

NAPPER

RIBA  Chartered Practice

Design and Access Statement

VM Baguley C0490

Revision : 2 / 2nd April 2020



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1.0 Background Information

UpNorth Group commissioned Napper Architects to submit applications for planning approval for the alteration and / or adaption of a number of Virgin Media 'hubs' nationwide, to provide air handling equipment to serve new VM digital media apparatus.

Some schemes involve the internal alteration of existing accommodation to create new data halls and their associated plant requirements. At VM Baguley some accommodation is to be relocated elsewhere within the building to create space for new data zones.

The premises are accessed off Timpson Road to the north with Southmoor Road to the east and a national rail line to the south.

***VM Virgin Media C0490
Virgin Media City House
Baguley
Manchester
M23 9WX***

2.0 Location, Constraints and Context



Figure 1.

Site location and application boundary. Not to scale

Virgin Media occupy the premises on the junction of Timpson Road and Southmoor Road with a national rail line to the south. To the East is another industrial unit whilst to the north is a Lidl. VM occupy the two-three storey building, with its own dedicated service yard and parking apron accessed from Timpson Road.

The Baguley site is a mixed used facility which is currently used for Corporate Office Services and Business Network Technical Services. The plan for the site is to introduce a new data centre within the building over several phases. To support the new data centre new external condenser units are proposed within a new plant compound to the west elevation of the site, with some additional condensers to the north elevation and the southern elevation of the building to service the data halls.



Figure 2.
The aerial photograph identifies the Virgin Media site and application boundary.



Figure 3.
Birds-eye view from the north.



Figure 4.
Birds-eye view from the east.



Figure 5.
Birds-eye view from the south.



Figure 6.
Birds-eye view from the west



Figure 7.
Location of proposed new plant compound & Louvre



Figure 8.
Location of proposed condensers at North elevation.

3.0 The Proposals

The proposals which form this submission build on the evolving client brief and the technical analysis noted in the sections below.

3.1 Amount

A proposed plant compound which to the west elevation of the existing warehouse building. The plant compound will be built up on new concrete plinth 100-300mm above the existing road level. Within the plant compound there is the provision for:

12No condensers horizontally mounted

To the northern elevation of the southern wing of the existing building we are proposing 2No. additional condenser units to the existing path (inline with existing condensers), there is the provision for:

2No. condensers vertically stacked

To the south elevation of the warehouse block there is the provision for:

2No. condensers vertically stacked

1No. condensers vertically mounted

3No. Roof Cows mounted on the roof next to the existing to serve the units in the new data hall.

3.2 Layout

The plan for the site is to introduce a new data centre within the building over several phases. To support the new data centre new external condenser units are proposed within a new plant compound to the west elevation of the site.

To the west elevation we are proposing to fit a new 1.5m high x 17m louvred intake vent behind the proposed condensers. The louvres are to be powder coated in grey to match the existing facade.

To the south elevation we are proposing to fit a new 2m high x 13m louvred intake vent at first floor level behind the existing generators. The louvres are to be powder coated in grey to match the existing facade.

For the exact location please refer to appendices 4.7 - 4.10.

3.3 Scale

These are proprietary units, sized for performance capacity; they are positioned to facilitate and directly cool new digital media apparatus.

- 12 x Airedale CR65 Horizontally Mounted 2184(L) x 1000(H)x1166(D)
- 1x 2No Vertiv Vertically Stacked 1970 x 1200 x 890
- 1x 2No Mitsubishi PUHZ-ZRP140YKA Vertically Stacked 1338 x 1050 x 330
- 1x 1No Airedale Vertically Stacked
- 3x Roof Cowles 1200 x 1200

3.4 Appearance

All condenser units, louvres and roof cowls are to have a self-finished powder coating.

3.5 Access

The plant installation requires only periodic maintenance, with full access required only during the installation period and for inspection of any damage or major technical faults that occur during operation. Direct access is possible via Timpson Road to the north via a private access road around the building. Access is restricted to virgin media operatives, within a secure compound enclosure.

3.6 Planning: Guidance Data

Refer also to preceding sections 3.1-3.5

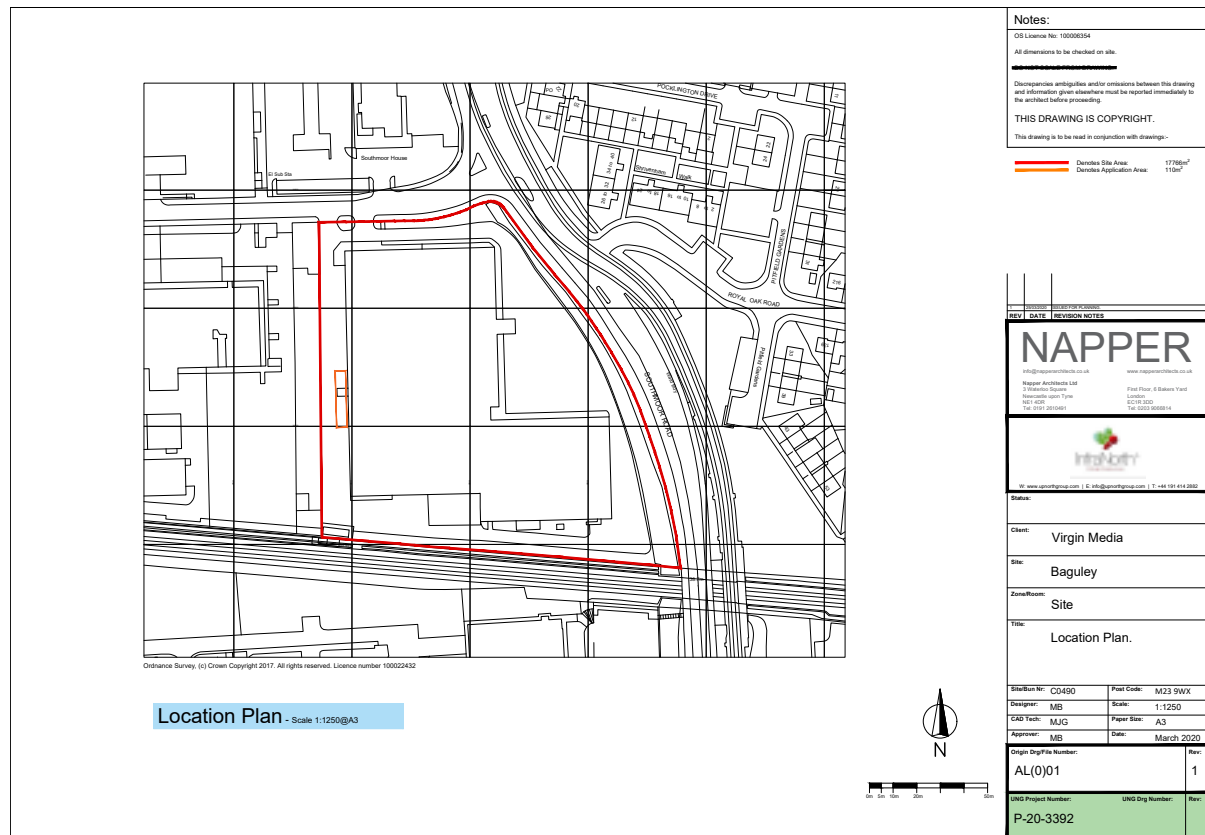
- A. Site Analysis** - Virgin Media occupy the premises on the junction of Timpson Road and Southmoor Road with a national rail line to the south. VM occupy the two-three storey building, with its own dedicated service yard and parking apron accessed from Timpson Road.
- B. Context Analysis** – The proposal is to provide a condensor units and supplementary air cooling plant to serve digital media equipment. No existing access arrangement for either Virgin Media or their neighbours is compromised.
- C. Policy Context**
- D. Movement** - No existing access arrangements are compromised by the proposal.
- E. Access** - Refer to item 3.5
- F. Amount** - Refer to item 3.1
- G. Layout** - Refer to item 3.2
- H. Scale** - Refer to item 3.3.
- I. Appearance** - Refer to item 3.4
- J. Landscaping** – No landscaping is involved in this application.
- K. Community Safety** - The proposed compound extension is located within the Virgin demise and is accessible only by Virgin Media staff and service engineers.
- L. Environmental Sustainability** - The scheme proposal is to provide an efficient element of plant with capacity to serve new digital media distribution equipment, whilst adhering to current legislation in terms of performance output.
- M. Flood Risk** - As identified from the Environment Agencies flood risk map the site lies within flood zone 1. Therefore there is a low probability of flooding.



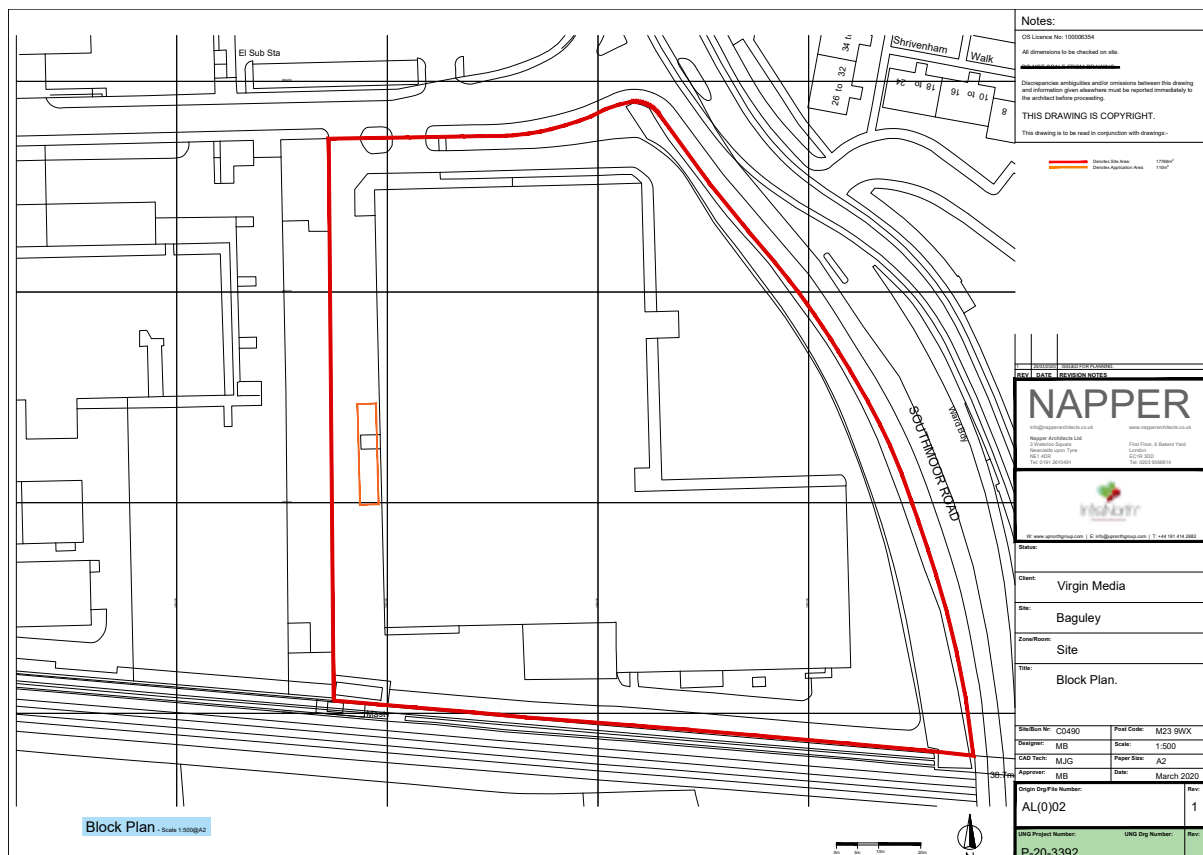
Figure 9.
Environment Agencies flood risk map

Final Scheme - As application drawings.
171020/MG/MB/25 March 2020

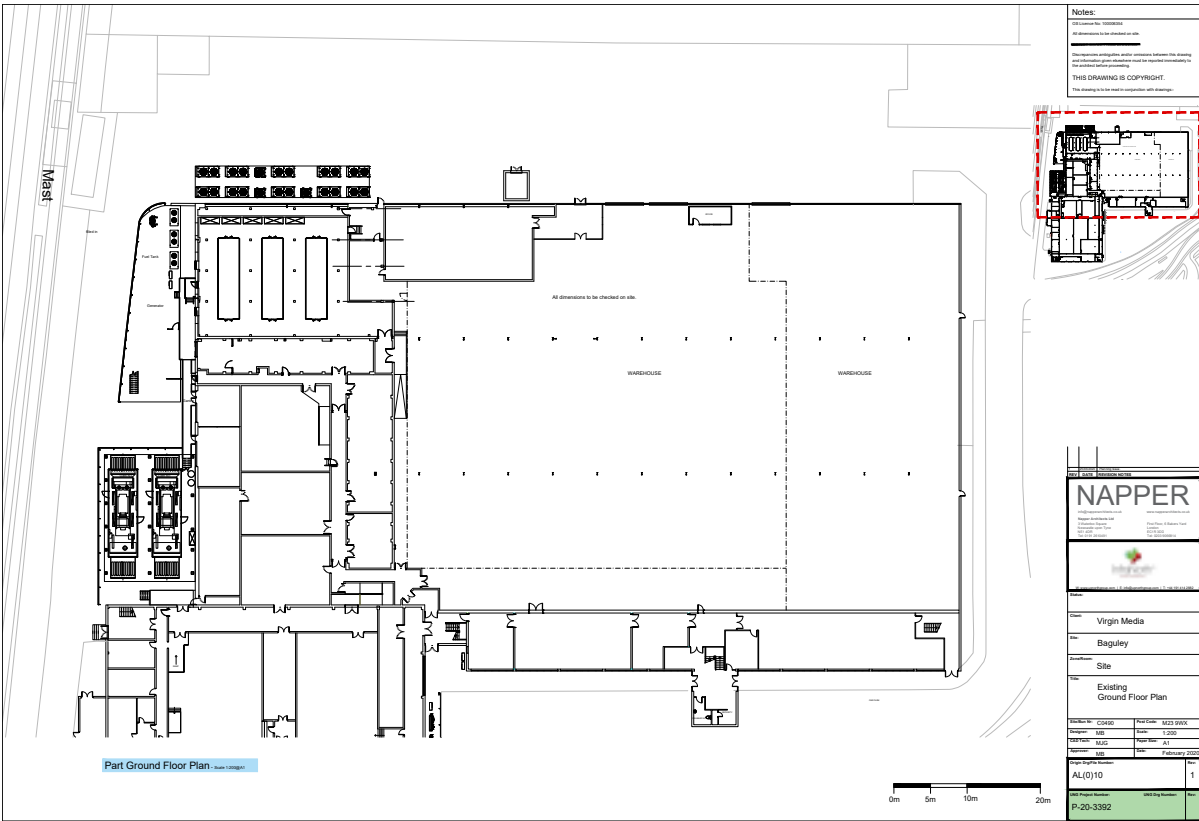
4.1 Napper Architects Drawing: AL(0)01 Location Plan



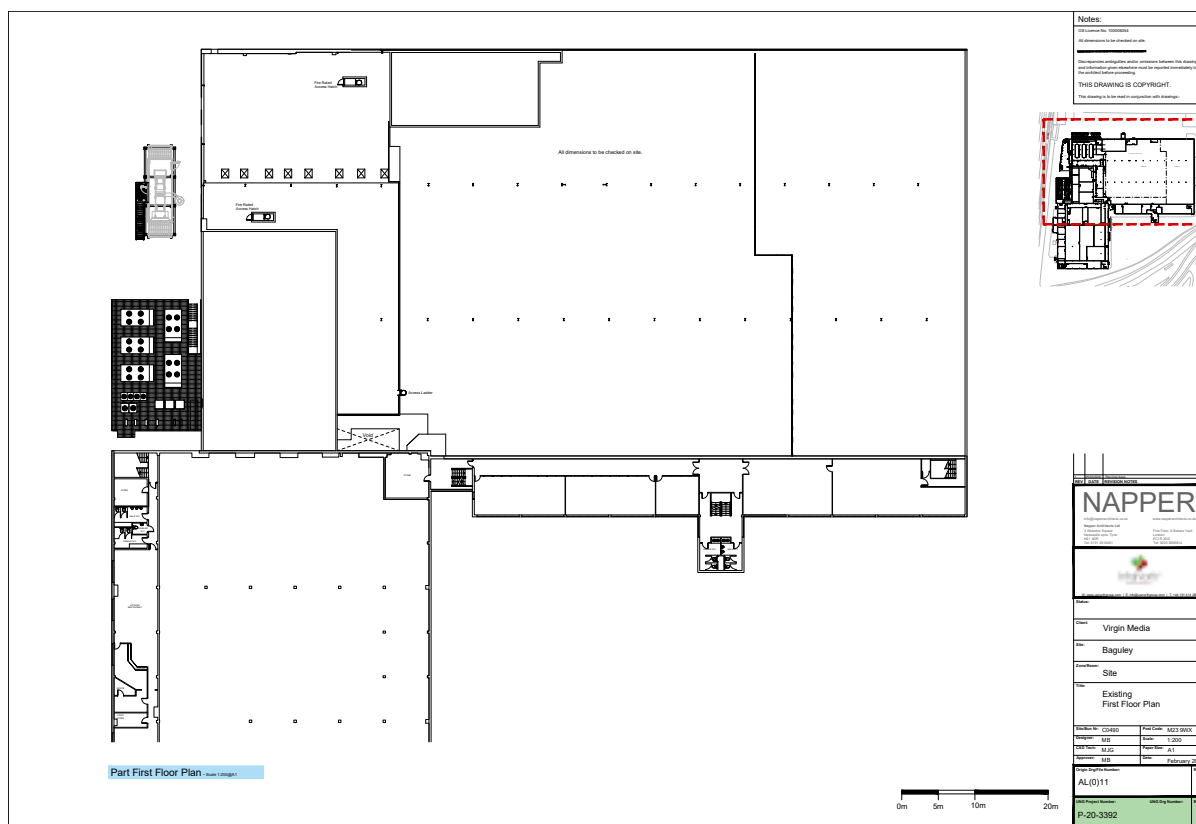
4.2 Napper Architects Drawing: AL(0)02 Block Plan



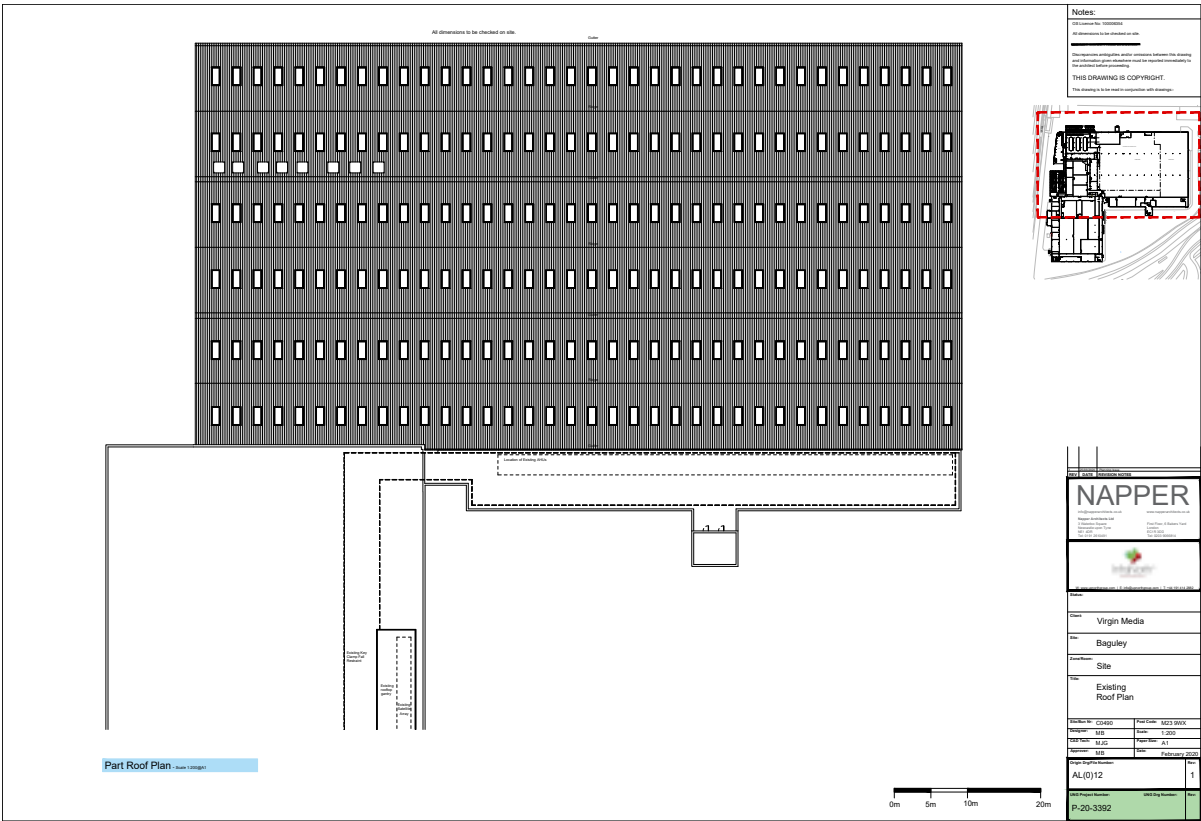
4.3 Napper Architects Drawing: AL(0)10 Existing Ground Floor Plan



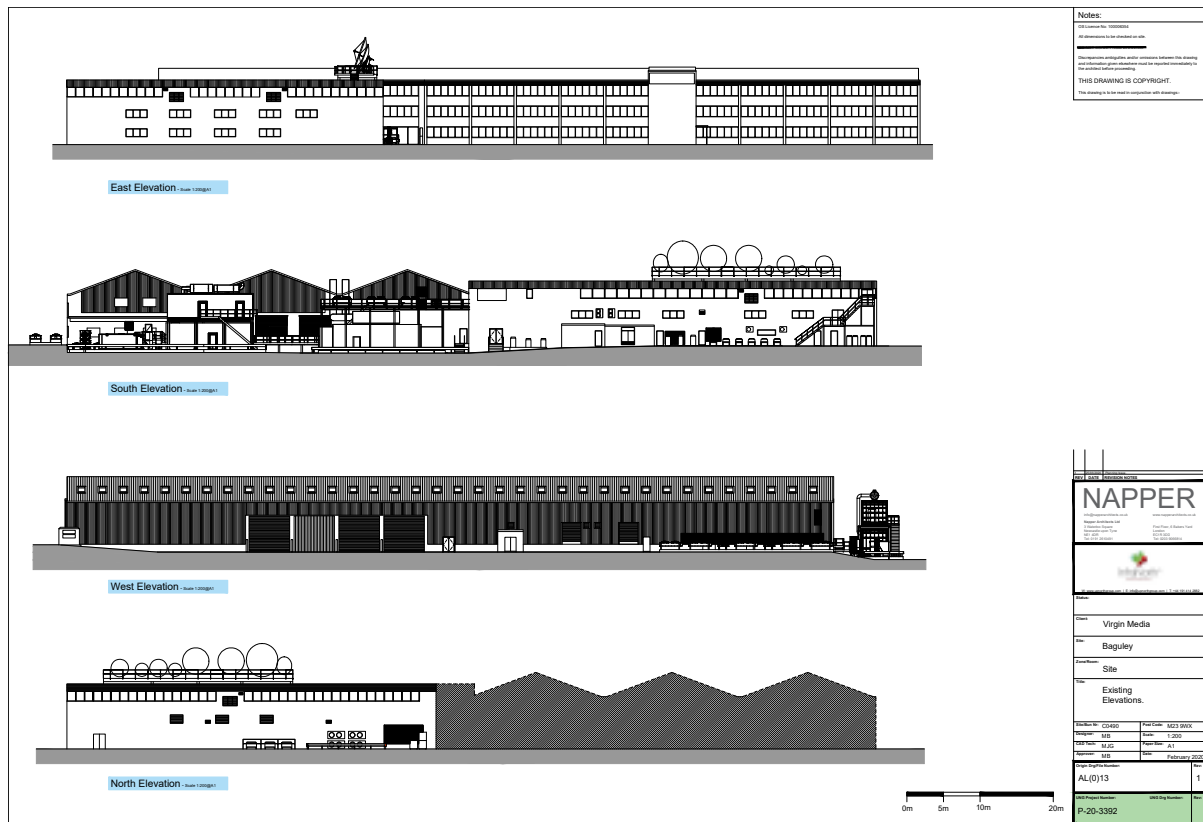
4.4 Napper Architects Drawing: AL(0)11 Existing First Floor Plan



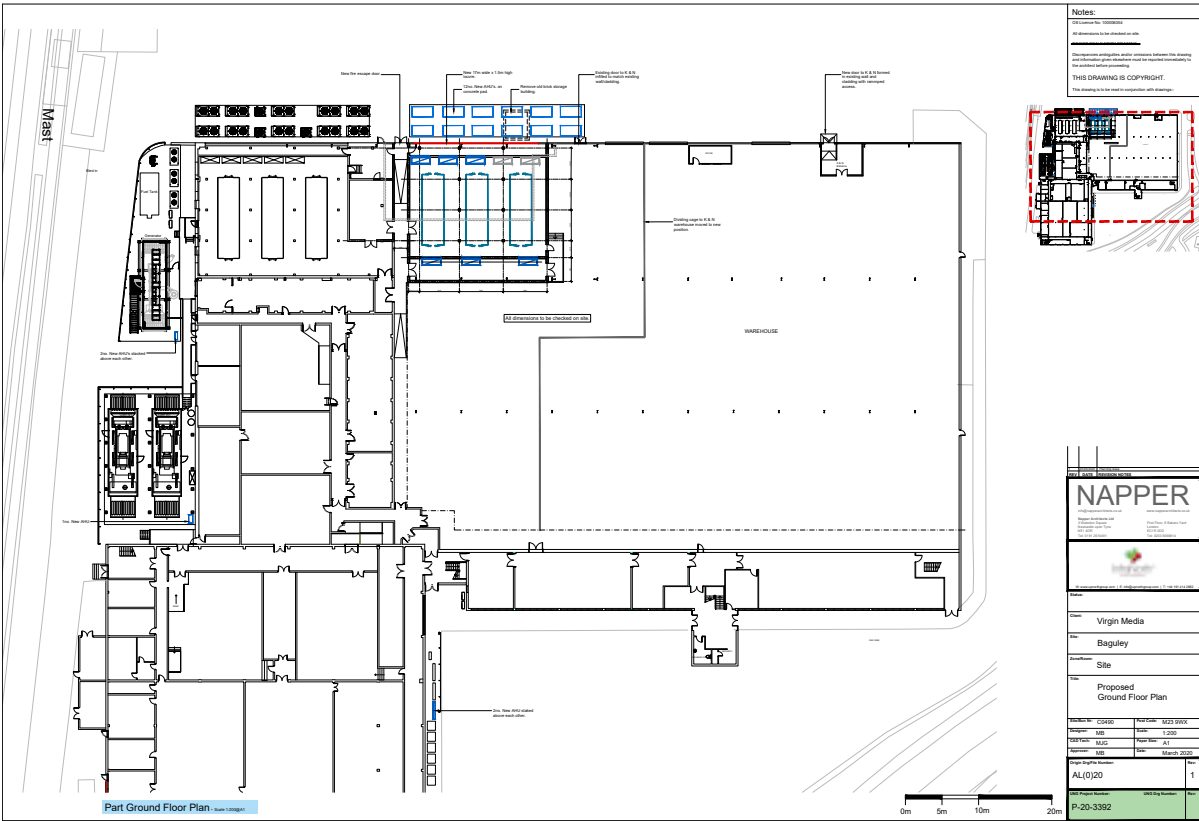
4.5 Napper Architects Drawing: AL(0)12 Existing Roof Plan



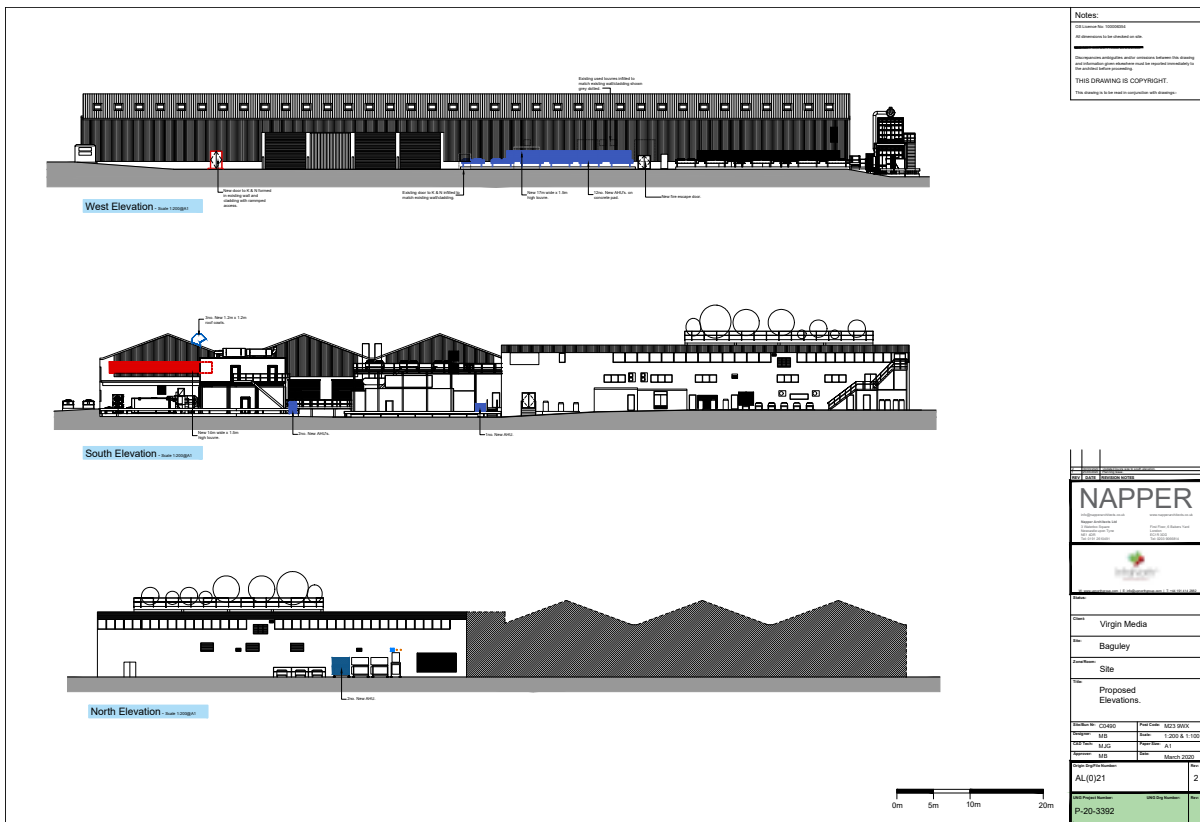
4.6 Napper Architects Drawing: AL(0)13 Existing Elevations



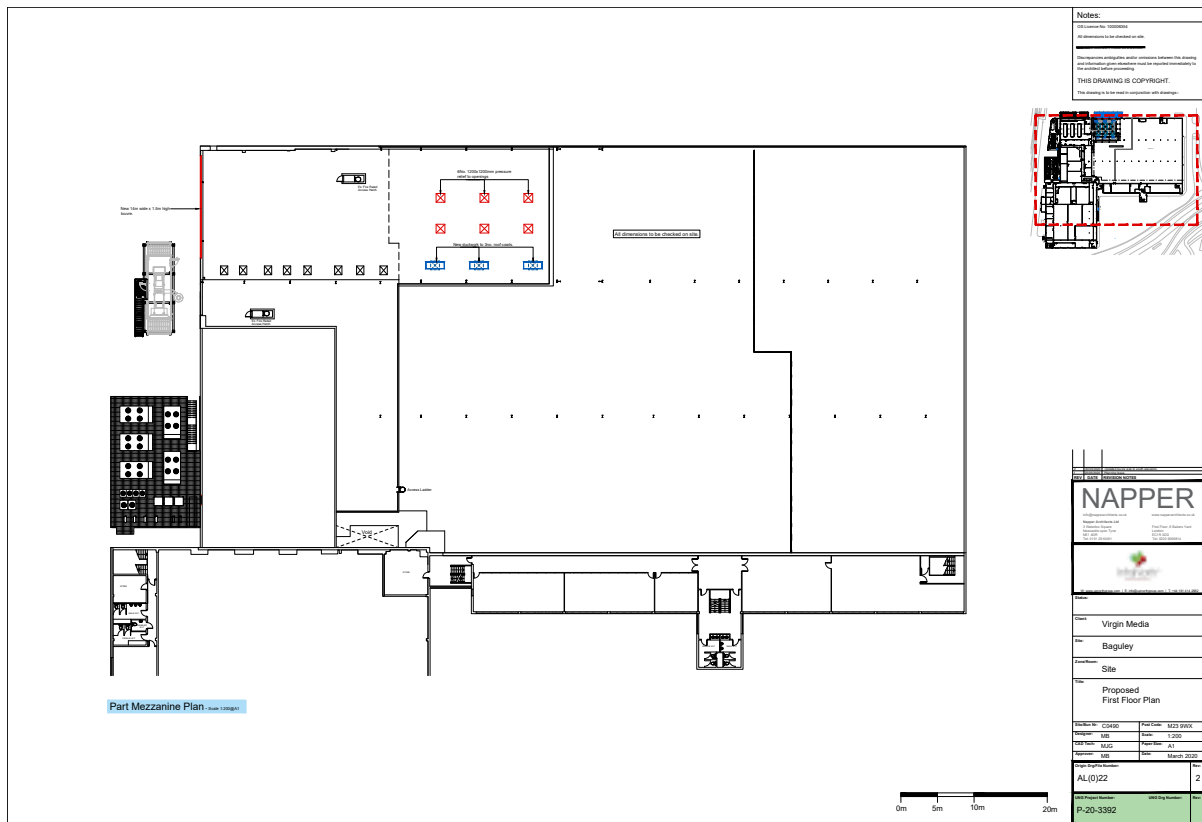
4.7 Napper Architects Drawing: AL(0)20 Proposed Ground Floor Plan



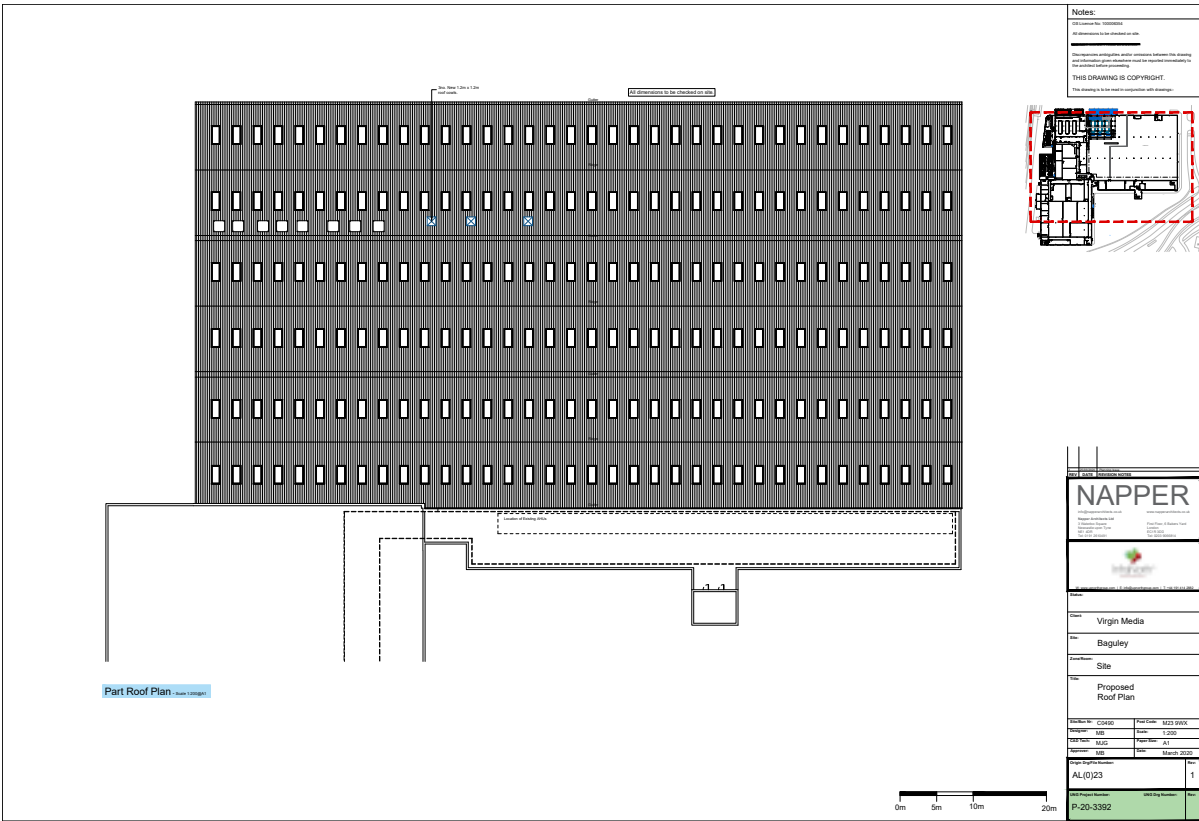
4.8 Napper Architects Drawing: AL(0)21 Proposed Elevations



4.9 Napper Architects Drawing: AL(0)22 Proposed First Floor Plan



4.10 Napper Architects Drawing: AL(0)23 Proposed Roof Plan



4.11 Technical Specification:

CONDENSERS

CR12 - CR165 50/60Hz

Technical Data

Performance Data

Mean Condensing Temperature °C	Ambient					
	25°C	30°C	35°C	40°C	45°C	48°C
	Output kW	Output kW	Output kW	Output kW	Output kW	Output kW
CR65	35	44.9	18.6	-	-	-
	40	69.1	45.2	19.3	-	-
	45	93.8	69.7	45.6	20	-
	50	119.2	94.8	70.6	46.4	21
	55	145.5	120.9	96.4	72	47.5
CR80	35	55.3	23	-	-	-
	40	85.8	55.8	23.8	-	-
	45	116.7	86.6	56.5	24.7	-
	50	148.4	118.1	87.8	57.5	25.8
	55	180.9	150.4	120	89.5	58.9
CR105	35	72.1	30	-	-	-
	40	110.8	72.6	31	-	-
	45	150.4	111.7	73.3	32.2	-
	50	191.1	152.1	113.2	74.5	33.8
	55	233.3	193.8	154.6	115.5	76.3
CR130	35	95.3	40.5	-	-	-
	40	146.3	95.9	41.7	-	-
	45	198.3	147.6	97	43.2	-
	50	251.6	200.6	149.7	98.6	45.1
	55	306.6	255.2	203.9	152.6	101
CR140	35	95.8	40.2	-	-	-
	40	147.2	96.3	41.5	-	-
	45	199.6	148.3	97.2	43	-
	50	253.5	201.6	150.1	98.7	44.9
	55	309	256.8	204.8	152.9	101
CR165	35	124.8	53.5	-	-	-
	40	191.6	125.6	55	-	-
	45	259.6	193.2	126.9	56.9	-
	50	329	262.3	195.7	128.9	59.2
	55	400.6	333.4	266.4	199.3	131.8

(1) Output kW refers to the condenser heat rejection.

Operating Limit

Standard Variable Speed Head Pressure Control	
Minimum Ambient Air DB °C	-20°C
Maximum Ambient Air DB °C	+48

Optional On/Off Head Pressure Control	
Minimum Ambient Air DB °C	-0°C
Maximum Ambient Air DB °C	+48

(1) For conditions outside those quoted, please contact Airedale.

(2) Low ambient kits are available for applications with temperatures below those quoted, please contact Airedale.

CONDENSERS

CR12 - CR165 50/60Hz

Technical Data

Mechanical Data

		CR50	CR65	CR80	CR105
Total Heat of Rejection	(1) kW	53.8	70.6	87.8	113.2
Dimensions - Horizontal	(2)				
H x W x L	mm	1167 x 1000 x 2184	1167 x 1000 x 2184	1167 x 1000 x 3565	1167 x 1000 x 3565
Dimensions - Vertical	(2)				
H x W x L	mm	1090 x 1167 x 2184	1090 x 1167 x 2184	1090 x 1167 x 3565	1090 x 1167 x 3565
Weight					
Machine	kg	132	162	208	260
Construction					
Material/Colour		Galvanised Sheet Steel, Epoxy Baked Powder Paint - Light Grey (RAL 7035)			
Condenser		Air Cooled - Rifled Copper Tube/Turbulated Aluminium Fins			
Total Face Area	m²	2.11	2.11	3.63	3.63
Nominal Airflow	m³/s	4.8	4.2	7.5	6.6
Discharge		-H Horizontal or -V Vertical (Please Specify at Order)			
Fan & Motor		Axial			
Quantity		2	2	3	3
Diameter	mm	630	630	630	630
Maximum Speed	rpm	870	870	870	870
Refrigeration		Single Circuit			
Refrigerant Type		R410A			
Holding Charge		Inert Gas			
Coil Volume	l	10.7	21.4	18.3	36.6
Refrigerant Charge	(3) kg	4.9	9.8	8.4	16.7
Connections					
Liquid Line - Sweat	in	3/4"	3/4"	7/8"	7/8"
Discharge Line - Sweat	in	1 1/8"	1 1/8"	1 3/8"	1 3/8"
Short Case Axial Fan		Designed to 75 Pa ESP			
Dimensions - Horizontal					
H x W x L	mm	1167 x 1000 x 2184	1167 x 1000 x 2184	1167 x 1000 x 3565	1167 x 1000 x 3565
Dimensions - Vertical					
H x W x L	mm	1130 x 1167 x 2184	1130 x 1167 x 2184	1130 x 1167 x 3565	1130 x 1167 x 3565
Weight					
Machine	kg	154	184	242	294
EC Fan		Designed to 75 Pa ESP			
Dimensions - Horizontal					
H x W x L	mm	1167 x 1000 x 2184	1167 x 1000 x 2184	1167 x 1000 x 3565	1167 x 1000 x 3565
Dimensions - Vertical					
H x W x L	mm	1127 x 1167 x 2184	1127 x 1167 x 2184	1127 x 1167 x 3565	1127 x 1167 x 3565
Weight					
Machine	kg	145	175	228	280

(1) Nominal data based on 35°C ambient and a 50°C mean condensing temperature and using standard fan.

(2) Overall dimensions for clearance; refer to Dimensional & Installation Data, on page 10 for detail.

(3) For guidance only.

Technical Data

Electrical Data - 0

			CR50	CR65	CR80	CR105
Unit Data	-1					
Nominal Run Amps	A		5.8	5.8	8.7	8.7
Maximum Start Amps	A		11.2	11.2	16.8	16.8
Recommended Mains Fuse	A		10	10	16	16
Max Mains Cable Incoming	mm ²		6	6	6	6
Mains Supply			230V / 1Ph + N / 60Hz			
Fan - Per Fan						
Quantity			2	2	3	3
Motor Size	kW		0.63	0.63	0.63	0.63
Full Load Amps	A		2.9	2.9	2.9	2.9
Locked Rotor Amps	A		5.6	5.6	5.6	5.6
Short Case Axial Fan - Per Fan						
Quantity			2	2	3	3
Motor Size	kW		1.4	1.4	1.4	1.4
Full Load Amps	A		6	6	6	6
Locked Rotor Amps	A		18	18	18	18
EC Condenser Fan - Per Fan						
Quantity			2	2	3	3
Motor Size	kW		0.77	0.77	0.77	0.77
Full Load Amps	A		3.3	3.3	3.3	3.3

			CR130	CR140	CR165
Unit Data	(1)				
Nominal Run Amps	A		4.94	10.48	6.6
Maximum Start Amps	A		18.3	36.7	24.4
Recommended Mains Fuse	A		10	16	10
Max Mains Cable Incoming	mm ²		6	6	6
Mains Supply			400V 3Ph / 50Hz	230V / 1Ph + N / 50Hz	400V 3Ph / 50Hz
Fan - Per Fan					
Quantity			3	4	4
Motor Size	kW		0.88	0.6	0.88
Full Load Amps	A		1.65	2.62	1.65
Locked Rotor Amps	A		6.1	9.17	6.1
Short Case Axial Fan - Per Fan					
Quantity			3	4	4
Motor Size	kW		1.94	1.4	1.94
Full Load Amps	A		3.4	6	3.4
Locked Rotor Amps	A		11.9	18	11.9
EC Condenser Fan - Per Fan					
Quantity			3	4	4
Motor Size	kW		1.68	0.73	1.68
Full Load Amps	A		2.6	3.3	2.6

(1) Nominal data based on 35°C ambient and a 50°C mean condensing temperature and using standard fan.

CONDENSERS

CR12 - CR165 50/60Hz

Technical Data

Electrical Data - 1

		CR12	CR16	CR22	CR30
Unit Data	(1)				
Nominal Run Amps	A	1.1	1.1	2.9	2.9
Maximum Start Amps	A	2.8	2.8	5.6	5.6
Recommended Mains Fuse	A	6	6	6	6
Max Mains Cable Incoming	mm ²	6	6	6	6
Mains Supply		230V / 1Ph + N / 60Hz			
Fan - Per Fan					
Quantity		1	1	1	1
Motor Size	kW	0.24	0.24	0.63	0.63
Full Load Amps	A	1.1	1.1	2.9	2.9
Locked Rotor Amps	A	2.8	2.8	5.6	5.6
Short Case Axial Fan - Per Fan					
Quantity		1	1	1	1
Motor Size	kW	0.61	0.61	1.4	1.4
Full Load Amps	A	2.8	2.8	6	6
Locked Rotor Amps	A	7	7	18	18
EC Condenser Fan - Per Fan					
Quantity		1	1	1	1
Motor Size	kW	0.7	0.7	0.77	0.77
Full Load Amps	A	3.1	3.1	3.3	3.3

		CR50	CR65	CR80	CR105
Unit Data	-1				
Nominal Run Amps	A	5.8	5.8	8.7	8.7
Maximum Start Amps	A	11.2	11.2	16.8	16.8
Recommended Mains Fuse	A	10	10	16	16
Max Mains Cable Incoming	mm ²	6	6	6	6
Mains Supply		230V / 1Ph + N / 60Hz			
Fan - Per Fan					
Quantity		2	2	3	3
Motor Size	kW	0.63	0.63	0.63	0.63
Full Load Amps	A	2.9	2.9	2.9	2.9
Locked Rotor Amps	A	5.6	5.6	5.6	5.6
Short Case Axial Fan - Per Fan					
Quantity		2	2	3	3
Motor Size	kW	1.4	1.4	1.4	1.4
Full Load Amps	A	6	6	6	6
Locked Rotor Amps	A	18	18	18	18
EC Condenser Fan - Per Fan					
Quantity		2	2	3	3
Motor Size	kW	0.77	0.77	0.77	0.77
Full Load Amps	A	3.3	3.3	3.3	3.3

(1) Nominal data based on 35°C ambient and a 50°C mean condensing temperature and using standard fan.

Technical Data**Electrical Data - 2**

			CR12	CR16	CR22	CR30
Unit Data	-2					
Nominal Run Amps	A		1.72	1.72	3.02	3.02
Maximum Start Amps	A		6.02	6.02	7.7	7.7
Recommended Mains Fuse	A		6	6	6	6
Max Mains Cable Incoming	mm ²		6	6	6	6
Mains Supply			220V / 2Ph / 60Hz			
Fan - Per Fan						
Quantity			1	1	1	1
Motor Size	kW		0.39	0.39	0.64	0.64
Full Load Amps	A		1.72	1.72	3.02	3.02
Locked Rotor Amps	A		6.02	6.02	7.7	7.7
Short Case Axial Fan - Per Fan						
Quantity			1	1	1	1
Motor Size	kW		0.82	0.82	1.75	1.75
Full Load Amps	A		3.5	3.5	7.8	7.8
Locked Rotor Amps	A		8.75	8.75	19.5	19.5
EC Condenser Fan - Per Fan						
Quantity			1	1	1	1
Motor Size	kW		0.75	0.75	0.73	0.73
Full Load Amps	A		3.4	3.4	3.3	3.3

			CR50	CR65	CR80	CR105
Unit Data	-2					
Nominal Run Amps	A		6.04	6.04	9.06	9.06
Maximum Start Amps	A		15.4	15.4	23.1	23.1
Recommended Mains Fuse	A		10	10	16	16
Max Mains Cable Incoming	mm ²		6	6	6	6
Mains Supply			220V / 2Ph / 60Hz			
Fan - Per Fan						
Quantity			2	2	3	3
Motor Size	kW		0.64	0.64	0.64	0.64
Full Load Amps	A		3.02	3.02	3.02	3.02
Locked Rotor Amps	A		7.7	7.7	7.7	7.7
Short Case Axial Fan - Per Fan						
Quantity			2	2	3	3
Motor Size	kW		1.75	1.75	1.75	1.75
Full Load Amps	A		7.8	7.8	7.8	7.8
Locked Rotor Amps	A		19.5	19.5	19.5	19.5
EC Condenser Fan - Per Fan						
Quantity			2	2	3	3
Motor Size	kW		0.73	0.73	0.73	0.73
Full Load Amps	A		3.3	3.3	3.3	3.3

(1) Nominal data based on 35°C ambient and a 50°C mean condensing temperature and using standard fan.

SOUND DATA

IMPORTANT

The sound data quoted is based on the unit having the STANDARD FAN running at FULL SPEED under normal operating conditions.

For sound data of optional fan selections, please contact Airedale.

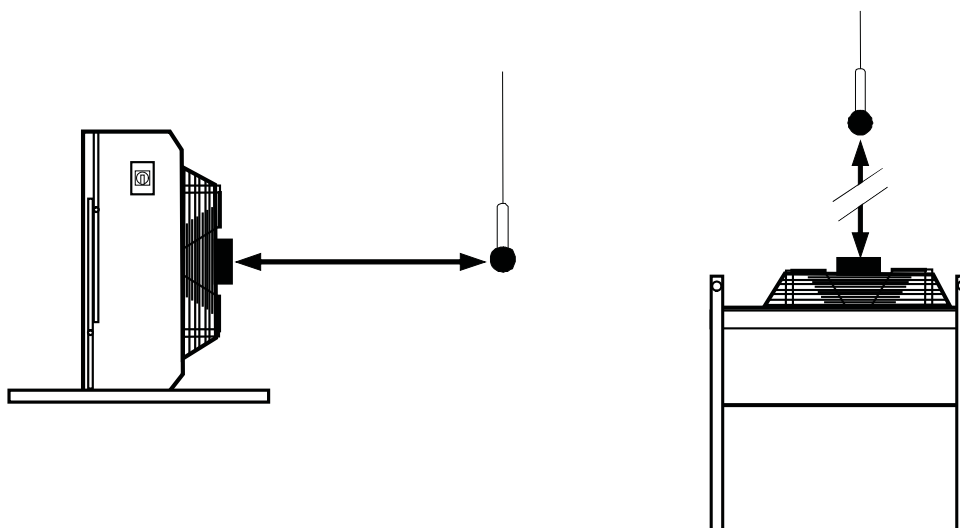
Measurement of Sound Data

All sound data quoted has been measured in the third-octave band limited values, using a Real Time Analyser calibrated sound intensity meter in accordance with BS EN ISO9614 Part 1 : 1995.

All Sound Power Levels quoted are calculated from measured sound intensity according BS EN ISO9614 Part 1 : 1995.

Semi Hemispherical

Sound Pressure Levels are calculated from sound power using the semi-hemispherical method where the noise source is in junction with 2 boundaries i.e. the floor and 1 wall.



SOUND DATA**Noise Data - Horizontal**

Sound Measurement		Overall dB(A)	Frequency (Hz) dB							
			63	125	250	500	1000	2000	4000	8000
CR12	Power	74	72	83	76	68	68	65	60	50
	Pressure @10m	46	44	55	48	40	40	37	32	22
CR16	Power	74	72	83	76	68	68	65	60	50
	Pressure @10m	46	44	55	48	40	40	37	32	22
CR22	Power	78	82	87	74	74	73	70	63	62
	Pressure @10m	50	54	59	46	46	45	42	35	34
CR26	Power	82	83	80	82	79	78	74	67	59
	Pressure @10m	54	55	52	54	51	50	46	39	31
CR30	Power	78	82	87	74	74	73	70	63	62
	Pressure @10m	50	54	59	46	46	45	42	35	34
CR35	Power	82	83	80	82	79	78	74	67	59
	Pressure @10m	54	55	52	54	51	50	46	39	31
CR50	Power	81	85	90	77	77	76	73	66	65
	Pressure @10m	53	57	62	49	49	48	45	38	37
CR60	Power	85	86	83	85	82	81	77	70	62
	Pressure @10m	57	58	55	57	54	53	49	42	34
CR65	Power	81	85	90	77	77	76	73	66	65
	Pressure @10m	53	57	62	49	49	48	45	38	37
CR75	Power	85	86	83	85	82	81	77	70	62
	Pressure @10m	57	58	55	57	54	53	49	42	34
CR80	Power	83	80	90	80	77	79	75	68	67
	Pressure @10m	55	52	62	52	49	51	47	40	39
CR95	Power	87	88	85	87	84	83	79	72	64
	Pressure @10m	59	60	57	59	56	55	51	44	36
CR105	Power	82	80	90	80	77	79	75	68	67
	Pressure @10m	55	52	62	52	49	51	47	40	39
CR130	Power	87	88	85	87	84	83	79	72	64
	Pressure @10m	59	60	57	59	56	55	51	44	36
CR140	Power	84	81	90	81	78	81	77	70	69
	Pressure @10m	56	53	62	53	50	53	49	42	41
CR165	Power	88	89	86	88	85	84	80	73	65
	Pressure @10m	60	61	58	60	57	56	52	45	37

Product Information

PSA-RP Power Inverter Heat Pump
Floor Standing System

Making a World of Difference



NETT SENSIBLE COOLING CAPACITIES:

$P_A - R_{P71} kA = 4.79 kW$
 $100 kA = 6.56 kW$
 $125 kA = 8.04 kW$
 $140 kA = 8.57 kW$

PLM ID#	DESCRIPTION	2014 Actual	2014 Estimate	2015 Proposed	2016 Proposed	2017 Proposed	2018 Proposed	2019 Proposed
GARF070400	Planning Services	9,821.3-16.5	11,121.23-14.5	11,224.5-14.6	14,225.5-18.6	14,525.5-18.6	14,625.7-18.6	14,925.7-18.6
	Operating Services	7,423.4-11.5	10,423.4-11.5	10,623.4-11.4	13,523.5-14.6	13,523.5-14.6	13,423.7-13.5	13,423.7-13.5
	Planning (M)	9,423.4-10.6	9,323.4-11.3	9,223.4-11.5	11,523.5-13.6	11,523.5-13.6	11,423.6-13.3	11,423.6-13.3
	Operating (M)	4,523.4-10.7	9,223.4-11.3	9,723.4-11.5	11,423.5-13.5	11,423.5-13.5	12,523.7-13.3	12,523.7-13.3
2014 Proposed (M)		9.15	9.15	9.15	9.15	9.15	9.15	9.15
2014-2015 Proposed		9.15-13.38	9.15-13.42	9.15-13.41	9.15-13.41	9.15-13.41	9.15-13.41	9.15-13.41
2015-2016 Proposed		9.15-13.42	9.15-13.42	9.15-13.41	9.15-13.41	9.15-13.41	9.15-13.41	9.15-13.41
2016-2017 Proposed		9.15-13.42	9.15-13.42	9.15-13.41	9.15-13.41	9.15-13.41	9.15-13.41	9.15-13.41
2017-2018 Proposed		9.15-13.42	9.15-13.42	9.15-13.41	9.15-13.41	9.15-13.41	9.15-13.41	9.15-13.41
2018-2019 Proposed		9.15-13.42	9.15-13.42	9.15-13.41	9.15-13.41	9.15-13.41	9.15-13.41	9.15-13.41
2019-2020 Proposed		9.15-13.42	9.15-13.42	9.15-13.41	9.15-13.41	9.15-13.41	9.15-13.41	9.15-13.41
2020-2021 Proposed		9.15-13.42	9.15-13.42	9.15-13.41	9.15-13.41	9.15-13.41	9.15-13.41	9.15-13.41
2021-2022 Proposed		9.15-13.42	9.15-13.42	9.15-13.41	9.15-13.41	9.15-13.41	9.15-13.41	9.15-13.41
2022-2023 Proposed		9.15-13.42	9.15-13.42	9.15-13.41	9.15-13.41	9.15-13.41	9.15-13.41	9.15-13.41
2023-2024 Proposed		9.15-13.42	9.15-13.42	9.15-13.41	9.15-13.41	9.15-13.41	9.15-13.41	9.15-13.41
2024-2025 Proposed		9.15-13.42	9.15-13.42	9.15-13.41	9.15-13.41	9.15-13.41	9.15-13.41	9.15-13.41
2025-2026 Proposed		9.15-13.42	9.15-13.42	9.15-13.41	9.15-13.41	9.15-13.41	9.15-13.41	9.15-13.41
2026-2027 Proposed		9.15-13.42	9.15-13.42	9.15-13.41	9.15-13.41	9.15-13.41	9.15-13.41	9.15-13.41
2027-2028 Proposed		9.15-13.42	9.15-13.42	9.15-13.41	9.15-13.41	9.15-13.41	9.15-13.41	9.15-13.41
2028-2029 Proposed		9.15-13.42	9.15-13.42	9.15-13.41	9.15-13.41	9.15-13.41	9.15-13.41	9.15-13.41
2029-2030 Proposed		9.15-13.42	9.15-13.42	9.15-13.41	9.15-13.41	9.15-13.41	9.15-13.41	9.15-13.41
2030-2031 Proposed		9.15-13.42	9.15-13.42	9.15-13.41	9.15-13.41	9.15-13.41	9.15-13.41	9.15-13.41
2031-2032 Proposed		9.15-13.42	9.15-13.42	9.15-13.41	9.15-13.41	9.15-13.41	9.15-13.41	9.15-13.41
2032-2033 Proposed		9.15-13.42	9.15-13.42	9.15-13.41	9.15-13.41	9.15-13.41	9.15-13.41	9.15-13.41
2033-2034 Proposed		9.15-13.42	9.15-13.42	9.15-13.41	9.15-13.41	9.15-13.41	9.15-13.41	9.15-13.41
2034-2035 Proposed		9.15-13.42	9.15-13.42	9.15-13.41	9.15-13.41	9.15-13.41	9.15-13.41	9.15-13.41
2035-2036 Proposed		9.15-13.42	9.15-13.42	9.15-13.41	9.15-13.41	9.15-13.41	9.15-13.41	9.15-13.41
2036-2037 Proposed		9.15-13.42	9.15-13.42	9.15-13.41	9.15-13.41	9.15-13.41	9.15-13.41	9.15-13.41
2037-2038 Proposed		9.15-13.42	9.15-13.42	9.15-13.41	9.15-13.41	9.15-13.41	9.15-13.41	9.15-13.41
2038-2039 Proposed		9.15-13.42	9.15-13.42	9.15-13.41	9.15-13.41	9.15-13.41	9.15-13.41	9.15-13.41
2039-2040 Proposed		9.15-13.42	9.15-13.42	9.15-13.41	9.15-13.41	9.15-13.41	9.15-13.41	9.15-13.41
2040-2041 Proposed		9.15-13.42	9.15-13.42	9.15-13.41	9.15-13.41	9.15-13.41	9.15-13.41	9.15-13.41
2041-2042 Proposed		9.15-13.42	9.15-13.42	9.15-13.41	9.15-13.41	9.15-13.41	9.15-13.41	9.15-13.41
2042-2043 Proposed		9.15-13.42	9.15-13.42	9.15-13.41	9.15-13.41	9.15-13.41	9.15-13.41	9.15-13.41
2043-2044 Proposed		9.15-13.42	9.15-13.42	9.15-13.41	9.15-13.41	9.15-13.41	9.15-13.41	9.15-13.41
2044-2045 Proposed		9.15-13.42	9.15-13.42	9.15-13.41	9.15-13.41	9.15-13.41	9.15-13.41	9.15-13.41
2045-2046 Proposed		9.15-13.42	9.15-13.42	9.15-13.41	9.15-13.41	9.15-13.41	9.15-13.41	9.15-13.41
2046-2047 Proposed		9.15-13.42	9.15-13.42	9.15-13.41	9.15-13.41	9.15-13.41	9.15-13.41	9.15-13.41
2047-2048 Proposed		9.15-13.42	9.15-13.42	9.15-13.41	9.15-13.41	9.15-13.41	9.15-13.41	9.15-13.41
2048-2049 Proposed		9.15-13.42	9.15-13.42	9.15-13.41	9.15-13.41	9.15-13.41	9.15-13.41	9.15-13.41
2049-2050 Proposed		9.15-13.42	9.15-13.42	9.15-13.41	9.15-13.41	9.15-13.41	9.15-13.41	9.15-13.41
2050-2051 Proposed		9.15-13.42	9.15-13.42	9.15-13.41	9.15-13.41	9.15-13.41	9.15-13.41	9.15-13.41
2051-2052 Proposed		9.15-13.42	9.15-13.42	9.15-13.41	9.15-13.41	9.15-13.41	9.15-13.41	9.15-13.41
2052-2053 Proposed		9.15-13.42	9.15-13.42	9.15-13.41	9.15-13.41	9.15-13.41	9.15-13.41	9.15-13.41
2053-2054 Proposed		9.15-13.42	9.15-13.42	9.15-13.41	9.15-13.41	9.15-13.41	9.15-13.41	9.15-13.41
2054-2055 Proposed		9.15-13.42	9.15-13.42	9.15-13.41	9.15-13.41	9.15-13.41	9.15-13.41	9.15-13.41
2055-2056 Proposed		9.15-13.42	9.15-13.42	9.15-13.41	9.15-13.41	9.15-13.41	9.15-13.41	9.15-13.41
2056-2057 Proposed		9.15-13.42	9.15-13.42	9.15-13.41	9.15-13.41	9.15-13.41	9.15-13.41	9.15-13.41
2057-2058 Proposed		9.15-13.42	9.15-13.42	9.15-13.41	9.15-13.41	9.15-13.41	9.15-13.41	9.15-13.41
2058-2059 Proposed		9.15-13.42	9.15-13.42	9.15-13.41	9.15-13.41	9.15-13.41	9.15-13.41	9.15-13.41
2059-2060 Proposed		9.15-13.42	9.15-13.42	9.15-13.41	9.15-13.41	9.15-13.41	9.15-13.41	9.15-13.41
2060-2061 Proposed		9.15-13.42	9.15-13.42	9.15-13.41	9.15-13.41	9.15-13.41	9.15-13.41	9.15-13.41
2061-2062 Proposed		9.15-13.42	9.15-13.42	9.15-13.41	9.15-13.41	9.15-13.41	9.15-13.41	9.15-13.41
2062-2063 Proposed		9.15-13.42	9.15-13.42	9.15-13.41	9.15-13.41	9.15-13.41	9.15-13.41	9.15-13.41
2063-2064 Proposed		9.15-13.42	9.15-13.42	9.15-13.41	9.15-13.41	9.15-13.41	9.15-13.41	9.15-13.41
2064-2065 Proposed		9.15-13.42	9.15-13.42	9.15-13.41	9.15-13.41	9.15-13.41	9.15-13.41	9.15-13.41
2065-2066 Proposed		9.15-13.42	9.15-13.42	9.15-13.41	9.15-13.41	9.15-13.41	9.15-13.41	9.15-13.41
2066-2067 Proposed		9.15-13.42	9.15-13.42	9.15-13.41	9.15-13.41	9.15-13.41	9.15-13.41	9.15-13.41
2067-2068 Proposed		9.15-13.42	9.15-13.42	9.15-13.41	9.15-13.41	9.15-13.41	9.15-13.41	9.15-13.41
2068-2069 Proposed		9.15-13.42	9.15-13.42	9.15-13.41	9.15-13.41	9.15-13.41	9.15-13.41	9.15-13.41
2069-2070 Proposed		9.15-13.42	9.15-13.42	9.15-13.41	9.15-13.41	9.15-13.41	9.15-13.41	9.15-13.41
2070-2071 Proposed		9.15-13.42	9.15-13.42	9.15-13.41	9.15-13.41	9.15-13.41	9.15-13.41	9.15-13.41
2071-2072 Proposed		9.15-13.42	9.15-13.42	9.15-13.41	9.15-13.41	9.15-13.41	9.15-13.41	9.15-13.41
2072-2073 Proposed		9.15-13.42	9.15-13.42	9.15-13.41	9.15-13.41	9.15-13.41	9.15-13.41	9.15-13.41
2073-2074 Proposed		9.15-13.42	9.15-13.42	9.15-13.41	9.15-13.41	9.15-13.41	9.15-13.41	9.15-13.41
2074-2075 Proposed		9.15-13.42	9.15-13.42	9.15-13.41	9.15-13.41	9.15-13.41	9.15-13.41	9.15-13.41
2075-2076 Proposed		9.15-13.42	9.15-13.42	9.15-13.41	9.15-13.41	9.15-13.41	9.15-13.41	9.15-13.41
2076-2077 Proposed		9.15-13.42	9.15-13.42	9.15-13.41	9.15-13.41	9.15-13.41	9.15-13.41	9.15-13.41
2077-2078 Proposed		9.15-13.42	9.15-13.42	9.15-13.41	9.15-13.41	9.15-13.41	9.15-13.41	9.15-13.41
2078-2079 Proposed		9.15-13.42	9.15-13.42	9.15-13.41	9.15-13.41	9.15-13.41	9.15-13.41	9.15-13.41
2079-2080 Proposed		9.15-13.42	9.15-13.42	9.15-13.41	9.15-13.41	9.15-13.41	9.15-13.41	9.15-13.41
2080-2081 Proposed		9.15-13.42	9.15-13.42	9.15-13.41	9.15-13.41	9.15-13.41	9.15-13.41	9.15-13.41
2081-2082 Proposed		9.15-13.42	9.15-13.42	9.15-13.41	9.15-13.41	9.15-13.41	9.15-13.41	9.15-13.41
2082-2083 Proposed		9.15-13.42	9.15-13.42	9.15-13.41	9.15-13.41	9.15-13.41	9.15-13.41	9.15-13.41
2083-2084 Proposed		9.15-13.42	9.15-13.42	9.15-13.41	9.15-13.41	9.15-13.41	9.15-13.41	9.15-13.41
2084-2085 Proposed		9.15-13.42	9.15-13.42	9.15-13.41	9.15-13.41	9.15-13.41	9.15-13.41	9.15-13.41
2085-2086 Proposed		9.15-13.42	9.15-13.42	9.15-13.41	9.15-13.41	9.15-13.41	9.15-13.41	9.15-13.41
2086-2087 Proposed		9.15-13.42	9.15-13.42	9.15-13.41	9.15-13.41	9.15-13.41	9.15-13.41	9.15-13.41
2087-2088 Proposed		9.15-13.42	9.15-13.42	9.15-13.41	9.15-13.41	9.15-13.41	9.15-13.41	9.15-13.41
2088-2089 Proposed		9.15-13.42	9.15-13.42	9.15-13.41	9.15-13.41	9.15-13.41	9.15-13.41	9.15-13.41
2089-2090 Proposed		9.15-13.42	9.15-13.42	9.15-13.41	9.15-13.41	9.15-13.41	9.15-13.41	9.15-13.41
2090-2091 Proposed		9.15-13.42	9.15-13.42	9.15-13.41	9.15-13.41	9.15-13.41	9.15-13.41	9.15-13.41
2091-2092 Proposed		9.15-13.42	9.15-13.42	9.15-13.41	9.15-13.41	9.15-13.41	9.15-13.41	9.15-13.41
2092-2093 Proposed		9.15-13.42	9.15-13.42	9.15-13.41	9.15-13.41	9.15-13.41	9.15-13.41	9.15-13.41
2093-2094 Proposed		9.15-13.42	9.15-13.42	9.15-13.41	9.15-13.41	9.15-13.41	9.15-13.41	9.15-13.41
2094-2095 Proposed		9.15-13.42	9.15-13.42	9.15-13.41	9.15-13.41	9.15-13.41	9.15-13.41	9.15-13.41
2095-2096 Proposed		9.15-13.42	9.15-13.42	9.15-13.41	9.15-13.41	9.15-13.41	9.15-13.41	9.15-13.41
2096-2097 Proposed		9.15-13.42	9.15-13.42	9.15-13.41	9.15-13.41	9.15-13.41	9.15-13.41	9.15-13.41
2097-2098 Proposed		9.15-13.42	9.15-13.42	9.15-13.41	9.15-13.41	9.15-13.41	9.15-13.41	9.15-13.41
2098-2099 Proposed		9.15-13.42	9.15-13.42	9.15-13.41	9.15-13.41	9.15-13.41	9.15-13.41	9.15-13.41
2099-2100 Proposed		9.15-13.42	9.15-13.42	9.15-13.41	9.15-13.41	9.15-13.41	9.15-13.41	9.15-13.41
2100-2101 Proposed		9.15-13.42	9.15-13.42	9.15-13.41	9.15-13.41	9.15-13.41	9.15-13.41	9.15-13.41
2101-2102 Proposed		9.15-13.42	9.15-13.42	9.15-13.41	9.15-13.41	9.15-13.41	9.15-13.41	9.15-13.41
2102-2103 Proposed		9.15-13.42	9.15-13.42	9.15-13.41	9.15-13.41	9.15-13.41	9.15-13.41	9.15-13.41
2103-2104 Proposed		9.15-13.42	9.15-13.42	9.15-13.41	9.15-13.41	9.15-13.41	9.15-13.41	9.15-13.41
2104-2105 Proposed		9.15-13.42	9.15-13.42	9.15-13.41	9.15-13.41	9.15-13.41	9.15-13.41	9.15-13.4

[illegible]

Figure 1



Changes for the Reader

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small.akconditioning@me.com or www.akconditioning.com/feedback

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Performance





UK_QUO_2020_G0S8YS_UPNORTH GROUP - VIRGIN MEDIA BAGULEY POWER ROOM

PDX PERFORMANCE SPECIFICATION & PHYSICAL DETAILS

Model Reference	:	PXD41UA
Quantity	:	2x
System Type	:	Air-Cooled DX
Number of refrigeration circuits	:	1x
Microprocessor Control	:	ICOM / Coldfire Displays
Configuration	:	Upflow, Front air inlet
Colour	:	RAL7021 Black

FANS

Number of fans	:	1x
Fan speed control setting	:	89 %
Design external static pressure	:	100 Pa
Corresponding air volume flow rate	:	10, 050 m³/h
Corresponding fan motor power	:	2.09 kW Total

FILTER

Recirculation	:	ePM10 50% / F5
---------------	---	----------------

COOLING COIL

Entering air conditions	:	24°C DB / 45% RH
Cooling media	:	Refrigerant R410A
Total cooling capacity	:	36.0 kW Net
Sensible cooling capacity	:	36.0 kW Net
Supply air temperature	:	12.6 °C DB

COMPRESSORS

Quantity	:	1x
Type	:	Digital Scroll™

ELECTRICAL REQUIREMENTS

Electrical supply required	:	400V(±10%) / 3 Phase / 50Hz + Neutral
Full Load Current	:	19.0 Amps / Phase

DIMENSIONS & WEIGHT

Width	:	1200 mm
Depth	:	890 mm
Height	:	1970 mm Excludes Plenum + Base Module
Weight	:	452 kg



UK_QUO_2020_G0S8YS_UPNORTH GROUP - VIRGIN MEDIA BAGULEY POWER ROOM

EXTERNAL AIR-COOLED CONDENSERS

Model reference	:	MCC MCL055
Quantity	:	2x (1x for each air conditioner)
Design external ambient temperature	:	35 °C
Head pressure control	:	Fan speed control

ELECTRICAL REQUIREMENTS

Electrical supply	:	400V(±10%) / 3Ph / 50Hz
Full Load Current	:	3.50 A

FANS

Type	:	Axial
Quantity per condenser	:	1x
Noise level @ 5m, free field	:	62.0 dB(A)
Maximum air volume flow rate	:	15, 451 m ³ /h total

FAN MOTORS

Motor power (Each)	:	0.55 kW
Maximum fan speed	:	980 rpm

PHYSICAL DIMENSIONS

Length	:	1676 mm
Depth	:	1509 mm
Height	:	1105 mm
Weight	:	156 kg

N.B. The quoted system performance data is valid for refrigerant pipe runs of no more than 60m each way [Equivalent length] with the condenser elevation no more than 20m above, or 3m below the air conditioner.



UK_QUO_2020_G0S8YS_UPNORTH GROUP - VIRGIN MEDIA BAGULEY POWER ROOM

SPECIFICATION for LIEBERT PDX STANDARD HEIGHT AIR CONDITIONING UNITS MODELS PX041UA

All units are built in accordance with ISO9001 quality management system standards, comply with European EMC and EMF directives and carry the CE mark.

CABINET

Upflow, front air inlet configuration.

The cabinet is manufactured from galvanised sheet steel, externally painted with RAL7021 Black epoxy-polyester powder paint and assembled using stainless steel screws and high tensile rivets to provide a strong, durable structure.

The fan compartment and rear panels are double-skinned, with 20mm, Class 'O' (A1 EU) fireproof insulation sandwiched between the skins to reduce noise emission and heat loss.

The evaporator section external side panels are isolated from the inside of the unit by the sheet steel framework to form double-skinned sections, incorporating 10mm Class 'O' (A1 EU) fireproof insulation.

The front access doors are hinged and secured by means of ¼ turn fasteners.

Pipework and cable services connections are via the base of the unit

REFRIGERATION CIRCUIT - MODELS PX041 DIGITAL (Single circuit, one Digital Scroll™ compressor)

A single R410A refrigeration circuit incorporating a high efficiency, fully hermetic Copeland Digital Scroll™ compressor; discharge shut-off valve; liquid receiver with inlet service valve; safety valve, filter drier, moisture indicating sight glass and an electronic expansion valve.

The compressor is equipped with a pre-set high-pressure switch, a high-pressure limit transducer and a low-pressure limit transducer for protection against high condensing and low evaporating temperatures.

The low-pressure limit features an automatic reset (with an adjustable delay for winter start-up) whilst to avoid compressor cycling at high discharge pressures, the high-pressure switch is equipped with a manual reset.

A crankcase heater is fitted to protect the compressor on start-up.

The exclusive Copeland Digital Scroll™ compressor is capable of rapid and precise modulating capacity control (20-100% nominal).

The inclined evaporator coil is manufactured from copper tubes, mechanically bonded to acrylic painted aluminium fins, with a stainless-steel condensate drain pan.

The large face area / low velocity coil allows precise control of temperature during cooling and is designed to optimise fluid velocity and minimise pressure drop.

FAN SECTION – PREMIUM FAN MODULE

The unit is fitted with one (models PX041) direct-driven, high efficiency, single inlet, backward curved, centrifugal 'plug' type fan with galvanised steel nozzle and GRP impeller.

The GRP impellers are corrosion resistant and maintain the high strength of aluminium alloy but with the added benefits of light weight, blade design flexibility and dampening behaviour which helps to reduce noise emission.

The fan is driven by an Electronically Commutated [EC], IP54 motor with integral soft start and adjustable speed setting, to provide significantly increased motor efficiency and reduced running costs compared to conventional AC motors.



The fan motor operates on a 3-phase electrical supply and incorporates internal thermal protection.

The fan impeller is statically and dynamically balanced and equipped with self-lubricating bearings.

FILTRATION

Filter cells are installed upstream of the cooling coil.

They are made of pleated paper material and are completely recyclable.

The large face area minimises the air pressure drop while maintaining maximum filter efficiency.

The filter cells are held in position by metal brackets and are easily accessed/replaced by opening the front panels.

The rated efficiency is ePM10 50% / F5, in compliance with CEN EN16980 standards.

The unit is fitted with a filter differential pressure switch, connected to the microprocessor controller to provide 'Filter Clogged' warning indication

ELECTRICAL PANEL

The electrical panel is located at the front of the unit in a compartment isolated from the airflow and contains the MCB's, contactors, transformers, controller PCB, overload relays etc.

Each high voltage system component is provided with an MCB over-current protective device.

The electrical panel complies with the IEC norm EN60204-1.

All units are designed for operation with a 400V(±10%) / 3Ph / 50Hz +N +E electrical supply and are fitted with a mains isolator, mechanically interlocked with the electrical panel cover.

DUAL POWER SUPPLY, ALTERNATE VERSION

The air conditioner is fitted with an Automatic Transfer Switch (ATS) to accept two incoming power supplies.

If the main supply to the unit (Supply 1) fails, the ATS automatically switches to the alternate supply (Supply 2)

The ATS also allows manual transfer and selection of the preferred lead supply

CONDENSER THREE PHASE FEED MCB's

The air conditioner is fitted with a 10A 3Ph circuit breaker to allow the remote air-cooled condensers to be powered from the air conditioner.

ICOM with COLD FIRE GRAPHIC DISPLAY

The ICOM microprocessor control and alarm system with Coldfire graphic display integrates the separate mechanical and electrical components into a 'state of the art' conditioned space support system.

The graphics screen displays all the major parameters, including symbolic representation of unit functions, such as cooling.

In addition temperature variations with time can be presented graphically on screen.

All diagnostic procedures, including checking and calibration of input and output signals, and of the microprocessor itself, can be run from the front panel.



The controller allows local monitoring and programming of the following room conditions via a 9-button keypad:

Temperature	-	°C
Temperature set-point	-	20°C - 35°C in steps of 0.1°C
Temperature band	-	1°C - 10°C in steps of 0.1°C

Two LED's indicate the unit status:

- 1 - 'Power on' (Amber), 'Unit on' (Green)
- 2 - 'Warning or Alarm activated' (Red)

A buzzer provides audible indication of a 'Warning' or 'Alarm' condition

The following warnings / alarms are included:

- High temperature
- Low temperature
- Fan failure
- Compressor Low Pressure trip
- Compressor High Pressure trip
- Sensor failure
- Controller errors

Terminals are provided for remote start / stop control plus Volt-free 'Common Alarm' and 'Unit Run' indication

The iCOM controller with Coldfire display incorporates standard facilities for group operation, with run / stand-by, rotation, automatic changeover and parameter sharing functions, plus a "Sleep Mode" function which allows units to be programmed to switch on and off at different times of the day, and on different days of the week.

The controller also incorporates a sequential auto restart timer, allowing field adjustable time delays to be applied to unit restart after a power loss (or other shutdown).

The timers allow multiple units to be restarted while limiting instantaneous inrush current.

Features:

- High definition, 128 x 64 pixel, back-lit LCD screen
- User interface via 9 push-buttons
- Battery-backed clock for date / time and real time functions
- Password control for set-points, unit / control set-up and service functions
- Graphic display of temperature

The Coldfire graphic display is menu-driven and user menus are available in 10 languages.

To facilitate quick and easy setting-up, Coldfire features icon menus and on-line help (providing information on each parameter and its possible settings) iCOM records the last 200 "events" (alarms, warnings etc.) occurring in the system along with a "Graphic Data Record" for the unit.

The Graphic Data Record can display the temperature readings for the last 16 days, over several user-selectable timescales.

The iCOM with Coldfire display controls date and time function using them as operating information for the customer and as a reference whenever a status change occurs, logging the status change in the "Status Report".

Details of the event which occurred are also stored.

Using buffered RAM, the iCOM also stores the operating hours of key components (e.g. fans, compressors) for each connected unit and incorporates facilities for fixed period maintenance reminders or variable maintenance periods, calculated by the microprocessor, based on component usage.



INTELLISLOT IS-UNITY-DP CARD

The Intellislot IS-UNITY-DP card provides high-level 2-way monitoring utilising any two of the following.

Modbus 485 protocol, which is widely used for BMS (Building Management System) integration. The card acts as a slave device on the network, managing a wide range of operating parameters, alarms and notifications and transmitting data via an RS485 connection.

SNMP. The card provides high-level 2-way monitoring, using SNMP and HTTP protocols over an Ethernet (10/100Mbit) network. The card manages a wide range of operating parameters, alarms and notifications, communicating with a standard web browser (such as Internet Explorer®) or SNMP network management software.

BACnet IP. The card provides high-level 2-way monitoring, using BACnet protocol, over IP, managing a wide range of operating parameters, alarms and notifications.

Modbus IP. The card provides high-level 2-way monitoring, using Modbus protocol, over IP, managing a wide range of operating parameters, alarms and notifications.

SPECIAL FACTORY APPLICATIONS

Three 'Clean' minor fault output contacts from our alarm contact
Three 'Clean' major fault output contacts from our warning contact

Installation Energy Meter Type Gavazzi with BUS Adapter Power Consumption Indication Measurement in iCOM

ACCESSORIES

FRONT DISCHARGE SUPPLY AIR PLENUMS

The air conditioner is provided with a 600mm high, front discharge supply air plenum, finished to match the air conditioner, with a manually adjustable, double-deflection, anodised aluminium discharge grille.

The plenum is constructed of sandwich panels with non-flammable, Class 0 (ISO 1182.2) insulation, and is supplied flat-packed, for site assembly by others.

BASE MODULES

The air conditioner is provided with a 200mm high base module, finished to match the unit, with a removable front access panel and open rear, to allow services to enter the base of the unit when a raised floor is not installed

COLD WATER CONDENSATE PUMPS

The air conditioner is provided with a cold-water condensate pump, Little Giant VCC20S self-priming, low profile high capacity fully automatic control; complete with safety switch Pump House tank pump. 1.1ltr tank capacity, 294 ltr/hr 4.3m maximum head

GALVANISED STEEL DRIP TRAYS

The air conditioner is provided with a galvanised steel drip tray 50 mm larger than the base frame of the unit and 42 mm deep.