

MSSP Report

1. Project Information

Date	8/20/2024
Project name	Maxi Zoo Bielsko Biala
Project address	
Country	Poland
State	
City	Bielsko Biala
Client name	
Client address	
Designed by	
Reference	New Project
Revision	
Altitude(m)	399
Indoor DB temperature in cooling(°C)	26
Indoor WB temperature in cooling(°C)	19
Outdoor DB temperature in cooling(°C)	28.4
Outdoor WB temperature in cooling(°C)	20.6
Indoor DB temperature in heating(°C)	21
Indoor WB temperature in heating(°C)	14
Outdoor DB temperature in heating(°C)	-11.4
Outdoor WB temperature in heating(°C)	-11.7

2. Overall Material List

2.1 Equipment List

Model	Quantity	Description
MVi-500WV2RN1(A)	1	EasyFit VRF (380-415V EU series)
MIH140Q4N18	1	Four-way Cassette (EU series)
MIH112Q4N18	3	Four-way Cassette (EU series)
MIH28GN18	1	Wall mounted (EU series)
FQZHN-02D	1	Branch joint
FQZHN-01D	1	Branch joint
FQZHN-03D	2	Branch joint
WDC3-86S	2	3rd generation group controller

2.2 Field Providing List

2.2.1 Refrigerant Piping Materials

Model	Quantity	Unit	Description
Φ6.35	7	m	Copper pipe
Φ9.52	25	m	Copper pipe
Φ12.7	11	m	Copper pipe
Φ15.9	19	m	Copper pipe
Φ22.2	9	m	Copper pipe
Φ28.6	7	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
System1	R410A	2.73	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	M1M2:0.75mm2 two-core cable PQ:0.75mm2 two-core shielded cable	According to the actual system design

3. Overall Electrical Characteristics

Model	Quantity	Power supply	MCA(A)	MFA(A)
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MVi-500WV2RN1(A)	1	380-415V-3ph-50Hz	33,00	40
MIH140Q4N18	1	220-240V-50Hz	2,30	15
MIH112Q4N18	3	220-240V-50Hz	1,80	15
MIH28GN18	1	220-240V-50Hz	0,36	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. System1

4.1 BOM List (System1)

Model	Quantity	Unit	Description
MVi-500WV2RN1(A)	1		EasyFit VRF (380-415V EU series)
MIH140Q4N18	1		Four-way Cassette (EU series)
MIH112Q4N18	3		Four-way Cassette (EU series)
MIH28GN18	1		Wall mounted (EU series)
FQZHN-02D	1		Branch joint
FQZHN-01D	1		Branch joint
FQZHN-03D	2		Branch joint
WDC3-86S	2		3rd generation group controller
R410A	2.73	kg	Extra Refrigerant Added
Φ6.35	7	m	Copper pipe
Φ9.52	25	m	Copper pipe
Φ12.7	11	m	Copper pipe
Φ15.9	19	m	Copper pipe
Φ22.2	9	m	Copper pipe
Φ28.6	7	m	Copper pipe

4.2 Indoor Unit Details (System1)

4.2.1 Indoor Unit Details Table

IDU Name	Model	Weight(kg)	Dimension(WxHxD)(mm)	Power supply	MCA(A)	MFA(A)
IDU1	MIH28GN18	10	750*295*265	220-240V-50Hz	0,36	15
IDU2	MIH112Q4N18	24	840*288*840	220-240V-50Hz	1,8	15
IDU2	MIH112Q4N18	24	840*288*840	220-240V-50Hz	1,8	15
IDU2	MIH112Q4N18	24	840*288*840	220-240V-50Hz	1,8	15
IDU2	MIH140Q4N18	26.5	840*288*840	220-240V-50Hz	2,3	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	MIH28GN18	26,0/19,0		2,72		2,29	24	21		2,03	24
IDU2	MIH112Q4N18	26,0/19,0		10,9		8,79	61	21		7,85	61
IDU2	MIH112Q4N18	26,0/19,0		10,9		8,79	61	21		7,85	61
IDU2	MIH112Q4N18	26,0/19,0		10,83		8,73	61	21		7,85	61
IDU2	MIH140Q4N18	26,0/19,0		13,35		10,58	89	21		10,04	89

IDU Name	Model	Airflow(m³/h)	Sound-Pr dB(A)	ESP(Pa)
IDU1	MIH28GN18	540[SSH]	35[SSH]	
IDU2	MIH112Q4N18	1600[SSH]	41[SSH]	
IDU2	MIH112Q4N18	1600[SSH]	41[SSH]	
IDU2	MIH112Q4N18	1600[SSH]	41[SSH]	
IDU2	MIH140Q4N18	1730[SSH]	43[SSH]	

IDU Name	Model	Piping Length to 1st Y Joint(m)
IDU1	MIH28GN18	11,50
IDU2	MIH112Q4N18	5,50
IDU2	MIH112Q4N18	5,50
IDU2	MIH112Q4N18	15,00
IDU2	MIH140Q4N18	23,00

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 (System1)

4.3.1 Outdoor Unit Details Table

Model		MVi-500WV2RN1(A)
Module		MVi-500WV2RN1(A)
Tmp-C	°C	28,4
RTC	kW	
ATC	kW	49,06
PI-C	kW	14,74
EER		3,33
Tmp-H	°C/°C	-11,4/-11,7
RHC	kW	
AHC	kW	35,61
PI-H	kW	14,17
COP		2,51
CR		100,8
Airflow	m ³ /h	20000
Sound-Pr		61
Sound-Po		88
Bas-Refr	kg	8,00
Ex-Refr(ODU)	kg	0,00
Ex-Refr(Piping)	kg	2,73
TCO2 eq.		22,40
MCA	A	33
MFA	A	40
Power supply	V/ph/Hz	380-415V-3ph-50Hz
Dimension (WxHxD)	mm	1250*1760*580
Weight	kg	214

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(ODU)	Extra refrigerant charge for outdoor unit
Ex-Refr(Piping)	Extra refrigerant charge for liquid piping
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 (System1)

4.4.1 Piping Limitations

Item	Capability	Actual Value
Total piping length	560,00(m)	41,00(m)
Longest actual length	150,00(m)	25,00(m)
Longest equivalent length	175,00(m)	26,50(m)
Longest equivalent length after first branch	90,00(m)	23,00(m)
Indoor unit to nearest branch length	40,00(m)	9,00(m)
Length difference between longest and shortest distance to indoor units	40,00(m)	17,50(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	30,00(m)	0,00(m)
Combination ratio	50-200%	100,80%
IDU quantity	29	5

4.4.2 Correction Factors

Item	Correction factor
Altitude (indoor unit)	0,992
Altitude (outdoor unit)	0,996
Piping (cooling)	0,978
Piping (heating)	0,990
Defrost (heating)	1,000

4.4.3 Piping Details Table

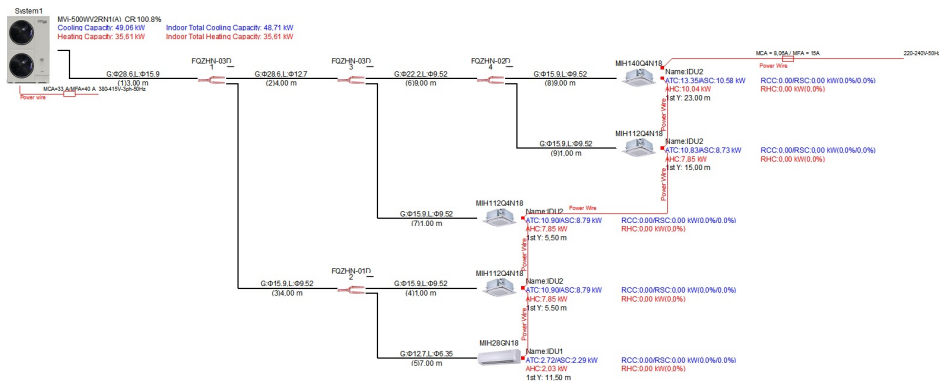
No.	Length(m)	Piping diameter
(1)	3,00	Φ28.6/Φ15.9
(2)	4,00	Φ28.6/Φ12.7
(3)	4,00	Φ15.9/Φ9.52
(4)	1,00	Φ15.9/Φ9.52
(5)	7,00	Φ12.7/Φ6.35
(6)	9,00	Φ22.2/Φ9.52
(7)	1,00	Φ15.9/Φ9.52
(8)	9,00	Φ15.9/Φ9.52
(9)	1,00	Φ15.9/Φ9.52

4.4.4 Branch Joints Details Table

No.	Load(kW)	Model
(1)	50,4	FQZHN-03D
(2)	14	FQZHN-01D
(3)	36,4	FQZHN-03D
(4)	25,2	FQZHN-02D

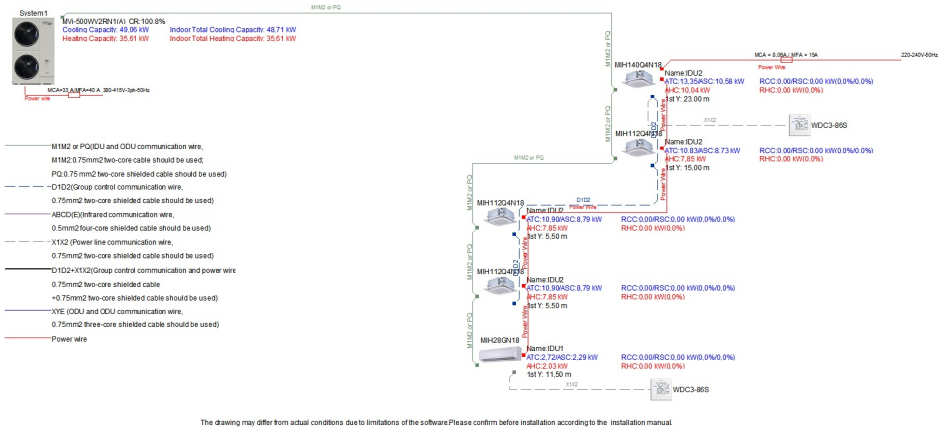
4.4.5 Reducer Details Table

4.5 Piping Diagrams (System1)



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 (System1)



5. Centralized Control Solution

5.1 Centralized Controller List

The centralized control system of this project is full output regardless of whether the system is selected.