

1 SAMPLE CONTENT - MECHANICAL & ELECTRICAL O&M MANUAL.



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1.1 MECHANICAL & ELECTRICAL O&M MANUAL

1.1.1 AIR CONDITIONING SYSTEMS SS_65_80

1.1.1.1 System Overview

The School's larger teaching areas have been provided with cooling and heating via variable refrigerant flow (VRF) Air Conditioning Systems with external condensers that serve fan coil units in the rooms/areas served in conjunction with the Mechanical Ventilation Systems

A further, direct expansion (DX) Air Conditioning System is also provided that provides cooling for the Server Room.

The systems were installed by the Specialist Air Conditioning System Installer in line with current regulations and standards.

1.1.1.2 System Description

VRF Systems

The larger teaching areas are provided with heating/cooling via VRF Air Conditioning System fan coil units installed in the ceiling void which acts as a plenum. There are 2 no. VRF System condensers installed on the roof that serve fan coil units in the areas served, one system serves the ground floor and the other serves the 1st floor. For each system, the condenser outputs a refrigerant circuit to a branch control box for onward distribution to the fan coil units located in the ceiling void plenums of the room/area served.

Fresh air is delivered to the rear of the fan coil unit by the room's heat recovery unit (HRU) as detailed in the Mechanical Ventilation Section with heat or cooling recovered from the extract air path by the HRU. Secondary ductwork is then installed from the fan coil unit to ceiling mounted diffusers. Air is returned to the HRU via ceiling mounted grilles and the plenum.

DX System

The Server Room is provided with cooling via a dedicated DX Air Conditioning System via a condenser located on the roof which is connected to a wall mounted fan coil unit in the Server Room on the ground floor.

1.1.1.2.1 General Air Conditioning System Installation Notes

Refrigerant gas lines have been installed from the internal units/branch control boxes to the condensers on the roof, ran on galvanized cable tray that is installed through ceiling voids and risers. All pipework has been completed using refrigeration qualify copper tubing to BS2871 Part 2: 1972 complete with the appropriate joints, carried out by approved refrigeration engineers in accordance with BS4434:1995 specification, insulated with elastomeric pipe insulation, with a fire performance to Class "O", protected when exposed to atmosphere.

The condensers are provided with an electrical supply via local, suitably sized and IP rated isolator, each of the internal units is provided with a 230 V electrical supply via a local fused connection unit. Condensation is drained from the internal fan coil units via condensation discharge pipework that runs directly to the Above Ground Waste Water Drainage System, connecting via waterless traps. Condensate lift pumps are provided where appropriate.

1.1.1.2.2 Controls

The VRF and DX Systems are controlled by wall mounted controllers that are each equipped with an integral temperature sensor and a liquid crystal display that provides the user with temperature and fan speed settings, ON/OFF and timer functions, etc.

The systems and each unit's operational statuses are also monitored by the BMS.

For more detailed information on the equipment refer to the Manufacturer's Literature in Section 4 of this Manual.

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1.1.1.3 Equipment & Material Schedules

1.1.1.3.1 Ground Floor VRF Systems Branch Controller

Type					
Manufactured By	MITSUBISHI ELECTRIC EUROPE				
Supplied By	MITSUBISHI ELECTRIC EUROPE				
Description	AC Branch Controller				
Model Number	CMB-P108V-GA1				
Category	Pr_70_60 Space heating and cooling products				
Component					
Tag Number	Asset Ref	Description	Location		
4600093	VRF-BC001	AC Branch Controller	0-09		
Attributes					
Description	Detail			Notes	
AssetType	Fixed			n/a	
WarrantyDurationUnit	Months			n/a	
WarrantyGuarantorParts	xxxx@meuk.mee.com			n/a	
WarrantyDurationParts	12			n/a	
WarrantyGuarantorLabour	enquiries@qualityac.co.uk			n/a	
WarrantyDurationLabour	12			n/a	
NominalLength	1110mm			n/a	
NominalWidth	520mm			n/a	
NominalHeight	289mm			n/a	
Voltage	230/1/50			n/a	
Duty	0.161 (Input)			n/a	
Spares					
Description	Manufacturer	Part No.	Size/Type/Rating	Qty	Notes
n/a	n/a	n/a	n/a	n/a	n/a
Residual Risk					
Working at height					
COSHH					
410a refrigerant					
Disposal					
By specialist in compliance with local regulations					
Referenced Documents					
Index	Reference	Description	File Type	Company	Link
5.3.1.3.1_001	CMB-P1-V-G1	AC Branch Controller	Data Sheet	MITSUBISHI ELECTRIC EUROPE	View
5.3.1.3.1_002	CMB-P-V-GA1 I	AC Branch Controller	User Manual	MITSUBISHI ELECTRIC EUROPE	View

1.1.1.3.2 1st Floor VRF Systems Branch Controller

Type					
Manufactured By	MITSUBISHI ELECTRIC EUROPE				
Supplied By	MITSUBISHI ELECTRIC EUROPE				
Description	AC Branch Controller				
Model Number	CMB-P1010V-GA1				
Category	Pr_70_65_03 Air conditioning units				
Component					
Tag Number	Asset Ref	Description			Location
4576424	VRF-BC002	AC Branch Controller			1-04
Attributes					
Description	Detail			Notes	
AssetType	Fixed			n/a	
WarrantyDurationUnit	Months			n/a	
WarrantyGuarantorParts	xxxx@meuk.mee.com			n/a	
WarrantyDurationParts	12			n/a	
WarrantyGuarantorLabour	enquiries@qualityac.co.uk			n/a	
WarrantyDurationLabour	12			n/a	
NominalLength	1110mm			n/a	
NominalWidth	520mm			n/a	
NominalHeight	289mm			n/a	
Voltage	230/1/50			n/a	
Duty	0.2 (Input)			n/a	
Spares					
Description	Manufacturer	Part No.	Size/Type/Rating	Qty	Notes
n/a	n/a	n/a	n/a	n/a	n/a
Residual Risk					
Working at height					
COSHH					
410a refrigerant					
Disposal					
By specialist in compliance with local regulations					
Referenced Documents					
Index	Reference	Description	File Type	Company	Link
5.3.1.3.2_001	CMB-P1-V-G1	AC Branch Controller	Data Sheet	MITSUBISHI ELECTRIC EUROPE	View
5.3.1.3.2_002	CMB-P-V-GA1 I	AC Branch Controller	User Manual	MITSUBISHI ELECTRIC EUROPE	View

1.1.1.3.3 VRF Systems External Condensing Unit (PUHZ-ZRP100VKA)

Type					
Manufactured By		MITSUBISHI ELECTRIC EUROPE			
Supplied By		MITSUBISHI ELECTRIC EUROPE			
Description		External Condensing Unit			
Model Number		PUHZ-ZRP100VKA			
Category		Pr_70_60_37 Heat pumps			
Component					
Tag Number	Asset Ref	Description	Location		
5638051	VRF-CO001	External Condensing Unit	0-52		
Attributes					
Description	Detail			Notes	
AssetType	Fixed			n/a	
WarrantyDurationUnit	Months			n/a	
WarrantyGuarantorParts	xxxx@meuk.mee.com			n/a	
WarrantyDurationParts	12			n/a	
WarrantyGuarantorLabour	enquiries@qualityac.co.uk			n/a	
WarrantyDurationLabour	12			n/a	
NominalLength	1050mm			n/a	
NominalWidth	330mm			n/a	
NominalHeight	1338mm			n/a	
Voltage	230/1/50			n/a	
Duty	2.43 (Output)			n/a	
Spares					
Description	Manufacturer	Part No.	Size/Type/Rating	Qty	Notes
n/a	n/a	n/a	n/a	n/a	n/a
Residual Risk					
None identified					
COSHH					
410a refrigerant					
Disposal					
By specialist in compliance with local regulations					
Referenced Documents					
Index	Reference	Description	File Type	Company	Link
5.3.1.3.3_001	PUHZ-ZRP100VKA	External Condensing Unit	User Manual	MITSUBISHI ELECTRIC EUROPE	View

1.1.1.3.4 VRF Systems External Condensing Unit (PURY-EP350YLM-A)

Type					
Manufactured By		MITSUBISHI ELECTRIC EUROPE			
Supplied By		MITSUBISHI ELECTRIC EUROPE			
Description		External Condensing Unit			
Model Number		PURY-EP350YLM-A			
Category		Pr_70_60_37 Heat pumps			
Component					
Tag Number	Asset Ref	Description	Location		
5637950	VRF-CO002	External Condensing Unit	0-52		
Attributes					
Description	Detail			Notes	
AssetType	Fixed			n/a	
WarrantyDurationUnit	Months			n/a	
WarrantyGuarantorParts	xxxx@meuk.mee.com			n/a	
WarrantyDurationParts	12			n/a	
WarrantyGuarantorLabour	enquiries@qualityac.co.uk			n/a	
WarrantyDurationLabour	12			n/a	
NominalLength	1220mm			n/a	
NominalWidth	740mm			n/a	
NominalHeight	1710mm			n/a	
Voltage	230/1/50			n/a	
Duty	11.33 / 12.98 (Cooling / Heating)			n/a	
Spares					
Description	Manufacturer	Part No.	Size/Type/Rating	Qty	Notes
n/a	n/a	n/a	n/a	n/a	n/a
Residual Risk					
None identified					
COSHH					
410a refrigerant					
Disposal					
By specialist in compliance with local regulations					
Referenced Documents					
Index	Reference	Description	File Type	Company	Link
5.3.1.3.4_001	PURY	External Condensing Unit	User Manual	MITSUBISHI ELECTRIC EUROPE	View

1.1.1.3.5 Fan Coil Units (PEFY-P50VMA-E)

Type					
Manufactured By		MITSUBISHI ELECTRIC EUROPE			
Supplied By		MITSUBISHI ELECTRIC EUROPE			
Description		Fan Coil Units			
Model Number		PEFY-P50VMA-E			
Category		Pr_70_65_03_29 Fan coil units			
Component					
Tag Number	Asset Ref	Description	Location		
4080083	VRF-FCU001	Fan Coil Units	1-06		
6319670	VRF-FCU002	Fan Coil Units	0-15		
6321867	VRF-FCU003	Fan Coil Units	0-24		
6323189	VRF-FCU004	Fan Coil Units	0-33		
6323754	VRF-FCU005	Fan Coil Units	0-37		
6372680	VRF-FCU006	Fan Coil Units	0-39		
6516760	VRF-FCU007	Fan Coil Units	0-40		
6516824	VRF-FCU008	Fan Coil Units	1-09		
6519387	VRF-FCU009	Fan Coil Units	1-08		
6519451	VRF-FCU010	Fan Coil Units	1-10		
6519260	VRF-FCU011	Fan Coil Units	1-11		
6516633	VRF-FCU012	Fan Coil Units	1-15		
3659069	VRF-FCU013	Fan Coil Units	1-17		
3660020	VRF-FCU014	Fan Coil Units	1-19		
3697432	VRF-FCU015	Fan Coil Units	1-18		
3710866	VRF-FCU016	Fan Coil Units	1-21		
Attributes					
Description	Detail			Notes	
AssetType	Fixed			n/a	
WarrantyDurationUnit	Months			n/a	
WarrantyGuarantorParts	xxxx@meuk.mee.com			n/a	
WarrantyDurationParts	12			n/a	
WarrantyGuarantorLabour	enquiries@qualityac.co.uk			n/a	
WarrantyDurationLabour	12			n/a	
NominalLength	900mm			n/a	
NominalWidth	732mm			n/a	
NominalHeight	250mm			n/a	
Voltage	230/1/50			n/a	
Duty	5.6 / 6.3 kW (Cooling/Heating)			n/a	
Spares					
Description	Manufacturer	Part No.	Size/Type/Rating	Qty	Notes
n/a	n/a	n/a	n/a	n/a	n/a
Residual Risk					
Working at height					
COSHH					
410a refrigerant					
Disposal					
By specialist in compliance with local regulations					
Referenced Documents					
Index	Reference	Description	File Type	Company	Link
5.3.1.3.5_001	HWE0812B	Fan Coil Units	User Manual	MITSUBISHI ELECTRIC EUROPE	View

1.1.1.3.6 Server Room DX System External Condensor Unit

Type					
Manufactured By		MITSUBISHI ELECTRIC EUROPE			
Supplied By		MITSUBISHI ELECTRIC EUROPE			
Description		External Condensor Unit			
Model Number		PURY-EP450YLM-A			
Category		Pr_70_60_37 Heat pumps			
Component					
Tag Number	Asset Ref	Description	Location		
5637892	VRF-CO003	External Condensor Unit	0-52		
Attributes					
Description	Detail			Notes	
AssetType	Fixed			n/a	
WarrantyDurationUnit	Months			n/a	
WarrantyGuarantorParts	xxxx@meuk.mee.com			n/a	
WarrantyDurationParts	12			n/a	
WarrantyGuarantorLabour	enquiries@qualityac.co.uk			n/a	
WarrantyDurationLabour	12			n/a	
NominalLength	1750mm			n/a	
NominalWidth	740mm			n/a	
NominalHeight	1710mm			n/a	
Voltage	230/1/50			n/a	
Duty	2.28 (Output)			n/a	
Spares					
Description	Manufacturer	Part No.	Size/Type/Rating	Qty	Notes
n/a	n/a	n/a	n/a	n/a	n/a
Residual Risk					
None identified					
COSHH					
410a refrigerant					
Disposal					
By specialist in compliance with local regulations					
Referenced Documents					
Index	Reference	Description	File Type	Company	Link
5.3.1.3.6_001	PURY	External Condensing Unit	User Manual	MITSUBISHI ELECTRIC EUROPE	View

1.1.1.3.7 Server Room DX System Fan Coil Unit

Type					
Manufactured By		MITSUBISHI ELECTRIC EUROPE			
Supplied By		MITSUBISHI ELECTRIC EUROPE			
Description		Fan Coil Units			
Model Number		PKA-RP100KAL			
Category		Pr_70_65_03_29 Fan coil units			
Component					
Tag Number	Asset Ref	Description	Location		
3696308	VRF-FCU017	Fan Coil Units	0-29		
Attributes					
Description	Detail		Notes		
AssetType	Fixed		n/a		
WarrantyDurationUnit	Months		n/a		
WarrantyGuarantorParts	xxxx@meuk.mee.com		n/a		
WarrantyDurationParts	12		n/a		
WarrantyGuarantorLabour	enquiries@qualityac.co.uk		n/a		
WarrantyDurationLabour	12		n/a		
NominalLength	295mm		n/a		
NominalWidth	1170mm		n/a		
NominalHeight	365mm		n/a		
Voltage	230/1/50		n/a		
Duty	10kw		n/a		
Spares					
Description	Manufacturer	Part No.	Size/Type/Rating	Qty	Notes
n/a	n/a	n/a	n/a	n/a	n/a
Residual Risk					
Working at height					
COSHH					
410a refrigerant					
Disposal					
By specialist in compliance with local regulations					
Referenced Documents					
Index	Reference	Description	File Type	Company	Link
5.3.1.3.7_001	PKA-RP100KAL	Fan Coil Units	Data Sheet	MITSUBISHI ELECTRIC EUROPE	View
5.3.1.3.7_002	OCH452	PKA-RP KAL Service Manual	User Manual	MITSUBISHI ELECTRIC EUROPE	View

1.1.1.4 Certificates

Not applicable

1.1.1.5 Drawings

Not applicable

1.1.1.6 Operation

Note: For detailed and specific Manufacturer's operational information, including requirements for start-up, shut down, etc., refer to the following:

O&M Manual

Start Up Procedures

Refer to the Manufacturer's pre-start instructions for each item of equipment.

Ensure power is provided to the external heat pump/condenser unit/s.

Ensure power is provided to the internal unit/s.

Ensure the controls are set for automatic operation.

Normal Operation

The Air Conditioning Systems are operated by their local controller/s.

Shut Down Procedures

Refer to specific Manufacturer's shut down procedures.

Isolate the power supplies to the equipment.

Emergency Operation

In the event of an emergency, follow the shut down procedures and specific Manufacturer's emergency shut down procedures.

Fault Finding

For detailed information on fault finding provided by the Manufacturer refer to the following:

O&M Manual

1.1.1.7 Maintenance

For maintenance procedures related to common components covering multiple systems refer to the General Maintenance Procedures located at the end of this Section.

1.1.1.7.1 Air Conditioning

Maintenance		
Detail	Frequency	Notes
Check DX unit filters	6 Months	n/a

1.1.2 LOW-VOLTAGE DISTRIBUTION SYSTEMS SS_70_30_45_45

1.1.2.1 System Overview

A low voltage (LV) supply has been provided to the School by the local supplying authority from their local network. The supply serves a main LV MCCB panel that in turn serves combined/split lighting

and power MCB distribution boards as well as general power and lighting MCB distribution boards that deliver the final circuits to the building. Further final circuits are also provided from the main LV MCCB panel to isolators for items such as Air Conditioning Systems, Lifts, etc. The works have been undertaken strictly in accordance with BS 7671.

1.1.2.2 System Description

A 400 A (216 kVA) TPN 400 V supply has been provided to the School by the local supplying authority/DNO via their head and metering arrangement installed in the Electrical Plantroom on the ground floor (0-47). The supply is delivered to the main switch disconnecter within the School's main MCCB LV panel in the same room (LVPB). LVPB is a wall mounted form 3, type B panel fitted with integral incoming consumption meter, a number of outgoing consumption meters (see later in this Section), power factor correction and harmonic filtering equipment, transient voltage surge suppression equipment (Class 1 and 2), etc. as well as the required amount of spare ways for future use.

LVPB distributes the following outgoing circuits (not in any particular order, refer to final commissioning documentation for actual circuit schedules/listings and device settings, all circuits are TPN unless stated otherwise):

- Combined/split lighting and power MCB distribution board DB/G01 in Store Room 0-42 for local lighting and power
- Combined/split lighting and power MCB distribution board DB/G02 in Stock Room 0-27 for local lighting and power
- MCB distribution board DB/G03 in Server Room 0-29 for power to the IT equipment in the same room
- MCB distribution board DB/G04 in Mechanical Plantroom 0-45 for power to various items of Mechanical Services plant
- MCB distribution board DB/G05 in PE Store Room 0-02 for external lighting
- MCB distribution board DB/G06 in Dry Store Room 0-03 for lighting and power to the Kitchen equipment for the use of the Specialist Kitchen Installer
- MCB distribution board DB/G07 in PE Store Room 0-02 for lighting and power to the Hall/Studio
- Combined/split lighting and power MCB distribution board DB/F01 in the riser within the Staff Work Room 1-24 for local lighting and power
- Combined/split lighting and power MCB distribution board DB/F02 in Store Room 1-16 for local lighting and power

- Isolator and commando socket outlet in the Lift Shaft for the lift and the use of the Specialist Lift Installer
- Isolator on the roof for the ground floor VRF Air Conditioning System condenser
- Isolator on the roof for the 1st floor VRF Air Conditioning System condenser
- Isolator on the roof for the Server Room DX Air Conditioning System condenser
- Isolator on the roof for the Hall air handling unit
- Isolator in the Entrance Lobby for the School's Fire Detection and Alarm System

- Isolator in the Server Room for the School's Intruder Detection and Alarm System

The combined/split lighting and power MCB distribution boards are served by a main incoming switch disconnector that isolates both power and lighting sections. Each lighting and power board with the combined/split lighting and power MCB distribution boards and the individual MCB distribution boards are provided with their own switch disconnector and consumption meter on its incoming supply. All meters in the main LV panel and MCB distribution boards are connected to the BMS for monitoring purposes.

Generally, supplies to and circuits from LVPB to the various MCB distribution boards are cabled using XLPE/SWA or fire resistant multi-core cabling ran on cable tray

1.1.2.2.1 Controls

The main LV MCCB panel and MCB distribution boards are provided with integral main switch disconnectors that isolates the entire board. Individual outgoing ways from the boards are protected by MCCBs, MCBs or RCDs.

Any isolation should be prior planned and the correct documentation provided (Method Statement, Isolation Plan, etc.) to the appropriate people well in advance of the activity. This documentation must be approved by the relevant parties before any isolation can be undertaken.

1.1.2.3 Equipment & Material Schedules

1.1.2.3.1 3 Phase Distribution Board

Type					
Manufactured By	SCHNEIDER ELECTRIC UK LIMITED				
Supplied By	SCHNEIDER ELECTRIC UK LIMITED				
Description	3 Phase Distribution Board				
Model Number	Acti 9				
Category	Pr_60_70_22_22 Distribution boards				
Component					
Asset Ref	Description				Location
DB001	3 Phase Distribution Board				1-24
DB002	3 Phase Distribution Board				1-16
DB003	3 Phase Distribution Board				0-42
DB004	3 Phase Distribution Board				0-27
DB005	3 Phase Distribution Board				0-29
DB006	3 Phase Distribution Board				0-45
DB007	3 Phase Distribution Board				0-47
DB008	3 Phase Distribution Board				0-05
DB009	3 Phase Distribution Board				0-02
Attributes					
Description	Detail			Notes	
AssetType	Fixed			n/a	
WarrantyDurationUnit	Months			n/a	
WarrantyGuarantorParts	info@schneider-electric.com			n/a	
WarrantyDurationParts	12			n/a	
WarrantyGuarantorLabour	info@deselectrical.com			n/a	
WarrantyDurationLabour	12			n/a	
NominalLength	1454mm			n/a	
NominalWidth	470mm			n/a	
NominalHeight	139mm			n/a	
Voltage	400/3/50			n/a	
Spares					
Description	Manufacturer	Part No.	Size/Type/Rating	Qty	Notes
Acti 9 DT40 MCB 1 Pole	Schneider Electric	A9P22602	2A/ 6kA/230V	5	RS Components
3 Pole DIN Rail Non Fused Isolator Switch - 40 A	Schneider Electric	A9S65340	40A/415V	1	RS Components
Residual Risk					
None identified					
COSHH					
None					
Disposal					
n/a					
Referenced Documents					
Index	Reference	Description	File Type	Company	Link
5.3.2.3.1_001	Acti 9	Three Phase Distribution Board	Data Sheet	SCHNEIDER ELECTRIC UK LIMITED	View

1.1.2.3.2 Panel Board

Type					
Manufactured By	SCHNEIDER ELECTRIC UK LIMITED				
Supplied By	R&B SWITCHGEAR GROUP LTD				
Description	Panel Board				
Model Number	MG6C12				
Category	Pr_65_72 Electrical power products and wiring accessories				
Component					
Asset Ref	Description	Location			
MDB001	Main LV Switchboard	0-47			
Attributes					
Description	Detail			Notes	
AssetType	Fixed			n/a	
WarrantyDurationUnit	Months			n/a	
WarrantyGuarantorParts	info@schneider-electric.com			n/a	
WarrantyDurationParts	12			n/a	
WarrantyGuarantorLabour	info@deselectrical.com			n/a	
WarrantyDurationLabour	12			n/a	
NominalLength	1493mm			n/a	
NominalWidth	850mm			n/a	
NominalHeight	260mm			n/a	
Voltage	400/3/50			n/a	
Spares					
Description	Manufacturer	Part No.	Size/Type/Rating	Qty	Notes
n/a	n/a	n/a	n/a	n/a	n/a
Residual Risk					
None identified					
COSHH					
None					
Disposal					
n/a					
Referenced Documents					
Index	Reference	Description	File Type	Company	Link
5.3.2.3.2_001	Powerpact MG6C12	Panel Board	Data Sheet	SCHNEIDER ELECTRIC UK LIMITED	View

1.1.2.4 Operation

Start-up

Refer to the Manufacturer's pre-start instructions for each item of equipment.

Ensure that power is provided to the site from the local supplying authority at the main intake/service head. This supply serves the entire School.

Ensure that the isolator/MCCB on the incoming power supply to the main panel is closed and power is available.

Ensure that MCCBs on the outgoing ways of the main panelboard switchboard are closed.

Ensure that isolators on the incoming supplies to the distribution boards (from the main panelboard switchboard) are closed.

Ensure that MCBs and RCBOs on the outgoing ways from the distribution boards are closed.

Ensure that the isolators on the power supplies to the equipment are closed.

Ensure that power is supplied to all outlets and equipment.

Normal Operation

Providing the main LV panel and distribution boards are energised and the individual circuit MCCBs, MCBs and RCBOs are closed, the system should operate normally.

Shutdown

Ensure that all electrical loads have been switched off in a controlled manner and the necessary parties have been advised under planned works.

To isolate an individual circuit, open the relevant outgoing MCCB, MCB or RCBO.

To isolate the entire main LV panel or distribution boards, open the relevant incoming isolator.

NOTE – Be sure to consider all incoming power supplies to the building, these can be delivered by other systems (Generators, Photovoltaic Systems, etc.) as well as other supplies from the local supplying authority.

Emergency Operation

In the event of an emergency, shut down the main panelboard switchboard or local distribution board at its main incoming switch.

Fault Finding

Fault	Action
Power circuit trips	<p>Has any item of equipment recently been installed? Power circuits provided with RCBOs monitor for earth leakage currents. This leakage current can be caused by some appliances in their usual course of operation. Check with the appliance manufacturer.</p> <p>Check operation of circuit protective device (CPD) at MCB distribution board/s and the "Test" button if RCBO is fitted.</p> <p>Has any work been carried out in the vicinity of the failure, or along the route of the failed circuit prior to the failure?</p> <p>If CPD failed disconnect all equipment from circuit and check continuity of conductors and insulation resistance of same. Remember, never replace CPD and re-energise unless fault has been identified.</p>
Equipment / Appliance failure	<p>Check condition of flexible cable and plug, if fitted.</p> <p>Check fuse in plug or connection unit has not blown and correct rating.</p> <p>Was the appliance or component operating when it failed, or did it fail to start?</p> <p>Do other items of equipment on the same circuit still operate?</p> <p>Has the correct operating procedure been carried out?</p> <p>When was the last time the component/ appliance used?</p> <p>Had there been any signs of deterioration in the performance or any increase in noise levels from the appliance/ component?</p> <p>Has there been any maintenance work carried out prior to the failure?</p>

Fault	Action
	Has anyone else investigated the failure prior to those now required to do so and if so what did they do and what did they find out? Remove appliance from circuit and consult service engineer.

1.1.2.5 Maintenance

For maintenance procedures related to common components covering multiple systems refer to the General Maintenance Procedures located at the end of this Section.

1.1.2.5.1 LV Distribution Board

Maintenance		
Detail	Frequency	Notes
Periodic inspections and condition reports should be carried out every three years by a registered NICEC inspector.	3 Years	n/a

1.1.3 LITERATURE SUMMARY

Index	Author	Description	Reference	Type
5.3.1.3.1_001 5.3.1.3.2_001	MITSUBISHI ELECTRIC EUROPE	AC Branch Controller	CMB-P1-V-G1	Data Sheet
5.3.1.3.1_002 5.3.1.3.2_002	MITSUBISHI ELECTRIC EUROPE	AC Branch Controller	CMB-P-V-GA1 I	User Manual
5.3.1.3.3_001	MITSUBISHI ELECTRIC EUROPE	External Condensing Unit	PUHZ-ZRP100VKA	User Manual
5.3.1.3.4_001 5.3.1.3.6_001	MITSUBISHI ELECTRIC EUROPE	External Condensing Unit	PURY	User Manual
5.3.1.3.5_001	MITSUBISHI ELECTRIC EUROPE	Fan Coil Units	HWE0812B	User Manual
5.3.1.3.7_001	MITSUBISHI ELECTRIC EUROPE	Fan Coil Units	PKA-RP100KAL	Data Sheet
5.3.1.3.7_002	MITSUBISHI ELECTRIC EUROPE	PKA-RP KAL Service Manual	OCH452	User Manual
5.3.2.3.1_001	SCHNEIDER ELECTRIC UK LIMITED	Three Phase Distribution Board	Acti 9	Data Sheet
5.3.2.3.2_001	SCHNEIDER ELECTRIC UK LIMITED	Panel Board	Powerpact MG6C12	Data Sheet