

Załącznik 4.2

1. Project Information

Project name	AGH Kraków
Country	Poland
City	Kraków
Altitude(m)	151
Indoor DB temperature in cooling(°C)	24
Indoor WB temperature in cooling(°C)	17
Outdoor DB temperature in cooling(°C)	32
Outdoor WB temperature in cooling(°C)	22.6
Indoor DB temperature in heating(°C)	20
Indoor WB temperature in heating(°C)	14
Outdoor DB temperature in heating(°C)	-20
Outdoor WB temperature in heating(°C)	6.9

2. Overall Material List

2.1 Equipment List

Model	Quantity	Description
JZ1	1	Side Discharge(380-415V EU series)
JW1	5	Compact Four-way Cassette(EU series)
JW2	4	Compact Four-way Cassette(EU series)
FQZHN-01D	8	Branch joint
Φ19.1<->Φ22.2	1	Reducer
Wireless remote control	9	2nd generation remote controller

2.2 Field Providing List

2.2.1 Refrigerant Piping Materials

Model	Quantity	Unit	Description
Φ6.35	16.8	m	Copper pipe
Φ9.53	34.35	m	Copper pipe
Φ12.7	16.8	m	Copper pipe
Φ15.9	15.95	m	Copper pipe
Φ19.1	1.9	m	Copper pipe
Φ22.2	16.5	m	Copper pipe
Insulation casing for piping			All refrigerant piping and branch joints should be completely insulated.

Recommended insulation casing thickness:

Piping size	Thickness	
	Humidity<80%RH	Humidity≥80%RH
Φ6.35~Φ38.1mm	≥15mm	≥20mm
Φ41.3~Φ38.1mm	≥20mm	≥25mm

2.2.2 Refrigerant charge

System name	Model	Quantity	Unit	Description
MINI VRF	R410A	2.56	kg	Extra Refrigerant Added

2.2.3 Electrical cables

Type	Size	Length
Power supply cable	Select based on MCA of each unit	According to the actual system design
Communication cable	0.75mm ² 3-core shielded	According to the actual system design

3. Overall Electrical Characteristics

Model	Quantity	Power supply	MCA(A)	MFA(A)
JZ1	1	380-415V-3ph-50Hz	19,00	25
JW1	5	220-240V-50Hz	0,43	15
JW2	4	220-240V-50Hz	0,43	15

Notes:

1. MCA: Minimum Circuit Amps. MCA is used to select wire size. The value in above table is for one unit.
2. MFA: Maximum Fuse Amps. MFA is used to select overcurrent circuit breakers and residual-current circuit breakers. The value in above table is for one unit.

4. MINI VRF

4.1 BOM List (MINI VRF)

Model	Quantity	Unit	Description
JZ1	1		Side Discharge(380-415V EU series)
JW1	5		Compact Four-way Cassette(EU series)
JW2	4		Compact Four-way Cassette(EU series)
2nd generation remote controller	8		
RM12F	9		
Φ19.1<->Φ22.2	1		Reducer
R410A	2.56	kg	Extra Refrigerant Added
Φ6.35	16.8	m	Copper pipe
Φ9.53	34.35	m	Copper pipe
Φ12.7	16.8	m	Copper pipe
Φ15.9	15.95	m	Copper pipe
Φ19.1	1.9	m	Copper pipe
Φ22.2	16.5	m	Copper pipe

4.2 Indoor Unit Details (MINI VRF)

4.2.1 Indoor Unit Details Table

IDU Name	Model	Weight(kg)	Dimension(WxHxD)(mm)	Power supply	MCA(A)	MFA(A)
IDU1	JW1	18	630*260*570	220-240V-50Hz	0,43	15
IDU1	JW1	18	630*260*570	220-240V-50Hz	0,43	15
IDU1	JW1	18	630*260*570	220-240V-50Hz	0,43	15
IDU1	JW2	18	630*260*570	220-240V-50Hz	0,43	15
IDU1	JW2	18	630*260*570	220-240V-50Hz	0,43	15
IDU1	JW2	18	630*260*570	220-240V-50Hz	0,43	15
IDU1	JW2	18	630*260*570	220-240V-50Hz	0,43	15
IDU1	JW1	18	630*260*570	220-240V-50Hz	0,43	15
IDU1	JW1	18	630*260*570	220-240V-50Hz	0,43	15

IDU Name	Model	Tmp-C(°C)	RTC(kW)	ATC(kW)	RSC(kW)	ASC(kW)	PI-C(W)	Tmp-H(°C)	RHC(kW)	AHC(kW)	PI-H(W)
IDU1	JW1	24,0/17,0		2,44		1,84	35	20		2,51	35
IDU1	JW1	24,0/17,0		2,44		1,84	35	20		2,51	35
IDU1	JW1	24,0/17,0		2,44		1,84	35	20		2,51	35
IDU1	JW2	24,0/17,0		1,94		1,55	35	20		1,88	35
IDU1	JW2	24,0/17,0		1,94		1,54	35	20		1,88	35
IDU1	JW2	24,0/17,0		1,93		1,54	35	20		1,88	35
IDU1	JW2	24,0/17,0		1,93		1,53	35	20		1,88	35
IDU1	JW1	24,0/17,0		2,42		1,83	35	20		2,51	35
IDU1	JW1	24,0/17,0		2,4		1,81	35	20		2,51	35

IDU Name	Model	Airflow(m ³ /h)	Sound-Pr dB(A)	ESP(Pa)
IDU1	JW1	414[SSH]	35[SSH]	0
IDU1	JW1	414[SSH]	35[SSH]	0
IDU1	JW1	414[SSH]	35[SSH]	0
IDU1	JW2	414[SSH]	35[SSH]	0
IDU1	JW2	414[SSH]	35[SSH]	0
IDU1	JW2	414[SSH]	35[SSH]	0
IDU1	JW2	414[SSH]	35[SSH]	0
IDU1	JW1	414[SSH]	35[SSH]	0
IDU1	JW1	414[SSH]	35[SSH]	0

IDU Name	Model	Piping Length to 1st Y Joint(m)
IDU1	JW1	3,85
IDU1	JW1	7,90
IDU1	JW1	3,20
IDU1	JW2	9,90
IDU1	JW2	12,15
IDU1	JW2	15,25
IDU1	JW2	18,05
IDU1	JW1	18,70
IDU1	JW1	22,70

4.2.2 Table of Abbreviations

Abbreviation code	Description
Tmp-C	Indoor temperature in cooling (Dry bulb temp. / Wet bulb temp. / RH)
RTC	Required total cooling capacity
ATC	Available total cooling capacity
RSC	Required sensible cooling capacity
ASC	Available sensible cooling capacity
Tmp-H	Indoor temperature in heating (Dry bulb temp.)
RHC	Required heating capacity
AHC	Available heating capacity
Tdis-H	Indoor unit discharge air temperature in heating
Airflow	Indoor unit airflow (High/Medium/Low)
ESP	External static pressure
Sound-Pr	Sound pressure level (High/Medium/Low)
Sound-Po	Sound power level (High/Medium/Low)
MCA	Minimum Circuit Amps
MFA	Maximum Fuse Amps
PI-C	Power input in cooling
PI-H	Power input in heating
Power supply	Power supply
Dimension(WxHxD)	Net Dimension (WxHxD) mm
Weight	Weight

4.3 Outdoor Unit Details (MINI VRF)

4.3.1 Outdoor Unit Details Table

Model		J21
Module		
Tmp-C	°C	32
RTC	kW	
ATC	kW	19,99
PI-C	kW	5,57
EER		3,59
Tmp-H	°C/°C	-20/6,9
RHC	kW	
AHC	kW	20,09
PI-H	kW	8,01
COP		2,51
CR		101,8
Airflow	m ³ /h	9000
Sound-Pr		58
Sound-Po		78
Bas-Refr	kg	6,50
Ex-Refr	kg	2,56
TCO2 eq.		18,91
MCA	A	19
MFA	A	25
Power supply	V/ph/Hz	380-415V-3ph-50Hz
Dimension (WxHxD)	mm	1120*1558*528
Weight	kg	143

4.3.2 Table of Abbreviations

Abbreviation code	Description
Tmp-C	Outdoor conditions in cooling (Dry bulb temp.)
RTC	Required cooling capacity
ATC	Available cooling capacity
PI-C	Power input in cooling
EER	EER
Tmp-H	Indoor conditions in heating (Dry bulb temp. / Wet bulb temp. / RH)
RHC	Required heating capacity
AHC	Available heating capacity
PI-H	Power input in heating
COP	COP
CR	Combination ratio
Airflow	Outdoor unit airflow
Sound-Pr	Sound pressure level
Sound-Po	Sound power level
Bas-Refr	Standard factory refrigerant charge
Ex-Refr	Extra refrigerant charge
TCO2 eq.	Tonnes of CO2 equivalent
MCA	Minimum Circuit Amps
MFA	Maximum Fuse Amps

Power supply	Power supply
Dimension (WxHxD)	Net Dimension (WxHxD) mm
Weight	Weight

4.4 Piping Limitations (MINI VRF)

4.4.1 Piping Limitations

Item	Capability	Actual Value
Total piping length	150,00(m)	55,15(m)
Longest actual length	100,00(m)	36,20(m)
Longest equivalent length	110,00(m)	39,70(m)
Longest equivalent length after first branch	40,00(m)	22,70(m)
Indoor unit to nearest branch length	15,00(m)	4,70(m)
Height difference between indoor and outdoor unit(ODU up)	50,00(m)	0,00(m)
Height difference between indoor and outdoor unit(ODU down)	40,00(m)	0,00(m)
Height difference between indoor units	15,00(m)	0,00(m)
Combination ratio	50-130%	101,79%
IDU quantity	13	9

4.4.2 Correction Factors

Item	Correction factor
Altitude (indoor unit)	0,997
Altitude (outdoor unit)	0,998
Piping (cooling)	0,977
Piping (heating)	0,993
Defrost (heating)	1,000

4.4.3 Piping Details Table

No.	Length(m)	Piping diameter
(1)	16,50	Φ22.2/Φ9.53
(2)	2,85	Φ15.9/Φ9.53
(3)	1,90	Φ19.1/Φ9.53
(4)	0,50	Φ12.7/Φ6.35
(5)	4,55	Φ12.7/Φ6.35
(6)	0,80	Φ12.7/Φ6.35
(7)	6,35	Φ15.9/Φ9.53
(8)	0,65	Φ12.7/Φ6.35
(9)	0,60	Φ15.9/Φ9.53
(10)	1,80	Φ12.7/Φ6.35
(11)	3,70	Φ15.9/Φ9.53
(12)	0,70	Φ12.7/Φ6.35
(13)	0,60	Φ15.9/Φ9.53
(14)	2,40	Φ12.7/Φ6.35
(15)	1,85	Φ15.9/Φ9.53
(16)	0,70	Φ12.7/Φ6.35
(17)	4,70	Φ12.7/Φ6.35

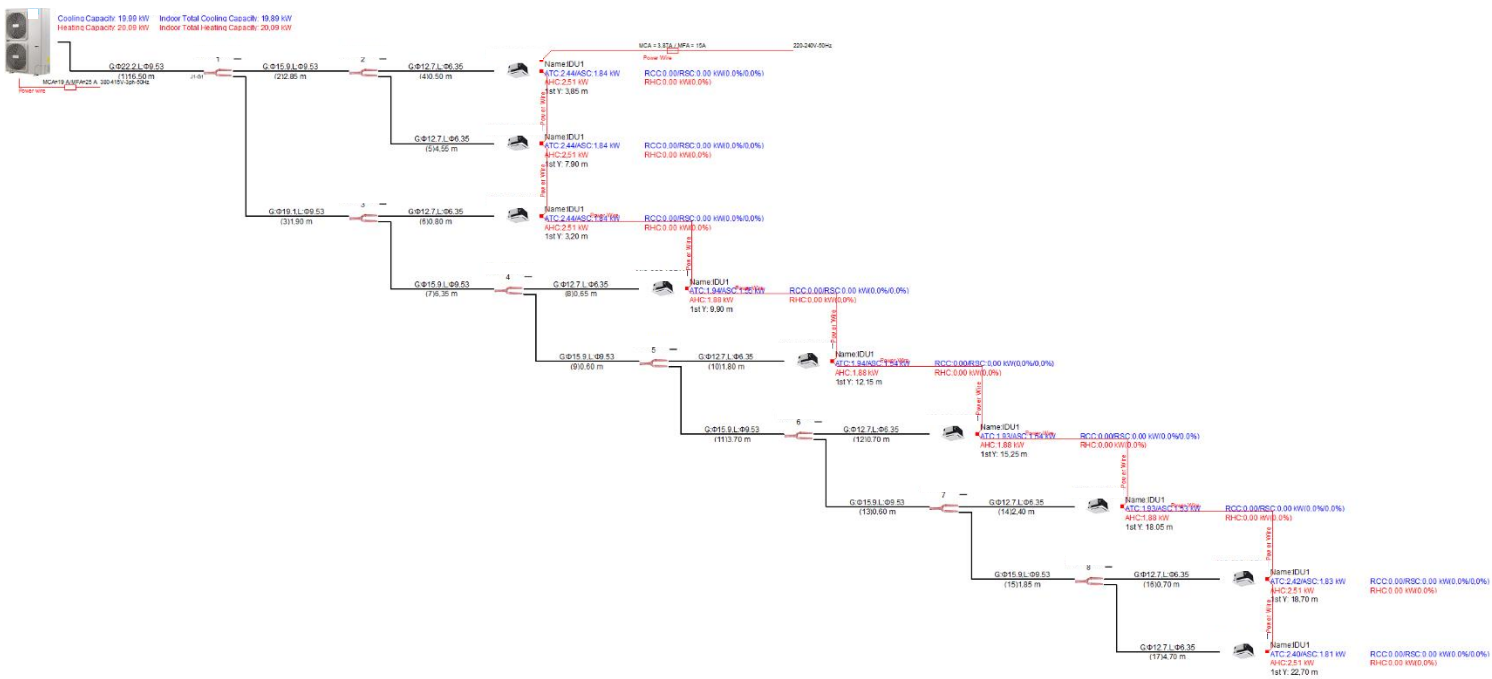
4.4.4 Branch Joints Details Table

No.	Load(kW)	Model
(1)	22,8	Branch Joint
(2)	5,6	Branch Joint
(3)	17,2	Branch Joint
(4)	14,4	Branch Joint
(5)	12,2	Branch Joint
(6)	10	Branch Joint
(7)	7,8	Branch Joint
(8)	5,6	Branch Joint

4.4.5 Reducer Details Table

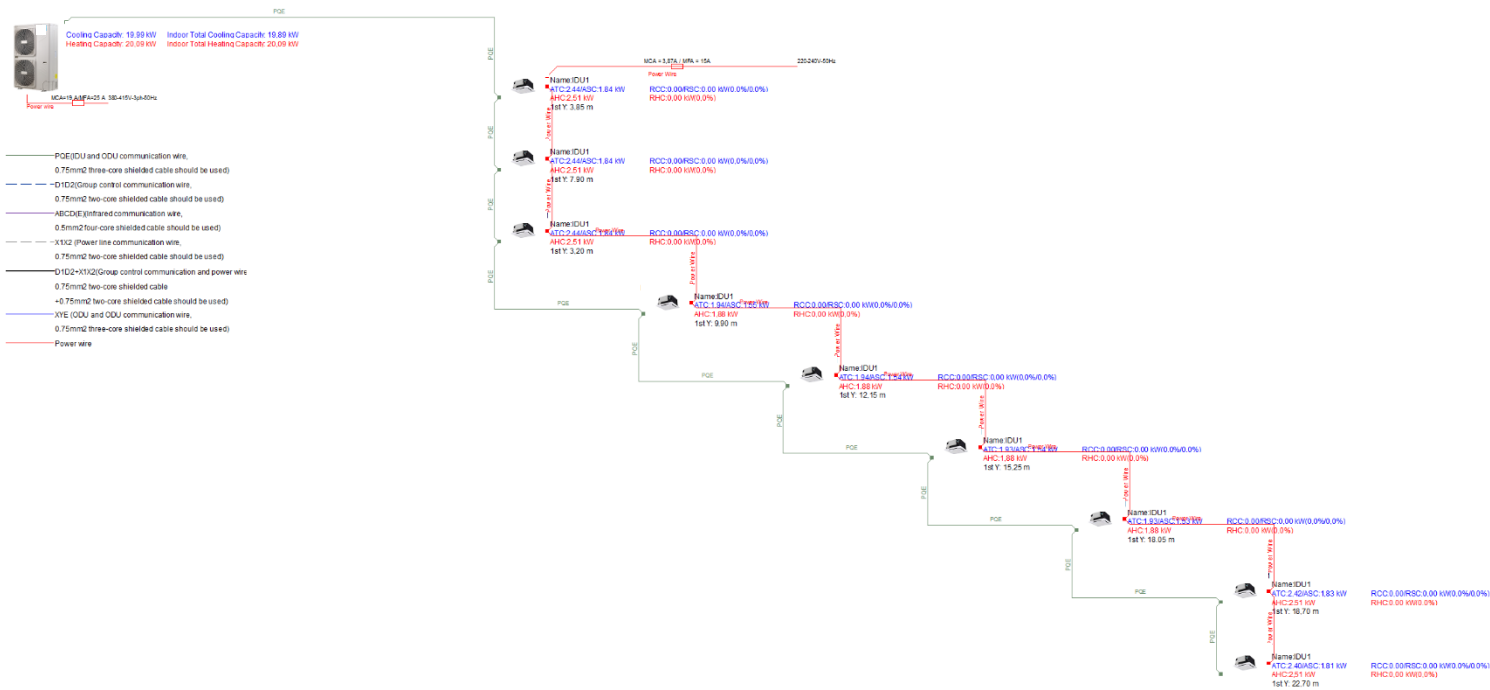
Reducer Name	Description
Reducer	Ø19.1<->Ø22.2

4.5 Piping Diagrams (MINI VRF)



The drawing may differ from actual conditions due to limitations of the software. Please confirm before installation according to the installation manual.

4.6 Wiring Diagrams (MINI VRF)



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