



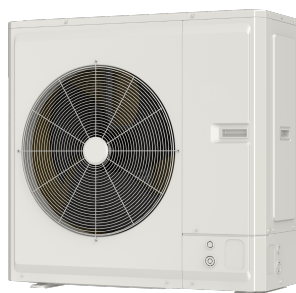
Technical Sales Guide

R32 GMV9 HOME DC INVERTER VRF UNITS

(GC202603-I)

TECHNICAL SALES GUIDE-50/60Hz

CAPACITY RANGE:8~15.5kW



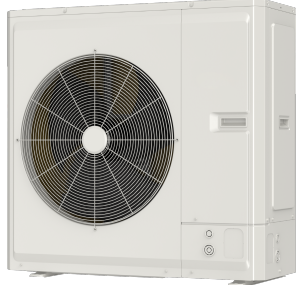
GREE ELECTRIC APPLIANCES, INC. OF ZHUHAI

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1. UNIT CHARACTERISTICS

1.1 Lineup of Outdoor Unit

Capacity (kW)	Model	Code	Appearance
8	GMV-S80WL/NhD-S	CN853W0190	
10	GMV-S100WL/NhD-S	CN853W0200	
12.1	GMV-S121WL/NhD-S	CN853W0180	
14.1	GMV-S141WL/NhD-S	CN853W0170	
15.5	GMV-S160WL/NhD-S	CN853W0160	

1.2 Product Function and Features

- **High-efficiency C-shaped Heat Exchanger Design**
Adopt brand new C-shaped high-efficiency heat exchanger structure design; windward area increased compared with the last generation one.
Adopt brand new air duct design; air volume increased compared with the last generation one.
- **New Generation Smart Defrosting**
Through real-time parameters learning and judgment, the defrosting capacity output and defrosting cycle are automatically changed to achieve stable defrosting or fast defrosting.
- **SRL Self-reaction Load Control**
Self-reaction load (SRL) control can automatically adapt to indoor cooling and heating load demand to change the refrigerant heat exchange temperature.
- **13 Quiet Modes**
GMV9 HOME has multiple quiet modes and the noise of outdoor unit is low, providing users with a quiet and comfortable environment all day long.
- **Room Temperature Holding Function**
When temperature is low in winter, if you need to go out for a long time, turn on the “Home leave operation mode” to keep indoor temperature at 8°C to avoid freezing and damage to objects in your house.
After activating the SETBACK function, cooling/heating mode will be turned on automatically to ensure that the room temperature is kept within a constant temperature range.
- **Anti-reversing, Startup Technology**
During the frequent coastal monsoon period, most air conditioners cannot be turned on in the moderate breeze.
By adopting Gree's unique anti-reversing startup technology, the unit can still started up and turned on normally in strong headwind.

1.3 Nomenclature

GMV	□	□	-	□	□	□	W	□	/	□	□	□	(□)
1	2	3		4	5	6	7	8		9	10	11	12

No.	Description	Options
1	Product code	GMV—Gree Multi VRF Units
2	Suitable climate	Omit—T1 condition T2—low temperature climate T3—high temperature climate
3	Function type	Omit—Heat pump L—Cooling only
4	RAC or CAC	Omit—CAC H—RAC
5	Function code	Omit—no special function V—low ambient temperature heat pump unit
6	Code of cooling capacity	Nominal capacity/100(W)
7	Code for outdoor unit	W—outdoor unit
8	Unit structure	Omit—Non-modular (top discharge) M—Modular (top discharge) L—Non-modular (side discharge)
9	Refrigerant	Nh—R32
10	Design No.	Named in order of A, B, C, or combined with 1, 2, 3...
11	Power supply	7000~18000W, Omit—1 phase; S—3 phase
12	Area code	Omit—for general area For special area, area code is in the form of one capital letter: A, P or S...

1.4 Operation Range

Cooling	Outdoor temperature: -5~55°C
Heating	Outdoor temperature: -20~27°C

2. UNIT PARAMETERS

Model			GMV-S80WL /NhD-S	GMV-S100WL /NhD-S	GMV-S121WL /NhD-S	GMV-S141WL /NhD-S	GMV-S160WL /NhD-S
Cooling capacity	Rated	kW	8	10	12.1	14.1	15.5
Heating capacity	Rated	kW	8	10	12.1	14.1	15.5
SEER	Ducted	—	7.31	7.11	7.76	7.72	7.53
	Cassette	—	7.28	7.65	7.96	7.95	7.70
SCOP	Ducted	—	4.81	5.00	5.02	5.14	4.86
	Cassette	—	4.53	4.82	4.98	4.89	4.7
Sound power level	Ducted	dB(A)	69	70	71	73	75
Circulating air volume		m³/h	4500	4500	5000	5600	6100
Refrigerant charge volume		kg	2.4	2.4	2.4	2.4	2.4
Power supply			220-240V ~ 50/60Hz				
Unit dimensions (mm) (W×D×H)			990×370×955				
Package dimensions (mm) (W×D×H)			1068×468×1110				
Compressor			QXFS-B360zX050				
Water-proof level			IPX4	IPX4	IPX4	IPX4	IPX4
Suitable climate			T1	T1	T1	T1	T1
Connection pipe	Gas	mm	Φ15.9	Φ15.9	Φ15.9	Φ15.9	Φ15.9
	Liquid	mm	Φ9.52	Φ9.52	Φ9.52	Φ9.52	Φ9.52
	High pressure gas	mm	Φ12.7	Φ12.7	Φ12.7	Φ12.7	Φ12.7
	Connection method		Flare	Flare	Flare	Flare	Flare
Net weight		kg	82.5	82.5	82.5	82.5	82.5

NOTICE:

- ① The total capacity of connected indoor units must be in the range of 50%~135% of the outdoor unit capacity. The relevant parameters can be corrected by referring to the unit capacity correction table.
- ② The above parameters are tested based on the standard connection pipe length. In the actual project, the parameters should be corrected referring to the capacity correction for the long connection pipe of units.
- ③ Specifications may be changed due to product improvement. Please refer to nameplates of the units.

3. ELECTRICAL SPECIFICATIONS

Model	Power supply	Circuit breaker capacity (A)	Number of ground wire× Min sectional area (mm ²)	Number of power cord × Min sectional area (mm ²)
GMV-S80WL/NhD-S	220-240V ~ 50/60Hz	25	1×2.5	2×2.5
GMV-S100WL/NhD-S	220-240V ~ 50/60Hz	25	1×2.5	2×2.5
GMV-S121WL/NhD-S	220-240V ~ 50/60Hz	32	1×4.0	2×4.0
GMV-S141WL/NhD-S	220-240V ~ 50/60Hz	32	1×4.0	2×4.0
GMV-S160WL/NhD-S	220-240V ~ 50/60Hz	32	1×4.0	2×4.0

4. PRODUCT CAPACITY CORRECTION

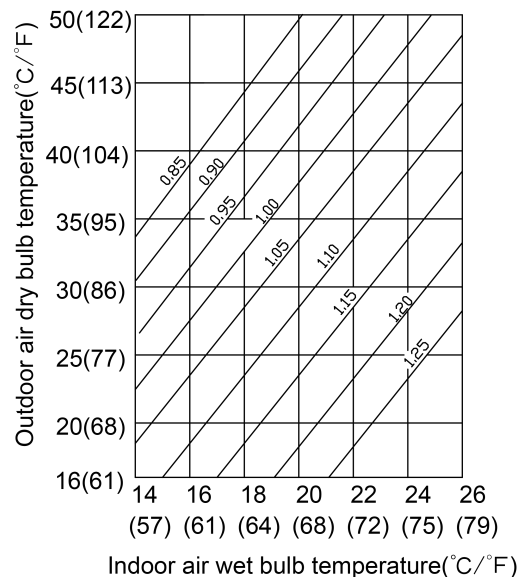
4.1 Capacity Correction Method for IDU and ODU

Capacity calculation method

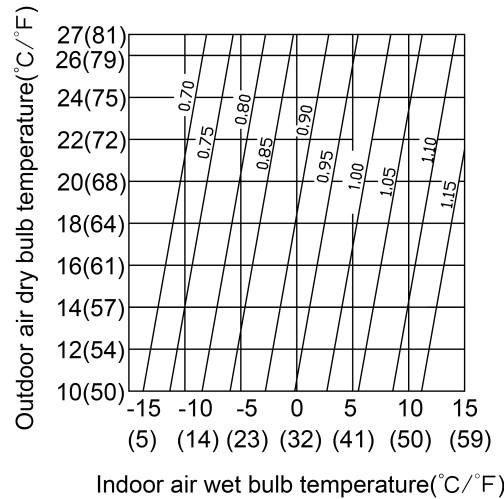
Cooling or heating capacity calculation method:

Outdoor unit capacity = outdoor unit capacity in rated condition × correction factor of indoor and outdoor temperature condition × connection pipe distance, correction factor of height difference between indoor unit and outdoor unit.

- (1) If the total capacity code of indoor units is smaller than the capacity code of outdoor unit, the capacity of outdoor unit in rated condition equals to the total capacity code of indoor units;
- (2) If the total capacity code of indoor units is bigger than the capacity code of outdoor unit, the capacity of outdoor unit in rated condition equals to its rated cooling capacity;
- (3) Correction factor of indoor and outdoor temperature condition.
 - 1) Correction factor of cooling capacity

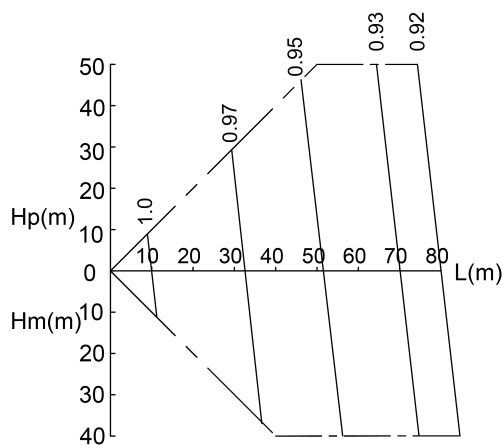


2) Correction factor of heating capacity

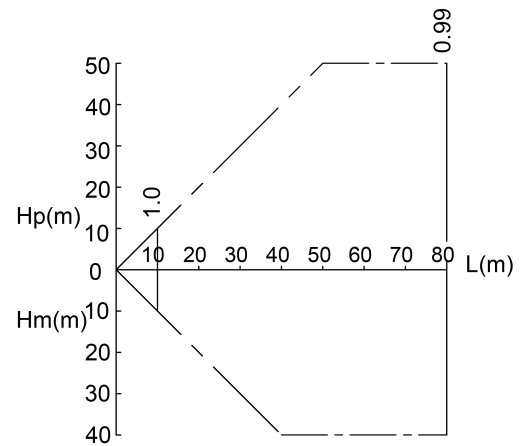


4.2 Capacity Correction According to Piping Length and Height Difference

The following chart is the capacity change rate in 100% load under standard condition (thermostat is set in 16°C (61°F) in cooling and set in 30°C (61°F) in heating).



Cooling



Heating

m	0	10	20	30	40	50	60	70	80
ft.	0	33	66	98	131	164	197	230	262

NOTE:

H_p : Level difference when outdoor unit at upper

H_m : Level difference when outdoor unit at lower

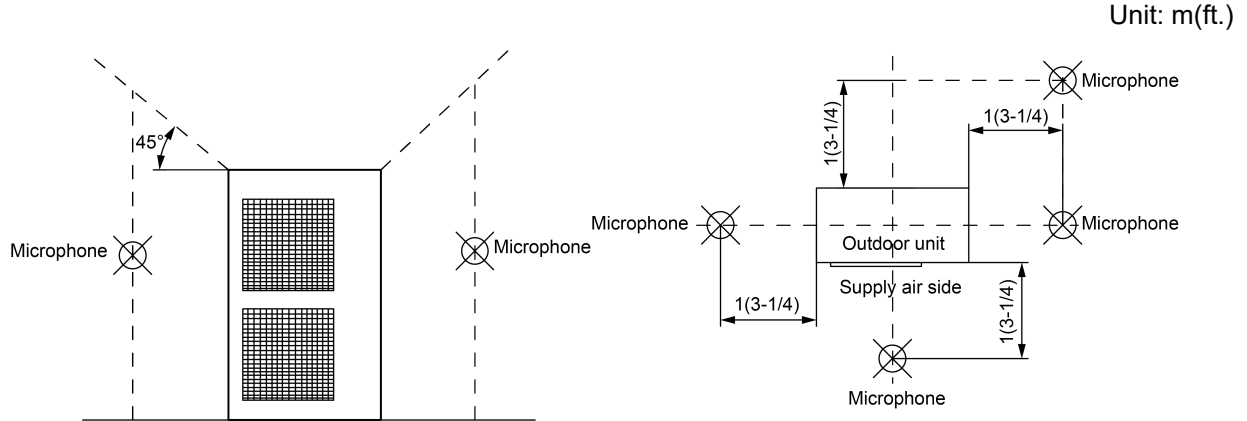
L: The length between ODU and the farthest IDU

5. UNIT NOISE CURVES

Test method for noise:

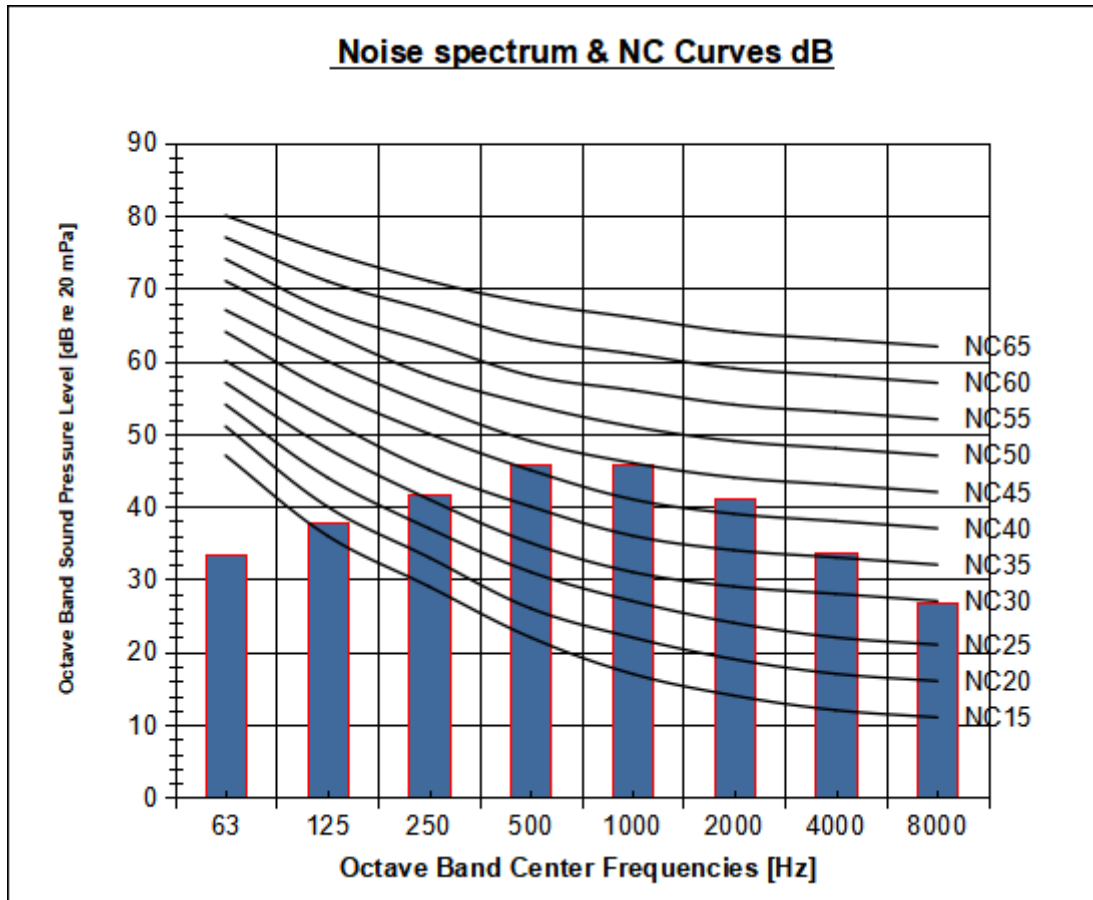
Test environment: Semi-an echoic room, the noise could be a little bit higher in actual operation due to environmental change.

Noise curve test point is as follow:

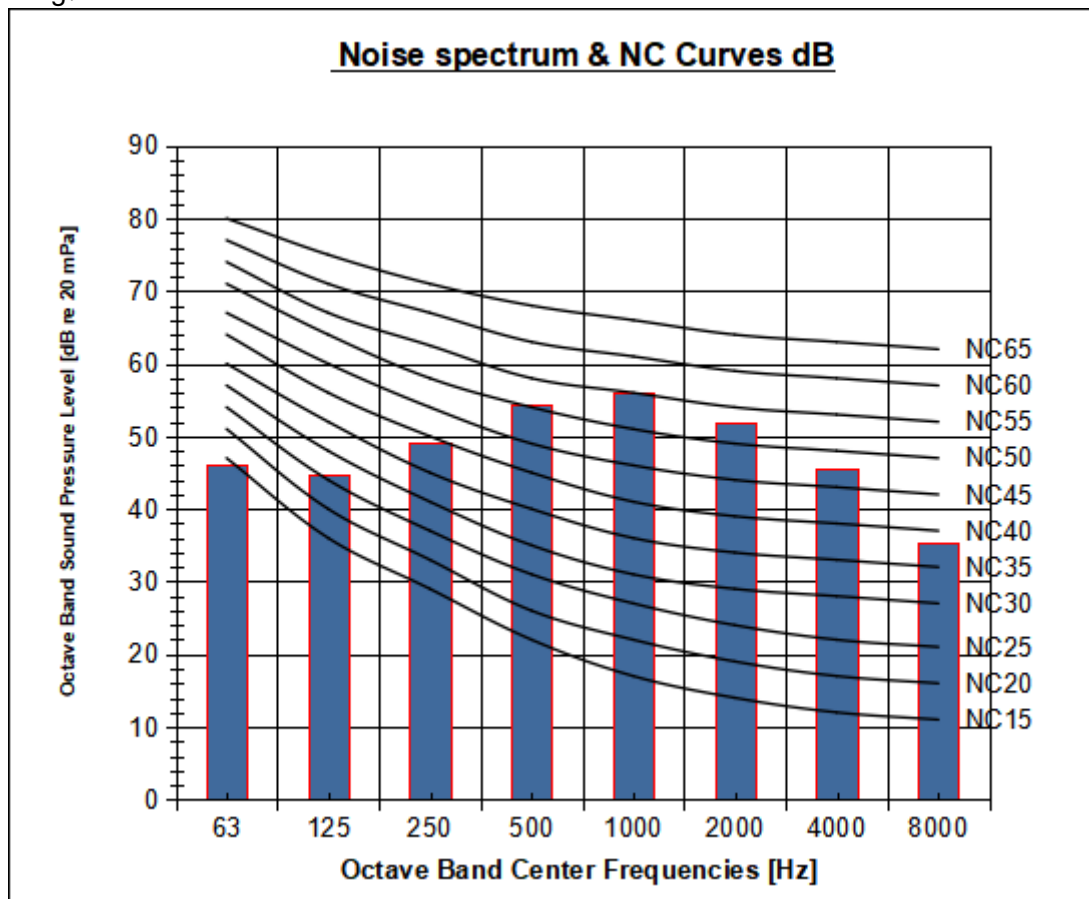


GMV-S80WL/NhD-S:

Cooling:

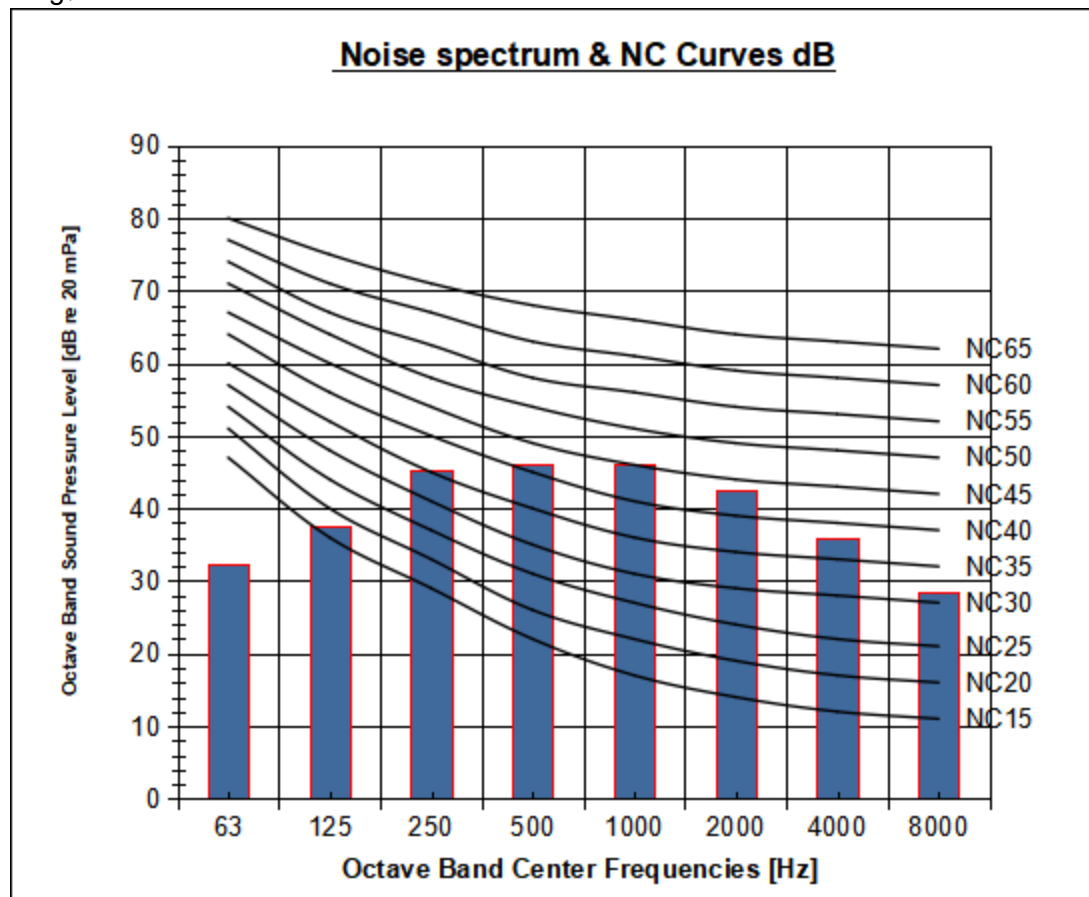


Heating:

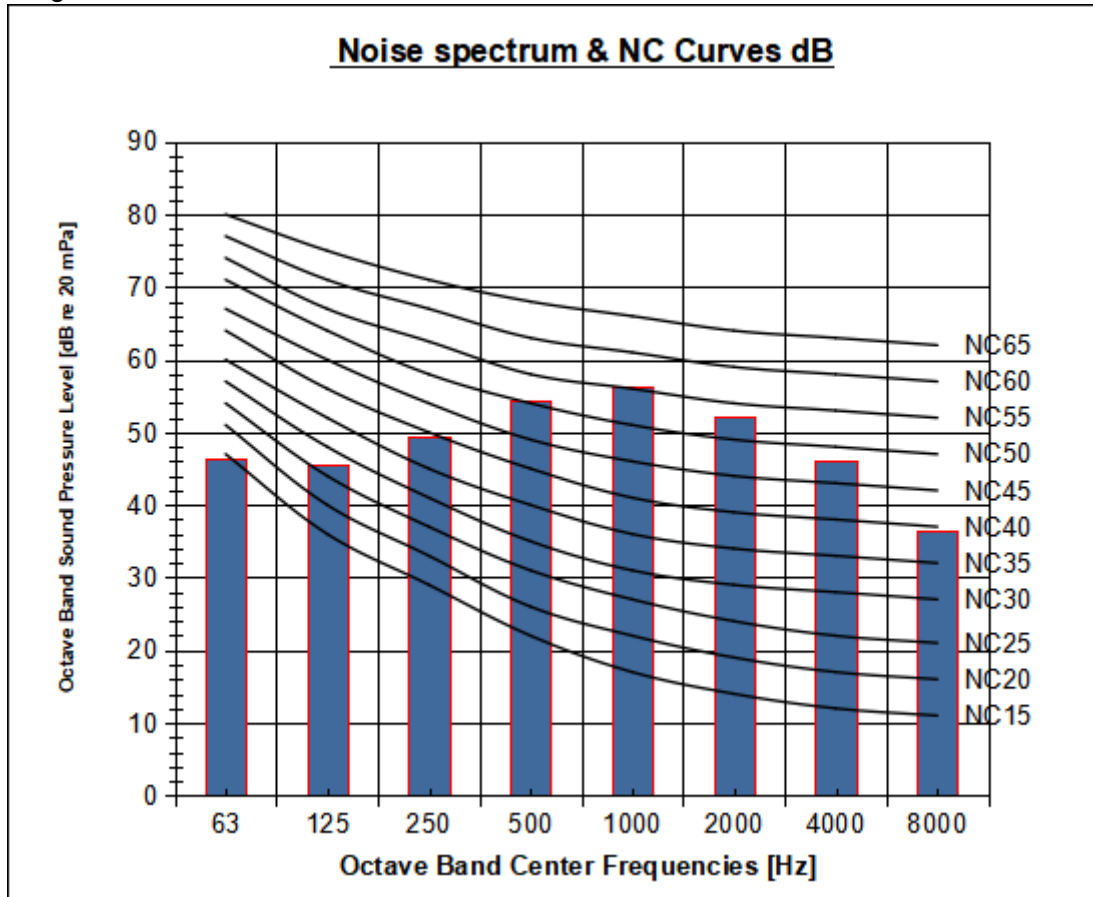


GMV-S100WL/NhD-S:

Cooling:

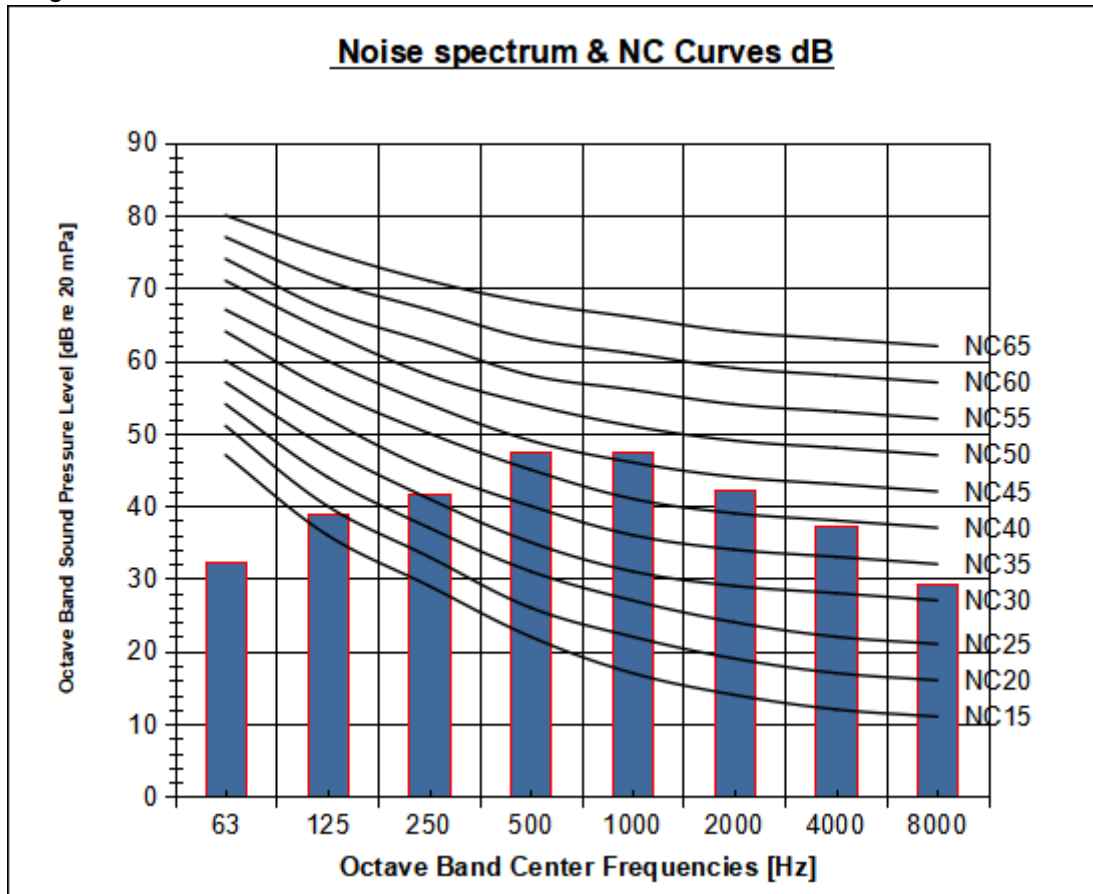


Heating:

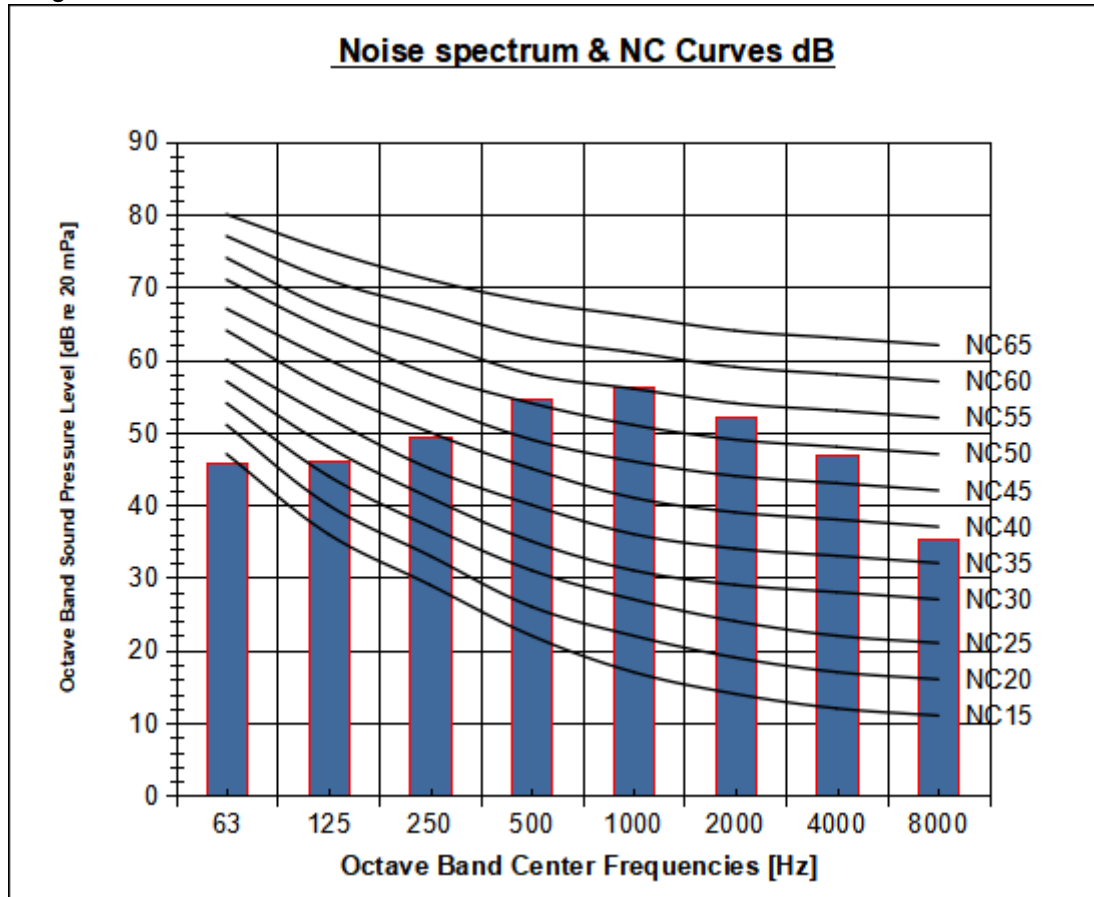


GMV-S121WL/NhD-S:

Cooling:

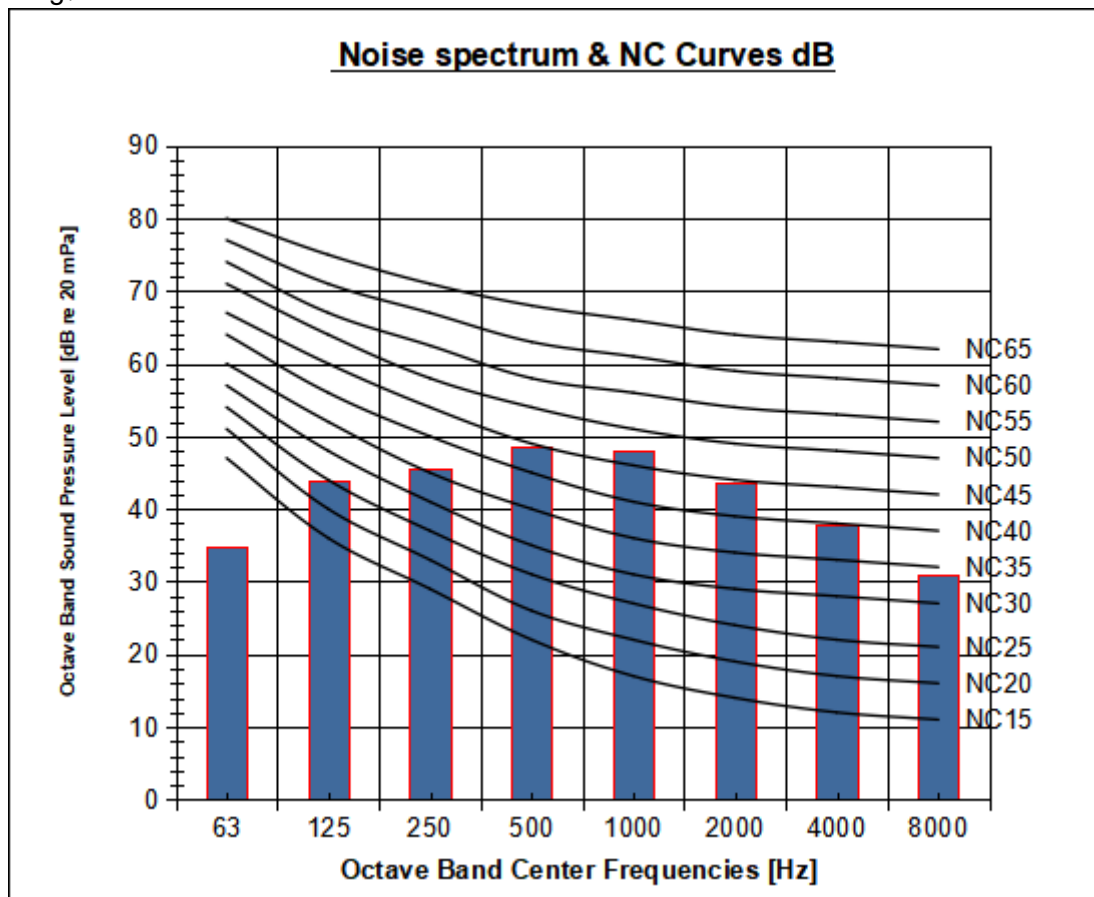


Heating:

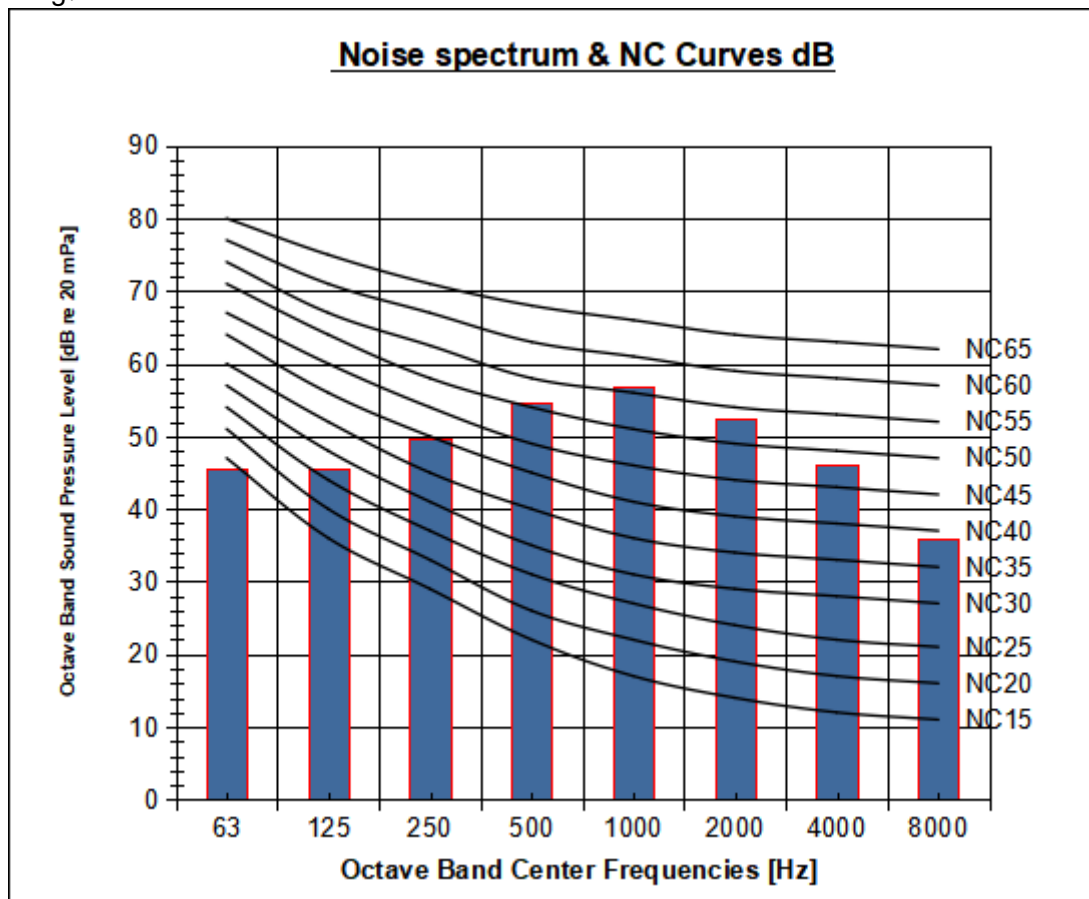


GMV-S141WL/NhD-S:

Cooling:

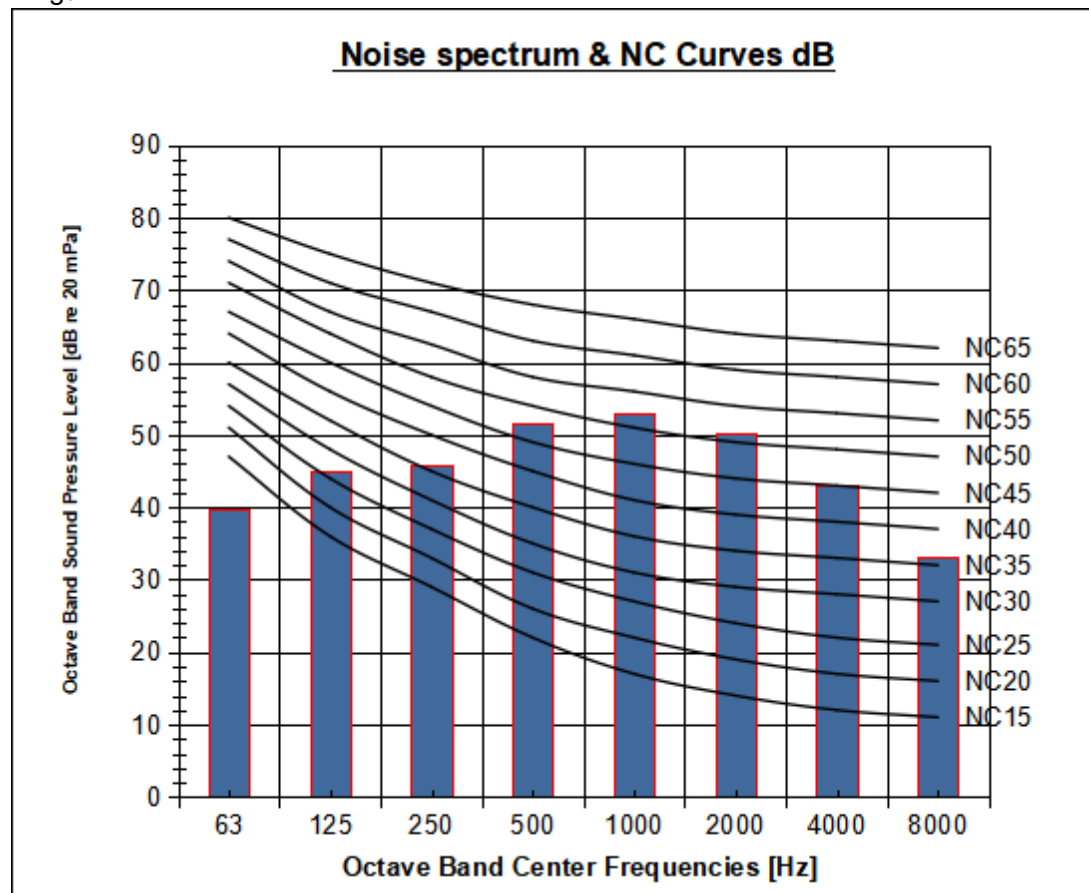


Heating:

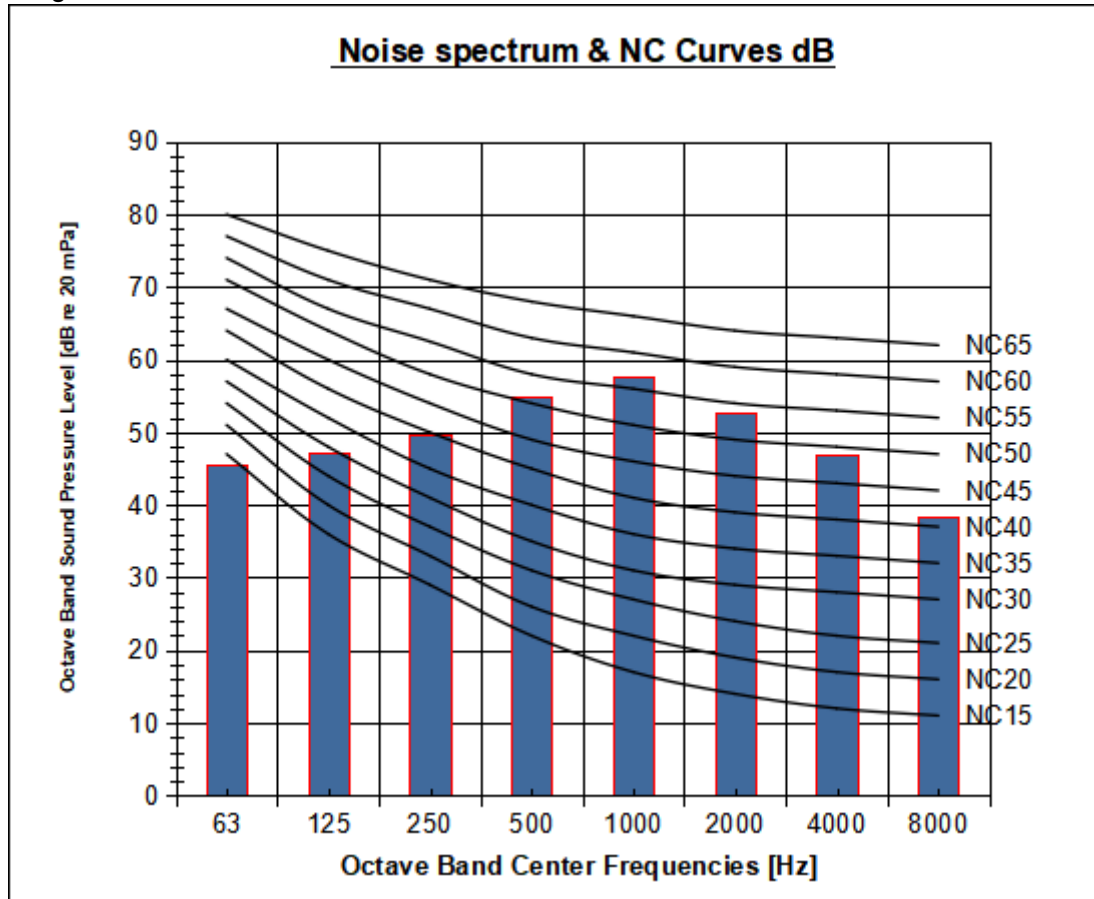


GMV-S160WL/NhD-S:

Cooling:



Heating:



6.HOMEMUM ROOM AREA FOR R32 UNIT

6.1 HOMEmum Room Area

Area of the room where the indoor unit is installed must meet the HOMEmum room area in the following table:

Table 1:

Refrigerant Amount (kg)	HOMEmum Room Area(m ²)					
	H ₀ ≥2.2m					
	H=2.2m	H=2.5m	H=3m	H=3.5m	H=4m	H=5m
2	4	3.5	2.9	2.5	2.2	1.8
2.2	4.4	3.9	3.2	2.8	2.4	2
2.4	4.8	4.2	3.5	3	2.7	2.1
2.6	5.2	4.6	3.8	3.3	2.9	2.3
2.8	5.6	4.9	4.1	3.5	3.1	2.5
3	6	5.3	4.4	3.8	3.3	2.7
3.2	6.4	5.6	4.7	4	3.5	2.8
3.4	6.8	6	5	4.3	3.7	3
3.6	7.2	6.3	5.3	4.5	4	3.2
3.8	7.6	6.7	5.6	4.8	4.2	3.4
4	7.9	7	5.8	5	4.4	3.5
4.2	8.3	7.3	6.1	5.3	4.6	3.7
4.4	8.7	7.7	6.4	5.5	4.8	3.9
4.6	9.1	8	6.7	5.8	5	4
4.8	9.5	8.4	7	6	5.3	4.2
5	9.9	8.7	7.3	6.3	5.5	4.4
5.2	10.3	9.1	7.6	6.5	5.7	4.6

Refrigerant Amount (kg)	HOMEum Room Area(m ²)					
	H ₀ ≥2.2m					
	H=2.2m	H=2.5m	H=3m	H=3.5m	H=4m	H=5m
5.4	10.7	9.4	7.9	6.8	5.9	4.7
5.6	11.1	9.8	8.2	7	6.1	4.9
5.8	11.5	10.1	8.4	7.2	6.3	5.1
6	11.9	10.5	8.7	7.5	6.6	5.3
6.2	12.3	10.8	9	7.7	6.8	5.4
6.4	12.7	11.2	9.3	8	7	5.6
6.6	13.1	11.5	9.6	8.2	7.2	5.8
6.8	13.5	11.9	9.9	8.5	7.4	6
7	13.9	12.2	10.2	8.7	7.7	6.1
7.2	14.3	12.6	10.5	9	7.9	6.3
7.4	14.7	12.9	10.8	9.2	8.1	6.5
7.6	15.1	13.3	11.1	9.5	8.3	6.7
7.8	15.4	13.6	11.3	9.7	8.5	6.8
8	15.8	13.9	11.6	10	8.7	7
8.2	16.2	14.3	11.9	10.2	9	7.2
8.4	16.6	14.6	12.2	10.5	9.2	7.3
8.6	17	15	12.5	10.7	9.4	7.5
8.8	17.4	15.3	12.8	11	9.6	7.7
9	17.8	15.7	13.1	11.2	9.8	7.9
9.2	18.2	16	13.4	11.5	10	8
9.4	18.6	16.4	13.7	11.7	10.3	8.2
9.6	19	16.7	13.9	12	10.5	8.4
9.8	19.4	17.1	14.2	12.2	10.7	8.6
10	19.8	17.4	14.5	12.5	10.9	8.7
10.2	20.2	17.8	14.8	12.7	11.1	8.9
10.4	20.6	18.1	15.1	13	11.3	9.1
10.6	21	18.5	15.4	13.2	11.6	9.3
10.8	21.4	18.8	15.7	13.5	11.8	9.4
11	21.8	19.2	16	13.7	12	9.6
11.2	22.2	19.5	16.3	13.9	12.2	9.8
11.4	22.6	19.9	16.6	14.2	12.4	10
11.6	23	20.2	16.8	14.4	12.6	10.1
11.8	23.3	20.5	17.1	14.7	12.9	10.3
12.0	23.7	20.9	17.4	14.9	13.1	10.5

Table 2:

Refrigerant Amount (kg)	HOMEum Room Area(m ²)					
	H ₀ ≥2.2m					
	H=2.2m	H=2.5m	H=3m	H=3.5m	H=4m	H=5m
2	6	5.3	4.4	3.8	3.3	2.7
2.2	6.6	5.8	4.8	4.1	3.6	2.9
2.4	7.2	6.3	5.3	4.5	4	3.2
2.6	7.7	6.8	5.7	4.9	4.3	3.4
2.8	8.3	7.3	6.1	5.3	4.6	3.7
3	8.9	7.9	6.6	5.6	4.9	4
3.2	9.5	8.4	7	6	5.3	4.2
3.4	10.1	8.9	7.4	6.4	5.6	4.5
3.6	10.7	9.4	7.9	6.8	5.9	4.7
3.8	11.3	10	8.3	7.1	6.2	5
4	11.9	10.5	8.7	7.5	6.6	5.3
4.2	12.5	11	9.2	7.9	6.9	5.5
4.4	13.1	11.5	9.6	8.2	7.2	5.8

Refrigerant Amount (kg)	HOMEum Room Area(m ²)					
	H ₀ ≥2.2m					
	H=2.2m	H=2.5m	H=3m	H=3.5m	H=4m	H=5m
4.6	13.7	12	10	8.6	7.5	6
4.8	14.3	12.6	10.5	9	7.9	6.3
5	14.9	13.1	10.9	9.4	8.2	6.6
5.2	15.4	13.6	11.3	9.7	8.5	6.8
5.4	16	14.1	11.8	10.1	8.8	7.1
5.6	16.6	14.6	12.2	10.5	9.2	7.3
5.8	17.2	15.2	12.6	10.8	9.5	7.6
6	17.8	15.7	13.1	11.2	9.8	7.9
6.2	18.4	16.2	13.5	11.6	10.1	8.1
6.4	19	16.7	13.9	12	10.5	8.4
6.6	19.6	17.2	14.4	12.3	10.8	8.6
6.8	20.2	17.8	14.8	12.7	11.1	8.9
7	20.8	18.3	15.3	13.1	11.5	9.2
7.2	21.4	18.8	15.7	13.5	11.8	9.4
7.4	22	19.3	16.1	13.8	12.1	9.7
7.6	22.6	19.9	16.6	14.2	12.4	10
7.8	23.1	20.4	17	14.6	12.8	10.2
8	23.7	20.9	17.4	14.9	13.1	10.5
8.2	24.3	21.4	17.9	15.3	13.4	10.7
8.4	24.9	21.9	18.3	15.7	13.7	11
8.6	25.5	22.5	18.7	16.1	14.1	11.3
8.8	26.1	23	19.2	16.4	14.4	11.5
9	26.7	23.5	19.6	16.8	14.7	11.8
9.2	27.3	24	20	17.2	15	12
9.4	27.9	24.5	20.5	17.5	15.4	12.3
9.6	28.5	25.1	20.9	17.9	15.7	12.6
9.8	29.1	25.6	21.3	18.3	16	12.8
10	29.7	26.1	21.8	18.7	16.3	13.1
10.2	30.3	26.6	22.2	19	16.7	13.3
10.4	30.8	27.2	22.6	19.4	17	13.6
10.6	31.4	27.7	23.1	19.8	17.3	13.9
10.8	32	28.2	23.5	20.2	17.6	14.1
11	32.6	28.7	23.9	20.5	18	14.4
11.2	33.2	29.2	24.4	20.9	18.3	14.6
11.4	33.8	29.8	24.8	21.3	18.6	14.9
11.6	34.4	30.3	25.2	21.6	18.9	15.2
11.8	35	30.8	25.7	22	19.3	15.4
12.0	35.6	31.3	26.1	22.4	19.6	15.7



NOTES!

- ① H₀ is the release height, H_{inst} is the installation height, H₀ is higher than H_{inst}.
- ② H is the floor-to-ceiling height of the room.
- ③ If the actual H is not exactly equal to the value in the table, the smaller H in the table need to be taken.
- ④ For spaces except lowest underground floor of the building, the total refrigerant amount and the room must meet the requirements of Table 1. If the cut-off valve box is installed, the releasable amount mrl after cutoff and the room area must meet the requirements of Table 1.

- ⑤ For lowest underground floor of the building, the total refrigerant amount and the room area must meet the requirements of Table 2. If the cut-off valve box is installed, the releasable amount m_{rl} after cutoff and the room area must meet the requirements of Table 2, while the total refrigerant amount and the room area must also meet the requirements of Table 1.
- ⑥ If the actual releasable charge is not exactly equal to the value in the table, the larger releasable charge in the table need to be taken.
- ⑦ This manual is only applicable to a single room.
- ⑧ Correct the HOMEmum room area of the space A_{min} by multiplying by an altitude adjustment factor (AF) based on for building site ground level altitude (Halt) in meters.

Halt	0	200	400	600	800	1000	1200	1400	1600
AF	1.00	1.00	1.00	1.00	1.02	1.05	1.07	1.10	1.12
Halt	1600	1800	2000	2200	2400	2600	2800	3000	3200
AF	1.12	1.15	1.18	1.21	1.25	1.28	1.32	1.36	1.40

- ⑨ The HOMEmum airflow is 240m³/h.
- ⑩ LEAK DETECTION SYSTEM installed. Unit must be powered except for service.

6.2 Calculation Method of Releasable Charge (m_{REL})

The shut-off valve box can be installed at the outdoor unit side, or the indoor unit side. When the indoor unit detects a refrigerant leak, all shut-off valves will automatically close to isolate the refrigerant system and prevent further leakage. The releasable charge (m_{rl}) refers to the total amount of refrigerant remaining in all downstream indoor units and pipeline that may leak into the room.

$$m_{rl} = (0.133 \times m_C) + 0.924 + m_1 + m_2$$

m_C is total refrigerant amount in the system (including the default refrigerant of outdoor unit and the additional refrigerant charge).

m_1 is the releasable charge of all indoor units downstream of the shut-off valve box.

m_2 is the releasable charge of all pipelines downstream of the shut-off valve box.

If the calculated m_{rl} is larger than the m_C , the m_C should be used as m_{rl} .

m_1 of different indoor unit must refer to corresponding Owner's Manual of indoor unit.

All pipelines in the system are divided into three types A/B/C according to pipe dimension. Count the total pipe length of each type and find out m_2 of corresponding type in the table below. Add up all m_2 of each type to obtain the m_2 of the system.

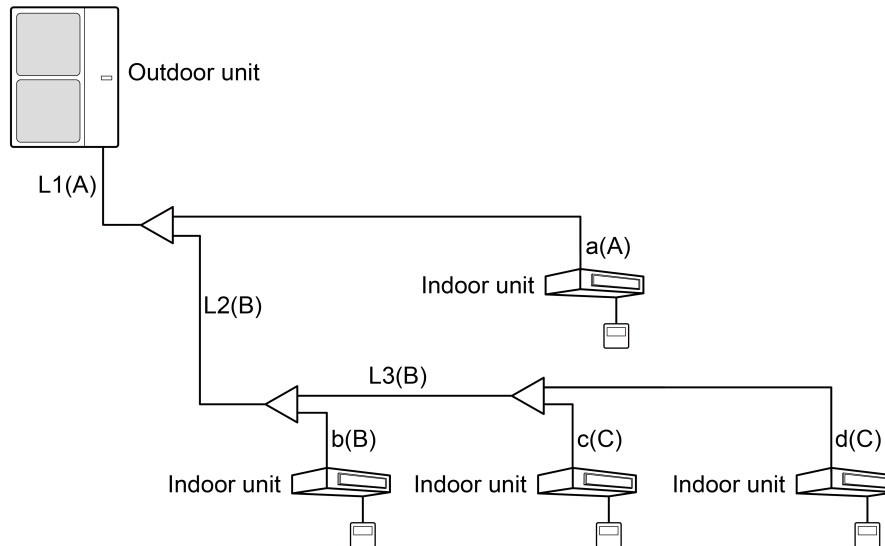
m_2 of pipeline:

Unit: kg

Pipe Type		A	B	C
Gas Pipe (mm)		15.9	12.7	9.52
Liquid Pipe (mm)		9.52	6.35	6.35
Total Pipe Length m	5	0.31	0.13	0.11
	10	0.61	0.26	0.22
	15	0.91	0.38	0.33
	20	1.21	0.51	0.44
	25	1.52	0.64	0.55
	30	1.82	0.76	0.66

Pipe Type		A	B	C
Gas Pipe (mm)		15.9	12.7	9.52
Liquid Pipe (mm)		9.52	6.35	6.35
Total Pipe Length m	35	2.12	0.89	0.77
	40	2.42	1.01	0.87
	45	2.72	1.14	0.98
	50	3.03	1.27	1.09
	55	3.33	1.39	1.20
	60	3.63	1.52	1.31
	65	3.93	1.64	1.42
	70	4.23	1.77	1.53
	75	4.54	1.90	1.64
	80	4.84	2.02	1.74
	85	5.14	2.15	1.85
	90	5.44	2.27	1.96
	95	5.74	2.40	2.07
	100	6.05	2.53	2.18

For example:



There are four indoor units in the system:

GMV-ND71G/NhA1C-T*1 and GMV-ND28G/NhA1C-T*3.

The total length of type A pipeline L1+a is 10m. m_2 of type A is 0.61kg.

The total length of type B pipeline L2+L3+b is 30m. m_2 of type B is 0.76kg.

The total length of type C pipeline c+d is 20m. m_2 of type C is 0.44kg.

The system refrigerant amount is 7kg.

The releasable charge (m_{rl}) should be calculated as below:

$$m_1 = 0.39 + 0.2 \times 3 = 0.99 \text{ kg}$$

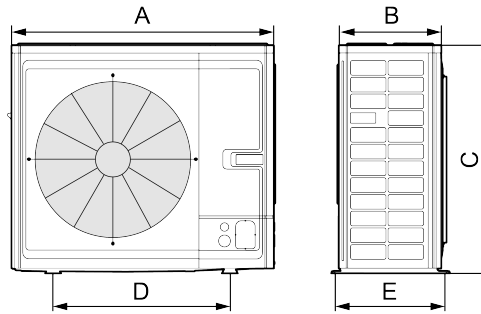
$$m_2 = 0.61 + 0.76 + 0.44 = 1.81 \text{ kg}$$

$$m_{rl} = 0.573 \text{ kg} + 0.924 \text{ kg} + 0.99 \text{ kg} + 1.81 \text{ kg} = 4.297 \text{ kg}$$

For 3 meters high room, the room area must not less than 11.3m². If the room area is less than 11.3m², measures need to be taken to make the room area meet the requirements, such as changing the piping design of the system to reduce the m_{rl} .

7. UNIT INSTALLATION SPACE REQUIREMENTS

7.1 Outline Dimension and Installation Hole



Unit: mm

Model	A	B	C	D	E
GMV-S80WL/NhD-S	990	370	955	755	395
GMV-S100WL/NhD-S					
GMV-S121WL/NhD-S					
GMV-S141WL/NhD-S					
GMV-S160WL/NhD-S					

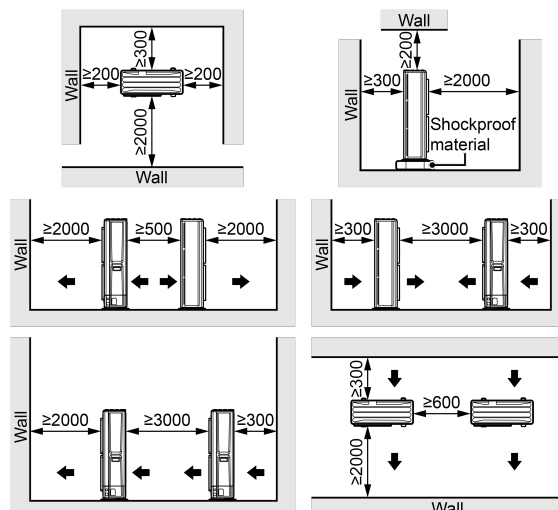
7.2 Location Selection Precautions for ODU

- (1) Select a location which is strong enough to hold unit's weight so that unit can stand still and erect.
- (2) The installation position should withstand strong wind, typhoon and earthquake. The unit must be installed stably.
- (3) Please keep the unit away from inflammable, explosive and corrosive gas or waste gas.
- (4) Make sure the location has space for heat exchange and maintenance so that unit can operate reliably with good ventilation.
- (5) ODU and IDU should stay as close as possible to shorten the length of refrigerant pipe and reduce bend angles.
- (6) Select a location which is out of children's reach. Keep the unit away from children.

7.3 Installation Space Requirements for ODU

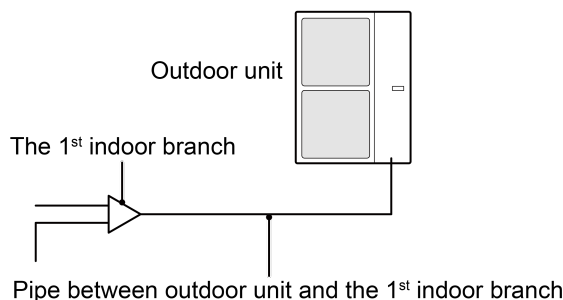
Maintenance space and unit ventilation should be considered when installing the unit. Installation method should base on the actual situation.

Unit: mm



8.2 Dimension of Pipe (Main Pipe) from ODU to the 1st Indoor Branch

Dimension of pipe from ODU to the 1st indoor branch will be determined by the dimension of outdoor connection pipe.

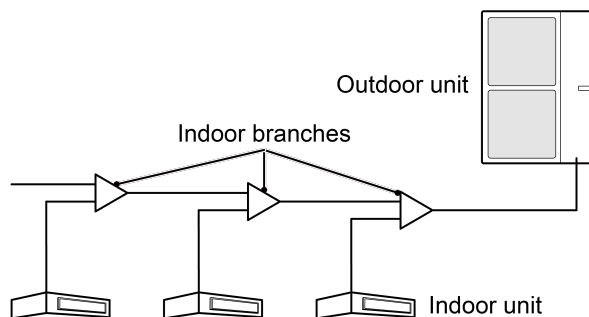


Dimension of outdoor connection pipe.

Basic module	Pipe dimension		
	Gas pipe (mm)	Liquid pipe (mm)	High pressure gas pipe (mm)
GMV-S80WL/NhD-S	Φ15.9	Φ9.52	Φ12.7
GMV-S100WL/NhD-S	Φ15.9	Φ9.52	Φ12.7
GMV-S121WL/NhD-S	Φ15.9	Φ9.52	Φ12.7
GMV-S141WL/NhD-S	Φ15.9	Φ9.52	Φ12.7
GMV-S160WL/NhD-S	Φ15.9	Φ9.52	Φ12.7

8.3 Selection of Indoor Branches

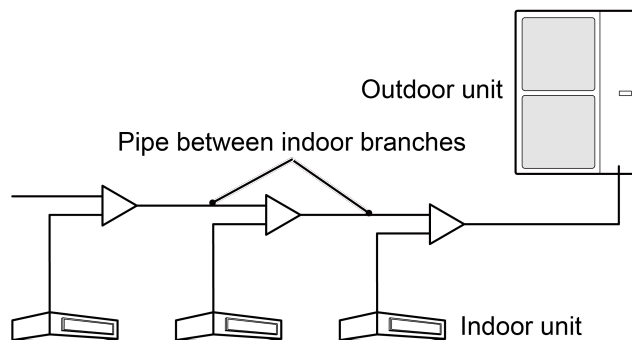
Select indoor branches according to the total capacity of downstream indoor units. If the capacity exceeds that of the outdoor unit, please select according to the capacity of outdoor units.



R32 Refrigerant system	Total capacity of downstream indoor units X(kW)	Model
Y type branch	$X < 20$	FQ01A/A
	$20 \leq X \leq 30$	FQ01B/A
	$30 < X \leq 70$	FQ02/A
	$70 < X \leq 135$	FQ03/A
	$135 < X$	FQ04/A

8.4 Dimension of Pipe between Indoor Branches

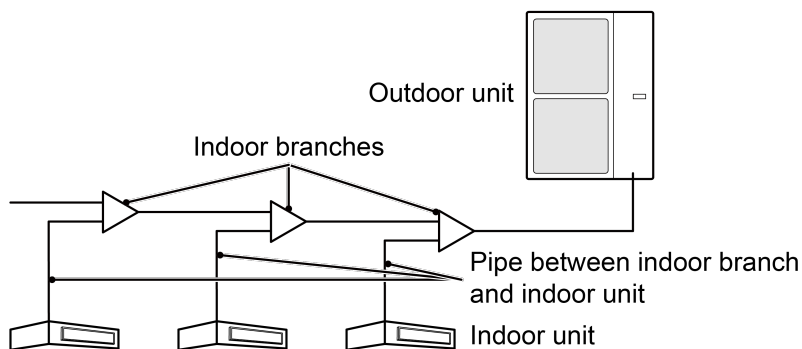
Select pipe between indoor branches according to the capacity of downstream indoor units; if the capacity exceeds that of the outdoor unit, please select according to the capacity of outdoor units.



Total capacity of downstream indoor unit C(kW)	Gas pipe (mm)	Liquid pipe (mm)
$C \leq 5.6$	$\Phi 12.7$	$\Phi 6.35$
$5.6 < C \leq 14.2$	$\Phi 15.9$	$\Phi 9.52$
$14.2 < C \leq 22.0$	$\Phi 19.05$	$\Phi 9.52$

8.5 Dimension of Pipe between Indoor Branch and IDU

Dimension of pipe between indoor branch and indoor unit should be consistent with the dimension of indoor pipe.



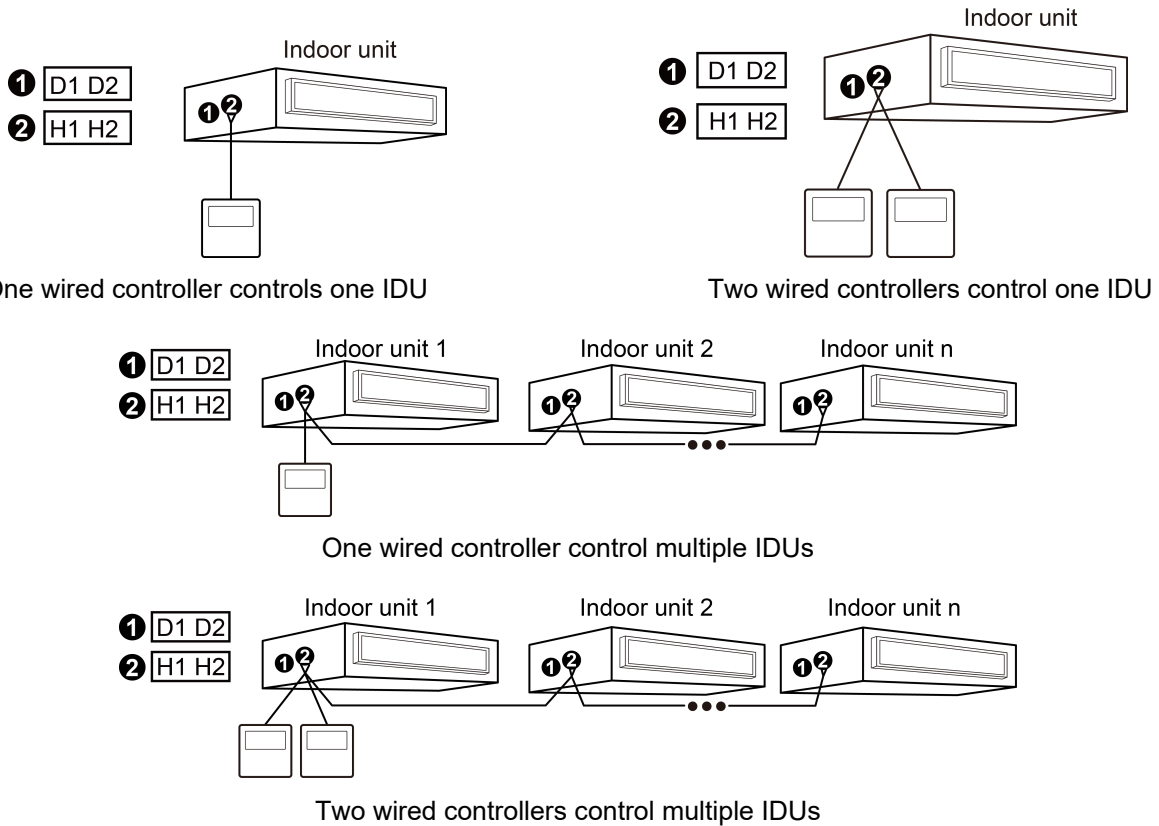
Rated capacity of IDU C(kW)	Gas pipe (mm)	Liquid pipe (mm)
$C \leq 2.8$	$\Phi 9.52$	$\Phi 6.35$
$2.8 < C \leq 5.0$	$\Phi 12.7$	$\Phi 6.35$
$5.0 < C \leq 14.0$	$\Phi 15.9$	$\Phi 9.52$
$14.0 < C \leq 16.0$	$\Phi 19.05$	$\Phi 9.52$
$16.0 < C \leq 28.0$	$\Phi 22.2$	$\Phi 9.52$

NOTE! If the distance between IDU and its nearest branch is over 10m, then the liquid pipe of IDU (rated capacity $\leq 5.0\text{kW}$) shall be enlarged.

9. COMMUNICATION WIRING SYSTEM

9.1 Communication Connection Method between IDU and Wired Controller

There are 4 connection ways between IDU and wired controller, please refer to the following:



When two wired controllers control several IDUs at the same time, the wired controller can be connected to any IDU, the connected IDUs shall be the IDU from the same series, meanwhile, set one of the wired controllers as the slave wired controller and shall be only set one. The amount of IDU controlled by wired controller shall not exceed 16 sets, and the connected IDUs shall be in the same IDU's network.

Set slave wired controller under ON/OFF status:

Long press "Function" button for 5s of the wired controller which needs to be set as the slave wired controller, the temperature area will display "C00", then long press "Function" button for 5s to enter parameter setting interface for wired controller, at this time, the temperature area will display "P00" acquiescently.

Press "▲" or "▼" button to select P13 as the parameter code and "Mode" button to switch to parameter value setting. At this time, the parameter value will blink, then press "▲" or "▼" to select "02" code. Press "Confirm/Cancel" button to complete the setting.

Press "Confirm/Cancel" button to return to the previous operation, until existing parameter setting.

Parameter setting list for the user is as follow:

Parameter code	Parameter name	Parameter range	Defaulted value	Remark
P13	Address setting for wired controller	01: Master wired controller 02: Slave wired controller	01	When two wired controllers control one (or several) set(s) of IDU at the same time, the address of two wired controllers shall be different. Apart from setting the wired controller address, the slave wired controller can not set unit parameter.

NOTICE!

- ① All wired controllers are set as master wired controllers at the factory.
- ② Under parameter setting status: the buttons of fan speed, timer, sleep and swing are invalid, press "ON/OFF" button to return to the main interface immediately, but it will not execute the startup/shutdown operation.
- ③ Under parameter setting status, the signal of remote controller is invalid.

9.2 Connection Method between Duct Type IDU and Remote Signal Receiving LED Panel

Connection method between duct type IDU and receiver (remote signal receiving LED panel)

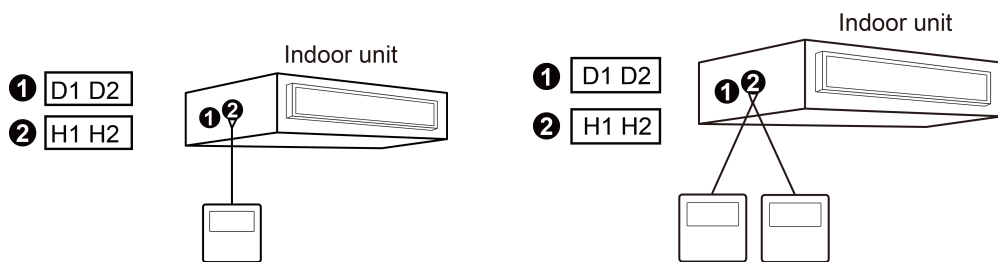


Figure 1 One Receiver Controls One Indoor unit

Figure 2 One Receiver and One Wired Controllers Control One Indoor unit

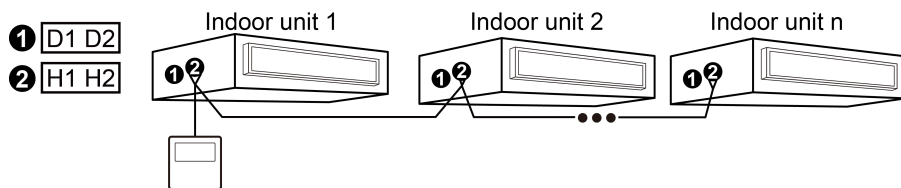


Figure 3 One Receiver Controls Several Multi VRF IDUs Simultaneously

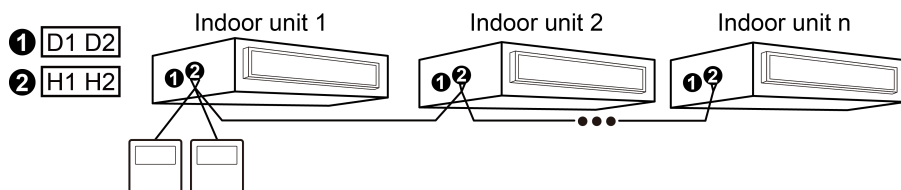


Figure 4 One Receiver and One Wired Controller Control Several Multi VRF IDUs Simultaneously

NOTICE!

- ① When the remote signal receiving LED panel is connected with multi VRF unit, the wiring methods as shown in Figure 1, Figure 2, Figure 3 and Figure 4 can be adopted, but please pay attention to the follow:
 - a) When one remote signal receiving LED panel or one remote signal receiving LED panel and one wired controller control several indoor units simultaneously, the remote signal receiving LED panel can connect any indoor unit, but the connected indoor unit shall be of the same indoor unit series and the connected indoor unit shall be in the same multi VRF system. When it is applied together with the wired controller, please set the indoor unit quantity of group control in the wired controller.
 - b) When the remote signal receiving LED panel controls several indoor units simultaneously, the settings for all indoor units are the same.
- ② In the wiring methods as shown in Figure 2, Figure 4, there can't be two remote signal receiving LED panels simultaneously and only one wired controller and one remote signal receiving LED panel are allowable in the same system. The wired controller can be set as master or slave wired controller and the remote signal receiving LED panel address will switch automatically (no need to set remote signal receiving LED panel address manually) according to the wired controller address (master/slave wired controller). The total quantity of remote signal receiving LED panel and wired controller can't exceed two.
- ③ The remote signal receiving LED panel interface is non-polar, but it can't be connected with heavy current.
- ④ Wired controller and remote signal receiving LED panel can be used at the same time.
- ⑤ When selecting remote signal receiving LED panel, selecting the remote controller at the same time.

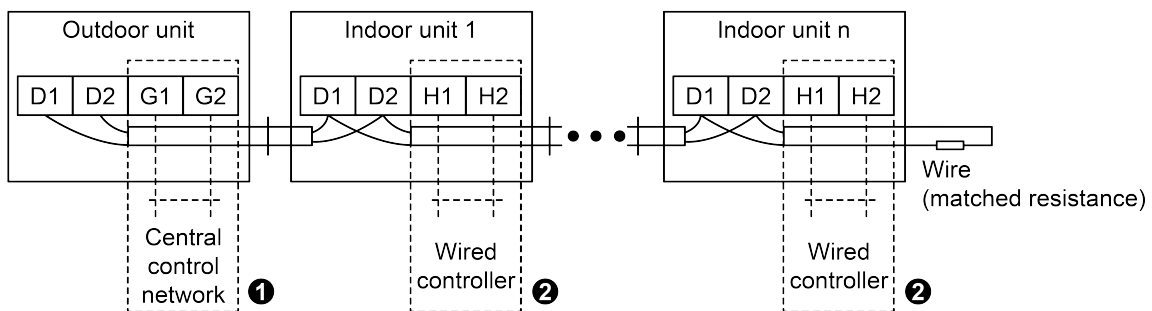
10. EXTERNAL ELECTRICAL WIRING DIAGRAM

10.1 External Wiring Interface

External wiring interface	Power supply	Number of cable cores	3
		Mark	L1 L2 G
	IDU/ODU communication	Number of cable cores	2
		Mark	D1 D2
	Central control	Number of cable cores	2
		Mark	G1 G2

10.2 External Wiring

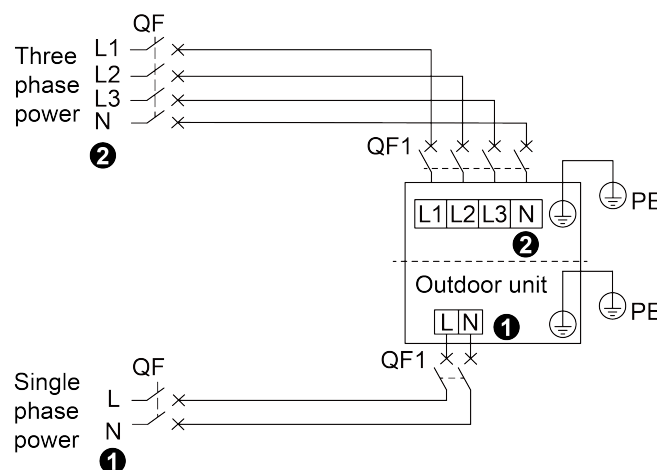
Connection of power cord and communication cord. Supply power for each unit separately. Each unit shall be equipped with a circuit breaker for short circuit and abnormal overload protection.



Note: (1) Whether the unit is with centralized network control function or wired controller function, please refer to the circuit diagram. For outdoor units equipped with the function of central control, connect wires according to drawing ①. For indoor units with the function of wired control, connect wires according to drawing ②.
 (2) n represents the maximum number of connectable indoor units, which is determined by the capacity of the outdoor unit. For details, please refer to the capacity configuration instructions of the unit.



NOTE: Keep all the units in the same system energized during using. Otherwise, the system will not operate normally.



NOTE: Wiring of single phase unit shall refer to ① and three phase unit shall refer to ②.



NOTE: Connect the power cord to the corresponding terminal and grounding screws, press and fix the power cord with wire clip. Please refer to the circuit diagram for wiring.

11. CALCULATION OF ADDITIONAL REFRIGERANT CHARGE

(1) Calculation of Additional Refrigerant Charge:

1) Additional refrigerant charge $R = \text{pipeline additional refrigerant charge } A + \text{indoor unit additional refrigerant charge } B + \text{high pressure gas pipe additional refrigerant charge } C +$

2) Calculation of pipeline additional refrigerant charge A

Pipeline additional refrigerant charge $A = \sum (\text{Liquid pipe length} \times \text{amount of additional refrigerant of each 1m})$

Diameter of liquid pipe (mm)	Φ19.05	Φ15.9	Φ12.7	Φ9.52	Φ6.35
kg/m	0.240	0.160	0.100	0.051	0.018

3) Calculation of indoor unit additional refrigerant charge B

Additional refrigerant charge $B = \text{additional refrigerant charge of Standard indoor unit} + \text{additional refrigerant charge of Special indoor unit indoor unit.}$

The Additional refrigerant charge of indoor units according to the table below.

Quantity of Standard indoor units	additional refrigerant charge/ kg
≤3	0.25
4	0.50
5	0.70
6	0.90
≥7	1.20

Quantity of special indoor units (hot water generator or hot water converter)	additional refrigerant charge kg
1	0.20
2	0.40
3	0.60

4) Calculation of high pressure gas pipe additional refrigerant charge C

High pressure gas pipe additional refrigerant charge $C = \sum \text{High pressure gas pipe length} \times \text{amount of additional refrigerant of each 1m})$

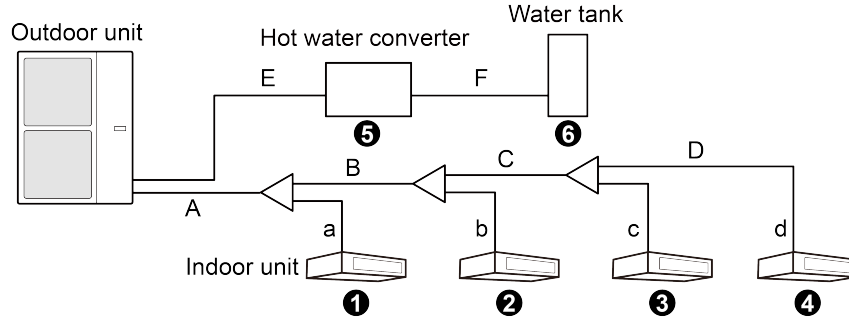
Diameter of high pressure gas pipe (mm)	Φ19.05	Φ15.9	Φ12.7	Φ9.52
kg/m	0.05	0.03	0.02	0.012

NOTE!

The maximum refrigerant charging volume for the system can't exceed 7 kg (including the refrigerant charged in the factory).

Record the amount of refrigerant added to facilitate after-sales maintenance. After ensuring that the system does not leak and the compressor is not working, first charge the specified amount of R32 into the unit from the injection port of the outdoor unit liquid pipe valve until the required amount is reached. If the amount of refrigerant that needs to be added cannot be filled quickly due to pressure rise in the pipe, then power on the unit in cooling mode and charge the refrigerant through the gas valve of the outdoor unit.

(2) Calculation example.



IDU:

No.	IDU 1	IDU 2	IDU 3
Model	Duct type GMV-ND80PHS/NhD-T	Duct type GMV-ND50PHS/NhD-T	Duct type GMV- ND36PHS/NhD-T
No.	IDU 4	IDU 5	IDU 6
Model	Duct type GMV-ND25PHS/NhD-T	NRZ16G/NhB-S	SXTD300LCJW/Za-K

Liquid pipe:

No.	A	B	C	D
Pipe size	Φ9.52	Φ9.52	Φ9.52	Φ6.35
Length	10m	5m	5m	5m
No.	a	b	c	d
Pipe size	Φ9.52	Φ6.35	Φ6.35	Φ6.35
Length	3m	3m	2m	1m
No.	E	F	/	/
Pipe size	Φ12.7	Φ9.52	/	/
Length	10m	5m	/	/

Total length of each liquid pipe.

Φ9.52: A+B+C+a=10+5+5+3=23m.

Φ6.35: D+b+c+d=5+3+2+1=11m.

Total length of each high pressure gas pipe.

Φ12.7: E=10m.

Φ9.52: F=5m.

Quantity of standard indoor indoor unit: 4 sets.

Quantity of special indoor indoor unit: 1 set.

Therefore, the minimum quantity of additional refrigerant = (23×0.051+11×0.018) +
(10×0.03+5×0.015)+(0.5+0.2) = 2.446kg.

12. SAFETY NOTICES

- (1) The unit should not be installed in places with high pH, high voltage fluctuations, such as on vehicles or ships.
- (2) Do not touch the fins of the heat exchanger. Improper touch can cause damage.
- (3) Do not mix other substances apart from refrigerant in the refrigerant circuit during installing or moving the unit, and do not leave any air in the pipe. If air or other substances are mixed within the pipe, the system pressure will rise, the compressor may burst and damage.
- (4) Don't charge the non-specified refrigerant when installing or moving the unit, otherwise, it might cause poor operation, malfunction, mechanical breakdown, etc., or even cause major safety accident.
- (5) When moving the unit or repairing the recycled refrigerant, be sure to use the pressure gauge. Conduct the cooling operation first, then completely shut down the valve (liquid valve) at high pressure side. When the pressure gauge displays 0~0.05MPa, and completely shut down the valve (gas valve) at low pressure side and immediately stop running the unit and cut off the power.
- (6) When recovering the refrigerant, please make sure to completely shut down the liquid valve and gas valve, and cut off the power before dismantling the connection pipe; otherwise, there will be air intrusion, and resulting in pressure rise within the system, the compressor may burst and damage.
- (7) When installing the unit, make sure that the connection pipe is securely attached before starting the compressor. If the compressor is started before the connection pipe is well attached and the cut off the valve is open, the air will be sucked in, resulting in system pressure rise, the compressor may burst and cause injury.
- (8) Wiring between indoor and outdoor units must be correctly connected with the specified wires, and the wiring terminal shall not be affected by external forces. Poor connection or poor fixing might cause fire accident.
- (9) No connection is allowed in the middle of the wire. When the length of the connecting wire is not enough, please contact the designated service store to re-equip a specific wire of sufficient length.

13. OPTIONAL ACCESSORIES

—		Model	Remarks
Branch		FQ01A/A,FQ01B/A,FQ02/A,FQ03/A,FQ04/A	—
Wireless remote controller		YAP1F	Optional: Duct type indoor units Standard: Cassette indoor units
Wired controller		XE7C-23/H	Optional: Cassette indoor units Standard: Duct type indoor units
Linkage Controller		LE60-24/H1	With access control and dry contact signals detection function
Centralized controller		CE52-24/F(C)	—
E-Smart Zone controller		CE54-24/F(C)	—
Debugger		CE42-24/F(C)	—
Debugging software		DE40-33/A(C)	—
Remote monitoring system	Software	FE30-24/DF(B)	—
	Controller	ME20-24/D1(T)	
Remote signal receiving LED panel		JS13	—
VRF Protocol Gateway		ME30-24/D1(BM)	Gateway capacity: 255 indoor units; it can output two kinds of BMS data: Modbus/BACnet
Modbus Gateway(HOME)		ME30-24/E6(M)	Gateway capacity: 128 indoor units (within 16 systems)
H2M Gateway		ME31-33/EH1(M)	Gateway capacity: one indoor unit (similar with the wired controller; it can control multiple units), it can output Modbus data



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