NRG CONSULTING

Equiano Court

Overheating Assessment

June 2024

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Document Control Sheet	
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Report Prepared For	Mr. Robert Morgan
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Approved By	Ryan Thrower
Date of Issue	17th June 2024

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1 Executive Summary

NRG Consulting have been commissioned to undertake an Overheating Assessment for compliance with Part O of the Building Regulations at **Flat 45 Equiano Court, EC1N 7AE**.

The assessed unit is an existing top floor flat for which an overheating test is required to verify the need of active cooling to support the application for *Installation of 2x air condenser units and associated acoustic enclosure.* Active Planning Ref: 2024/1323/P.

The following guidelines have been followed to assess the proposed development:

- GLA Guidance on preparing Energy Statements (June 2022)
- Approved Document Part O of the Building Regulations – 2021 edition.

This assessment has been performed based on the follow specification, details of which are contained within this report:

- U-Values of thermal elements. (Nb: NRG Consulting produced the as-built SAP and EPC for the original developer in 2017)
- Window specification including U-Value, G-Value and opening details.
- The ventilation strategy, infiltration and air permeability rates.

Based on the information and statement made within this report, we have run a dynamic thermal analysis of the proposed habitable rooms for the residential development in order to assess compliance against the requirements of Part O without cooling. This assessment failed for the rooms with the proposed cooling. The cooling hierarchy was then reviewed before the assessment was re-run with mechanical cooling.

This report has been written to address the following comment from Camden Council during determining the application:

"Note that the Council typically resists the installation of air condition units unless it is demonstrated, through the submission of an Overheating Assessment, that the existing property cannot be actively cooled through passive measures (ie, not using air conditioning). Any proposal would need to be accompanied by an Overheating Assessment (thermal modelling), which would be reviewed by one of our Sustainability Officers, to ensure it meets policy and guidance. Please refer to Local Plan Policy CC2, para. 8.41 and Camden Planning Guidance: Energy efficiency and adaptation for further information and guidance."

Therefore, based on this report, passive measures have been investigated but are not sufficient to avoid overheating without mechanical cooling due to the orientation, size and large amount of glazing within the room and built to Part L 2010 before the introduction of overheating legislation.

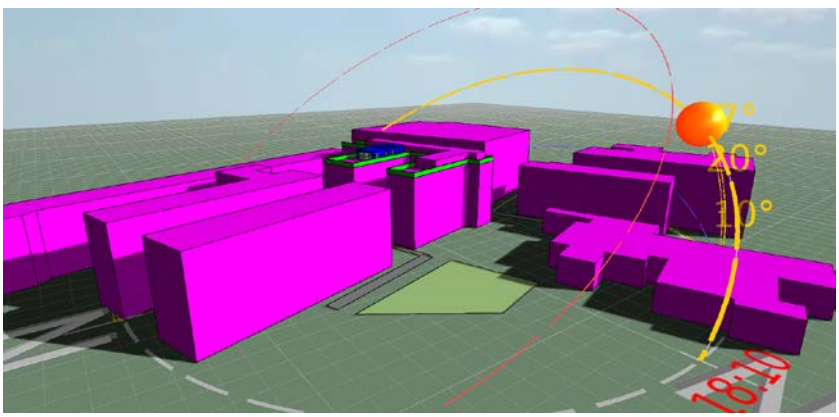


Figure 1: 3D model of the proposed building

2 Overheating Guidance for Homes

2.1 CIBSE TM59 (2017) and Approved Document O: Overheating

The Chartered Institute of Building Services Engineers guidance "*Design Methodology for the Assessment of Overheating Risk in Homes*" (CIBSE TM59) was published in 2017 and presents a standardised approach to predicting overheating risk for residential building using dynamic thermal analysis.

Approved Document O (Part O) of the Building Regulations (2021) was introduced in June 2022. The aim and reason for the introduction of Part O1: Overheating mitigation is to protect the health and welfare of occupants of the building by reducing the occurrence of high indoor temperatures. This is met by designing and constructing the building to achieve both of the following:

(a) limit unwanted solar gains in summer.
(b) provide an adequate means to remove heat from the indoor environment.

Part O applies to:

1. Residential (dwellings) Dwellings, which includes both dwellinghouses and flats.
2. Residential (institutional) Home, school, or other similar establishment, where people sleep on the premises.
3. The building may be living accommodation for the care or maintenance of any of the following:
    a. Older and disabled people, due to illness or other physical or mental condition.
    b. People under the age of 5 years.
4. Residential (other) Residential college, hall of residence and other student accommodation, and living. Accommodation for children aged 5 years and older.

2.2 CIBSE TM59: 2017 – Assessment Criterion

TM59:2017 provides a baseline in which to simulate overheating risk against which includes specific weather files, defined internal gains and a set of profiles that represent reasonable usage patterns for a home suitable for evaluating overheating risk.

It then has two criterion which deem whether it believes a habitable room within a dwelling is at risk of having issues with overheating. These are:

Test	Assessment Criterion	Acceptable Criterion	Investigated Period	Weather File
Criterion *a*	The frequency of the time when the operative temperature is higher than the maximum acceptable temperature	3% of occupied hours	May-September	Design Summer Year 1 DSY1, 2020s, High Emission, 50% percentile scenario
Criterion *b* (Bedrooms only)	Number of hours where temperature is above required	32 hours between 22:00 and 7:00	May-September	

Table 1: CIBSE TM59 – Assessment criteria for naturally ventilated buildings

2.3 Approved Document Part O – Amendments to the CIBSE TM59 Methodology

With the introduction of Part O, some clarifications were made within the guidance of the design parameters to input when running the dynamic thermal simulations for compliance that supersede or clarify the CIBSE TM59 manual. These are highlighted in Sections 2.4 and 2.5 below.

To demonstrate compliance using the dynamic thermal modelling method, all the following guidance should be followed:

- CIBSE's TM59 methodology for predicting overheating risk.
- The limits on the use of CIBSE's TM59 methodology set out in paragraphs 2.5 and 2.6. of ADO.
- The acceptable strategies for reducing overheating risk in paragraphs 2.7 to 2.11 of ADO.

2.4 Amendments to CIBSE TM59 methodology within Part O

All of the following limits on CIBSE's TM59, section 3.3, apply:

a. When a room is occupied during the day (8am to 11pm), openings should be modelled to do all of the following:
   i. Start to open when the internal temperature exceeds 22°C.
   ii. Be fully open when the internal temperature exceeds 26°C.
   iii. Start to close when the internal temperature falls below 26°C.
   iv. Be fully closed when the internal temperature falls below 22°C.
b. At night (11pm to 8am), openings should be modelled as fully open if both of the following apply.
   i. The opening is on the first floor or above and not easily accessible.
   ii. The internal temperature exceeds 23°C at 11pm.
c. When a ground floor or easily accessible room is unoccupied, both of the following apply.
   i. In the day, windows, patio doors and balcony doors should be modelled as open, if this can be done securely.
   ii. At night, windows, patio doors and balcony doors should be modelled as closed.
d. An entrance door should be included, which should be shut all the time.

2.5 GLA Guidance on Energy Statements

The GLA Guidance (June 2022) contains a section on overheating in-line with the requirements of Policy SI 4 of the London Plan (2021). This introduces the cooling hierarchy and the text states:

It is important to identify potential overheating risk, particularly in residential accommodation, early in the design process, and then incorporate suitable passive measures within the building envelope and services design to mitigate overheating and reduce cooling demand, in line with London Plan Policy SI 4. 8.2. Applicants should apply the cooling hierarchy in Policy SI 4 of the London Plan to the development. Whilst the cooling hierarchy applies to major developments, the principles can also be applied to minor developments. Measures that are proposed to reduce the demand for cooling should be set out under the following categories:

1. Reduce the amount of heat entering the building through orientation, shading, high albedo materials, fenestration, insulation and the provision of green infrastructure.
2. Minimise internal heat generation through energy efficient design:
3. Manage the heat within the building through exposed internal thermal mass and high ceilings:
4. Provide passive ventilation
5. Provide mechanical ventilation
6. Provide active cooling systems

3 Methodology Applied & Model Inputs

This section includes the model inputs used to assess the risk of overheating within the proposed development.

3.1 Scope of Assessment

All the habitable rooms of the proposed dwelling have been included within the overheating analysis.

3.2 Basis for Model

Project Information	
Building Category	Category II – New Builds
Software	IES Virtual Environment - 2023
Weather File - Location	London Weather Centre
Weather File - Details	DSY1, 2020s, High Emission, 50% percentile scenario
Summer Days	May 1st to September 30th – 153 days
Drawing Issue Date	June 2024

Table 2: Project information

3.3 Occupancy Patterns and Behaviour – CIBSE TM59 Data

In line with CIBSE guidance, realistic algorithms for occupant behaviour, the use of windows and other adaptive behaviour were used in the dynamic thermal model, as well as a realistic occupancy schedule.

Internal heat gains are based on '*Table 2 Occupancy and equipment gain description*' content in CIBSE TM59 (Appendix 1). These are replicated in the table below.

Room	Occupancy Heat Gain (W/person)		Light Heat Gain (W/m2)	(Other Small Power W/m2)
	Sensible	Latent		
Kitchen/Living Room	75	55	2	450
Bedroom	75	55	2	80

Table 3: Heat gain figures – Modelling & data inputs

3.4 Fabric Element and Ventilation Details

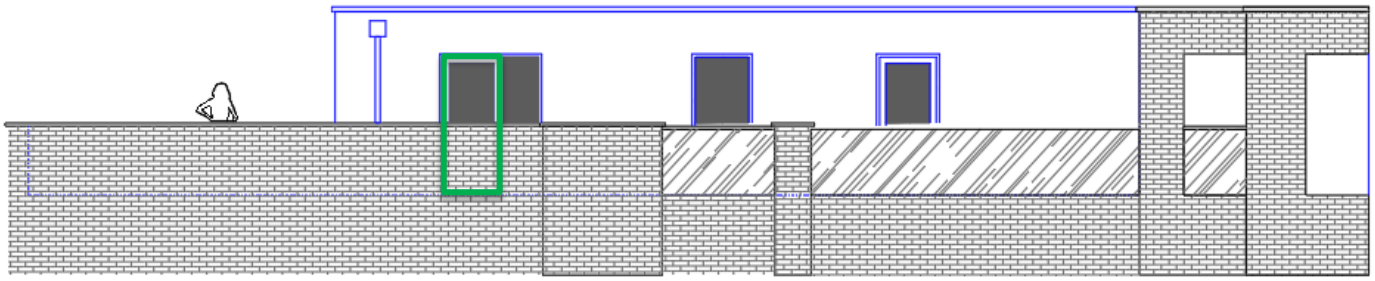
Thermal Elements	Proposed U-Value (W/m²K)
External Wall	0.20
Roof	0.13
Ventilation Type	System 4 - MVHR
MVHR Comfort Cooling	**Not installed**
Room	**Ventilation Rate (l/s)**
Kitchen	13
Living room	13
Bedroom	8
Bathroom	8
Air Permeability – Measured	
4.4 $m^3/(hm^2)$ @50Pa	

Table 4: Fabric elements and ventilation details

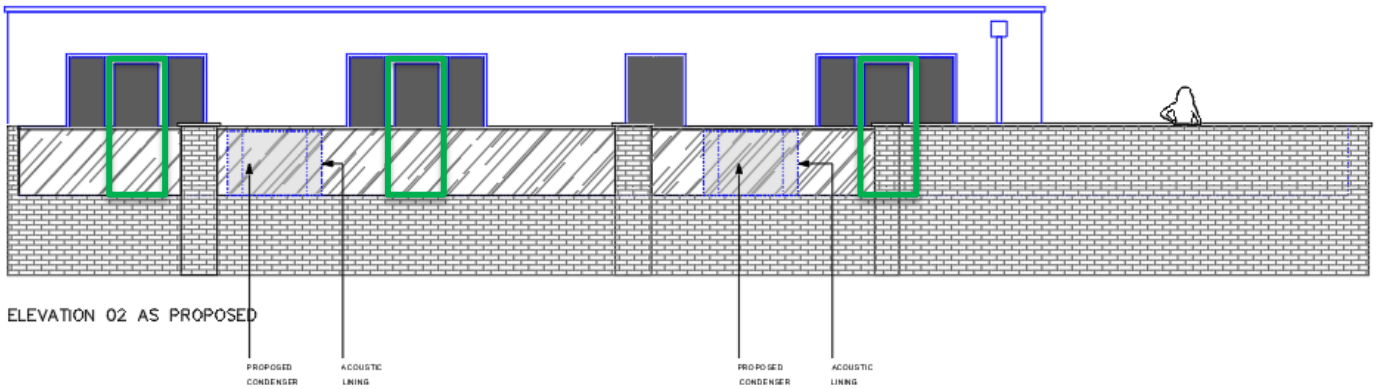
3.5 Windows and Internal Doors – Opening and Operation Details

Opening Type	Proposed U-Value (W/m²K)	Proposed G-Value (%)	Opening Hours
Window	1.32	0.63	As per Section 2.4 of this report. **Any window which forms part of the overheating mitigation strategy can be opened securely as per sections 3.6 to 3.9 of ADO and ADK**
Window Type	**Openable Area**	**Maximum Openable Angle**	
Fixed	-	-	
Side Hung (green)	100%	90°	
Bi-folding (orange)	90%	-	
Window Reveal Depth	N/A		
External Window Shading	Not installed		
Door Type	**Opening Hours**		
Balcony / Patio Doors	Open during the day and closed during the night		
Internal Doors	Assumed open in the daytime and closed when the occupants are sleeping.		
In-line with Part O methodology, the impact of Internal Blinds or Curtains has not been modelled in this assessment.			

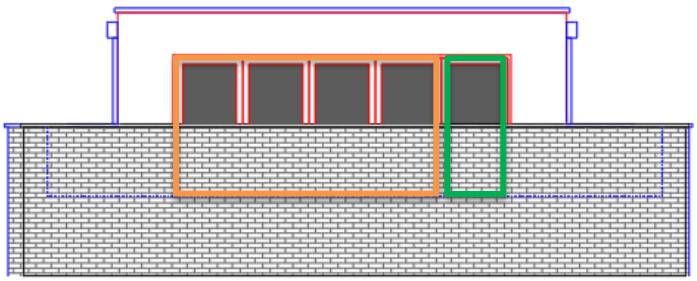
Table 5: Window and doors opening details



ELEVATION 01 AS PROPOSED



ELEVATION 02 AS PROPOSED



ELEVATION 03 AS PROPOSED

Figure 2: Window opening details

4 Results

4.1 Without Cooling

The table below shows the results of the dynamic simulation based on the current design proposals against the CIBSE TM59 criteria for dwellings that are predominantly naturally ventilated. The results based on the current situation demonstrates that the kitchen/living room as existing exceed the threshold outlined by CIBSE TM59 Criteria A and therefore overheats during the summer.

Compliance for kitchens and living rooms is based on passing Criterion A. Bedrooms must pass both criteria.

Plot - Room	CIBSE TM59 – Predominantly Naturally Ventilated Homes		
	Criterion A (%Hrs Top-Tmax>=1K) Pass with value < 3	Criterion B – Bedrooms only (Hrs Top>26°C) Pass with value < 33	Compliance
Kitchen/Living Room	4.3		**NO**
Bedroom 1	1.1	18	**YES**
Bedroom 2	1.3	20	**YES**

Table 6: Overheating results – without Cooling

4.2 With Cooling

The cooling hierarchy has been reviewed for the scheme as follows:

Cooling Hierarchy	Measures Undertaken
Reduce the amount of heat entering the building through orientation, shading, high albedo materials, fenestration, insulation and the provision of green infrastructure.	High albedo materials were prioritised where possible.
	Insulation levels in-line with Part L 2010 were installed and insulation levels are like that of current new-builds.
Minimise internal heat generation through energy efficient design:	Communal heating system installed by original developer; assume pipework insulated but not to CIBSE CP1 recommendations.
	LED lighting was installed to reduce internal heat gains.
Manage the heat within the building through exposed internal thermal mass and high ceilings:	High thermal mass has been maximised where possible, but studwork was used for internal partitions.
	The Floor to Ceiling Height complies with National Space Standards.
Provide Passive Ventilation	Openable Windows allow for nighttime purge ventilation if required.
	The dwelling benefits from the provision of cross-ventilation
Provide Mechanical Ventilation	Mechanical Ventilation with Heat Recovery was installed.

As the above, all stages of the hierarchy were followed but due to the large area of glazing for the penthouse kitchen & living room and the large area of the room with just Part F ventilation (assumed for compliance only), active cooling is required in order to mitigate the risks of overheating.

The cooling system proposed is highly efficient and comprises of:

- Daikin Multi system with 4 k/w nominal cooling duty/4.2 k/w nominal heating duty - for Bedrooms 1 & 2 consisting of an external unit Model 2MXM40A and internal units (2k/w) Model FTXA20AW for each bedroom.

- Daikin Split A/C system for Living room/Kitchen area consisting of external unit RXA50B with a 5 k/w nominal cooling duty/5.8k/w nominal heating duty and a 5 k/w internal unit model FTXA50AW.

A full datasheet is in the Appendices. Results with the cooling are:

Plot - Room	CIBSE TM59 – Predominantly Naturally Ventilated Homes		
	Criterion A (%Hrs Top-Tmax>=1K) Pass with value < 3	Criterion B – Bedrooms only (Hrs Top>26°C) Pass with value < 33	Compliance
Kitchen/living room	0		YES
Bedroom 1	0	0	YES
Bedroom 2	0	0	YES

Table 7: Overheating results – with Cooling

5 Conclusion

Overall, based on the contents of this report, a dynamic overheating assessment was undertaken for the dwelling and it shows that based on CIBSE TM59 (Part O version) that the dwelling is at risk of overheating. The cooling hierarchy has been reviewed in the context of the scheme being completed for seven years and based on accurate as-built construction data.

In order to mitigate the risk of overheating, a modern and stylish Daikin split system is proposed with industry leading cooling efficiency (SEER of over 7) and based on this assessment, it is the authors opinion that the existing property cannot be actively cooled through passive measures and thus permission should be granted in terms of overheating and energy for the application.

Appendix 1

Multi model application Air Conditioning Technical Data

2MXM-A

2MXM40A2V1B
2MXM50A2V1B
2MXM68A2V1B

EEDEN22

TABLE OF CONTENTS

2MXM-A

1 Features

1 - 1 2MXM-A

› New design outlook for outdoor unit
› Seasonal efficiency values up to A+++ in cooling and A++ in heating thanks to its up-to-date technology and built-in intelligence
› Up to 2 indoor units can be connected to 1 multi outdoor unit; all indoor units are individually controllable and do not need to be installed in the same room or at the same time. They operate simultaneously within the same heating or cooling mode.
› Choosing for an R-32 product, reduces the environmental impact with 68% compared to R-410A and leads directly to lower energy consumption thanks to its high energy efficiency
› Different types of indoor units can be connected: e.g. wall mounted, ceiling mounted cassette corner, concealed ceiling unit
› Outdoor units are fitted with a swing compressor, renowned for its low noise and high energy efficiency

Inverter

2 Specifications

2 - 1 2MXM-A

Technical specifications					2MXM40A	2MXM50A	2MXM68A
Casing	Colour				Ivory white		
Dimensions	Unit	Height		mm	552		734
		Width		mm	852		974
		Depth		mm	350		408
	Packed unit	Height		mm	614		820
		Width		mm	900		1,050
		Depth		mm	357		480
Weight	Unit			kg	36	41	60
	Packed unit			kg	39	44	66
Heat exchanger	Length			mm	805	810	920
	Rows	Quantity			2		
	Fin pitch			mm	1.50		1.40
	Stages	Quantity			24		32
	Passes	Quantity			3.00		6.00
	Tube type				7.0 Hi-XD	8.1 Hi-XA	Hi-XA
	Tube diameter			mm	7.0	8.1	8.0
	Fin	Type			WH fin		WHS8 FIN-HYDROPHILIC
		Treatment			Anti-corrosion treatment		
Fan	Type				Propeller fan		
	Discharge direction				Horizontal		
	Quantity				1		
	Air flow rate	Cooling	High	m^3/min	36.0	37.0	46.5
				cfm	1,271	1,306	1,642
			Medium	m^3/min	33.0	34.0	42.5
				cfm	1,165	1,200	1,501
			Low	m^3/min	20.0		24.1
				cfm	706		851
		Heating	High	m^3/min	32.0	34.0	43.8
				cfm	1,130	1,200	1,547
			Medium	m^3/min	32.0	34.0	43.8
				cfm	1,130	1,200	1,547
			Low	m^3/min	18.0	22.0	16.1
				cfm	636	777	569
Fan motor	Quantity				1		
	Model				LFD-280-23-8F		D55F-31
	Output			W	50		55
Fan motor	Speed	Cooling	High	rpm	900	950	760
			Medium	rpm	840	890	700
			Low	rpm	500		420
		Heating	High	rpm	820	890	720
			Low	rpm	320	500	300
			Medium	rpm	820	890	720
Compressor	Quantity				1		
	Model				1YC25GXD#C	2YC40JXD#C	2YC71DXD#C
	Oil Amount			cm^3	375	650	900
	Type				Hermetically sealed swing compressor		
	Output			W	800	1,300	2,400
	Oil Type				FW68DA		
Operation range	Cooling	Ambient	Min.	°CDB	-10		
			Max.	°CDB	46		
	Heating	Ambient	Min.	°CDB	-15		
			Max.	°CDB	24		
Sound power level	Cooling	Max		dBA	62		63
		Night quiet mode		dBA	57	58	59
		Tonal adjustment		dBA	0		
	Heating	Max		dBA	62		63
		Nom.		dBA	62		61
		Night quiet mode		dBA	57	58	59
		Tonal adjustment		dBA	0		
Sound power level - Low sound mode (Stb. 2020, 189)	Cooling	Max.		dBA	60		61
		Night quiet mode		dBA	55		58
		Tonal adjustment		dBA	0		
	Heating	Max.		dBA	60		61
		Night quiet mode		dBA	55		58
		Tonal adjustment		dBA	0		
Sound pressure level	Cooling	Nom.		dBA	46	48	
	Heating	Nom.		dBA	48	50	48
Refrigerant	Type				R-32		
	Charge			kg	0.88	1.15	2.00
	Charge			TCO2Eq	0.60	0.78	1.35
	Control				Expansion valve		
	GWP				675		

2 Specifications

2 - 1 2MXM-A

Technical specifications					2MXM40A	2MXM50A	2MXM68A
Piping connections	Liquid	Quantity			2		
Piping connections	Liquid	OD		mm	6.35		
	Gas	Quantity			2	1	
		OD		mm	9.5		
	Drain	Quantity			1		
		OD		mm	16 (inner diameter of connecting hose)		
	Gas 2	Quantity			-	1	
		OD		mm	-	12.7	
	Piping length	OU - IU	Min.	m	3 (1)		
			Max.	m	20 (1)		25 (1)
		System	Chargeless	m	20		30
	Additional refrigerant charge			kg/m	0.02 (for piping length exceeding 20m)		0.02 (for piping length exceeding 30m)
	Level difference	IU - OU	Max.	m	15		
		IU - IU		m	7.5		
	Heat insulation				Both liquid and gas pipes		
	Total piping length	System	Actual	m	30		50
Capacity control	Method				Variable (inverter)		

Standard accessories: Installation manual; Quantity: 1;

Standard accessories: Screw bag; Quantity: 1;

Standard accessories: Drain plug; Quantity: 1;

Standard accessories: Reducer assembly; Quantity: 1;

Standard accessories: Drain cap (1); Quantity: 6;

Standard accessories: Drain cap (2); Quantity: 3;

Electrical specifications				2MXM40A	2MXM50A	2MXM68A
Power supply	Phase			1~		
	Frequency		Hz	50		
	Voltage		V	220-240		
Wiring connections	For power supply	Quantity		3		
		Remark		Earth wire included		
	For connection with indoor	Quantity		4		
		Remark		Earth wire included		

(1)For one room |
For combination with CVXM-A, FVXM-A - maximum piping length is 30m. |
See separate drawing for operation range |
See separate drawing for electrical data |
Contains fluorinated greenhouse gases

3 Electrical data

3 - 1 Electrical Data

2MXM40-50A

Outdoor unit	Power supply			·RA· indoor units (·10·% safety factor) See note ·5·.		Other indoor units (·10·% safety factor)		Compressor		Outdoor fan motor	
Model name	Hz	Voltage	Voltage range	MCA	MFA	MCA	MFA	RHz	RLA	kW	FLA
2MXM40M3V1B	50	220	Maximum ·50·Hz ·264·V	9,80	16	9,80	16	-	5,1	0,040	0,17
2MXM40M4V1B	50	230							5,3		
2MXM40N2V1B 2MXM40A2V1B	50	240	Minimum ·50·Hz ·198·V						5,6		
2MXM50M2V1B9	50	220	Maximum ·50·Hz ·264·V	12,94	16	13,27	16	-	5,9	0,042	0,18
2MXM50M3V1B9	50	230							6,2		
2MXM50N2V1B 2MXM50A2V1B	50	240	Minimum ·50·Hz ·198·V						6,5		
2AMXM40M3V1B	50	220	Maximum ·50·Hz ·264·V	9,80	16	9,80	16	-	5,1	0,040	0,17
2AMXM40M4V1B	50	230							5,3		
	50	240	Minimum ·50·Hz ·198·V						5,6		
2AMXM50M3V1B	50	220	Maximum ·50·Hz ·264·V	12,94	16	13,27	16	-	5,9	0,042	0,18
2AMXM50M4V1B	50	230							6,2		
	50	240	Minimum ·50·Hz ·198·V						6,5		
2AMXF40A2V1B	50	220	Maximum ·50·Hz ·264·V	9,80	16	9,80	16	-	5,1	0,040	0,17
	50	230							5,3		
	50	240	Minimum ·50·Hz ·198·V						5,6		
2AMXF50A2V1B	50	220	Maximum ·50·Hz ·264·V	12,83	16	12,83	16	-	5,9	0,042	0,18
	50	230							6,2		
	50	240	Minimum ·50·Hz ·198·V						6,5		
2MXF40A2V1B	50	220	Maximum ·50·Hz ·264·V	9,80	16	9,80	16	-	5,1	0,040	0,17
	50	230							5,3		
	50	240	Minimum ·50·Hz ·198·V						5,6		
2MXF50A2V1B	50	220	Maximum ·50·Hz ·264·V	12,83	16	12,83	16	-	5,9	0,042	0,18
	50	230							6,2		
	50	240	Minimum ·50·Hz ·198·V						6,5		

Symbols

MCA: Minimum Circuit Ampere [A]
MFA: Maximum Fuse Ampere [A]
RLA: Rated load amps [A]
OFM: Outdoor fan motor
MSC: Maximum starting current
FLA: Full Load Ampere [A]
kW: Fan motor rated output [kW]

Notes

1 The ·RLA· is based on the following conditions.
Outdoor temperature ·35·°C DB
Indoor temperature ·27·°C DB / ·19·°C WB
2 Select the wire size according to the MCA.
3 The maximum allowable voltage that is unbalanced between phases is ·2·%.
4 Use a circuit breaker instead of a fuse.
5 Only for wall-mounted ·FVXM· units

3D110207F

3 Electrical data

3 - 1 Electrical Data

2MXM68-A
3MXM-A
4MXM-A
5MXM-A

Outdoor unit	Power supply			·RA· indoor units (·10·% safety factor) See note ·5·.		Other indoor units (·10·% safety factor)		Compressor		Outdoor fan motor	
Model name	Hz	Voltage	Voltage range	MCA	MFA	MCA	MFA	RHz	RLA	kW	FLA
2MXM68N2V1B 2MXM68A2V1B	50	220	Maximum ·50·Hz ·264·V	16,94	20	19,80	20	-	7,8	0,056	0,37
	50	230							7,5		
	50	240	Minimum ·50·Hz ·198·V						8,7		
3MXM40N2V1B9	50	220	Maximum ·50·Hz ·264·V	14,31	16	15,97	16	-	2,9	0,056	0,37
	50	230							3,0		
	50	240	Minimum ·50·Hz ·198·V						3,1		
3MXM52N2V1B9	50	220	Maximum ·50·Hz ·264·V	14,59	20	16,27	20	-	4,5	0,056	0,37
	50	230							4,7		
	50	240	Minimum ·50·Hz ·198·V						4,9		
3MXM68N2V1B9 3MXM68A2V1B	50	220	Maximum ·50·Hz ·264·V	17,19	20	19,81	20	-	8,0	0,056	0,37
	50	230							8,4		
	50	240	Minimum ·50·Hz ·198·V						8,7		
4MXM68N2V1B9 4MXM68A2V1B	50	220	Maximum ·50·Hz ·264·V	17,36	20	19,81	20	-	7,0	0,056	0,37
	50	230							7,3		
	50	240	Minimum ·50·Hz ·198·V						7,6		
4MXM80N2V1B9 4MXM80A2V1B	50	220	Maximum ·50·Hz ·264·V	17,04	25	20,36	25	-	8,5	0,075	0,50
	50	230							8,9		
	50	240	Minimum ·50·Hz ·198·V						9,3		
5MXM90N2V1B9 5MXM90A2V1B	50	220	Maximum ·50·Hz ·264·V	21,70	32	25,88	32	-	9,2	0,075	0,50
	50	230							9,6		
	50	240	Minimum ·50·Hz ·198·V						10,0		
3AMXM52N2V1B9	50	220	Maximum ·50·Hz ·264·V	18,19	20	16,27	20	-	4,5	0,056	0,37
	50	230							4,7		
	50	240	Minimum ·50·Hz ·198·V						4,9		
3MXF52A2V1B9	50	220	Maximum ·50·Hz ·264·V	14,59	20	16,27	20	-	4,5	0,056	0,37
	50	230							4,7		
	50	240	Minimum ·50·Hz ·198·V						4,9		
3AMXF52A2V1B9	50	220	Maximum ·50·Hz ·264·V	14,59	20	16,27	20	-	4,5	0,056	0,37
	50	230							4,7		
	50	240	Minimum ·50·Hz ·198·V						4,9		
3MXF68A2V1B9	50	220	Maximum ·50·Hz ·264·V	17,19	20	19,81	20	-	8,0	0,056	0,37
	50	230							8,4		
	50	240	Minimum ·50·Hz ·198·V						8,7		
3MXM40N2V1B8 3MXM40A2V1B	50	220	Maximum ·50·Hz ·264·V	14,31	16	15,97	16	-	2,9	0,056	0,37
	50	230							3,0		
	50	240	Minimum ·50·Hz ·198·V						3,1		
3MXM52N2V1B8 3MXM52A2V1B	50	220	Maximum ·50·Hz ·264·V	14,59	20	16,27	20	-	4,5	0,056	0,37
	50	230							4,7		
	50	240	Minimum ·50·Hz ·198·V						4,9		

Symbols

MCA: Minimum Circuit Ampere [A]
MFA: Maximum Fuse Ampere [A]
RLA: Rated load amps [A]
OFM: Outdoor fan motor
MSC: Maximum starting current
FLA: Full Load Ampere [A]
kW: Fan motor rated output [kW]

Notes

1) The ·RLA· is based on the following conditions.
Outdoor temperature ·35·°C DB
Indoor temperature ·27·°C DB / ·19·°C WB
2) Select the wire size according to the MCA.
3) The maximum allowable voltage that is unbalanced between phases is ·2·%.
4) Use a circuit breaker instead of a fuse.
5) Only for wall-mounted ·FVXM· units

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4 Combination table

4 - 1 Combination Table

2MXM40A

Cooling ·230V 50Hz·

Outdoor unit	Indoor unit	Cooling capacity [kW]		Total capacity [kW]			Power input [kW]			Total current [A]			Power factor [%]
		Room ·A·	Room ·B·	Minimum	Nominal	Maximum	Minimum	Nominal	Maximum	Minimum	Nominal	Maximum	
2MXM40M2V1B 2MXM40M3V1B 2MXM40M4V1B 2MXM40N2V1B 2MXM40N2V1B9 2MXM40A2V1B	1.5	1,50	-	1,30	1,50	2,00	0,33	0,31	0,40	1,78	1,70	2,17	79
	2.0	2,00	-	1,30	2,00	2,40	0,33	0,44	0,57	1,78	2,38	3,09	79
	2.5	2,50	-	1,30	2,50	3,00	0,33	0,61	0,80	1,78	3,33	4,40	79
	3.5	3,50	-	1,30	3,50	4,00	0,33	1,04	1,35	1,78	5,71	7,38	79
	1.5+1.5	1,50	1,50	1,50	3,00	3,60	0,31	0,60	0,73	1,67	3,33	4,00	79
	1.5+2.0	1,50	2,00	1,50	3,50	4,00	0,31	0,79	0,91	1,67	4,35	4,98	79
	1.5+2.5	1,50	2,50	1,50	4,00	4,20	0,31	0,98	1,03	1,67	5,37	5,64	79
	1.5+3.5	1,20	2,80	1,50	4,00	4,40	0,31	0,96	1,06	1,67	5,30	5,83	79
	2.0+2.0	2,00	2,00	1,50	4,00	4,20	0,31	0,97	1,02	1,67	5,34	5,61	79
	2.0+2.5	1,78	2,22	1,50	4,00	4,30	0,31	0,96	1,04	1,67	5,30	5,70	79
	2.0+3.5	1,45	2,55	1,50	4,00	4,50	0,31	0,95	1,08	1,67	5,25	5,91	79
	2.5+2.5	2,00	2,00	1,50	4,00	4,40	0,31	0,96	1,06	1,67	5,27	5,80	79
	2.5+3.5	1,67	2,33	1,50	4,00	4,60	0,31	0,94	1,09	1,67	5,20	5,98	79

Notes

1) The total capacity of each connected indoor unit is up to ·6·kW.
2) The values mentioned in this document are for connecting with the following indoor unit types:
   ·1.5, 2.0, 2.5, 3.5· kW class
   Wall-mounted ·CTXA-AS, CTXA-AT, CTXA-AW, CTXA-BB, CTXA-BS, CTXA-BT, CTXM-M, CTXM-N, CTXM-R, FTXA-AS, FTXA-AT, FTXA-AW, FTXA-BB, FTXA-BS, FTXA-BT, FTXM-M, FTXM-N, FTXM-R, FTXJ-AB, FTXJ-AS, FTXJ-AW· series
3) Cooling capacity conditions
   Indoor temperature ·27·°C DB / ·19·°C WB
   Outdoor temperature ·35·°C DB
4) For additional information on the connection of the DHW generator for Multi and the Hybrid for Multi, see ·3D106169·.

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2MXM40A

Heating ·230V 50Hz·

Outdoor unit	Indoor unit	Heating capacity [kW]		Total capacity [kW]			Power input [kW]			Total current [A]			Power factor [%]
		Room ·A·	Room ·B·	Minimum	Nominal	Maximum	Minimum	Nominal	Maximum	Minimum	Nominal	Maximum	
2MXM40M2V1B 2MXM40M3V1B 2MXM40M4V1B 2MXM40N2V1B 2MXM40N2V1B9 2MXM40A2V1B	1,5	2,00	-	1,00	2,00	3,30	0,26	0,68	1,04	1,43	3,66	5,69	79
	2,0	2,70	-	1,00	2,70	3,70	0,26	0,75	1,24	1,43	4,11	6,78	79
	2,5	3,40	-	1,00	3,40	4,10	0,26	1,02	1,48	1,43	5,59	8,09	79
	3,5	3,80	-	1,00	3,80	4,40	0,26	1,28	1,71	1,43	7,02	9,40	79
	1.5+1.5	1,75	1,75	1,20	3,50	4,30	0,24	0,80	0,99	1,31	4,43	5,45	79
	1.5+2.0	1,63	2,17	1,20	3,80	4,50	0,24	0,88	1,04	1,31	4,85	5,75	79
	1.5+2.5	1,58	2,63	1,20	4,20	4,60	0,24	1,00	1,10	1,31	5,53	6,06	79
	1.5+3.5	1,26	2,94	1,20	4,20	4,70	0,24	0,96	1,12	1,31	5,29	5,92	79
	2.0+2.0	2,10	2,10	1,20	4,20	4,60	0,22	0,98	1,08	1,21	5,41	5,93	79
	2.0+2.5	1,87	2,33	1,20	4,20	4,70	0,22	0,97	1,09	1,21	5,36	6,00	79
	2.0+3.5	1,53	2,67	1,20	4,20	4,80	0,22	0,95	1,09	1,21	5,25	6,00	79
	2.5+2.5	2,10	2,10	1,20	4,20	4,70	0,22	0,96	1,08	1,21	5,29	5,92	79
	2.5+3.5	1,75	2,45	1,20	4,20	4,80	0,22	0,94	1,08	1,21	5,19	5,94	79

Notes

1) The total capacity of each connected indoor unit is up to ·6·kW.
2) The values mentioned in this document are for connecting with the following indoor unit types:
   ·1.5, 2.0, 2.5, 3.5· kW class
   Wall-mounted ·CTXA-AS, CTXA-AT, CTXA-AW, CTXA-BB, CTXA-BS, CTXA-BT, CTXM-M, CTXM-N, CTXM-R, FTXA-AS, FTXA-AT, FTXA-AW, FTXA-BB, FTXA-BS, FTXA-BT, FTXM-M, FTXM-N, FTXM-R, FTXJ-AB, FTXJ-AS, FTXJ-AW· series
3) Heating capacity conditions
   Indoor temperature ·20·°C DB
   Outdoor temperature ·7·°C DB / ·6·°C WB
4) For additional information on the connection of the DHW generator for Multi and the Hybrid for Multi, see ·3D106169·.

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4 Combination table

4 - 1 Combination Table

2MXM50A

Cooling ·230V 50Hz·

Outdoor unit	Indoor unit	Cooling capacity [kW]		Total capacity [kW]			Power input [kW]			Total current [A]			Power factor [%]
		Room ·A·	Room ·B·	Minimum	Nominal	Maximum	Minimum	Nominal	Maximum	Minimum	Nominal	Maximum	
2MXM50M2V1B 2MXM50M2V1B9 2MXM50M3V1B9 2MXM50N2V1B 2MXM50N2V1B9 2MXM50A2V1B	1.5	1,50	-	1,40	1,50	2,20	0,31	0,32	0,52	1,53	1,55	2,53	89
	2.0	2,00	-	1,40	2,00	2,90	0,31	0,47	0,77	1,53	2,25	3,76	89
	2.5	2,50	-	1,40	2,50	3,10	0,31	0,67	0,92	1,53	3,27	4,50	89
	3.5	3,50	-	1,40	3,50	4,10	0,31	1,09	1,46	1,53	5,32	7,13	89
	4.2	4,20	-	1,40	4,20	4,70	0,31	1,59	1,75	1,53	7,73	8,57	89
	5.0	5,00	-	1,60	5,00	5,30	0,33	1,30	1,44	1,64	6,33	7,01	89
	1.5+1.5	1,50	1,50	1,60	3,00	4,20	0,33	0,62	0,87	1,64	3,03	4,25	89
	1.5+2.0	1,50	2,00	1,60	3,50	4,20	0,33	0,76	0,91	1,64	3,71	4,46	89
	1.5+2.5	1,50	2,50	1,60	4,00	4,20	0,33	0,94	0,99	1,64	4,60	4,83	89
	1.5+3.5	1,50	3,50	1,60	5,00	5,00	0,33	1,25	1,25	1,64	6,10	6,10	89
	1.5+4.2	1,32	3,68	1,60	5,00	5,40	0,33	1,23	1,54	1,64	6,04	6,53	89
	1.5+5.0	1,15	3,85	1,80	5,00	5,50	0,33	1,23	1,68	1,64	5,99	6,59	89
	2.0+2.0	2,00	2,00	1,80	4,00	5,00	0,33	0,94	1,28	1,64	4,60	5,75	89
	2.0+2.5	2,00	2,50	1,80	4,50	5,10	0,33	1,07	1,31	1,64	5,23	5,93	89
	2.0+3.5	1,82	3,18	1,80	5,00	5,40	0,33	1,24	1,49	1,64	6,05	6,54	89
	2.0+4.2	1,61	3,39	1,80	5,00	5,50	0,33	1,23	1,51	1,64	6,01	6,62	89
	2.0+5.0	1,43	3,57	1,80	5,00	5,50	0,33	1,22	1,44	1,64	5,95	6,55	89
	2.5+2.5	2,50	2,50	1,80	5,00	5,30	0,33	1,25	1,42	1,64	6,10	6,47	89
	2.5+3.5	2,08	2,92	1,80	5,00	5,40	0,33	1,23	1,43	1,64	6,02	6,51	89
	2.5+4.2	1,87	3,13	1,80	5,00	5,50	0,33	1,22	1,45	1,64	5,98	6,58	89
	2.5+5.0	1,67	3,33	1,80	5,00	5,50	0,33	1,21	1,38	1,64	5,92	6,52	89
	3.5+3.5	2,50	2,50	1,80	5,00	5,40	0,33	1,22	1,42	1,64	5,95	6,43	89
	3.5+4.2	2,27	2,73	1,80	5,00	5,50	0,33	1,21	1,40	1,64	5,90	6,49	89
	3.5+5.0	2,06	2,94	1,80	5,00	5,50	0,33	1,20	1,34	1,64	5,85	6,44	89
	4.2+4.2	2,50	2,50	1,80	5,00	5,50	0,33	1,20	1,38	1,64	5,88	6,47	89

Notes

1) The total capacity of each connected indoor unit is up to ·8.5·kW.
2) The values mentioned in this document are for connecting with the following indoor unit types:
   ·1.5, 2.0, 2.5, 3.5, 4.2, 5.0· kW class
   Wall-mounted ·CTXA-AS, CTXA-AT, CTXA-AW, CTXA-BB, CTXA-BS, CTXA-BT, CTXM-M, CTXM-N, CTXM-R, FTXA-AS, FTXA-AT, FTXA-AW, FTXA-BB, FTXA-BS, FTXA-BT, FTXM-M, FTXM-N, FTXM-R, FTXJ-AB, FTXJ-AS, FTXJ-AW· series
3) Cooling capacity conditions
   Indoor temperature ·27·°C DB / ·19·°C WB
   Outdoor temperature ·35·°C DB
4) For additional information on the connection of the DHW generator for Multi and the Hybrid for Multi, see ·3D106169·.

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2MXM50A

Heating ·230V 50Hz·

Outdoor unit	Indoor unit	Heating capacity [kW]		Total capacity [kW]			Power input [kW]			Total current [A]			Power factor [%]
		Room ·A·	Room ·B·	Minimum	Nominal	Maximum	Minimum	Nominal	Maximum	Minimum	Nominal	Maximum	
2MXM50M2V1B 2MXM50M2V1B9 2MXM50M3V1B9 2MXM50N2V1B 2MXM50N2V1B9 2MXM50A2V1B	1.5	2,30	-	1,10	2,30	3,30	0,29	0,78	0,95	1,44	3,82	4,66	89
	2.0	3,00	-	1,10	3,00	3,70	0,27	0,82	1,13	1,33	3,99	5,52	89
	2.5	3,40	-	1,10	3,40	4,10	0,25	0,99	1,34	1,23	4,81	6,54	89
	3.5	4,20	-	1,10	4,20	4,80	0,25	1,30	1,60	1,23	6,36	7,80	89
	4.2	4,60	-	1,10	4,60	5,00	0,23	1,49	1,81	1,12	7,27	8,85	89
	5.0	5,50	-	1,20	5,50	5,60	0,23	1,35	1,51	1,12	6,56	9,01	89
	1.5+1.5	1,80	1,80	1,20	3,60	5,00	0,23	0,79	1,09	1,12	3,84	5,34	89
	1.5+2.0	1,67	2,23	1,20	3,90	5,00	0,23	0,90	1,16	1,12	4,40	5,65	89
	1.5+2.5	1,69	2,81	1,20	4,50	5,19	0,23	1,10	1,27	1,12	5,39	6,22	89
	1.5+3.5	1,56	3,64	1,20	5,20	5,70	0,25	1,28	1,40	1,23	6,25	6,86	89
	1.5+4.2	1,47	4,13	1,20	5,60	5,96	0,25	1,37	1,46	1,23	6,71	7,15	89
	1.5+5.0	1,29	4,31	1,20	5,60	6,16	0,25	1,37	1,50	1,23	6,68	7,35	89
	2.0+2.0	2,35	2,35	1,20	4,70	5,70	0,23	1,15	1,40	1,12	5,61	6,82	89
	2.0+2.5	2,27	2,83	1,20	5,10	5,80	0,23	1,24	1,42	1,12	6,08	6,92	89
	2.0+3.5	2,04	3,56	1,20	5,60	5,90	0,25	1,36	1,43	1,23	6,65	7,01	89
	2.0+4.2	1,81	3,79	1,20	5,60	6,00	0,25	1,36	1,46	1,23	6,63	7,11	89
	2.0+5.0	1,60	4,00	1,20	5,60	6,20	0,25	1,35	1,50	1,23	6,60	7,31	89
	2.5+2.5	2,80	2,80	1,20	5,60	5,80	0,23	1,37	1,42	1,12	6,71	6,95	89
	2.5+3.5	2,33	3,27	1,20	5,60	6,00	0,25	1,38	1,48	1,23	6,76	7,25	89
	2.5+4.2	2,09	3,51	1,20	5,60	6,10	0,25	1,39	1,51	1,23	6,79	7,40	89
	2.5+5.0	1,87	3,73	1,30	5,60	6,30	0,25	1,41	1,58	1,23	6,88	7,74	89
	3.5+3.5	2,80	2,80	1,30	5,60	6,10	0,25	1,40	1,52	1,23	6,83	7,44	89
	3.5+4.2	2,55	3,05	1,30	5,60	6,20	0,25	1,40	1,55	1,23	6,84	7,58	89
	3.5+5.0	2,31	3,29	1,30	5,60	6,40	0,25	1,42	1,63	1,23	6,95	7,95	89
	4.2+4.2	2,80	2,80	1,30	5,60	6,30	0,25	1,41	1,58	1,23	6,88	7,74	89

Notes

1) The total capacity of each connected indoor unit is up to ·8.5·kW.
2) The values mentioned in this document are for connecting with the following indoor unit types:
   ·1.5, 2.0, 2.5, 3.5, 4.2, 5.0· kW class
   Wall-mounted ·CTXA-AS, CTXA-AT, CTXA-AW, CTXA-BB, CTXA-BS, CTXA-BT, CTXM-M, CTXM-N, CTXM-R, FTXA-AS, FTXA-AT, FTXA-AW, FTXA-BB, FTXA-BS, FTXA-BT, FTXM-M, FTXM-N, FTXM-R, FTXJ-AB, FTXJ-AS, FTXJ-AW· series
3) Heating capacity conditions
   Indoor temperature ·20·°C DB
   Outdoor temperature ·7·°C DB / ·6·°C WB
4) For additional information on the connection of the DHW generator for Multi and the Hybrid for Multi, see ·3D106169·.

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4 Combination table

4 - 1 Combination Table

2MXM68A

Cooling ·230V 50Hz·

Outdoor unit	Indoor unit	Cooling capacity [kW]		Total capacity [kW]			Power input [kW]			Total current [A]			Power factor [%]
		Room ·A·	Room ·B·	Minimum	Nominal	Maximum	Minimum	Nominal	Maximum	Minimum	Nominal	Maximum	
	1.5	1,60	---	1,52	1,60	2,49	0,40	0,42	0,59	1,82	1,98	2,71	95
	2.0	2,00	---	1,65	2,00	3,00	0,41	0,43	0,67	1,89	2,08	3,08	95
	2.5	2,50	---	1,74	2,50	3,44	0,44	0,44	0,82	2,00	2,62	3,77	95
	3.5	3,50	---	1,93	3,50	4,86	0,46	0,46	1,43	2,09	3,84	6,53	95
	4.2	4,20	---	1,93	4,20	5,33	0,46	0,46	1,43	2,09	3,93	6,56	95
	5.0	5,00	---	1,94	5,00	6,03	0,44	0,44	2,13	2,00	7,20	9,77	95
	6.0	6,00	---	1,94	6,00	6,51	0,44	0,44	2,13	2,00	7,29	9,77	95
	1.5+1.5	1,50	1,50	1,95	3,00	4,79	0,40	0,51	1,15	1,81	2,34	5,25	95
	1.5+2.0	1,50	2,00	1,95	3,50	4,96	0,40	0,62	1,22	1,81	2,84	5,58	95
	1.5+2.5	1,50	2,50	1,95	4,00	5,28	0,40	0,75	1,36	1,81	3,44	6,23	95
	1.5+3.5	1,50	3,50	1,95	5,00	6,17	0,39	1,04	1,83	1,77	4,76	8,39	95
	1.5+4.2	1,50	4,20	1,95	5,70	6,39	0,39	1,27	1,96	1,77	5,82	8,97	95
	1.5+5.0	1,50	5,00	1,95	6,50	7,08	0,38	1,50	2,23	1,73	6,87	10,22	95
	1.5+6.0	1,36	5,44	1,96	6,80	7,59	0,37	1,62	2,36	1,68	7,42	10,79	95
	2.0+2.0	2,00	2,00	1,95	4,00	5,12	0,40	0,75	1,29	1,81	3,44	5,91	95
2MXM68N2V1B	2.0+2.5	2,00	2,50	1,95	4,50	5,44	0,40	0,89	1,43	1,81	4,08	6,56	95
2MXM68A2V1B	2.0+3.5	2,00	3,50	1,95	5,50	6,30	0,39	1,17	1,91	1,77	5,36	8,76	95
	2.0+4.2	2,00	4,20	1,95	6,20	6,51	0,39	1,43	2,05	1,77	6,55	9,37	95
	2.0+5.0	1,94	4,86	1,95	6,80	7,26	0,38	1,59	2,36	1,73	7,28	10,79	95
	2.0+6.0	1,70	5,10	1,96	6,80	7,71	0,37	1,61	2,45	1,68	7,37	11,20	95
	2.5+2.5	2,50	2,50	1,95	5,00	6,10	0,41	1,01	1,78	1,89	4,63	8,15	95
	2.5+3.5	2,50	3,50	1,95	6,00	6,57	0,40	1,29	2,11	1,81	5,91	9,65	95
	2.5+4.2	2,50	4,20	1,95	6,70	6,95	0,40	1,51	2,38	1,81	6,92	10,88	95
	2.5+5.0	2,27	4,53	1,95	6,80	7,37	0,37	1,50	2,45	1,68	6,87	11,20	95
	2.5+6.0	2,00	4,80	1,96	6,80	7,71	0,35	1,48	2,45	1,60	6,78	11,20	95
	3.5+3.5	3,40	3,40	1,95	6,80	7,13	0,38	1,45	2,37	1,73	6,64	10,83	95
	3.5+4.2	3,09	3,71	1,95	6,80	7,24	0,38	1,45	2,46	1,73	6,64	11,24	95
	3.5+5.0	2,80	4,00	1,95	6,80	7,76	0,35	1,42	2,78	1,60	6,50	12,71	95
	3.5+6.0	2,51	4,29	2,26	6,80	8,07	0,40	1,40	2,72	1,81	6,41	12,46	95
	4.2+4.2*	3,40	3,40	1,95	6,80	7,14	0,38	1,44	2,37	1,73	6,60	10,83	95
	4.2+5.0*	3,10	3,70	1,95	6,80	7,77	0,35	1,41	2,78	1,60	6,46	12,71	95
	4.2+6.0*	2,80	4,00	2,26	6,80	8,08	0,40	1,40	2,72	1,81	6,41	12,46	95

Notes

1) The total capacity of each connected indoor unit is up to ·10.2·kW.
2) The values mentioned in this document are for connecting with the following indoor unit types:
   ·1.5, 2.0, 2.5, 3.5, 4.2, 5.0, 6.0· kW class
   Wall-mounted ·CTXA-AS, CTXA-AT, CTXA-AW, CTXA-BB, CTXA-BS, CTXA-BT, CTXM-M, CTXM-N, CTXM-R, FTXA-AS, FTXA-AT, FTXA-AW, FTXA-BB, FTXA-BS, FTXA-BT, FTXM-M, FTXM-N, FTXM-R, FTXJ-AB, FTXJ-AS, FTXJ-AW· series
   * Only for ·CTXM-R· and · · ·FTXM-R· series
3) Cooling capacity conditions
   Indoor temperature ·27·°C DB / ·19·°C WB
   Outdoor temperature ·35·°C DB
4) For additional information on the connection of the DHW generator for Multi and the Hybrid for Multi, see ·3D106169·.

4D139796A

2MXM68A

Heating ·230V 50Hz·

Outdoor unit	Indoor unit	Heating capacity [kW]		Total capacity [kW]			Power input [kW]			Total current [A]			Power factor [%]
		Room ·A·	Room ·B·	Minimum	Nominal	Maximum	Minimum	Nominal	Maximum	Minimum	Nominal	Maximum	
	1.5	2,70	---	1,20	2,70	4,08	0,34	0,72	1,22	1,55	3,35	5,59	95
	2.0	3,00	---	1,19	3,00	4,09	0,34	0,81	1,28	1,57	3,70	5,64	95
	2.5	3,40	-	1,22	3,40	4,30	0,35	1,02	1,37	1,61	4,72	6,08	95
	3.5	4,30	-	1,33	4,30	4,90	0,37	1,41	1,75	1,67	6,50	7,15	95
	4.2	4,90	-	1,44	4,90	5,70	0,40	1,58	2,04	1,82	7,25	7,15	95
	5.0	5,90	-	1,66	5,90	6,90	0,39	1,92	2,59	1,78	8,78	8,70	95
	6.0	7,20	-	1,88	7,20	8,91	0,37	2,39	2,64	1,69	10,94	12,08	95
	1.5+1.5	1,83	1,83	1,33	3,65	7,38	0,29	0,82	1,83	1,31	3,75	8,38	95
	1.5+2.0	1,76	2,34	1,39	4,10	7,76	0,30	0,94	1,99	1,37	4,31	9,09	95
	1.5+2.5	1,76	2,94	1,65	4,70	7,95	0,36	1,10	2,06	1,63	5,04	9,43	95
	1.5+3.5	1,77	4,13	1,80	5,90	8,50	0,37	1,45	2,35	1,68	6,61	10,74	95
	1.5+4.2	1,79	5,01	1,80	6,80	8,85	0,37	1,72	2,57	1,68	7,88	11,75	95
	1.5+5.0	1,80	6,00	2,18	7,80	10,38	0,45	2,03	2,91	2,06	9,27	13,31	95
	1.5+6.0	1,72	6,88	2,46	8,60	10,58	0,48	2,28	2,67	2,19	10,44	12,21	95
	2.0+2.0	2,40	2,40	1,65	4,80	7,95	0,36	1,01	2,31	1,63	4,63	9,47	95
2MXM68N2V1B	2.0+2.5	2,36	2,94	1,65	5,30	8,12	0,36	1,17	2,32	1,63	5,34	9,81	95
2MXM68A2V1B	2.0+3.5	2,36	4,14	1,80	6,50	8,67	0,37	1,52	2,43	1,68	6,94	11,12	95
	2.0+4.2	2,39	5,01	1,80	7,40	9,03	0,37	1,83	2,66	1,68	8,38	12,17	95
	2.0+5.0	2,37	5,93	2,18	8,30	10,56	0,45	2,18	3,00	2,06	9,98	13,73	95
	2.0+6.0	2,15	6,45	2,46	8,60	10,75	0,48	2,24	2,74	2,19	10,26	12,55	95
	2.5+2.5	2,95	2,95	1,65	5,90	8,49	0,36	1,33	2,36	1,63	6,08	10,78	95
	2.5+3.5	2,96	4,14	1,89	7,10	9,03	0,38	1,72	2,66	1,72	7,86	12,17	95
	2.5+4.2	2,99	5,01	1,89	8,00	9,29	0,38	2,03	2,82	1,72	9,31	12,93	95
	2.5+5.0	2,87	5,73	2,27	8,60	10,68	0,46	2,24	3,09	2,11	10,26	14,15	95
	2.5+6.0	2,53	6,07	2,55	8,60	10,88	0,50	2,22	2,77	2,28	10,17	12,67	95
	3.5+3.5	4,15	4,15	2,17	8,30	9,38	0,42	2,18	2,86	1,94	9,98	13,09	95
	3.5+4.2	3,91	4,69	2,17	8,60	9,47	0,42	2,26	2,91	1,94	10,35	13,31	95
	3.5+5.0	3,54	5,06	2,56	8,60	10,90	0,51	2,22	3,13	2,32	10,17	14,32	95
	3.5+6.0	3,17	5,43	2,74	8,60	11,01	0,52	2,21	2,76	2,37	10,12	12,63	95
	4.2+4.2*	4,30	4,30	2,17	8,60	9,56	0,42	2,22	2,94	1,94	10,17	13,47	95
	4.2+5.0*	3,93	4,67	2,56	8,60	10,91	0,51	2,21	3,19	2,32	10,12	14,61	95
	4.2+6.0*	3,54	5,06	2,74	8,60	11,02	0,51	2,20	2,79	2,32	10,07	12,76	95

Notes

1) The total capacity of each connected indoor unit is up to ·10.2·kW.
2) The values mentioned in this document are for connecting with the following indoor unit types:
   ·1.5, 2.0, 2.5, 3.5, 4.2, 5.0, 6.0· kW class
   Wall-mounted ·CTXA-AS, CTXA-AT, CTXA-AW, CTXA-BB, CTXA-BS, CTXA-BT, CTXM-M, CTXM-N, CTXM-R, FTXA-AS, FTXA-AT, FTXA-AW, FTXA-BB, FTXA-BS, FTXA-BT, FTXM-M, FTXM-N, FTXM-R, FTXJ-AB, FTXJ-AS, FTXJ-AW· series
   * Only for ·CTXM-R· and · · ·FTXM-R· series
3) Heating capacity conditions
   Indoor temperature ·20·°C DB
   Outdoor temperature ·7·°C DB / ·6·°C WB
4) For additional information on the connection of the DHW generator for Multi and the Hybrid for Multi, see ·3D106169·.

4D139789A

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:

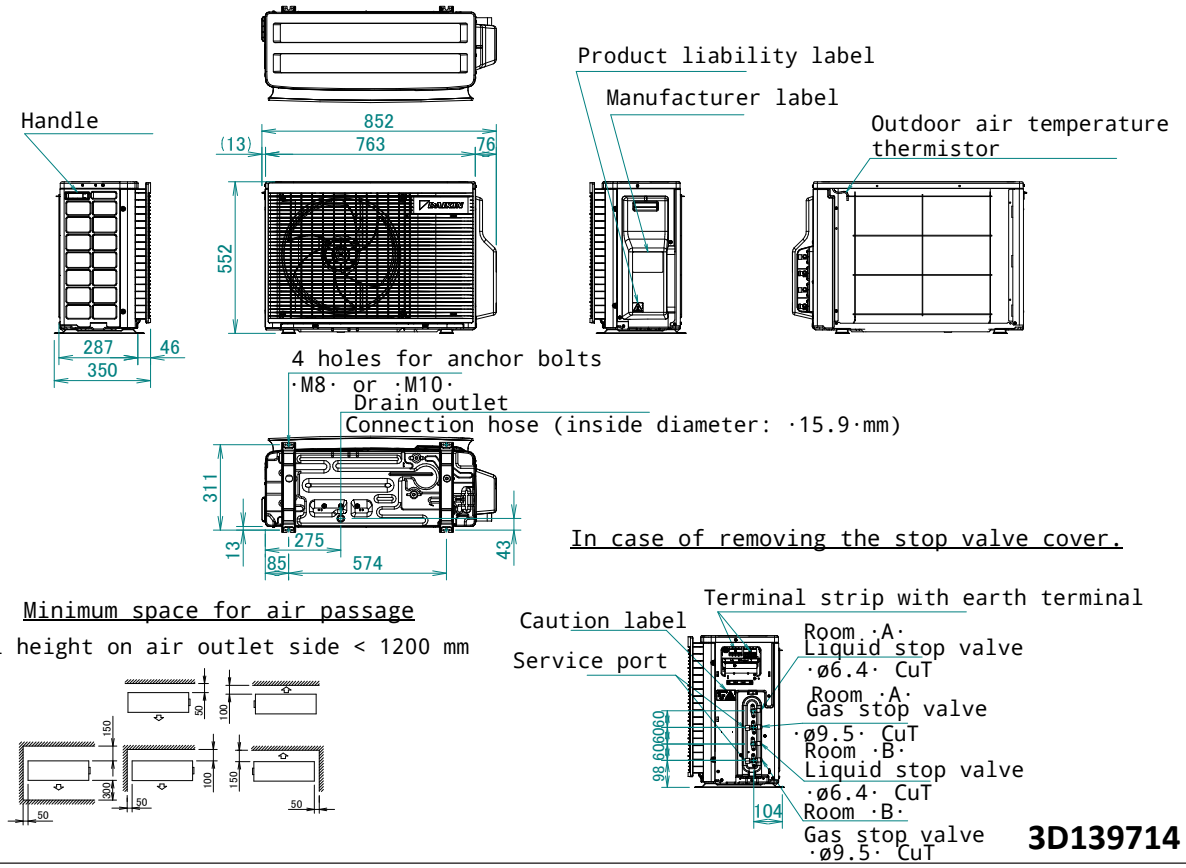
- **Capacity table database:** lets you find back and export quickly the capacity information you are looking for based upon unit model, refrigerant temperature and connection ratio.
- You can access the capacity table viewer here:
  https://my.daikin.eu/content/denv/en_US/home/applications/software-finder/capacity-table-viewer.html

- 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

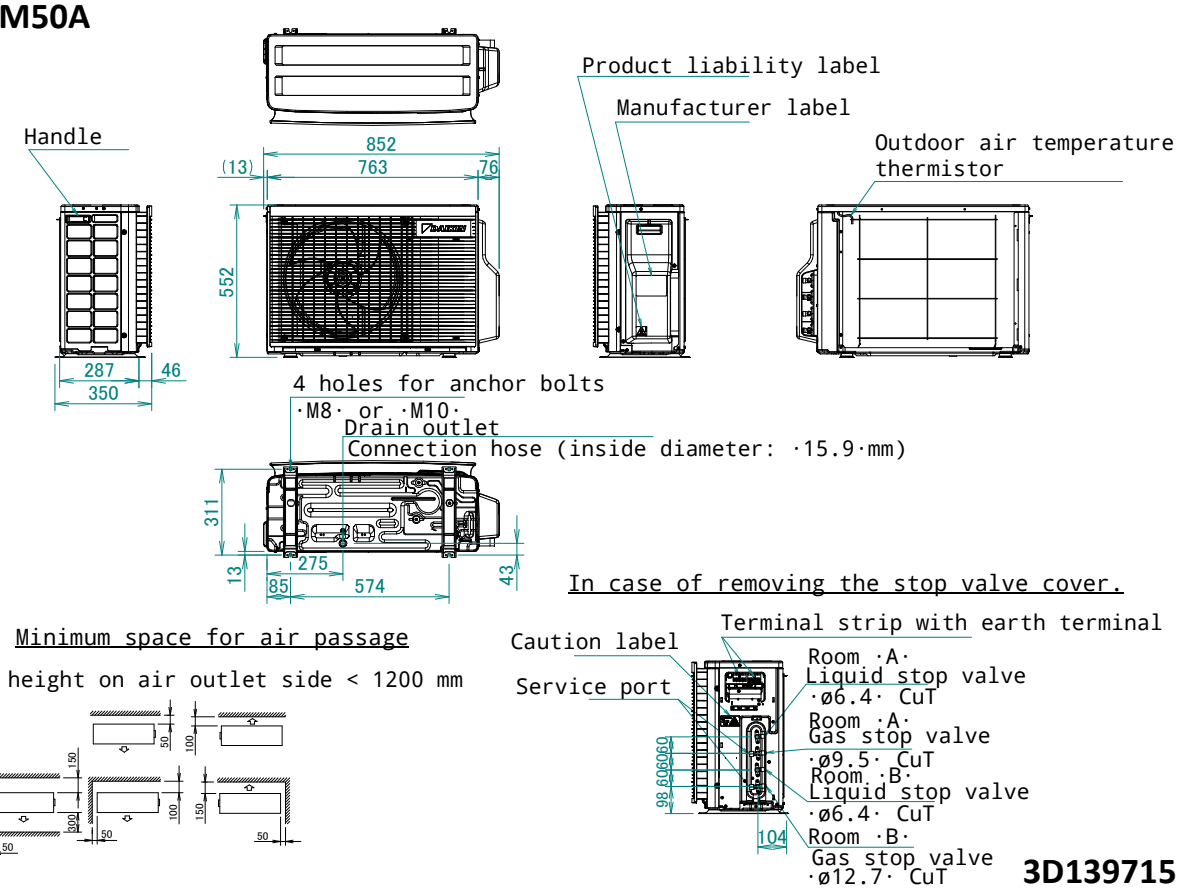
6 Dimensional drawings

6 - 1 Dimensional Drawings

2MXM40A



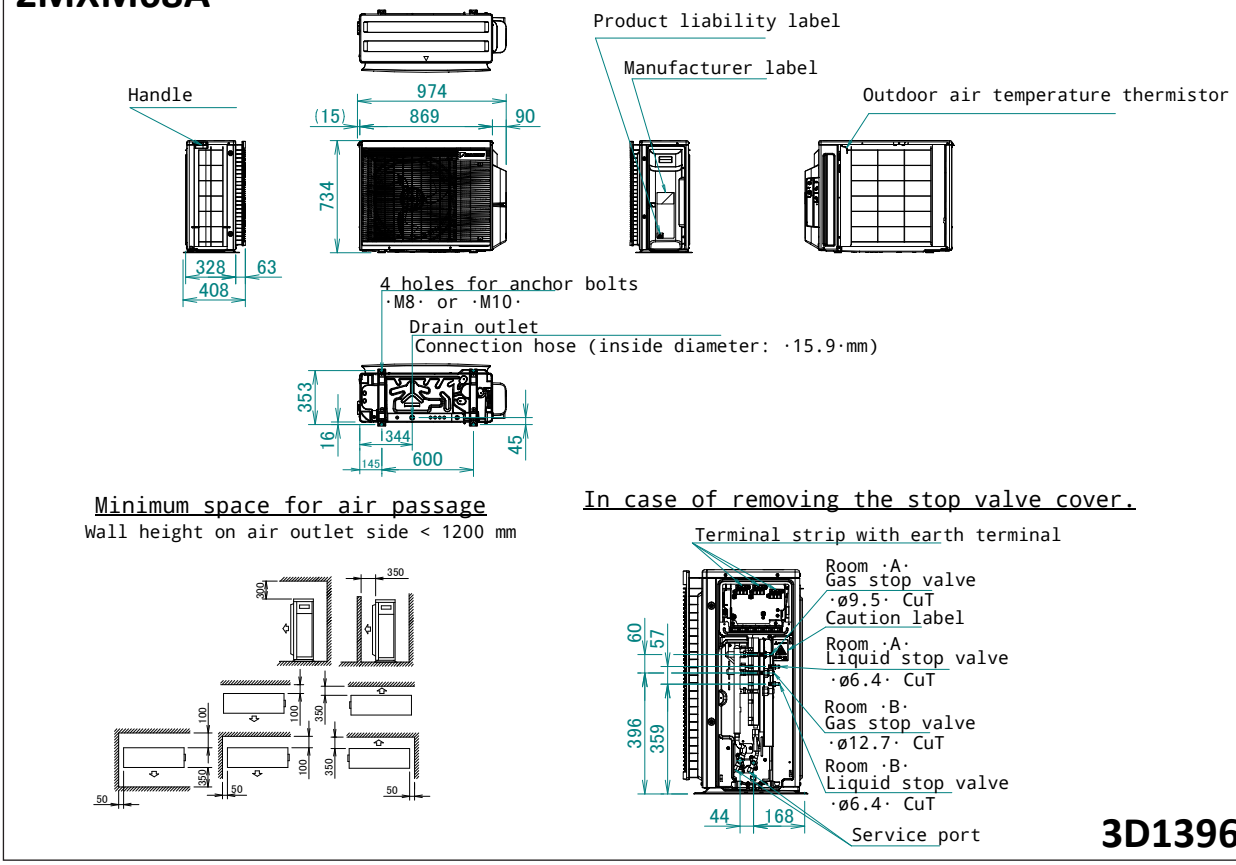
2MXM50A



6 Dimensional drawings

6 - 1 Dimensional Drawings

2MXM68A

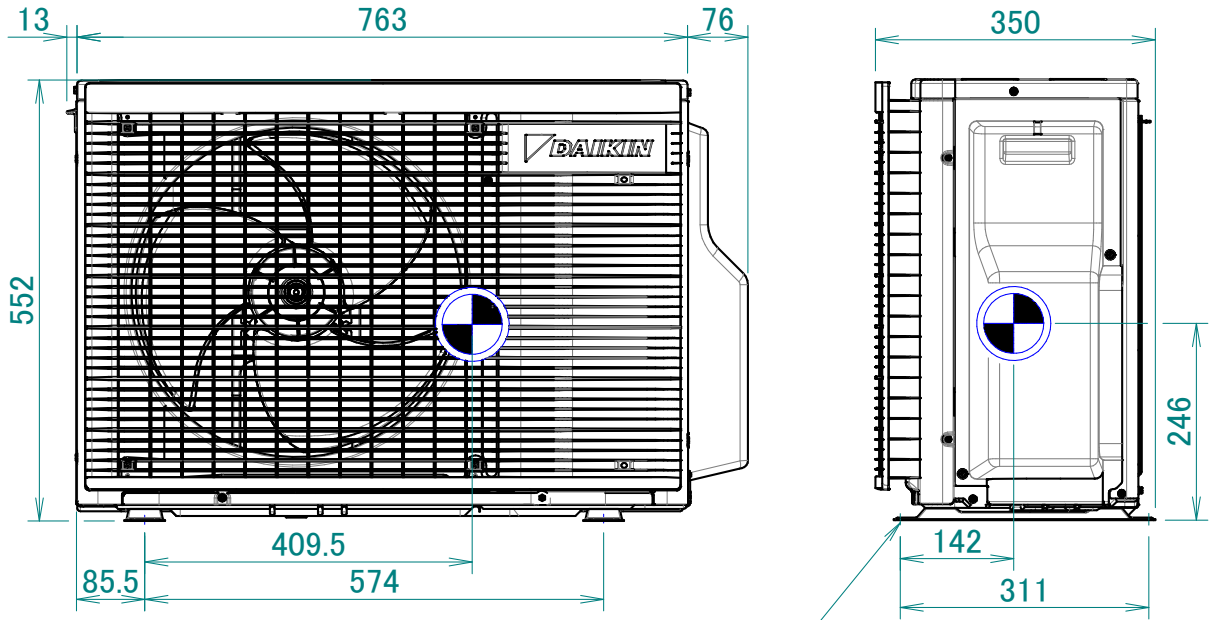


3D139689

7 Centre of gravity

7 - 1 Centre of Gravity

2MXM40A



4D139747

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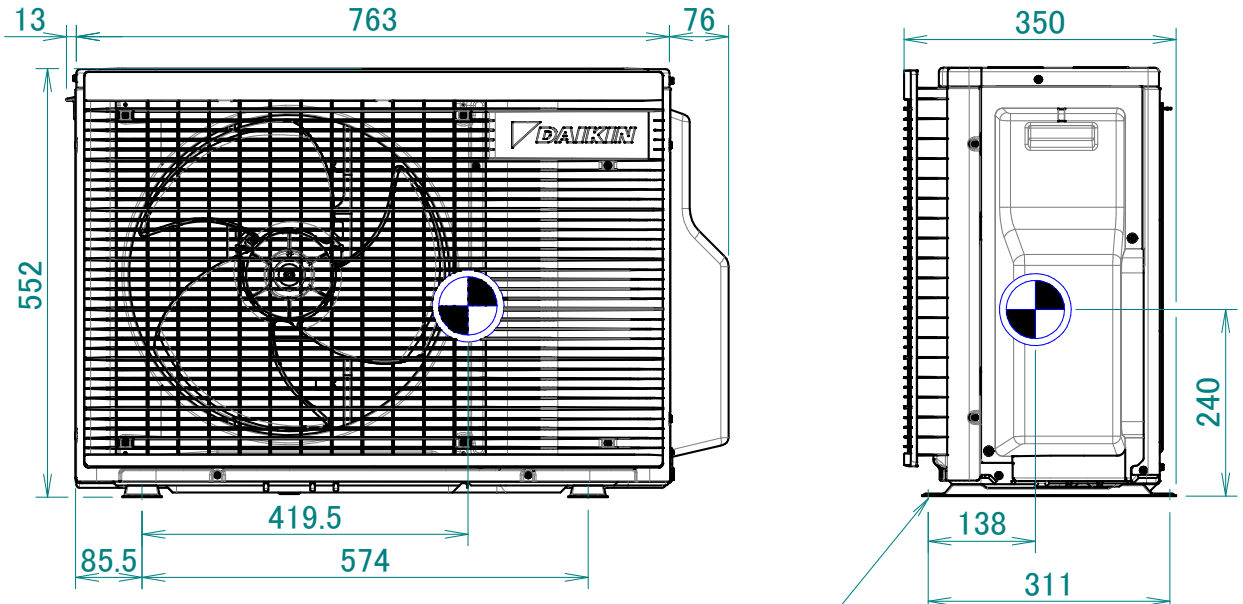
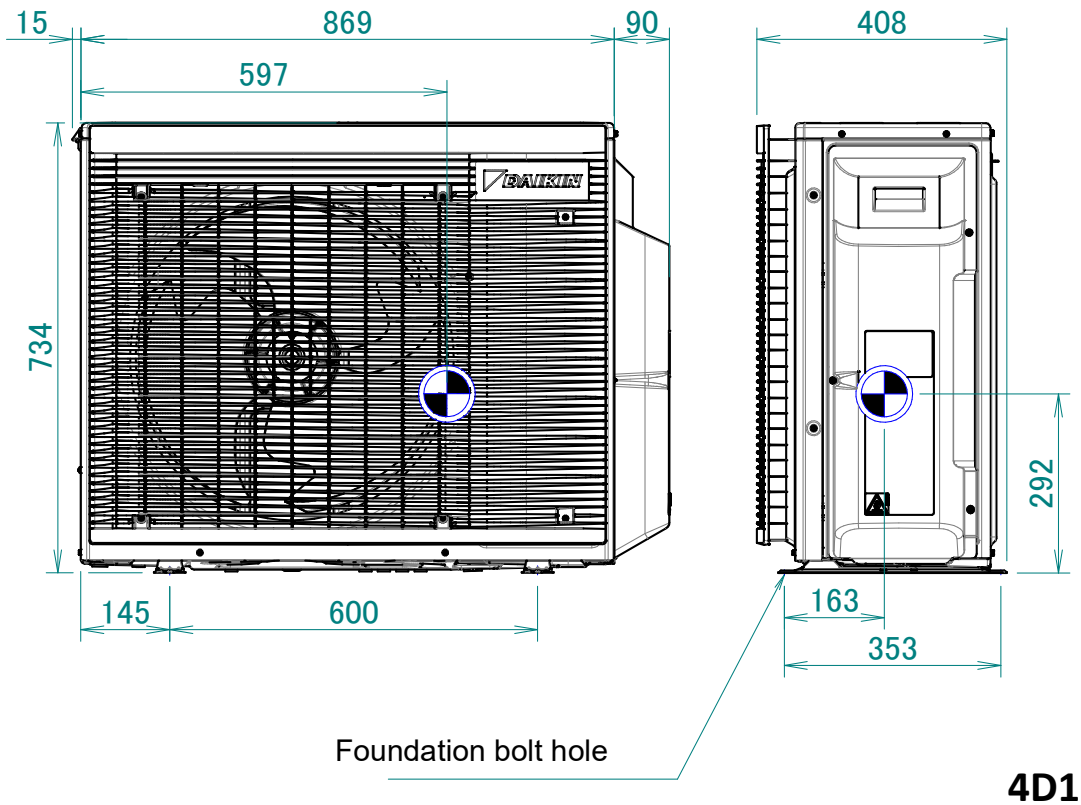


4D139693

7 Centre of gravity

7 - 1 Centre of Gravity

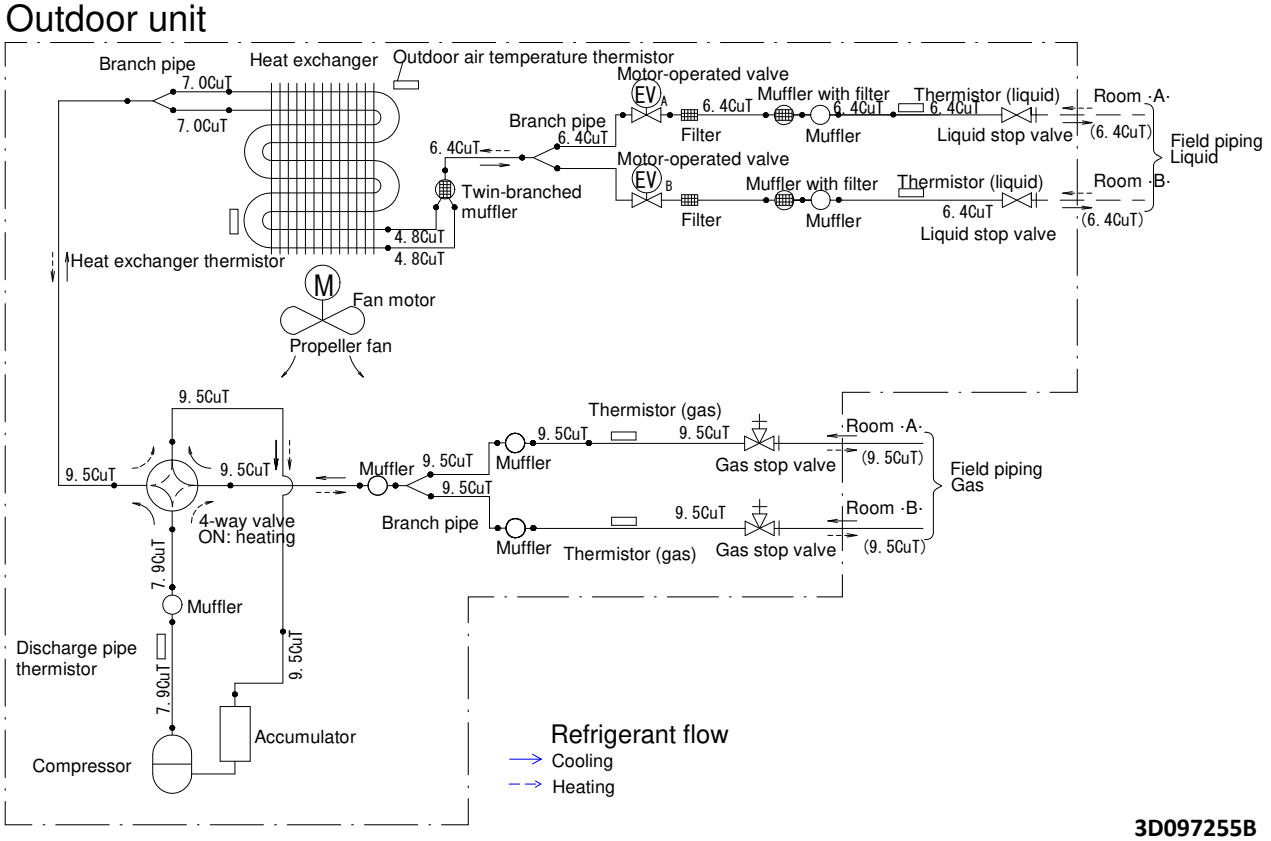
2MXM68A



8 Piping diagrams

8 - 1 Piping Diagrams

2MXM40A



3D097255B

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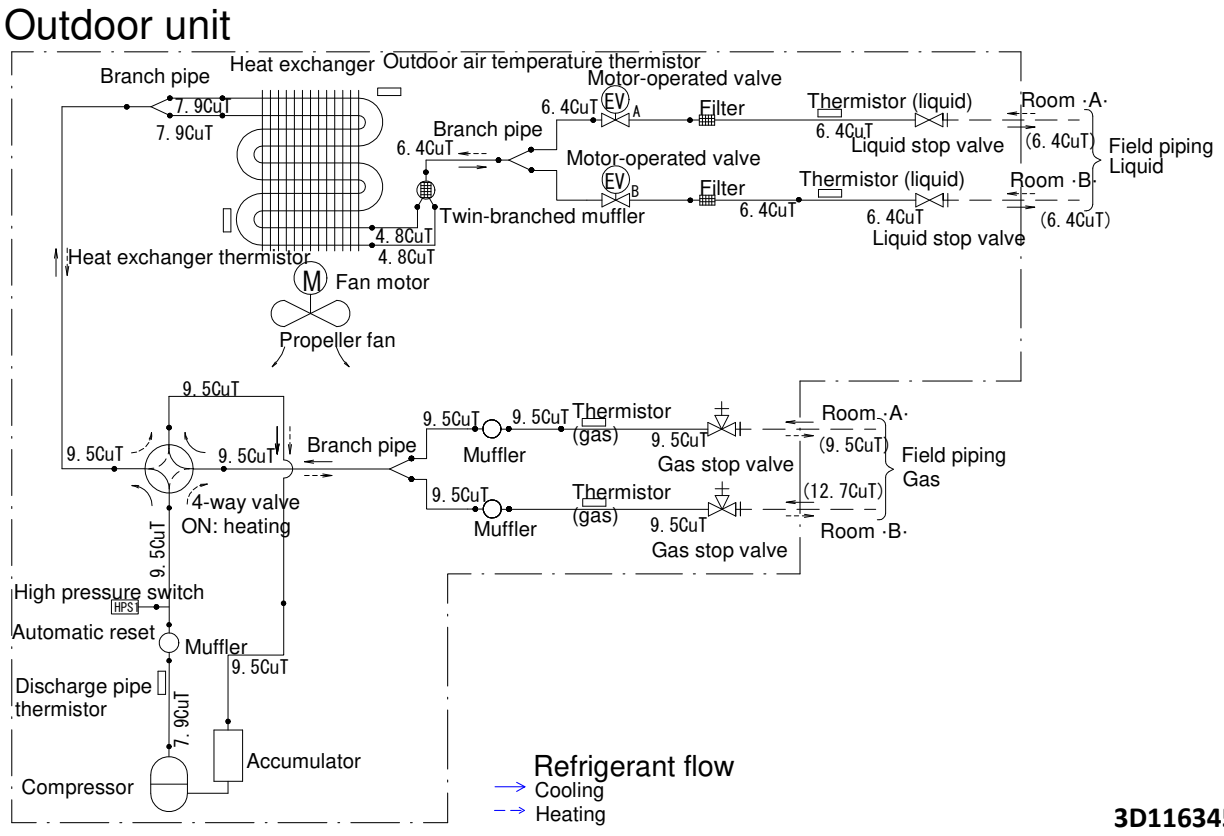


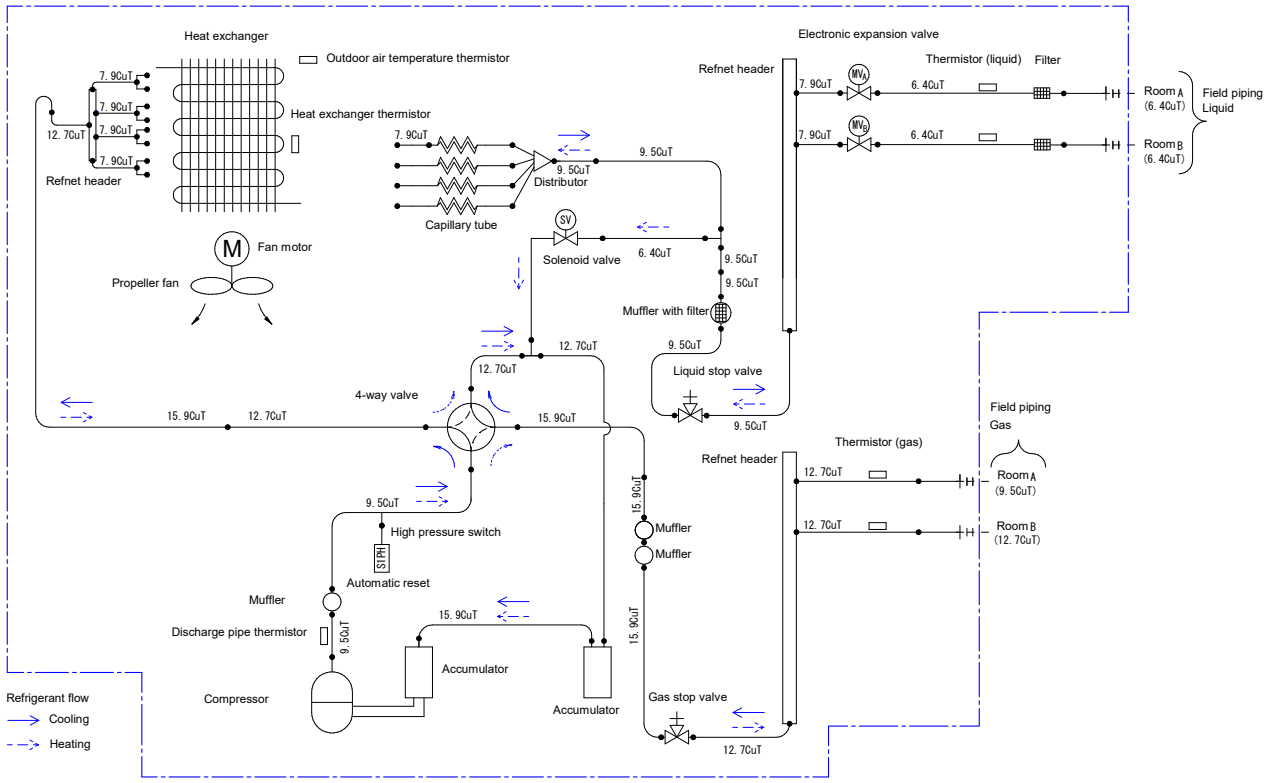
3D116345

8 Piping diagrams

8 - 1 Piping Diagrams

2MXM68A

Outdoor Unit

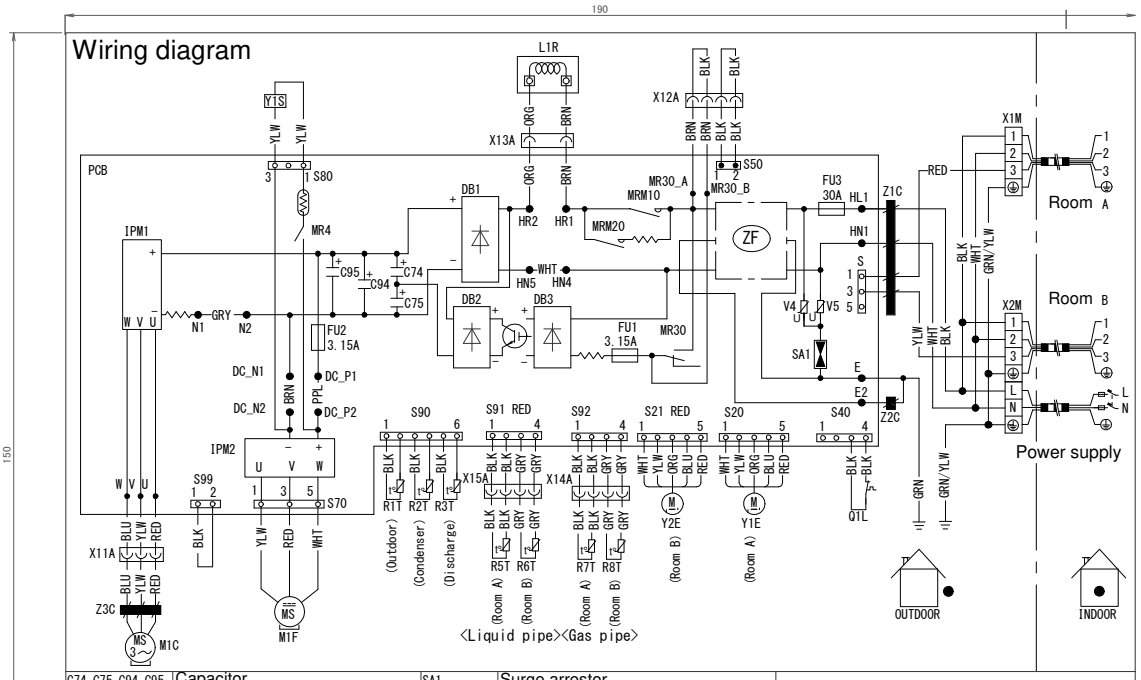


3D130564

9 Wiring diagrams

9 - 1 Wiring Diagrams - Single Phase

2MXM40A



C74, C75, C94, C95	Capacitor	SA1	Surge arrestor		
DB1, DB2, DB3	Diode bridge				
FU1, FU2, FU3	Fuse	V4, V5	Varistor		
IPM1	Intelligent power module	X1M–X2M	Terminal strip with earth terminal		Field wiring
L1R	Reactor	Y1E–Y2E	Electronic expansion valve coil		Screw terminal
M1C	Compressor motor	Y1S	Reversing solenoid valve coil		Connector
M1F	Fan motor	ZF	Noise filter	WHT: white	GRY: grey
MRM10, MRM20	Magnetic relay	Z1C–Z3C	Ferrite core	BLK: black	ORG: orange
MR4, MR30	Magnetic relay	S2–S502	Connector	BLU: blue	RED: red
PCB	Printed circuit board	X11A–X15A	Connector	BRN: brown	YLW: yellow
Q1L	Overload protector	S99	Heating-to-cooling changeover	GRN: green	
R1T–R8T	Thermistor			PPL: purple	

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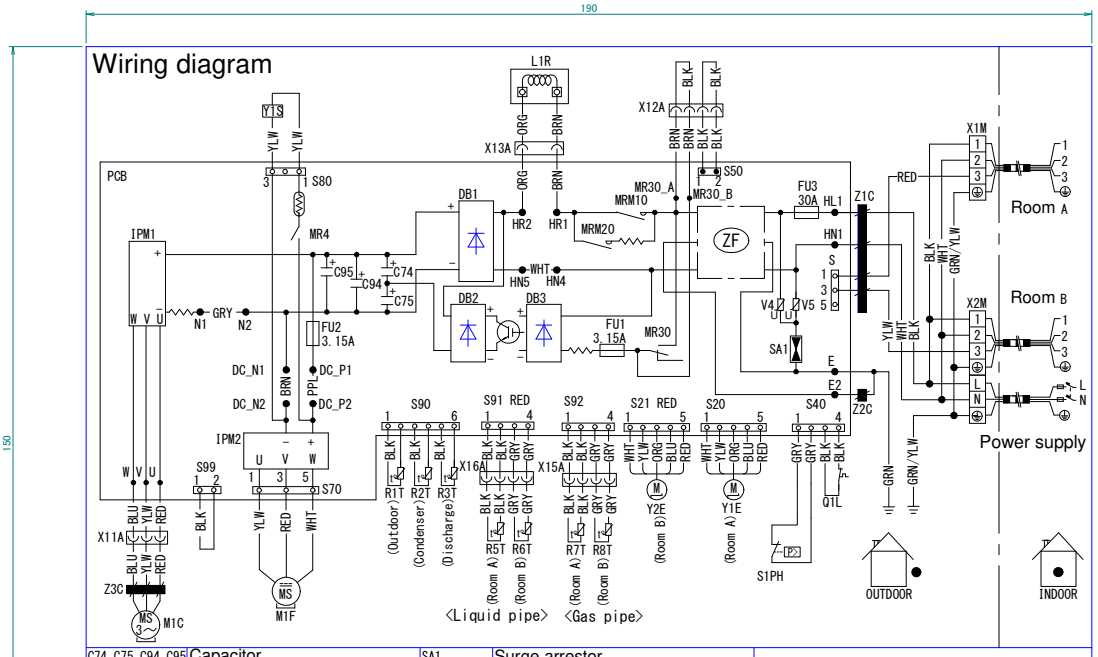
2MXM50A



C74, C75, C94, C95	Capacitor	SA1	Surge arrestor		
DB1, DB2, DB3	Diode bridge	S1PH	High pressure switch		
FU1, FU2, FU3	Fuse	V4, V5	Varistor		
IPM1	Intelligent power module	X1M–X2M	Terminal strip with earth terminal		Field wiring
L1R	Reactor	Y1E–Y2E	Electronic expansion valve coil		Screw terminal
M1C	Compressor motor	Y1S	Reversing solenoid valve coil		Connector
M1F	Fan motor	ZF	Noise filter	WHT: white	GRY: grey
MRM10, MRM20	Magnetic relay	Z1C–Z3C	Ferrite core	BLK: black	ORG: orange
MR4, MR30	Magnetic relay	S2–S502	Connector	BLU: blue	RED: red
PCB	Printed circuit board	X11A–X16A	Connector	BRN: brown	YLW: yellow
Q1L	Overload protector	S99	Heating-to-cooling changeover	GRN: green	
R1T–R8T	Thermistor			PPL: purple	

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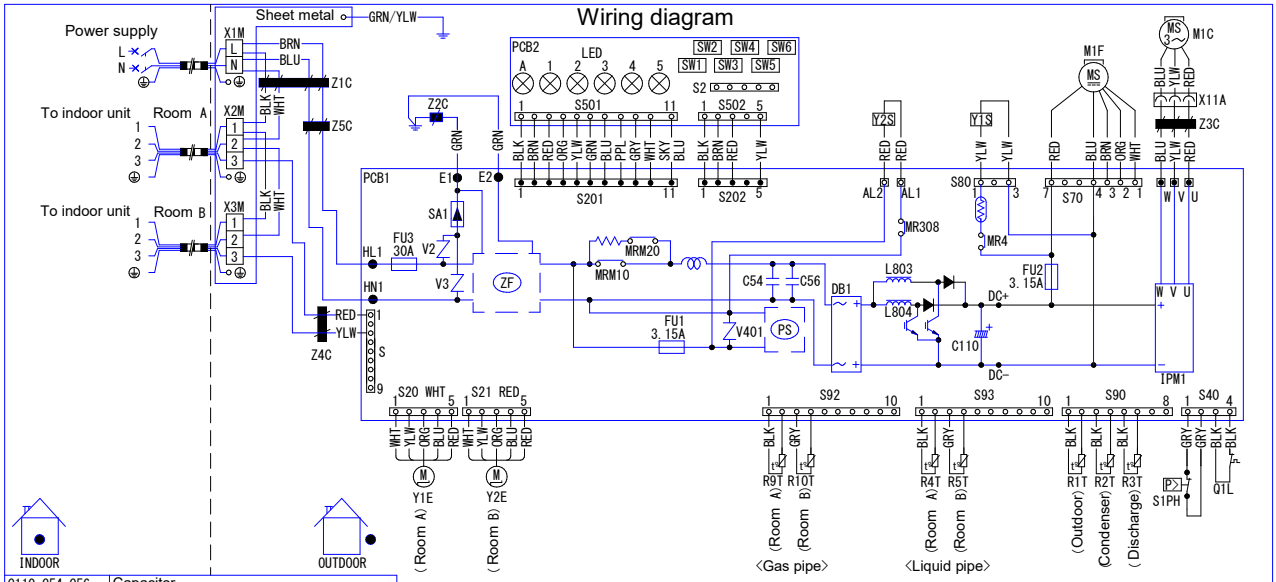
9 Wiring diagrams

9 - 1 Wiring Diagrams - Single Phase

2MXM68A



C110, C54, C56	Capacitor				
DB1	Diode bridge	Q1L	Overload protector	ZF	Noise filter
FU1, FU2, FU3	Fuse	R1T–R10T	Thermistor	S, S2–S502	Connector
IPM1	Intelligent power module	SA1	Surge arrester	U, V, W	Connector
L803, L804	Reactor	S1PH	High pressure switch	X11A, AL1, AL2	Connector
LED1–5, LEDA	Light-emitting diode	SW1–SW6	Switch		Field wiring
M1C	Compressor motor	V2, V3, V401	Varistor		Screw terminal
M1F	Fan motor	X1M–X3M	Terminal strip with earth terminal		Connector
MRM10, MRM20	Magnetic relay	Y1E–Y2E	Electronic expansion valve coil	BLK: black	GRY: grey
MR4, MR308	Magnetic relay	Y1S	Reversing solenoid valve coil	BLU: blue	ORG: orange
PCB1, PCB2	Printed circuit board	Y2S	Solenoid valve	BRN: brown	PPL: purple
PS	Switching power supply	Z1C–Z5C	Ferrite core	GRN: green	RED: red

SKY BLU: sky blue	
WHT: white	
YLW: yellow	
3D130366-1	

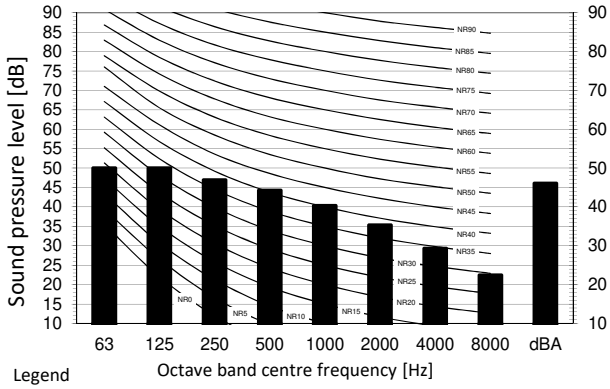
3D130366

10 Sound data

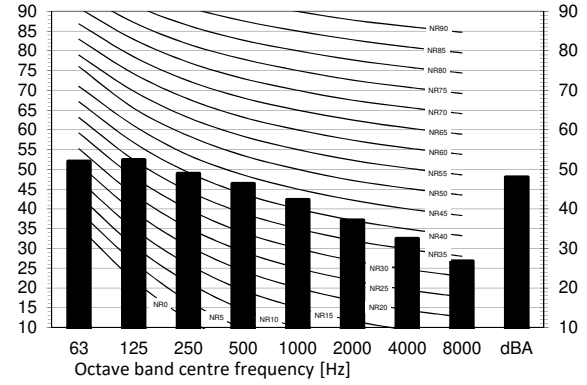
10 - 1 Sound Pressure Spectrum

2MXM40A

Cooling mode



Heating mode



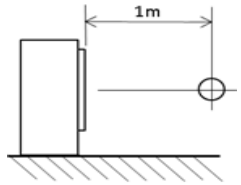
Legend

dBA = A-weighted sound pressure level (A scale according to IEC).

A Scale

B ■ Fan speed: High

Location of microphone



Cooling Total dB

A	B
dBA	46

Heating Total dB

A	B
dBA	48

Notes

1 Background noise already taken into account.

2 Operating conditions: power source 220-240 V/220 V 50/60 Hz; JIS standard

3 Operating noise varies depending on operation and ambient conditions.

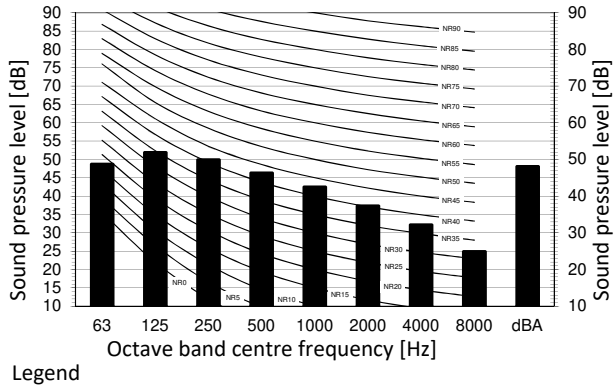
4 The operation noise measuring method is in accordance with JISC9612.

5 Measuring location: anechoic chamber

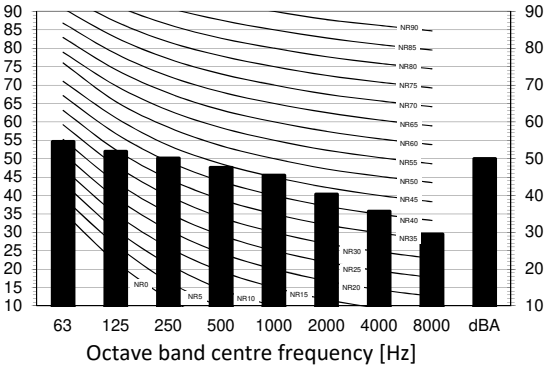
3D102207C

2MXM50A

Cooling mode



Heating mode



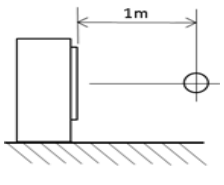
Legend

dBA = A-weighted sound pressure level (A scale according to IEC).

A Scale

B ■ Fan speed: High

Location of microphone



Cooling Total dB

A	B
dBA	48

Heating Total dB

A	B
dBA	50

Notes

1 Background noise already taken into account.

2 Operating conditions: power source 220-240 V/220 V 50/60 Hz; JIS standard

3 Operating noise varies depending on operation and ambient conditions.

4 The operation noise measuring method is in accordance with JISC9612.

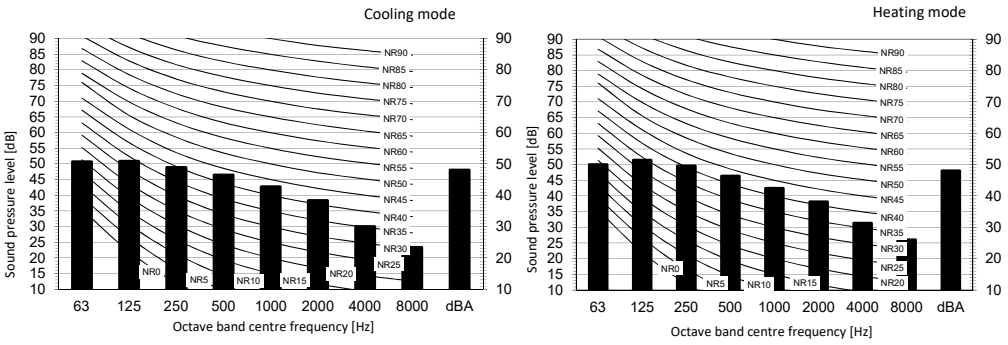
5 Measuring location: anechoic chamber

3D102208C

10 Sound data

10 - 1 Sound Pressure Spectrum

2MXM68A
3MXM68A



Legend

dBA = A-weighted sound pressure level (A scale according to IEC).

A Scale

B Fan speed: High

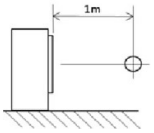
Cooling Total dB

A	B
dBA	48

Heating Total dB

A	B
dBA	49

Location of microphone



Notes

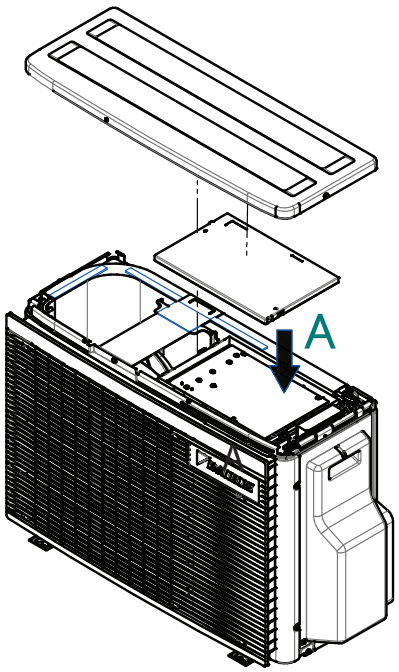
1. Operating conditions: power source 220-240 V/220 V 50/60 Hz; JIS standard
2. Background noise already taken into account.
3. Operating noise varies depending on operation and ambient conditions.
4. The operation noise measuring method is in accordance with JISC9612.
5. Measuring location: anechoic chamber

3D106223B

11 Installation

11 - 1 Installation Method

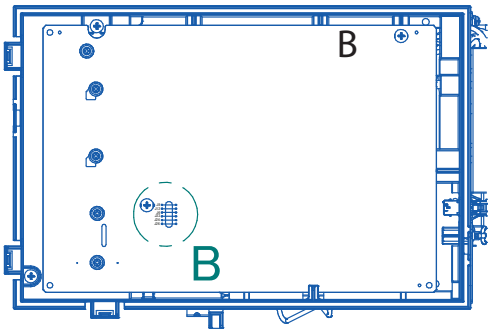
2MXM40-50A



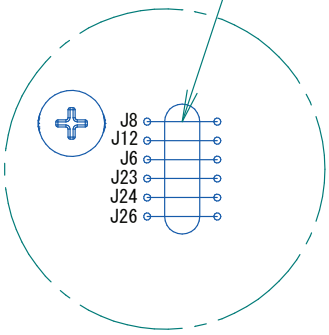
Disassembly of unit

Cut jumper J8 with pliers

(Cut parts shall not touch each other)
(Do not damage other jumpers)



Arrow view A
El. Compo. Assy



Detail B

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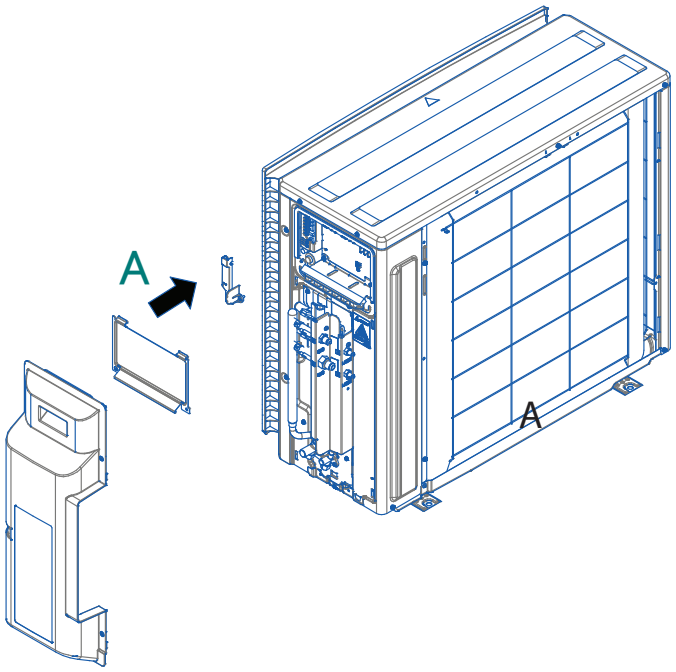
11 Installation

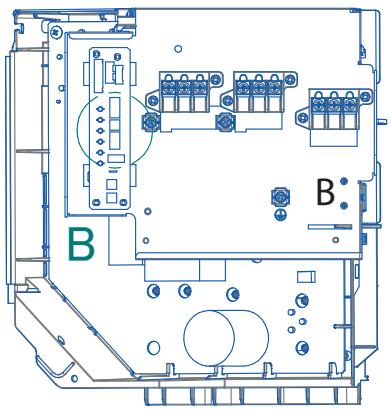
11 - 1 Installation Method

2MXM68A

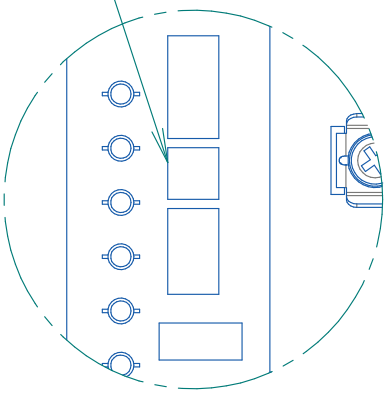


Disassembly of unit

Swich SW6-2 to "on" position



Arrow view A
El. Compo. Assy



Detail B

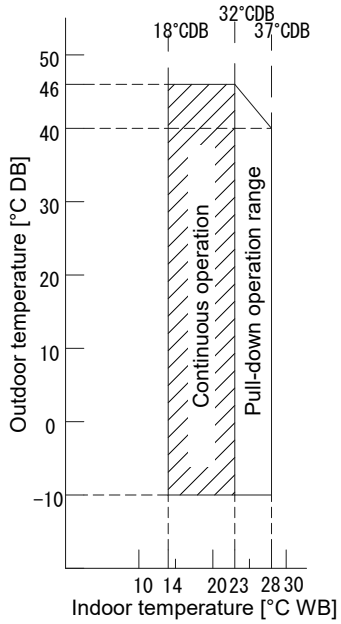
4D139893

12 Operation range

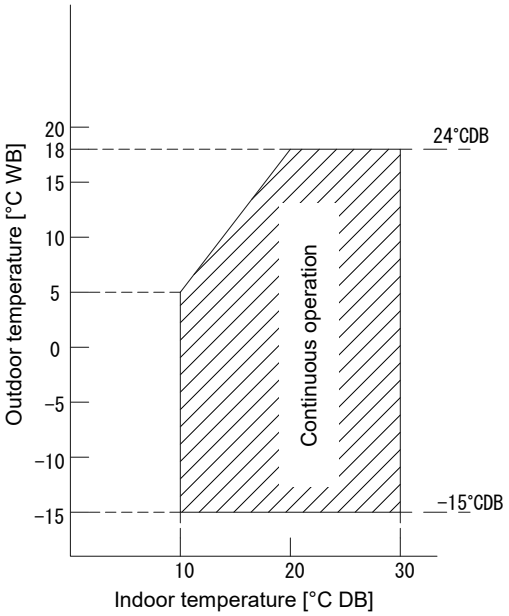
12 - 1 Operation Range

2MXM-A
3MXM-A
4MXM-A
5MXM-A

Cooling



Heating



Notes
1. The ·graph· is based on the following conditions.
Corresponding refrigerant piping length: ·5· m
Level difference: ·0·m
Air flow rate High

3D101376D

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

EEDEN22 04/2022

Daikin Europe N.V. participates in the ECP programmes for Fan Coil Units and Variable Refrigerant Flow systems. Daikin Applied Europe S.p.A. participates in the ECP programmes for Liquid Chilling Packages and Hydronic Heat Pumps. Check ongoing validity of certificate: www.eurovent-certification.com

Stylish

Where innovation meets creativity

FTXA-A/B (W/S/T/B) / RXA-A/B

R-32 BLUEVOLUTION

Award winning design

Stylish brings together excellent design and technology to deliver a total climate solution for any interior. Measuring only 189mm deep, Stylish is one of the slimmest wall mounted units on the market and achieves the best in comfort, energy efficiency, reliability and control.

Inspired by its predecessors, Daikin Emura and Ururu Sarara, Stylish has earned the Good Design Award for its innovative look and functional capabilities.

Users can now choose from **four distinct colours** (white, silver, blackwood and now matt black).

> **Curved corners** create an unobtrusive and space-saving design
> Simple panel enables variation in texture and colour to easily blend into any room

The Coanda effect

Already present in the Ururu Sarara, the **Coanda effect** optimises the airflow for a comfortable climate. By using specially designed louvres, a more focused airflow allows a better temperature distribution throughout the whole room.

A+++ A+++

Replacement Technology

How it works
Stylish determines the airflow pattern based on whether the room needs heating or cooling. When Stylish is in heating mode, two louvres will direct air downward (vertical airflow), while in cooling mode the louvres will move air upward (ceiling airflow).

By creating two different airflow patterns, Stylish prevents draughts and establishes a more stable and comfortable room temperature for occupants.

Fresh, pure air

Stylish provides the best indoor air quality using **Daikin's Flash Streamer** technology. This technology breaks down allergens such as pollen and fungal spores, providing better, cleaner air. The Flash Streamer technology is not meant to be used for medical purposes.

Quiet operation

Stylish uses a **newly designed fan** to optimise airflow for higher energy efficiency at low sound levels. To achieve higher energy efficiency, Daikin designed a new fan that runs efficiently within Stylish's compact dimensions. Together, the fan and heat exchanger attain top energy performance but operate at a sound level that is practically inaudible to occupants.

FTXA-AW

FTXA-BB

FTXA-BS

FTXA-BT

RXA-A/B

ARC466A58

WI-FI ADAPTOR
INCLUDED AS STANDARD

FTXA-A/B (W/S/T/B) / RXA-A/B

R-32 BLUEVOLUTION

Indoor Units	White		CTXA15AW	FTXA20AW	FTXA25AW	FTXA35AW	FTXA42AW	FTXA50AW
	Black		CTXA15BB	FTXA20BB	FTXA25BB	FTXA35BB	FTXA42BB	FTXA50BB
	Silver		CTXA15BS	FTXA20BS	FTXA25BS	FTXA35BS	FTXA42BS	FTXA50BS
	Blackwood		CTXA15BT	FTXA20BT	FTXA25BT	FTXA35BT	FTXA42BT	FTXA50BT
Capacity	UK Total Cooling	kW	Multi Combination Only	1.95	2.44	3.32	4.11	4.89
	UK Sensible Cooling	kW		1.95	1.96	2.43	3.01	3.56
	Nominal Cooling	kW		2.0	2.5	3.4	4.2	5.0
	Nominal Heating	kW		2.5	2.8	4.0	5.4	5.8
Seasonal Efficiency (EN14825) COOLING	Energy Label			A+++	A+++	A+++	A++	A++
	Pdesign	kW		2.0	2.5	3.4	4.2	5.0
	SEER			8.75	8.74	8.73	7.50	7.33
	Annual Energy Consumption	kWh		80	101	137	196	239
Seasonal Efficiency (EN14825) HEATING	Energy Label			A+++	A+++	A+++	A++	A++
	Pdesign	kW		2.40	2.45	2.50	3.80	4.00
	SCOP			5.15	5.15	5.15	4.6	4.6
	Annual Energy Consumption	kWh		653	666	680	1156	1217
Nominal Efficiency	EER/COP			4.70/6.27	4.46/6.25	4.37/6.19	3.99/6.33	3.68/6.32
Air Flow Rate (Cooling)	High / Nom / Low / Silent	m^3/sec	0.183/0.136/0.101/ 0.076	0.183/0.136/0.101/ 0.076	0.191/0.143/0.101/ 0.076	0.198/0.143/0.101/ 0.076	0.218/0.163/0.120/ 0.076	0.225/0.173/0.126/ 0.086
Dimensions	Height / Weight / Depth	mm	295 x 798 x 189	295 x 798 x 189	295 x 798 x 189	295 x 798 x 189	295 x 798 x 189	295 x 798 x 189
Weight		kg	12	12	12	12	12	12
Sound Pressure (Cooling)	High / Nom / Low / Silent	dbA	39/32/25/21	39/32/25/19	40/33/25/19	41/33/25/19	45/37/29/21	46/39/31/24
Sound Power (Cooling)		dbA	57	57	57	60	60	60

Outdoor Units				RXA20A	RXA25A	RXA35A	RXA42B	RXA50B
Dimensions	Height x Width x Depth	mm	Multi Combination Only	550 x 765 x 285	550 x 765 x 285	550 x 765 x 285	734 x 870 x 373	734 x 870 x 373
Weight		kg		32	32	32	50	50
Electrical Details	Power Supply			1ph	1ph	1ph	1ph	1ph
	Running Current	A		-	-	-	-	-
	Starting Current	A		-	-	-	-	-
	Max Fuse Size	A		10	13	13	13	13
Interconnection Wiring	Core / Cable Size			3+E / 1.5	3+E / 1.5	3+E / 1.5	3+E / 1.5	3+E / 1.5
Piping Connections	Liquid / Gas	inches (mm)		1/4 (6.4) / 3/8 (9.5)	1/4 (6.4) / 3/8 (9.5)	1/4 (6.4) / 3/8 (9.5)	1/4 (6.4) / 1/2 (12.7)	1/4 (6.4) / 1/2 (12.7)
Pipework	Maximum Length	m		20	20	20	30	30
	Maximum Vertical Rise	m		15	15	15	20	20
	Precharged to	m		10	10	10	10	10
	Additional charge	g/m		20	20	20	20	20
	Holding charge	kg		0.76	0.76	0.76	1.1	1.1
Sound Pressure (Cooling)	High	dBA		46	46	49	48	48
Sound Power (Cooling)		dBA		59	59	61	62	62
Operating Range (Cooling)	Min / Max	°CDB		-10/46	-10/46	-10/46	-10/46	-10/46
Operating Range (Heating)	Min / Max	°CWB		-15/18	-15/18	-15/18	-15/18	-15/18
ECA Eligible				•	•	•	•	•

Accessories:

Accessory Ref	Description
EKRS21	Wire harness for new S21 port for all marked (*) options
BRC073*	Optional wired remote controller BRC1E53 style - Connection cable required
BRCW901A03	3m connection cable for BRC073
BRCW901A08	8m connection cable for BRC073
K.CGM	Condensing unit guard size Split 42-71/ Sky Air 35-250
K.CGS	Condensing unit guard size 20-35
K.CWB90-2	Condensing unit bracket - up to size 71, max weight 90kg of ODU
K.DT1	Condensate drip tray for use with K.CWB90-2
KLIC-DD*	KNX interface for Split type systems
KRP413A1S*	Adaptor PCB for remote on/off control - constant/pulse contact
KRP928A2S*	Adaptor PCB for interface to Daikin centralised control systems

Notes & Features:

> All fan coils are supplied with infrared remote controller ARC466A58
> New fan with Coanda effect for optimum air distribution and indoor comfort
> New grid eye sensor redirects air away from the occupants in the room

Daikin Europe N.V. participates in the Eurovent Certification programme for Air conditioners (AC), Liquid Chilling Packages (LCP), Air handling units (AHU) and Fan coil units (FCU), Check ongoing validity of certificate online: www.eurovent-certification.com or using: www.certiflash.com

FSC

Daikin D1+ Dealer **Airtech Air Conditioning Services Limited**
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