

MECHANICAL, ELECTRICAL AND PUBLIC HEALTH SERVICES SPECIFICATION
SECTION 2 - MECHANICAL SPECIFICATION & APPENDICES



U10 AIR HANDLING UNIT SCHEDULE

	AHU/01	AHU/02	AHU/03	AHU/04	AHU/05	AHU/06
MAKE	SYSTEMAIR	SYSTEMAIR	BARKELL	BARKELL	BARKELL	BARKELL
FINISH	MANUFACTURER STANDARD	MANUFACTURER STANDARD	MANUFACTURER STANDARD	MANUFACTURER STANDARD	MANUFACTURER STANDARD	MANUFACTURER STANDARD
SERVING	NORTH TENANT OFFICE	SOUTH TENANT OFFICE	CHANGING ROOMS B1 & B2	DRYING ROOM / CYCLE STORE	B2 HABITABLE ROOMS	RETAIL UNIT
UNIT TYPE	THERMAL WHEEL	THERMAL WHEEL	THERMAL WHEEL	PLATE HEAT RECUPERATOR	PLATE HEAT RECUPERATOR	PLATE RECUPERATOR
ARRANGEMENT	DOUBLE DECK	DOUBLE DECK	SIBE-BY-SIDE	SIBE-BY-SIDE	SIBE-BY-SIDE	SIBE-BY-SIDE
FRAMEWORK	50MM A POST	50MM A POST	MANUFACTURER STANDARD	MANUFACTURER STANDARD	MANUFACTURER STANDARD	MANUFACTURER STANDARD
PANEL OUTER	MANUFACTURER STANDARD	MANUFACTURER STANDARD	MANUFACTURER STANDARD	MANUFACTURER STANDARD	MANUFACTURER STANDARD	MANUFACTURER STANDARD
PANEL INNER	GALVANISED	GALVANISED	GALVANISED	GALVANISED	GALVANISED	GALVANISED
INSULATION	ROCK WOOL 60KG/M3	ROCK WOOL 60KG/M3	ROCK WOOL 88KG/M3	ROCK WOOL 88KG/M3	ROCK WOOL 88KG/M3	ROCK WOOL 88KG/M3
ROOF TYPE	EXTERNAL DOUBLE PITCH ROOF	EXTERNAL DOUBLE PITCH ROOF	N/A	N/A	N/A	N/A
LEAKAGE CLASS	L2	L2	MANUFACTURER STANDARD	MANUFACTURER STANDARD	MANUFACTURER STANDARD	MANUFACTURER STANDARD
BASE MATERIAL	160X40 PLASTISOL	160X40 PLASTISOL	MANUFACTURER STANDARD	MANUFACTURER STANDARD	MANUFACTURER STANDARD	MANUFACTURER STANDARD
BASE FRAME HEIGHT SUPPLY [MM]	160 MM	160 MM	MANUFACTURER STANDARD	MANUFACTURER STANDARD	MANUFACTURER STANDARD	MANUFACTURER STANDARD
COOLING	CHILLED WATER	CHILLED WATER	N/A	N/A	N/A	CHILLED WATER
HEATING	LOW TEMPERATURE HOT WATER	LOW TEMPERATURE HOT WATER	LOW TEMPERATURE HOT WATER	LOW TEMPERATURE HOT WATER	LOW TEMPERATURE HOT WATER	LOW TEMPERATURE HOT WATER
CONTROLS CONTAINMENT	SINGLE COMPARTMENT	SINGLE COMPARTMENT	MANUFACTURER STANDARD	MANUFACTURER STANDARD	MANUFACTURER STANDARD	MANUFACTURER STANDARD
UNIT SIZE	LENGTH [MM]	6792 (+2978 DOG-LEGGED)	1822	2000	1400	2000

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AHU/01		AHU/02	AHU/03	AHU/04	AHU/05	AHU/06
WIDTH [MM]	3298 (2338 WHERE DOG-LEGGED)	3778	1240	1710	1080	1710
HEIGHT [MM]	3298	2596	1345	470	310	740
LOCATION	EXTERNAL	EXTERNAL	INTERNAL	INTERNAL	INTERNAL	INTERNAL
HANDING (SUPPLY AIR)	RIGHT	RIGHT	FRONT	RIGHT	RIGHT	RIGHT
UNIT WEIGHT [KG]	8247	7750	384	245	95	245
SUPPLY AIR VOLUME [M ³ /S]	10.25	9.45	0.791	0.334	0.130	0.5
SUPPLY EXTERNAL STATIC PRESSURE [PA]	324	242	225	200	150	200
EXTRACT AIR VOLUME [M ³ /S]	8.55	7.90	0.862	0.334	0.30	0.5
EXTRACT EXTERNAL STATIC PRESSURE [PA]	276	288	225	200	150	100
SPECIFIC FAN POWER [W/(L/S)] @ MEAN FILTERS	1.98	1.82	1.35	1.35	1.5	1.61
PART L COMPLIANCE	COMPLIANT	COMPLIANT	COMPLIANT	COMPLIANT	COMPLIANT	COMPLIANT
ERP 2018 COMPLIANCE	COMPLIANT	COMPLIANT	COMPLIANT	COMPLIANT	COMPLIANT	COMPLIANT
WINTER EXTERNAL AIR TEMPERATURE (°C)	-4	-4	-4	-4	-4	-4
SUMMER EXTERNAL AIR TEMPERATURE (°C) DB/WB	29/21	29/21	N/A	N/A	N/A	N/A
FROST COIL OFF COIL TEMPERATURE (°C)	5	5	N/A	N/A	N/A	N/A
HEATING COIL OFF COIL TEMPERATURE (°C)	24	24	30	24	24	24
COOLING COIL OFF COIL TEMPERATURE (°C)	20.0/17.8	20.0/17.7	N/A	N/A	N/A	N/A
FROST COIL DUTY (KW)	113.53	104.67	N/A	N/A	N/A	N/A
HEATING COIL DUTY (KW)	252.29	232.60	29.89	8.28	0.877	10.687
COOLING COIL DUTY (KW)	132.89	124.41	N/A	N/A	N/A	6

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	AHU/01	AHU/02	AHU/03	AHU/04	AHU/05	AHU/06
HEAT RECOVERY EFFICIENCY [%] EN308 CONDITIONS	73%	75%	81.1%	85.5%	87%	84.1
INLET/OUTLET SIZE	INTAKE [WXH]	FULL FACE	400X400	600X300	300X200	-
	SUPPLY [WXH]	1800X1760 (OFFSET)	400X400	600X300	300X200	-
	EXTRACT [WXH]	3138X1218	400X400	600X300	300X200	-
	EXHAUST [WXH]	FULL FACE	400X400	600X300	300X200	-
BREAKOUT NOISE (DBA)	61	61	37.8	36.2	32.2	44.8
	63HZ	75	68	73.8	70.6	71.8
	125HZ	75	68	75.2	75.4	73
	250HZ	63	59	70.3	64.2	69.7
	500HZ	54	46	63	50.8	54.7
INTAKE ACOUSTIC DATA	49	36	55.7	46	42.2	51.5
	44	31	49.2	41.2	32.8	46.8
	39	32	45.1	31.2	26	37.7
	34	33	41.5	22.8	19.5	29.6
	OVERALL	61	55	65.8	61.3	63
SUPPLY ACOUSTIC DATA	78	73	80.3	78.2	78.5	N/A
	78	73	83.4	81.2	80.9	N/A
	68	67	81.8	76.4	78	N/A
	58	56	75.2	72.1	73.2	N/A
	48	50	74.5	70.4	63.5	N/A
	46	54	68.5	63.4	62	N/A
	44	59	64.1	57.5	57.2	N/A

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	AHU/01	AHU/02	AHU/03	AHU/04	AHU/05	AHU/06
EXTRACT DATA	8KHZ	59	66	53.9	51.1	N/A
	OVERALL	65	79.4	75	74.3	N/A
	63HZ	71	71.5	69.8	71.7	N/A
	125HZ	71	73.4	75.4	71.2	N/A
	250HZ	62	69.1	64.3	68.8	N/A
	500HZ	49	61.9	50.9	54.7	N/A
	1KHZ	40	54.4	46.3	42.3	N/A
	2KHZ	35	47.9	41.2	33.1	N/A
	4KHZ	33	44.1	31.2	26.4	N/A
	8KHZ	31	41.2	22.8	19.9	N/A
EXHAUST DATA	OVERALL	58	64.5	61.3	61.9	N/A
	63HZ	75	78.8	77.7	78.3	83.3
	125HZ	75	83.1	80.8	81.1	86.4
	250HZ	65	80.3	76	77.8	83.7
	500HZ	55	73.3	71.7	72.4	75.7
	1KHZ	44	72.7	70	62.9	74.6
	2KHZ	42	66.4	63	61.3	67.7
	4KHZ	41	62.1	56.9	56.5	62.6
	8KHZ	45	63.8	53.2	50.2	59.2
	OVERALL	62	77.7	74.6	73.9	N/A
SUPPLY COMPONENTS	LOUVRE	LOUVRE	INLET DAMPER	INLET DAMPER	INLET DAMPER	INLET DAMPER
	INLET DAMPER	INLET DAMPER	F7 FILTER (RIGID)	F7 FILTER (RIGID)	F7 FILTER (RIGID)	F7 FILTER (RIGID)

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AHU/01	AHU/02	AHU/03	AHU/04	AHU/05	AHU/06
FROST COIL (SINGLE PIECE FULL WIDTH WITH SECTION LENGTH EXTENSION FOR FUTURE SPLIT COILS)	FROST COIL (SINGLE PIECE FULL WIDTH WITH SECTION LENGTH EXTENSION FOR FUTURE SPLIT COILS)	THERMAL WHEEL	PLATE HEAT RECUPERATOR	PLATE HEAT RECUPERATOR	PLATE HEAT RECUPERATOR
ATTENUATOR	ATTENUATOR	DIRECT DRIVE FAN	DIRECT DRIVE FAN	DIRECT DRIVE FAN	DIRECT DRIVE FAN
F7 FILTER (RIGID), ISO 60%	F7 FILTER (RIGID) ISO 60%	HEATING COIL	HEATING COIL	HEATING COIL	COOLING COIL
THERMAL WHEEL	THERMAL WHEEL	OUTLET	OUTLET	OUTLET	HEATING COIL
DIRECT DRIVE DUAL FANS	DIRECT DRIVE TRIPLE FANS	-	-	-	OUTLET
ATTENUATOR	ATTENUATOR	-	-	-	-
COOLING COIL (SINGLE PIECE FULL WIDTH WITH SECTION LENGTH EXTENSION FOR FUTURE SPLIT COILS)	COOLING COIL (SINGLE PIECE FULL WIDTH WITH SECTION LENGTH EXTENSION FOR FUTURE SPLIT COILS)	-	-	-	-
HEATING COIL (SINGLE PIECE FULL WIDTH WITH SECTION LENGTH EXTENSION FOR FUTURE SPLIT COILS)	HEATING COIL (SINGLE PIECE FULL WIDTH WITH SECTION LENGTH EXTENSION FOR FUTURE SPLIT COILS)	-	-	-	-
OUTLET	OUTLET	-	-	-	-
		-	-	-	-
INLET	INLET	INLET	INLET	INLET	INLET
M5 FILTER (BAG)	M5 FILTER (BAG)	G4 FILTER (PANEL)	G4 FILTER (PANEL)	G4 FILTER (PANEL)	G4 FILTER (PANEL)
ATTENUATOR	ATTENUATOR	DIRECT DRIVE FAN	DIRECT DRIVE FAN	DIRECT DRIVE FAN	DIRECT DRIVE FAN
DIRECT DRIVE QUAD FANS	DIRECT DRIVE QUAD FANS	OUTLET DAMPER	OUTLET DAMPER	OUTLET DAMPER	OUTLET DAMPER
ATTENUATOR	ATTENUATOR	-	-	-	-
OUTLET DAMPER	OUTLET DAMPER	-	-	-	-
LOUVRE	LOUVRE	-	-	-	-
EXTRACT COMPONENTS					

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	AHU/01	AHU/02	AHU/03	AHU/04	AHU/05	AHU/06
ELECTRICAL SUPPLY	400V/3PH/50HZ	400V/3PH/50HZ	400V/3PH/50HZ	230V/1PH/50HZ	230V/1PH/50HZ	230V/1PH/50HZ
ESTIMATED RUNNING CURRENT (A)	80	100	5.8	6.3	2.5	6.3
EXTRAS AND FURNITURE	LOCKABLE ACCESS DOORS WITH HINGES DOOR GUARDS VIEWING GLASSES IN ACCESS SECTIONS INTERNAL BULKHEAD LIGHTING WITH SWITCHES FILTER MANOMETERS FRONT WITHDRAWAL FILTER FRAMES THERMAL WHEEL WIRED TO ISOLATOR PLASTIC TEST POINTS PRESSURE SWITCHES	LOCKABLE ACCESS DOORS WITH HINGES DOOR GUARDS VIEWING GLASSES IN ACCESS SECTIONS INTERNAL BULKHEAD LIGHTING WITH SWITCHES FILTER MANOMETERS FRONT WITHDRAWAL FILTER FRAMES THERMAL WHEEL WIRED TO ISOLATOR PLASTIC TEST POINTS PRESSURE SWITCHES	-	-	-	-

Notes

- AHU1 and AHU2 shall be by Systemair UK or equal and approved.
- Other equipment shall be by Bakkell or equal and approved.
- In order for units to be compliant with the ErP directive variable speed drives and inverters should be supplied and installed by the AHU manufacturer.
- AHUs to be delivered to site in flat pack kit form and assembled on site by the AHU manufacturer.
- AHUs to be provided with a complete spare set of filters for all units.
- WC extract fans detailed above have been sized to provide a minimum of 15% spare capacity.
- Ductwork connection sizes are provided as guidance and shall be confirmed by the contractor's working drawings as bespoke ductwork connections to the riser will be required for AHU/01 and AHU/02.
- Base panels to be suitable for internal access for AHU/01 and AHU/02.
- AHU coils to be sized based on heat recovery being non-operational.

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	AV MOUNTS VARIABLE SPEED DRIVE BMS INTERFACE	AV MOUNTS VARIABLE SPEED DRIVE BMS INTERFACE	AV MOUNTS VARIABLE SPEED DRIVE BMS INTERFACE	AV MOUNTS VARIABLE SPEED DRIVE BMS INTERFACE	AV MOUNTS VARIABLE SPEED DRIVE BMS INTERFACE	AV MOUNTS VARIABLE SPEED DRIVE BMS INTERFACE	AV MOUNTS VARIABLE SPEED DRIVE BMS INTERFACE	AV MOUNTS VARIABLE SPEED DRIVE BMS INTERFACE
REFERENCE	EF/01/01 – EF/09/01	EF/01/02 – EF/09/02	EF/01/03 – EF/07/03	EF/08/03 – EF/09/03	EF/10/01	EF/10/02		
LOCATION	FEMALE WC	FEMALE WC	MALE WC	MALE WC	CLEANER STORE	WC		
SERVING	CLEANER STORE	FEMALE WC	MALE WC	MALE WC	CLEANER STORE	WCS		
MAKE/MODEL	SYSTEMAIR KV DUO 150 EC	SYSTEMAIR KV DUO 315 EC	SYSTEMAIR KV DUO 315 EC	SYSTEMAIR KV DUO 315 EC	SYSTEMAIR KV DUO 150 EC	SYSTEMAIR KV DUO 150 EC		
QUANTITY	1NO.	9NO.	7NO.	2NO.	1NO.	1NO.		
DUTY	L/S @ PA 15 @ 30	161 @ 100	179 @ 100	175 @ 100	15 @ 30	40 @ 75		
SPEED CONTROLLED	YES	YES	YES	YES	YES	YES		
SPECIFIC FAN POWER	W/(L/S) 0.248	0.238	0.234	0.235	0.248	0.325		
MOTOR INPUT/NOM. POWER	KW 0.005 / 0.086	0.038 / 0.169	0.042 / 0.169	0.041 / 0.169	0.005 / 0.086	0.013 / 0.086		
ELECTRICAL SUPPLY	230V/1PH/50HZ	230V/1PH/50HZ	230V/1PH/50HZ	230V/1PH/50HZ	230V/1PH/50HZ	230V/1PH/50HZ		
MOTOR CURRENT (FLC/SC)	A 0.05 / 0.73	0.29 / 1.17	0.317 / 1.17	0.311 / 1.17	0.05 / 0.73	0.116 / 0.73		
BREAKOUT NOISE @ 3M	DBA 26	43	44	44	26	37		
SOUND POWER INDUCT	INLET OUTLET	INLET OUTLET	INLET OUTLET	INLET OUTLET	INLET OUTLET	INLET OUTLET	INLET OUTLET	INLET OUTLET
	30 32	45 45	45 45	45 45	30 32	37 38	37 38	37 38
	39 38	52 53	54 54	53 54	39 38	43 42	43 42	43 42
	33 40	49 50	50 51	50 51	33 40	46 52	46 52	46 52
	36 40	45 50	46 51	46 51	36 40	47 51	47 51	47 51
	32 36	45 48	46 50	46 49	32 36	44 48	44 48	44 48
	30 32	40 44	41 45	41 45	30 32	45 47	45 47	45 47
	20 23	32 34	34 36	33 36	20 23	37 39	37 39	37 39
	22 25	23 28	25 29	24 29	22 25	29 31	29 31	29 31
ANCILLARIES PER FAN	FLEXIBLE CONNECTORS AV MOUNTS VARIABLE SPEED DRIVE	FLEXIBLE CONNECTORS AV MOUNTS VARIABLE SPEED DRIVE	FLEXIBLE CONNECTORS AV MOUNTS VARIABLE SPEED DRIVE	FLEXIBLE CONNECTORS AV MOUNTS VARIABLE SPEED DRIVE	FLEXIBLE CONNECTORS AV MOUNTS VARIABLE SPEED DRIVE	FLEXIBLE CONNECTORS AV MOUNTS VARIABLE SPEED DRIVE	FLEXIBLE CONNECTORS AV MOUNTS VARIABLE SPEED DRIVE	FLEXIBLE CONNECTORS AV MOUNTS VARIABLE SPEED DRIVE

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	BMS INTERFACE	BMS INTERFACE	BMS INTERFACE	BMS INTERFACE	BMS INTERFACE	BMS INTERFACE	BMS INTERFACE
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- Nuairé, contact: Steve Welsh 077 67 298250 / 029 2085 8200. Systemair contact: Philip Livermore 01794 816869