Langstone Phase 2

Technical Note: Noise Conditions

20th March 2024

Introduction

This Technical Note considers the proposed plant equipment intended to serve Phase 2 at Langstone Park having regard to the provisions within Conditions 9, 18, 44 and 45 attached to the outline planning permission (Ref: APP/22/00172). These conditions refer to noise from plant, machinery and equipment (Condition 44); require details of acoustic performance (Condition 45); and require consideration of maximum noise levels from percussive piling or works with heavy machinery (Condition 9).

Noise Conditions

The conditions that are considered in this Technical Note are 9, 18, 44 and 45 and are reproduced below:

9 Percussive piling or works with heavy machinery (i.e. plant resulting in a noise level in excess of 69dbAmax – measured at the sensitive receptor) shall be avoided during the bird overwintering period (i.e. October to March inclusive) unless otherwise agreed in writing by the Local Planning Authority in consultation with Natural England. The sensitive receptor is the nearest point of the SPA or any SPA supporting habitat (e.g. high tide roosting site).

Reason: To avoid impacts on the SPA, SPA supporting habitat and Protected Species having due regard to policies CS11 and DM10 of the Havant Borough Local Plan, the Habitat Regulations and the National Planning Policy Framework.

18 The Reserved Matters applications in relation to any phase of development shall seek to ensure that the design of any units set close to nearby residential properties incorporate layout and designs that minimise potential impacts to residential amenities for example, in relation to loading bay positions, external equipment, openings, windows and lighting.
Reason: To ensure that impacts on residential amenity are minimised in accordance with policies CS16 and DM10 of Havant Borough Local Plan (Core Strategy) 2011 and the National Planning Policy Framework.

44 The external sound level emitted from plant, machinery or equipment in any phase of the development shall be equal or lower than the representative background sound level, with noise levels assessed (if necessary) in accordance with BS 4142:2014+A1:2019 at the nearest and/or most affected noise sensitive premises.
Reason: In the interests of the amenities of nearby residents having due regard to policy DM10 of the Havant Borough Local Plan (Core Strategy) 2011 and the National Planning Policy Framework.

45 No externally visible or audible plant, machinery or structures required for ventilation or filtration purposes shall be installed in each phase of the development until and unless details of the external appearance and acoustic and odour prevention performance of the same have been submitted to and approved in writing by the Local Planning Authority for that phase.
Any plant, machinery or structures required for ventilation or filtration purposes shall be provided and maintained in accordance with the approved details.
Reason: To protect the residential amenities of nearby residents having due regard to policy DM10 of the Havant Borough Local Plan (Core Strategy) 2011 and the National Planning Policy Framework.

Plant at Langstone Phase 2

The external plant and locations of the plant are shown on the annotated Masterplan in Figure 1. The Masterplan shows three plant locations and the equipment consists of:

- Daikon VRF Condenser – Model REYA8A+REYA12A (Position 1 and 3)
- Daikon VRF Condenser – Model REYA8A+REYA12A (Position 2)

The detailed specifications and for the condenser units listed above, which include pictures showing the external appearance are attached in the Daikin Document entitled 'VRV 5 heat recovery, Air Conditioning Technical Data, REYA-A'.

Daikon VRF Condenser

Daikin have provided manufacturers sound power data for the two selected types of condenser units and these are shown in Figure 2.

The nearest residential receptors are located to the east of the site and the noise prediction locations (NPL1 & NLP2) are shown in Figure 3.

Plant Noise Assessment

A BS4142:2014+2019 noise assessment has been undertaken for the proposed plant at the nearest residential properties.

A recent noise survey was undertaken by Spectrum on 11th and 12th November 2021 and details are provided in the report entitled 'Langstone Park, Havant – Masterplan Noise Assessment'. The baseline noise measurements shown in this report have been used to enable the BS4142 assessment.

The Spectrum noise measurements at monitoring location LTM2 are considered to provide representative noise levels at the nearest residential receptors, as shown on Figure 3. The report includes an analysis of the day and night background noise levels and these are summarised in Table 1.

Table 1: Summary of Backround Noise Analysis at LTM2

Period	Background Noise Levels, $L_{A90,T}$ dB			
	Range	Mean	Median	Mode
Day	38-59	47	49	50
Night	36-50	40	38	37&38

In relation to the 'background sound level' BS4142 states that '*it is important to ensure that values are reliable and suitably represent both the particular circumstances and periods of interest. For this purpose, the objective is not simply to ascertain a lowest background sound level, but rather to quantify what is typical during particular time periods.*'

On ths basis the median L_{A90} values are considered to provide represenative background noise levels for the BS4142 assessment and these values are similar to both the Mode and Mean values.

The noise levels from the three plant areas shown on Figure 1 have been predicted at the nearest receptor locations. The predictions at Position 3 take the noise barrier effect of the building structure into account whereas the predictions at Positions 1 and 2 assume a direct line of sight from the plant to the receptors. The predicted plant noise levels at the nearest residential properties, asssuming a worst case sceanio where all items of plant are operating simulaneously are as follows:

- NPL1 – $L_{Aeq,T}$ 37 dB
- NPL2 - $L_{Aeq,T}$ 34 dB

BS4142 indicates that an acoustic correction should be applied if the noise is tonal, impulsive or intermittent. The octave band sound power levels shown in Figure 2 provide a good indication that there is not a tonal element of the noise for either condenser unit. It should be

noted that the manufactuers are unable to provide 1/3rd octave band data that would have assisted in determining any tonal components. The condenser noise is not considered to be impulsive in character. However, it is assumed that the condensers will have an identifiable on/off condition and if readily distinctive against the residual acoustic environment a penalty of 3 dB can be applied. The Spectrum noise data indicates that the residual noise levels at LTM2 are $L_{Aeq,T}$ 54 dB in the daytime and $L_{Aeq,T}$ 46 dB at night. The residual acoustic environment is 17dB higher than the background in the daytime and 12 dB higher at night and would not therefore be readily distinctive against the residual acoustic environment and so no penalty has been applied to the BS4142 assessment. The BS4142 assessment is shown in Table 2.

Table 2: BS4142 Assessment at NLP1 and NPL2

BS4142 Assessment	Daytime	Night-time
	NPL1	
Specific Noise Level	$L_{Aeq,T}$ 37 dB	$L_{Aeq,T}$ 37 dB
Background Sound Level	$L_{A90,T}$ 49 dB	$L_{A90,T}$ 38 dB
Acoustic Correction	0 dB	0 dB
Rating Level	(37+0) = 37 dB	(37+0) = 37 dB
Excess of rating over background level	(37-49) = -12 dB	(37-38) = -1 dB
	NPL2	
Specific Noise Level	$L_{Aeq,T}$ 34 dB	$L_{Aeq,T}$ 34 dB
Background Sound Level	$L_{A90,T}$ 49 dB	$L_{A90,T}$ 38 dB
Acoustic Correction	0 dB	0 dB
Rating Level	(34+0) = 34 dB	(34+0) = 34 dB
Excess of rating over background level	(34-49) = -15 dB	(34-38) = -4 dB

Noise Conditions

Condition 44

The noise target provided by Condition 44 is that the plant noise level should be equal or lower than the representaive background sound levels when assessed using BS4142:2014+A1:2019. As shown in Table 2 the BS4142 assessment with the proposed plant provides an 'excess of rating over background level' of -12 to -15 dB in the daytime and -1 to -4 dB at night at the nearset residential properties, which meets the target provided by Condition 44.

Condition 45

Details of the proposed condenser units, the location and number of items of plant and the acoustic performance of the plant have been provided within Figures 1 and 2 of this Technical Note as required by Condition 45. The specification for the condensers including details of the external apperance of the condensers is provided in the Daikin Document entitled 'VRV 5 heat recovery, Air Conditioning Technical Data, REYA-A'.

Condition 9

It is confirmed that there will be no piling operation at Langstone Phase 2 and that standard construction plant will be used during the construction period to minimise the maximum noise levels when measured at the SPA or any SPA supporting habitat.

Figure 1 – Plan showing location and type of plant at Langstone Phase 2

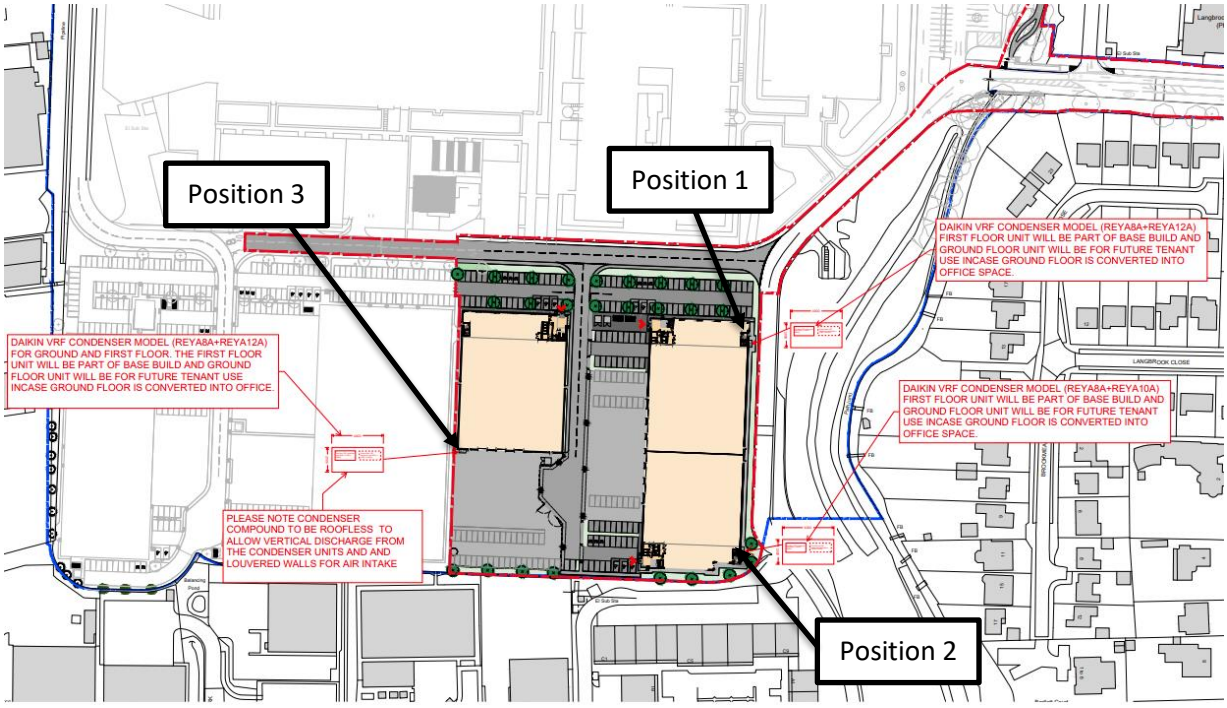
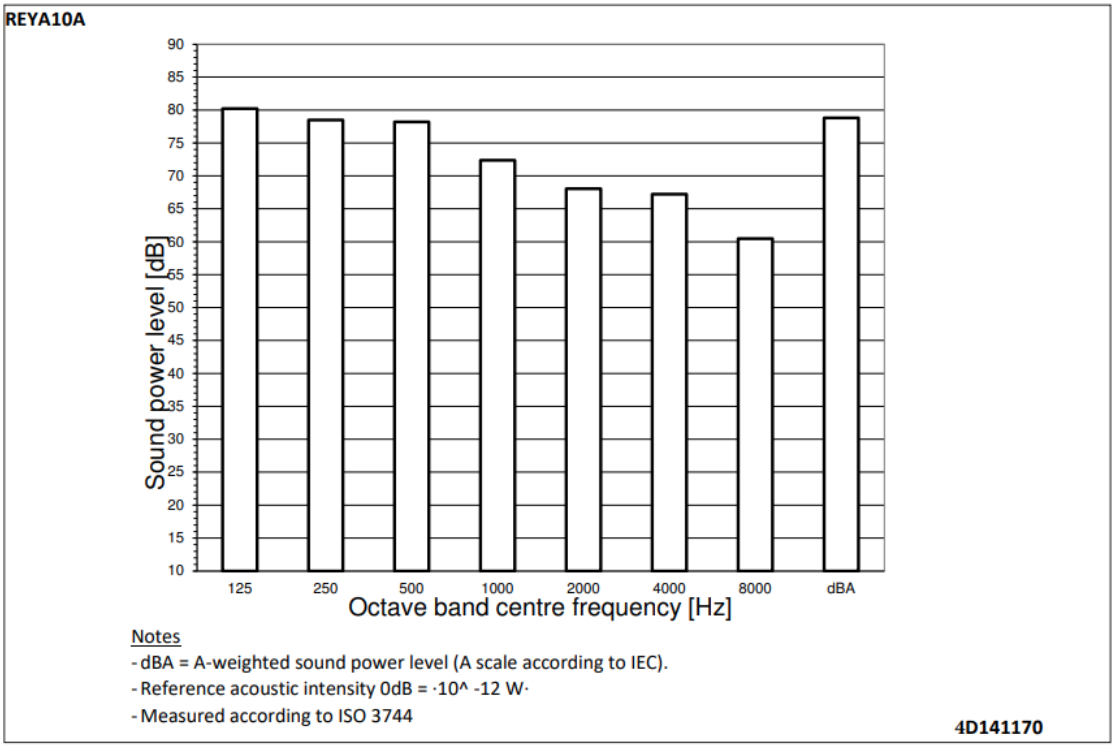


Figure 2 – Daikin Condeser Sound Power Levels



DAIKIN VRV 5 heat recovery • REYA-A

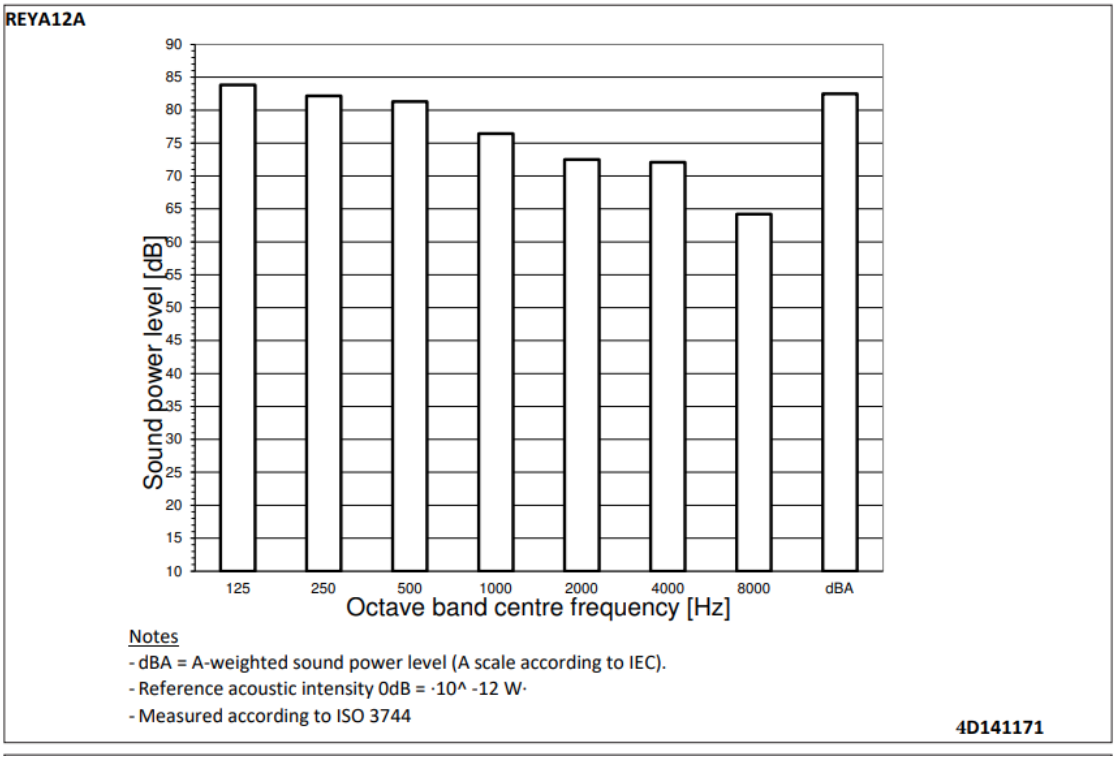
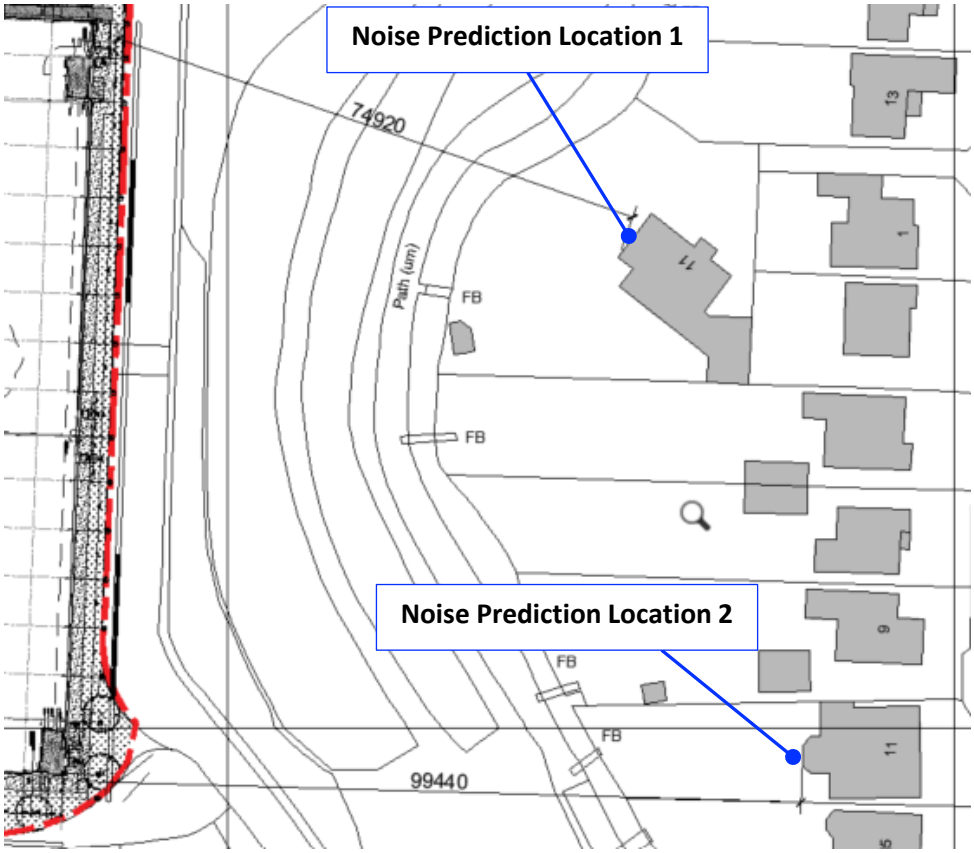


Figure 3 – Noise Prediction Locations



VRV 5 heat recovery Air Conditioning Technical Data

REYA-A

REYA8A7Y1B
REYA10A7Y1B
REYA12A7Y1B
REYA14A7Y1B
REYA16A7Y1B
REYA18A7Y1B
REYA20A7Y1B
REYA10A7Y1B.
REYA13A7Y1B
REYA16A7Y1B.
REYA18A7Y1B.
REYA20A7Y1B.
REYA22A7Y1B
REYA24A7Y1B
REYA26A7Y1B
REYA28A7Y1B
REMA5A7Y1B

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1 Features

1 - 1 REYA-A

The sustainability champion

- "Free" heating provided by transferring heat from areas requiring cooling to areas requiring heating
- Reduced CO2 equivalent thanks to the use of lower GWP R-32 refrigerant and lower refrigerant charge
- Top sustainability over the entire lifecycle, thanks to market leading real-life seasonal efficiency
- Tackle small room applications without any additional measures, thanks to Shîrudo technology
- Specially designed indoor units for R-32, ensuring low sound and maximum efficiency
- The perfect personal comfort for guests/tenants via simultaneous cooling and heating
- Incorporates VRV standards & technologies: Variable Refrigerant Temperature, continuous heating, VRV configurator, 7 segment display and full inverter compressors, 4-side heat exchanger, refrigerant cooled PCB, new DC fan motor

Variable refrigerant temperature

2 Specifications

2 - 1 Specifications

Technical Specifications				REYA8A	REYA10A	REYA12A	REYA14A
Recommended combination				4 x FXFA50A2VEB	4 x FXFA63A2VEB	6 x FXFA50A2VEB	1 x FXFA50A2VEB + 5 x FXFA63A2VEB
Recommended combination 2				4 x FXSA50A2VEB	4 x FXSA63A2VEB	6 x FXSA50A2VEB	1 x FXSA50A2VEB + 5 x FXSA63A2VEB
Recommended combination 3				4 x FXMA50A5VEB	4 x FXMA63A5VEB	6 x FXMA50A5VEB	1 x FXMA50A5VEB + 5 x FXMA63A5VEB
Cooling capacity	Prated,c		kW	22.4 (1)	28.0 (1)	33.5 (1)	40.0 (1)
Heating capacity	Nom.	6°CWB	kW	22.4 (2)	28.0 (2)	33.5 (2)	40.0 (2)
	Prated,h		kW	22.4 (2)	28.0 (2)	33.5 (2)	40.0 (2)
	Max.	6°CWB	kW	25.0 (2)	31.5 (2)	37.5 (2)	45.0 (2)
COP at nom. capacity	6°CWB		kW/kW	3.83 (2)	3.45 (2)	3.46 (2)	3.57 (2)
SCOP				4.11	4.33	4.49	4.28
SCOP recommended combination 2				4.10	4.34	4.56	4.33
SCOP recommended combination 3				4.15	4.40	4.56	4.33
SEER				7.35	7.14	7.21	7.73
SEER recommended combination 2				7.07	6.87	6.90	7.53
SEER recommended combination 3				7.49	7.15	7.41	7.78
ηs,c			%	290.8	282.6	285.3	306.1
ηs,c recommended combination 2			%	279.6	271.7	273.2	298.3
ηs,c recommended combination 3			%	296.5	283.1	293.4	308.1
ηs,h			%	161.5	170.2	176.4	168.3
ηs,h recommended combination 2			%	161.1	170.4	179.5	170.2
ηs,h recommended combination 3			%	163.2	172.9	179.5	170.2
Space cooling	A Condition	EERd		3.25	3.26	3.24	3.26
	(35°C - 27/19)	Pdc	kW	22.4	28.0	33.5	40.0
	B Condition	EERd		5.23	5.00	4.60	4.92
	(30°C - 27/19)	Pdc	kW	16.5	20.6	24.7	29.5
	C Condition	EERd		9.11	8.50	8.45	8.74
	(25°C - 27/19)	Pdc	kW	10.6	13.3	15.9	18.9
	D Condition	EERd		15.3	14.8	17.7	22.5
	(20°C - 27/19)	Pdc	kW	8.13	8.19	8.57	10.9
Space cooling recommended combination 2	A Condition	EERd		3.23		3.00	3.23
	(35°C - 27/19)	Pdc	kW	22.4	28.0	33.5	40.0
	B Condition	EERd		5.09	4.83	4.54	4.85
	(30°C - 27/19)	Pdc	kW	16.5	20.6	24.7	29.5
	C Condition	EERd		8.55	8.06	7.94	8.38
	(25°C - 27/19)	Pdc	kW	10.6	13.3	15.9	18.9
	D Condition	EERd		14.6	14.1	16.9	21.7
	(20°C - 27/19)	Pdc	kW	7.84	7.97	8.20	10.6
Space cooling recommended combination 3	A Condition	EERd		3.22	3.27	3.23	3.30
	(35°C - 27/19)	Pdc	kW	22.4	28.0	33.5	40.0
	B Condition	EERd		5.31	4.91	4.69	4.93
	(30°C - 27/19)	Pdc	kW	16.5	20.6	24.7	29.5
	C Condition	EERd		9.41	8.59	8.82	8.84
	(25°C - 27/19)	Pdc	kW	10.6	13.3	15.9	18.9
	D Condition	EERd		15.7	15.1	18.5	22.4
	(20°C - 27/19)	Pdc	kW	8.19	8.13	8.50	10.9
Space heating (Average climate)	TBivalent	COPd (declared COP)		2.80	2.28	2.38	2.57
		Pdh (declared heating cap)	kW	13.7	16.0	18.4	20.6
		Tbiv (bivalent temperature)	°C	-10			
	TOL	COPd (declared COP)		2.80	2.28	2.38	2.57
		Pdh (declared heating cap)	kW	13.7	16.0	18.4	20.6
		Tol (temperature operating limit)	°C	-10			
	A Condition	COPd (declared COP)		3.06	2.67	2.84	2.94
	(-7°C)	Pdh (declared heating cap)	kW	12.1	14.2	16.3	18.2
	B Condition	COPd (declared COP)		3.81	4.23	4.15	3.86
	(2°C)	Pdh (declared heating cap)	kW	7.38	8.62	9.89	11.1
	C Condition	COPd (declared COP)		5.27	5.70	6.32	6.31
	(7°C)	Pdh (declared heating cap)	kW	4.76	5.54	6.36	7.13
	D Condition	COPd (declared COP)		7.04	7.92	9.14	6.68
	(12°C)	Pdh (declared heating cap)	kW	4.51	5.46	5.52	5.15

2 Specifications

2 - 1 Specifications

Technical Specifications					REYA8A	REYA10A	REYA12A	REYA14A
Space heating (Average climate) recommended combination 2	A Condition (-7°C)	COPd (declared COP)			3.00	2.62	2.83	2.95
		Pdh (declared heating cap)		kW	12.1	14.2	16.3	18.2
	B Condition (2°C)	COPd (declared COP)			3.80	4.24	4.26	3.89
		Pdh (declared heating cap)		kW	7.45	8.61	9.89	11.1
	C Condition (7°C)	COPd (declared COP)			5.35	5.79	6.39	6.45
		Pdh (declared heating cap)		kW	4.76	5.54	6.36	7.14
	D Condition (12°C)	COPd (declared COP)			7.04	7.91	9.39	6.94
		Pdh (declared heating cap)		kW	4.71	5.60	5.80	5.33
	TBivalent	COPd (declared COP)			2.73	2.32	2.38	2.58
		Pdh (declared heating cap)		kW	13.7	16.0	18.4	20.6
		Tbiv (bivalent temperature)		°C	-10			
	TOL	COPd (declared COP)			2.73	2.32	2.38	2.58
		Pdh (declared heating cap)		kW	13.7	16.0	18.4	20.6
		Tol (temperature operating limit)		°C	-10			
Space heating (Average climate) recommended combination 3	A Condition (-7°C)	COPd (declared COP)			3.05	2.68	2.85	2.96
Space heating (Average climate) recommended combination 3	A Condition (-7°C)	Pdh (declared heating cap)		kW	12.1	14.2	16.3	18.2
	B Condition (2°C)	COPd (declared COP)			3.86	4.32	4.24	3.89
		Pdh (declared heating cap)		kW	7.39	8.62	9.89	11.1
	C Condition (7°C)	COPd (declared COP)			5.35	5.80	6.43	
		Pdh (declared heating cap)		kW	4.75	5.55	6.36	7.15
	D Condition (12°C)	COPd (declared COP)			7.14	8.02	9.37	6.84
		Pdh (declared heating cap)		kW	4.65	5.56	5.67	5.29
	TBivalent	COPd (declared COP)			2.78	2.29	2.41	2.58
		Pdh (declared heating cap)		kW	13.7	16.0	18.4	20.6
		Tbiv (bivalent temperature)		°C	-10			
	TOL	COPd (declared COP)			2.78	2.29	2.41	2.58
		Pdh (declared heating cap)		kW	13.7	16.0	18.4	20.6
		Tol (temperature operating limit)		°C	-10			
Capacity range				HP	8	10	12	14
PED	Category				Category III			
	Most critical part	Name			Liquid receiver			
		Ps*V		Bar*l	508			612
Maximum number of connectable indoor units					64 (3)			
Indoor index connection	Min.				100	125	150	175
	Max.				260	325	390	455
Dimensions	Unit	Height		mm	1,685			
		Width		mm	930			1,240
		Depth		mm	765			
	Packed unit	Height		mm	1,820			
		Width		mm	995			1,305
		Depth		mm	860			
Weight	Unit			kg	213			296
	Packed unit			kg	224			309
Packing	Material				Carton			
	Weight			kg	1.5			1.8
Packing 2	Material				Wood			
	Weight			kg	8.9			11.0
Packing 3	Material				Plastic			
	Weight			kg	0.6			0.7
Casing	Colour				Daikin White			
	Material				Painted galvanized steel plate			
Heat exchanger	Type				Cross fin coil			
Heat exchanger	Indoor side				Air			
	Outdoor side				Air			
	Air flow rate	Cooling	Rated	m^3/h	9,145	9,709	10,823	11,576
		Heating	Rated	m^3/h	9,145	9,709	10,823	13,124
Fan	Quantity				1			2
	External static pressure	Max.		Pa	78			
Fan motor	Quantity				1			2
	Type				DC motor			
	Output			W	550			750
Compressor	Quantity				1			
	Type				Hermetically sealed scroll compressor			
	Crankcase heater			W	33			
Operation range	Cooling	Min.		°CDB	-5			
		Max.		°CDB	46			
	Heating	Min.		°CWB	-20			
		Max.		°CWB	16			

2 Specifications

2 - 1 Specifications

2

Technical Specifications					REYA8A	REYA10A	REYA12A	REYA14A
Sound power level	Cooling	Nom.		dBA	78.3 (4)	78.8 (4)	82.5 (4)	78.7 (4)
	Heating	Nom.		dBA	79.4 (4)	80.7 (4)	83.3 (4)	82.9 (4)
Sound pressure level	Cooling	Nom.		dBA	56.3 (5)	58.0 (5)	60.8 (5)	58.1 (5)
	Heating			dBA	58.1 (5)	58.8 (5)	61.9 (5)	61.3 (5)
Refrigerant	Type				R-32			
	GWP				675.0			
	Charge			kg	9.00			10.6
	Charge			tCO2Eq	6.08			7.16
Refrigerant oil	Type				FW68DE			
Piping connections	Liquid	Type			Braze connection			
		OD		mm	9.52		12.70	
	Gas	Type			Braze connection			
		OD		mm	19.1		22.2	
	HP/LP gas	Type			Braze connection			
		OD		mm	15.90		19.10	
	Total piping length	System	Actual	m	1,000 (6)			
Defrost method					Reversed cycle			
Capacity control	Method				Inverter controlled			
Indication if the heater is equipped with a supplementary heater					No			
Supplementary heater	Back-up capacity	Heating	elbu	kW	0.0			
Power consumption in other than active mode	Crankcase heater mode	Cooling	PCK	kW	0.000			
Power consumption in other than active mode	Crankcase heater mode	Heating	PCK	kW	0.053			0.058
	Off mode	Cooling	POFF	kW	0.050			0.058
		Heating	POFF	kW	0.053			0.058
	Standby mode	Cooling	PSB	kW	0.050			0.058
		Heating	PSB	kW	0.053			0.058
	Thermo-stat-off mode	Cooling	PTO	kW	0.001			
		Heating	PTO	kW	0.053			0.058
Cooling	Cdc (Degradation cooling)				0.25			
Heating	Cdh (Degradation heating)				0.25			
Safety devices	Item	01			High pressure switch			
		02			Fan driver overload protector			
		03			Inverter overload protector			

Technical Specifications				REYA16A	REYA18A	REYA20A
Recommended combination				4 x FXFA63A2VEB + 2 x FXFA80A2VEB	3 x FXFA50A2VEB + 5 x FXFA63A2VEB	8 x FXFA63A2VEB
Recommended combination 2				4 x FXSA63A2VEB + 2 x FXSA80A2VEB	3 x FXSA50A2VEB + 5 x FXSA63A2VEB	8 x FXSA63A2VEB
Recommended combination 3				4 x FXMA63A5VEB + 2 x FXMA80A5VEB	3 x FXMA50A5VEB + 5 x FXMA63A5VEB	8 x FXMA63A5VEB
Cooling capacity	Prated,c		kW	45.0 (1)	50.4 (1)	56.0 (1)
Heating capacity	Nom.	6°CWB	kW	45.0 (2)	50.4 (2)	56.0 (2)
	Prated,h		kW	45.0 (2)	50.4 (2)	56.0 (2)
	Max.	6°CWB	kW	50.0 (2)	56.5 (2)	63.0 (2)
COP at nom. capacity	6°CWB		kW/kW	3.52 (2)	3.66 (2)	3.37 (2)
SCOP				4.26	4.39	4.14
SCOP recommended combination 2				4.33		4.11
SCOP recommended combination 3				4.32	4.39	4.14
SEER				7.10	7.09	6.63
SEER recommended combination 2				7.01	6.94	6.57
SEER recommended combination 3				7.15	7.11	6.64
ηs,c			%	281.0	280.6	262.2
ηs,c recommended combination 2			%	277.4	274.8	259.6
ηs,c recommended combination 3			%	283.1	281.3	262.5
ηs,h			%	167.5	172.5	162.7
ηs,h recommended combination 2			%	170.2		161.4
ηs,h recommended combination 3			%	169.6	172.7	162.7
Space cooling	A Condition	EERd		3.23	2.73	2.57
	(35°C - 27/19)	Pdc	kW	45.0	50.4	56.0
	B Condition	EERd		4.58	4.47	4.42
	(30°C - 27/19)	Pdc	kW	33.2	37.1	41.3
	C Condition	EERd		8.25	8.15	7.70
	(25°C - 27/19)	Pdc	kW	21.3	23.9	26.5
	D Condition	EERd		16.7	20.7	15.8
	(20°C - 27/19)	Pdc	kW	11.1	12.0	11.6

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Technical Specifications				REYA16A	REYA18A	REYA20A
Space cooling recommended combination 2	A Condition	EERd		3.06	2.64	2.52
	(35°C - 27/19)	Pdc	kW	45.0	50.4	56.0
	B Condition	EERd		4.64	4.43	4.41
	(30°C - 27/19)	Pdc	kW	33.2	37.1	41.3
	C Condition	EERd		8.11	7.87	7.41
	(25°C - 27/19)	Pdc	kW	21.3	23.9	26.5
	D Condition	EERd		16.5	20.0	16.6
	(20°C - 27/19)	Pdc	kW	10.8	11.6	11.9
Space cooling recommended combination 3	A Condition	EERd		3.04	2.66	2.50
	(35°C - 27/19)	Pdc	kW	45.0	50.4	56.0
	B Condition	EERd		4.64	4.49	4.41
	(30°C - 27/19)	Pdc	kW	33.2	37.1	41.3
	C Condition	EERd		8.50	8.22	7.71
	(25°C - 27/19)	Pdc	kW	21.3	23.9	26.5
	D Condition	EERd		16.7	20.9	16.4
	(20°C - 27/19)	Pdc	kW	10.7	11.9	11.8
Space heating (Average climate)	TBivalent	COPd (declared COP)		2.53	2.36	2.23
		Pdh (declared heating cap)	kW	23.2	27.9	31.0
		Tbiv (bivalent temperature)	°C		-10	
	TOL	COPd (declared COP)		2.53	2.36	2.23
		Pdh (declared heating cap)	kW	23.2	27.9	31.0
		Tol (temperature operating limit)	°C		-10	
	A Condition	COPd (declared COP)		2.87	2.70	2.60
	(-7°C)	Pdh (declared heating cap)	kW	20.5	24.7	27.4
	B Condition	COPd (declared COP)		3.93	4.19	3.84
	(2°C)	Pdh (declared heating cap)	kW	12.5	15.0	16.7
	C Condition	COPd (declared COP)		6.21	6.22	5.89
	(7°C)	Pdh (declared heating cap)	kW	8.03	9.66	10.7
	D Condition	COPd (declared COP)		6.04	6.85	7.70
	(12°C)	Pdh (declared heating cap)	kW	5.07	6.24	7.34
Space heating (Average climate) recommended combination 2	A Condition	COPd (declared COP)		2.89	2.62	2.54
	(-7°C)	Pdh (declared heating cap)	kW	20.5	24.7	27.5
	B Condition	COPd (declared COP)		3.96	4.07	3.79
	(2°C)	Pdh (declared heating cap)	kW	12.5	15.0	16.7
	C Condition	COPd (declared COP)		6.41	6.19	5.98
	(7°C)	Pdh (declared heating cap)	kW	8.04	9.65	10.7
	D Condition	COPd (declared COP)		6.47	8.15	7.81
	(12°C)	Pdh (declared heating cap)	kW	5.36	7.68	7.69
	TBivalent	COPd (declared COP)		2.54	2.28	2.18
		Pdh (declared heating cap)	kW	23.2	27.9	31.0
		Tbiv (bivalent temperature)	°C		-10	
	TOL	COPd (declared COP)		2.54	2.28	2.18
		Pdh (declared heating cap)	kW	23.2	27.9	31.0
		Tol (temperature operating limit)	°C		-10	
Space heating (Average climate) recommended combination 3	A Condition (-7°C)	COPd (declared COP)		2.88	2.73	2.60
Space heating (Average climate) recommended combination 3	A Condition (-7°C)	Pdh (declared heating cap)	kW	20.5	24.8	27.5
	B Condition	COPd (declared COP)		3.95	4.25	3.88
	(2°C)	Pdh (declared heating cap)	kW	12.5	15.0	16.7
	C Condition	COPd (declared COP)		6.34	6.39	6.07
	(7°C)	Pdh (declared heating cap)	kW	8.03	9.66	10.7
	D Condition	COPd (declared COP)		6.44	5.48	6.15
	(12°C)	Pdh (declared heating cap)	kW	5.32	5.80	5.91
	TBivalent	COPd (declared COP)		2.54	2.39	2.24
		Pdh (declared heating cap)	kW	23.2	28.0	31.1
		Tbiv (bivalent temperature)	°C		-10	
	TOL	COPd (declared COP)		2.54	2.39	2.24
		Pdh (declared heating cap)	kW	23.2	28.0	31.1
		Tol (temperature operating limit)	°C		-10	
Capacity range			HP	16	18	20
PED	Category				Category III	
	Most critical part	Name			Liquid receiver	
		Ps*V	Bar*l	612	764	
Maximum number of connectable indoor units					64 (3)	
Indoor index connection	Min.			200	225	250
	Max.			520	585	650

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Technical Specifications					REYA16A	REYA18A	REYA20A
Dimensions	Unit	Height		mm	1,685		
		Width		mm	1,240		
		Depth		mm	765		
	Packed unit	Height		mm	1,820		
		Width		mm	1,305		
		Depth		mm	860		
Weight	Unit			kg	296	319	
	Packed unit			kg	309	332	
Packing	Material				Carton		
	Weight			kg	1.8		
Packing 2	Material				Wood		
	Weight			kg	11.0		
Packing 3	Material				Plastic		
	Weight			kg	0.7		
Casing	Colour				Daikin White		
	Material				Painted galvanized steel plate		
Heat exchanger	Type				Cross fin coil		
Heat exchanger	Indoor side				Air		
	Outdoor side				Air		
	Air flow rate	Cooling	Rated	m^3/h	14,315	12,351	14,893
		Heating	Rated	m^3/h	14,315	12,351	14,893
Fan	Quantity				2		
	External static pressure	Max.		Pa	78		
Fan motor	Quantity				2		
	Type				DC motor		
	Output			W	750		
Compressor	Quantity				1		
	Type				Hermetically sealed scroll compressor		
	Crankcase heater			W	33		
Operation range	Cooling	Min.		°CDB	-5		
		Max.		°CDB	46		
	Heating	Min.		°CWB	-20		
		Max.		°CWB	16		
Sound power level	Cooling	Nom.		dBA	83.7 (4)	83.4 (4)	87.9 (4)
	Heating	Nom.		dBA	86.3 (4)	85.1 (4)	89.6 (4)
Sound pressure level	Cooling	Nom.		dBA	61.4 (5)	63.0 (5)	67.0 (5)
	Heating			dBA	64.5 (5)	64.0 (5)	68.0 (5)
Refrigerant	Type				R-32		
	GWP				675.0		
	Charge			kg	10.6		
	Charge			tCO2Eq	7.16		
Refrigerant oil	Type				FW68DE		
Piping connections	Liquid	Type			Braze connection		
		OD		mm	12.70		
	Gas	Type			Braze connection		
		OD		mm	22.2		28.6
	HP/LP gas	Type			Braze connection		
		OD		mm	19.10		22.20
	Total piping length	System	Actual	m	1,000 (6)		
Defrost method					Reversed cycle		
Capacity control	Method				Inverter controlled		
Indication if the heater is equipped with a supplementary heater					No		
Supplementary heater	Back-up capacity	Heating	elbu	kW	0.0		
Power consumption in other than active mode	Crankcase heater mode	Cooling	PCK	kW	0.000		
Power consumption in other than active mode	Crankcase heater mode	Heating	PCK	kW	0.058		
	Off mode	Cooling	POFF	kW	0.058		
		Heating	POFF	kW	0.058		
	Standby mode	Cooling	PSB	kW	0.058		
		Heating	PSB	kW	0.058		
	Thermo-stat-off mode	Cooling	PTO	kW	0.001		
		Heating	PTO	kW	0.058		
Cooling	Cdc (Degradation cooling)				0.25		
Heating	Cdh (Degradation heating)				0.25		

2 Specifications

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Technical Specifications			REYA16A	REYA18A	REYA20A
Safety devices	Item	01	High pressure switch		
		02	Fan driver overload protector		
		03	Inverter overload protector		

Standard accessories: Installation and operation manual;Quantity: 1;

Standard accessories: Connection pipes;Quantity: 1;

Electrical Specifications					REYA8A	REYA10A	REYA12A	REYA14A
Power supply	Name				Y1			
	Phase				3N~			
	Frequency			Hz	50			
	Voltage			V	380-415			
Power supply intake					Both indoor and outdoor unit			
Voltage range	Min.			%	-10			
	Max.			%	10			
Current - 50Hz	Nominal running current (RLA)	Combination A	Cooling		-			
		Combination B	Cooling		-			
		Cooling		A	10.5 (8)	13.0 (8)	15.6 (8)	18.5 (8)
	Starting current (MSC) - remark				See note 9			
	Zmax	List			No requirements			
	Minimum Ssc value			kVa	2,789 (9)	3,810 (9)	4,157 (9)	4,676 (9)
	Minimum circuit amps (MCA)			A	16.1 (10)	22.0 (10)	24.0 (10)	27.0 (10)
	Maximum fuse amps (MFA)			A	20 (11)	25 (11)	32 (11)	
Power Performance	Power factor	Combination B	35°C ISO - Full load		-			
			46°C ISO - Full load		-			
Wiring connections - 50Hz	For power supply	Quantity			5G			
	For connection with indoor	Quantity			2			
		Remark			F1,F2			
Compressor	Crankcase heater			W	33			

Electrical Specifications					REYA16A	REYA18A	REYA20A
Power supply	Name				Y1		
	Phase				3N~		
	Frequency			Hz	50		
	Voltage			V	380-415		
Power supply intake					Both indoor and outdoor unit		
Voltage range	Min.			%	-10		
	Max.			%	10		
Current - 50Hz	Nominal running current (RLA)	Combination A	Cooling		-		
		Combination B	Cooling		-		
		Cooling		A	21.0 (8)	27.8 (8)	32.8 (8)
	Starting current (MSC) - remark				See note 9		
	Zmax	List			No requirements		
	Minimum Ssc value			kVa	5,369 (9)	6,062 (9)	7,274 (9)
	Minimum circuit amps (MCA)			A	31.0 (10)	35.0 (10)	42.0 (10)
	Maximum fuse amps (MFA)			A	40 (11)		50 (11)
Power Performance	Power factor	Combination B	35°C ISO - Full load		-		
			46°C ISO - Full load		-		
Wiring connections - 50Hz	For power supply	Quantity			5G		
	For connection with indoor	Quantity			2		
		Remark			F1,F2		
Compressor	Crankcase heater			W	33		

(1)Cooling: indoor temp. 27°CDB, 19°CWB; outdoor temp. 35°CDB; equivalent piping length: 7.5m; level difference: 0m |
(2)Heating: indoor temp. 20°CDB; outdoor temp. 7°CDB, 6°CWB; equivalent refrigerant piping: 7.5m; level difference: 0m |
(3)The actual number of units depends on the connection ratio (CR) and the restrictions for the system. |
(4)Air Flow Rate (AFR) of multi outdoor systems is sum of AFR of the individual systems it consists of |
(5)Sound power level is an absolute value that a sound source generates. |
(6)Sound pressure level is a relative value, depending on the distance and acoustic environment. For more details, please refer to the sound level drawings. |
(7)Refer to refrigerant pipe selection or installation manual |
(8)RLA is based on following conditions: indoor temp. 27°CDB, 19°CWB; outdoor temp. 35°CDB |
(9)MSC means the maximum current during start up of the compressor. This unit uses only inverter compressors. Starting current is always ≤ max. running current. |
(10)In accordance with EN/IEC 61000-3-12, it may be necessary to consult the distribution network operator to ensure that the equipment is connected only to a supply wih Ssc ≥ minimum Ssc value |
(11)MCA must be used to select the correct field wiring size. The MCA can be regarded as the maximum running current. |
(12)MFA is used to select the circuit breaker and the ground fault circuit interrupter (earth leakage circuit breaker). |
(13)Maximum allowable voltage range variation between phases is 2%. |
(14)Voltage range: units are suitable for use on electrical systems where voltage supplied to unit terminal is not below or above listed range limits. |
(15)Sound values are measured in a semi-anechoic room. |
(16)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 current > 16A and ≤ 75A per phase |

2 Specifications

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(17)Ssc: Short-circuit power |
(18)For detailed contents of standard accessories, see installation/operation manual |
(19)Multi combination (10~28HP) data is corresponding with the standard multi combination

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Technical specifications System					REYA10A	REYA13A	REYA16A	REYA18A	REYA20A
System	Outdoor unit module 1				REMA5A		REYA8A		
	Outdoor unit module 2				REMA5A	REYA8A		REYA10A	REYA12A
Recommended combination					4 x FXFA63A2VEB	3 x FXFA50A2VEB + 3 x FXFA63A2VEB	4 x FXFA63A2VEB + 2 x FXFA80A2VEB	4 x FXFA50A2VEB + 4 x FXFA63A2VEB	10 x FXFA50A2VEB
Recommended combination 2					4 x FXSA63A2VEB	3 x FXSA50A2VEB + 3 x FXSA63A2VEB	4 x FXSA63A2VEB + 2 x FXSA80A2VEB	4 x FXSA50A2VEB + 4 x FXSA63A2VEB	10 x FXSA50A2VEB
Recommended combination 3					4 x FXMA63A5VEB	3 x FXMA50A5VEB + 3 x FXMA50A5VEB	4 x FXMA63A5VEB + 2 x FXMA80A5VEB	4 x FXMA50A5VEB + 4 x FXMA63A5VEB	10 x FXMA50A5VEB
Continuous heating					Yes				
Cooling capacity	Prated,c			kW	28.0 (1)	36.4 (1)	44.8 (1)	50.4 (1)	55.9 (1)
Heating capacity	Nom.	6°CWB		kW	28.0 (2)	36.4 (2)	44.8 (2)	50.4 (2)	55.9 (2)
	Prated,h			kW	28.0 (2)	36.4 (2)	44.8 (2)	50.4 (2)	55.9 (2)
	Max.	6°CWB		kW	32.0 (2)	41.0 (2)	50.0 (2)	56.5 (2)	62.5 (2)
COP at nom. capacity	6°CWB			kW/kW	3.66 (2)	3.76 (2)	3.72 (2)	3.61 (2)	3.60 (2)
SCOP					4.09	4.11	4.35	4.34	4.38
SCOP recommended combination 2					4.14	4.19	4.38	4.40	4.48
SCOP recommended combination 3					4.16	4.22	4.37	4.46	4.50
SEER					7.62	7.49	7.40	7.26	7.27
SEER recommended combination 2					7.30	7.15	6.93	6.95	6.94
SEER recommended combination 3					7.61	7.57	7.31	7.30	7.48
ηs,c				%	301.9	296.5	293.0	287.5	287.6
ηs,c recommended combination 2				%	289.0	282.9	274.2	275.2	274.8
ηs,c recommended combination 3				%	301.2	299.8	289.4	288.9	296.1
ηs,h				%	160.6	161.5	170.9	170.5	172.2
ηs,h recommended combination 2				%	162.5	164.8	172.2	173.2	176.4
ηs,h recommended combination 3				%	163.4	165.8	171.8	175.4	177.0
Space cooling	A Condition	EERd			3.81	3.46	3.25	3.26	3.24
	(35°C - 27/19)	Pdc		kW	28.0	36.4	44.8	50.4	55.9
	B Condition	EERd			7.73	6.08	5.41	5.18	4.89
	(30°C - 27/19)	Pdc		kW	20.6	26.8	33.0	37.1	41.2
	C Condition	EERd			8.99	9.04	9.11	8.76	8.70
	(25°C - 27/19)	Pdc		kW	13.5	18.0	21.2	23.9	26.5
	D Condition	EERd			11.5	13.9	15.0		16.4
	(20°C - 27/19)	Pdc		kW	14.1	15.5	15.9	16.3	16.7
Space cooling recommended combination 2	A Condition	EERd			3.67	3.36	3.14	3.23	3.09
	(35°C - 27/19)	Pdc		kW	28.0	36.4	44.8	50.4	55.9
	B Condition	EERd			7.32	5.78	5.00	4.94	4.75
	(30°C - 27/19)	Pdc		kW	20.6	26.8	33.0	37.1	41.2
	C Condition (25°C - 27/19)	EERd			8.54	8.53	8.36	8.27	8.17
Space cooling recommended combination 2	C Condition (25°C - 27/19)	Pdc		kW	13.3	17.8	21.2	23.9	26.5
	D Condition	EERd			11.1	13.3	14.3		15.7
	(20°C - 27/19)	Pdc		kW	13.7	15.0	15.5	15.8	16.0
Space cooling recommended combination 3	A Condition	EERd			3.71	3.41	3.18	3.25	3.27
	(35°C - 27/19)	Pdc		kW	28.0	36.4	44.8	50.4	55.9
	B Condition	EERd			7.71	6.12	5.24	5.08	5.04
	(30°C - 27/19)	Pdc		kW	20.6	26.8	33.0	37.1	41.2
	C Condition	EERd			8.99	9.22	9.04	8.94	9.03
	(25°C - 27/19)	Pdc		kW	13.5	18.1	21.2	23.9	26.5
	D Condition	EERd			11.6	14.2	15.2	15.4	16.9
	(20°C - 27/19)	Pdc		kW	14.1	15.5	16.0	16.3	16.7
Space heating (Average climate)	TBivalent	COPd (declared COP)			2.69	2.74	2.87	2.51	2.55
		Pdh (declared heating cap)		kW	16.0	21.7	23.2	27.9	31.0
		Tbiv (bivalent temperature)		°C	-10				
	TOL	COPd (declared COP)			2.69	2.74	2.87	2.51	2.55
		Pdh (declared heating cap)		kW	16.0	21.7	23.2	27.9	31.0
		Tol (temperature operating limit)		°C	-10				
	A Condition	COPd (declared COP)			3.00	3.03	3.18	2.87	2.95
	(-7°C)	Pdh (declared heating cap)		kW	14.2	19.2	20.5	24.7	27.4
	B Condition	COPd (declared COP)			4.37	4.02	4.17	4.20	4.09
	(2°C)	Pdh (declared heating cap)		kW	8.60	11.7	12.5	15.0	16.7
	C Condition	COPd (declared COP)			4.70	5.11	5.45	5.60	5.90
	(7°C)	Pdh (declared heating cap)		kW	7.17	8.40	8.05	9.66	10.7
	D Condition	COPd (declared COP)			5.57	6.47	6.93	7.49	8.06
	(12°C)	Pdh (declared heating cap)		kW	8.74	8.93	9.04	9.97	10.0

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Technical specifications System					REYA10A	REYA13A	REYA16A	REYA18A	REYA20A
Space heating (Average climate) recommended combination 2	A Condition (-7°C)	COPd (declared COP)			3.02	3.05	3.18	2.86	2.96
		Pdh (declared heating cap)		kW	14.2	19.2	20.5	24.7	27.4
	B Condition (2°C)	COPd (declared COP)			4.43	4.12	4.18	4.27	4.21
		Pdh (declared heating cap)		kW	8.64	11.7	12.5	15.0	16.7
	C Condition (7°C)	COPd (declared COP)			4.76	5.24	5.57	5.78	6.07
		Pdh (declared heating cap)		kW	7.31	8.54	8.08	9.65	10.7
	D Condition (12°C)	COPd (declared COP)			5.62	6.58	6.97	7.59	8.30
		Pdh (declared heating cap)		kW	8.87	9.17	9.24	10.3	10.5
	TBivalent	COPd (declared COP)			2.70	2.26	2.38	2.27	2.34
		Pdh (declared heating cap)		kW	16.0	21.7	23.2	27.9	31.0
		Tbiv (bivalent temperature)		°C	-10				
	TOL	COPd (declared COP)			2.70	2.26	2.38	2.27	2.34
Space heating (Average climate) recommended combination 2	TOL	Pdh (declared heating cap)		kW	16.0	21.7	23.2	27.9	31.0
		Tol (temperature operating limit)		°C	-10				
Space heating (Average climate) recommended combination 3	A Condition (-7°C)	COPd (declared COP)			3.03	3.07	3.17	2.91	2.99
		Pdh (declared heating cap)		kW	14.2	19.2	20.5	24.7	27.5
	B Condition (2°C)	COPd (declared COP)			4.48	4.14	4.19	4.35	4.22
		Pdh (declared heating cap)		kW	8.61	11.7	12.5	15.0	16.7
	C Condition (7°C)	COPd (declared COP)			4.76	5.25	5.52	5.77	6.07
		Pdh (declared heating cap)		kW	7.28	8.49	8.04	9.67	10.7
	D Condition (12°C)	COPd (declared COP)			5.62	6.64	6.94	7.69	8.32
		Pdh (declared heating cap)		kW	8.85	9.13	9.17	10.2	10.3
	TBivalent	COPd (declared COP)			2.71	2.78	2.86	2.53	2.59
		Pdh (declared heating cap)		kW	16.0	21.7	23.2	27.9	31.0
		Tbiv (bivalent temperature)		°C	-10				
	TOL	COPd (declared COP)			2.71	2.78	2.86	2.53	2.59
		Pdh (declared heating cap)		kW	16.0	21.7	23.2	27.9	31.0
		Tol (temperature operating limit)		°C	-10				
Capacity range				HP	10	13	16	18	20
PED	Category				Category III				
Maximum number of connectable indoor units					64 (3)				
Indoor index connection	Min.				125	163	200	225	250
	Max.				325	423	520	585	650
Heat exchanger	Indoor side				Air				
	Outdoor side				Air				
	Air flow rate	Cooling	Rated	m^3/h	18,290 (11)			18,854 (11)	19,968 (11)
		Heating	Rated	m^3/h	18,290 (11)			18,854 (11)	19,968 (11)
Sound power level	Cooling	Nom.		dBA	81.3 (4)			81.6 (4)	83.9 (4)
	Heating	Nom.		dBA	82.4 (4)			83.1 (4)	84.8 (4)
Sound pressure level	Cooling	Nom.		dBA	59.3 (5)			60.2 (5)	62.1 (5)
	Heating			dBA	61.1 (5)			61.5 (5)	63.4 (5)
Refrigerant	Type				R-32				
	GWP				675.0				
Refrigerant oil	Type				FW68DE				
Piping connections	Liquid	Type			Braze connection				
		OD		mm	9.52	12.70			
	Gas	Type			Braze connection				
		OD		mm	19.1	22.2			28.6
	HP/LP gas	Type			Braze connection				
Piping connections	HP/LP gas	OD		mm	15.90	19.10			22.20
	Total piping length	System	Actual	m	500 (6)				
Defrost method					Reversed cycle				
Capacity control	Method				Inverter controlled				
Indication if the heater is equipped with a supplementary heater					No				
Supplementary heater	Back-up capacity	Heating	elbu	kW	0.0				
Power consumption in other than active mode	Crankcase heater mode	Cooling	PCK	kW	0.000				
		Heating	PCK	kW	0.106				
	Off mode	Cooling	POFF	kW	0.100				
		Heating	POFF	kW	0.106				
	Standby mode	Cooling	PSB	kW	0.100				
		Heating	PSB	kW	0.106				
	Thermo-stat-off mode	Cooling	PTO	kW	0.002				
		Heating	PTO	kW	0.106				
Cooling	Cdc (Degradation cooling)				0.25				
Heating	Cdh (Degradation heating)				0.25				

2 Specifications

2 - 1 Specifications

Technical specifications System				REYA22A	REYA24A	REYA26A	REYA28A
System	Outdoor unit module 1			REYA10A	REYA8A	REYA12A	
	Outdoor unit module 2			REYA12A	REYA16A	REYA14A	REYA16A
Recommended combination				6 x FXFA50A2VEB + 4 x FXFA63A2VEB	4 x FXFA50A2VEB + 4 x FXFA63A2VEB + 2 x FXFA80A2VEB	7 x FXFA50A2VEB + 5 x FXFA63A2VEB	6 x FXFA50A2VEB + 4 x FXFA63A2VEB + 2 x FXFA80A2VEB
Recommended combination 2				6 x FXSA50A2VEB + 4 x FXSA63A2VEB	4 x FXSA50A2VEB + 4 x FXSA63A2VEB + 2 x FXSA80A2VEB	7 x FXSA50A2VEB + 5 x FXSA63A2VEB	6 x FXSA50A2VEB + 4 x FXSA63A2VEB + 2 x FXSA80A2VEB
Recommended combination 3				6 x FXMA50A5VEB + 4 x FXMA63A5VEB	4 x FXMA50A5VEB + 4 x FXMA63A5VEB + 2 x FXMA80A5VEB	7 x FXMA50A5VEB + 5 x FXMA63A5VEB	6 x FXMA50A5VEB + 4 x FXMA63A5VEB + 2 x FXMA80A5VEB
Continuous heating				Yes			
Cooling capacity	Prated,c		kW	61.5 (1)	67.4 (1)	73.5 (1)	78.5 (1)
Heating capacity	Nom.	6°CWB	kW	61.5 (2)	67.4 (2)	73.5 (2)	78.5 (2)
	Prated,h		kW	61.5 (2)	67.4 (2)	73.5 (2)	78.5 (2)
	Max.	6°CWB	kW	69.0 (2)	75.0 (2)	82.5 (2)	87.5 (2)
COP at nom. capacity	6°CWB		kW/kW	3.46 (2)	3.62 (2)	3.52 (2)	3.49 (2)
SCOP				4.41	4.20	4.38	4.36
SCOP recommended combination 2				4.45	4.24	4.44	4.43
SCOP recommended combination 3				4.48	4.25	4.44	4.43
SEER				7.17	7.16	7.48	7.15
SEER recommended combination 2				6.88	7.01	7.23	6.96
SEER recommended combination 3				7.28	7.29	7.61	7.26
ηs,c			%	283.6	283.4	296.2	282.8
ηs,c recommended combination 2			%	272.1	277.3	286.4	275.6
ηs,c recommended combination 3			%	288.2	288.7	301.3	287.4
ηs,h			%	173.3	165.2	172.0	171.5
ηs,h recommended combination 2			%	175.1	166.6	174.4	174.3
ηs,h recommended combination 3			%	176.3	167.1	174.5	174.0
Space cooling	A Condition	EERd		3.25	3.24	3.25	3.23
	(35°C - 27/19)	Pdc	kW	61.5	67.4	73.5	78.5
	B Condition	EERd		4.78		4.77	4.59
	(30°C - 27/19)	Pdc	kW	45.3	49.7	54.2	57.8
	C Condition	EERd		8.47	8.52	8.61	8.33
	(25°C - 27/19)	Pdc	kW	29.1	31.9	34.8	37.2
	D Condition	EERd		16.2	16.0	20.1	17.1
	(20°C - 27/19)	Pdc	kW	16.8	19.2	19.5	19.7
Space cooling recommended combination 2	A Condition	EERd		3.10	3.11	3.12	3.03
	(35°C - 27/19)	Pdc	kW	61.5	67.4	73.5	78.5
	B Condition	EERd		4.67	4.78	4.71	4.60
	(30°C - 27/19)	Pdc	kW	45.3	49.7	54.2	57.8
	C Condition (25°C - 27/19)	EERd		8.00	8.25	8.17	8.04
Space cooling recommended combination 2	C Condition (25°C - 27/19)	Pdc	kW	29.1	31.9	34.8	37.2
	D Condition	EERd		15.4	15.6	19.3	16.7
	(20°C - 27/19)	Pdc	kW	16.2	18.6	18.8	19.0
Space cooling recommended combination 3	A Condition	EERd		3.25	3.13	3.27	3.12
	(35°C - 27/19)	Pdc	kW	61.5	67.4	73.5	78.5
	B Condition	EERd		4.79	4.94	4.82	4.66
	(30°C - 27/19)	Pdc	kW	45.3	49.7	54.1	57.8
	C Condition	EERd		8.71	8.77	8.83	8.64
	(25°C - 27/19)	Pdc	kW	29.1	31.9	34.8	37.2
	D Condition	EERd		16.6	16.2	20.5	17.5
	(20°C - 27/19)	Pdc	kW	16.6	18.9	19.4	19.3
Space heating (Average climate)	TBivalent	COPd (declared COP)		2.33	2.62	2.48	2.46
		Pdh (declared heating cap)	kW	34.4	36.9	39.0	41.6
		Tbiv (bivalent temperature)	°C	-10			
	TOL	COPd (declared COP)		2.33	2.62	2.48	2.46
		Pdh (declared heating cap)	kW	34.4	36.9	39.0	41.6
		Tol (temperature operating limit)	°C	-10			
	A Condition	COPd (declared COP)		2.76	2.94	2.89	2.85
	(-7°C)	Pdh (declared heating cap)	kW	30.4	32.6	34.5	36.8
	B Condition	COPd (declared COP)		4.19	3.89	3.99	4.03
	(2°C)	Pdh (declared heating cap)	kW	18.5	19.9	21.0	22.4
	C Condition	COPd (declared COP)		6.02	5.82	6.32	6.26
	(7°C)	Pdh (declared heating cap)	kW	11.9	12.8	13.5	14.4
	D Condition	COPd (declared COP)		8.49	6.47	7.76	7.33
	(12°C)	Pdh (declared heating cap)	kW	11.0	9.58	10.7	10.6

2 Specifications

2 - 1 Specifications

Technical specifications System					REYA22A	REYA24A	REYA26A	REYA28A
Space heating (Average climate) recommended combination 2	A Condition (-7°C)	COPd (declared COP)			2.73	2.93	2.89	2.86
		Pdh (declared heating cap)		kW	30.4	32.6	34.5	36.8
	B Condition (2°C)	COPd (declared COP)			4.25	3.90	4.06	4.09
		Pdh (declared heating cap)		kW	18.5	19.9	21.0	22.4
	C Condition (7°C)	COPd (declared COP)			6.10	5.97	6.42	6.40
		Pdh (declared heating cap)		kW	11.9	12.8	13.5	14.4
	D Condition (12°C)	COPd (declared COP)			8.60	6.72	8.03	7.72
		Pdh (declared heating cap)		kW	11.4	10.1	11.1	11.2
	TBivalent	COPd (declared COP)			2.26	2.17	2.24	2.20
		Pdh (declared heating cap)		kW	34.4	36.9	39.0	41.6
		Tbiv (bivalent temperature)		°C	-10			
	TOL	COPd (declared COP)			2.26	2.17	2.24	2.20
Space heating (Average climate) recommended combination 2	TOL	Pdh (declared heating cap)		kW	34.4	36.9	39.0	41.6
		Tol (temperature operating limit)		°C	-10			
Space heating (Average climate) recommended combination 3	A Condition (-7°C)	COPd (declared COP)			2.77	2.95	2.91	2.87
		Pdh (declared heating cap)		kW	30.5	32.7	34.6	36.9
	B Condition (2°C)	COPd (declared COP)			4.28	3.92	4.05	4.08
		Pdh (declared heating cap)		kW	18.5	19.9	21.0	22.4
	C Condition (7°C)	COPd (declared COP)			6.12	5.93	6.43	6.38
		Pdh (declared heating cap)		kW	11.9	12.8	13.5	14.4
	D Condition (12°C)	COPd (declared COP)			8.65	6.75	7.95	7.68
		Pdh (declared heating cap)		kW	11.2	9.97	11.0	
	TBivalent	COPd (declared COP)			2.35	2.62	2.50	2.48
		Pdh (declared heating cap)		kW	34.4	36.9	39.0	41.6
		Tbiv (bivalent temperature)		°C	-10			
	TOL	COPd (declared COP)			2.35	2.62	2.50	2.48
		Pdh (declared heating cap)		kW	34.4	36.9	39.0	41.6
		Tol (temperature operating limit)		°C	-10			
Capacity range				HP	22	24	26	28
PED	Category				Category III			
Maximum number of connectable indoor units					64 (3)			
Indoor index connection	Min.				275	300	325	350
	Max.				715	780	845	910
Heat exchanger	Indoor side				Air			
	Outdoor side				Air			
	Air flow rate	Cooling	Rated	m^3/h	20,532 (11)	23,460 (11)	22,399 (11)	25,138 (11)
		Heating	Rated	m^3/h	20,532 (11)	23,460 (11)	23,947 (11)	25,138 (11)
Sound power level	Cooling	Nom.		dBA	84.0 (4)	84.8 (4)	84.0 (4)	86.2 (4)
	Heating	Nom.		dBA	85.2 (4)	87.1 (4)	86.1 (4)	88.1 (4)
Sound pressure level	Cooling	Nom.		dBA	62.6 (5)		62.7 (5)	64.1 (5)
	Heating			dBA	63.6 (5)	65.4 (5)	64.6 (5)	66.4 (5)
Refrigerant	Type				R-32			
	GWP				675.0			
Refrigerant oil	Type				FW68DE			
Piping connections	Liquid	Type			Braze connection			
		OD		mm	12.70		15.90	
	Gas	Type			Braze connection			
		OD		mm	28.6			
	HP/LP gas	Type			Braze connection			
Piping connections	HP/LP gas	OD		mm	22.20			
	Total piping length	System	Actual	m	1,000 (6)			
Defrost method					Reversed cycle			
Capacity control	Method				Inverter controlled			
Indication if the heater is equipped with a supplementary heater					No			
Supplementary heater	Back-up capacity	Heating	elbu	kW	0.0			
Power consumption in other than active mode	Crankcase heater mode	Cooling	PCK	kW	0.000			
		Heating	PCK	kW	0.106	0.111		
	Off mode	Cooling	POFF	kW	0.100	0.108		
		Heating	POFF	kW	0.106	0.111		
	Standby mode	Cooling	PSB	kW	0.100	0.108		
		Heating	PSB	kW	0.106	0.111		
	Thermo-stat-off mode	Cooling	PTO	kW	0.002			
		Heating	PTO	kW	0.106	0.121	0.111	0.121
Cooling	Cdc (Degradation cooling)				0.25			
Heating	Cdh (Degradation heating)				0.25			

2 Specifications

2 - 1 Specifications

2

Electrical specifications System					REYA10A	REYA13A	REYA16A	REYA18A	REYA20A
Power supply	Name				Y1				
	Phase				3N~				
	Frequency			Hz	50				
	Voltage			V	380-415				
Power supply intake					Both indoor and outdoor unit				
Voltage range	Min.			%	-10				
	Max.			%	10				
Current - 50Hz	Nominal running current (RLA)	Combination A	Cooling		-				
		Combination B	Cooling		-				
		Cooling		A	11.2 (8)	16.0 (8)	20.9 (8)	23.4 (8)	26.1 (8)
	Starting current (MSC) - remark				See note 9				
	Zmax	List			No requirements				
	Minimum Ssc value			kVa	5,196 (9)	5,387 (9)	5,577 (9)	6,599 (9)	6,945 (9)
	Minimum circuit amps (MCA)			A	30.0 (10)	31.1 (10)	32.2 (10)	38.1 (10)	40.1 (10)
	Maximum fuse amps (MFA)			A	40 (11)			50 (11)	
Power Performance	Power factor	Combination B	35°C ISO - Full load		-				
			46°C ISO - Full load		-				
Wiring connections - 50Hz	For power supply	Quantity			5G				
	For connection with indoor	Quantity			2				
		Remark			F1,F2				

Electrical specifications System					REYA22A	REYA24A	REYA26A	REYA28A
Power supply	Name				Y1			
	Phase				3N~			
	Frequency			Hz	50			
	Voltage			V	380-415			
Power supply intake					Both indoor and outdoor unit			
Voltage range	Min.			%	-10			
	Max.			%	10			
Current - 50Hz	Nominal running current (RLA)	Combination A	Cooling		-			
		Combination B	Cooling		-			
		Cooling		A	28.6 (8)	31.5 (8)	34.1 (8)	36.7 (8)
	Starting current (MSC) - remark				See note 9			
	Zmax	List			No requirements			
	Minimum Ssc value			kVa	7,967 (9)	8,158 (9)	8,833 (9)	9,526 (9)
	Minimum circuit amps (MCA)			A	46.0 (10)	47.1 (10)	51.0 (10)	55.0 (10)
	Maximum fuse amps (MFA)			A	63 (11)			
Power Performance	Power factor	Combination B	35°C ISO - Full load		-			
			46°C ISO - Full load		-			
Wiring connections - 50Hz	For power supply	Quantity			5G			
	For connection with indoor	Quantity			2			
		Remark			F1,F2			

Technical specifications Module					REMA5A
Cooling capacity	Prated,c			kW	14.0 (1)
Heating capacity	Max.	6°CWB		kW	16.0 (2)
Capacity range				HP	5
PED	Category				Category III
	Most critical part	Name			Liquid receiver
		Ps*V		Bar*l	508
Maximum number of connectable indoor units					64 (3)
Indoor index connection	Min.				63
	Max.				163
Dimensions	Unit	Height		mm	1,685
		Width		mm	930
		Depth		mm	765
	Packed unit	Height		mm	1,820
		Width		mm	995
		Depth		mm	860
Weight	Unit			kg	213
	Packed unit			kg	224
Packing	Material				Carton
	Weight			kg	1.5
Packing 2	Material				Wood
	Weight			kg	8.9

2 Specifications

2 - 1 Specifications

Technical specifications Module					REMA5A
Packing 3	Material				Plastic
	Weight			kg	0.6
Casing	Colour				Daikin White
	Material				Painted galvanized steel plate
Heat exchanger	Type				Cross fin coil
	Indoor side				Air
	Outdoor side				Air
	Air flow rate	Cooling	Rated	m^3/h	9,145
		Heating	Rated	m^3/h	9,145
Fan	Quantity				1
	External static pressure	Max.		Pa	78
Fan motor	Quantity				1
	Type				DC motor
	Output			W	550
Compressor	Quantity				1
Compressor	Type				Hermetically sealed scroll compressor
	Crankcase heater			W	33
Operation range	Cooling	Min.		°CDB	-5
		Max.		°CDB	46
	Heating	Min.		°CWB	-20
		Max.		°CWB	16
Sound power level	Cooling	Nom.		dBA	78.3 (4)
	Heating	Nom.		dBA	79.4 (4)
Sound pressure level	Cooling	Nom.		dBA	56.3 (5)
	Heating			dBA	58.1 (5)
Refrigerant	Type				R-32
	GWP				675.0
	Charge			kg	9.00
	Charge			tCO2Eq	6.08
Refrigerant oil	Type				FW68DE
Piping connections	Liquid	Type			Braze connection
		OD		mm	9.52
	Gas	Type			Braze connection
		OD		mm	19.1
	HP/LP gas	Type			Braze connection
		OD		mm	15.90
Defrost method					Reversed cycle
Capacity control	Method				Inverter controlled
Safety devices	Item	01			High pressure switch
		02			Fan driver overload protector
		03			Inverter overload protector

Electrical specifications Module					REMA5A
Power supply	Name				Y1
	Phase				3N~
	Frequency			Hz	50
	Voltage			V	380-415
Power supply intake					Both indoor and outdoor unit
Voltage range	Min.			%	-10
	Max.			%	10
Current - 50Hz	Nominal running current (RLA)	Combination A	Cooling		-
		Combination B	Cooling		-
		Cooling		A	5.6 (8)
	Starting current (MSC) - remark				See note 9
	Zmax	List			No requirements
	Minimum Ssc value			kVa	2,598 (9)
	Minimum circuit amps (MCA)			A	15.0 (10)
	Maximum fuse amps (MFA)			A	20 (11)
Power Performance	Power factor	Combination B	35°C ISO - Full load		-
			46°C ISO - Full load		-
Wiring connections - 50Hz	For power supply	Quantity			5G
	For connection with indoor	Quantity			2
		Remark			F1,F2
Compressor	Crankcase heater			W	33

(1)Cooling: indoor temp. 27°CDB, 19°CWB; outdoor temp. 35°CDB; equivalent piping length: 7.5m; level difference: 0m |
(2)Heating: indoor temp. 20°CDB; outdoor temp. 7°CDB, 6°CWB; equivalent refrigerant piping: 7.5m; level difference: 0m |
(3)The actual number of units depends on the connection ratio (CR) and the restrictions for the system. |

2 Specifications

2 - 1 Specifications

(4)Air Flow Rate (AFR) of multi outdoor systems is sum of AFR of the individual systems it consists of |
(5)Sound power level is an absolute value that a sound source generates. |
(6)Sound pressure level is a relative value, depending on the distance and acoustic environment. For more details, please refer to the sound level drawings. |
(7)Refer to refrigerant pipe selection or installation manual |
(8)RLA is based on following conditions: indoor temp. 27°CDB, 19°CWB; outdoor temp. 35°CDB |
(9)MSC means the maximum current during start up of the compressor. This unit uses only inverter compressors. Starting current is always ≤ max. running current. |
(10)In accordance with EN/IEC 61000-3-12, it may be necessary to consult the distribution network operator to ensure that the equipment is connected only to a supply wih Ssc ≥ minimum Ssc value |
(11)MCA must be used to select the correct field wiring size. The MCA can be regarded as the maximum running current. |
(12)MFA is used to select the circuit breaker and the ground fault circuit interrupter (earth leakage circuit breaker). |
(13)Maximum allowable voltage range variation between phases is 2%. |
(14)Voltage range: units are suitable for use on electrical systems where voltage supplied to unit terminal is not below or above listed range limits. |
(15)Sound values are measured in a semi-anechoic room. |
(16)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 current > 16A and ≤ 75A per phase |
(17)Ssc: Short-circuit power |
(18)For detailed contents of standard accessories, see installation/operation manual |
(19)Multi combination (10~28HP) data is corresponding with the standard multi combination

3 Options

3 - 1 Options

REYA-A

REMA5A

VRV5 **R32 models**

Heat recovery

Option list

Description		Option	REYA*A* 8	10	12	14	16	18	20	REMA*A* 5	Multi ·2· unit
Low ambient option		EKBPH012TA	O	O	O	-	-	-	-	O	O (*1)
Bottom plate heater		EKBPH020TA	-	-	-	O	O	O	O	-	O (*1)
Demand adaptor kit	(*3)	DTA104A*	O	O	O	O (*2)	O (*2)	O (*2)	O (*2)	O	O
External control adapter	(*3)	DTA109A51*	O	O	O	O (*2)	O (*2)	O (*2)	O (*2)	O	O
Refnet header		KHRQ23M29H	O	O	O	O	O	O	O	O	O
		KHRQ23M64H	-	-	O	O	O	O	O	-	O
		KHRQ23M75H	-	-	-	-	-	-	-	-	O
Refnet joint		KHRQ23M20T	O	O	O	O	O	O	O	O	O
		KHRQ23M29T	O	O	O	O	O	O	O	O	O
		KHRQ23M64T	-	-	O	O	O	O	O	-	O
		KHRQ23M75T	-	-	-	-	-	-	-	-	O
Refrigerant branch kit		BHFQ23P907A	-	-	-	-	-	-	-	-	O

*1 ·1· option kits are required per unit.
*2 These options require mounting plate ·EKSB26B1·.
*3 Because both adaptor PCBs have the same installation location, it is only possible to install either ·DTA104A· or ·DTA109A51·.

Remote controllers and centralised controllers with R32 safety system functionality

Nr.	Item	Sound pressure level of built-in alarm	Mode: Fully functional, Built-in alarm	Alarm only, Built-in alarm	Supervisor, Built-in alarm	Supervisor, External alarm connection
1	BRC1H52/82*	·65· dBA at ·1· m	O	O	O	-
2	DCM601A51 (*4)	NA	-	-	-	O (*6)
3	DCM601B51 (*5)	·65· dBA at ·1· m	-	-	O	O (*6)

*4 From software version ·1.28.00· onwards.
*5 From software version ·1.32.00· onwards.
*6 via WAGO module

3D141187C

4 Combination table

4 - 1 Combination Table

REYA-A
REMA5A

4

VRV5
Heat recovery
Multi-unit standard combinations table

		5HP	8HP	10HP	12HP	14HP	16HP	18HP	20HP
	REMA5* (*1)	1							
Non-continuous heating	REYA8*		1						
	REYA10*			1					
	REYA12*				1				
	REYA14*					1			
	REYA16*						1		
	REYA18*							1	
	REYA20*								1
Continuous heating ·2· outdoor units	REYA10*	2							
	REYA13*	1	1						
	REYA16*		2						
	REYA18*		1	1					
	REYA20*		1		1				
	REYA22*			1	1				
	REYA24*		1				1		
	REYA26*				1	1			
	REYA28*				1		1		

Notes
1. The ·REMA5*· unit cannot be used as a standalone unit and may only be used in standard combinations.
2. Standard and free combinations have different piping restrictions.
3. Never combine more than ·2· units to create a multi-combination.

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REYA-A
REMA5A

Unit combination restrictions: ·VRV5· outdoor units (all models) + ·10 / 15·-class indoor units

Indoor unit in the system	
FXDA10A	FXZA15A and/or FXAA15A
Yes	Yes

1. In case the system contains the indoor unit situation as shown in the table above, and the total connection ratio (·CR·)≤ ·85·%: no special restrictions.
   Follow the restrictions that apply to regular ·VRV DX· indoor units.

2. In case the system contains the indoor unit situation as shown in the table above, and the total connection ratio (·CR·) > ·85·%: special restrictions apply.
   A. When the connection ratio (·CR1·) of the sum of all ·FXDA10A· units in the system ≤ ·65·%, and ALL other ·VRV DX·indoor units have an individual capacity class > ·50·: no special restrictions.

   B. When the connection ratio (·CR1·) of the sum of all ·FXDA10A· units in the system ≤ ·65·%, and NOT ALL other ·VRV DX·indoor units have an individual capacity class > ·50·: the restrictions below apply.
   - ° 85% < CR ≤ 95% -> ·CR1· of the sum of all ·FXDA10A· indoor units in the system must be ≤ ·65·%.
   - ° 95% < CR ≤ 100% -> ·CR1· of the sum of all ·FXDA10A· indoor units in the system must be ≤ ·55·%.
   - ° 100% < CR ≤ 105% -> ·CR1· of the sum of all ·FXDA10A· indoor units in the system must be ≤ ·40·%.
   - ° 105% < CR ≤ 130% -> ·FXDA10A· cannot be used

Remark
Only the ·10 / 15·-class indoor units explicitly mentioned on this page are in scope. Other indoor units follow the rules that apply to regular ·VRV DX· indoor units.

4D141206

4 Combination table

4 - 1 Combination Table

REYA-A

REMA5A

Unit combination restrictions: ·VRV5· outdoor units (all models) + ·10 / 15·-class indoor units

Indoor unit in the system	
FXDA10A	FXZA15A and/or FXAA15A
Yes	No

1. In case the system contains the indoor unit situation as shown in the table above, and the total connection ratio (·CR·) ≤ ·85·%: no special restrictions.
   Follow the restrictions that apply to regular ·VRV DX· indoor units.

2. In case the system contains the indoor unit situation as shown in the table above, and the total connection ratio (·CR·) > ·85·%: special restrictions apply.
   A. When the connection ratio (·CR1·) of the sum of all ·FXDA10A· units in the system ≤ ·65·%, and ALL other ·VRV DX·indoor units have an individual capacity class > ·50·: no special restrictions.

   B. When the connection ratio (·CR1·) of the sum of all ·FXDA10A· units in the system ≤ ·65·%, and NOT ALL other ·VRV DX·indoor units have an individual capacity class > ·50·: the restrictions below apply.
   - ° 85% < CR ≤ 95% -> ·CR1· of the sum of all ·FXDA10A· indoor units in the system must be ≤ ·65·%.
   - ° 95% < CR ≤ 100% -> ·CR1· of the sum of all ·FXDA10A· indoor units in the system must be ≤ ·55·%.
   - ° 100% < CR ≤ 105% -> ·CR1· of the sum of all ·FXDA10A· indoor units in the system must be ≤ ·40·%.
   - ° 105% < CR ≤ 110% -> ·CR1· of the sum of all ·FXDA10A· indoor units in the system must be ≤ ·30·%.
   - ° 110% < CR ≤ 115% -> ·CR1· of the sum of all ·FXDA10A· indoor units in the system must be ≤ ·20·%.
   - ° 115% < CR ≤ 120% -> ·CR1· of the sum of all ·FXDA10A· indoor units in the system must be ≤ ·10·%.
   - ° 120% < CR ≤ 125% -> ·CR1· of the sum of all ·FXDA10A· indoor units in the system must be ≤ ·5·%.
   - ° 125% < CR ≤ 130% -> ·FXDA10A· cannot be used

Remark

Only the ·10 / 15·-class indoor units explicitly mentioned on this page are in scope. Other indoor units follow the rules that apply to regular ·VRV DX· indoor units.

4D141206

REYA-A

REMA5A

Unit combination restrictions: ·VRV5· outdoor units (all models) + ·10 / 15·-class indoor units

Indoor unit in the system	
FXDA10A	FXZA15A and/or FXAA15A
No	Yes

1. In case the system contains the indoor units situation which as shown in the table above, and the total connection ratio (·CR·) ≤ ·100·%: no special restrictions.
   Follow the restrictions that apply to regular ·VRV DX· indoor units.

2. In case the system contains the indoor units situation which as shown in the table above, and the total connection ratio (·CR·) > ·100·%: special restrictions apply.
   A. When the connection ratio (·CR1·) of the sum of all ·FXZA15A· and/or ·FXAA15A· units in the system ≤ ·70·%, and ALL other ·VRV DX· indoor units have an individual capacity class > ·50·: no special restrictions.

   B. When the connection ratio (·CR1·) of the sum of all ·FXZA15A· and/or ·FXAA15A· units in the system ≤ ·70·%, and NOT ALL other ·VRV DX· indoor units have an individual capacity class > ·50·: the restrictions below apply.
   - ° 100% < CR ≤ 105% -> ·CR1· of the sum of all ·FXZA15A· and/or ·FXAA15A· indoor units in the system must be ≤ ·70·%.
   - ° 105% < CR ≤ 110% -> ·CR1· of the sum of all ·FXZA15A· and/or ·FXAA15A· indoor units in the system must be ≤ ·60·%.
   - ° 110% < CR ≤ 115% -> ·CR1· of the sum of all ·FXZA15A· and/or ·FXAA15A· indoor units in the system must be ≤ ·40·%.
   - ° 115% < CR ≤ 120% -> ·CR1· of the sum of all ·FXZA15A· and/or ·FXAA15A· indoor units in the system must be ≤ ·25·%.
   - ° 120% < CR ≤ 125% -> ·CR1· of the sum of all ·FXZA15A· and/or ·FXAA15A· indoor units in the system must be ≤ ·10·%.
   - ° 125% < CR ≤ 130% -> ·FXZA15A· and ·FXAA15A· cannot be used.

Remark

Only the ·10 / 15·-class indoor units explicitly mentioned on this page are in scope. Other indoor units follow the rules that apply to regular ·VRV DX· indoor units.

4D141206

5 Capacity tables

5 - 1 Capacity Table Legend

In order to fulfill more your requirements on quick access of data in the format you require, we have developed a tool to consult capacity tables.

Below you can find the link to the capacity table database and an overview of all the tools we have to help you select the correct product:

- **Capacity table database:** lets you find back and export quickly the capacity information you are looking for based upon unit model, refrigerant temperature and connection ratio.
- You can access the capacity table viewer here:
  https://my.daikin.eu/content/denv/en_US/home/applications/software-finder/capacity-table-viewer.html

- An overview of **all software tools** that we offer can be found here:
  https://my.daikin.eu/denv/en_US/home/applications/software-finder.html

5 Capacity tables

5 - 2 Integrated Heating Capacity Correction Factor

REYA-A
REMA5A

VRV5
Heat recovery
Integrated heating capacity coefficient

Inlet air temperature of heat exchanger

Integrated correction factor for frost accumulation ·(C)·

	[°CDB/°CWB]	-7/-7.6	-5/-5.6	-3/-3.7	0/-0.7	3/2.2	5/4.1	7/6
For single unit installation	8HP	0,90	0,88	0,83	0,80	0,81	0,85	1,00
	10HP	0,90	0,88	0,82	0,75	0,76	0,83	1,00
	12HP	0,90	0,87	0,82	0,71	0,72	0,81	1,00
	14HP	0,90	0,87	0,81	0,68	0,69	0,80	1,00
	16HP	0,90	0,87	0,81	0,68	0,68	0,79	1,00
	18HP	0,90	0,88	0,83	0,80	0,81	0,85	1,00
	20HP	0,90	0,88	0,83	0,80	0,81	0,85	1,00
For multi-unit installation	10HP	0,90	0,88	0,83	0,80	0,81	0,85	1,00
	13HP	0,90	0,88	0,83	0,80	0,81	0,85	1,00
	16HP	0,90	0,88	0,83	0,80	0,81	0,85	1,00
	18HP	0,90	0,88	0,83	0,77	0,78	0,84	1,00
	20HP	0,90	0,88	0,83	0,75	0,76	0,83	1,00
	22HP	0,90	0,88	0,82	0,73	0,74	0,82	1,00
	24HP	0,90	0,88	0,82	0,74	0,74	0,82	1,00
	26HP	0,90	0,87	0,82	0,70	0,71	0,80	1,00
	28HP	0,90	0,87	0,82	0,70	0,70	0,80	1,00

The heating capacity tables do not take into account the capacity reduction in case of frost accumulation or defrost operation.

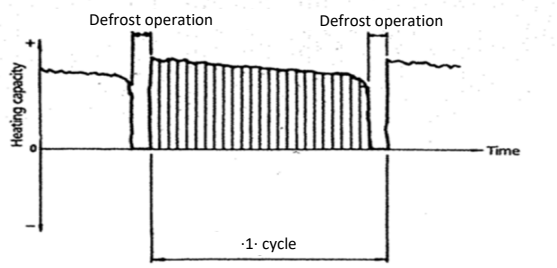
The capacity values that take these factors into account, or in other words, the integrated heating capacity values, can be calculated as follows:

Formula **A = B * C**

A= Integrated heating capacity

B= Capacity characteristics value

C= Integrated correction factor for frost accumulation (see table)



Notes

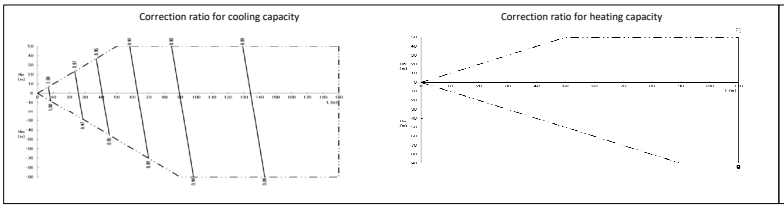
1. The figure shows the integrated heating capacity for a single cycle (from one defrost operation to the next).
2. When there is an accumulation of snow against the outdoor unit heat exchanger, there will always be a temporary reduction in capacity depending on the outdoor temperature (°C DB), relative humidity (RH) and the amount of frosting which occurs.
3. The multi-combination data ·VRV4· corresponds with the standard multi-combination of drawing ·4D138289·.

4D141185

5 Capacity tables

5 - 3 Capacity Correction Factor

REYA8A



Legend

Hp: Maximum level difference (m) between outdoor and indoor units when the outdoor unit is positioned higher than the indoor units.

Hm: Maximum level difference (m) between outdoor and indoor units when the outdoor unit is positioned lower than the indoor units.

L: Equivalent piping length [m]

Notes

1. These figures illustrate the capacity correction factor due to the piping length for a standard indoor unit system at maximum load (with the thermostat set to maximum), under standard conditions.

   Moreover, under partial load conditions, there is only a minor deviation for the capacity correction ratio, as shown it the above figures.

2. Method of calculating the capacity of the outdoor units.
   The maximum capacity of the system will be either the total capacity of the indoor units or the maximum capacity of the outdoor units as mentioned below, whichever is less.

   Indoor connection ratio ≤ 100%.

   Maximum capacity of outdoor units = Capacity of outdoor units from capacity table at 100% connection ratio. x Correction ratio of piping to furthest indoor unit

   Indoor connection ratio > 100%.

   Maximum capacity of outdoor units = Capacity of outdoor units from capacity table at installed connection ratio. x Correction ratio of piping to furthest indoor unit

3. Main liquid pipe size increase

Model	Standard liquid side Ø	Increased liquid side Ø
8HP	9,5	12,7

For the allowed system setups and the rules for when to increase the main liquid piping diameter, refer to the installation manual.

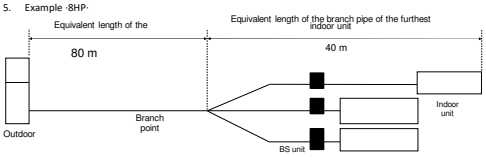
4. Overall equivalent length

   Overall equivalent length = Equivalent length of the main pipe x Correction factor + Equivalent length of the branch pipes

   Choose the correction factor from the following table.

Model	Correction ratio for cooling capacity		Correction ratio for heating capacity	
	Standard size	Size increase	Standard size	Size increase
8HP	1	0,5	1	0,2

5. Example ·8HP·

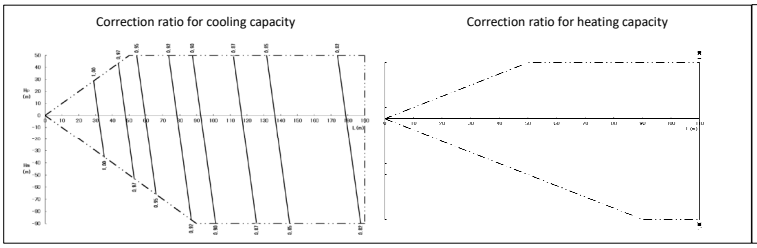


Overall equivalent length
- Cooling mode = 80 m x 0,5 + 40 m = 80 m
- Heating mode = 80 m x 0,2 + 40 m = 56 m

Capacity correction ratio (height difference = 0)
- Cooling mode = 0,91
- Heating mode = 1,00

4D141191

REYA10A



Legend

Hp: Maximum level difference (m) between outdoor and indoor units when the outdoor unit is positioned higher than the indoor units.

Hm: Maximum level difference (m) between outdoor and indoor units when the outdoor unit is positioned lower than the indoor units.

L: Equivalent piping length [m]

Notes

1. These figures illustrate the capacity correction factor due to the piping length for a standard indoor unit system at maximum load (with the thermostat set to maximum), under standard conditions.
   Moreover, under partial load conditions, there is only a minor deviation for the capacity correction ratio, as shown it the above figures.

2. Method of calculating the capacity of the outdoor units.
   The maximum capacity of the system will be either the total capacity of the indoor units or the maximum capacity of the outdoor units as mentioned below, whichever is less.

   Indoor connection ratio ≤ 100%.

   Maximum capacity of outdoor units = Capacity of outdoor units from capacity table at 100% connection ratio. x Correction ratio of piping to furthest indoor unit

   Indoor connection ratio > 100%.

   Maximum capacity of outdoor units = Capacity of outdoor units from capacity table at installed connection ratio. x Correction ratio of piping to furthest indoor unit

3. Main liquid pipe size increase

Model	Standard liquid side Ø	Increased liquid side Ø
10HP	9,5	12,7

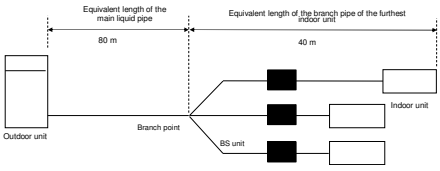
For the allowed system setups and the rules for when to increase the main liquid piping diameter, refer to the installation manual.

4. Overall equivalent length = Equivalent length of the main pipe x Correction factor + Equivalent length of the branch pipes

   Choose the correction factor from the following table.

Model	Correction ratio for cooling capacity		Correction ratio for heating capacity	
	Standard size	Size increase	Standard size	Size increase
	1	0,5	1	0,2

5. Example ·10HP·



Overall equivalent length
- Cooling mode = 80 m x 0,5 + 40 m = 80 m
- Heating mode = 80 m x 0,2 + 40 m = 56 m

Capacity correction ratio (height difference = 0)
- Cooling mode = 0,92
- Heating mode = 1,00

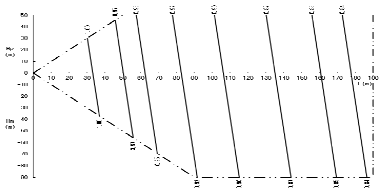
4D141191

5 Capacity tables

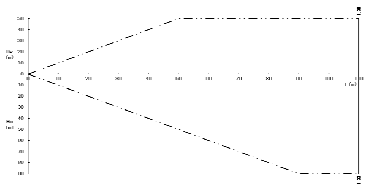
5 - 3 Capacity Correction Factor

REYA12A

Correction ratio for cooling capacity



Correction ratio for heating capacity



Legend

Hp: Maximum level difference (m) between outdoor and indoor units when the outdoor unit is positioned higher than the indoor units.

Hm: Maximum level difference (m) between outdoor and indoor units when the outdoor unit is positioned lower than the indoor units.

L: Equivalent piping length [m]

Notes

1. These figures illustrate the capacity correction factor due to the piping length for a standard indoor unit system at maximum load (with the thermostat set to maximum), under standard conditions. Moreover, under partial load conditions, there is only a minor deviation for the capacity correction ratio, as shown it the above figures.
2. Method of calculating the capacity of the outdoor units.
   The maximum capacity of the system will be either the total capacity of the indoor units or the maximum capacity of the outdoor units as mentioned below, whichever is less.

Indoor connection ratio ≤ 100%.

Maximum capacity of outdoor units = Capacity of outdoor units from capacity table at 100% connection ratio. x Correction ratio of piping to furthest indoor unit

Indoor connection ratio > 100%.

Maximum capacity of outdoor units = Capacity of outdoor units from capacity table at installed connection ratio. x Correction ratio of piping to furthest indoor unit

3. Main liquid pipe size increase

Model	Standard liquid side Ø	Increased liquid side Ø
12HP	12,7	15,9

For the allowed system setups and the rules for when to increase the main liquid piping diameter, refer to the installation manual.

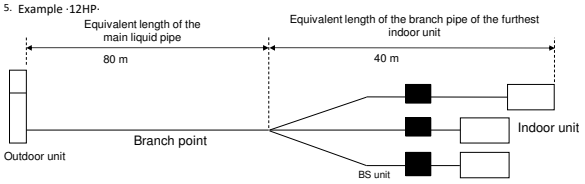
4. Overall equivalent length

Overall equivalent length = Equivalent length of the main pipe x Correction factor + Equivalent length of the branch pipes

Choose the correction factor from the following table.

Model	Correction ratio for cooling capacity		Correction ratio for heating capacity	
	Standard size	Size increase	Standard size	Size increase
12HP	1	0,5	1	0,3

5. Example ·12HP·



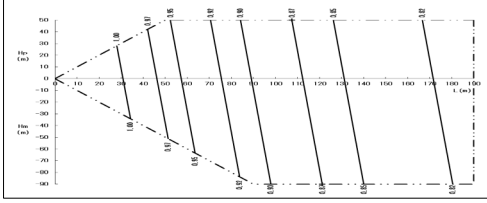
Overall equivalent length
- Cooling mode = 80 m x 0,5 + 40 m = 80 m
- Heating mode = 80 m x 0,3 + 40 m = 64 m

Capacity correction ratio (height difference = 0)
- Cooling mode = 0,92
- Heating mode = 1,00

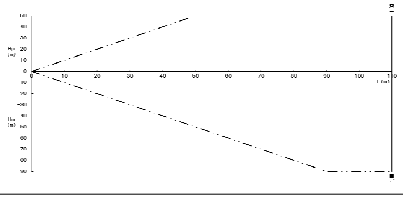
4D141191

REYA13A
REYA14A

Correction ratio for cooling capacity



Correction ratio for heating capacity



Legend

Hp: Maximum level difference (m) between outdoor and indoor units when the outdoor unit is positioned higher than the indoor units.

Hm: Maximum level difference (m) between outdoor and indoor units when the outdoor unit is positioned lower than the indoor units.

L: Equivalent piping length [m]

Notes

1. These figures illustrate the capacity correction factor due to the piping length for a standard indoor unit system at maximum load (with the thermostat set to maximum), under standard conditions. Moreover, under partial load conditions, there is only a minor deviation for the capacity correction ratio, as shown it the above figures.
2. Method of calculating the capacity of the outdoor units.
   The maximum capacity of the system will be either the total capacity of the indoor units or the maximum capacity of the outdoor units as mentioned below, whichever is less.

Indoor connection ratio ≤ 100%.

Maximum capacity of outdoor units = Capacity of outdoor units from capacity table at 100% connection ratio. x Correction ratio of piping to furthest indoor unit

Indoor connection ratio > 100%.

Maximum capacity of outdoor units = Capacity of outdoor units from capacity table at installed connection ratio. x Correction ratio of piping to furthest indoor unit

3. Main liquid pipe size increase

Model	Standard liquid side Ø	Increased liquid side Ø
13+14HP	12,7	15,9

For the allowed system setups and the rules for when to increase the main liquid piping diameter, refer to the installation manual.

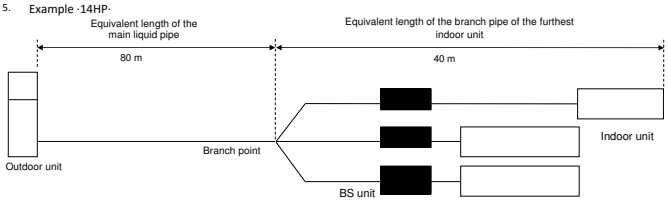
4. Overall equivalent length

Overall equivalent length = Equivalent length of the main pipe x Correction factor + Equivalent length of the branch pipes

Choose the correction factor from the following table.

Model	Correction ratio for cooling capacity		Correction ratio for heating capacity	
	Standard size	Size increase	Standard size	Size increase
13+14HP	1	0,5	1	0,3

5. Example ·14HP·



Overall equivalent length
- Cooling mode = 80 m x 0,5 + 40 m = 80 m
- Heating mode = 80 m x 0,3 + 40 m = 64 m

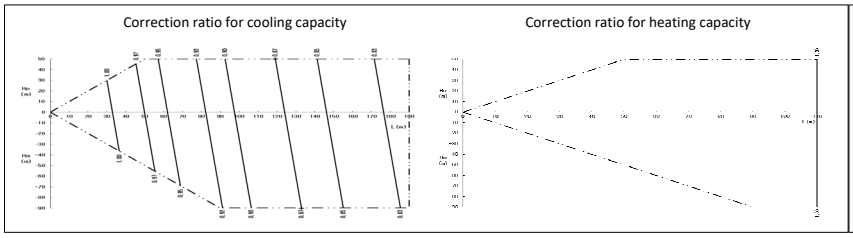
Capacity correction ratio (height difference = 0)
- Cooling mode = 0,91
- Heating mode = 1,00

4D141191

5 Capacity tables

5 - 3 Capacity Correction Factor

REYA16A



Notes

1. These figures illustrate the capacity correction factor due to the piping length for a standard indoor unit system at maximum load (with the thermostat set to maximum), under standard conditions.
   Moreover, under partial load conditions, there is only a minor deviation for the capacity correction ratio, as shown it the above figures.
2. Method of calculating the capacity of the outdoor units.
   The maximum capacity of the system will be either the total capacity of the indoor units or the maximum capacity of the outdoor units as mentioned below, whichever is less.

   Indoor connection ratio ≤ 100%.

   Maximum capacity of outdoor units = Capacity of outdoor units from capacity table at 100% connection ratio. X Correction ratio of piping to furthest indoor unit

   Indoor connection ratio > 100%.

   Maximum capacity of outdoor units = Capacity of outdoor units from capacity table at installed connection ratio. X Correction ratio of piping to furthest indoor unit
3. Main liquid pipe size increase

Model	Standard liquid side Ø	Increased liquid side Ø
16HP	12,7	15,9

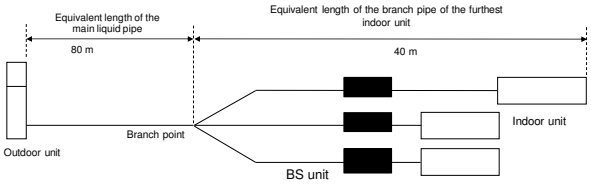
   For the allowed system setups and the rules for when to increase the main liquid piping diameter, refer to the installation manual.
4. Overall equivalent length

   Overall equivalent length = Equivalent length of the main pipe X Correction factor + Equivalent length of the branch pipes

   Choose the correction factor from the following table.

Model	Correction ratio for cooling capacity		Correction ratio for heating capacity	
	Standard size	Size increase	Standard size	Size increase
16HP	1	0,5	1	0,3

5. Example ·16HP·

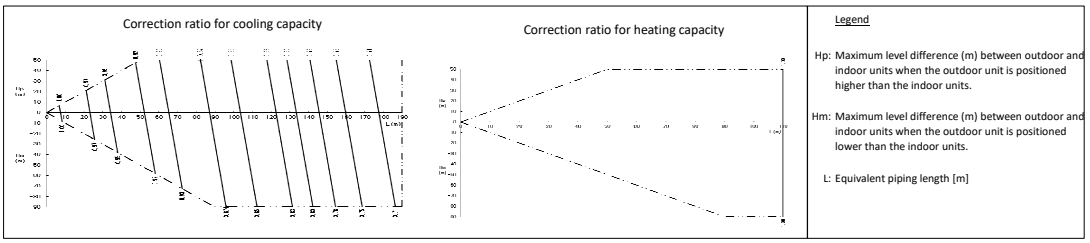


Overall equivalent length
- Cooling mode = 80 m x 0,5 + 40 m = 80 m
- Heating mode = 80 m x 0,3 + 40 m = 64 m

Capacity correction ratio (height difference = 0)
- Cooling mode = 0,92
- Heating mode = 1,00

4D141191

REYA18A



Notes

1. These figures illustrate the capacity correction factor due to the piping length for a standard indoor unit system at maximum load (with the thermostat set to maximum), under standard conditions.
   Moreover, under partial load conditions, there is only a minor deviation for the capacity correction ratio, as shown it the above figures.
2. Method of calculating the capacity of the outdoor units.
   The maximum capacity of the system will be either the total capacity of the indoor units or the maximum capacity of the outdoor units as mentioned below, whichever is less.

   Indoor connection ratio ≤ 100%.

   Maximum capacity of outdoor units = Capacity of outdoor units from capacity table at 100% connection ratio. X Correction ratio of piping to furthest indoor unit

   Indoor connection ratio > 100%.

   Maximum capacity of outdoor units = Capacity of outdoor units from capacity table at installed connection ratio. X Correction ratio of piping to furthest indoor unit
3. Main liquid pipe size increase

Model	Standard liquid side Ø	Increased liquid side Ø
18HP	12,7	15,9

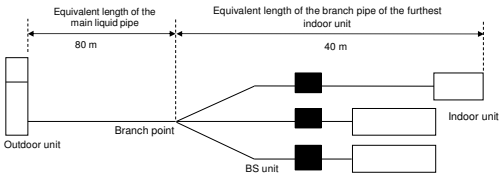
   For the allowed system setups and the rules for when to increase the main liquid piping diameter, refer to the installation manual.
4. Overall equivalent length

   Overall equivalent length = Equivalent length of the main pipe X Correction factor + Equivalent length of the branch pipes

   Choose the correction factor from the following table.

Model	Correction ratio for cooling capacity		Correction ratio for heating capacity	
	Standard size	Size increase	Standard size	Size increase
18HP	1	0,5	1	0,3

5. Example ·18HP·



Overall equivalent length
- Cooling mode = 80 m x 0,5 + 40 m = 80 m
- Heating mode = 80 m x 0,3 + 40 m = 64 m

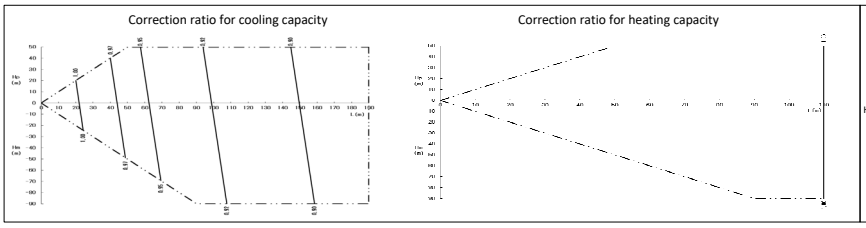
Capacity correction ratio (height difference = 0)
- Cooling mode = 0,88
- Heating mode = 1,00

4D141191

5 Capacity tables

5 - 3 Capacity Correction Factor

REYA20A



Notes

1. These figures illustrate the capacity correction factor due to the piping length for a standard indoor unit system at maximum load (with the thermostat set to maximum), under standard conditions. Moreover, under partial load conditions, there is only a minor deviation for the capacity correction ratio, as shown it the above figures.
2. Method of calculating the capacity of the outdoor units.
   The maximum capacity of the system will be either the total capacity of the indoor units or the maximum capacity of the outdoor units as mentioned below, whichever is less.

   Indoor connection ratio ≤ 100%.

   Maximum capacity of outdoor units = Capacity of outdoor units from capacity table at 100% connection ratio. X Correction ratio of piping to furthest indoor unit

   Indoor connection ratio > 100%.

   Maximum capacity of outdoor units = Capacity of outdoor units from capacity table at installed connection ratio. X Correction ratio of piping to furthest indoor unit
3. Main liquid pipe size increase

Model	Standard liquid side Ø	Increased liquid side Ø
20HP	12,7	15,9

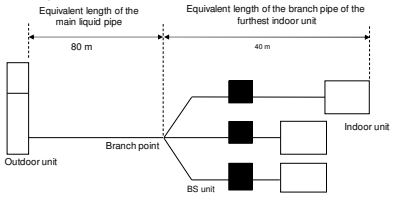
   For the allowed system setups and the rules for when to increase the main liquid piping diameter, refer to the installation manual.
4. Overall equivalent length

   Overall equivalent length = Equivalent length of the main pipe X Correction factor + Equivalent length of the branch pipes

   Choose the correction factor from the following table.

Model	Correction ratio for cooling capacity		Correction ratio for heating capacity	
	Standard size	Size increase	Standard size	Size increase
20HP	1	0,5	1	0,3

5. Example ·20HP·



Overall equivalent length
- Cooling mode = 80 m x 0,5 + 40 m = 80 m
- Heating mode = 80 m x 0,3 + 40 m = 64 m

Capacity correction ratio (height difference = 0)
- Cooling mode = 0,93
- Heating mode = 1,00

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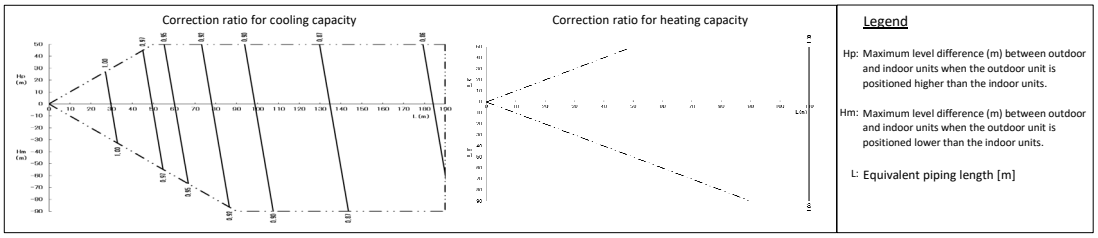
REYA22A



Notes

1. These figures illustrate the capacity correction factor due to the piping length for a standard indoor unit system at maximum load (with the thermostat set to maximum), under standard conditions. Moreover, under partial load conditions, there is only a minor deviation for the capacity correction ratio, as shown it the above figures.
2. Method of calculating the capacity of the outdoor units.
   The maximum capacity of the system will be either the total capacity of the indoor units or the maximum capacity of the outdoor units as mentioned below, whichever is less.

   Indoor connection ratio ≤ 100%.

   Maximum capacity of outdoor units = Capacity of outdoor units from capacity table at 100% connection ratio. X Correction ratio of piping to furthest indoor unit

   Indoor connection ratio > 100%.

   Maximum capacity of outdoor units = Capacity of outdoor units from capacity table at installed connection ratio. X Correction ratio of piping to furthest indoor unit
3. Main liquid pipe size increase

Model	Standard liquid side Ø	Increased liquid side Ø
22HP	12,7	15,9

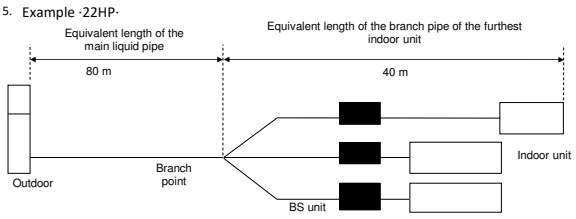
   For the allowed system setups and the rules for when to increase the main liquid piping diameter, refer to the installation manual.
4. Overall equivalent length

   Overall equivalent length = Equivalent length of the main pipe X Correction factor + Equivalent length of the branch pipes

   Choose the correction factor from the following table.

Model	Correction ratio for cooling capacity		Correction ratio for heating capacity	
	Standard size	Size increase	Standard size	Size increase
22HP	1	0,5	1	0,3

5. Example ·22HP·



Overall equivalent length
- Cooling mode = 80 m x 0,5 + 40 m = 80 m
- Heating mode = 80 m x 0,3 + 40 m = 64 m

Capacity correction ratio (height difference = 0)
- Cooling mode = 0,92
- Heating mode = 1,00

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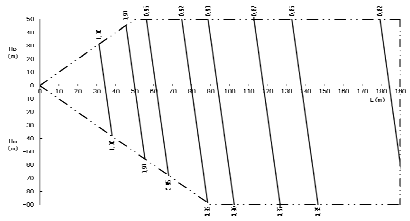
5 Capacity tables

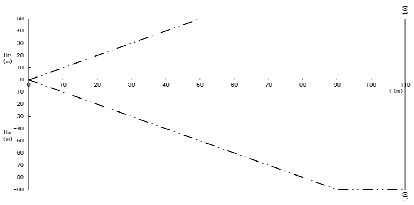
5 - 3 Capacity Correction Factor

REYA26A

Correction ratio for cooling capacity



Correction ratio for heating capacity



Legend

Hp: Maximum level difference (m) between outdoor and indoor units when the outdoor unit is positioned higher than the indoor units.

Hm: Maximum level difference (m) between outdoor and indoor units when the outdoor unit is positioned lower than the indoor units.

L: Equivalent piping length [m]

Notes

1. These figures illustrate the capacity correction factor due to the piping length for a standard indoor unit system at maximum load (with the thermostat set to maximum), under standard conditions.

   Moreover, under partial load conditions, there is only a minor deviation for the capacity correction ratio, as shown it the above figures.

2. Method of calculating the capacity of the outdoor units.
   The maximum capacity of the system will be either the total capacity of the indoor units or the maximum capacity of the outdoor units as mentioned below, whichever is less.

   Indoor connection ratio ≤ 100%.

   Maximum capacity of outdoor units = Capacity of outdoor units from capacity table at 100% connection ratio. X Correction ratio of piping to furthest indoor unit

   Indoor connection ratio > 100%.

   Maximum capacity of outdoor units = Capacity of outdoor units from capacity table at installed connection ratio. X Correction ratio of piping to furthest indoor unit

3. Main liquid pipe size increase

Model	Standard liquid side Ø	Increased liquid side Ø
26HP	15,9	19,1

   For the allowed system setups and the rules for when to increase the main liquid piping diameter, refer to the installation manual.

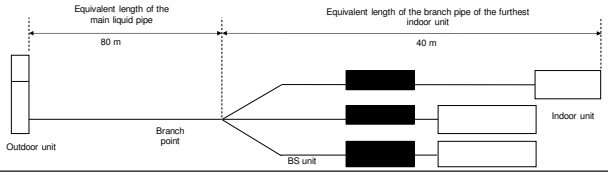
4. Overall equivalent length

   Overall equivalent length = Equivalent length of the main pipe X Correction factor + Equivalent length of the branch pipes

   Choose the correction factor from the following table.

Model	Correction ratio for cooling capacity		Correction ratio for heating capacity	
	Standard size	Size increase	Standard size	Size increase
26HP	1	0,5	1	0,4

5. Example ·26HP·



Overall equivalent length
- Cooling mode = 80 m x 0,5 + 40 m = 80 m
- Heating mode = 80 m x 0,4 + 40 m = 72 m

Capacity correction ratio (height difference = 0)
- Cooling mode = 0,92
- Heating mode = 1,00

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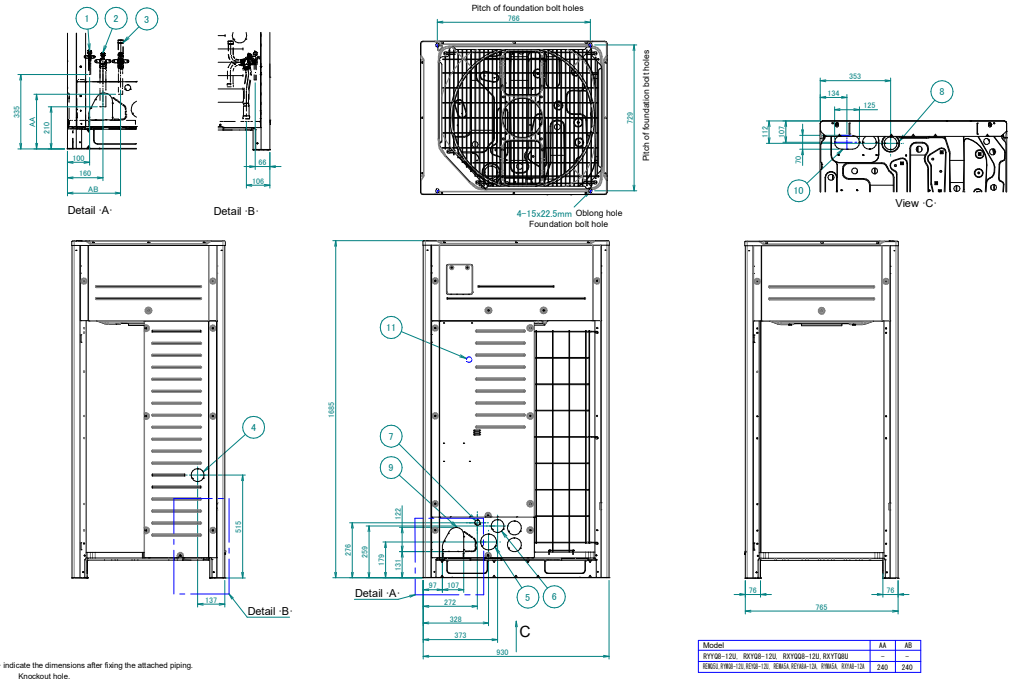
6 Dimensional drawings

6 - 1 Dimensional Drawings

REYA8-12A
REMA5A



Notes

1. Detail ·A· and detail ·B· indicate the dimensions after fixing the attached piping.
2. Items ·4 - 10·: Knockout hole.
3. **Gas pipe**
   - RYYQ8U, RYMQ8U, RXYQ8U, RXYQQ8U, RXYTQ8U : Ø ·19.1· brazing connection
   - RYMA5A, RXYA8-12A
   - RYYQ10U, RYMQ10U, RXYQ10U, RXYQQ10U : Ø ·22.2· brazing connection
   - REMQ5U, REMA5A, REYQ8-12U, REYA8-12A : Ø ·25.4· brazing connection
   - RYYQ12U, RYMQ12U, RXYQ12U, RXYQQ12U : Ø ·28.6· brazing connection

   Liquid pipe
   - RYYQ8-10U, RYMQ8-10U, RXYQ8-10U, RXYQQ8-10U, REMQ5U, REMA5A, REYQ8-12U, REYA8-12A, RXYTQ8U : Ø ·9.5· brazing connection
   - RYMA5A, RXYA8-12A
   - RYYQ12U, RYMQ12U, RXYQ12U, RXYQQ12U : Ø ·12.7· brazing connection

   Equalising pipe
   - RYMQ8-10U : Ø ·19.1· brazing connection
   - RYMQ12U : Ø ·22.2· brazing connection
   - RYMA5A, RXYA8-12A : Ø ·25.4· brazing connection

   High pressure/low pressure gas pipe
   - REMQ5U, REMA5A, REYQ8-12U, REYA8-12A : Ø ·19.1· brazing connection

Model	AA	AB
RYYQ8~12U, RXYQ8~12U, RXYQQ8~12U, RXYTQ8U	-	-
REMQ5U, RYMQ8~12U, REYQ8~12U, REMA5A, REYA8~12A, RYMQ5A, RXYA8~12A	240	240

No.	Part name		Remark
1	Liquid pipe connection port		See note ·3·.
2	Gas pipe connection port Equalising pipe connection port	RYMA5A, RXYA8-12A	See note ·3·.
3	Equalising pipe connection port High pressure/low pressure gas pipe Gas pipe connection port	RYMA5A, RXYA8-12A	See note ·3·.
4	Power cord routing hole (side)		Ø65
5	Power cord routing hole (front)		Ø80
6	Power cord routing hole (front)		Ø65
7	Power cord routing hole (front)		Ø27
8	Power cord routing hole (bottom)		Ø65
9	Pipe routing hole (front)		
10	Pipe routing hole (bottom)		
11	Grounding terminal		Inside of the switch box (·MB·)

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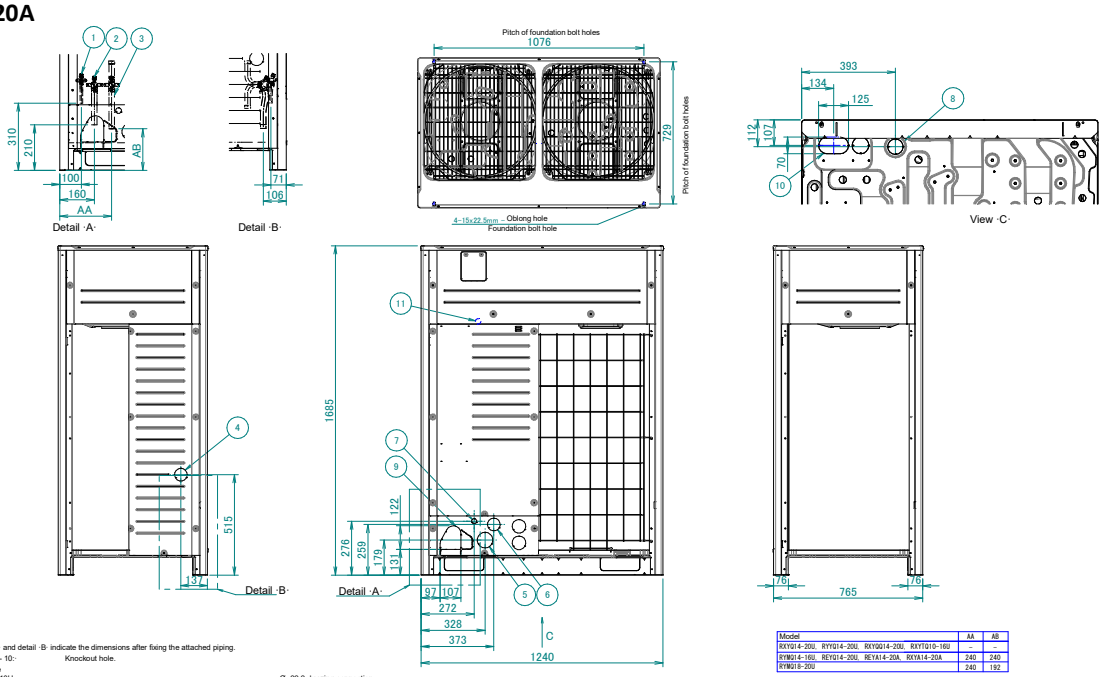
REYA14-20A



Notes

1. Detail ·A· and detail ·B· indicate the dimensions after fixing the attached piping.
2. Items ·4 - 10·: Knockout hole.
3. **Gas pipe**
   - RXYTQ10U : Ø ·22.2· brazing connection
   - REYQ14-20U, REYA14-20A : Ø ·25.4· brazing connection
   - RYYQ14-20U, RYMQ14-20U RXYQ14-20U, RXYQQ14-20U, RXYTQ12-16U : Ø ·28.6· brazing connection
   - RXYA14-20A : Ø ·19.1· brazing connection

   Liquid pipe
   - RXYTQ10U : Ø ·9.5· brazing connection
   - RYYQ14-16U, RYMQ14-16U, RXYQ14-16U, RXYQQ14-16U, REYQ14-20U, REYA14-20A, RXYTQ12-16U, RXYA14-20A : Ø ·12.7· brazing connection
   - RYYQ18-20U, RYMQ18-20U, RXYQ18-20U, RXYQQ18-20U : Ø ·15.9· brazing connection

   Equalising pipe
   - RYMQ14-16U : Ø ·22.2· brazing connection
   - RYMQ18-20U : Ø ·28.6· brazing connection
   - RXYA14-20A : Ø ·25.4· brazing connection

   High pressure/low pressure gas pipe
   - REYQ14-20U, REYA14-20A : Ø ·19.1· brazing connection

Model	AA	AB
RXYQ14-20U, RYYQ14-20U, RXYQQ14-20U, RXYTQ10~16U	-	-
RYMQ14-16U, REYQ14-20U, REYA14-20A, RXYA14-20A	240	240
RYMQ18-20U	240	192

No.	Part name		Remark
1	Liquid pipe connection port		See note ·3·.
2	Gas pipe connection port Equalising pipe connection port	RXYA14-20A	See note ·3·.
3	Equalising pipe connection port High pressure/low pressure gas pipe Gas pipe connection port	RXYA14-20A	See note ·3·.
4	Power cord routing hole (side)		Ø65
5	Power cord routing hole (front)		Ø80
6	Power cord routing hole (front)		Ø65
7	Power cord routing hole (front)		Ø27
8	Power cord routing hole (bottom)		Ø65
9	Pipe routing hole (front)		
10	Pipe routing hole (bottom)		
11	Grounding terminal		Inside of the switch box (·MB·)

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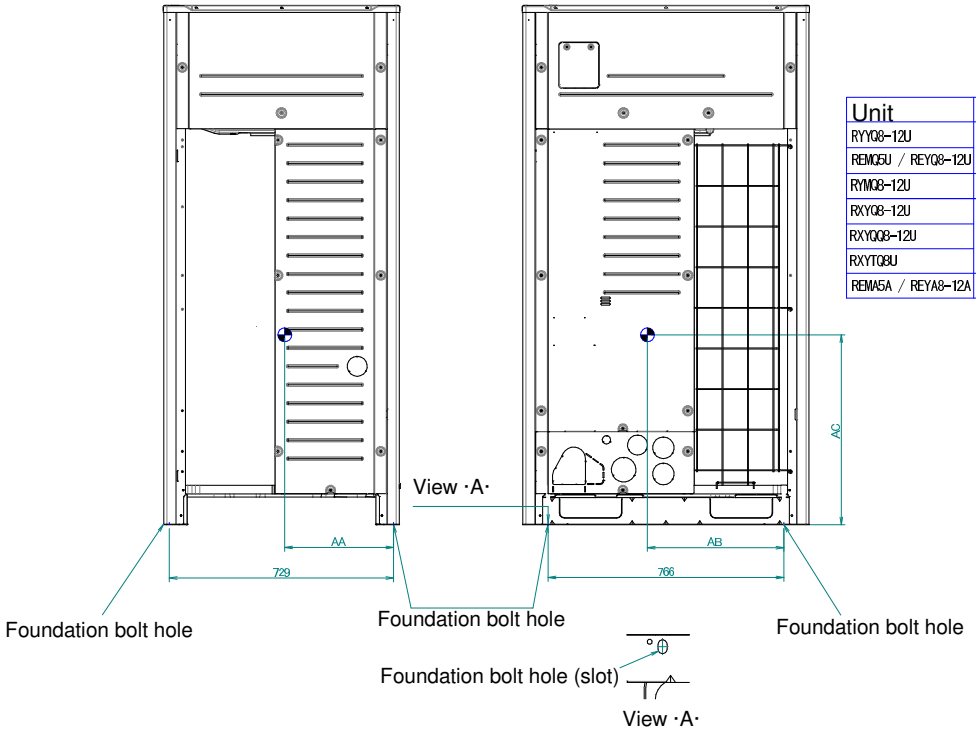
7 Centre of gravity

7 - 1 Centre of Gravity

REYA8-12A
REMA5A



Unit	AA	AB	AC
RYYQ8-12U	328	366	565
REMQ5U / REYQ8-12U			
RYMQ8-12U	354	443	565
RXYQ8-12U	339	448	565
RXYQQ8-12U			
RXYTQ8U			
REMA5A / REYA8-12A	353	426	690

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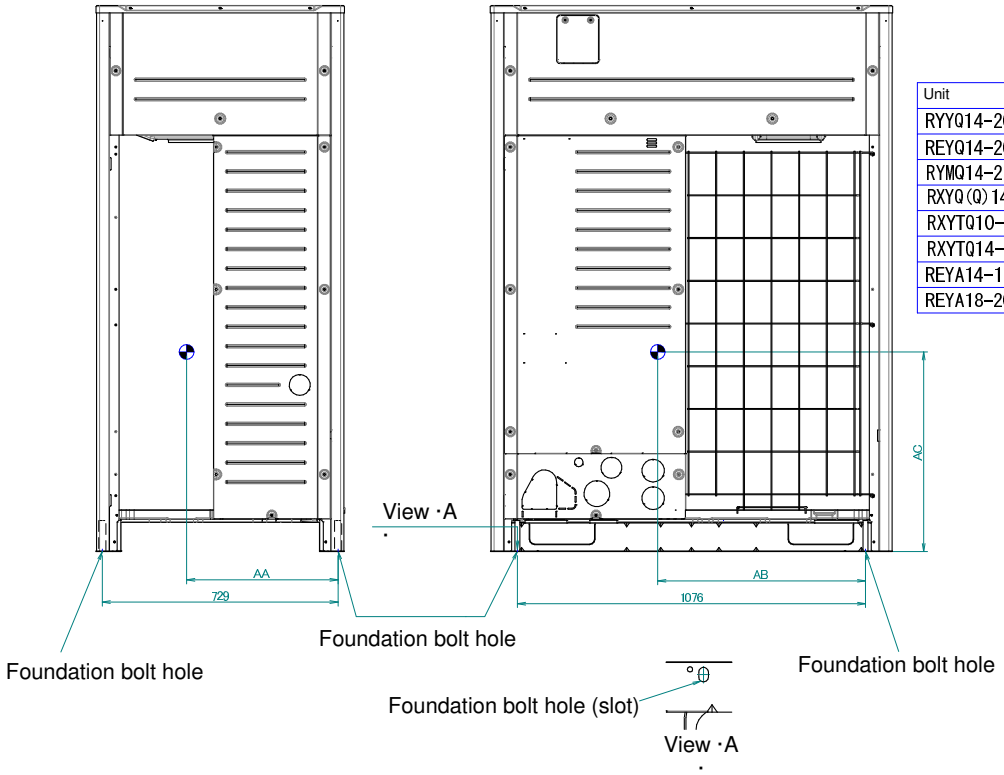
7 Centre of gravity

7 - 1 Centre of Gravity

REYA14-20A



Unit	AA	AB	AC
RYYQ14-20U	334	470	610
REYQ14-20U	334	470	610
RYMQ14-20U	360	569	610
RXYQ(Q)14-20U	345	575	610
RXYTQ10-12U	350	610	810
RXYTQ14-16U	351	565	610
REYA14-16A	339	596	758
REYA18-20A	350	587	752

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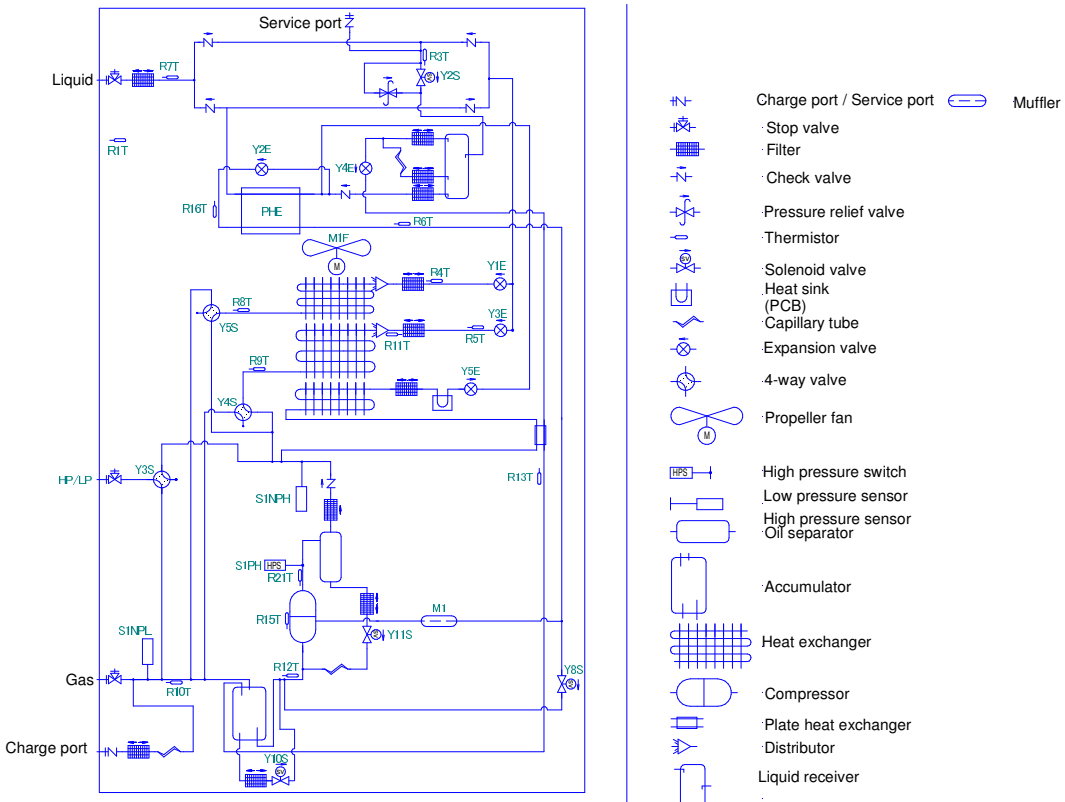
8 Piping diagrams

8 - 1 Piping Diagrams

8

REYA8-12A
REMA5A



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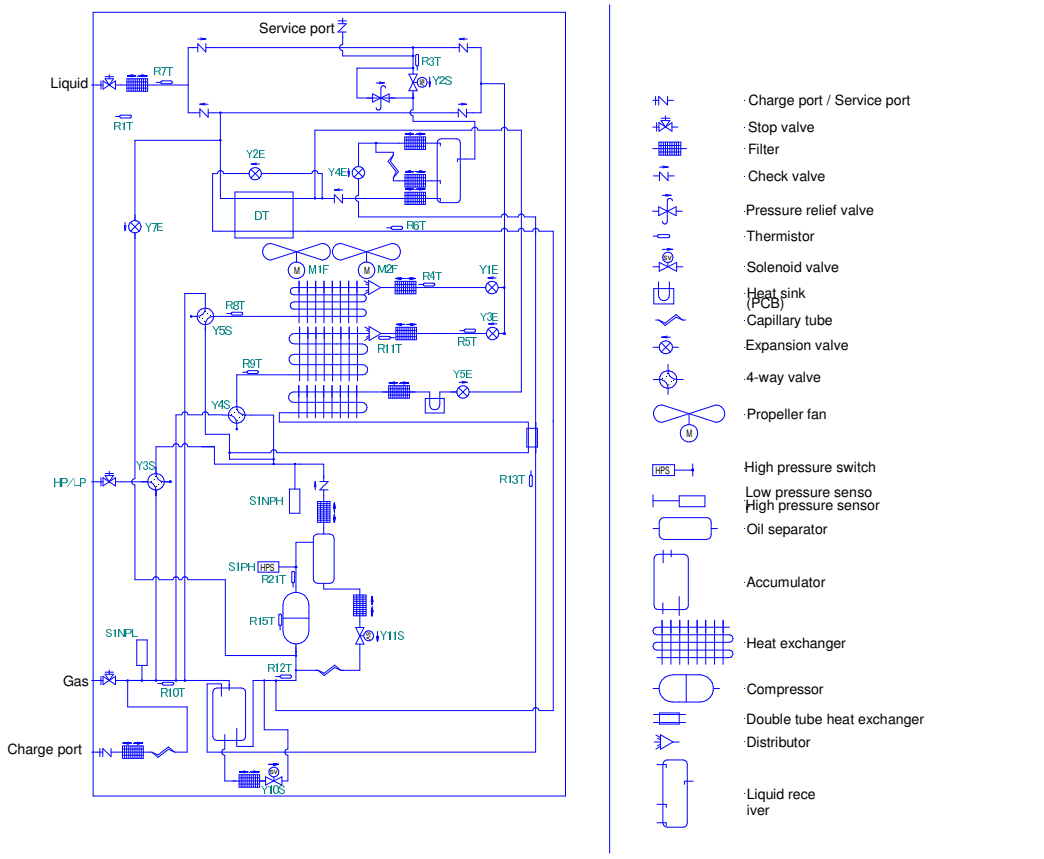
REYA14-20A



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9 Wiring diagrams

9 - 1 Wiring Diagrams - Three Phase

REYA8-12A / REMA5A

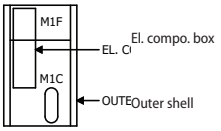
NOTES to go through before starting the unit

1. Symbols:

X1M : Main terminal
: Earth wiring
: Field wire
: Field cable
: Screened conductor
(1) : Several wiring possibilities
: Option
: Wiring depending on model
: Not mounted in switch box
: PCB

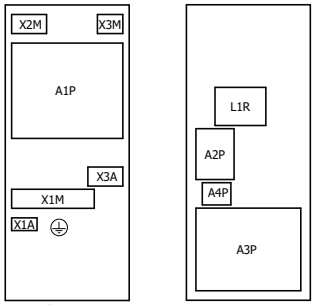
2. Refer to the installation or service manual on how to use BS1 ~ BS3 push buttons and DS1 ~ DS2 DIP switches.
3. Do not operate the unit by short-circuiting protection device S1PH.
4. Refer to the installation manual for indoor-outdoor transmission F1-F2 and outdoor-multi transmission Q1-Q2 wiring.
5. When using the central control system, connect outdoor-outdoor transmission F1-F2.
6. The capacity of the contact is 220~240V AC - 0,5A (Rush current needs 3A or less).
7. Use dry contact for micro-current (10mA or less, 15V DC).
8. When using the optional adapter, refer to the installation manual of the optional adapter.

LAYOUT OF M1C, M1F, M2F



TERMINAL OF M1C

POSITION IN SWITCH BOX



Front side Back side

LEGEND

Part n°		Description
A1P		Printed circuit board (main)
A2P		Printed circuit board (noise filter)
A3P		Printed circuit board (inverter)
A4P		Printed circuit board (fan)
BS* (A1P)		Push button switch
DS* (A1P)		Dipswitch
E1HC		Crank case heater
E3H	*	Bottom plate heater
F1U (A1P)		Fuse T 10 A 250 V
F1U, F2U		Fuse T 1 A 250 V
F3U	#	Field fuse
HAP (A1P)		Running LED (service monitor-green)
K*R (A*P)		Relay on PCB
L1R		Reactor
M1C		Motor (compressor)
M1F		Motor (fan)
Q1DI	#	Earth leakage circuit breaker
R1T		Thermistor (Air)
R3T		Thermistor (Liquid main)
R4T		Thermistor (Heat exch. liquid upper)
R5T		Thermistor (Heat exch. liquid lower)
R6T		Thermistor (Subcool heat exch. gas)
R7T		Thermistor (Subcool heat exch. liquid)
R8T		Thermistor (Heat exch. gas upper)
R9T		Thermistor (Heat exch. gas lower)
R10T		Thermistor (Suction)
R11T		Thermistor (Heat exch. de-icer)
R12T		Thermistor (Suction compressor)

Part n°		Description
R13T		Thermistor (Receiver gas)
R15T		Thermistor (M1C body)
R16T		Thermistor (Gas injection)
R21T		Thermistor (M1C discharge pipe)
S1NPH		High pressure sensor
S1NPL		Low pressure sensor
S1PH		High pressure switch
SEG* (A1P)		7-segment display
SFB	#	Mechanical ventilation error input
T1A		Current sensor
X*A		Connector
X*M		Terminal strip
Y1E		Electronic exp. valve (Heat exch. upper)
Y2E		Electronic exp. valve (Subc. heat exch.)
Y3E		Electronic exp. valve (Heat exch. lower)
Y4E		Electronic exp. valve (Receiver gas)
Y5E		Electronic exp. valve (Inverter cooling)
Y2S		Solenoïd valve (Liquid pipe)
Y3S		Solenoïd valve (HP/LP gas pipe)
Y4S		Solenoïd valve (Heat exchanger lower)
Y5S		Solenoïd valve (Heat exchanger upper)
Y8S		Solenoïd valve (Gas injection)
Y10S		Solenoïd valve (Accu oil return)
Y11S		Solenoïd valve (M1C oil return)
Y13S	#	Error operation output (SVEO)
Y14S	#	Leak sensor output (SVS)
Z*C		Noise filter (ferrite core)

* : optional #: field supply

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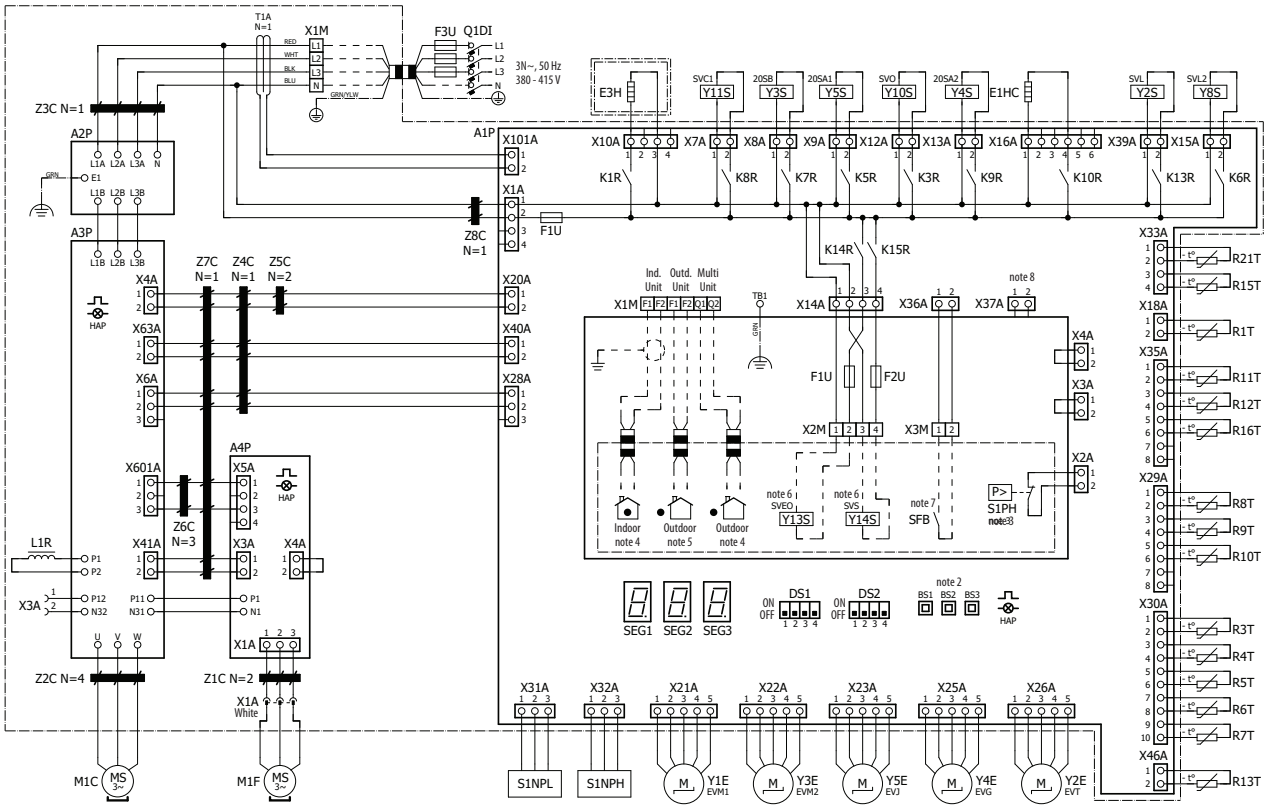
REYA8-12A
REMA5A



4D138280A

9 Wiring diagrams

9 - 1 Wiring Diagrams - Three Phase

REYA14-20A

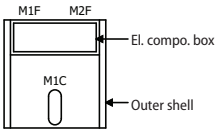
NOTES to go through before starting the unit

1. Symbols:

X1M : Main terminal
: Earth wiring
: Field wire
: Field cable
: Screened conductor
(1) : Several wiring possibilities
: Option
: Wiring depending on model
: Not mounted in switch box
: PCB

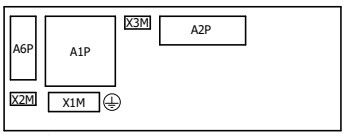
2. Refer to the installation or service manual on how to use BS1 ~ BS3 push buttons and DS1 ~ DS2 DIP switches.
3. Do not operate the unit by short-circuiting protection device S1PH.
4. Refer to the installation manual for indoor-outdoor transmission F1-F2 and outdoor-multi transmission Q1-Q2 wiring.
5. When using the central control system, connect outdoor-outdoor transmission F1-F2.
6. The capacity of the contact is 220~240V AC - 0,5A (Rush current needs 3A or less).
7. Use dry contact for micro-current (10mA or less, 15V DC).
8. When using the optional adapter, refer to the installation manual of the optional adapter.

LAYOUT OF M1C, M1F, M2F

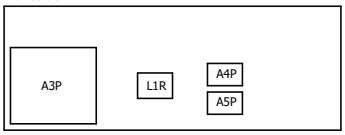


TERMINAL OF M1C

POSITION IN SWITCH BOX



Front side



Back side

LEGEND

Part n°		Description
A1P		Printed circuit board (main)
A2P		Printed circuit board (noise filter)
A3P		Printed circuit board (inverter)
A4P, A5P		Printed circuit board (fan)
A6P		Printed circuit board (sub)
BS* (A1P)		Push button switch
DS* (A1P)		Dipswitch
E1HC		Crank case heater
E3H	*	Bottom plate heater
F1U (A1P)		Fuse T 10 A 250 V
F1U (A6P)		Fuse 3.15 A 250 V
F3U	#	Field fuse
HAP (A1P)		Running LED (service monitor-green)
K*R (A*P)		Relay on PCB
L1R		Reactor
M1C		Motor (compressor)
M1F, M2F		Motor (fan)
Q1DI	#	Earth leakage circuit breaker
R1T		Thermistor (Air)
R3T		Thermistor (Liquid main)
R4T		Thermistor (Heat exch. liquid upper)
R5T		Thermistor (Heat exch. liquid lower)
R6T		Thermistor (Subcool heat exch. gas)
R7T		Thermistor (Subcool heat exch. liquid)
R8T		Thermistor (Heat exch. gas upper)
R9T		Thermistor (Heat exch. gas lower)
R10T		Thermistor (Suction)
R11T		Thermistor (Heat exch. de-icer)
R12T		Thermistor (Suction compressor)

Part n°		Description
R13T		Thermistor (Receiver gas)
R15T		Thermistor (M1C body)
R21T		Thermistor (M1C discharge pipe)
S1NPH		High pressure sensor
S1NPL		Low pressure sensor
S1PH		High pressure switch
SEG* (A1P)		7-segment display
SFB	#	Mechanical ventilation error input
T1A		Current sensor
X*A		Connector
X*M		Terminal strip
Y1E		Electronic exp. valve (Heat exch. upper)
Y2E		Electronic exp. valve (Subc. heat exch.)
Y3E		Electronic exp. valve (Heat exch. lower)
Y4E		Electronic exp. valve (Receiver gas)
Y5E		Electronic exp. valve (Inverter cooling)
Y7E		Electronic exp. valve (Liquid injection)
Y2S		Solenoïd valve (Liquid pipe)
Y3S		Solenoïd valve (HP/LP gas pipe)
Y4S		Solenoïd valve (Heat exchanger lower)
Y5S		Solenoïd valve (Heat exchanger upper)
Y10S		Solenoïd valve (Accu oil return)
Y11S		Solenoïd valve (M1C oil return)
Y13S	#	Error operation output (SVEO)
Y14S	#	Leak sensor output (SVS)
Z*C		Noise filter (ferrite core)

* : optional #: field supply

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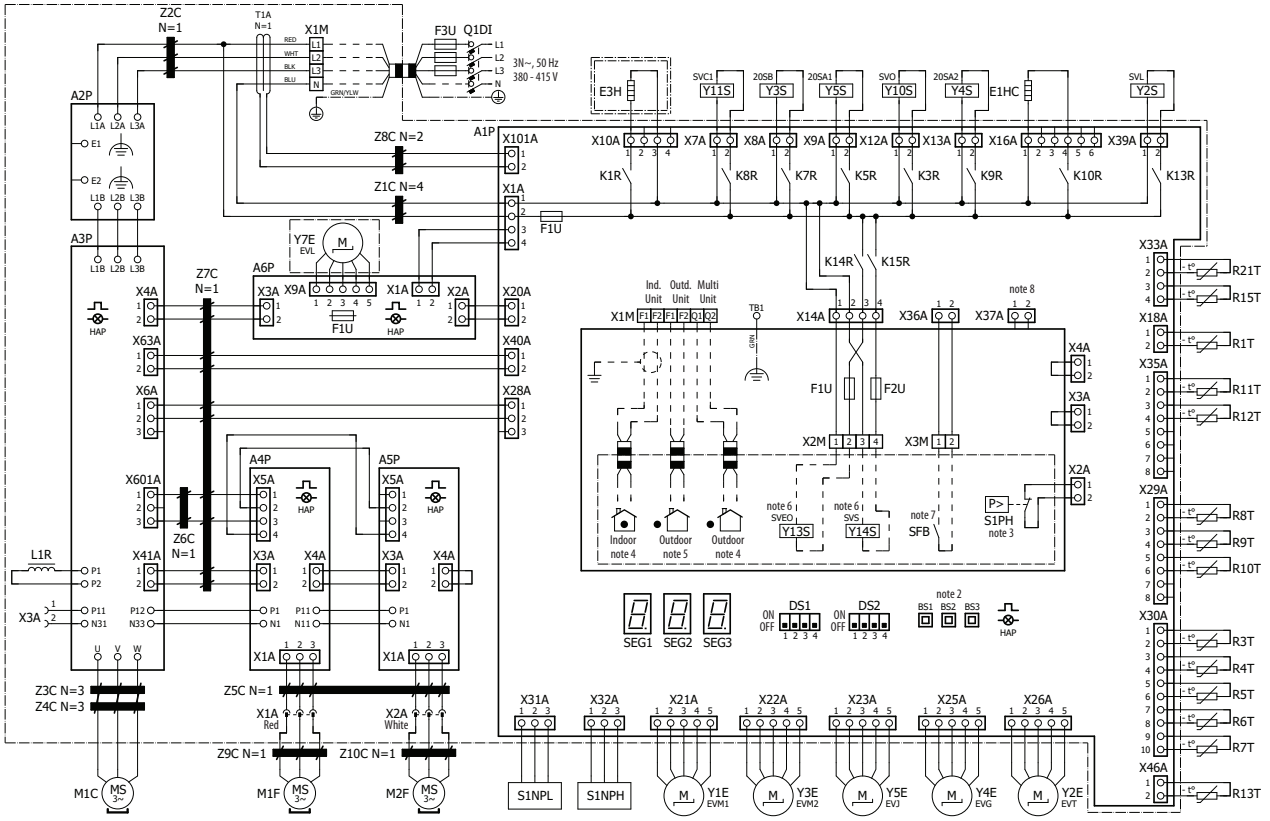
REYA14-20A



4D138281A

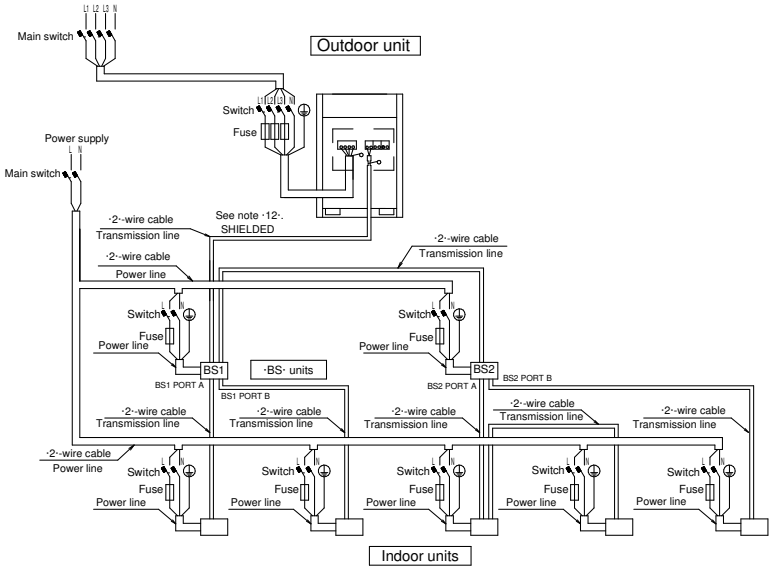
10 External connection diagrams

10 - 1 External Connection Diagrams

REYA-A
REMA5A

VRV5
Heat recovery

External connection diagram



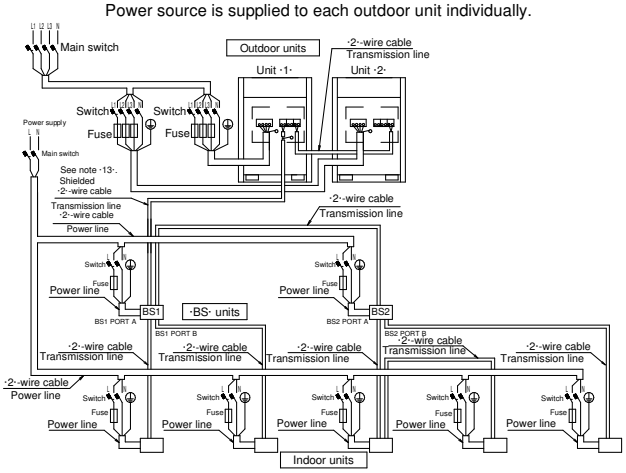
1. All wiring, components and materials to be procured on-site must comply with the applicable legislation.
2. Use copper conductors only
3. For more details, refer to the wiring diagram of the unit.
4. Install a circuit breaker for safety.
5. All field wiring and components must be provided by an authorised electrician.
6. Unit has to be grounded in compliance with the applicable legislation.
7. The wiring shown is a general points-of-connection guide and is not intended to include all details for a specific installation.
8. Make sure to install the switch and the fuse to the power line of each equipement.
9. Install a main to switch to (if necessary) immediately interrupt all the system's power sources.
10. If there exists the possibility of reversed phase, loose phase or momentary blackout, or if the power goes on and off while the product is operating, attach a reversed phase protection circuit locally.
    Running the product in reversed phase may break the compressor and other parts.
11. Install an earth leakage circuit breaker.
12. See outdoor unit manual for shielding the ·F1F2· wire

3D138298

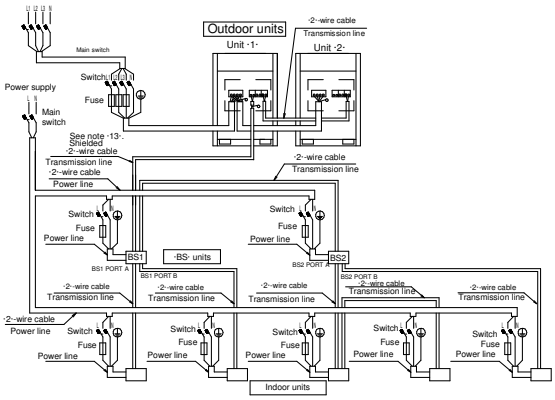
REYA-A
REMA5A

VRV5 Heat recovery
External connection diagram

Power source is supplied to each outdoor unit individually.



Power source is connected in series between the units.



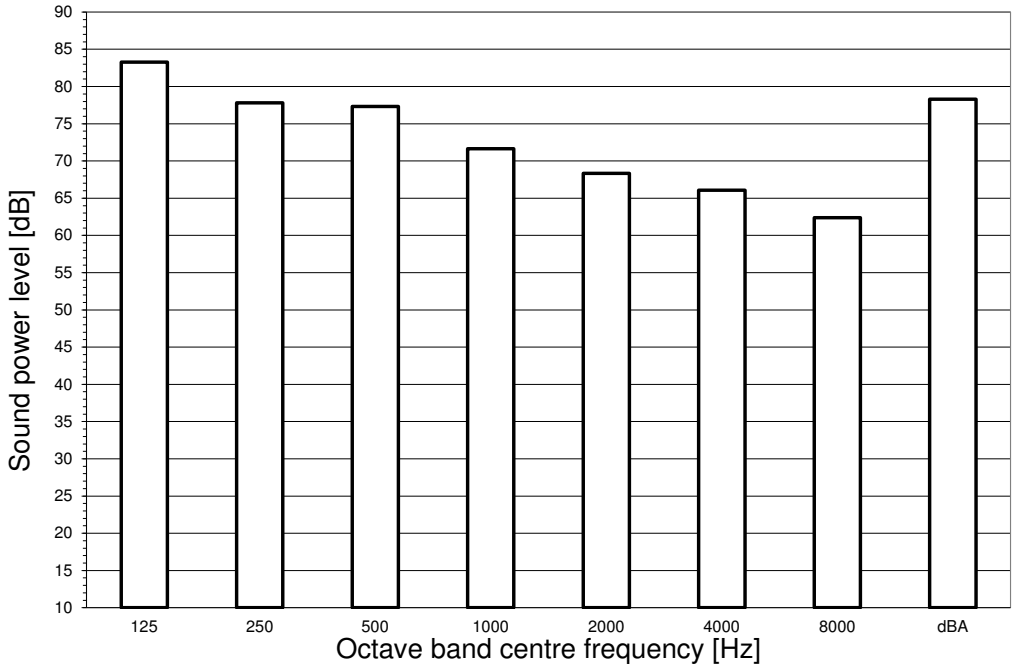
1. All wiring, components and materials to be procured on-site must comply with the applicable legislation.
2. Use copper conductors only
3. For more details, refer to the wiring diagram of the unit.
4. Install a circuit breaker for safety.
5. All field wiring and components must be provided by an authorised electrician.
6. Unit has to be grounded in compliance with the applicable legislation.
7. The wiring shown is a general points-of-connection guide and is not intended to include all details for a specific installation.
8. Make sure to install the switch and the fuse to the power line of each equipement.
9. Install a main to switch to (if necessary) immediately interrupt all the system's power sources.
10. If there exists the possibility of reversed phase, loose phase or momentary blackout, or if the power goes on and off while the product is operating, attach a reversed phase protection circuit locally.
    Running the product in reversed phase may break the compressor and other parts.
11. Install an earth leakage circuit breaker.
12. The capacity of UNIT1 must be larger than that of UNIT2 when the power source is connected in series between the units.
13. See outdoor unit manual for shielding the ·F1F2· wire

3D141220

11 Sound data

11 - 1 Sound Power Spectrum - Cooling

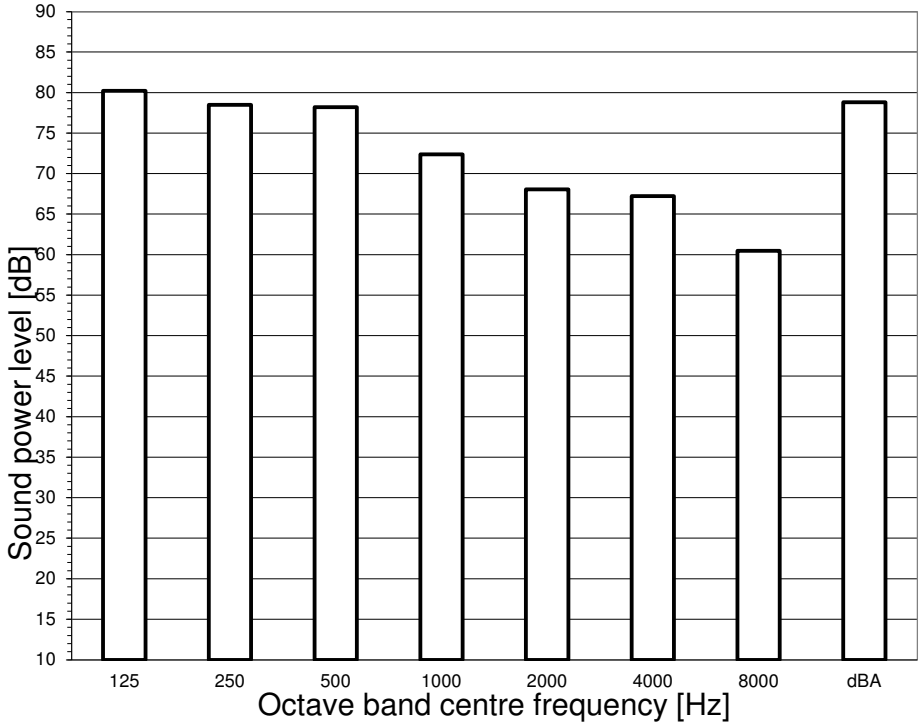
REYA8A
REMA5A



Notes
- dBA = A-weighted sound power level (A scale according to IEC).
- Reference acoustic intensity 0dB = ·10^ -12 W·
- Measured according to ISO 3744

4D138299

REYA10A



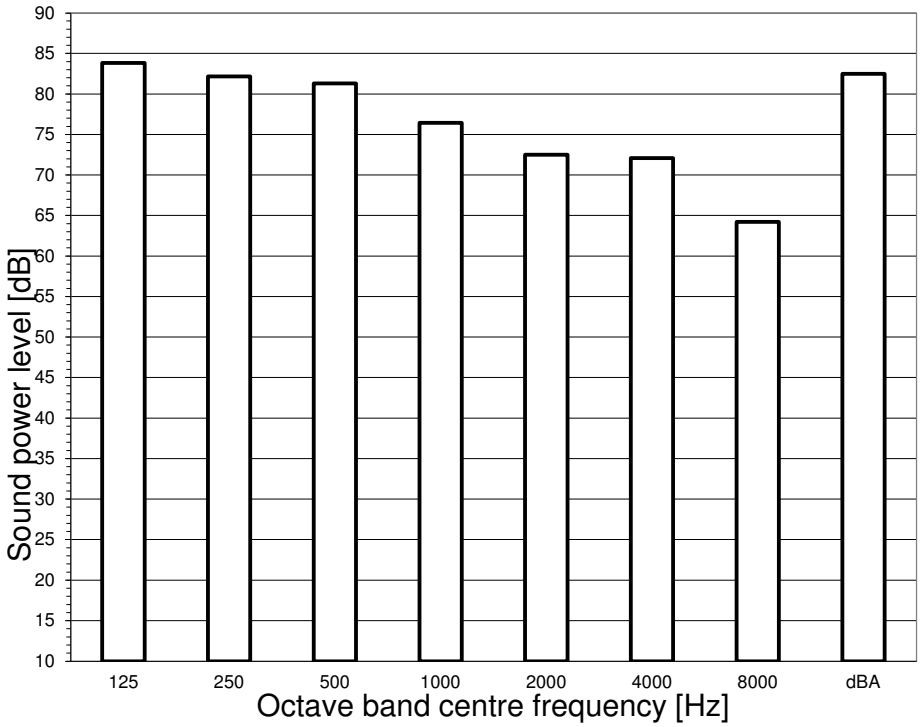
Notes
- dBA = A-weighted sound power level (A scale according to IEC).
- Reference acoustic intensity 0dB = ·10^ -12 W·
- Measured according to ISO 3744

4D141170

11 Sound data

11 - 1 Sound Power Spectrum - Cooling

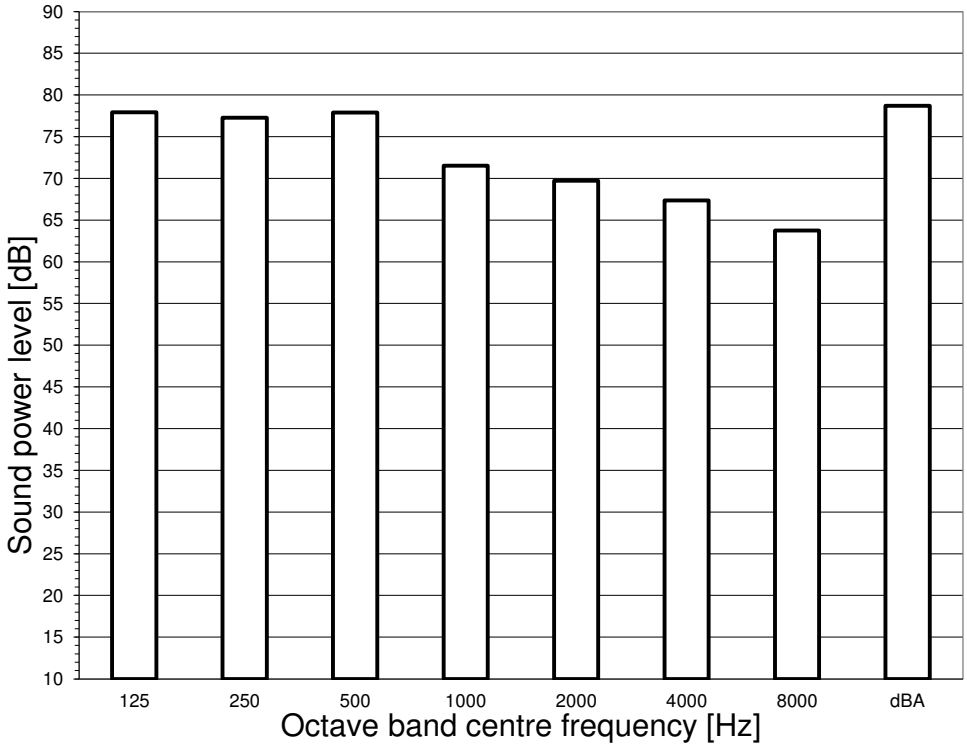
REYA12A



Notes
- dBA = A-weighted sound power level (A scale according to IEC).
- Reference acoustic intensity 0dB = ·10^ -12 W·
- Measured according to ISO 3744

4D141171

REYA14A



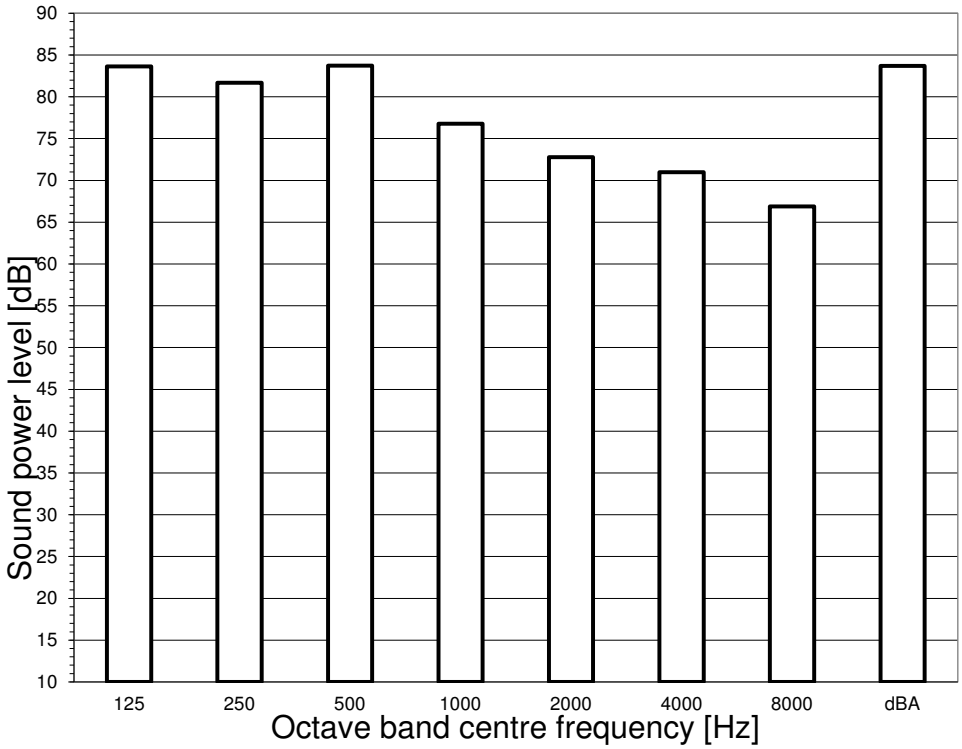
Notes
- dBA = A-weighted sound power level (A scale according to IEC).
- Reference acoustic intensity 0dB = ·10^ -12 W·
- Measured according to ISO 3744

4D141172

11 Sound data

11 - 1 Sound Power Spectrum - Cooling

REYA16A

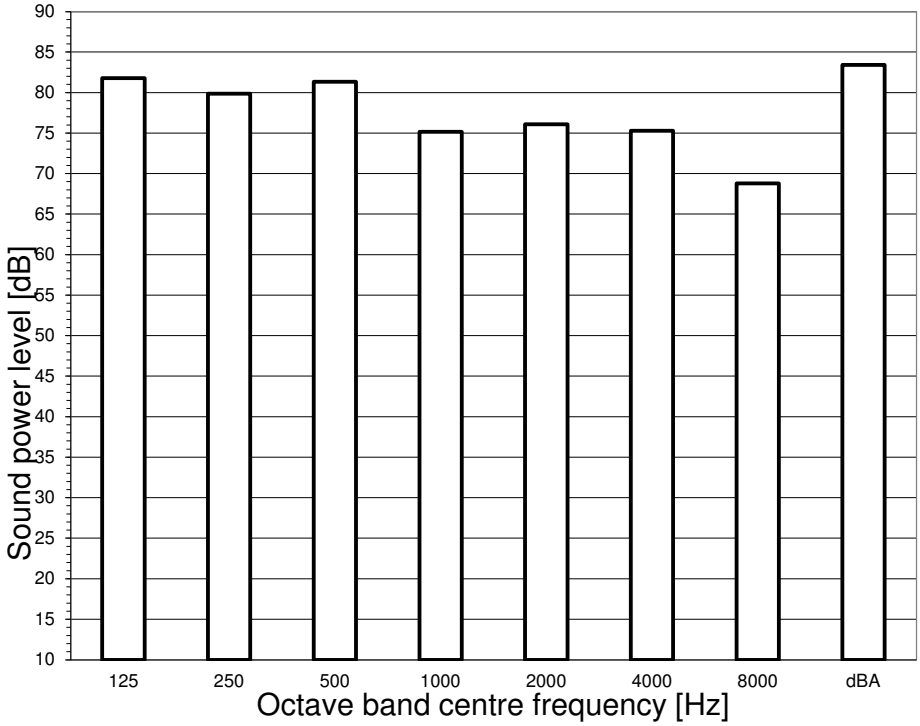


Notes

- dBA = A-weighted sound power level (A scale according to IEC).
- Reference acoustic intensity 0dB = ·10^ -12 W·
- Measured according to ISO 3744

4D141173

REYA18A



Notes

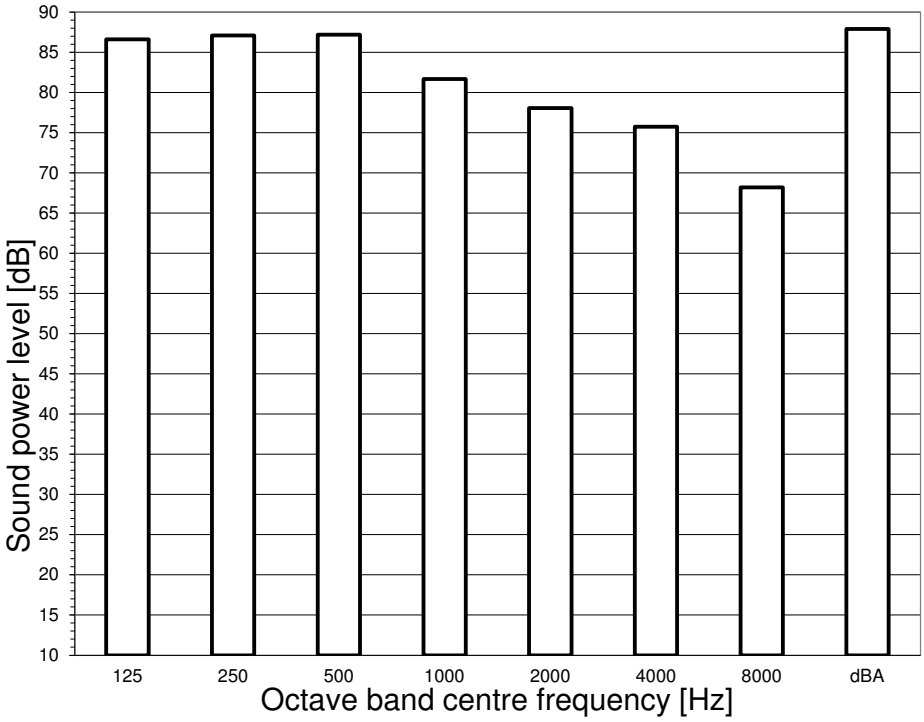
- dBA = A-weighted sound power level (A scale according to IEC).
- Reference acoustic intensity 0dB = ·10^ -12 W·
- Measured according to ISO 3744

4D141174

11 Sound data

11 - 1 Sound Power Spectrum - Cooling

REYA20A



Notes

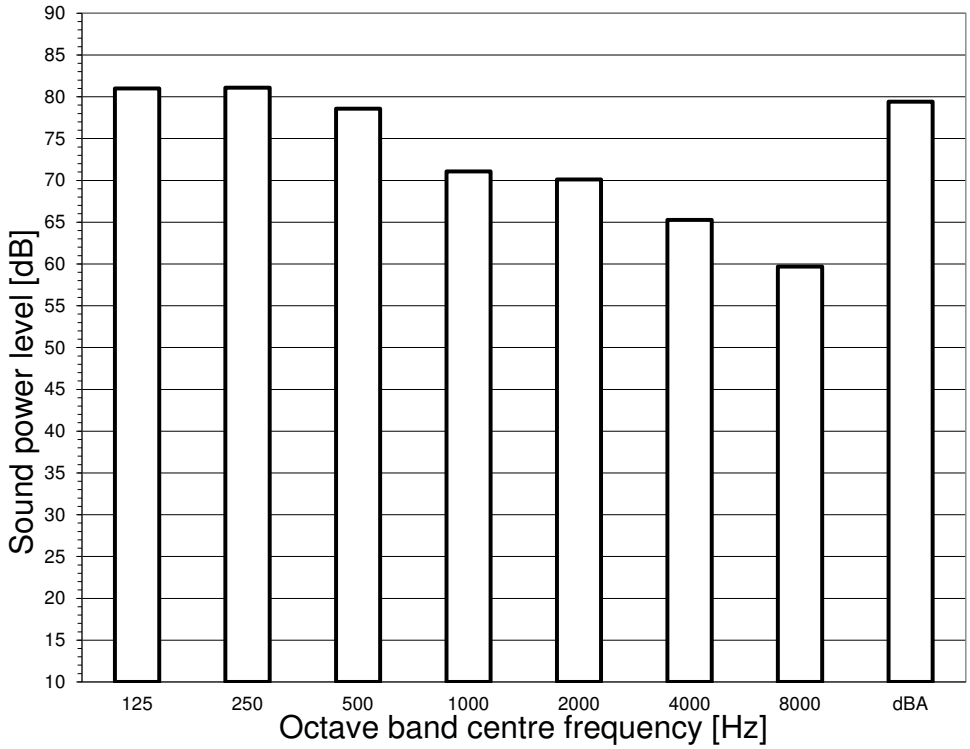
- dBA = A-weighted sound power level (A scale according to IEC).
- Reference acoustic intensity 0dB = ·10^ -12 W·
- Measured according to ISO 3744

4D141175

11 Sound data

11 - 2 Sound Power Spectrum - Heating

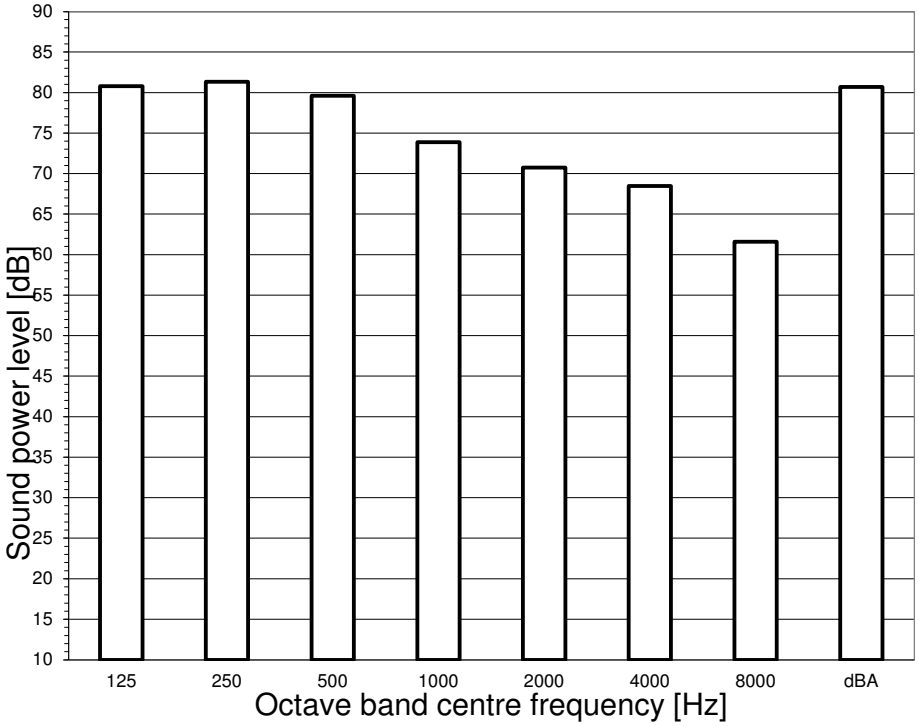
REYA8A
REMA5A



Notes
- dBA = A-weighted sound power level (A scale according to IEC).
- Reference acoustic intensity 0dB = ·10^ -12 W·
- Measured according to ISO 3744

4D138299

REYA10A



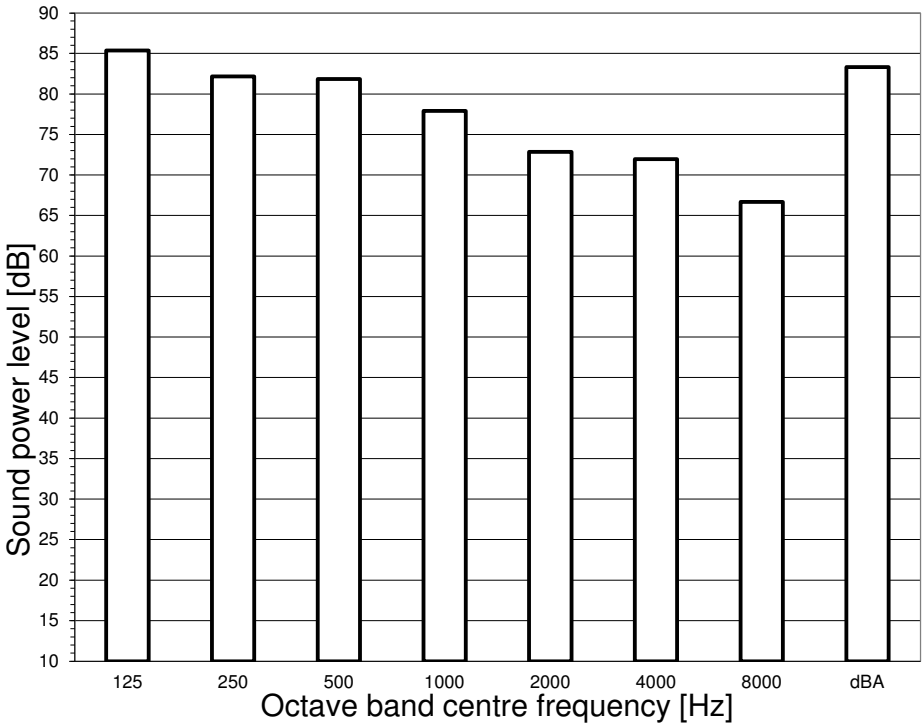
Notes
- dBA = A-weighted sound power level (A scale according to IEC).
- Reference acoustic intensity 0dB = ·10^ -12 W·
- Measured according to ISO 3744

4D141170

11 Sound data

11 - 2 Sound Power Spectrum - Heating

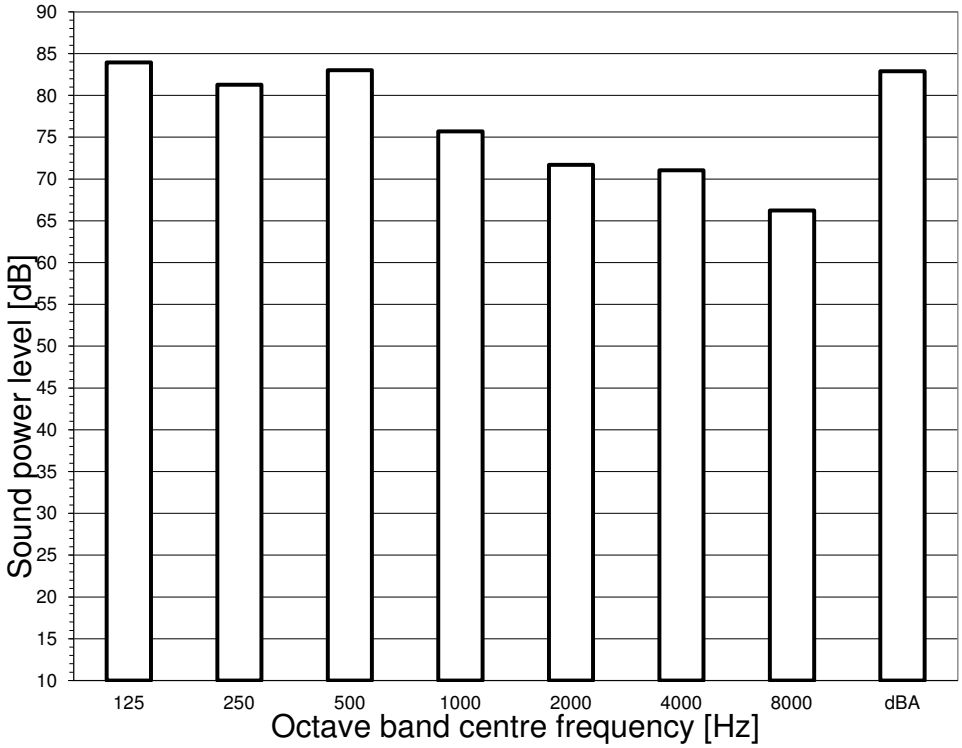
REYA12A



Notes
- dBA = A-weighted sound power level (A scale according to IEC).
- Reference acoustic intensity 0dB = ·10^ -12 W·
- Measured according to ISO 3744

4D141171

REYA14A



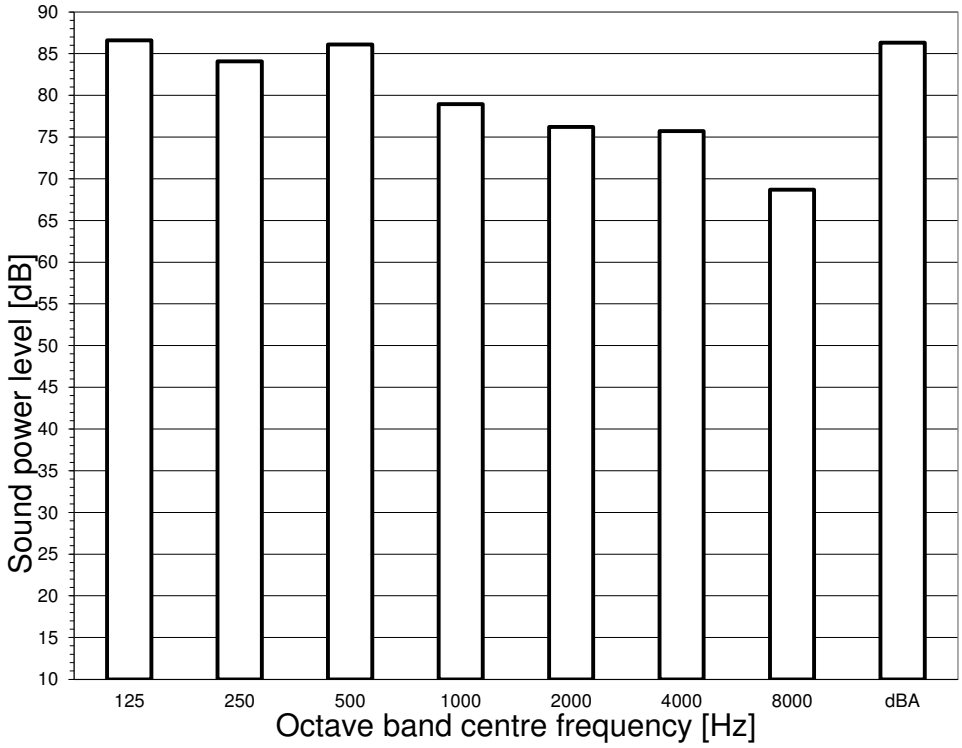
Notes
- dBA = A-weighted sound power level (A scale according to IEC).
- Reference acoustic intensity 0dB = ·10^ -12 W·
- Measured according to ISO 3744

4D141172

11 Sound data

11 - 2 Sound Power Spectrum - Heating

REYA16A

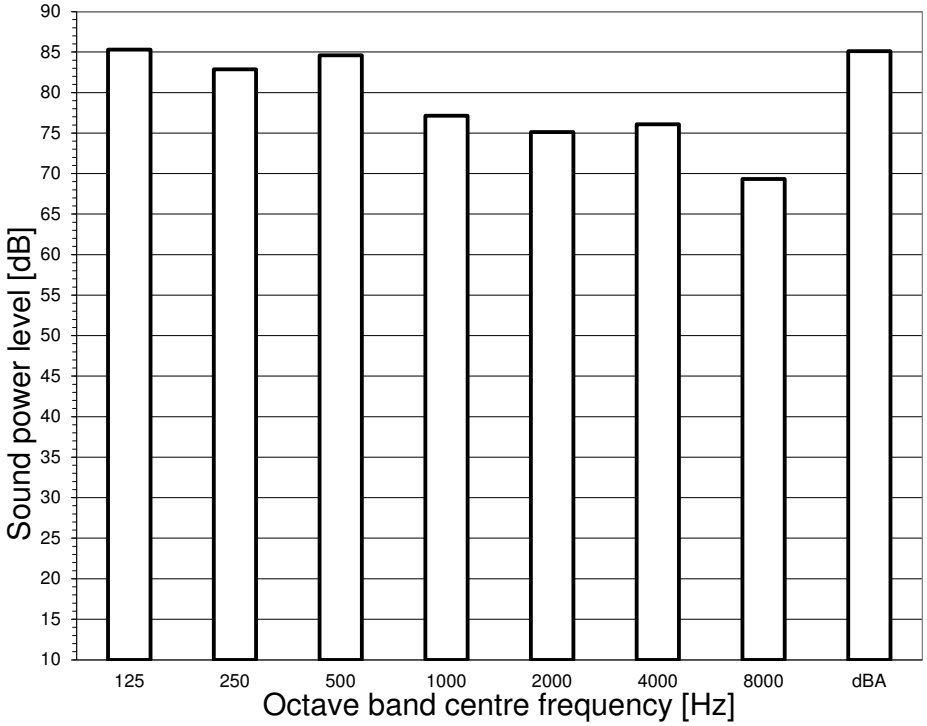


Notes

- dBA = A-weighted sound power level (A scale according to IEC).
- Reference acoustic intensity 0dB = ·10^ -12 W·
- Measured according to ISO 3744

4D141173

REYA18A



Notes

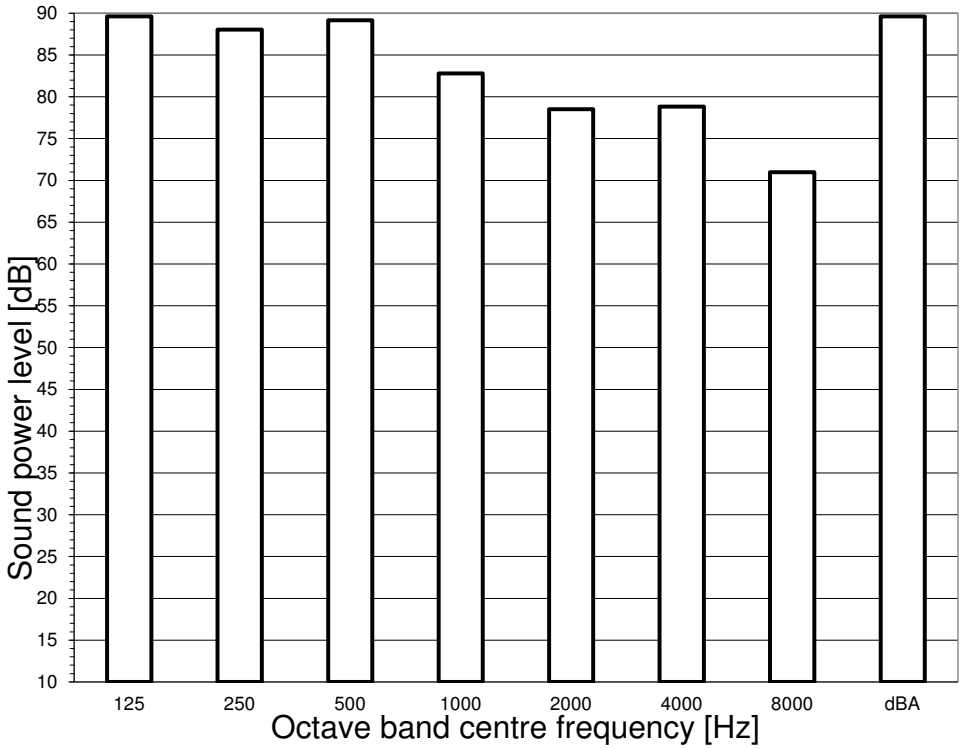
- dBA = A-weighted sound power level (A scale according to IEC).
- Reference acoustic intensity 0dB = ·10^ -12 W·
- Measured according to ISO 3744

4D141174

11 Sound data

11 - 2 Sound Power Spectrum - Heating

REYA20A



Notes

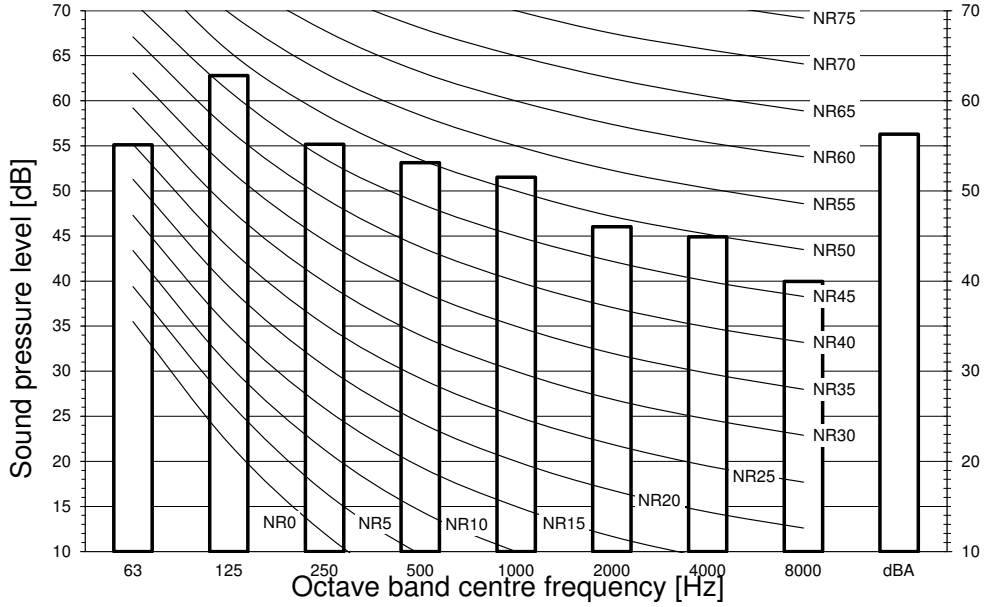
- dBA = A-weighted sound power level (A scale according to IEC).
- Reference acoustic intensity 0dB = ·10^ -12 W·
- Measured according to ISO 3744

4D141175

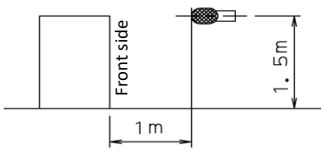
11 Sound data

11 - 3 Sound Pressure Spectrum - Cooling

REYA8A
REMA5A

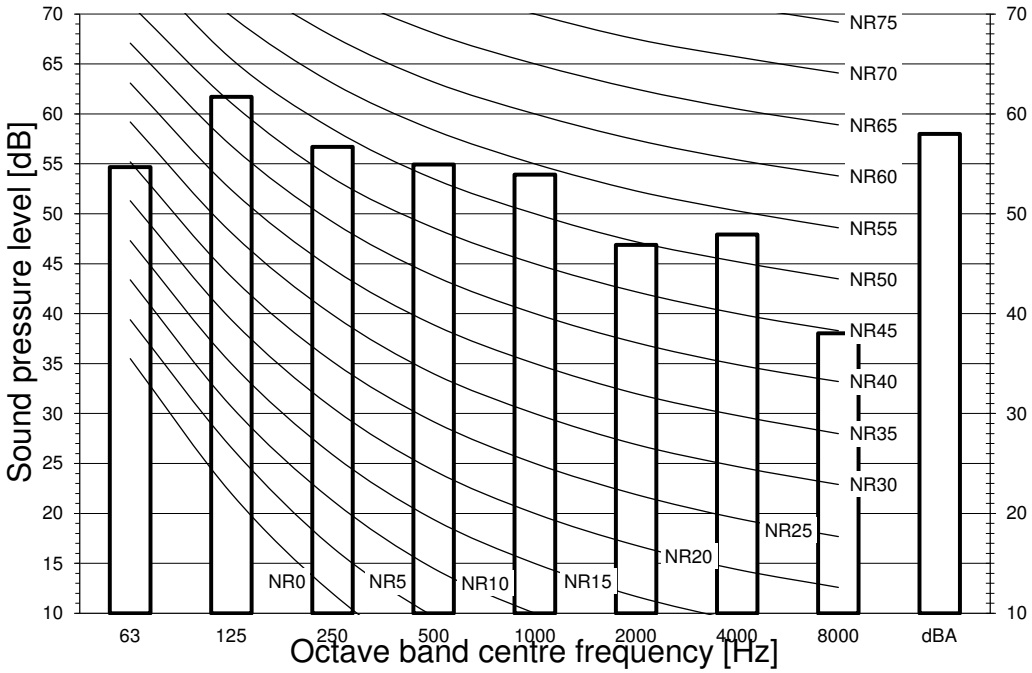


Notes
- Data is valid at free field condition.
- Data is valid at nominal operation condition.
- dBA = A-weighted sound pressure level (A scale according to IEC).
- Reference acoustic pressure 0 dB = 20 µPa

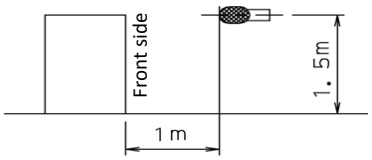


4D138299

REYA10A



Notes
- Data is valid at free field condition.
- Data is valid at nominal operation condition.
- dBA = A-weighted sound pressure level (A scale according to IEC).
- Reference acoustic pressure 0 dB = 20 µPa

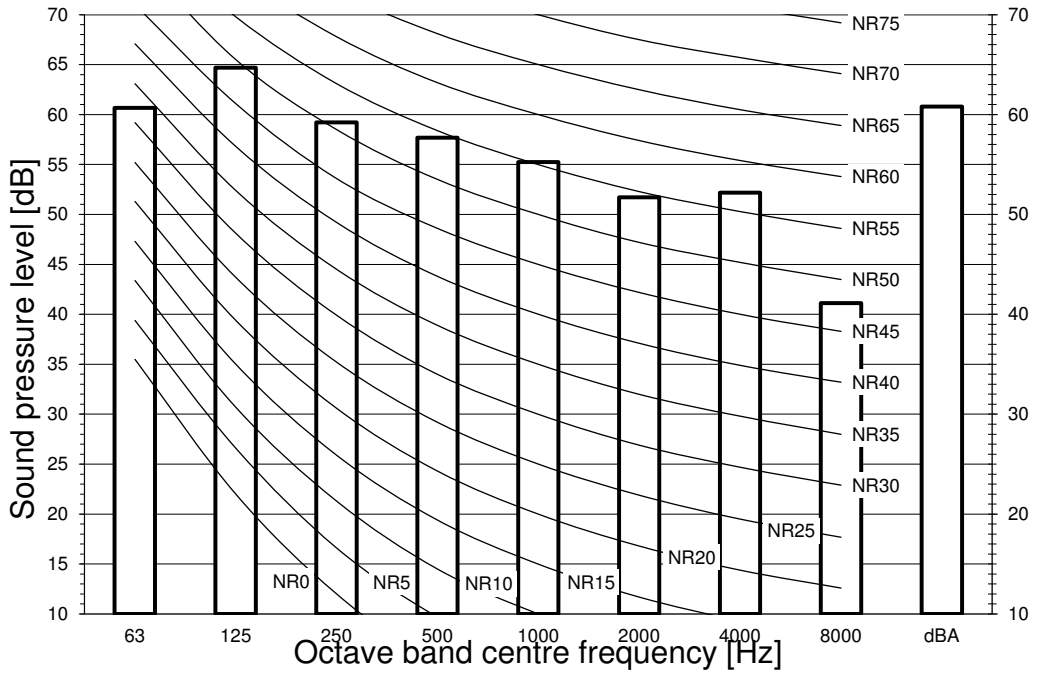


4D141170

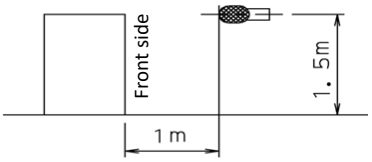
11 Sound data

11 - 3 Sound Pressure Spectrum - Cooling

REYA12A

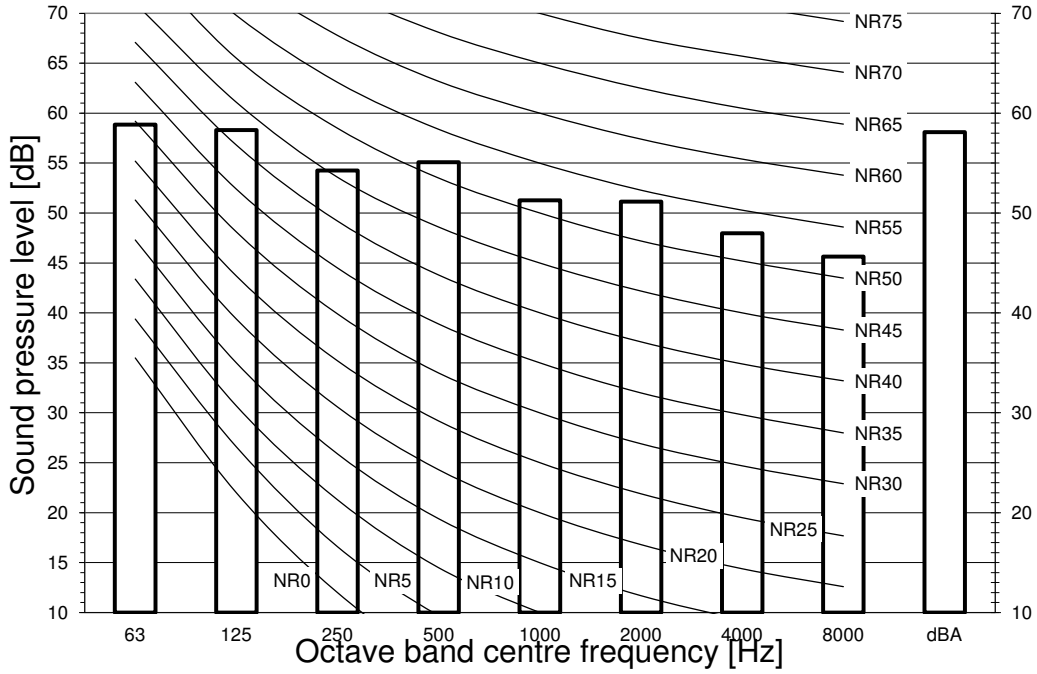


Notes
- Data is valid at free field condition.
- Data is valid at nominal operation condition.
- dBA = A-weighted sound pressure level (A scale according to IEC).
- Reference acoustic pressure 0 dB = 20 µPa

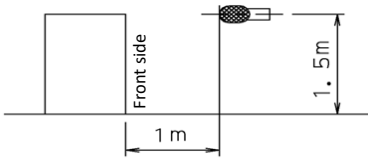


4D141171

REYA14A



Notes
- Data is valid at free field condition.
- Data is valid at nominal operation condition.
- dBA = A-weighted sound pressure level (A scale according to IEC).
- Reference acoustic pressure 0 dB = 20 µPa

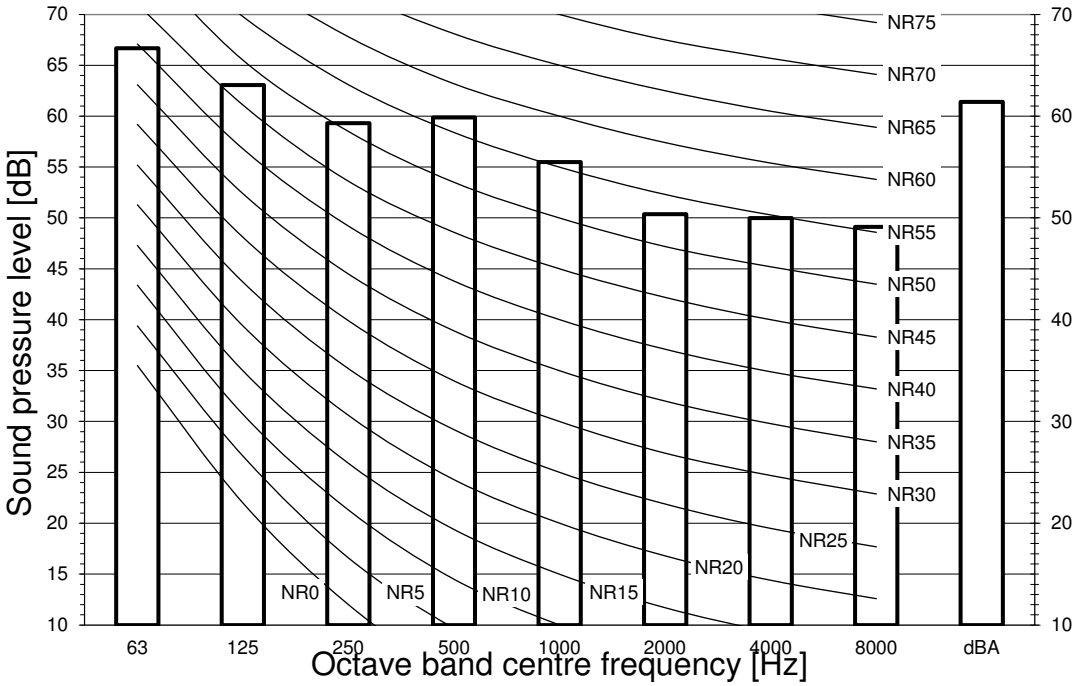


4D141172

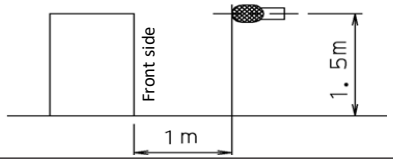
11 Sound data

11 - 3 Sound Pressure Spectrum - Cooling

REYA16A

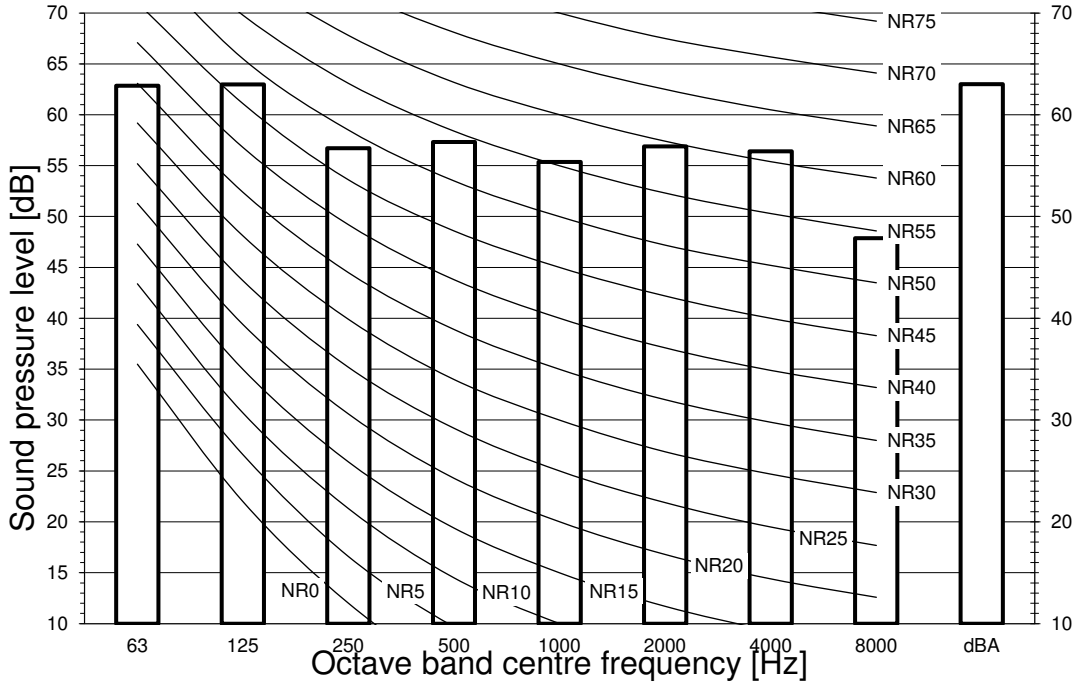


Notes
- Data is valid at free field condition.
- Data is valid at nominal operation condition.
- dBA = A-weighted sound pressure level (A scale according to IEC).
- Reference acoustic pressure 0 dB = 20 µPa

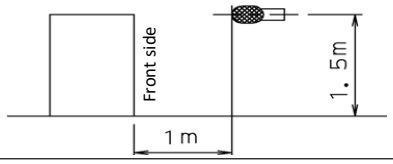


4D141173

REYA18A



Notes
- Data is valid at free field condition.
- Data is valid at nominal operation condition.
- dBA = A-weighted sound pressure level (A scale according to IEC).
- Reference acoustic pressure 0 dB = 20 µPa

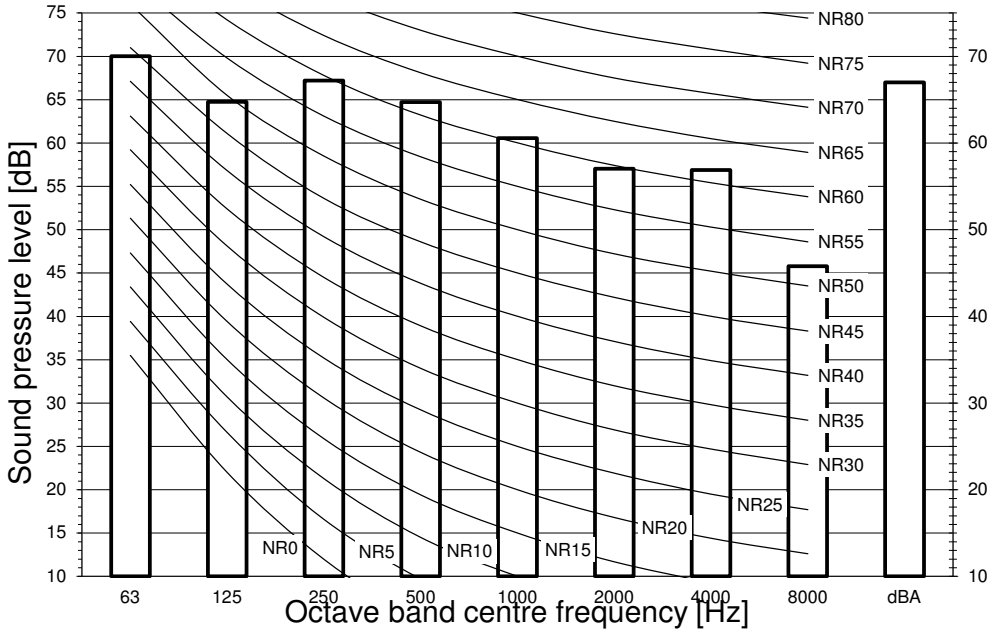


4D141174

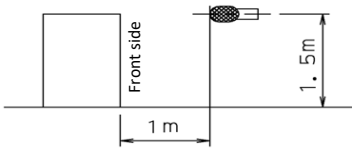
11 Sound data

11 - 3 Sound Pressure Spectrum - Cooling

REYA20A



Notes
- Data is valid at free field condition.
- Data is valid at nominal operation condition.
- dBA = A-weighted sound pressure level (A scale according to IEC).
- Reference acoustic pressure 0 dB = 20 µPa

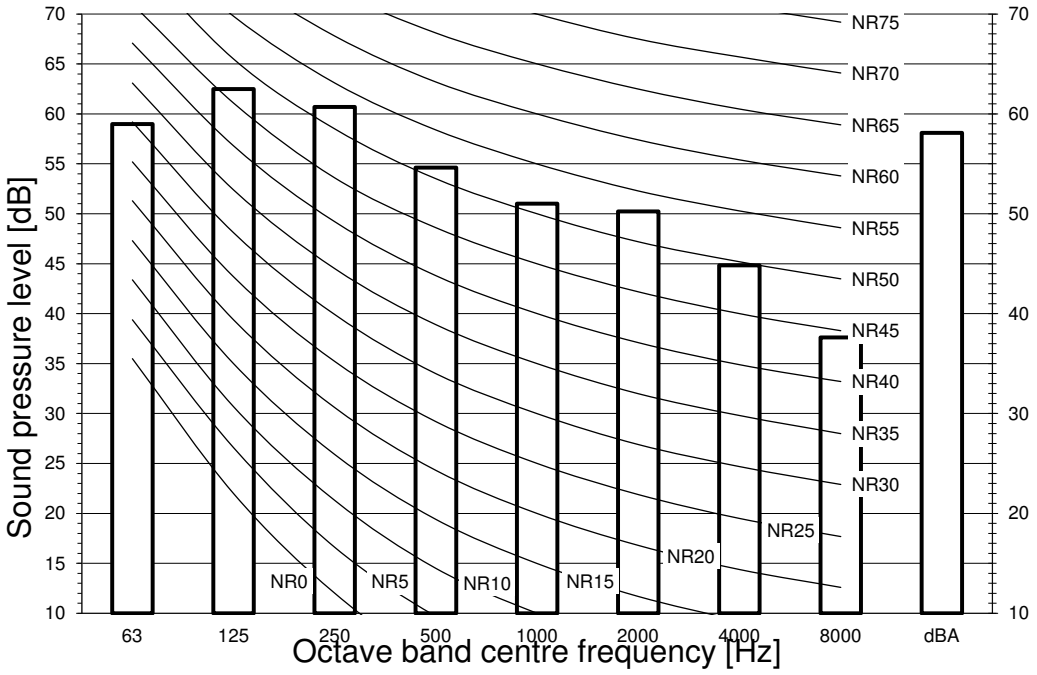


4D141175

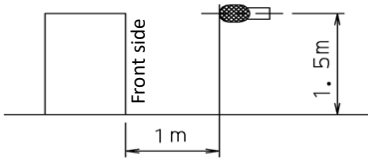
11 Sound data

11 - 4 Sound Pressure Spectrum - Heating

REMA5A
REYA8A

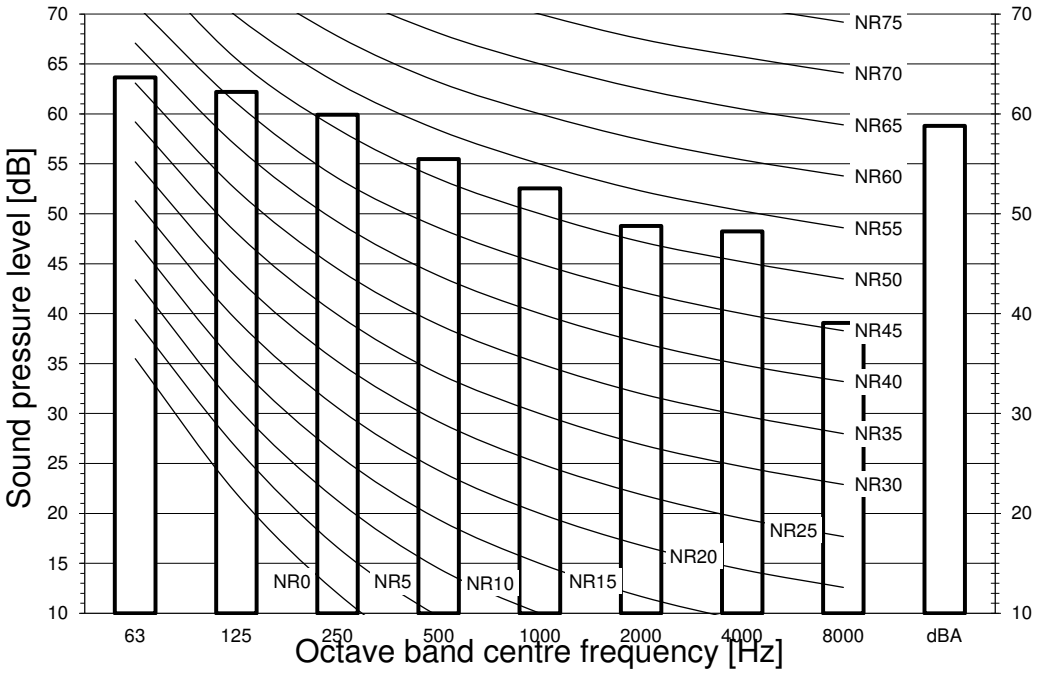


Notes
- Data is valid at free field condition.
- Data is valid at nominal operation condition.
- dBA = A-weighted sound pressure level (A scale according to IEC).
- Reference acoustic pressure 0 dB = 20 µPa

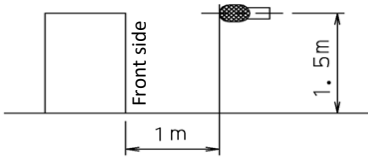


4D138299

REYA10A



Notes
- Data is valid at free field condition.
- Data is valid at nominal operation condition.
- dBA = A-weighted sound pressure level (A scale according to IEC).
- Reference acoustic pressure 0 dB = 20 µPa

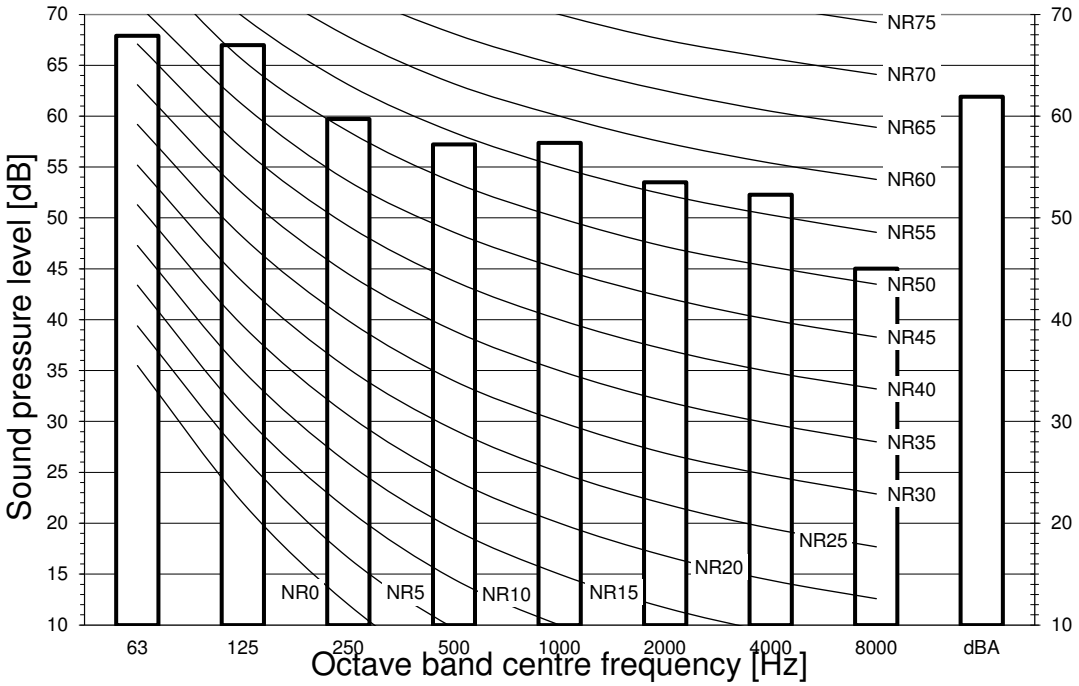


4D141170

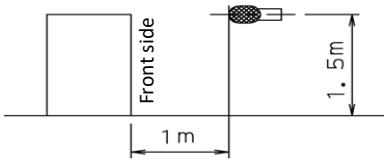
11 Sound data

11 - 4 Sound Pressure Spectrum - Heating

REYA12A



Notes
- Data is valid at free field condition.
- Data is valid at nominal operation condition.
- dBA = A-weighted sound pressure level (A scale according to IEC).
- Reference acoustic pressure 0 dB = 20 µPa



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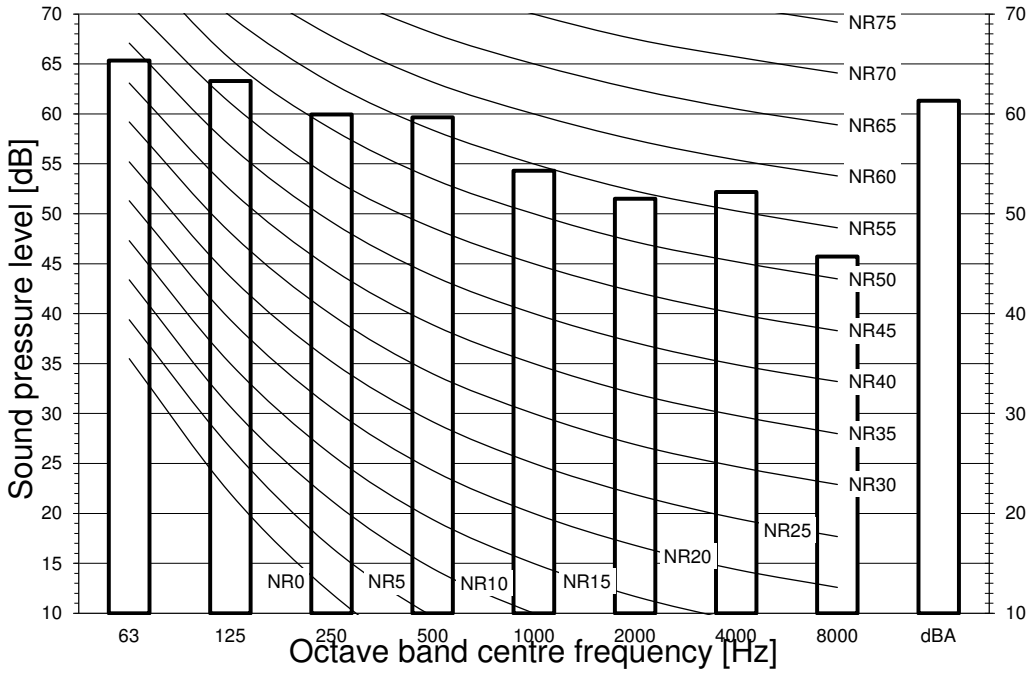
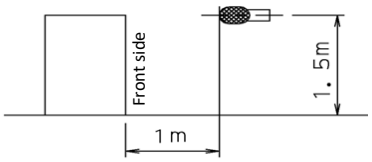
REYA14A



Notes
- Data is valid at free field condition.
- Data is valid at nominal operation condition.
- dBA = A-weighted sound pressure level (A scale according to IEC).
- Reference acoustic pressure 0 dB = 20 µPa



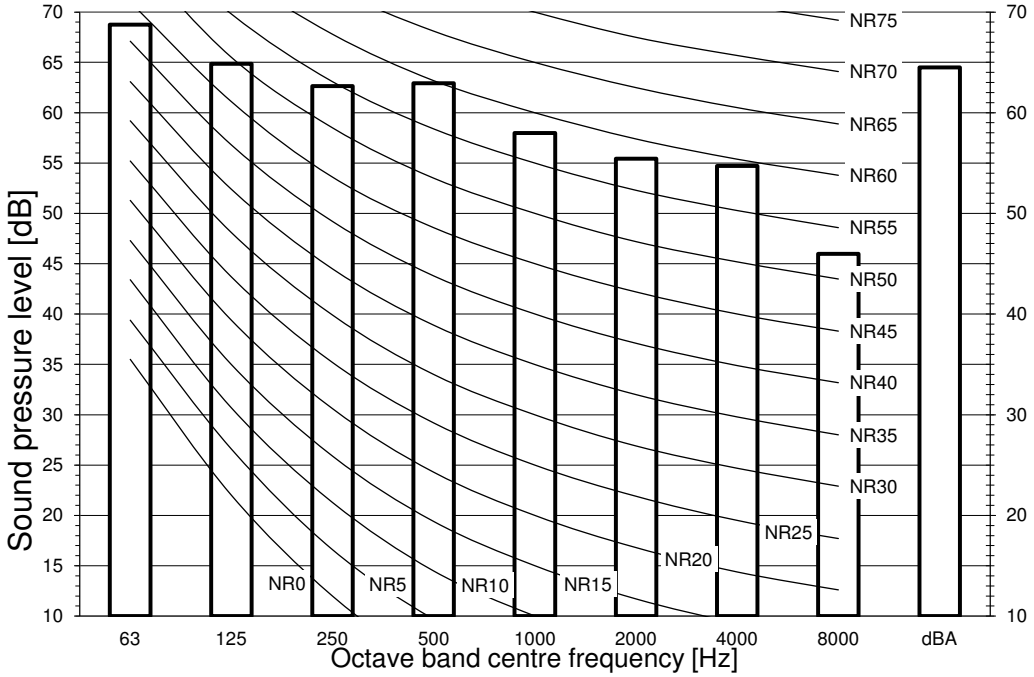
4D141172

11 Sound data

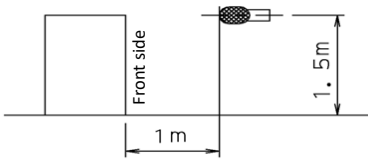
11 - 4 Sound Pressure Spectrum - Heating

11

REYA16A



Notes
- Data is valid at free field condition.
- Data is valid at nominal operation condition.
- dBA = A-weighted sound pressure level (A scale according to IEC).
- Reference acoustic pressure 0 dB = 20 µPa



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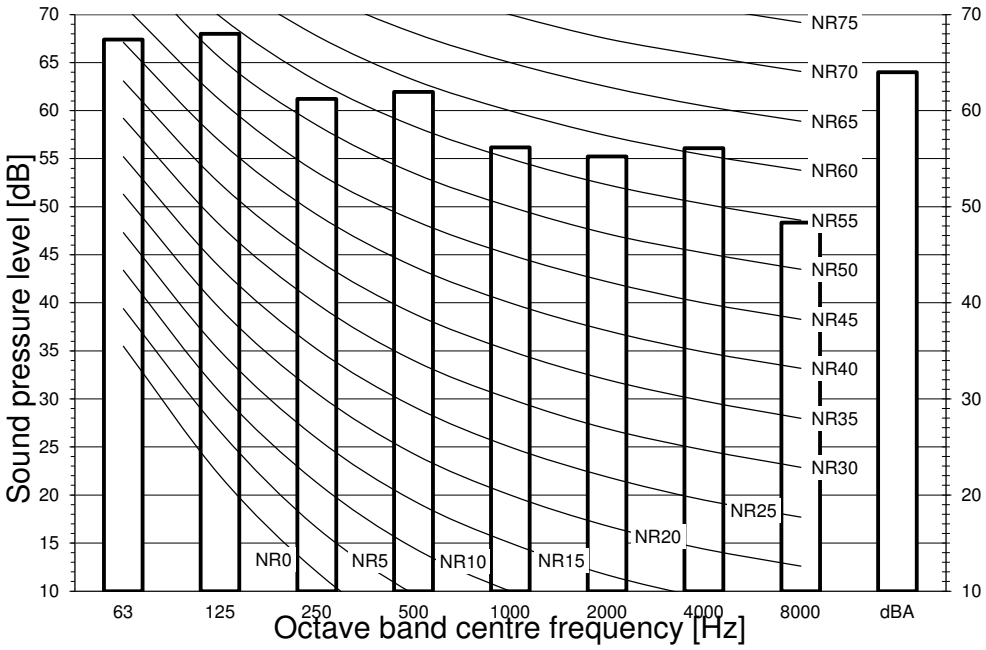
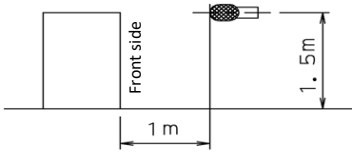
REYA18A



Notes
- Data is valid at free field condition.
- Data is valid at nominal operation condition.
- dBA = A-weighted sound pressure level (A scale according to IEC).
- Reference acoustic pressure 0 dB = 20 µPa



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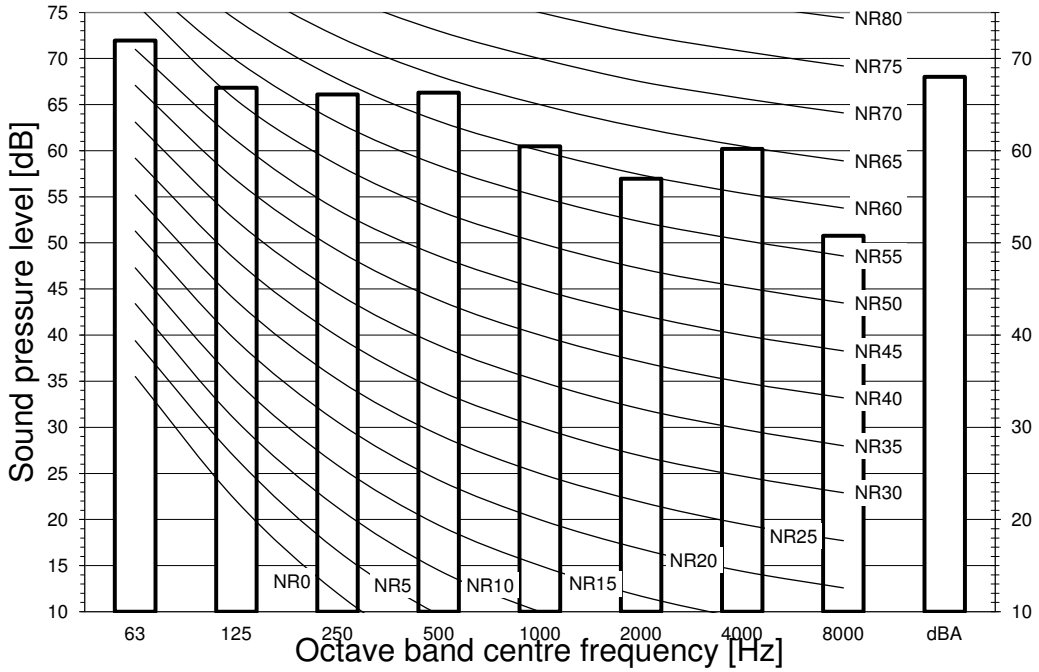
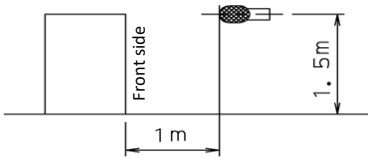
11 Sound data

11 - 4 Sound Pressure Spectrum - Heating

REYA20A



Notes
- Data is valid at free field condition.
- Data is valid at nominal operation condition.
- dBA = A-weighted sound pressure level (A scale according to IEC).
- Reference acoustic pressure 0 dB = 20 µPa



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11 Sound data

11 - 5 Sound level data Quiet mode

REYA-A
REMA5A

11

VRV-5 **Heat recovery**
Low noise data (level ·1-5·)

	Capacity ratio
LN1	90%
LN2	75%
LN3	60%
LN4	45%
LN5	30%

5HP/ 8HP	Cooling		Heating	
	Sound power [dBA]	Sound pressure [dBA]	Sound power [dBA]	Sound pressure [dBA]
LN1	75	53	76	55
LN2	72	50	73	52
LN3	69	47	70	49
LN4	66	44	67	46
LN5	63	41	64	43

10HP	Cooling		Heating	
	Sound power [dBA]	Sound pressure [dBA]	Sound power [dBA]	Sound pressure [dBA]
LN1	76	55	78	56
LN2	73	52	75	53
LN3	70	49	72	50
LN4	67	46	69	47
LN5	64	43	66	44

12HP	Cooling		Heating	
	Sound power [dBA]	Sound pressure [dBA]	Sound power [dBA]	Sound pressure [dBA]
LN1	79	58	80	58
LN2	76	55	77	55
LN3	73	52	74	52
LN4	70	49	71	49
LN5	67	46	68	46

14HP	Cooling		Heating	
	Sound power [dBA]	Sound pressure [dBA]	Sound power [dBA]	Sound pressure [dBA]
LN1	76	53	81	58
LN2	73	50	78	55
LN3	70	47	75	52
LN4	67	44	72	49
LN5	64	41	69	46

16HP	Cooling		Heating	
	Sound power [dBA]	Sound pressure [dBA]	Sound power [dBA]	Sound pressure [dBA]
LN1	81	58	84	62
LN2	78	55	82	59
LN3	75	52	80	56
LN4	72	49	77	53
LN5	69	46	74	50

4D141207

11 Sound data

11 - 5 Sound level data Quiet mode

REYA-A
REMA5A

18HP	Cooling		Heating	
	Sound power [dBA]	Sound pressure [dBA]	Sound power [dBA]	Sound pressure [dBA]
LN1	81	60	83	61
LN2	78	57	81	58
LN3	76	54	78	55
LN4	74	51	75	52
LN5	71	48	72	49

20HP	Cooling		Heating	
	Sound power [dBA]	Sound pressure [dBA]	Sound power [dBA]	Sound pressure [dBA]
LN1	85	64	87	65
LN2	82	61	84	62
LN3	80	58	81	59
LN4	77	55	79	56
LN5	74	52	77	53

LN1: Low noise level ·1·
LN2: Low noise level ·2·
LN3: Low noise level ·3·
LN4: Low noise level ·4·
LN5: Low noise level ·5·

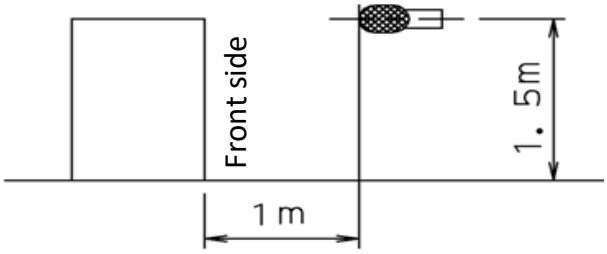
Notes

Sound power

dBA = A-weighted sound power level (A scale according to IEC).
Reference acoustic intensity 0dB = ·10^ -12 W·
Measured according to ISO 3744

sound pressure

Data is valid at free field condition.
Data is valid at nominal operation condition.
dBA = A-weighted sound pressure level (A scale according to IEC).
Reference acoustic pressure 0 dB = 20 µPa



4D141207

11 Sound data

11 - 6 Sound power level at high ESP

REYA-A
REMA5A

VRV-5 Heat recovery
High ESP

	Cooling	Heating
	Sound power [dBA]	Sound power [dBA]
5HP	81	84
8HP	81	84
10HP	81	84
12HP	81	84
14HP	83	85
16HP	87	89
18HP	87	89
20HP	88	90

Sound power is measured on a freestanding unit.
Actual sound is depending on the installation of the duct.

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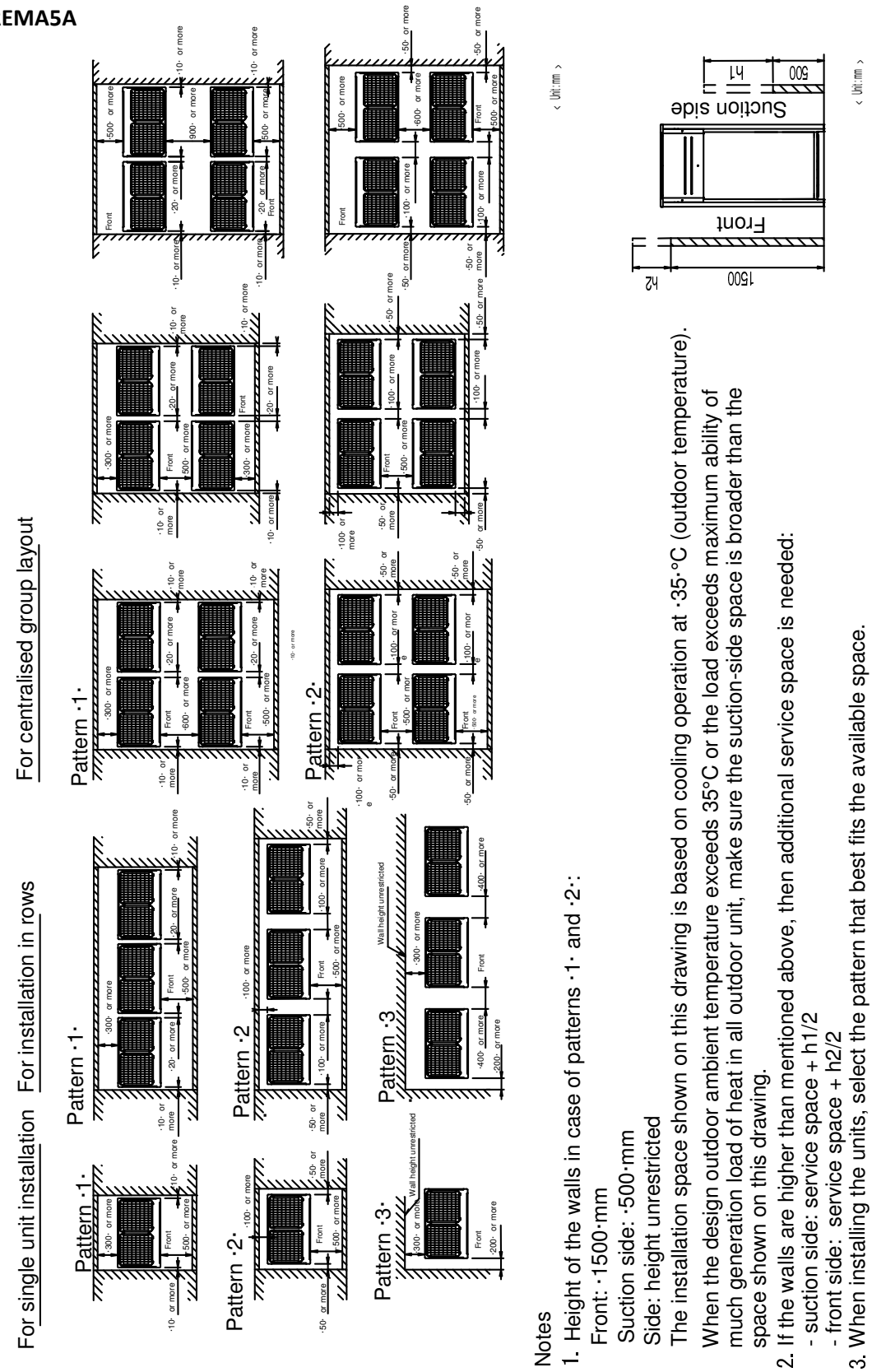
12 Installation

12 - 1 Installation Method

REYA-A
REMA5A



Notes

1. Height of the walls in case of patterns ·1· and ·2·:
   Front: ·1500·mm
   Suction side: ·500·mm
   Side: height unrestricted
   The installation space shown on this drawing is based on cooling operation at ·35·°C (outdoor temperature).
   When the design outdoor ambient temperature exceeds 35°C or the load exceeds maximum ability of much generation load of heat in all outdoor unit, make sure the suction-side space is broader than the space shown on this drawing.
2. If the walls are higher than mentioned above, then additional service space is needed:
   - suction side: service space + h1/2
   - front side: service space + h2/2
3. When installing the units, select the pattern that best fits the available space.
   Always keep in mind to leave sufficient space for a person to pass between unit and wall and for the air to circulate freely.
   Provide sufficient space at the front to connect refrigerant piping (comfortably).
4. If more units are to be installed than are catered for in the above patterns, your layout should take into account of the possibilit
   y of short circuits.

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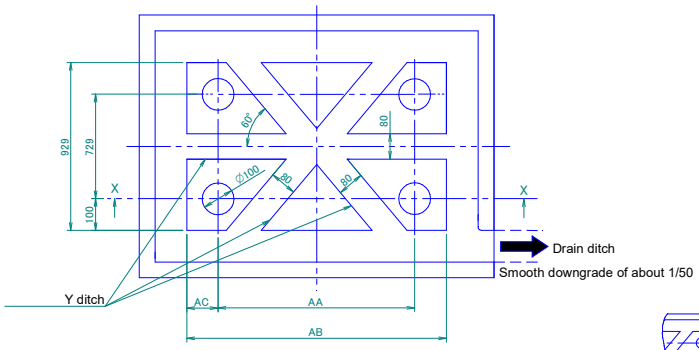
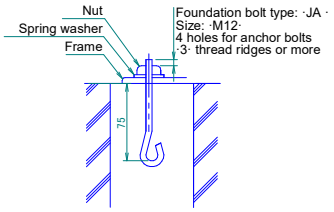
12 Installation

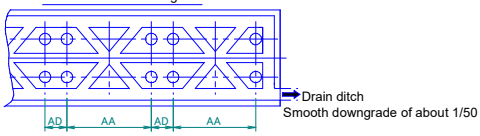
12 - 2 Fixation and Foundation of Units

REYA-A
REMA5A

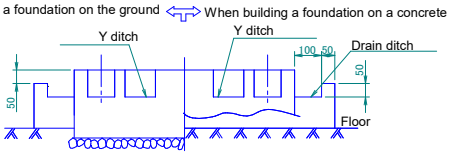




Foundation bolt fixing method



When building a foundation on the ground ⇔ When building a foundation on a concrete floor



Cross section · X - X·

For multi-unit installation

Model	AA	AB	AC	AD
RYYQ8-12U RYMQ8-12U RXYQ8-12U RXYQQ8-12U REMQ5T/REYQ8-12U RXYTQ8U REMA5A/REYA8-12A RYMA5A/RXYA8-12A	766	992	113	185
RYYQ14-20U RYMQ14-20U RXYQ14-20U RXYQQ14-20U REYQ14-20U RXYTQ10-16U REYA14-20A RXYA14-20A	1076	1076		

Notes

1 Provide a drain ditch around the foundation to drain water from the installation area.

2 The surface has to be finished with mortar. The corner edges have to be chamfered.

3 Build the foundation on a concrete floor or, if not possible, make sure the foundation surface has a rough finish.

4 Use a cement/sand/gravel ratio of 1/2/4 for the concrete, and a diameter of 10 mm for the reinforcement bars (approximately, 300mm intervals).

5 When installing the equipment on a roof, make sure to check the strength of the floor and take adequate water proofing measures.

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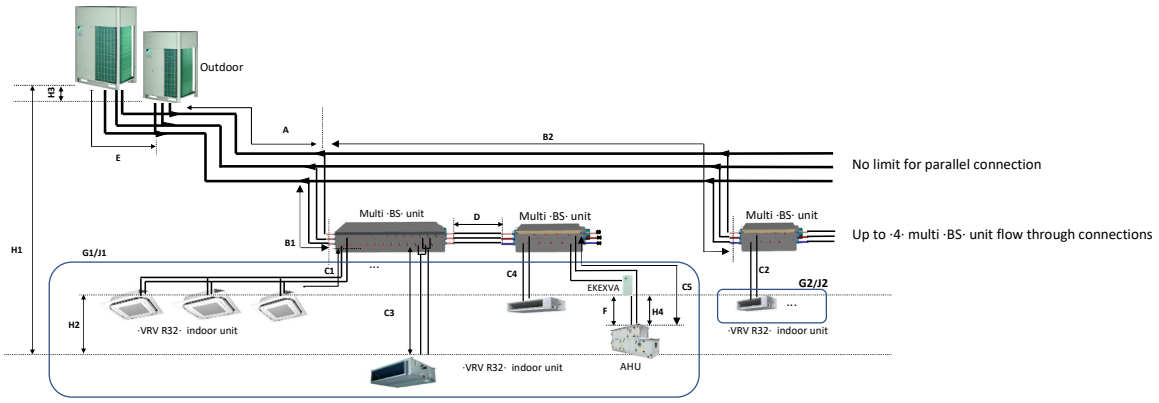
12 Installation

12 - 3 Refrigerant Pipe Selection

REYA-A
REMA5A



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RAYA-A
REMA5A

VRV5
Heat recovery

Piping restrictions

	Total				Allowed capacity	
	Capacity	**Maximum indoor unit quantity**	**Maximum total downstream capacity — flow through connection ·BS· unit**	**Maximum downstream number of ports – flow through connection ·BS· unit**	**VRV indoor unit**	**Air handling unit (AHU)**
		(*1)	**[G1]; [G2]**	**[J1]; [J2]**		
·VRV R32· indoor units only	50 ~ 130%	64	750	16	50 ~ 130%	-
AHU only (·EKEXVA + EKEACBVE·) **Pair** (*5)	-	-	-	-	-	-
AHU only (·EKEXVA + EKEACBVE·) **Multi** (*5)(*7)	65/75(*3) ~ 110%(*4)	64(*6)(*8)	750	16	-	65/75(*3) ~ 110%(*4)
·VRV R32 DX· indoor unit + ·AHU(EKEXVA + EKEACBVE)· **Mix** (*5)(*7)	50 ~ 110%(*4)	64(*8)	750	16	50 ~ 110%	0 ~ 60%(*4)

VRV5
Heat recovery
Unit combination restrictions

Combination table	REYA5-28(*2)
·VRV R32 DX· indoor unit	O
·EKVDX· (Option of ·VAM - J8·)	O
·Cooling only· indoor unit	X
Hydrobox unit	X
AHU only (Pair (·EKEXVA + EKEACBVE ·))	X
AHU only (Multi (·EKEXVA + EKEACBVE·))	O
·VRV R32 DX · indoor unit + AHU mix (·EKEXVA + EKEACBVE ·)	O

O: Allowed
X: Not allowed

Notes
1. Excluding ·BS· units
2. Other combinations than mentioned in this combination table are prohibited.
   All units are to be connected to ·BS· units
3. ·75% ~ 110%·: default situation
   ·65% ~ 75%·: Allowed if stricter AHU volume limitations are valid.
   Refer to the databook of ·EKEACBVE· for details.
4. Restrictions regarding the air handling unit capacity
5. Pair AHU = system with 1 air handling unit connected to one outdoor unit system
   Multi AHU = system with multiple air handling units connected to one outdoor unit system
   Mixed AHU = mix of AHU units and ·VRV· indoor units connected to one outdoor system
6. ·Z,Z'·-control is possible (the allowed number of [·EKEXVA + EKEACBVE · boxes] is determined by the connection ratio and the capacity of the outdoor unit.
7. ·Z,Z'·-control is possible (·EKEACBVE· boxes are allowed).
8. ·EKEXVA· kits are also considered indoor units.

Amount of units connectable to a ·BS· unit

	BS4A (*9)	BS6A (*9)	BS8A (*9)	BS10A (*9)	BS12A (*9)	Multi ·BS· per branch (*9)	Multi ·BS· when 2 branches are combined (*9)
·VRV R32· indoor unit	Maximum ·20· units	Maximum ·30· units	Maximum ·40· units	Maximum ·50· units	Maximum ·60· units	Maximum ·5· units	Maximum ·5· units
Air handling unit (AHU)	Maximum ·400· class	Maximum ·600· class	Maximum ·750· class	Maximum ·750· class	Maximum ·750· class	Maximum ·140· class	Maximum ·250· class

Notes
9. When combining ·2· branches, the maximum piping length between the ·BS· unit and the indoor unit is ≤ 20m. If the length of this piping is > 20m, increase the size of the liquid pipe.

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12 Installation

12 - 3 Refrigerant Pipe Selection

REYA-A
REMA5A

VRV5
Heat recovery
Piping restrictions

		Maximum piping length			Maximum height difference			Total piping length
		Longest pipe from the outdoor unit or the last multi-outdoor piping branch Actual / Equivalent Maximum: ·(A+B1+C1, A+B2+C2, A+B1+C3, A+B1+D+C4, A+B1+D+C5)·	Longest pipe after first branch or multi ·BS· unit Actual Maximum: ·(B1+C1,B2+C2,B1+C3,B1+D+C4, B1+D+C5)·	Longest pipe from the outdoor unit to the last multi-outdoor piping branch Actual / Equivalent Maximum: ·(E)·	Indoor-to-outdoor Outdoor unit higher than indoor unit / Indoor unit higher than outdoor unit Maximum: ·(H1)·	Indoor-to-indoor Maximum: ·(H2)·	Outdoor-to-outdoor Maximum: ·(H3)·	Piping length
Single outdoor units and standard multi-outdoor-unit combinations > ·20hp·	**·VRV DX R32· indoor unit**	165/190 m (*3)	40 m (*1)(*4)	10/13 m	50/40 m (*2)	15 m	5 m	1000 m
		120/165 m (*3)	40 m (*1)(*4)		50/40 m (*2)	30 m		
	AHU (*5)	165/190 m (*3)	40 m		50/40 m	15 m		
Standard multi-outdoor-unit combinations ·≤ 20hp· and free multi-outdoor-unit combinations	**·VRV DX R32· indoor unit**	135/160 m (*3)	40 m (*1)(*4)	10/13 m	50/40 m (*2)	15 m	5 m	500 m
	AHU (*5)		40 m		50/40 m			

	Maximum piping length	Maximum height difference
	EKEXVA --> AHU: (F)	EKEXVA --> AHU: (H4)
AHU (*5)	5 m	5 m

Notes

1. If all conditions below are met, the limitation can be extended up to 90 m
   - 1.1 The piping length between all indoor units and the multi ·BS· unit is ≤ ·40· m.
   - 1.2 It is required to size up the liquid piping between the first branch kit or multi ·BS· unit and the last branch kit or last multi ·BS· unit.
     It is not required to size up the liquid piping between the multi ·BS· unit and indoor units.
     It is required to size up the liquid piping which is downstream of the multi ·BS· unit, if the last branch kit is located downstream of the multi ·BS· unit.
     If the increased pipe size is larger than the pipe size of the main pipe, also increase the size of the main pipe.
   - 1.3 When the piping size is increased, the piping length has to be counted as double.
     The total piping length has to be within limitations.
   - 1.4 The piping length difference between the nearest indoor unit to the outdoor unit and the farthest indoor unit to the outdoor unit is ≤ ·40·m.
2. If all conditions below are met, the limitation can be extended up to 90 m
   - 2.1 If the outdoor units are positioned higher than the indoor units:
     - 2.1.1 Minimum connection ratio: ·80%·
     - 2.1.2 Size up the liquid piping
     - 2.1.3 Outdoor unit setting
       For more information, refer to the service manual.
   - 2.2 If the outdoor units are positioned lower than the indoor units:
     - 2.2.1 Size up the liquid piping
     - 2.2.2 Outdoor unit setting
       For more information, refer to the service manual.
3. If the equivalent piping is > ·90·m, size up the main liquid piping.
4. Limit of ·40· m piping length between multi ·BS· unit and indoor unit is depending upon room size (cfr. Safety system)
5. Possible combinations
   - Multi ·AHUs·
   - Mix of ·DX· units and ·AHUs·

4D141190A

12 Installation

12 - 4 Refrigerant Charge Information

REYA-A
REMA5A

Requirements for R32 units

To comply with the requirements of enhanced tightness refrigerating systems of the IEC 60335-2-40:2018, this system is equipped with shut-off valves in the ·BS· unit and an alarm in the remote controller.

The ·BS· unit is prearranged for a ventilated enclosure as countermeasure.

Outdoor unit installation

The outdoor unit has to be installed outside. For indoor installation of the outdoor unit, additional measures can be necessary to comply with the applicable legislation.

Indoor unit installation

The total amount of refrigerant in the system shall be less than or equal to the maximum allowed total refrigerant amount.
The maximum allowed total refrigerant amount depends on the area of the rooms being served by the system and the rooms in the lowest underground floor.
Note: The total refrigerant charge amount in the system MUST always be lower than ·15.96· [kg] × the number of indoor units connected downstream of ·BS· units, with a maximum of ·63.8· kg..

When the R32 sensor in the indoor unit detects a refrigerant leak, the corresponding shut-off valves in the ·BS· unit close and the alarm in the remote controller connected to the indoor unit is triggered.

Follow the flowchart. Details are described in the manual of the outdoor unit.

Note: The total refrigerant charge amount in the system MUST always be lower than ·15.96· [kg] × the number of indoor units connected downstream of ·BS· units, with a maximum of ·63.8· kg..

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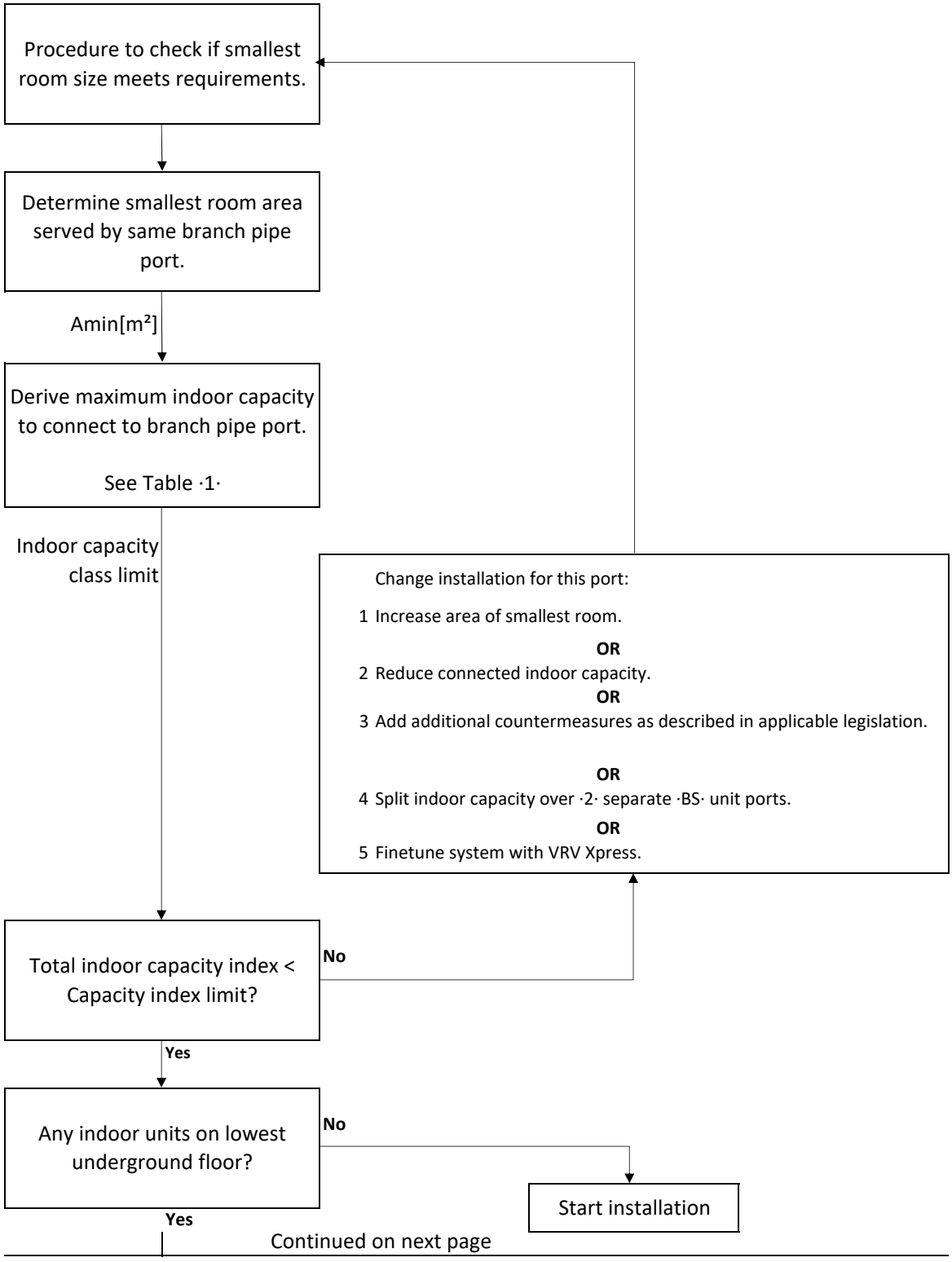
12 Installation

12 - 4 Refrigerant Charge Information

REYA-A
REMA5A

Indoor unit installation

Flowchart (for EACH ·BS· unit branch pipe port)



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12 Installation

12 - 4 Refrigerant Charge Information

REYA-A
REMA5A

Indoor unit installation

Continued from previous page

Procedure to check if smallest area of lowest underground floor meets the requirements.

Determine smallest room area of the lowest underground floor.

Amin[m²]

Derive maximum system charge.

See Table ·2·

Total charge limit [kg]

Derive total charge amount.

= Factory refrigerant charge + additional refrigerant charge

Total charge amount [kg]

Total charge amount < Total charge limit?

No

Change installation for this port:

1 Increase area of smallest underground room.
OR
2 Decrease piping length by changing layout.
OR
3 Add additional countermeasures as described in applicable legislation.

Yes

Start installation

4D141154A

12 Installation

12 - 4 Refrigerant Charge Information

REYA-A
REMA5A

Indoor unit installation

Table ·1·

Room area [m²]	Maximum total indoor unit capacity class		
	1 indoor unit per branch pipe port (·a, d·)	·2-5· units per branch pipe port	
		·40· m after first branch (·b·)	·90· m after first branch (·c·)
≤6	-	-	-
7	10	-	-
8	15	-	-
9	32	-	-
10	32	-	-
11	40	-	-
12	40	-	-
13	71	-	-
14	80	-	-
15	80	-	-
20	80	32	-
25	140	40	25
30	200	63	50
35	200	71	71
40	250	100	100
≥45	250	140	140

(a) 1 indoor unit connected to a single branch pipe port.

(b) ·2· to ·5· indoor units connected to a single branch pipe port, ·40· m after first refrigerant branch.

(c) ·2· to ·5· indoor units connected to a single branch pipe port, ·90· m after first refrigerant branch.

(d) In case the indoor unit capacity class exceeds ·140·, two branch ports need to be combined. Refer to the installation manual for more details.

Note: The values in Table ·1· are under the assumption of worst case indoor unit volume and ·40· m piping between indoor and ·BS· unit.

In VRV Xpress (https://vrvxpress.daikin.eu/) it is possible to add custom piping lengths and indoor units, which can lead to lower minimum room area requirements.

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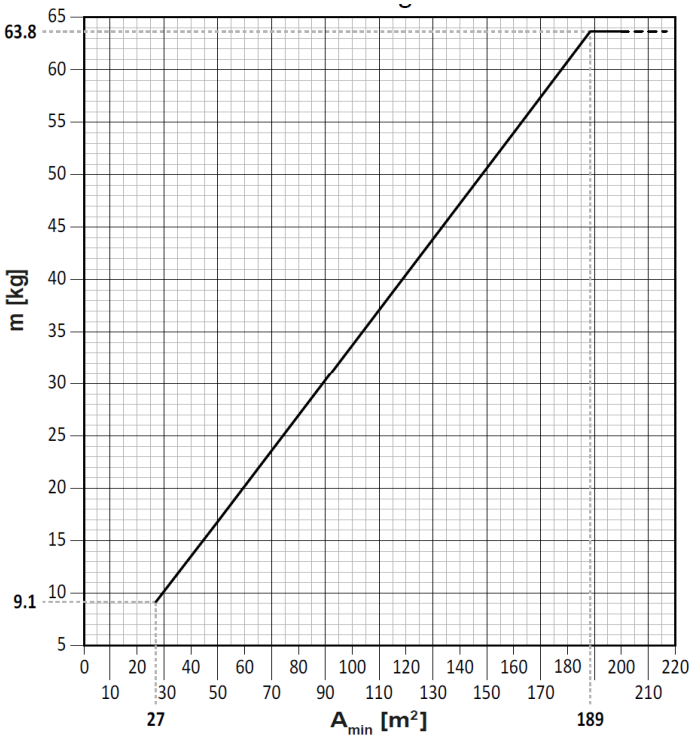
REYA-A
REMA5A

Table ·2·

Lowest underground floor (·a·)



A_{min} (m²)	m (kg)
27	9.1
30	10.1
40	13.5
50	16.8
60	20.2
70	23.6
80	27.0
90	30.3
100	33.7
110	37.1
120	40.5
130	43.9
140	47.2
150	50.6
160	54.0
170	57.4
180	60.7
189	63.8
190	63.8
200	63.8

4D141154A

12 Installation

12 - 4 Refrigerant Charge Information

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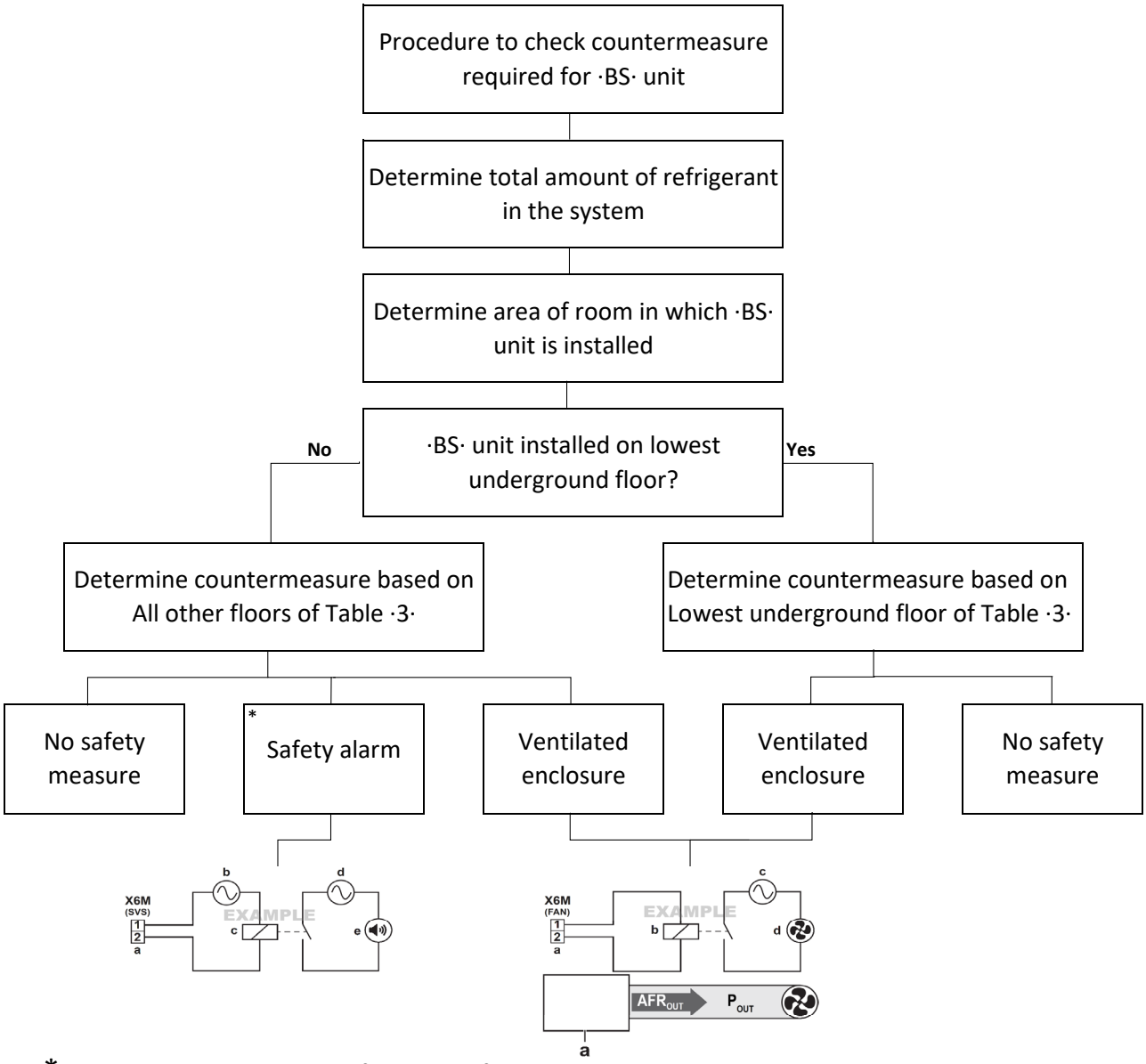
·BS· unit installation

Depending on the room size in which the ·BS· unit is installed and the total amount of refrigerant in the system, different safety measures can be applied.

Follow the flowchart. Details are described in the manual of ·BS· unit.

Note: If the installation height is more than ·2.2· m, different boundaries for the applicable safety measures can apply.
To know which safety measure is required in case the installation height is more than ·2.2· m, refer to VRV Xpress (https://vrvxpress.daikin.eu/).



* Do NOT use the external safety alarm if the ·BS· unit is installed in an occupied space where people are restricted in their movement.

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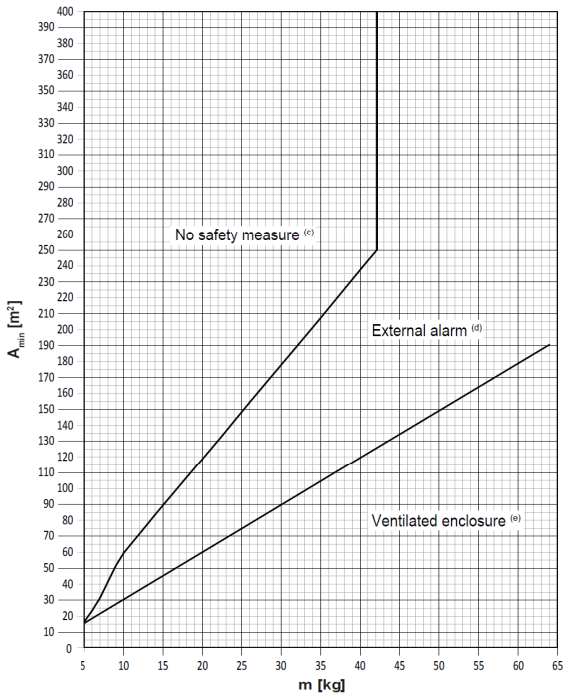
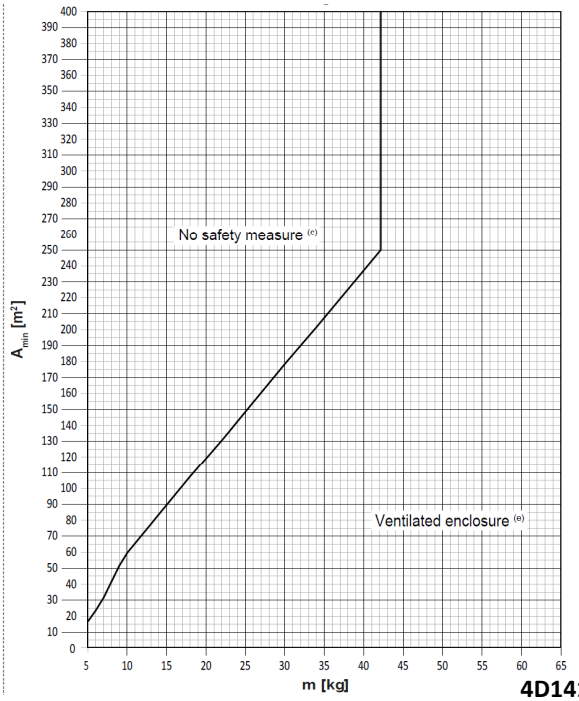
·BS· unit installation

Table ·3·

All other floors (·a·)



Lowest underground floor (·b·)



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·BS· unit installation

m [kg]	Amin [m²]			m [kg]	Amin [m²]		
	All other floors (·a·)		Lowest underground floor (·b·)		All other floors (·a·)		Lowest underground floor (·b·)
	No safety measure (·c·)	External alarm (·d·)	No safety measure (·c·)		No safety measure (·c·)	External alarm (·d·)	No safety measure (·c·)
5	16	15	16	35	207	104	207
6	23	18	23	36	213	107	213
7	31	21	31	37	219	110	219
8	41	24	41	38	225	113	225
9	51	27	51	39	231	115	231
10	59	30	59	40	237	118	237
11	65	33	65	41	243	121	243
12	71	36	71	42	249	124	249
13	77	38	77	43	-	127	-
14	83	41	83	44	-	130	-
15	89	44	89	45	-	133	-
16	95	47	95	46	-	136	-
17	101	50	101	47	-	139	-
18	107	53	107	48	-	142	-
19	113	56	113	49	-	145	-
20	118	59	118	50	-	148	-
21	124	62	124	51	-	151	-
22	130	65	130	52	-	154	-
23	136	68	136	53	-	157	-
24	142	71	142	54	-	160	-
25	148	74	148	55	-	163	-
26	154	77	154	56	-	166	-
27	160	80	160	57	-	169	-
28	166	83	166	58	-	172	-
29	172	86	172	59	-	175	-
30	178	89	178	60	-	178	-
31	184	92	184	61	-	181	-
32	190	95	190	62	-	184	-
33	195	98	195	63	-	187	-
34	201	101	201	64	-	190	-

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·BS· unit installation

When the R32 sensor in the ·BS· unit detects a refrigerant leak, it will activate the safety measures.

Safety alarm

An external alarm circuit (field supply) must be connected to the SVS output of the ·BS· unit.

When the R32 sensor in the ·BS· unit detects a refrigerant leak, the SVS output closes and activates the alarm. An error message is displayed on the remote controllers of the connected indoor units.

- This alarm system must warn audibly AND visibly (e.g. a loud buzzer AND a flashing light). The audible alarm must be ·15· dBA above the background sound level at all times.
- At least one alarm must be installed in the occupied space in which the ·BS· unit is installed.
- For the occupancy listed below, the alarm system must additionally warn at a supervised location with 24-hour monitoring. To warn at a supervised location, connect a supervisor remote controller (e.g. ·BRC1H52*·) to the system
  - with sleeping facilities.
  - where an uncontrolled number of people are present.
  - accessible for persons not familiar with the necessary safety precautions.
- Do NOT use the external safety alarm if the ·BS· unit is installed in an occupied space where people are restricted in their movement.

For details, see the manual of the ·BS· unit.

Ventilated enclosure

For the ventilated enclosure safety measure, ductwork and an extraction fan are installed.
When the R32 sensor in the ·BS· unit detects a refrigerant leak, it will activate the safety measures.
This includes:

- opening the damper of the unit to allow air to enter and evacuate the refrigerant leak.
- activating the fan output signal to trigger an extraction fan to operate.
- displaying an error message on the remote controllers of the connected indoor units.

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·BS· unit installation

The information in the table below must be taken into account in case a ventilated enclosure is used as a safety measure.

Ductwork	The evacuation ductwork MUST vent outside the building. Avoid that dirt and small animals can enter the ductwork and lead to an obstruction. Example: install a non-return valve, grille, filter or other component in the evacuation duct.
Extraction fan	The extraction fan must have a CE marking and cannot act as an ignition source during normal operation. Example: Brushed DC motors can cause sparks and are not allowed. Fan power must be lower than ·2.5· kVA.
Replacement air	Make sure that sufficient air is available for the extraction of a refrigerant leak. The extraction airflow rate must be maintained for at least ·6.5· hours. This is achieved by providing a sufficiently large air volume around the ·BS· unit, or by providing sufficient replacement air around the ·BS· unit (e.g. natural openings or a dedicated opening in the false ceiling).
Maintenance	A periodic inspection of the unit is required, where the test run is repeated. Maintain the evacuation channel to avoid dust and dirt from building up and obstructing the flow path.

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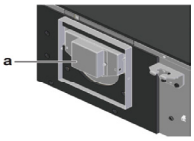
·BS· unit installation

A damper at the air inlet of the ·BS· unit enables a choice between 3 types of configurations (see below).

The damper opens when a refrigerant leak has been detected in the ·BS· unit. This creates an airflow path from the leaking ·BS· unit to the extraction fan.



a Damper

When a ventilated enclosure is required, the following requirements apply.

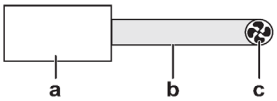
- Pressure inside the ·BS· unit has to be more than ·20· Pa below the ambient pressure.
- Minimum airflow rate

Model	Minimum airflow rate [m³/h]
BS4A	90
BS6-8A	87
BS10-12A	77

External fan needs to be selected in order to meet these requirements. The available calculation method depends on the configuration.

Possible configurations

One ·BS· unit – one extraction fan



a BS unit
b Ductwork
c Extraction fan

Calculation method for selection of external fan

- Manual calculation: see ·BS· unit manual for details
- VRV Xpress: see https://vrvxpress.daikin.eu/

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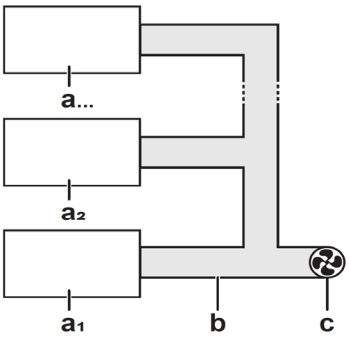
·BS· unit installation

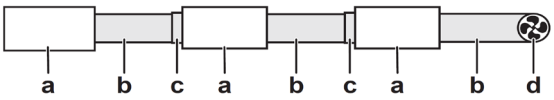
Multiple ·BS· units in parallel – one extraction fan



$a_{\#}$ BS unit #
b Ductwork
c Extraction fan

- VRV Xpress: see https://vrvxpress.daikin.eu/

Multiple ·BS· units in series – one extraction fan



a BS unit
b Ductwork
c EKBSDCK
d Extraction fan

- VRV Xpress: see https://vrvxpress.daikin.eu/

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13 Operation range

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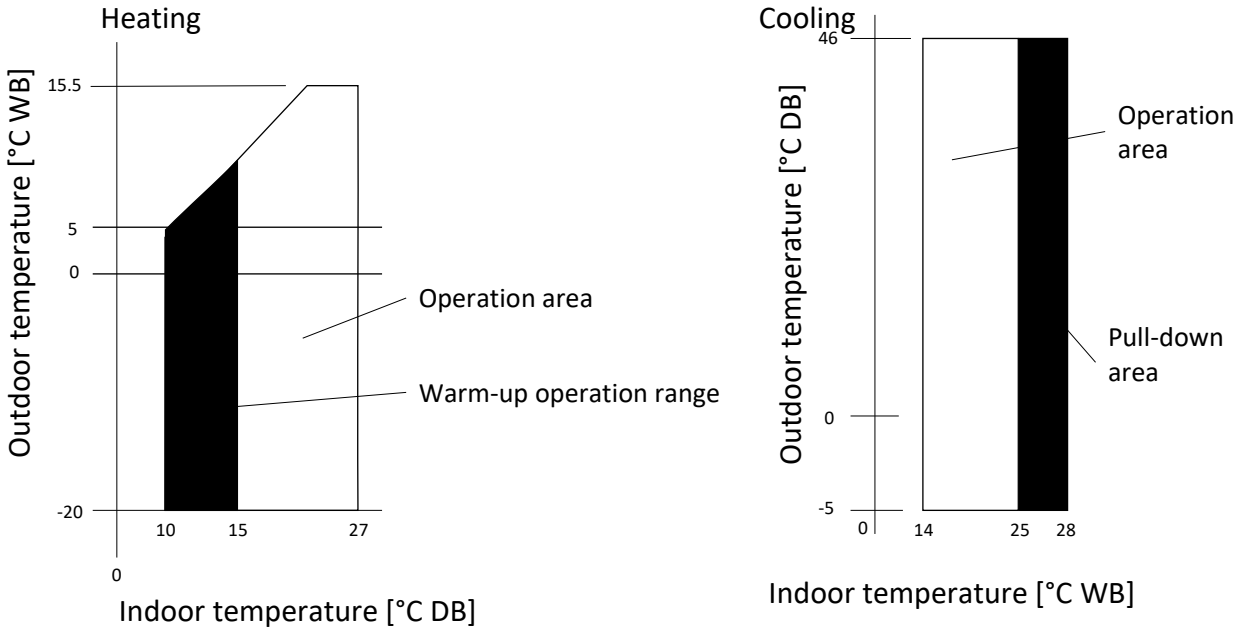

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14 Appropriate Indoors

14 - 1 Appropriate Indoors

REYA-A
REMA5A

Recommended indoor units for ·REYA*A* + REMA5A*· outdoor units

·· HP	8	10	12	13	14	16	18	20
	4xFXSA50	4xFXSA63	6xFXSA50	3xFXSA50 3XFXSA63	1xFXSA50 5XFXSA63	4XFXSA63 2xFXSA80	3xFXSA50 5XFXSA63	8xFXSA63

For multi outdoor units ·>16HP·, the recommended amount of indoor units is the sum of the indoor units defined for a single outdoor unit.
For details about the allowed combinations, see the engineering databook.

Appropriate indoor units for ·REYA*A* + REMA5A*· outdoor units

Covered by ·ENER LOT21·

FXFA20-25-32-40-50-63-80-100-125
FXZA15-20-25-32-40-50
FXSA15-20-25-32-40-50-63-80-100-125-140
FXDA10-15-20-25-32-40-50-63
FXAA15-20-25-32-40-50-63
FXMA50-63-80-100-125-200-250
FXHA32-50-63-100
FXUA50-71-100

Outside the scope of ·ENER LOT21·

EKVDX32-50-80-100
EKEXVA50-63-80-100-125-140-200-250-300-350-400-450-500 + EKEACBVE
CYAS100*80, CYAS150*80, CYAS200*100, CYAS250*140
CYAM100*80, CYAM150*80, CYAM200*100, CYAM250*140
CYAL100*125, CYAL150*200, CYAL200*250, CYAL250*250

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