HOARE LEA

UCL BSU COMPLIANCE

TEMPORARY AIR CONDITIONING.

U60 AIR CONDITIONING UNITS – SELF CONTAINED

Audit sheet

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100 PERFORMANCE OBJECTIVES

There is a requirement to provide some back up cooling to two no BSU units at UCL in order to maintain animal welfare while a long term solution is put into place.

KLB: Will be in the form of temporary stand alone units located within each BSUs holding room.

Central: External packaged cooling unit to reduce the air intake temperature of the existing AHU.

Provide a self-contained direct expansion (DX) cooling unit to supply cooled air onto existing AHU inlet to reduce cooling load in peak weather conditions.

Provide stand alone cooling units within BSU rooms to supplement cooling in peak hot weather conditions.

200 DESIGN PARAMETERS

This specification is written based on legislation, standards and guidance in force in the UK generally, and within England by default. For projects in Scotland, Wales, Northern Ireland, the Channel Islands and the Isle of Man, give appropriate consideration to any locally applicable legislation, standards and guidance that deviates from or is additional to those in force within England. Similarly for projects outside the UK comply with the corresponding national legislation, standards and guidance.

Comply fully with the edition (including amendments, replacements and associated normative references) of each of the following, current at the time of tender:

The Building Regulations (England)

The Health and Safety at Work Etc Act

The Offices, Shops and Railway Premises Act

The Workplace (Health, Safety and Welfare) Regulations

DCLG	Approved Document B (fire safety) volume 2: buildings other than dwellinghouses
BS 5970	Code of practice for thermal insulation of pipework and equipment in the temperature range of -100ºC to +870ºC
BS 7005	Specification for design and manufacture of carbon steel unfired pressure vessels for use in vapour compression refrigeration systems
BS 7671	Requirements for electrical installations. IET Wiring Regulations
BS EN 14511-1	Air conditioners, liquid chilling packages and heat pumps with electrically driven compressors for space heating and cooling. Terms, definitions and classification
BS EN 14511-2	Air conditioners, liquid chilling packages and heat pumps with electrically driven compressors for space heating and cooling. Test conditions
BS EN 14511-3	Air conditioners, liquid chilling packages and heat pumps with electrically driven compressors for space heating and cooling. Test methods
BS EN 14511-4	Air conditioners, liquid chilling packages and heat pumps with electrically driven compressors for space heating and cooling. Operating requirements, marking and instructions
BS EN ISO 9614-1	Acoustics. Determination of sound power levels of noise sources using sound intensity. Measurement at discrete points

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BS EN ISO 9614-2	Acoustics. Determination of sound power levels of noise sources using sound intensity. Precision method for measurement by scanning
BS ISO 10294-1	Fire resistance tests. Fire dampers for air distribution systems. Test method
BESA DW/144	Specification for sheet metal ductwork
CIBSE Commissioning Code R	Commissioning refrigeration systems
CIBSE TM40	Health issues in building services
Institute of Refrigeration	Code of practice for the minimisation of refrigerant emissions from refrigerating systems
Institute of Refrigeration	Safety code of refrigerating systems utilising A1 refrigerants
Institute of Refrigeration	Safety code of refrigerating systems utilising A2 & A3 refrigerants
HSE ACOP L8	Approved code of practice: Legionnaires' disease. The control of Legionella bacteria in water systems. Approved code of practice and guidance

External Unit Central Building 17

Internal design conditions

Minimum supply air temperature	15±1°C
Supply air temperature	15-25°C
Noise rating for external plant	76 dBA at 3 metres
Return air temperature	35°C

Outdoor temperature

Cooling	Max 35°C db/25°C wb

Overall cooling duty	90 kW sensible
Refrigerant	R134A / R407C / R410A

Local Room Cooling Units to KLB Building 01

Internal design conditions

Minimum supply air temperature	15±1°C
Max ambient operating temperature	25°C
Overall cooling duty	2.8 kW sensible

300 SYSTEM DESCRIPTION

310 General

The existing BSU facilities at KLB Building 1 and Central Building 17 requirement temporary cooling works to be installed for the summer 2021.

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KLB

The proposal is for 8 number of BSU rooms to have local room mounted air conditioning unit installed to provide back up to the base system during summer periods. It is envisaged that will need to operate when external air temperatures exceed 25-30°C.Units shall have ducted exhausts connected to room extract system. Provide local SPN plug in power supplies to small power within the room.

Central

A packaged cooling unit shall be installed to supply cooled air into the AHU intake when conditions are likely to exceed 25-30°C ambient. Provide a suitable SWA TPN service rated at approx 125Amps to supply unit.

320 Ventilation air supply and exhaust system

The external unit serving Central will have air intakes taken from the external location within Malet Place. Air supplied from the unit shall be ducted onto the AHU supply louvre within the plant room at second floor level via two number 600mm diameter ducts.

The portable units within the BSU Holding rooms at KLB will supply air directly to the rooms and will have an exhaust connection connected to the room extract system to dissipate any heat rejection to outside.

400 CONTROL REQUIREMENTS

Liaise with BMS contractor for UCL site to extend existing control system to temporary AHU.

410 Air conditioned space

The air conditioned spaces served will continue to operate on their existing BMS control system.

Temporary cooling units within KLB should be set at 1°C above the BMS room set point so that they operate when the base build system cannot provide adequate cooling.

The remote external unit installed to serve Central will operate by BMS to a variable set point with a range of 20-35°C located externally to the building. This can then be adjusted to provide cooling when the base system cannot provide cooling. Interlock operation of temporary unit with AHU to ensure temporary unit does not run on its own.

420 Ancillary systems

Provide all systems and equipment with packaged controls that permit standalone operation in the event of communication network failure.

500 SCOPE OF WORKS

510 Responsibilities

520 Detail coordination

Agree all proposed methods of fixing the systems to structures and equipment with the Contract Administrator.

Agree the colours and finishes of all exposed materials of the systems with the Contract Administrator.

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600 SYSTEM COMPONENTS

610 Ductwork and ancillaries

Provide ductwork in accordance with BESA DW/144 and sections Y30 and Y31 of this specification and the sub-clauses following:

611 External weather louvres

Fix air supply ductwork to Central plant room louvres to ensure air flow from the temporary unit passes directly into the AHU when its running. Ensure adequate air flow to AHU when temporary unit is not operational.

620 Condensate drainage system

Provide a condensate drainage system for the temporary units to gravity drains or pumped condensate drainage system

Provide factory-fitted condensate pumps within the CRAC units, when indicated on the drawings, and route copper to BS EN 1057, R250 (half hard) / ABS individual condensate drain tubing from each pump to a common tundish connected to the foul / surface water sewer through a waterless drain trap. Provide sufficient air gap between the ends of the pumps discharge tubing and the tundish to provide a class A air gap as defined in BS EN 13076. Install 10 mm BL-s3,d0/class 0 fire-rated, closed cell, elastomeric, nitrile rubber foam insulation on the pump and tubing.

621 Gravity condensate drainage system

Provide a gravity drainage system from each CRAC unit, where indicated on the drawings, and route copper to BS EN 1057, R250 (half hard) / ABS condensate drain tubing with a minimum continuous fall of 1:50, through a class A air gap created by tundish (as defined in BS EN 13076) to the building's foul / surface water drainage system through a waterless drain trap. Install 10 mm BL-s3,d0/class 0 fire rated, closed cell, elastomeric nitrile rubber foam insulation on the tubing.

700 PAINTING

Paint all steel piping, fittings, supports and brackets in accordance with section Y50 of this specification.

800 FIXING TO BUILDING 'FABRIC'

Comply with section Y90 of this specification.

900 TESTING AND COMMISSIONING

910 General

Carry out testing and commissioning including manufacturer's pressure testing. On-site commissioning

920 Client demonstration

Arrange for the installer to be in attendance at the Client instruction/demonstrations. In addition to this ensure that the manufacturer contributes as required towards a video training manual that is to be provided by a third party provider.

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1000 SCHEDULE OF INSTALLER'S SUBMISSIONS

Submit the following for the Contractor Administrator's comment:

Provide instruction manuals and warning notices in accordance with the requirements of BS EN 378-3.

Ensure the instruction manuals meet the requirements of BS EN 378-2, for all items of equipment including:

END OF SECTION U60