



Air Conditioning Technical Data

High temperature hydrobox for VRV



EEEN13-204

HXHD-A

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HXHD-A

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1 Features

- Air to water connection to VRV for applications such as bathrooms, sinks, underfloor heating, radiators and air handling units
- Free heating provided by transferring heat from areas requiring cooling to areas requiring heating or hot water
- Uses heat pump technology to produce hot water efficiently, providing up to 17% savings compared to a gas boiler
- Possibility to connect thermal solar collectors to the domestic hot water tank
- Leaving water temperature range from 25 to 80°C without electric heater
- Super wide operating range for hot water production from -20 to +43°C ambient outdoor temperature
- Saves time on system design as all water-side components are fully integrated with direct control over leaving water temperature
- Various control possibilities with weather dependant set point or thermostat control
- The indoor unit and domestic hot water tank can be stacked to save space, or installed next to each other, if only limited height is available
- Requires no gas connection or oil tank
- Connectable to VRV III heat recovery (REYAQ-P)



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2 Specifications

2-1 Technical Specifications				HXHD125A				
Heating capacity	Nom.			kW		14.0 (1)		
Casing	Colour			Metallic grey				
	Material			Precoated sheet metal				
Dimensions	Unit	Height	mm		705			
		Width	mm		600			
		Depth	mm		695			
	Packed unit	Height	mm		860			
		Width	mm		680			
		Depth	mm		800			
Weight	Unit			kg		92		
	Packed unit			kg		103		
Packing	Material			EPS / Cardboard / MDF / Wood (pallet) / Metal				
	Weight			kg		8.75		
Pump	Type			DC motor				
	Nr of speeds			Inverter controlled				
	Nominal ESP unit	Heating	kPa		37.0 (2)			
Expansion vessel	Volume			l		7		
	Max. water pressure			bar		3		
	Pre pressure			bar		1		
Sound power level	Nom.			dBA		55		
Sound pressure level	Nom.			dBA		42 (5) / 43 (6)		
	Night quiet mode	Level 1		dBA		38 (5)		
Operation range	Heating	Ambient	Min.	°C		-20		
			Max.	°C		20 / 24 (11)		
		Water side	Min.	°C		25		
			Max.	°C		80		
	Domestic hot water	Ambient	Min.	°CDB		-20		
			Max.	°CDB		43		
		Water side	Min.	°C		45		
			Max.	°C		75		
Refrigerant	Type			R-134a				
	Charge			kg		2		
Refrigerant circuit	Gas side diameter			mm		12.7		
	Liquid side diameter			mm		9.52		
	High pressure side	Design pressure		bar		38		
Water circuit	Piping connections diameter			inch		G 1" (female)		
	Piping			inch		1"		
	Safety valve			bar		3		
	Manometer					Yes		
	Drain valve / fill valve					Yes		
	Shut off valve					Yes		
	Air purge valve					Yes		
	Heating water system	Water volume	Min.	l		20		
			Max.	l		200		
	Refrigerant oil	Type			FVC50K			
		Charged volume			l		0.75	
Refrigerant side heat exchanger	Type			Plate heat exchanger				
	Quantity			1				
	Plates	Quantity		66				
	Material			AISI 316				
	Insulation material			Felt type				

2 Specifications

2

2-1 Technical Specifications				HXHD125A		
Water side Heat exchanger	Water flow rate	Min.		l/min		
		Heating	Nom.	l/min		
	Heating	Type		Plate heat exchanger		
		Quantity		1		
		Plates	Quantity	72		
		Material		AISI 316		
		Water volume	l	2.2		
Insulation material		Felt type				
Water filter	Diameter perforations		mm		1	
	Material		Brass			
Cascade compressor	Quantity		1			
	Motor	Type		Hermetically sealed swing compressor		
		Starting method		Direct on line		
Installation place				Indoor		

2-2 Electrical Specifications				HXHD125A		
Power supply	Phase		1~			
	Frequency		Hz		50	
	Voltage		V		220-240	
	Voltage range	Min.	%		-10	
		Max.	%		6	
Current	Zmax	Text		0.46		
	Minimum Ssc value		kVa		1,459	
	Maximum running current	Heating	A		16.5	
	Recommended fuses		A		20	
Wiring connections	For power supply	Quantity		2G		
		Type of wires		Select diameter and type according to national and local regulations		
	Benefit kWh rate power supply installations	Quantity		2G+2G		
		Type of wires		Select diameter and type according to national and local regulations		
	For power supply multi tenant	Quantity		2G		
		Remark		Select diameter and type according to national and local regulations		
	For connection with outdoor unit	Quantity		2		
Remark		F1 + F2				
Power supply intake				Both indoor and outdoor unit		
Multi tenant	Power supply	Voltage		V		
		Voltage range	Min.	%		
			Max.	%		
	Current	Maximum running current		A		
		Recommended fuses		A		

Notes

- (1) EW 40°C; LW 45°C; Dt 5°C; ambient conditions: 7°CDB/6°CWB
- (2) For water Dt 5°C
- (3) Sound level is valid in free field condition because it is measured in a semi-anechoic room. Measured value under actual installation conditions will be higher due to environmental noise and sound reflections.
- (4) Values are sound pressure values measured at all sides (front, back, left, right, top) at 1m distance. The values do not occur simultaneously on all mentioned sides.
- (5) Sound levels are measured at: EW 55°C; LW 65°C
- (6) Sound levels are measured at: EW 70°C; LW 80°C
- (7) 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 (system impedance) ≤ Zmax
- (8) 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 ≤ 75A
- (9) EN/IEC 61000-3-12: European/international technical standard setting the limits for harmonic currents produced by equipment connected to public low-voltage system with input

2 Specifications

current $\leq 16A$ and $\leq 75A$ per phase

(10) Ssc: Short-circuit power

(11) Field setting

3 Selection procedure

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**HXHD125A
REYQA-P**

I. Definitions

Index definition of HXHD125A

- 1) Index for selecting *pipng*, calculating *refrigerant charge* and *total connection ratio*
→ Index = 125 (see installation manual & technical specs 3TW60651-1)
- 2) Index for performing unit *capacity* calculation/selection
→ Index depends on leaving water temperature ≠ 125 (details are explained below)

Selection procedure

- Outdoor unit heating capacity (design point conditions) = **HC_o** [kW] ▶ See heating capacity table outdoor unit
- Outdoor unit power input (design point conditions) = **PI_o** (kW) ▶ See heating capacity table outdoor unit
- HXHD125A capacity calculation index = **R** ▶ To be looked up (see table below)
- VRV DX indoor capacity index total = **S** ▶ To be looked up (depends on VRV DX indoor unit type)
- Total indoor capacity index = index VRV DX connected + HXHD125A capacity calculation index = S + R = J ▶ To be calculated
- HXHD125A heating capacity (design point conditions) = **HC** (kW) ▶ To be calculated
- HXHD125A power input* (design point conditions) = **PI** (kW) ▶ To be calculated
- HXHD125A cascade step power input = **P** (kW) ▶ To be looked up
- ▶ **HC = HC_o/J * 112**

Informational remark

▶ **PI = PI_o/J * R + P**

*: total power input required to operate the cascade system = fraction of outdoor unit power input + HXHD cascade step power input

**IIa. Cascade step power input
and HXHD-A capacity calculation index**

RWT [°C]	30	40	45	55	65
LWT [°C]	35	45	55	65	75
P [kW]	1.50	1.79	1.83	2.33	3.25
R	103	100	100	96	88

RWT = entering water temperature
LWT = leaving water temperature

**IIb. Integrated heating capacity
correction coefficient for REYQA**

		Inlet port temperature of heat exchanger (°C/RH 85%)						
		-7	-5	-3	0	3	5	7
β	REYQA10/12P	0.97	0.95	0.90	0.86	0.87	0.92	1.00
	REYQA14/16P	0.96	0.94	0.89	0.85	0.86	0.91	1.00

Integrated heating capacity = A [kW]
Value given in table of capacity characteristics = B [kW]
Integrated correction factor for frost accumulation = β
A = B * β

III. Example

A. Make clear design point

- DX indoor units: 4 * ± 5.5 kW @ -7°CDB/-7.6°CWB outdoor ambient conditions / 20°C indoor ambient conditions
- Water heating ± 12kW @ -7°CDB/-7.6°CWB outdoor ambient conditions / 65°C LWT
- Required capacity for building : ± 34kW
→ VRV DX indoor units "50" type
→ HXHD
→ REYQA14*

A1. Calculate total indoor capacity index

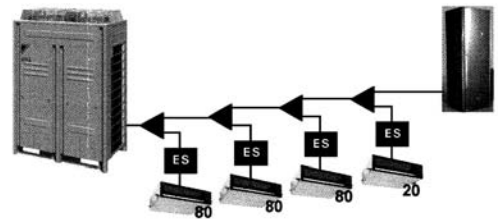
- VRV indoor units: 4* "50" type: S
- HXHD125A: R
- J = R + S

S	200
R	96
J	296

A2. HXHD specifications at design point

- HC = HC_o / J * 112
- PI = PI_o / J * R + P
- Heating capacity left for DX indoor units
- Heating capacity left for DX indoor

HC [kW]	12.5
PI [kW]	5.39
[kW]	22.4 (x33.5*200/255)
[kW]	5.59



Capacity	6.30	Look up in heating capacity table [=f (Ta indoor; Ta outdoor; HP)]
p [kW]	2.33	Look up in heating capacity table [=f (Ta indoor; Ta outdoor; HP)]
HC _o [kW]	33.1	Look up table above [=f (leaving water temperature)]
PI _o [kW]	9.44	Look up table above [=f (leaving water temperature)]
		→ Decide outdoor unit HP class

S: Depends on DX indoor unit selection
R: Look up table above
J: Σ (S, R)

B. Check connection ratio

At least 1HXHD-A			OK
DX connection ratio: 50% ≤ x ≤ 130 %	200/350	57%	OK
HXHD-A connection ratio ≤ 100%	125/350	36%	OK
Total connection ratio: 80% ≤ x ≤ 200%	325/350	93%	OK

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4 Combination table

HXHD-A REYQA-P

I. Outdoor/Indoor combination table

Heating only hydrobox indoor unit	Outdoor unit	REYQA10P	REYQA12P	REYQA14	REYQA16P
HXHD125A		0	0	0	0

II. Kit availability

1. Kits connected to the outdoor unit

Reference	Description	REYQA10P	REYQA12P	REYQA14P	REYQA16P
KHRQ(M)22M29H8	Refnet header	0	0	0	0
KHRQ(M)22M64H8	Refnet header		0	0	0
KHRQ(M)22M75H8	Refnet joint			0	0
KHRQ(M)22M20T8	Refnet joint	0	0	0	0
KHRQ(M)22M29T9	Refnet joint	0	0	0	0
KHRQ(M)22M64T8	Refnet joint		0	0	0
KHRQ(M)22M75T8	Refnet joint			0	0
KHRQ(M)23M29H8	Refnet header	0	0	0	0
KHRQ(M)23M64H8	Refnet header		0	0	0
KHRQ(M)23M75H8	Refnet joint			0	0
KHRQ(M)23M20T8	Refnet joint	0	0	0	0
KHRQ(M)23M29T9	Refnet joint	0	0	0	0
KHRQ(M)23M64T8	Refnet joint		0	0	0
KHRQ(M)23M75T8	Refnet joint			0	0
KWC25C450	Drain pan kit (1)	0	0	0	0
BSVQ100P8		0 (Δ2)	0 (Δ2)	0 (Δ2)	0 (Δ2)
BSVQ160P8	BSVQ box for Heat Recovery (Individual Branch Selector)	0 (Δ2)	0 (Δ2)	0 (Δ2)	0 (Δ2)
BSVQ250P8		0 (Δ2)	0 (Δ2)	0 (Δ2)	0 (Δ2)
BSV4Q100PV	BSVQ box for Heat Recovery (Multi Branch Selector)	0 (Δ2)	0 (Δ2)	0 (Δ2)	0 (Δ2)
BSV6Q100PV		0 (Δ2)	0 (Δ2)	0 (Δ2)	0 (Δ2)
EKBSVQLNP	Sound reduction kit for individual BSVQ box (Δ1)	0	0	0	0
BHGP26A1	Digital Pressure gauge kit	0	0	0	0

(Δ1): Only available for individual BSVQ boxes (not possible for Central BSV4Q/BSV6Q). Allows to reduce operating sound of BSVQ-box (requires 1 sound kit per BSVQ - box)
 (Δ2): - Multi tenant is possible - Need connect option-PCB DTA114A61 to each BSVQ-box & need compatible indoor unit.
 - Not required for hydro box HXHD125A, only for connection of DX indoor units.

2. Kits connected to the indoor unit

Reference	Description	Indoor Unit
		HXHD125A
EKHTS200[AC]	Stainless domestic hot water tank 200 l	0
EKHTS260[AC]	Stainless domestic hot water tank 260 l	0
EKHTSU200[AC]	Stainless domestic hot water tank 260 l UK - version	0
EKHTSU260[AC]	Stainless domestic hot water tank 260 l UK - version	0
EKHWP300A	PP tank	0
EKHWP500A	PP tank	0
EKRP1HBAA	Digital I/O PCB	0
EKRP1AHTA	Demand PCB (3)	0
EKRUAHTB	Remote user interface [remocon] (4)	0
EKRTWA	Wired Room thermostat (2)	0
EKRTR1	Wireless Room thermostat (2)	0
EKRTEETS	Remote sensor for Room thermostat (2)	0

3. Kits connected to the domestic hot water tank

Reference	Description	Domestic hot water tank			
		EKHTS		EKHTSU	
		200A	260A	200AA	260AA
EKUHWHTA	Option kit for UK EKHTSU200-260A	-	-	0	0
EKFMAHTB (5)	Option kit for floor mounted tank	0	0	0	0

Remark: Other combinations are not guaranteed.

- (1) For allowed installation, see Installation Manual
- (2) Requires Demand PCB EKRP1AHTA
- (3) Requires to install to be able to connect Roomthermostat
- (4) Same controller as supplied with Cascade unit can be mounted parallel or on other location. If 2 controllers are installed, the installer needs to select 1 master & 1 slave
- (5) Only required if tank is NOT mounted on top of cascade indoor unit

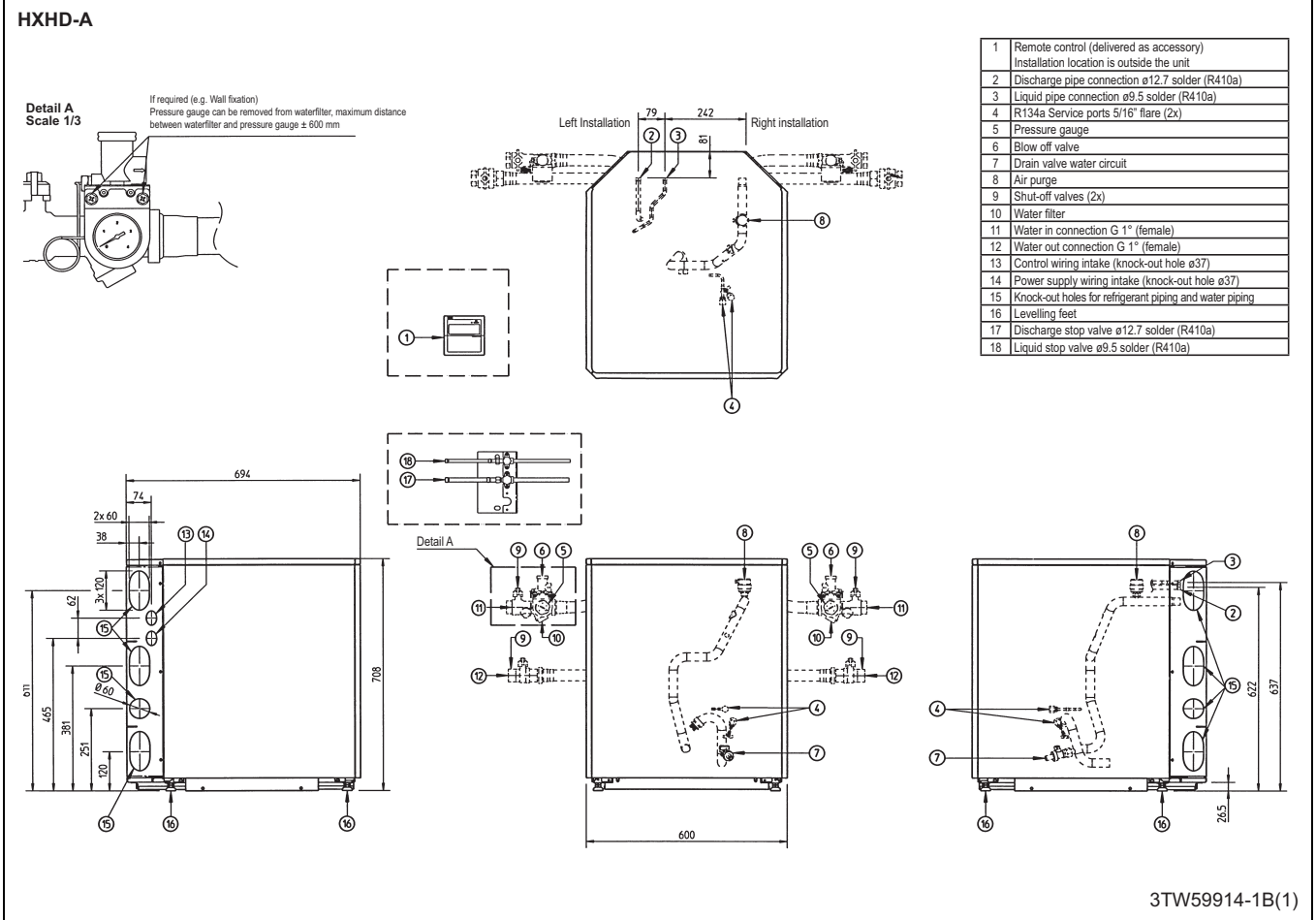
NOTES

- 1 To one outdoor unit, multiple hydrobox units can be connected (≤100% connection ratio; further information, see technical data)
- 2 All VRV indoor units can be connected.

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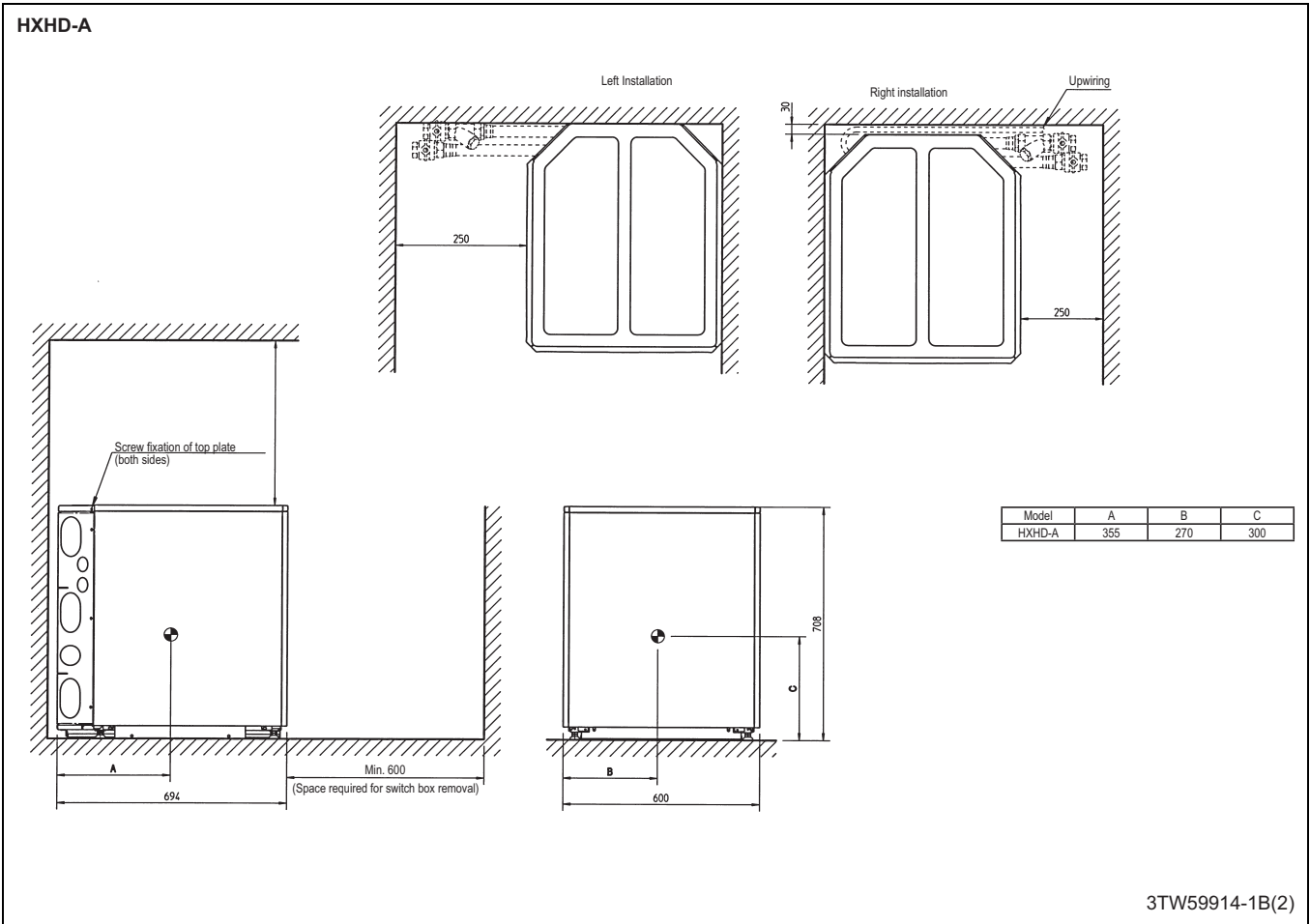
5 Dimensional drawings

5



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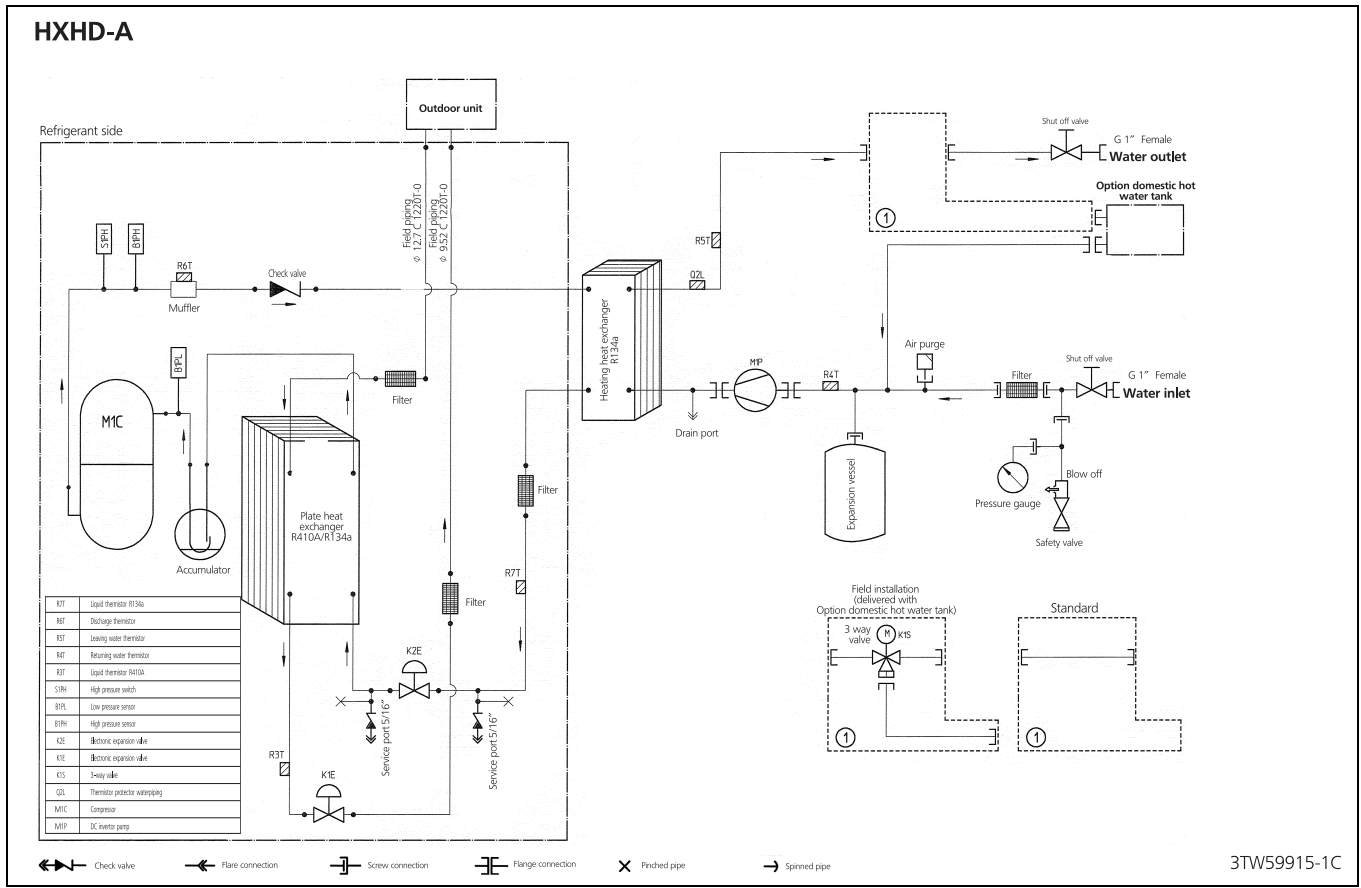
5 Dimensional drawings



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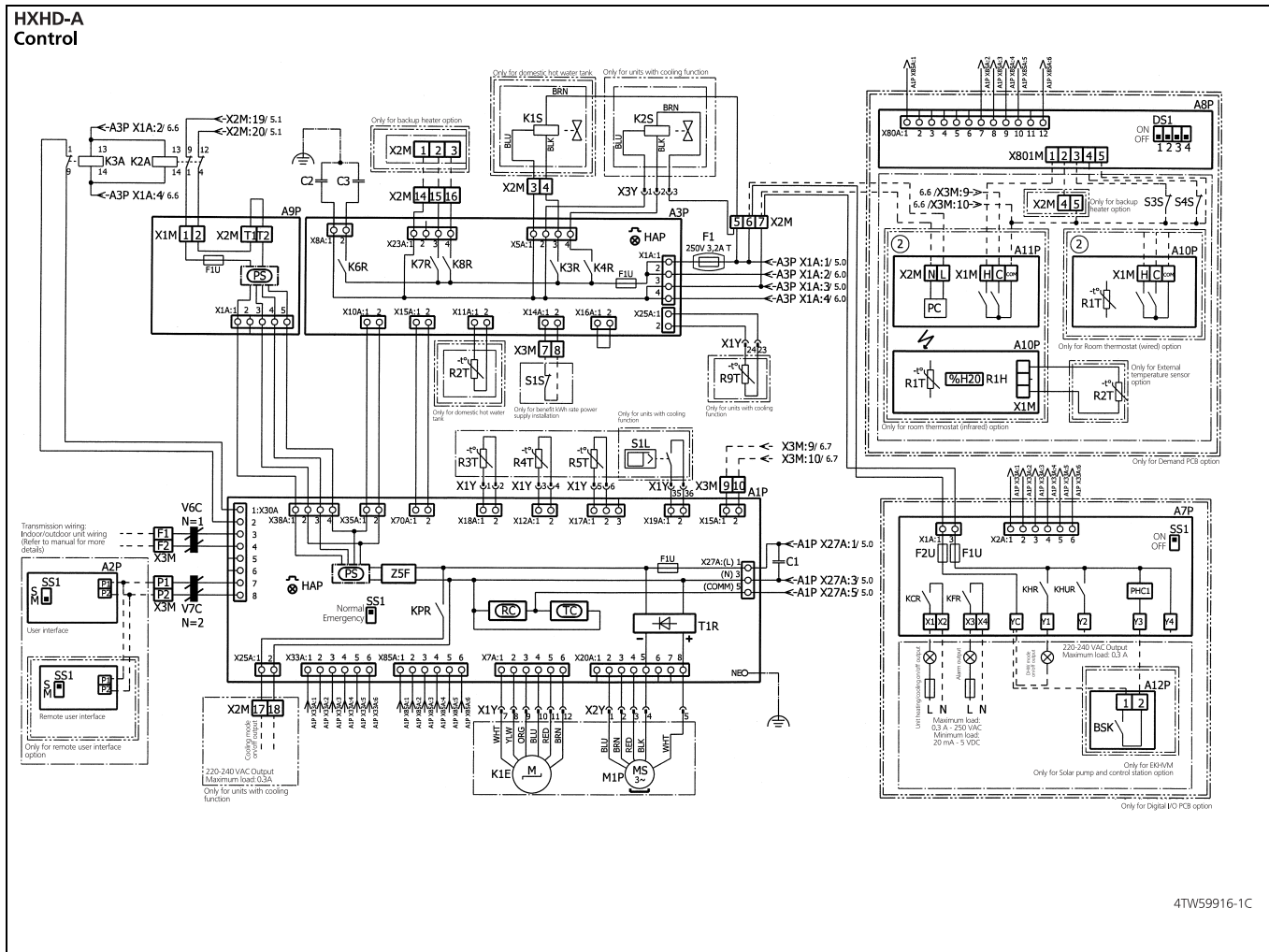
6 Piping diagrams

6



7 Wiring diagrams

7 - 1 Wiring Diagrams - Single Phase



7 Wiring diagrams

7 - 1 Wiring Diagrams - Single Phase

NOTES TO GO THROUGH BEFORE STARTING THE UNIT

X1M : Main terminal
 X2M : Field wiring terminal for high voltage
 X3M : Field wiring terminal for low voltage

--- : Earth wiring
 - - - - : Field supply



: Option



: Wiring depending on model



: Not mounted in switchbox



: PCB

---**/12.2 : Connection ** continues on page 12 column 2



: Several wiring possibilities

User installed options:

- Backup heater (includes wiring diagram of option)
- Domestic hot water tank
- Domestic hot water tank with solar connection (Only for EKHVM)
- Room thermostat (Wired)
- Room thermostat (Wireless)
- External temperature sensor
- Remote user interface
- Digital I/O PCB
- Demand PCB
- Solar pump and control station (Only for EKHVM)

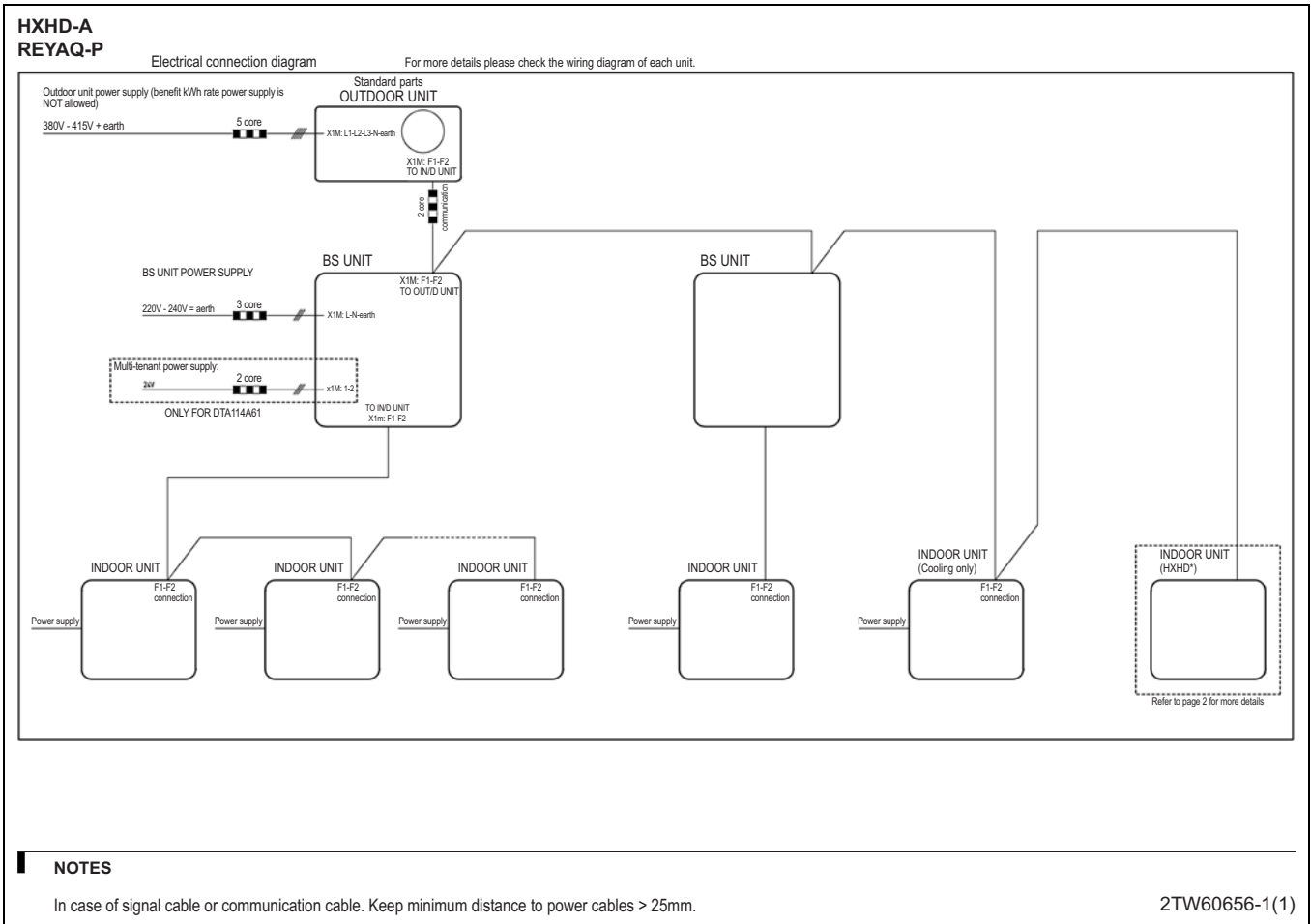
Legend

- * : included in option kit
 # : field supplied
- A1P : Main PCB
 - A2P : User interface PCB
 - A3P : control PCB
 - A4P : Inverter PCB
 - A5P : QA PCB
 - A6P : Filter PCB
 - A7P * : Digital I/O PCB
 - A8P * : Demand PCB
 - A9P : Multi tenant PCB
 - A10P * : Thermostat PCB
 - A11P * : Receiver PCB
 - A12P * : Solar pump station PCB
 - B1PH : High pressure sensor
 - B1PL : Low pressure sensor
 - BSK * : Solar pump station relay
 - C1-C3 : Filter capacitor
 - C1-C3 (A4P) : PCB Capacitor
 - DS1 (A*P) : Dipswitch
 - FIU : Fuse (T, 3.2A, 250V)
 - FIU (A1PA3PA9P) : Fuse (T, 3.15A, 250V)
 - FIU (A6P) : Fuse (T, 6.3A, 250V)
 - FIU-F2U (A7P) * : Fuse (5A, 250V)
 - F3U-F4U (A*P) : Fuse (T, 6.3A, 250V)
 - HAP (A*P) : PCB LED
 - IPM1 : Integrated power module
 - K1A-K3A : Interface relay
 - K1E-K3E : Electronic expansion valve
 - K*R (A*P) : PCB Relay
 - K1S * : 3 way valve
 - K2S : 3 way valve
 - K3S : 2 way valve
 - K4S # : 2 way valve
 - M1C : Compressor
 - M1F : Switchbox cooling fan
 - M1P-M2P : DC inverter pump
 - PC (A11P) * : Power circuit
 - PHC1 (A7P) * : Optocoupler input circuit
 - PS (A*P) : Switching power supply
 - Q1DI-Q2DI # : Earth leakage protector
 - Q2L : Thermal protector water piping
 - R1-R2 (A4P) : Resistance
 - R1L : Reactor
 - R1H (A10P) * : Humidity sensor
 - R1T (A10P) * : Ambient sensor
 - R2T * : Domestic hot water tank Thermistor
 - R2T * : External sensor (floor or ambient)
 - R3T : Liquid thermistor R410A
 - R4T : Returning water thermistor
 - R5T : Leaving water thermistor (heating)
 - R6T : Discharge thermistor
 - R7T : Liquid thermistor R134a
 - R8T : Fin thermistor
 - R9T : Leaving water thermistor (cooling)
 - R10T : Liquid thermistor (cooling)
 - R11T : Suction thermistor (cooling)
 - RC (A*P) : Receiver circuit
 - S1PH : High pressure switch
 - S1S # : benefit kWh rate power supply contact
 - S3S # : Input multiple setpoint 1
 - S4S # : Input multiple setpoint 2
 - SS1 (A1P) : Selector switch (Emergency)
 - SS1 (A2P) : Selector switch (master slave)
 - SS1 (A7P) * : Selector switch
 - TC (A*P) : Transmitter circuit
 - T1R-T2R (A*P) : Diode bridge
 - T3R : Power module
 - V1C-V8C : Ferrite core noise filter
 - X1M-X3M : Terminal strip
 - X*M (A*P) * : PCB terminal strip
 - X1Y-X4Y : Connector
 - Z1F-Z5F (A*P) : Noise filter

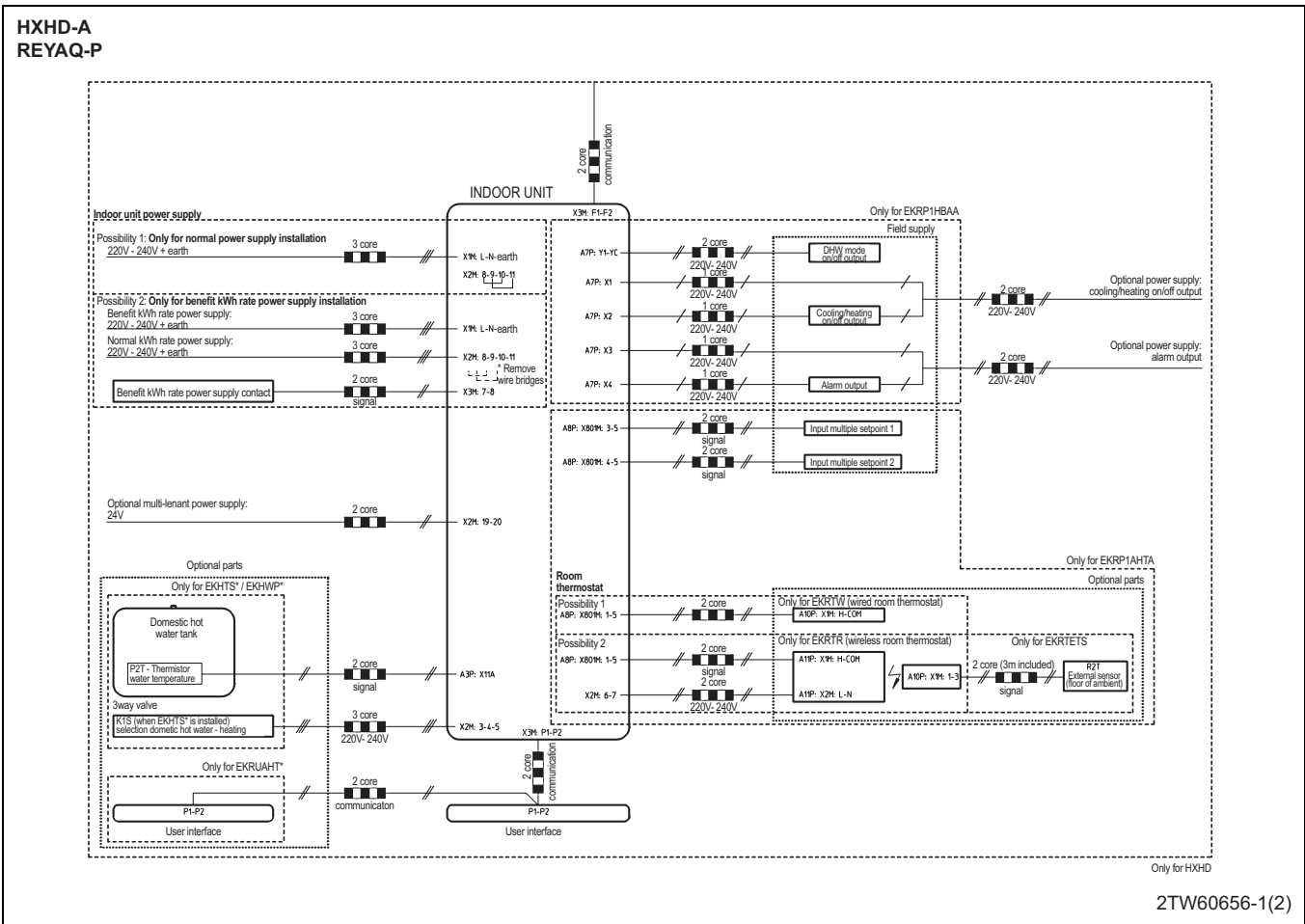
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8 External connection diagrams

8



8 External connection diagrams



9 Sound data

9 - 1 Sound Power Spectrum

9

HXHD-A

	Sound Power Lw per Octave band (dB)							Total (dBA)
	125	250	500	1000	2000	4000	8000	LwA
HXHD125A	39	50	51	45	45	43	41	55

NOTES

- Measured according to ISO 3744
- Reference acoustic pressure 0dB = 10e-6 μW/m²
- dBA = A-weighted sound power level

- Unit condition: Ta = 7/6°C - heating setpoint 55/65°C - maximum compressor frequency

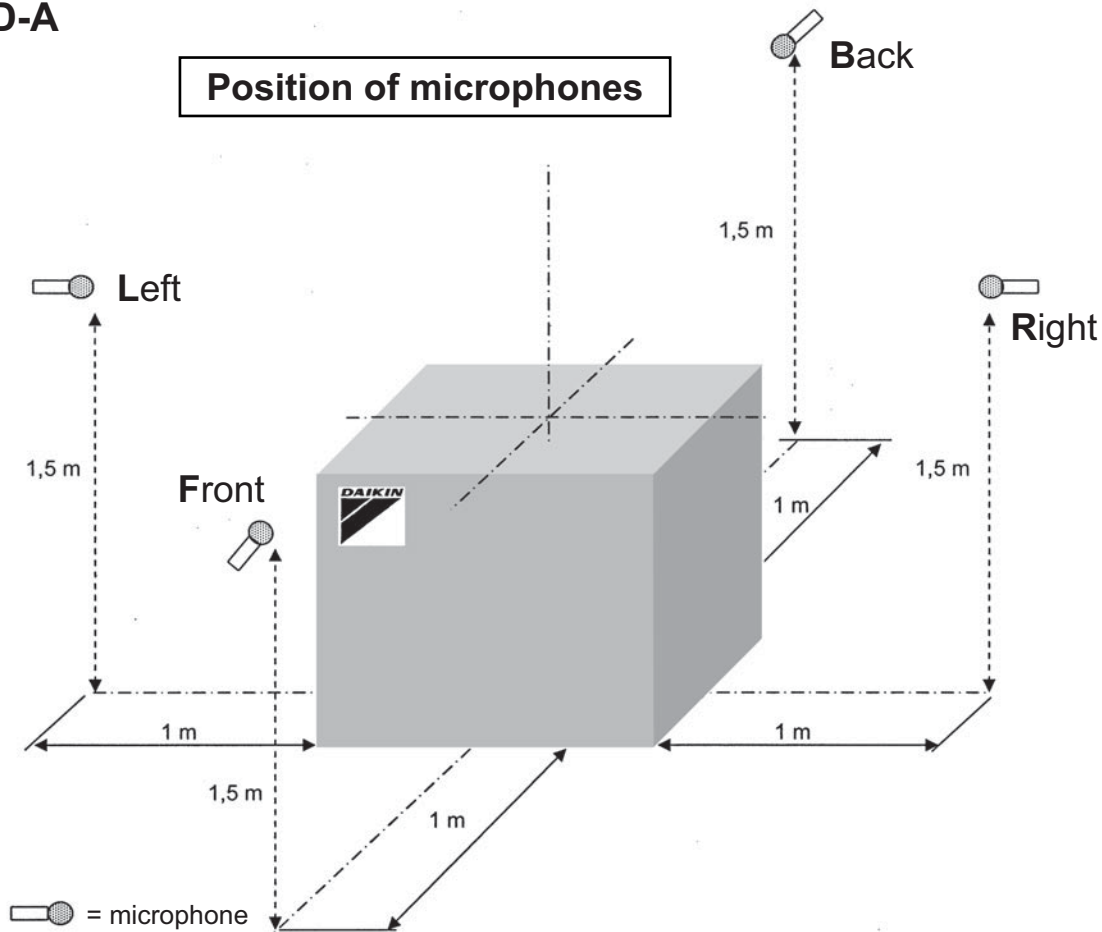
- If sound is measured under actual installation conditions, the measured value will be higher due to environmental noise and sound reflections. Choos the installation location carefully and do not install in a sound sensitive environment (e.g. living room, bedroom, ...).

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9 Sound data

9 - 2 Sound Pressure Spectrum

HXHD-A



Sound levels

Sound pressure [dBA]	
	HXHD 125
- EW/LW 55/65° C Front	42
Left / Right / Back (*)	41
- EW/LW 70/80° C Front	43
Left / Right / Back (*)	42
- EW/LW 55/65° C - Low sound mode n°1 Front-Right (*)	38

NOTES

- The above data is valid in free field condition, because it is measured in a semi-anechoic room. If the sound is measured under actual installation, the measured value will be higher due to environmental noise and sound reflections. Choose the installation location carefully and do not install the unit in a sound sensitive environment (e.g. living room, bedroom, ...).
- dBA = A-weighted sound pressure level (A scale according to IEC).
- EW = entering water temperature - LW = Leaving water temperature
- Reference acoustic pressure 0dB = 20µPa
- Sound pressure level of low sound mode n°2 and n°3 is lower than n°1
- (*) Does not occur simultaneously on all sides.

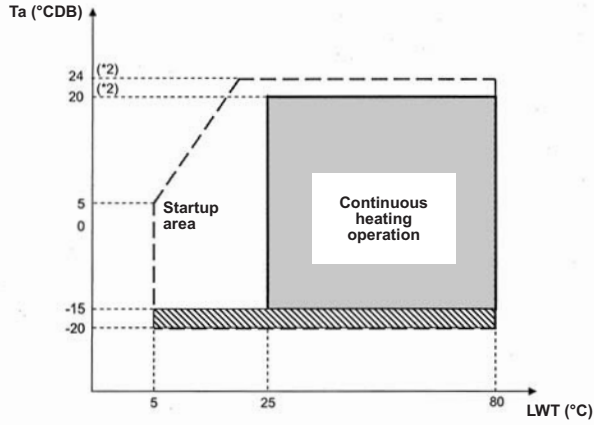
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10 Operation range

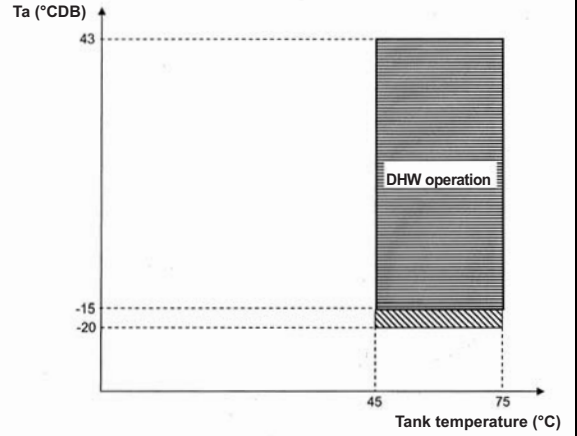
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HXHD-A
REYAQ-P

Space heating mode



Domestic hot water mode



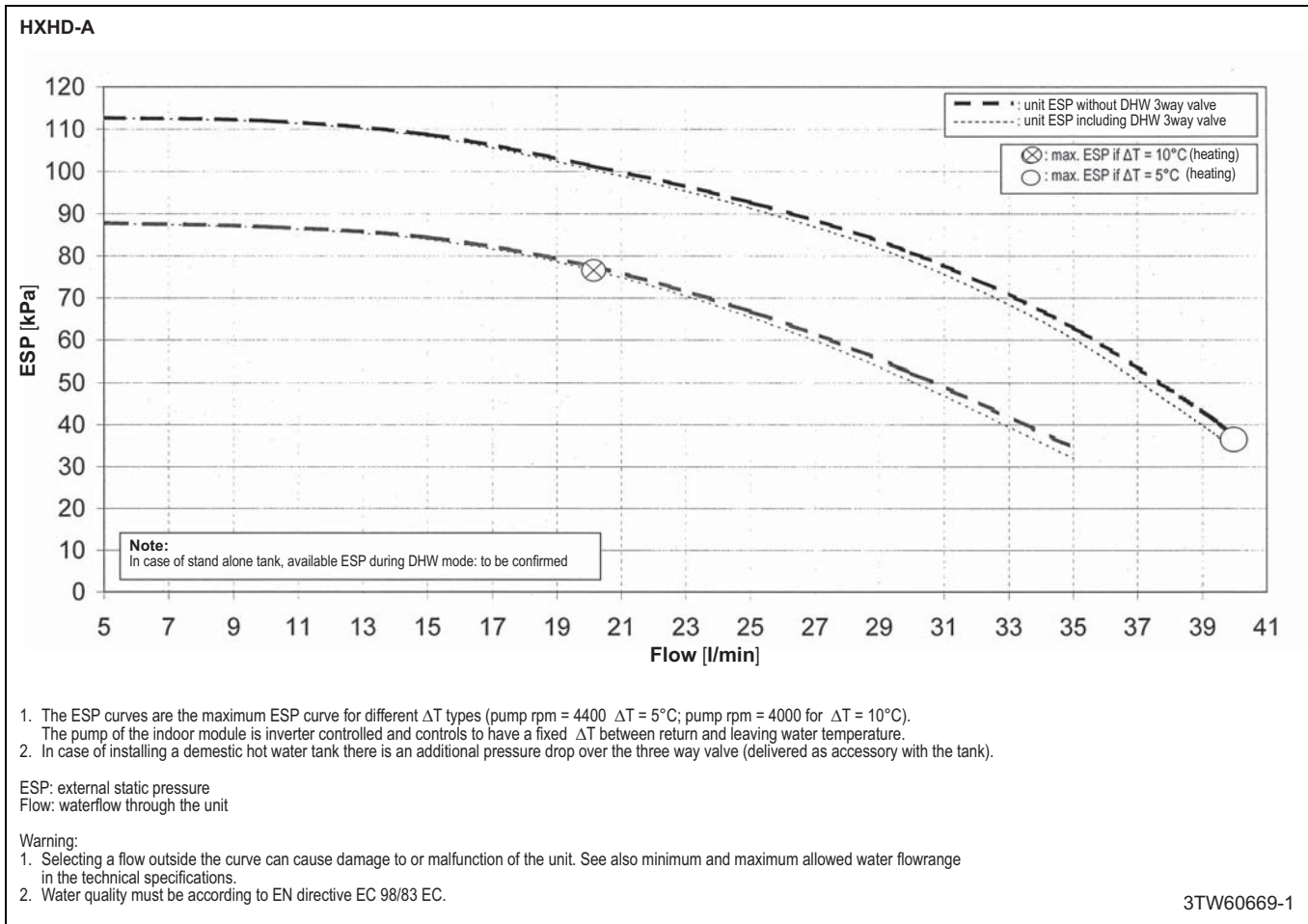
- : Continuous heating operation
- : Startup area
- : Operation possible, but no guarantee of capacity
- (*2) : Can be adjusted by field setting

- : Domestic hot water operation
- : Operation possible, but no guarantee of capacity

3TW60653-1A

11 Hydraulic performance

11 - 1 Static Pressure Drop Unit





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