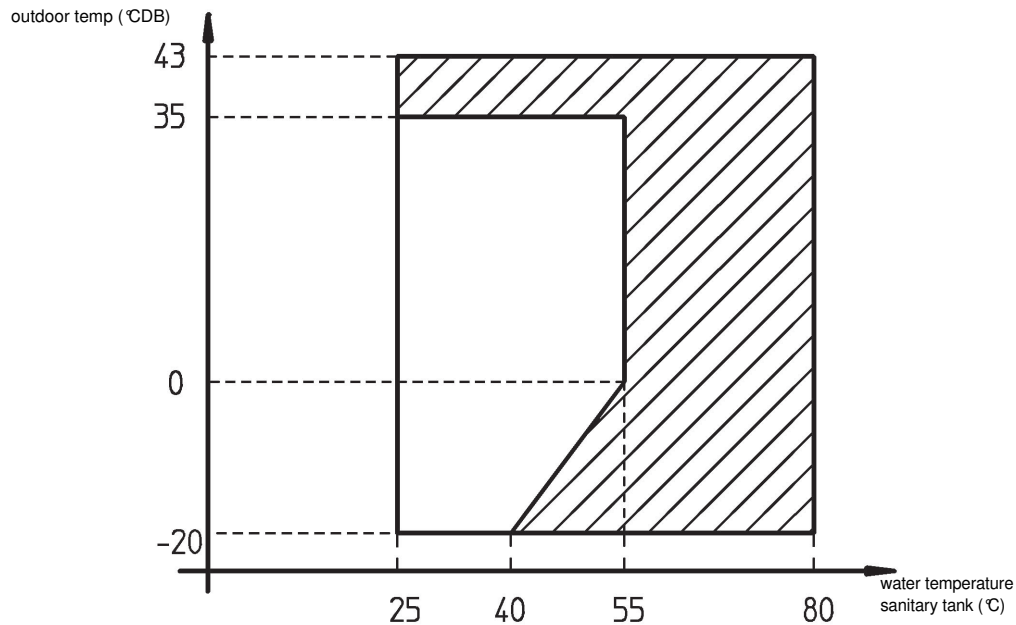


HEATING MODE



▨ : NO HEAT PUMP OPERATION  
BACK UP HEATER ONLY

DOMESTIC HOT MODE



▨: BOOSTER HEATER OPERATION ONLY