Design & Access Statement

University College London
Queen Square House Ground Floor Refurbishments

Our project ref: 6773

Full application for the following alterations:

- Installation of condenser unit externally at Ground floor level

Revision Information

Rev.	Detail	Date	Prepared
P01	Issued for Planning Application	2022-12-02	sg

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01 Introduction

a) Objective

This application, relating to the refurbishments being undertaken within the Ground floor of UCL Queen Square House, intends to set out in general terms aspects of the proposals that will require planning consent, with a view to obtaining full planning permission for the works. Please refer to the attached drawings for full detail of the proposed works – this statement should be read in contingency with this information.

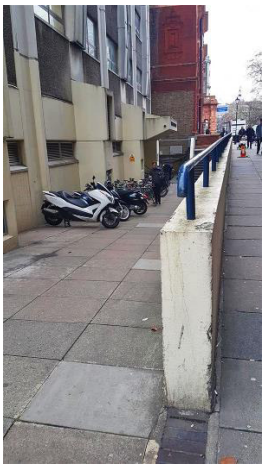
No drawings are to scale within the report, unless specifically stated. Please refer to the accompanying drawings for scaled figures.

b) Building History and Existing Condition

The existing Queen Square House is a concrete frame building constructed in the 1970s, comprising 10 storeys originally designed for laboratory research functions. Its footprint at ground floor is approximately 1100m^2. The building is not listed by Historic England.

Some external photos of the building and its external areas in its current state, however noting these are the prominent building frontages for information/background and do not show areas where the alterations are proposed:

Front entrance from Queen Anne's Walk



View of Queen Anne's Walk, entrance left

Corner approach junction Guildford St. – Queen Anne's Walk

Guildford St. Elevation

The building occupies a corner plot location between Guildford Street and Queen Anne's Walk.

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c) Previous Planning Applications

The following approved relevant and similar planning applications have been made to the Queen Square House building and flanks:

- Application no. 207/1937/P [Approved]: *Erection of block wall and metal louvers enclosure at ground level adjoining the service yard access off Guilford Street to accommodate new plant associated with a new Functional Magnetic Resonance Scanner located at basement level.*
- Application no. 2009/4974/P [Approved]: *Erection of plant to flat roof on the north east corner of hospital building (Class C2) fronting Guilford Street.*
- Application no. 2021/5687/P [Approved]: *Installation of a new air handling unit (AHU) and associated support gantry….*
- *Application no. 2022/3498/P* [Approved]: *Installation of a condenser unit at rear 1st floor level, and alterations to rear 3rd floor window to allow venting of medical gas pipes*.

Those above relate primarily to plant-related modifications. Two other applications have been made for building however were lodged in the 1960s are not of similar nature to the works proposed.

This application is for works to be undertaken in areas nearby to the areas in the latter applications:

- ref 2021/5687/P, which was granted full planning consent 14th January 2021
- ref 2022/3498/P, which was granted full planning consent 21st September 2022

The works proposed in this application do not superseded or replace those that have already been granted consent, and are shown to be installed within the existing drawings for this application as these works are currently underway.

d) Purpose of Application

The main drive for the project is to provide new clinical trials accommodation, and to refurbish a series of shared building spaces.

To deliver these spaces, plant alterations are required which will result in the following external alterations:

- Installation of an condenser unit externally at Ground floor

These amendments are set out in greater detail within the following statement sections.

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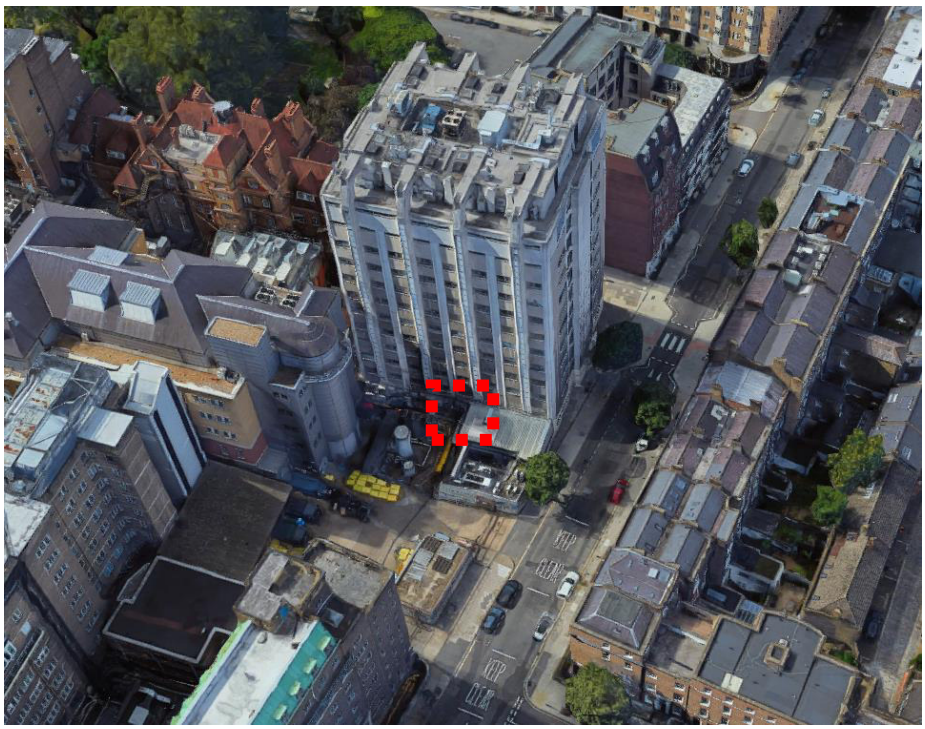
02 Design Statement

a) Overview

The below satellite image illustrates in overview the area within the scope of alterations (outlined in red):



Satelite image indicating areas where alterations are proposed (not to scale)

The red outline indicates the external condenser location at Ground Floor.

b) Proposed Plans

Please refer to relevant drawings:

- ***6773-L(00)22*** / Site, Location and Proposed Floor Plan
- ***6773-L(2-)30*** / North and West Locations - Existing
- ***6773-L(2-)31*** / South and East Locations - Existing
- ***6773-L(2-)32*** / North and West Locations - Proposed
- ***6773-L(2-)33*** / South and East Locations – Proposed

c) Photo Overlays, Visibility from Roadways

As noted above, a new condenser is required to serve the new clinical areas. This will be located within the external areas toward the goods service area under UCL remit and backing on to Great Ormond street hospital. Please refer to the drawings which demonstrate the proposals in elevation and plan.

The photograph below (taken from within the goods service yard escape route) indicates the location where the condenser unit is proposed.

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Photos within back of house goods yard indicating location where new condenser unit is proposed highlighted in red. Note sufficient clear width is provided for fire escape.

As can be seen in the above, there are several existing condenser units adjacent. It would be freely accessible for maintenance and and in a position not adversely affecting access to a number of existing condenser units adjacent. Condenser refrigerant pipework will run from the unit into the building directly and not affect the building elevation.

Photo from Guildford Street illustrating where new condenser unit is proposed behind building massing, highlighted in red.

Being located within the gated area that is off the main street, and hidden from view behind existing gas silos and adjoining masonry walls, the condenser would not be visible from the North side of the building along Guildford Street. This can also be understood from the satellite imagery on the previous page; the unit would not be visible from any other highway or aspect that can be accessed within the public realm.

The new unit will not affect building users internally as there are no windows to this façade. New masonry brick cavity walls installed (as proposed in approved application 2021/5687/P) will be of substantial density and also insulated so that there will be no noticeable uplift in plant noise from an internal standpoint.

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Materiality

Condenser Unit

The proposed condenser unit will be of metal external casing, and as-supplied in a white polyester powdercoated finish as illustrated within specification sheets appended. It should be noted that the external element proposed is the REYQ8U unit:

Acoustic Impact

The proposed condenser unit specification / product data sheets are appended to this statement. A background noise survey was produced in March 2020; this is attached for reference and it should be noted that the contractor will undertake post-completion noise surveys to verify that the new condenser unit will emit 10dB less than the current noise emitted from the plant in that lightwell. This effectively means that once the proposed plant is installed, noise emissions from that area will be no worse than the previous 'as existing' scenario.

03 Access Statement

a. Access Statement

The condenser is a floorstanding unit and will be mounted at ground floor level, and so will be freely accessible without requirement for elevated platforms or via ladder. The unit will be orientated so that elements which require scheduled maintenance access are unobstructed.

b. Maintenance Statement

The condenser does not require especially regular access and inspection intervals are annual. Should the unit ever need to be replaced, it would be hoisted in from from the building service yard in line with client-reviewed and approved Risk Assessment and Mitigation Strategies (RAMS) that are appropriate and suitable for the weight and size of the unit.

c. Health & Safety Statement

Safety is always of paramount importance when considering the access and maintenance strategy of new proposals. Where this report identifies some outline safe methods of working and installation, review of RAMS will be required for any works that present a risk to health and safety throughout the project to ensure the appropriate installation and maintenance strategies are in place prior to starting any works. UCL employ stringent H&S review processes throughout the project lifecycle and regular meetings include agenda items to review H&S elements.

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04 Sustainability

a) Mini-SKA Tracker

UCL requires in all its projects that sustainable design is implemented with a view to utilising environmentally-friendly systems and materials in the installations. Due to the size of this project, a 'mini' (rather than full) SKA tracker is utilised to demonstrate that sustainability is considered across several facets of the design, and which extends to new plant installations. This has been reviewed by the university sustainability officers who have provided comment and are now satisfied that the plant proposals are in line with their sustainability criteria.

05 Summary

We recommend that the proposals are approved as in overall terms the proposals are minor in nature, and are as they are not visible from any public highway, would result in no condition adverse to the existing appearance of the building and local surrounding areas. The plant noise output is such that the background noise will not be greater than the pre-existing condition.

The proposed materials are to be robust, and will be visually continuous to several adjacent condensers in each case.

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06 Appendices

Proposed Condenser Specification REYQ8U

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London North Sales
0845 6419360
londonnorthsales@daikin.co.uk

- Flexible installation as the air suction direction can be altered from rear to bottom suction
- Standard drain pump increases the reliability of the drain system

KHRQ22M20T

- Imperial-size connection for VRV heat pump system
- For capacity index smaller than 200
- Specifically designed to optimise refrigerant flow

REYQ-U

VRV IV heat recovery. Best efficiency & comfort solution

- By choosing this product with Certified Reclaimed Refrigerant Allocation you support the reuse of refrigerant
- Fully integrated solution with heat recovery for maximum efficiency with COPs of up to 8 !
- Covers all thermal needs of a building via a single point of contact: accurate temperature control, ventilation, hot water, air handling units and Biddle air curtains
- "Free" heating and hot water through heat recovery
- The perfect personal comfort for guests/tenants via simultaneous cooling and heating
- Incorporates VRV IV standards & technologies such as Variable Refrigerant temperature and continuous heating
- Variable Refrigerant Temperature increases seasonal efficiency with 28% and avoids cold draft
- Continuous comfort, the new standard in heating comfort

UCL (REVISION B)

London North Sales
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- Free combination of outdoor units to meet installation space or efficiency requirements
- Indoor or outdoor installation to fit any building
- Guaranteed optimal efficiency with automatic charging & testing
- Easy compliance with F-gas regulation thanks to automated refrigerant containment check
- Flexible piping design
- Operation range down to -20°C for technical cooling operation such as server rooms
- All indoor units can be individually controlled, keeping running costs to an absolute minimum
- Spread your installation cost by phased installation
- Keep your system in top condition via the Daikin Cloud Service

RZAG-NV1

- Unique, low-height single fan range
- Compact dimensions allow almost unoticeable installation
- Market-leading serviceability and handling
- Top efficient outdoor units up to A++
- Lower environmental impact thanks to R-32 refrigerant
- Variable Refrigerant Temperature
- Suits infrastructure cooling applications
- Replacement technology
- Guarantees operation in both heating and cooling mode down to -20°C
- Reliable in operation thanks to refrigerant cooled PCB
- Maximum piping length up to 85m
- Pair, twin, triple and double twin application

VRV Selection

Project Report

Report details

Produced on: 3/9/2022

Application version: 2022.3.4.1

Project details

Project name: UCL

Solution name: 2

Client Name: ASG

Customer reference:

Quotation reference:

Project number: 921545/1130639

The output of the VRV Xpress software is based on Daikin-genuine capacity tables that relate to the Japanese Industry Standard. The VRV Xpress software provides a selection of outdoor and indoor units with optimal efficiency to fit cooling and heating load requirements.

Material list

Model	Quantity	Description
REYQ8U	1	REYQ-U (VRV IV)
BS6Q14AV1B	1	Branch selector unit
FXAQ20A	5	FXAQ-A - Wall mounted unit
FXSQ63A	1	FXSQ-A - Concealed ceiling unit with medium ESP
BRC1H52W	6	Remote controller (white)

Indoor unit details

Table of abbreviations

Abbreviation	Description
Name	Logical name of the device
FCU	Device model name
Tmp C	Indoor conditions in cooling
Rq TC	Required total cooling capacity
Rv TC	Revised total cooling capacity (asked from outdoor)
Max TC	Available total cooling capacity
Rq SC	Required sensible cooling capacity
Tevap	Evaporating temperature of indoor unit coil
Tdis C	Indoor unit discharge air temperature in cooling based on maximum capacities
Max SC	Available sensible cooling capacity
PIC	Power input in cooling mode @ 50Hz
Tmp H	Indoor temperature in heating
Rq HC	Required heating capacity
Max HC	Available heating capacity
Tdis H	Indoor unit discharge air temperature in heating based on maximum capacities
PIH	Power input in heating mode @ 50Hz
Sound	Sound pressure level low and high
PS	Power supply (voltage and phases)
MCA	Minimum Circuit Amps
MFA	Maxium Fuse Amps
WxHxD	WidthxHeightxDepth
Weight	Weight of the device
Min coil	Minimum coil volume
Max coil	Maximum coil volume
Air Flow Rate	Air Flow Rate

COND-G-01 - REYQ8U

Capacity data at conditions and connection ratio (81) as entered

Name	FCU	Cooling								
		Tmp C	Rq TC	Rv TC	Max TC	Rq SC	Tevap	Tdis C	Max SC	PIC
		°C (DBT/RH)	kW	kW	kW	kW	°C	°C	kW	kW
G01L	FXSQ63A	24.0/50%	0.0	5.1	6.2	3.8	6.0	13.2	4.6	0.188
G01N	FXAQ20A	24.0/50%	0.0	1.6	2.0	1.2	6.0	14.5	1.8	0.020
G01M	FXAQ20A	24.0/50%	0.0	1.6	2.0	1.2	6.0	14.5	1.8	0.020
G01Q	FXAQ20A	24.0/50%	0.0	1.6	2.0	1.2	6.0	14.5	1.8	0.020
G01S	FXAQ20A	24.0/50%	0.0	1.6	2.0	1.2	6.0	14.5	1.8	0.020
G01T	FXAQ20A	24.0/50%	0.0	1.6	2.0	1.2	6.0	14.5	1.8	0.020
			0.0							

Name	FCU	Heating							
		Tmp H	Rq HC	Max HC	Tdis H	PIH	Min coil	Max coil	Air Flow Rate
		°C	kW	kW	°C	kW	m³	m³	l/s
G01L	FXSQ63A	21.0	n/a	7.7	38.9	0.183	n/a	n/a	350.00
G01N	FXAQ20A	21.0	n/a	2.4	33.9	0.030	n/a	n/a	151.67
G01M	FXAQ20A	21.0	n/a	2.4	33.9	0.030	n/a	n/a	151.67
G01Q	FXAQ20A	21.0	n/a	2.4	33.9	0.030	n/a	n/a	151.67
G01S	FXAQ20A	21.0	n/a	2.4	33.9	0.030	n/a	n/a	151.67
G01T	FXAQ20A	21.0	n/a	2.4	33.9	0.030	n/a	n/a	151.67
			n/a						

Name	Room	Sound	PS	MCA	MFA	WxHxD	Weight
		dBA		A		mm	kg
G01L	Infusion Suite	27 - 33	220V 1ph	1.6	Factory Std	1,000 x 245 x 800	35.5
G01N	Lab	29 - 33	230V 1ph	0.3	Factory Std	795 x 290 x 266	12.0
G01M	Clean Utility	29 - 33	230V 1ph	0.3	Factory Std	795 x 290 x 266	12.0
G01Q	Dirty Utility	29 - 33	230V 1ph	0.3	Factory Std	795 x 290 x 266	12.0
G01S	Hot Desk Office	29 - 33	230V 1ph	0.3	Factory Std	795 x 290 x 266	12.0
G01T	Consult	29 - 33	230V 1ph	0.3	Factory Std	795 x 290 x 266	12.0

Remarks

Outdoor vs. indoor position

Outdoor unit placed at the same level as the indoor units.

Outdoor unit details

Table of abbreviations

Abbreviation	Description
Name	Logical name of the device
Model	Device model name
CR	Connection ratio
Tmp C	Outdoor conditions in cooling
WFR	Water flow per outdoor unit module
CC	Available cooling capacity
Rq CC	Required cooling capacity
PIC	Power input in cooling mode
InC	Water inlet temperature in cooling mode
OutC	Water outlet temperature in cooling mode
Tmp H	Outdoor conditions in heating (dry bulb temp. / RH)
HC	Available heating capacity (integrated heating capacity)
Rq HC	Required heating capacity
PIH	Power input in heating mode
InH	Water inlet temperature in heating mode
OutH	Water outlet temperature in heating mode
Piping	Largest distance from indoor unit to outdoor unit
Bse Refr	Standard factory refrigerant charge (16.4ft actual piping length) excluding extra refrigerant charge. For calculation of extra refrigerant charge refer to the databook
Ex Refr	Extra refrigerant charge
PS	Power supply (voltage and phases)
MCA	Minimum Circuit Amps
MFA	Maxium Fuse Amps
FLA	Fan Motor Input
RLA	Nominal Running Amps
WxHxD	WidthxHeightxDepth
Weight	Weight of the device
EER	EER value at nominal condition
IEER	IEER value at nominal condition
COP47	COP value at nominal condition and at ambient temperature of 8°C
COP17	COP value at nominal condition and at ambient temperature of -8°C

Outdoor details

Name	Model	CR	Cooling			Heating			Piping
			Tmp C	CC	Rq CC	Tmp H	HC	Rq HC	
		%	°C	kW	kW	°C (DBT/RH)	kW	kW	m
COND-G-01	REYQ8U	81.3	30.0	16.5	13.1	-5.0/86%	18.7	0.0	70.0

Name	Model	PS	MCA	MFA	RLA	FLA	WxHxD	Weight
			A	A	A	A	mm	kg
COND-G-01	REYQ8U	400V 3Nph	16.1	20.0	7.7	1.2	930 x 1,685 x 765	230.0
BC-G-01	BS6Q14AV1B	230V 1ph					580 x 298 x 430	28.0

Sound Data

Name	Model	Sound Power		Sound Pressure	
		Cooling	Heating	Cooling	Heating
		dBA	dBA	dBA	dBA
COND-G-01	REYQ8U	78	63	57	-

Seasonal Efficiency

Name	Model	$\eta_{s,h}$ heating	$\eta_{s,c}$ cooling	SCOP	SEER	CSPF
		%	%			
COND-G-01	REYQ8U	165.1	286.1	4.20	7.20	-

For more information go to: https://energylabel.daikin.eu/.

Refrigerant information

Name	Model	Refrigerant type	GWP	Base charge kg	Extra charge kg	TCO2 equivalent
COND-G-01	REYQ8U	R410A	2087.5	9.70	unknown	20.2

The system(s) contain fluorinated greenhouse gases.

TCO2 equivalent is calculated only considering the base refrigerant charge. Depending on the field pipe length extra refrigerant needs to be added which will increase the TCO2 equivalent.

COND-G-01 - REYQ8U

Model	Quantity	Description
REYQ8U	1	REYQ-U (VRV IV)
BS6Q14AV1B	1	Branch selector unit
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Pipe capacities

Maximum Connection Index	Diameters
149.9	3/8"x5/8"x1/2"
199.9	3/8"x3/4"x5/8"
289.9	3/8"x7/8"x3/4"
419.9	1/2"x1 1/8"x3/4"
639.9	5/8"x1 1/8"x1 1/8"
919.9	3/4"x1 3/8"x1 1/8"
> 919.9	3/4"x1 5/8"x1 1/8"
Main pipe size up	1/2"x3/4"x5/8"

Remarks

Please make sure to provide a drain pipe connection to each multi BS-box in the system.

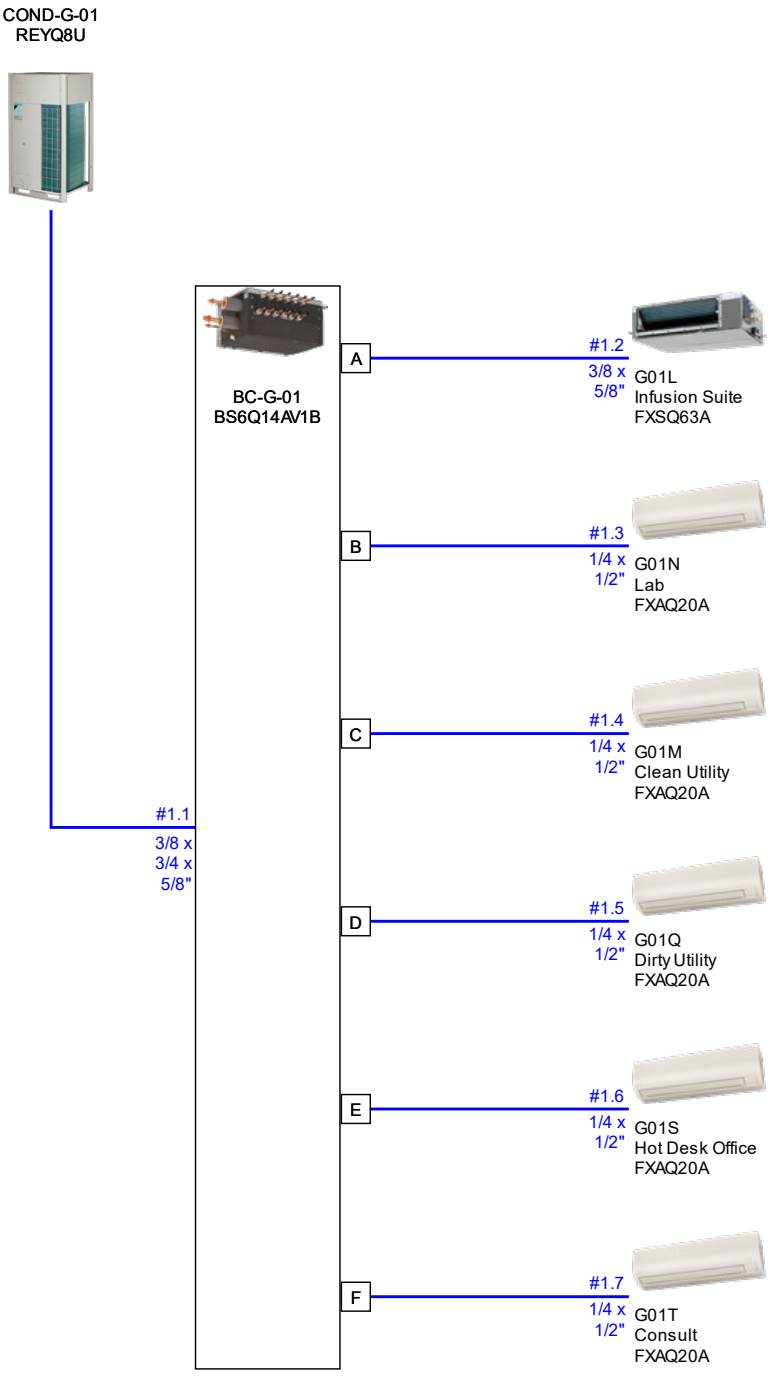
Piping limitations

Description	Value
Maximum total length	1,000.0m
Maximum longest actual length	165.0m
Maximum longest equivalent length	190.0m
Maximum main pipe length (size up of main pipe required if longer)	-
Maximum length first branch to indoor unit(size up of intermediate pipes required if longer)	40.0m
Maximum length first branch to indoor unit	90.0m
Maximum length of indoor units to nearest branch	40.0m
Maximum length difference between longest and shortest distance to indoor units	40.0m

Maximum height difference, outdoor unit below indoor units	90.0m
Minimum connection ratio, outdoor unit below indoor units	-
Maximum height difference, outdoor unit above indoor units	90.0m
Minimum connection ratio, outdoor unit above indoor units	-
Maximum height difference in technical cooling, outdoor unit below indoor units	90.0m
Maximum height difference in technical cooling, outdoor unit above indoor units	90.0m
Maximum height difference between indoor units	30.0m
Connection ratio range	50.0% - 130.0%
Refrigerant pipe diameters	1/2" (liquid) x 3/4" (gas) x 5/8" (discharge)
Maximum equivalent length from BP unit or VRV indoor to VRV REFNET (size up of intermediate pipes required if longer)	-
Maximum equivalent length from BP unit or VRV indoor to VRV REFNET	90.0m
Maximum actual length between CM and HM	-
Maximum height difference between CM and HM	-

Piping diagrams

Piping COND-G-01

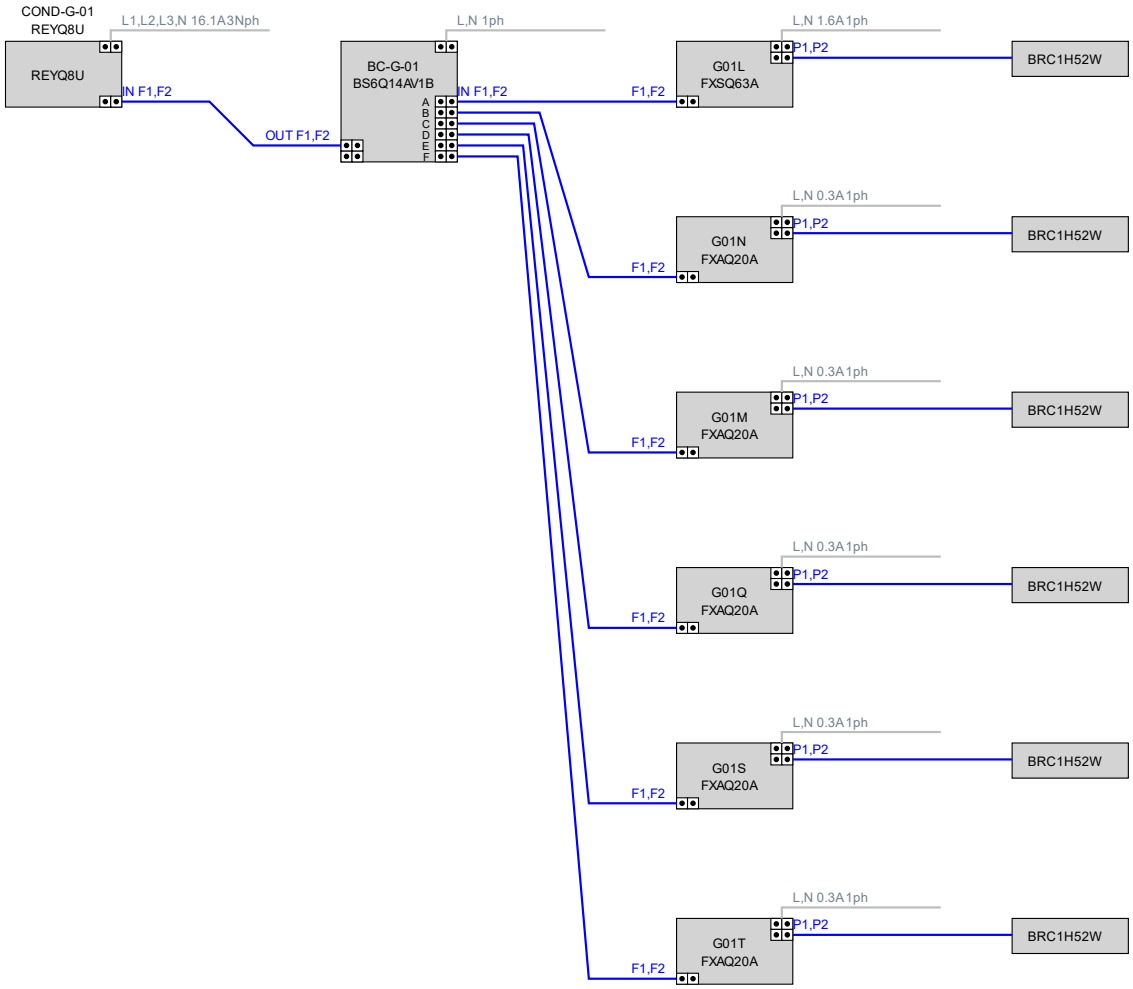


Piping

Warning: The pipe diameter values are purely indicative. Depending on the required pipe lengths, a different pipe diameter might be required.

Wiring diagrams

Wiring COND-G-01



Remarks

P1P2 = 0,75 - 1,25 mm2, max 500m length - always refer to local code for further information.

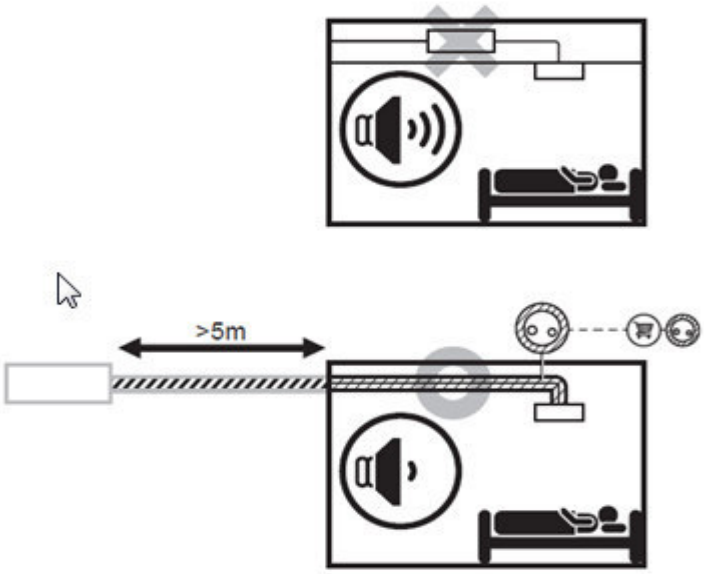
F1F2 IN/OUT transmission wiring, use 2-core wires of 0,75 to 1,25 mm² size cables, without shield (but shielded cable can be used if required by local regulations and standards).

Note: The shield should only be earthed at outdoor unit side, not at the indoor units!

Best Practices

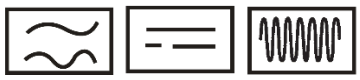
Multi BS-box

- Install the multi BS-box on a location where the refrigerant noise cannot disturb the room occupants
- To avoid that refrigerant noise disturbs the people in the room, keep at least 5m piping length between the occupied room and the multi BS unit (See figure)
- If there is no false ceiling in the occupied room, please add sound insulation around the piping between the multi BS-box and indoor unit, or keep much longer length between multi BS-box unit and occupied room (See figure)



Residual Current Circuit Breaker

For better protection of installations against the risk of fire, power supply of indoor and outdoor units must be protected with a Residual Current Circuit Breaker. For protection against fire, we recommend a sensitivity of 300mA. The selected RCCB should be of the type B, suitable for inverter devices and indicated by the symbols here below. Further electrical characteristics of the RCCB must be selected in accordance with local regulation.



For a complete list of all required safety precautions, warnings and attention points, please consult the “general safety precautions manual” delivered with the unit.