Calculation and Selection Result

A.Project Overview

Project Name	RTG Włocławek
Country	Poland
City	Toruń
Address	
Client Name	
Client Address	
Reference	
Revision	
Project Date	3 / 20 / 2020
Altitude	m
Cooling Condition: Indoor Dry-bulb	27.0 °C
Cooling Condition: Indoor Wet-bulb	19.0 °C
Cooling Condition: Outdoor Dry-bulb	32.0 °C
Cooling condition: Outdoor wet bulb	28.1 °C
Heating Condition: Indoor Dry-bulb	20.0 °C
Heating Condition: Outdoor Dry-bulb	-20.0 °C
Heating Condition: Outdoor Wet-bulb	-20.0 °C

B.Material List

Model	Quantity	Description
MDV-V200W/DRN1	1	DC Inverter Individual VRF (380V 20-45kW)
MI2-56GDN1	2	Wall_mounted (2nd DC IDU)
MI2-28Q4CDN1	2	Compact Four-way Cassette (2nd DC IDU)
MI2-22GDN1	2	Wall_mounted (2nd DC IDU)
MI2-28GDN1	1	Wall_mounted (2nd DC IDU)
FQZHN-02D	1	Branch Joint
FQZHN-01D	5	Branch Joint
Ø22.2	4.0 m	Copper Pipe
Ø19.1	2.5 m	Copper Pipe
Ø15.9	13.0 m	Copper Pipe

Model	Quantity	Description
Ø12.7	15.5 m	Copper Pipe
Ø9.53	19.5 m	Copper Pipe
Ø6.35	15.5 m	Copper Pipe
WDC-86E/KD	7	2nd generation wired controller

System1

1.1 Material List

Model	Quantity	Description
MDV-V200W/DRN1	1	DC Inverter Individual VRF (380V 20-45kW)
MI2-56GDN1	2	Wall_mounted (2nd DC IDU)
MI2-28Q4CDN1	2	Compact Four-way Cassette (2nd DC IDU)
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Ø15.9	13.0 m	Copper Pipe
Ø12.7	15.5 m	Copper Pipe
Ø9.53	19.5 m	Copper Pipe
Ø6.35	15.5 m	Copper Pipe

1.2 Indoor Unit Specifications

IDU Name	Model	Sound (dB(A))	Weight(kg)	Dimension(mm) W x H x D	Power Supply	Rated Power(W)	MCA(A)	MFA(A)
0.10	MI2-56GDN1	38(SSH)	12.80	990*315*223	220-240,50,1	45	N/A	N/A
0.1	MI2-28Q4CDN1	35(SSH)	18.00	630*260*570	220-240,50,1	35	N/A	N/A
0.4	MI2-22GDN1	31(SSH)	8.40	835*280*203	220-240,50,1	28	N/A	N/A
0.12	MI2-56GDN1	38(SSH)	12.80	990*315*223	220-240,50,1	45	N/A	N/A
0.3	MI2-22GDN1	31(SSH)	8.40	835*280*203	220-240,50,1	28	N/A	N/A
0.1	MI2-28Q4CDN1	35(SSH)	18.00	630*260*570	220-240,50,1	35	N/A	N/A
0.17	MI2-28GDN1	31(SSH)	9.50	835*280*203	220-240,50,1	28	N/A	N/A

IDU Name	Model	Cooling AT (°C)	Req.TC (kW)	TC (kW)	Req.SC (kW)	SC (kW)	Heating AT (°C)	Req.HC (kW)	HC (kW)	Air flow (m^3/h)	ESP (Pa)
0.10	MI2-56GDN1	27.0/19.0	0.00	4.88	0.00	2.96	20.0	0.00	3.58	747(SSH)	N/A
0.1	MI2-28Q4CDN1	27.0/19.0	0.00	2.44	0.00	1.65	20.0	0.00	1.81	414(SSH)	N/A
0.4	MI2-22GDN1	27.0/19.0	0.00	1.90	0.00	1.30	20.0	0.00	1.35	422(SSH)	N/A
0.12	MI2-56GDN1	27.0/19.0	0.00	4.86	0.00	2.94	20.0	0.00	3.55	747(SSH)	N/A
0.3	MI2-22GDN1	27.0/19.0	0.00	1.89	0.00	1.29	20.0	0.00	1.34	422(SSH)	N/A
0.1	MI2-28Q4CDN1	27.0/19.0	0.00	2.40	0.00	1.62	20.0	0.00	1.78	414(SSH)	N/A
0.17	MI2-28GDN1	27.0/19.0	0.00	2.40	0.00	1.62	20.0	0.00	1.77	417(SSH)	N/A

1.3 Outdoor Unit Specifications

Name	Model	Module	Dimension(mm)	Weight(kg)	Base refr(kg)	Add refr(kg)	Power Supply	MCA(A)	MFA(A)
ODU1	MDV-V200W/DRN1	MDV-V200W/DRN1	1120*1558*528	137.00	4.80	1.62	380-415V-3ph-50Hz	N/A	N/A

Name	Model	CR%	Temp(°C)	CC(kW)	Req CC(kW)	Temp(H/RH)(°C)	HC(kW)	Req HC(kW)
ODU1	MDV-V200W/DRN1	120.00	32.0	20.92	0.00	-20.0/100%	15.35	0.00

Name	Model	EER	COP	Cooling Power(kW)	Heating Power(kW)
ODU1	MDV-V200W/DRN1	3.63	2.71	5.86	5.7

Req.TC: Required Total Cooling Capacity

Req.SC: Required Sensible Cooling Capacity

Req.HC: Required Total Heating Capacity

TC: Available Total Cooling Capacity

SC: Available Sensible Cooling Capacity

HC: Available Total Heating Capacity

AT: Ambient Temperature

ESP: External Static Pressure

Req.CC: Required Cooling Capacity

CC: Available Cooling Capacity

1.4 Piping and Mode Selection Devices

IDU Quantity	7/10
Combination Ratio	120.00%
Additional refrigerant charge	1.62 kg = 15.50(6.35) * 0.022 + 22.50(9.53) * 0.057
Factory refrigerant charge	4.80 kg
Total refrigerant charge	6.42 kg
Total Pipe Length	38 m / 120 m
Furthest Actual	21.5 m / 60 m
Furthest Equivalent	24.5 m / 70 m
Furthest Equivalent from First Branch to IDU	20 m / 20(40) m
Drop Height between IDU and IDU	0 m / 8 m
Drop height between IDU and ODU(Below ODU)	3 m / 30 m
Available Capacity Cooling	20.92 kW
Available Capacity Heating	15.35 kW

Note:

1.The equivalent length of each branch joint is 0.5m.

Pipe

No.	Length	Gas Pipe	Liquid Pipe
(1)	4.0 m	Ø22.2	Ø9.53
(2)	1.5 m	Ø15.9	Ø9.53
(3)	2.5 m	Ø19.1	Ø9.53
(4)	1.0 m	Ø12.7	Ø6.35
(5)	5.5 m	Ø15.9	Ø9.53
(6)	3.0 m	Ø12.7	Ø6.35
(7)	2.5 m	Ø15.9	Ø9.53
(8)	1.0 m	Ø15.9	Ø9.53
(9)	0.5 m	Ø15.9	Ø9.53
(10)	3.0 m	Ø12.7	Ø6.35
(11)	2.0 m	Ø15.9	Ø9.53
(12)	4.0 m	Ø12.7	Ø6.35
(13)	4.5 m	Ø12.7	Ø6.35

Branch Joint

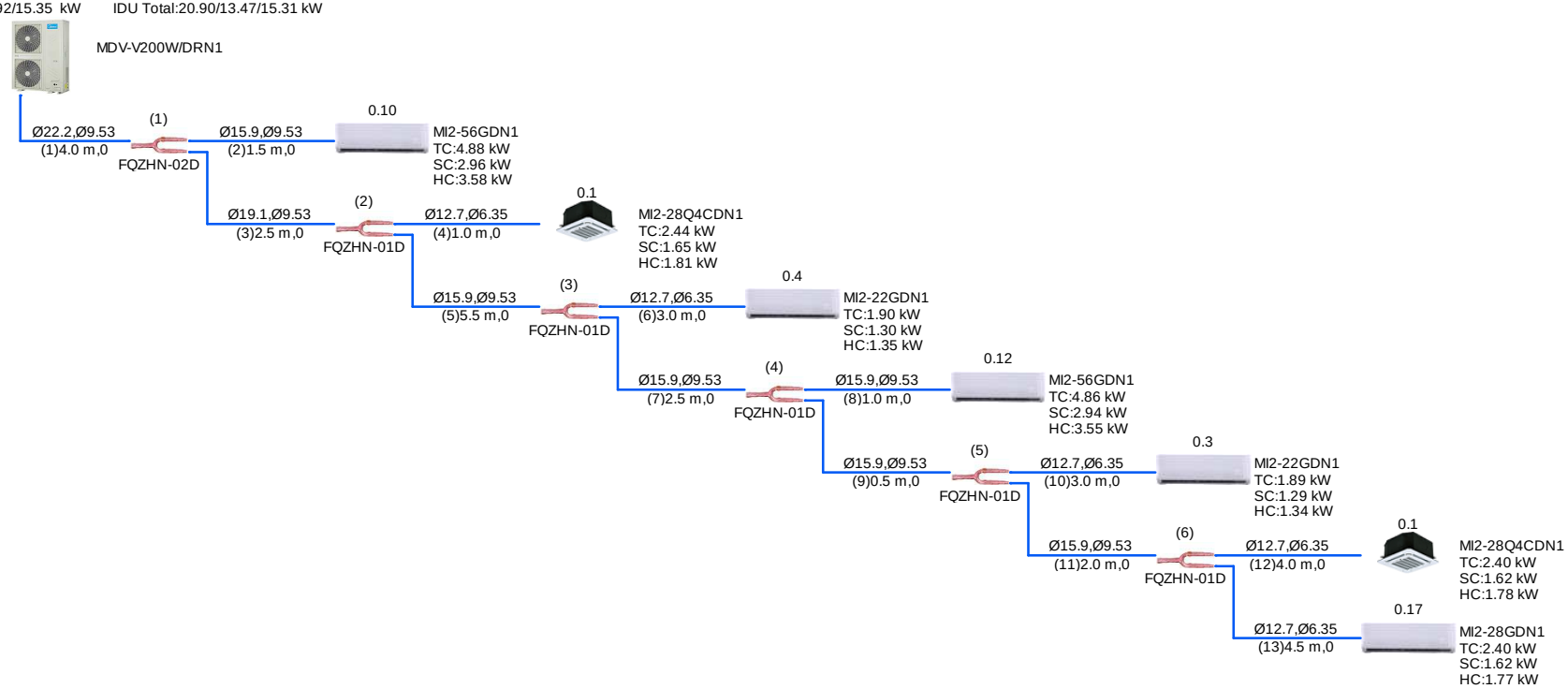
No.	Load kW	Model
(1)	24.00	FQZHN-02D
(2)	18.40	FQZHN-01D

No.	Load kW	Model
(3)	15.60	FQZHN-01D
(4)	13.40	FQZHN-01D
(5)	7.80	FQZHN-01D
(6)	5.60	FQZHN-01D

1.5 Piping Diagram

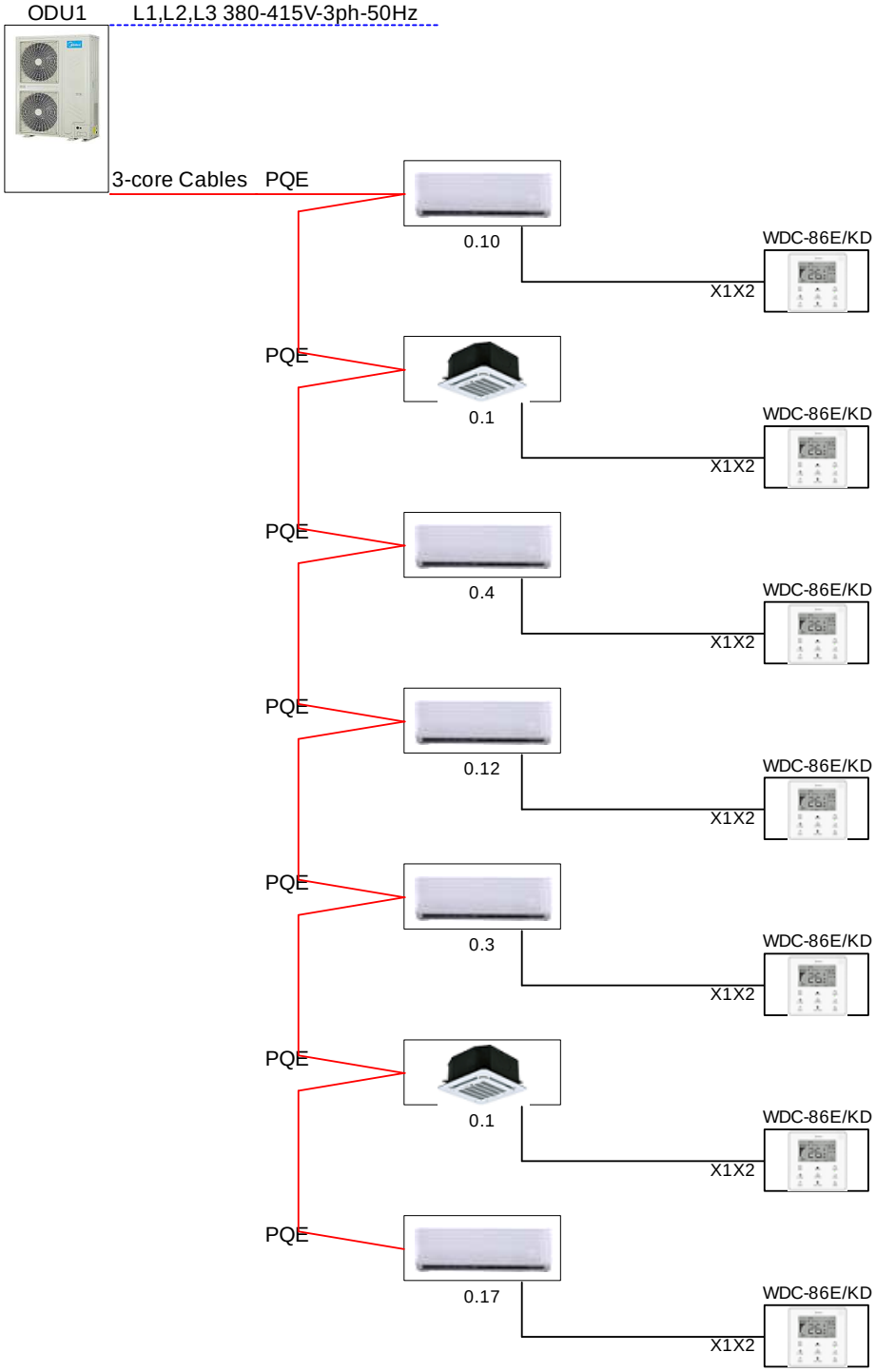
VRF 50Hz R410A

ODU:20.92/15.35 kW IDU Total:20.90/13.47/15.31 kW



The piping size may be different with the actual situation because of the software's illustration limitation, please confirm the piping size according to the installation manual before installation.

1.6 Wiring Diagram



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