AIR CONDITIONING PROPOSAL SHEET

Date: 2021-09-28

LGE

Prepared by:

Customer/Contractor Information

Customer

Name :
Address :
City :
State/Province :
Country :
Phone Number :
Fax Number :
E-mail :

Contractor

Name :
Address :
City :
State/Province :
Country :
Phone Number :
Fax Number :
E-mail :

Contents

Abbreviations

Abbreviations	Description
TC	Total Cooling Capacity
SC	Sensible Cooling Capacity
HC	Heating Capacity
Capacity Ratio(%)	Corrected Capacity / Room Load
PI	Power Input
IDU	Indoor Unit
ODU	Outdoor Unit
DBT	Dry Bulb Temperature
WBT	Wet Bulb Temperature
IAT	Indoor Air Temperature
OAT	Outdoor Air Temperature
EWT	Entering Water Temperature
LWT	Leaving Water Temperature
RH	Relative Humidity
OA	Outdoor Air
RA	Return Air
SA	Supply Air
EA	Exhaust Air
MCA	Minimum Circuit Ampere
MFA	Maximum Fuse Ampere
MOP	Maximum rating of Overcurrent Protective device
FLA	Full Load Ampere
RLA	Rated Load Ampere
EER	Energy Efficiency Ratio
COP	Coefficient of Performance
ESP	External Static Pressure
AFR	Air Flow Rate
EDT	Estimated Discharge Temperature
Qty	Quantity
Liq	Liquid
WxHxD	Width x Height x Depth
H / M / L	High / Middle / Low
CR	Combination Ratio
Freq.	Frequency
Volt	Voltage
CF(%)	Correction Factor (Total Cooling Capacity / Total Rated Cooling Capacity)

Building Load Summary

1. Project name:Kalistara oras vanduo aukstatemperaturiai
2. Date:2021-09-28
3. Location :Nation(VILNIUS, Lithuania), Altitude(156m)
4. Design conditions

		Cooling	Heating
OAT	DBT(°C)	35.0	-19.7
	WBT(°C)	26.1	-20.0
	RH(%)	50.0	80.0
IAT	DBT(°C)	27.0	20.0
	WBT(°C)	19.5	13.7
	RH(%)	50.0	50.0

5. Cooling and Heating Loads

Floor Name	Room Name	Cooling Load(kW)		Heating Load(kW)
		Total	Sensible	

Model Selection - Summary

Date: 2021-09-28

1. Outdoor Units

No.	Model Name	Quantity	Description
1	ARUM400LTE5		
1.1	ARUM200LTE5	2	50,60Hz/R410A/Heat Pump/MULTI V 5/EU(EUROVENT)
Total		2	

2. Indoor Units

No.	Model Name	Quantity	Description
1	ARNH08GK3A4	5	Hydro Kit
Total		5	

3. Branch/Header

No.	Model Name	Quantity
1	ARBLN03321	1
2	ARBLN07121	1
3	ARBLN14521	2
4	ARCNN21	1

4. Pipes

No.	Diameter(Liq:Gas,mm)	Length(m)
1	9.52 : 19.05	15.0
2	12.7 : 28.58	3.0
3	15.88 : 34.9	3.0
4	19.05 : 34.9	3.0
5	19.05 : 41.3	20.0

5. Accessories

Index	Model Name	Quantity	Description

Kalistara oras vanduo aukstatemperaturiai(ver 1.8.4.9)

System Model Selection - ODU

System Name: Multi V1

Date: 2021-09-28

System No : 1/1

1. Design conditions - Outdoor

	Cooling			Heating		
	DBT(°C)	WBT(°C)	RH(%)	DBT(°C)	WBT(°C)	RH(%)
OAT	35.0	26.1	50.0	-19.7	-20.0	80.0
IAT	27.0	19.5	50.0	20.0	13.7	50.0

2. Outdoor Units

Model Name	Maximum Indoor Units	Maximum CR (kW(%))	Combination Ratio	Precharged Refrigerant (kg)	Additional Refrigerant (kg)	Fluid Type / Concentration (%)
ARUM400LTE5	64	117.6(105%)	100.0 %	32.00	12.91	

Model Name	Combination
ARUM400LTE5	ARUM200LTE5 + ARUM200LTE5

Rated / Corrected Capa. (kW)		Rated / Corrected Power Input (kW)	
Cooling	Heating	Cooling	Heating
112.0/110.7	126.0/99.0	36.1/38.4	29.4/36.4

Efficiency(W/W)		Weight(kg)	Dimension (WxHxD) (mm)	Electrical Characteristics				
Cooling	Heating			Volt	Phase	Hz	MCA (A)	Breaker (A)
2.9	2.7	(300x1)+(300x1)	((1,240x1,690x760)x1)+((1,240x1,690x760)x1)	380~415	3	50/60	74.5	100

Rated Running Current(A) (380V / 400V / 415V)		Corrected Running Current(A) (380V / 400V / 415V)	
Cooling	Heating	Cooling	Heating
59.0/56.1/54.0	48.0/45.6/44.0	62.7/59.6/57.4	59.5/56.5/54.5

3. Pipes

Diameter(Liq:Gas,mm)	Length(m)
9.52 : 19.05	15.0

4. Branch/Header

Model Name	Quantity
ARBLN03321	1

#Notes: Correction factor is corrected by such as, but not limited to, indoor unit combination, temperature, and pipe length.
The result can be slightly different from Product Data Book due to simulation.
* Running current is simulated under the assumption that the load is stable. Actual running current can be varied depending on the site condition. (For circuit breaker and wire size, please refer to the PDB.)

System Model Selection - ODU

System Name: Multi V1

Date: 2021-09-28

System No : 1/1

3. Pipes

Diameter(Liq:Gas,mm)	Length(m)
12.7 : 28.58	3.0
15.88 : 34.9	3.0
19.05 : 34.9	3.0
19.05 : 41.3	20.0

4. Branch/Header

Model Name	Quantity
ARBLN07121	1
ARBLN14521	2
ARCNN21	1
-	-

#Notes: Correction factor is corrected by such as, but not limited to, indoor unit combination, temperature, and pipe length.
The result can be slightly different from Product Data Book due to simulation.
* Running current is simulated under the assumption that the load is stable. Actual running current can be varied depending on the site condition. (For circuit breaker and wire size, please refer to the PDB.)

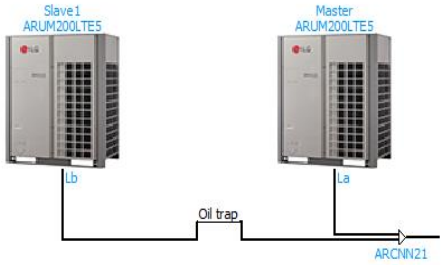
System Model Selection - ODU

System Name: Multi V1

Date: 2021-09-28

System No : 1/1

5. Branch-Branch



Branch-Branch		
Pipe	Diameter(mm)	Length(m)
LA	-	-
LB	-	-

Outdoor Unit-Branch		
Pipe	Diameter(mm)	Length(m)
La	15.88 : 28.58	-
Lb	15.88 : 28.58	-
Lc	-	-
Ld	-	-

Height Difference	
Pipe	Length(m)
Hb (Master-Slave1)	-
Hc (Master-Slave2)	-
Hd (Master-Slave3)	-

#Notes: Height difference is calculated based on master ODU.

System Model Section - IDU

System Name: Multi V1

Date: 2021-09-28

System No : 1/1

6. Indoor Units(1)

Room	Room Load(kW)			Room Design Temp.(Return Air Temp.)(°C)				Model Name	Rated TC/Corrected TC(kW)			Correted Capa/Room Load(%)		
				Cooling		Heating								
	TC	SC	HC	DBT	WBT	DBT	WBT		TC	SC	HC	TC	SC	HC
Room	-	-	-	-	-	55.0(Heating -IWT)	62.9(Heating -OWT)	ARNH08GK3A4	-	Flowrate : 36.0(LPM)	25.2/19.7	-	-	-
Room	-	-	-	-	-	55.0(Heating -IWT)	62.9(Heating -OWT)	ARNH08GK3A4	-	Flowrate : 36.0(LPM)	25.2/19.7	-	-	-
Room	-	-	-	-	-	55.0(Heating -IWT)	62.9(Heating -OWT)	ARNH08GK3A4	-	Flowrate : 36.0(LPM)	25.2/19.7	-	-	-
Room	-	-	-	-	-	55.0(Heating -IWT)	62.9(Heating -OWT)	ARNH08GK3A4	-	Flowrate : 36.0(LPM)	25.2/19.7	-	-	-
Room	-	-	-	-	-	55.0(Heating -IWT)	62.9(Heating -OWT)	ARNH08GK3A4	-	Flowrate : 36.0(LPM)	25.2/19.7	-	-	-

#Notes: Correction factor is corrected by such as, but not limited to, indoor unit combination, temperature, and pipe length.

The result can be slightly different from Product Data Book due to simulation.

This simulation is performed under diversity condition.

In this case, sum of calculated capacity of all IDUs is different from sum of calculated capacity of ODU.

When calculating load, ODU should be considered as a dynamic peak load.

When diversity is used, the basic assumption is that not all IDUs are running simultaneously.

Partial load operation is assumed.

If sum of operating IDUs capacity is smaller than ODU capacity, IDUs will operate on 100% capacity.

If all units run at the same time, IDU capacity might not reach the required cooling load.

EWT=Entering Water Temperature / LWT=Leaving Water Temperature.

System Model Section - IDU

System Name: Multi V1

Date: 2021-09-28

System No : 1/1

7. Indoor Units(2)

Tag	Model Name	Type	Est. Discharge Temp.(°C)		Air flow rate (CMM)	Remark
			Cooling	Heating		
1	ARNH08GK3A4	HYDRO KIT	-	-	0.0	PI 1.9 kW
2	ARNH08GK3A4	HYDRO KIT	-	-	0.0	PI 1.9 kW
3	ARNH08GK3A4	HYDRO KIT	-	-	0.0	PI 1.9 kW
4	ARNH08GK3A4	HYDRO KIT	-	-	0.0	PI 1.9 kW
5	ARNH08GK3A4	HYDRO KIT	-	-	0.0	PI 1.9 kW

#Notes: Correction factor is corrected by such as, but not limited to, indoor unit combination, temperature, and pipe length.

The result can be slightly different from Product Data Book due to simulation.

This simulation is performed under diversity condition.

In this case, sum of calculated capacity of all IDUs is different from sum of calculated capacity of ODU.

When calculating load, ODU should be considered as a dynamic peak load.

When diversity is used, the basic assumption is that not all IDUs are running simultaneously.

Partial load operation is assumed.

If sum of operating IDUs capacity is smaller than ODU capacity, IDUs will operate on 100% capacity.

If all units run at the same time, IDU capacity might not reach the required cooling load.

EWT=Entering Water Temperature / LWT=Leaving Water Temperature.

System Model Section - IDU

System Name: Multi V1

Date: 2021-09-28

System No : 1/1

8. Indoor Units(3)

Tag	Model Name	Weight	Dimension (WxHxD)	Electrical Characteristics				
				Volt	Phase	Hz	MCA (A)	FLA (A)
1	ARNH08GK3A4	90 kg	520x1074x330 mm	220~240	1	50/60	26.20	20.15
2	ARNH08GK3A4	90 kg	520x1074x330 mm	220~240	1	50/60	26.20	20.15
3	ARNH08GK3A4	90 kg	520x1074x330 mm	220~240	1	50/60	26.20	20.15
4	ARNH08GK3A4	90 kg	520x1074x330 mm	220~240	1	50/60	26.20	20.15
5	ARNH08GK3A4	90 kg	520x1074x330 mm	220~240	1	50/60	26.20	20.15

#Notes: Correction factor is corrected by such as, but not limited to, indoor unit combination, temperature, and pipe length.

The result can be slightly different from Product Data Book due to simulation.

This simulation is performed under diversity condition.

In this case, sum of calculated capacity of all IDUs is different from sum of calculated capacity of ODU.

When calculating load, ODU should be considered as a dynamic peak load.

When diversity is used, the basic assumption is that not all IDUs are running simultaneously.

Partial load operation is assumed.

If sum of operating IDUs capacity is smaller than ODU capacity, IDUs will operate on 100% capacity.

If all units run at the same time, IDU capacity might not reach the required cooling load.

EWT=Entering Water Temperature / LWT=Leaving Water Temperature.

System Model Section - IDU

System Name: Multi V1

Date: 2021-09-28

System No : 1/1

9. Indoor Units(4)

Tag	Model Name	Rated Running Current (220V / 230V / 240V)	Rated Power Input (H / M / L)	Sound Power Level dB(A) (H / M / L)	Sound Pressure Level dB(A) (H / M / L)
1	ARNH08GK3A4	23.00 / 22.00 / 21.08	5000 / - / -	-	46
2	ARNH08GK3A4	23.00 / 22.00 / 21.08	5000 / - / -	-	46
3	ARNH08GK3A4	23.00 / 22.00 / 21.08	5000 / - / -	-	46
4	ARNH08GK3A4	23.00 / 22.00 / 21.08	5000 / - / -	-	46
5	ARNH08GK3A4	23.00 / 22.00 / 21.08	5000 / - / -	-	46

#Notes: Correction factor is corrected by such as, but not limited to, indoor unit combination, temperature, and pipe length.

The result can be slightly different from Product Data Book due to simulation.

This simulation is performed under diversity condition.

In this case, sum of calculated capacity of all IDUs is different from sum of calculated capacity of ODU.

When calculating load, ODU should be considered as a dynamic peak load.

When diversity is used, the basic assumption is that not all IDUs are running simultaneously.

Partial load operation is assumed.

If sum of operating IDUs capacity is smaller than ODU capacity, IDUs will operate on 100% capacity.

If all units run at the same time, IDU capacity might not reach the required cooling load.

EWT=Entering Water Temperature / LWT=Leaving Water Temperature.

System Validation Check

System Name: Multi V1

Date: 2021-09-28

System No : 1/1

10. System Validation Check - General Condition

Contents	Limit	Current(Max value : connected unit)
Total pipe length	1000.0 m	44.0 m
Longest equivalent pipe length	175.0 m	34.0 m : ARNH08GK3A4[4]
Longest pipe length after 1st branch	40.0 m	12.0 m : ARNH08GK3A4[4]
Height difference [Above: IDU, Below: ODU]	110.0 m	0.0 m
Height difference [Above: ODU, Below: IDU]	110.0 m	3.0 m : ARNH08GK3A4[5]
Height difference [IDU to IDU]	40.0 m	0.0 m : ARNH08GK3A4[1]-ARNH08GK3A4[1]
Longest actual pipe length	150.0 m	32.0 m : ARNH08GK3A4[4]

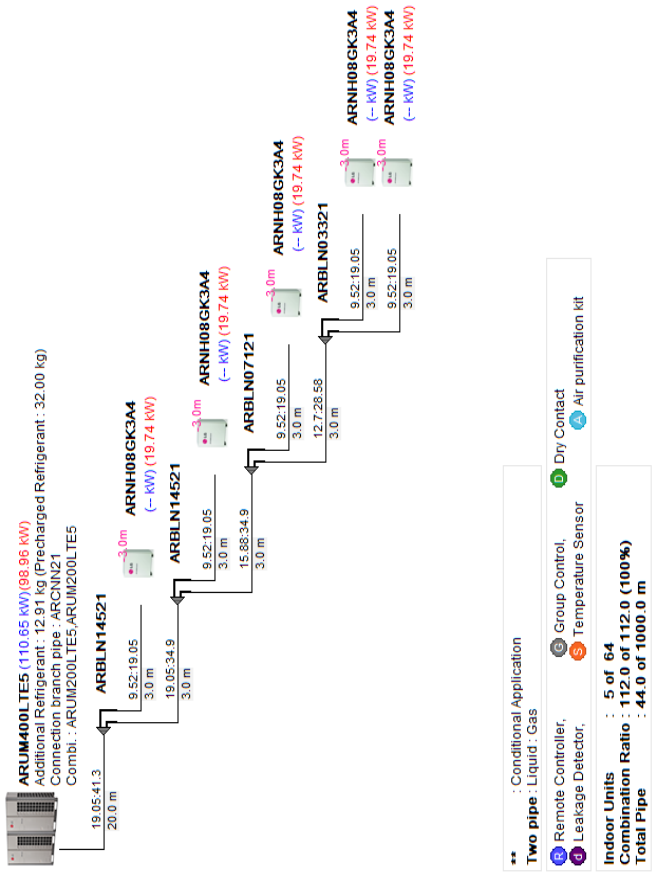
Note : Except "Longest equivalent pipe length", the other pipe length limitations are actual length.

System Tree Diagram

System Name: Multi V1

Date: 2021-09-28

System No : 1/1

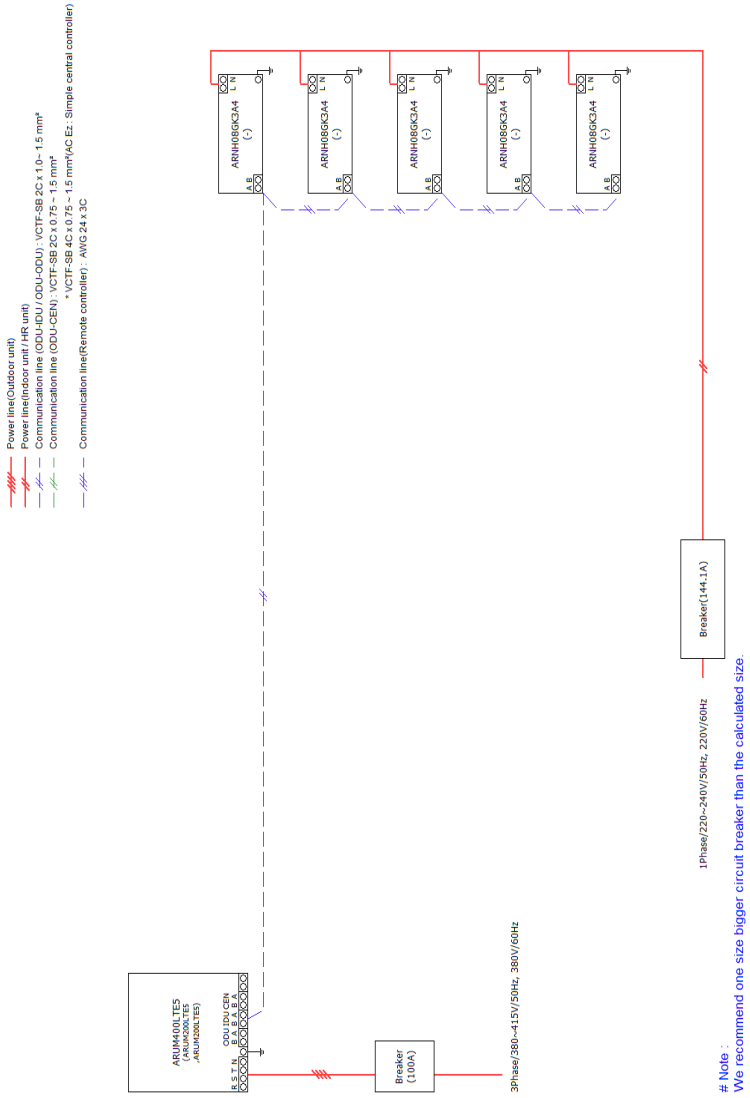


System Schematic Diagram

System Name: Multi V1

Date: 2021-09-28

System No : 1/1



Kalistara oras vanduo aukstatemperaturiai(ver 1.8.4.9)

System Cost Estimate

System Name: Multi V1

Date: 2021-09-28

System No : 1/1

Total Cost	#VALUE!

1. Outdoor Units

Model Name	Quantity	Unit Cost	Total Cost
ARUM200LTE5	2		0
SubTotal	2		0

2. Indoor Units

Model Name	Quantity	Unit Cost	Total Cost
ARNH08GK3A4	5		0
SubTotal	5		0

3. Branch/Header

Model Name	Quantity	Unit Cost	Total Cost
ARBLN03321	1		0
ARBLN07121	1		0
ARBLN14521	2		0
ARCNN21	1		0
SubTotal	5		0

4. Pipes

Diameter(mm)	Length(m)	Unit Cost	Total Cost
9.52	15.0		#VALUE!
12.7	3.0		#VALUE!
15.88	3.0		#VALUE!
19.05	38.0		#VALUE!
28.58	3.0		#VALUE!
34.9	6.0		#VALUE!
41.3	20.0		#VALUE!
SubTotal			#VALUE!

System Cost Estimate

System Name: Multi V1

Date: 2021-09-28

System No : 1/1

5. Refrigerant

Refrigerant	Additional Refrigerant(kg)	Unit Cost	Total Cost
R410A	12.91		#VALUE!
SubTotal			#VALUE!

Cost Estimate - MULTI V

Date: 2021-09-28

Total Cost	#VALUE!

1. Outdoor Units

Model Name	Quantity	Unit Cost	Total Cost
ARUM200LTE5	2		0
SubTotal	2		0

2. Indoor Units

Model Name	Quantity	Unit Cost	Total Cost
ARNH08GK3A4	5		0
SubTotal	5		0

3. Branch/Header

Model Name	Quantity	Unit Cost	Total Cost
ARBLN03321	1		0
ARBLN07121	1		0
ARBLN14521	2		0
ARCNN21	1		0
SubTotal	5		0

4. Pipes

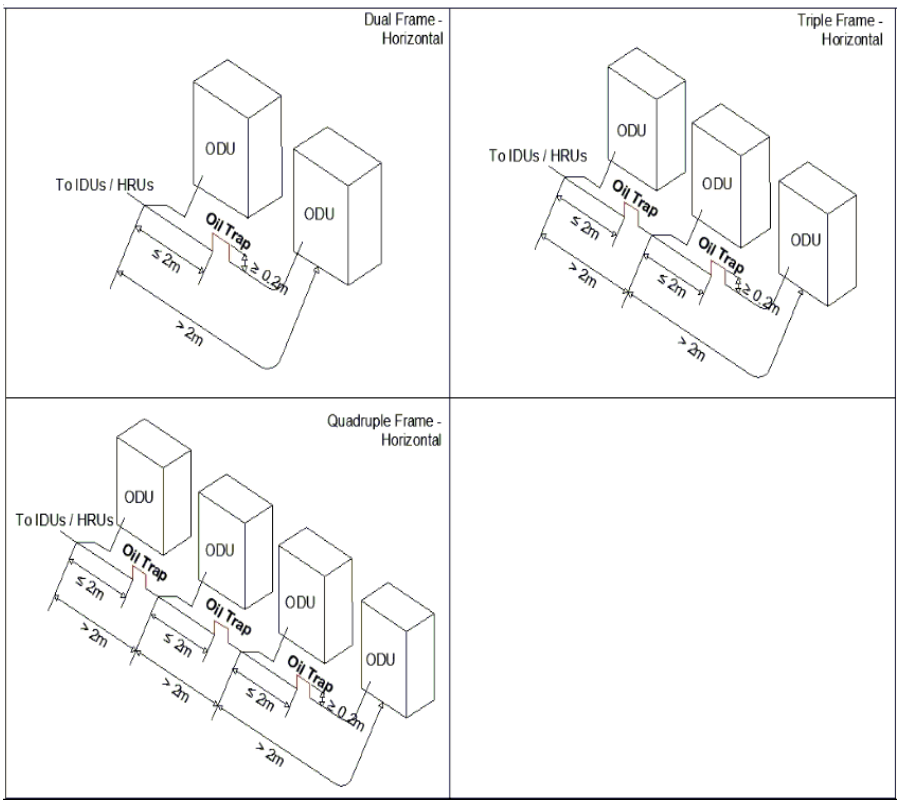
Diameter(mm)	Length(m)	Unit Cost	Total Cost
9.52	15.0		#VALUE!
12.7	3.0		#VALUE!
15.88	3.0		#VALUE!
19.05	38.0		#VALUE!
28.58	3.0		#VALUE!
34.9	6.0		#VALUE!
41.3	20.0		#VALUE!
SubTotal			#VALUE!

5. Refrigerant

Refrigerant	Additional Refrigerant(kg)	Unit Cost	Total Cost
R410A	12.91		#VALUE!
SubTotal			#VALUE!

Oil Trap Requirement

Date: 2021-09-28



Oil trap required:

- Horizontal piping when distance between the frame and connecting Y-branch exceeds 2 m.
- High Gas and Low Gas pipes only
- Oil trap must be minimum 0.2 m high and wide.
- Oil trap must be located close to connecting Y-branch (no farther than 2 m).
- Connecting Y-branch must be installed horizontally.

Kalistara oras vanduo aukstatemperaturiai(ver 1.8.4.9)

Project Cost Estimate

Date: 2021-09-28

Total Cost	#VALUE!

1. Outdoor Units

Model Name	Quantity	Unit Cost	Total Cost
ARUM200LTE5	2		0
SubTotal	2		0

2. Indoor Units

Model Name	Quantity	Unit Cost	Total Cost
ARNH08GK3A4	5		0
SubTotal	5		0

3. Accessories

Model Name	Quantity	Unit Cost	Total Cost
SubTotal	0		0

4. Branch/Header

Model Name	Quantity	Unit Cost	Total Cost
ARBLN03321	1		0
ARBLN07121	1		0
ARBLN14521	2		0
ARCNN21	1		0
SubTotal	5		0

5. Pipes

Diameter(mm)	Length(m)	Unit Cost	Total Cost
9.52	15.0		#VALUE!
12.7	3.0		#VALUE!
15.88	3.0		#VALUE!
19.05	38.0		#VALUE!
28.58	3.0		#VALUE!
34.9	6.0		#VALUE!
41.3	20.0		#VALUE!
SubTotal			#VALUE!

Kalistara oras vanduo aukstatemperaturiai(ver 1.8.4.9)

Project Cost Estimate

Date: 2021-09-28

6. Refrigerant

Refrigerant	Additional Refrigerant(kg)	Unit Cost	Total Cost
R410A	12.91		#VALUE!
SubTotal			#VALUE!

Kalistara oras vanduo aukstatemperaturiai(ver 1.8.4.9)

Pipe Summary

Date: 2021-09-28

1. Refrigerant Pipe

System Name		Length(m)														
Diameter(mm)	Type	6.35	9.52	12.7	15.88	19.05	22.2	25.4	28.58	34.9	31.8	41.3	38.1	44.5	50.8	53.98
Multi V1	Liquid	-	15,0	3,0	3,0	23,0	-	-	-	-	-	-	-	-	-	-
	Low Gas	-	-	-	-	15,0	-	-	3,0	6,0	-	20,0	-	-	-	-
	High Gas	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	SubTotal	-	15,0	3,0	3,0	38,0	-	-	3,0	6,0	-	20,0	-	-	-	-
Total		**-**	**15,0**	**3,0**	**3,0**	**38,0**	**-**	**-**	**3,0**	**6,0**	**-**	**20,0**	**-**	**-**	**-**	**-**