

Product Information

PEAD-M R410A
Ceiling Concealed Ducted System
Standard Inverter Heat Pump (Single Phase)

Making a
World of
Difference

Air Conditioning

Mr.SLM



The PEAD-M Standard Inverter range is a ceiling concealed ducted system that blends a host of outstanding features with an unobtrusive design for easy installation and maintenance. Offering advanced control options and quiet operation, this range provides extreme flexibility and ease of installation whilst being cost effective.

Key Features

- Entire range only 250mm in height
- Wider range of external static pressure settings
- Drain pump included as standard
- Replace Technology available
- New single fan chassis on 12.5 and 14kW models



Cooling | Heating | Ventilation | Controls

ENSOL

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For the attention of Dr Helena Patsos

MAW/OS/17/05/328

30 April 2018

Dear Sirs

COMFORT COOLING PROPOSAL FOR EXISTING CLEAN ROOMS & MEZZANINE OFFICE - HADFIELD

Thank you for your enquiry. We have studied your requirements and are now pleased to confirm our recommendations.

REQUIREMENTS

During the warmer months of the year, conditions become hot & stuffy as a result of the heat build-up from personnel and electrical equipment. A cooling system is required which will be capable of maintaining a much higher comfort level during warm weather conditions.

You have also asked for our proposals to provide comfort cooling to the mezzanine floor office which becomes very hot in warm weather due to its elevated position.

CLEAN ROOM DETAILS

Existing Rooms - 7 Rooms in total

Rooms overall: 8.0m W x 12m L x 2.7m High. Solid sided.
16 no Fan filters - 100% recirculation.
Humidity Control - N/A
Room Conditions Required: 21oC/23oC - comfort cooling only

height from floor
externally:
2.7m / 2.8m



Indoor Environment Specialists

Evaporative Cooling • Natural & Powered Ventilation • Air Conditioning • Space Heating • Smoke & Heat Exhaust Ventilation

Incorporated in England No 2774690

VAT-Reg No 598220123



Air con: steel channel sto span putting
M10 rods damped

CALCULATIONS - CLEANROOM

We have prepared heatgain and cooling load calculations based on the recommendations laid down by the Chartered Institute of Building Services Engineers (CIBSE). These are based on maintaining a comfortable internal temperature of 22 oC when the outside ambient is 29 oC in July/August.

We have calculated that there are around 12 KW of internal heat gains (inc 3.8 kW for fan filter units) and 10 kW latent and structural gains. Ventilation (pressurisation) losses are likely to be of the order of 3-5KW which, implicate the selection of a system with a cooling capability of 28 KW. There is also an Autoclave from which the heat generated could not be catered for during the period when it is opened and the heat is discharged.

RECOMMENDATIONS

COMFORT COOLING - CLEANROOM

To meet the cooling requirements accurately and cost effectively in the clean room, we recommend the provision of de-centralised MITSUBISHI ELECTRIC DUCTED heat pump inverter air conditioning units. We have based our offer on the provision of 2 no 14KW unit so that the system will maintain comfortable working conditions during all conditions.



Ducted air conditioning units are versatile, they allow air to be drawn from the room and ducted to improve distribution of cooled air. The units will be arranged to draw in warm air from the void above the cleanroom via insulated flexible ductwork and supply cooled air back to the void in the vicinity of the Fan Filter Units supplying each of the 6 main areas (3 supply ducts per system).



This will ensure that cooled air can be evenly distributed to the areas. The removal of 28Kw of heat from the building will have also a positive effect on the building as a whole.

The units will be controlled from hard wired LCD remote controller with full 7-day timer and temperature control. The fan speed can also be allowed to be controlled automatically dependant on the temperature.

Cage size
1150 sq
650 clear
1300 h
1000 w
500 d

Heat rejected from the room is discharged using two condensing units sited externally on the fascia at 3m level on steel brackets and housed in an anti-vandal security cages.

The equipment is manufactured by MITSUBISHI ELECTRIC who are amongst the world leaders in the manufacture of cooling systems.

COMFORT COOLING - MEZZANINE OFFICE

The area measures approx. 9m long x 5m wide and is open to the main circulation area with no partitioning or suspended ceiling at present. We understand that it is likely that the area will be enclosed in the long term to reduce the area and minimise the cooling capacity required.

To provide comfort cooling to the area, we propose the installation of a ceiling cassette unit suspended for the roof structure to direct cooled air into the working area.

The system will have a capacity of 14KW which will be more than adequate to serve the enclosed area.



WARRANTY

We confirm the warranty on the air conditioning equipment is 12 months' parts and labour. Ensol Limited is an accredited Business Solutions Partner for MITSUBISHI ELECTRIC and this means that the warranty is extended to 7 years for Mitsubishi manufactured parts subject to the equipment being regularly serviced by formal service contract.

SIMILAR INSTALLATIONS

SOG - Runcorn
Astra Zeneca - Macclesfield
Yaqrit - Hook
Jellagen - Cardiff
Synexus - Chorley
Iconichem Chemicals - Widnes
UU plc - Warrington
Landis & Gyr - Cheadle

Graham & Brown - Blackburn
Infinitesima - Abingdon
Swansea University
Thermo Fisher - Warrington
Active Pharma - Leyland
MacPack - Stockport
LGC - Runcorn
Rolls Royce - Derby

Ensol Ltd was established in 1993 and over 75% of our business is from existing customers placing further orders.

QUOTATION

DELIVERY: 2 weeks from acknowledgement of order.
VALIDITY: This quotation is open for acceptance for 30 days.
SCOPE: Supply, deliver, install, commission and guarantee.
PAYMENT: Payment strictly within 30 days from date of invoice.
All prices EXCLUDE VAT.

EQUIPMENT SPECIFICATION

CLEAN ROOM

Item 1	2 no	MITSUBISHI ELECTRIC ABOVE CEILING MOUNTED DUCTED <i>INVERTER</i> HEATING & COOLING AIR CONDITIONING UNIT complete with wired LCD controller and variable speed fan. (240/1/50) 47KG. 14KW HEATING & COOLING CAPACITY.
Item 2	2 no	MITSUBISHI ELECTRIC CONDENSING UNIT (240/1/50 - 40A). 99 KG.
Item 3	6 no	INSULATED SUPPLY AIR PLENUMS
Item 4	2 no	Fresh Air Inlet ducts connected to one central air inlet Louvre c/w birdmesh.

MEZZANINE OFFICE

Item 5	1 no	MITSUBISHI ELECTRIC CEILING CASSETTE <i>INVERTER</i> HEATING & COOLING AIR CONDITIONING UNIT complete with wired LCD controller and variable speed fan. (240/1/50) 14KW HEATING & COOLING CAPACITY.
Item 6	1 no	MITSUBISHI ELECTRIC CONDENSING UNIT (240/1/50 - 40A). 99 KG.

Item 7 TO INSTALL ON SITE DURING NORMAL WORKING HOURS

INCLUDING: Supply & Fitting GBM steel frame to support external condensing units. Scaffolding/access equipment.
Mounting internal and external air conditioning units.
Refrigerant pipe work between internal/external units complete with thermal weatherproof insulation.
Cutting out and fitting supply air plenum boxes, foil backed insulated flexible ductwork and connecting return air vacuum boxes with integral pre-filter media.
Interconnecting wiring between indoor and outdoor units.
Condensate drain pipe work & pumps as necessary.
Supply and fitting polyester powder coated professional security mesh cages (3 in total).
Commissioning on completion.

EXCLUDING: Power supply to outdoor unit inc. final connection (3 no -240/1/50 - 40A).

CLEAN ROOM AREAS
MEZZANINE OFFICE AREA

TOTAL SUPPLY & INSTALLATION PRICE

CONCLUSIONS

We are confident that our proposals meet your requirements and look forward to receiving your further instructions. The writer will contact you shortly to discuss further, however, in the meantime if you have any immediate queries, please contact him as noted below.

Yours faithfully
for ENSOL LIMITED

Mark Whitehead

Mark Whitehead
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