MSSP Report

1. Project Information

Date	3/27/2025
Project name	Przedszkole Sówki Wola Zabierzowska
Project address	
Country	Poland
State	
City	Wola Zabierzowska
Client name	
Client address	
Designed by	
Reference	New Project
Revision	
Altitude(m)	237
Indoor DB temperature in cooling(℃)	24
Indoor WB temperature in cooling(℃)	17.8
Outdoor DB temperature in cooling(℃)	32
Outdoor WB temperature in cooling(℃)	21.5
Indoor DB temperature in heating(℃)	20
Indoor WB temperature in heating(℃)	14
Outdoor DB temperature in heating(℃)	-20
Outdoor WB temperature in heating(℃)	-18

2. Overall Material List

2.1 Equipment List

Model	Quantity	Description
MVi-400WV2RN1(A)	1	EasyFit VRF (380-415V EU series)
MVi-224WV2RN1(A)	1	V6-i Side Discharge(380-415V EU series)
MIH56Q4CN18	4	Compact Four-way Cassette (EU series)
MIH45Q4CN18	2	Compact Four-way Cassette (EU series)
MIH36Q4CN18	1	Compact Four-way Cassette (EU series)
MIH15GN18	3	Wall mounted (EU series)
FQZHN-01D	6	Branch joint
FQZHN-02D	3	Branch joint
AHUKZ-02F	1	AHU Kit(Standard wired controller WDC3-86S)
WDC3-86T	9	3rd generation group controller

2.2 Field Providing List

2.2.1 Refrigerant Piping Materials

Model	Quantity	Unit	Description
Φ6.35	29.25	m	Copper pipe
Φ9.52	34.3	m	Copper pipe
Φ12.7	73.15	m	Copper pipe
Φ15.9	20	m	Copper pipe
Φ19.1	6.4	m	Copper pipe
Φ22.2	34.8	m	Copper pipe
Φ25.4	17	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
System VRF	R410A	4.75	kg	Extra Refrigerant Added
Agregat do centrali_N3W3	R410A	2.96	kg	Extra Refrigerant Added
Total(R410A)	R410A	7.71	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	According to the actual system design

	PQ:0.75mm2 two-core shielded cable PQE:0.75mm2 three-core shielded cable	

3. Overall Electrical Characteristics

Model	Quantity	Power supply	MCA(A)	MFA(A)
MVi-400WV2RN1(A)	1	380-415V-3ph-50Hz	28,00	32
MVi-224WV2RN1(A)	1	380-415V-3ph-50Hz	19,00	25
MIH56Q4CN18	4	220-240V-50Hz	0,65	15
MIH45Q4CN18	2	220-240V-50Hz	0,61	15
MIH36Q4CN18	1	220-240V-50Hz	0,54	15
MIH15GN18	3	220-240V-50Hz	0,28	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. System VRF

4.1 BOM List (System VRF)

Model	Quantity	Unit	Description
MVi-400WV2RN1(A)	1		EasyFit VRF (380-415V EU series)
MIH56Q4CN18	4		Compact Four-way Cassette (EU series)
MIH45Q4CN18	2		Compact Four-way Cassette (EU series)
MIH36Q4CN18	1		Compact Four-way Cassette (EU series)
MIH15GN18	3		Wall mounted (EU series)
FQZHN-01D	6		Branch joint
FQZHN-02D	3		Branch joint
WDC3-86T	9		3rd generation group controller
R410A	4.75	kg	Extra Refrigerant Added
Φ6.35	29.25	m	Copper pipe
Φ9.52	34.3	m	Copper pipe
Φ12.7	46.25	m	Copper pipe
Φ15.9	20	m	Copper pipe
Φ19.1	6.4	m	Copper pipe
Φ22.2	7.9	m	Copper pipe
Φ25.4	17	m	Copper pipe

4.2 Indoor Unit Details (System VRF)

4.2.1 Indoor Unit Details Table

IDU Name	Model	Weight(kg)	Dimension(WxHxD)(mm)	Power supply	MCA(A)	MFA(A)
IDU1	MIH15GN18	9	750*295*265	220-240V-50Hz	0,28	15
IDU1	MIH15GN18	9	750*295*265	220-240V-50Hz	0,28	15
IDU1	MIH15GN18	9	750*295*265	220-240V-50Hz	0,28	15
IDU1	MIH36Q4CN18	14	575*235*638	220-240V-50Hz	0,54	15
IDU1	MIH45Q4CN18	14	575*235*638	220-240V-50Hz	0,61	15
IDU1	MIH56Q4CN18	15	575*235*638	220-240V-50Hz	0,65	15
IDU1	MIH56Q4CN18	15	575*235*638	220-240V-50Hz	0,65	15
IDU1	MIH56Q4CN18	15	575*235*638	220-240V-50Hz	0,65	15
IDU1	MIH56Q4CN18	15	575*235*638	220-240V-50Hz	0,65	15
IDU1	MIH45Q4CN18	14	575*235*638	220-240V-50Hz	0,61	15

IDU Name	Model	Tmp-C(℃)	RTC(kW)	ATC(kW)	RSC(kW)	ASC(kW)	PI-C(W)	Tmp-H(℃)	RHC(kW)	AHC(kW)	PI-H(W)
IDU1	MIH15GN18	24,0/17,8		1,31		1,2	18	20		0,86	18
IDU1	MIH15GN18	24,0/17,8		1,31		1,2	18	20		0,86	18
IDU1	MIH15GN18	24,0/17,8		1,31		1,2	18	20		0,86	18
IDU1	MIH36Q4CN18	24,0/17,8		3,1		2,55	18	20		2,02	18
IDU1	MIH45Q4CN18	24,0/17,8		3,92		3,25	25	20		2,53	25
IDU1	MIH56Q4CN18	24,0/17,8		4,88		4,11	35	20		3,18	35
IDU1	MIH56Q4CN18	24,0/17,8		4,83		4,08	35	20		3,18	35
IDU1	MIH56Q4CN18	24,0/17,8		4,77		4,02	35	20		3,18	35
IDU1	MIH56Q4CN18	24,0/17,8		4,68		3,95	35	20		3,18	35
IDU1	MIH45Q4CN18	24,0/17,8		3,92		3,25	25	20		2,53	25

IDU Name	Model	Airflow(m^3/h)	Sound-Pr dB(A)	ESP(Pa)
IDU1	MIH15GN18	460[SSH]	32[SSH]	
IDU1	MIH15GN18	460[SSH]	32[SSH]	
IDU1	MIH15GN18	460[SSH]	32[SSH]	
IDU1	MIH36Q4CN18	530[SSH]	31[SSH]	
IDU1	MIH45Q4CN18	640[SSH]	36.5[SSH]	
IDU1	MIH56Q4CN18	810[SSH]	39[SSH]	
IDU1	MIH56Q4CN18	810[SSH]	39[SSH]	
IDU1	MIH56Q4CN18	810[SSH]	39[SSH]	
IDU1	MIH56Q4CN18	810[SSH]	39[SSH]	
IDU1	MIH45Q4CN18	640[SSH]	36.5[SSH]	

IDU Name	Model	Piping Length to 1st Y Joint(m)
IDU1	MIH15GN18	10,90
IDU1	MIH15GN18	12,50
IDU1	MIH15GN18	11,10
IDU1	MIH36Q4CN18	17,00
IDU1	MIH45Q4CN18	4,60
IDU1	MIH56Q4CN18	9,75
IDU1	MIH56Q4CN18	16,65
IDU1	MIH56Q4CN18	25,30
IDU1	MIH56Q4CN18	35,15
IDU1	MIH45Q4CN18	7,60

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 (System VRF)

4.3.1 Outdoor Unit Details Table

Model		MVi-400WV2RN1(A)
Module		MVi-400WV2RN1(A)
Tmp-C	℃	32
RTC	kW	
ATC	kW	34,42
PI-C	kW	11,49
EER		2,99
Tmp-H	℃/℃	-20/-18
RHC	kW	
AHC	kW	22,39
PI-H	kW	10,23
COP		2,19
CR		98,8
Airflow	m^3/h	12500
Sound-Pr		59
Sound-Po		82
Bas-Refr	kg	7,40
Ex-Refr(ODU)	kg	0,00
Ex-Refr(Piping)	kg	4,75

TCO2 eq.		25,37
MCA	A	28
MFA	A	32
Power supply	V/ph/Hz	380-415V-3ph-50Hz
Dimension (WxHxD)	mm	1130*1760*580
Weight	kg	187

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 (System VRF)

4.4.1 Piping Limitations

Item	Capability	Actual Value
Total piping length	560,00(m)	85,05(m)
Longest actual length	150,00(m)	50,15(m)
Longest equivalent length	175,00(m)	52,65(m)
Longest equivalent length after first branch	90,00(m)	35,15(m)
Indoor unit to nearest branch length	40,00(m)	10,40(m)
Length difference between longest and shortest distance to indoor units	40,00(m)	30,55(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%	98,75%
IDU quantity	22	10

4.4.2 Correction Factors

Item	Correction factor
Altitude (indoor unit)	0,995
Altitude (outdoor unit)	0,998
Piping (cooling)	0,953
Piping (heating)	0,977
Defrost (heating)	1,000

4.4.3 Piping Details Table

No.	Length(m)	Piping diameter
(1)	17,00	Φ25.4/Φ12.7
(2)	1,05	Φ22.2/Φ9.52
(3)	7,95	Φ15.9/Φ9.52
(4)	1,25	Φ15.9/Φ9.52
(5)	1,40	Φ15.9/Φ9.52
(6)	0,70	Φ12.7/Φ6.35
(7)	2,30	Φ12.7/Φ6.35
(8)	0,75	Φ12.7/Φ6.35
(9)	6,65	Φ12.7/Φ6.35
(10)	0,95	Φ15.9/Φ9.52
(11)	6,85	Φ22.2/Φ9.52
(12)	1,60	Φ12.7/Φ6.35
(13)	4,60	Φ12.7/Φ6.35
(14)	0,85	Φ12.7/Φ6.35

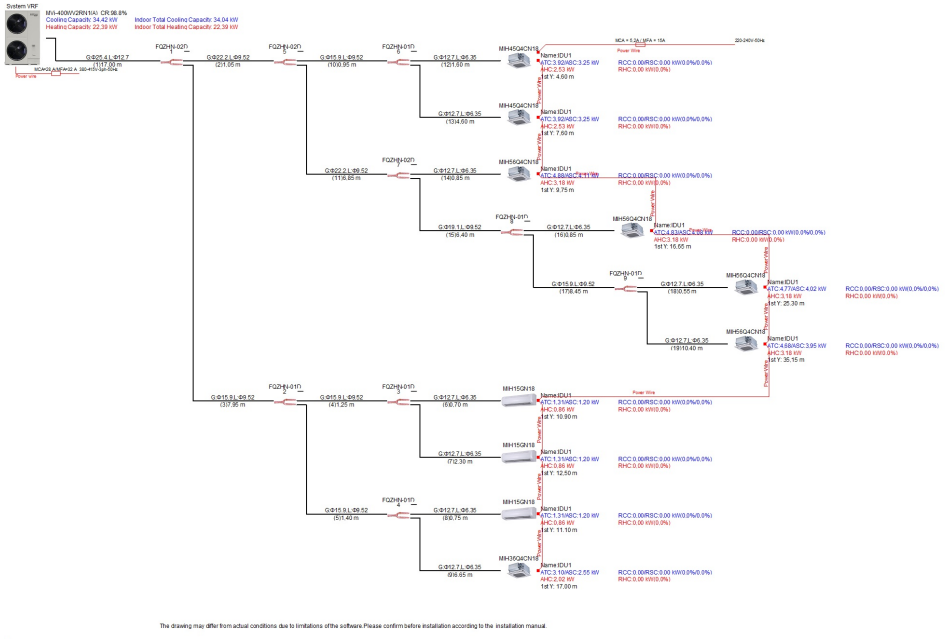
(15)	6,40	Φ19.1/Φ9.52
(16)	0,85	Φ12.7/Φ6.35
(17)	8,45	Φ15.9/Φ9.52
(18)	0,55	Φ12.7/Φ6.35
(19)	10,40	Φ12.7/Φ6.35

4.4.4 Branch Joints Details Table

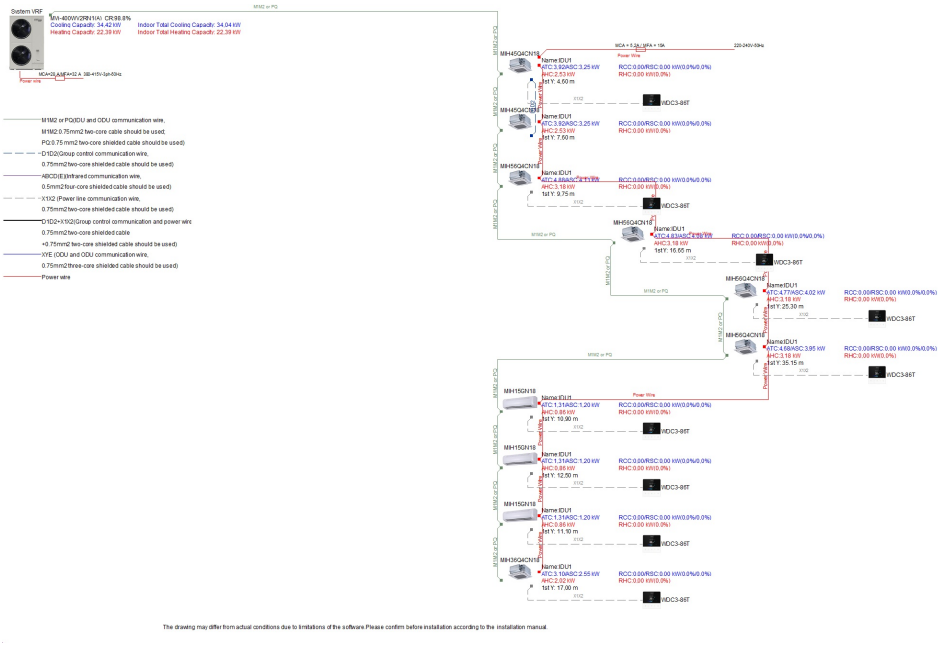
No.	Load(kW)	Model
(1)	39,5	FQZHN-02D
(2)	8,1	FQZHN-01D
(3)	3	FQZHN-01D
(4)	5,1	FQZHN-01D
(5)	31,4	FQZHN-02D
(6)	9	FQZHN-01D
(7)	22,4	FQZHN-02D
(8)	16,8	FQZHN-01D
(9)	11,2	FQZHN-01D

4.4.5 Reducer Details Table

4.5 Piping Diagrams (System VRF)



4.6 Wiring Diagrams (System VRF)



5. Agregat do centrali_N3W3

5.1 BOM List (Agregat do centrali_N3W3)

Model	Quantity	Unit	Description
MVi-224WV2RN1(A)	1		V6-i Side Discharge(380-415V EU series)
AHUKZ-02F	1		AHU Kit(Standard wired controller WDC3-86S)
R410A	2.96	kg	Extra Refrigerant Added
Φ12.7	26.9	m	Copper pipe
Φ22.2	26.9	m	Copper pipe

5.2 Indoor Unit Details (Agregat do centrali_N3W3)

5.2.1 Indoor Unit Details Table

5.2.2 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

5.3 Outdoor Unit Details (Agregat do centrali_N3W3)

5.3.1 Outdoor Unit Details Table

Model		MVi-224WV2RN1(A)
Module		MVi-224WV2RN1(A)

Tmp-C	℃	32
RTC	kW	
ATC	kW	21,36
PI-C	kW	6,17
EER		3,46
Tmp-H	℃/℃	-20/-18
RHC	kW	
AHC	kW	20,19
PI-H	kW	8,07
COP		2,50
CR		100,0
Airflow	m^3/h	9000
Sound-Pr		58
Sound-Po		78
Bas-Refr	kg	6,50
Ex-Refr(ODU)	kg	0,00
Ex-Refr(Piping)	kg	2,96
TCO2 eq.		19,75
MCA	A	19
MFA	A	25
Power supply	V/ph/Hz	380-415V-3ph-50Hz
Dimension (WxHxD)	mm	1120*1558*528
Weight	kg	143

5.3.2 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

5.4 Piping Limitations (Agregat do centrali_N3W3)

5.4.1 Piping Limitations

Item	Capability	Actual Value
Total piping length	150,00(m)	27,40(m)
Longest actual length	100,00(m)	26,90(m)
Longest equivalent length	110,00(m)	27,40(m)
Longest equivalent length after first branch	40,00(m)	1,00(m)
Length difference between longest and shortest distance to indoor units	40,00(m)	0,00(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	40,00(m)	0,00(m)
Combination ratio	50-130%	100,00%
IDU quantity	13	1

5.4.2 Correction Factors

Item	Correction factor
Altitude (indoor unit)	0,995
Altitude (outdoor unit)	0,998
Piping (cooling)	0,986
Piping (heating)	0,997
Defrost (heating)	1,000

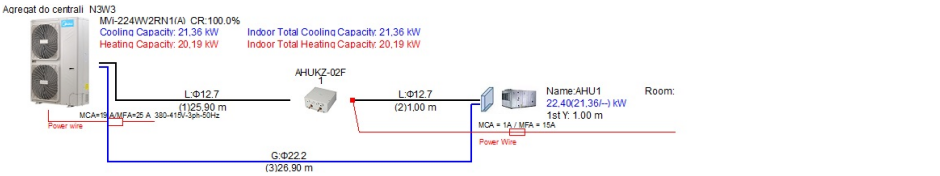
5.4.3 Piping Details Table

No.	Length(m)	Piping diameter
(1)	25,90	Φ/Φ12.7
(2)	1,00	Φ/Φ12.7
(3)	26,90	Φ22.2/Φ

5.4.4 Branch Joints Details Table

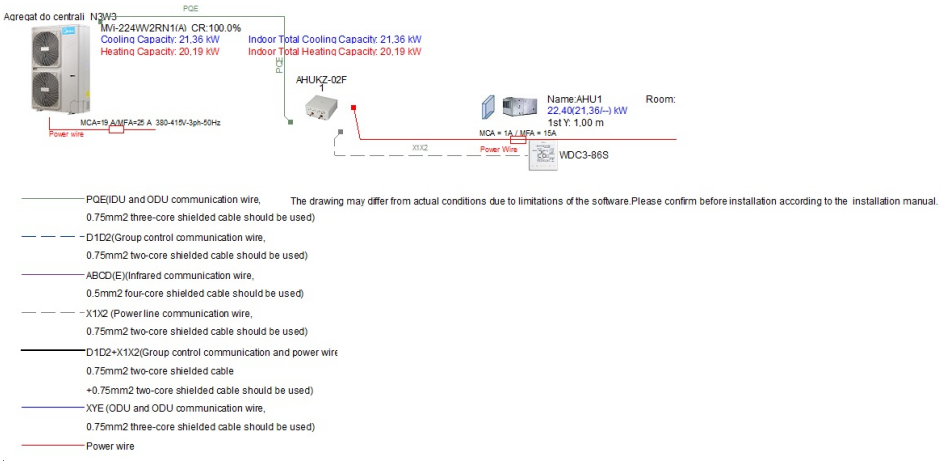
5.4.5 Reducer Details Table

5.5 Piping Diagrams (Agregat do centrali_N3W3)



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

5.6 Wiring Diagrams (Agregat do centrali_N3W3)



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

6. Centralized Control Solution

6.1 Centralized Controller List

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