

MSSP Report

1. Project Information

Date	2022-6-7
Project name	
Project address	
Country	Estonia
State	
City	
Client name	
Client address	
Designed by	Airwave OÜ
Reference	
Revision	
Altitude(m)	0
Indoor DB temperature in cooling(°C)	24
Indoor WB temperature in cooling(°C)	17
Outdoor DB temperature in cooling(°C)	35
Outdoor WB temperature in cooling(°C)	30
Indoor DB temperature in heating(°C)	21
Indoor WB temperature in heating(°C)	14
Outdoor DB temperature in heating(°C)	10
Outdoor WB temperature in heating(°C)	0

2. Overall Material List

2.1 Equipment List

Model	Quantity	Description
MV6-560WV2GN1-E	1	V6 VRF(EU series)
MI2-36Q4CDN1	1	Compact Four-way Cassette(EU series)
MI2-28Q4CDN1	23	Compact Four-way Cassette(EU series)
FQZHN-02D	20	Branch joint
FQZHN-03D	3	Branch joint
Φ22.2<->Φ25.4	6	Reducer
Φ12.7<->Φ15.9	3	Reducer
Φ28.6<->Φ31.8	2	Reducer
RM12F	24	2nd generation remote controller

2.2 Field Providing List

2.2.1 Refrigerant Piping Materials

Model	Quantity	Unit	Description
Φ6.35	77.9	m	Copper pipe
Φ9.53	11	m	Copper pipe
Φ12.7	129.8	m	Copper pipe
Φ15.9	17.2	m	Copper pipe
Φ19.1	26.4	m	Copper pipe

Φ22.2	7.8	m	Copper pipe
Φ25.4	20.7	m	Copper pipe
Φ31.8	9.2	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
VRF1	R410A	11.28	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)
MV6-560WV2GN1-E	1	380-415V-3ph-50Hz	43,90	50
MI2-36Q4CDN1	1	220-240V-50Hz	0,48	15
MI2-28Q4CDN1	23	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. VRF1

4.1 BOM List (VRF1)

Model	Quantity	Unit	Description
MV6-560WV2GN1-E	1		V6 VRF(EU series)
MI2-36Q4CDN1	1		Compact Four-way Cassette(EU series)
MI2-28Q4CDN1	23		Compact Four-way Cassette(EU series)
FQZHN-02D	20		Branch joint
FQZHN-03D	3		Branch joint
RM12F	24		2nd generation remote controller
Φ22.2<->Φ25.4	6		Reducer
Φ12.7<->Φ15.9	3		Reducer
Φ28.6<->Φ31.8	2		Reducer
R410A	11.28	kg	Extra Refrigerant Added
Φ6.35	77.9	m	Copper pipe
Φ9.53	11	m	Copper pipe
Φ12.7	129.8	m	Copper pipe
Φ15.9	17.2	m	Copper pipe
Φ19.1	26.4	m	Copper pipe
Φ22.2	7.8	m	Copper pipe
Φ25.4	20.7	m	Copper pipe
Φ31.8	9.2	m	Copper pipe

4.2 Indoor Unit Details (VRF1)

4.2.1 Indoor Unit Details Table

IDU Name	Model	Weight(kg)	Dimension(WxHxD)(mm)	Power supply	MCA(A)	MFA(A)
103/	MI2-28Q4CDN1	18	630*260*570	220-240V-50Hz	0,43	15
104/	MI2-28Q4CDN1	18	630*260*570	220-240V-50Hz	0,43	15
125/	MI2-28Q4CDN1	18	630*260*570	220-240V-50Hz	0,43	15
106/	MI2-28Q4CDN1	18	630*260*570	220-240V-50Hz	0,43	15
124/	MI2-28Q4CDN1	18	630*260*570	220-240V-50Hz	0,43	15
107/	MI2-28Q4CDN1	18	630*260*570	220-240V-50Hz	0,43	15
123/	MI2-28Q4CDN1	18	630*260*570	220-240V-50Hz	0,43	15
103/	MI2-28Q4CDN1	18	630*260*570	220-240V-50Hz	0,43	15
108/	MI2-28Q4CDN1	18	630*260*570	220-240V-50Hz	0,43	15
155/	MI2-28Q4CDN1	18	630*260*570	220-240V-50Hz	0,43	15
130.1/	MI2-28Q4CDN1	18	630*260*570	220-240V-50Hz	0,43	15
130.2/	MI2-28Q4CDN1	18	630*260*570	220-240V-50Hz	0,43	15
103/	MI2-28Q4CDN1	18	630*260*570	220-240V-50Hz	0,43	15
130.3/	MI2-28Q4CDN1	18	630*260*570	220-240V-50Hz	0,43	15
152/	MI2-36Q4CDN1	19.2	630*260*570	220-240V-50Hz	0,48	15
150/	MI2-28Q4CDN1	18	630*260*570	220-240V-50Hz	0,43	15
131/	MI2-28Q4CDN1	18	630*260*570	220-240V-50Hz	0,43	15
147/	MI2-28Q4CDN1	18	630*260*570	220-240V-50Hz	0,43	15
145/	MI2-28Q4CDN1	18	630*260*570	220-240V-50Hz	0,43	15
109/	MI2-28Q4CDN1	18	630*260*570	220-240V-50Hz	0,43	15
154/	MI2-28Q4CDN1	18	630*260*570	220-240V-50Hz	0,43	15
111/	MI2-28Q4CDN1	18	630*260*570	220-240V-50Hz	0,43	15

113/	MI2-28Q4CDN1	18	630*260*570	220-240V-50Hz	0,43	15
114/	MI2-28Q4CDN1	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)
103/	MI2-28Q4CDN1	24,0/17,0	2,2	2,21		1,57	35	21		2,79	35
104/	MI2-28Q4CDN1	24,0/17,0	2,2	2,2		1,57	35	21		2,79	35
125/	MI2-28Q4CDN1	24,0/17,0	2,2	2,19		1,56	35	21		2,79	35
106/	MI2-28Q4CDN1	24,0/17,0	2,2	2,18		1,56	35	21		2,79	35
124/	MI2-28Q4CDN1	24,0/17,0	2,2	2,17		1,55	35	21		2,79	35
107/	MI2-28Q4CDN1	24,0/17,0	2,2	2,17		1,55	35	21		2,79	35
123/	MI2-28Q4CDN1	24,0/17,0	2,2	2,16		1,54	35	21		2,79	35
103/	MI2-28Q4CDN1	24,0/17,0	2,2	2,16		1,54	35	21		2,79	35
108/	MI2-28Q4CDN1	24,0/17,0	2,2	2,15		1,53	35	21		2,79	35
155/	MI2-28Q4CDN1	24,0/17,0	2,2	2,21		1,57	35	21		2,79	35
130.1/	MI2-28Q4CDN1	24,0/17,0	2,2	2,2		1,57	35	21		2,79	35
130.2/	MI2-28Q4CDN1	24,0/17,0	2,2	2,19		1,56	35	21		2,79	35
103/	MI2-28Q4CDN1	24,0/17,0	2,2	2,19		1,56	35	21		2,79	35
130.3/	MI2-28Q4CDN1	24,0/17,0	2,2	2,17		1,55	35	21		2,79	35
152/	MI2-36Q4CDN1	24,0/17,0	2,9	2,79		1,84	40	21		3,49	40
150/	MI2-28Q4CDN1	24,0/17,0	2,2	2,15		1,54	35	21		2,79	35
131/	MI2-28Q4CDN1	24,0/17,0	2,2	2,15		1,53	35	21		2,79	35
147/	MI2-28Q4CDN1	24,0/17,0	2,2	2,13		1,52	35	21		2,79	35
145/	MI2-28Q4CDN1	24,0/17,0	2,2	2,1		1,5	35	21		2,79	35
109/	MI2-28Q4CDN1	24,0/17,0	2,2	2,14		1,53	35	21		2,79	35
154/	MI2-28Q4CDN1	24,0/17,0	2,2	2,21		1,57	35	21		2,79	35
111/	MI2-28Q4CDN1	24,0/17,0	2,2	2,13		1,52	35	21		2,79	35
113/	MI2-28Q4CDN1	24,0/17,0	2,2	2,12		1,51	35	21		2,79	35
114/	MI2-28Q4CDN1	24,0/17,0	2,2	2,11		1,5	35	21		2,79	35

IDU Name	Model	Airflow(m ³ /h)	Sound-Pr dB(A)	ESP(Pa)
103/	MI2-28Q4CDN1	313[M]	29[M]	0
104/	MI2-28Q4CDN1	313[M]	29[M]	0
125/	MI2-28Q4CDN1	313[M]	29[M]	0
106/	MI2-28Q4CDN1	313[M]	29[M]	0
124/	MI2-28Q4CDN1	313[M]	29[M]	0
107/	MI2-28Q4CDN1	313[M]	29[M]	0
123/	MI2-28Q4CDN1	313[M]	29[M]	0
103/	MI2-28Q4CDN1	313[M]	29[M]	0
108/	MI2-28Q4CDN1	313[M]	29[M]	0
155/	MI2-28Q4CDN1	313[M]	29[M]	0
130.1/	MI2-28Q4CDN1	313[M]	29[M]	0
130.2/	MI2-28Q4CDN1	313[M]	29[M]	0
103/	MI2-28Q4CDN1	313[M]	29[M]	0
130.3/	MI2-28Q4CDN1	313[M]	29[M]	0
152/	MI2-36Q4CDN1	409[M]	32[M]	0
150/	MI2-28Q4CDN1	313[M]	29[M]	0
131/	MI2-28Q4CDN1	313[M]	29[M]	0
147/	MI2-28Q4CDN1	313[M]	29[M]	0
145/	MI2-28Q4CDN1	313[M]	29[M]	0
109/	MI2-28Q4CDN1	313[M]	29[M]	0
154/	MI2-28Q4CDN1	313[M]	29[M]	0
111/	MI2-28Q4CDN1	313[M]	29[M]	0
113/	MI2-28Q4CDN1	313[M]	29[M]	0
114/	MI2-28Q4CDN1	313[M]	29[M]	0

IDU Name	Model	Piping Length to 1st Y Joint(m)
103/	MI2-28Q4CDN1	2,50
104/	MI2-28Q4CDN1	11,10
125/	MI2-28Q4CDN1	16,00
106/	MI2-28Q4CDN1	17,70
124/	MI2-28Q4CDN1	21,00
107/	MI2-28Q4CDN1	23,00
123/	MI2-28Q4CDN1	26,40
103/	MI2-28Q4CDN1	25,50
108/	MI2-28Q4CDN1	29,00
155/	MI2-28Q4CDN1	8,70
130.1/	MI2-28Q4CDN1	13,20
130.2/	MI2-28Q4CDN1	17,20
103/	MI2-28Q4CDN1	16,70
130.3/	MI2-28Q4CDN1	21,70
152/	MI2-36Q4CDN1	22,70
150/	MI2-28Q4CDN1	27,70
131/	MI2-28Q4CDN1	30,20
147/	MI2-28Q4CDN1	34,20
145/	MI2-28Q4CDN1	42,20
109/	MI2-28Q4CDN1	32,30
154/	MI2-28Q4CDN1	10,70

111/	MI2-28Q4CDN1	35,80
113/	MI2-28Q4CDN1	38,90
114/	MI2-28Q4CDN1	42,50

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 (VRF1)

4.3.1 Outdoor Unit Details Table

Model		MV6-560WV2GN1-E
Module		MV6-560WV2GN1-E
Tmp-C	°C	35
RTC	kW	53,5
ATC	kW	53,55
PI-C	kW	27,92
EER		1,92
Tmp-H	°C/°C	10/0
RHC	kW	
AHC	kW	67,66
PI-H	kW	18,86
COP		3,59
CR		121,4
Airflow	m ³ /h	17000
Sound-Pr		66
Sound-Po		89
Bas-Refr	kg	17,00
Ex-Refr	kg	11,28

TCO2 eq.		59,06
MCA	A	43,9
MFA	A	50
Power supply	V/ph/Hz	380-415V-3ph-50Hz
Dimension (WxHxD)	mm	1340*1635*825
Weight	kg	348

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 (VRF1)

4.4.1 Piping Limitations

Item	Capability	Actual Value
Total piping length	1000,00(m)	219,60(m)
Longest actual length	175,00(m)	40,20(m)
Longest equivalent length	200,00(m)	46,00(m)
Longest equivalent length after first branch	90,00(m)	42,50(m)
Indoor unit to nearest branch length	40,00(m)	11,00(m)
Length difference between longest and shortest distance to indoor units	40,00(m)	40,00(m)
Height difference between indoor and outdoor unit(ODU up)	90,00(m)	0,00(m)
Height difference between indoor and outdoor unit(ODU down)	110,00(m)	0,00(m)
Height difference between indoor units	30,00(m)	0,00(m)
Combination ratio	50-130%	121,43%
IDU quantity	33	24

4.4.2 Correction Factors

Item	Correction factor
Altitude (indoor unit)	1,000
Altitude (outdoor unit)	1,000
Piping (cooling)	0,973
Piping (heating)	0,991
Defrost (heating)	1,000

4.4.3 Piping Details Table

No.	Length(m)	Piping diameter
(1)	3,00	Φ31.8/Φ19.1
(2)	1,00	Φ31.8/Φ15.9
(3)	5,20	Φ25.4/Φ12.7
(4)	1,00	Φ12.7/Φ6.35
(5)	5,20	Φ31.8/Φ15.9
(6)	3,90	Φ12.7/Φ6.35
(7)	3,80	Φ25.4/Φ12.7
(8)	4,50	Φ12.7/Φ6.35
(9)	1,00	Φ25.4/Φ12.7
(10)	4,70	Φ12.7/Φ6.35
(11)	3,00	Φ25.4/Φ12.7
(12)	4,50	Φ12.7/Φ6.35
(13)	2,20	Φ25.4/Φ12.7
(14)	3,80	Φ12.7/Φ6.35
(15)	2,30	Φ22.2/Φ12.7
(16)	4,40	Φ12.7/Φ6.35
(17)	2,00	Φ22.2/Φ12.7
(18)	1,00	Φ12.7/Φ6.35
(19)	1,00	Φ19.1/Φ12.7
(20)	3,00	Φ12.7/Φ6.35
(21)	2,80	Φ19.1/Φ12.7
(22)	3,00	Φ12.7/Φ6.35
(23)	1,50	Φ25.4/Φ12.7
(24)	4,00	Φ12.7/Φ6.35
(25)	3,00	Φ25.4/Φ12.7
(26)	4,50	Φ12.7/Φ6.35
(27)	2,50	Φ22.2/Φ12.7
(28)	1,00	Φ12.7/Φ6.35
(29)	1,00	Φ22.2/Φ12.7
(30)	4,50	Φ12.7/Φ6.35
(31)	1,00	Φ19.1/Φ12.7
(32)	4,00	Φ12.7/Φ6.35
(33)	4,50	Φ19.1/Φ12.7
(34)	4,00	Φ12.7/Φ6.35
(35)	1,50	Φ19.1/Φ12.7
(36)	4,50	Φ12.7/Φ6.35
(37)	5,00	Φ19.1/Φ12.7
(38)	3,00	Φ12.7/Φ6.35
(39)	11,00	Φ15.9/Φ9.53
(40)	3,00	Φ12.7/Φ6.35
(41)	3,00	Φ19.1/Φ12.7

(42)	3,00	Φ12.7/Φ6.35
(43)	1,00	Φ25.4/Φ12.7
(44)	3,00	Φ12.7/Φ6.35
(45)	4,60	Φ19.1/Φ12.7
(46)	1,00	Φ12.7/Φ6.35
(47)	4,60	Φ12.7/Φ6.35

4.4.4 Branch Joints Details Table

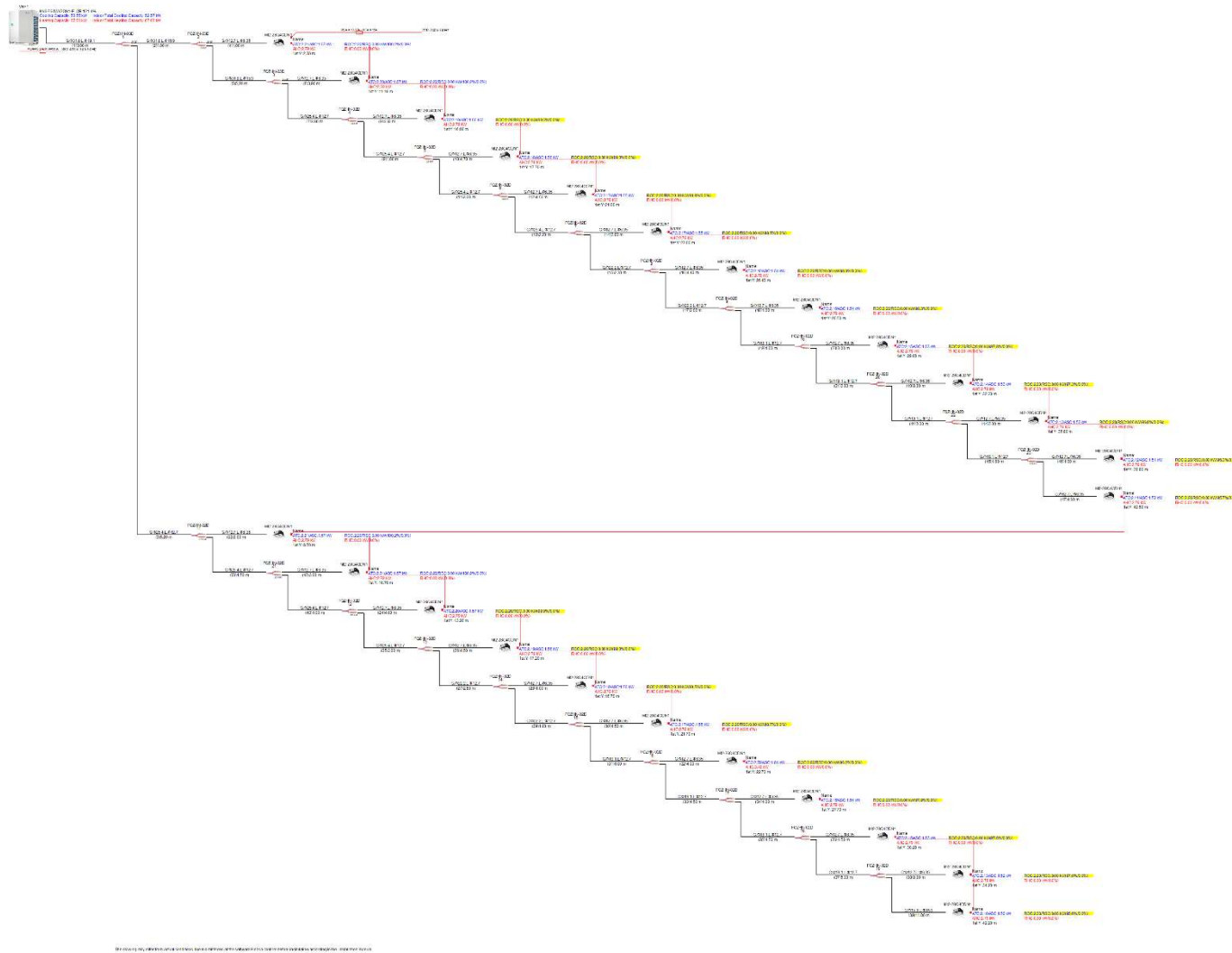
No.	Load(kW)	Model
(1)	68	FQZHN-03D
(2)	36,4	FQZHN-03D
(3)	33,6	FQZHN-03D
(4)	30,8	FQZHN-02D
(5)	28	FQZHN-02D
(6)	25,2	FQZHN-02D
(7)	22,4	FQZHN-02D
(8)	19,6	FQZHN-02D
(9)	16,8	FQZHN-02D
(10)	14	FQZHN-02D
(11)	31,6	FQZHN-02D
(12)	26	FQZHN-02D
(13)	23,2	FQZHN-02D
(14)	20,4	FQZHN-02D
(15)	17,6	FQZHN-02D
(16)	14,8	FQZHN-02D
(17)	11,2	FQZHN-02D
(18)	8,4	FQZHN-02D
(19)	5,6	FQZHN-02D
(20)	11,2	FQZHN-02D
(21)	28,8	FQZHN-02D
(22)	8,4	FQZHN-02D
(23)	5,6	FQZHN-02D

4.4.5 Reducer Details Table

Reducer Name	Description
J1-G1	Φ28.6<->Φ31.8
J2-G1	Φ12.7<->Φ15.9
J2-G2	Φ28.6<->Φ31.8
J3-G1	Φ12.7<->Φ15.9
J4-G1	Φ22.2<->Φ25.4
J5-G1	Φ22.2<->Φ25.4
J6-G1	Φ22.2<->Φ25.4
J11-G1	Φ22.2<->Φ25.4
J12-G1	Φ22.2<->Φ25.4
J21-G1	Φ22.2<->Φ25.4
J23-G1	Φ12.7<->Φ15.9



4.5 Piping Diagrams (VRF1)





4.6 Wiring Diagrams (VRF1)

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.