



TECHNICAL SUBMITTAL

Project:	Echo Street	T.S No:	63073-ABE-ZZ-ZZ-TS-M-10
A&B Contract No:	3898	Date:	20/08/2024
Engineer:	Ian Buxton	Rev: C01	

F.T.A.O.	Name: Chinua Nisbitt Organisation: Waterman Building Services
Copies To:	Issued via Viewpoint for Projects.

Plant Item:	Air Handling Units.														
Specified Manufacturer:	Not Applicable.														
Proposed Manufacturer:	Systemair.														
Model Type:	<u>Geniox 16</u> <table><tr><th>Reference</th><th>Duty Flow Rate</th><th>Duty Pressure Drop</th><th>SFP's</th><th>Size (l x w x h)</th></tr><tr><td>AHU.RF.001</td><td>2.32 m³/s</td><td>220 Pa</td><td>1640 W/(m³/s)</td><td>3852 x 1800 x 1682mm</td></tr></table> SFP is better than the specified unit, in relation to this the BRUKL is fine and will not be affected. AHU 01 will be serving block B laundry, student hub, store, and IT hub.					Reference	Duty Flow Rate	Duty Pressure Drop	SFP's	Size (l x w x h)	AHU.RF.001	2.32 m³/s	220 Pa	1640 W/(m³/s)	3852 x 1800 x 1682mm
Reference	Duty Flow Rate	Duty Pressure Drop	SFP's	Size (l x w x h)											
AHU.RF.001	2.32 m³/s	220 Pa	1640 W/(m³/s)	3852 x 1800 x 1682mm											
Attachments:	- AHU.RF.001 Datasheet. - AHU.RF.001 Controls Technical Details. - Ventilation Schematic.														

Approval Required By:	A.S.A.P
------------------------------	---------

Response:

Date:

Signed:

Quotation no.
Project
Plant no.

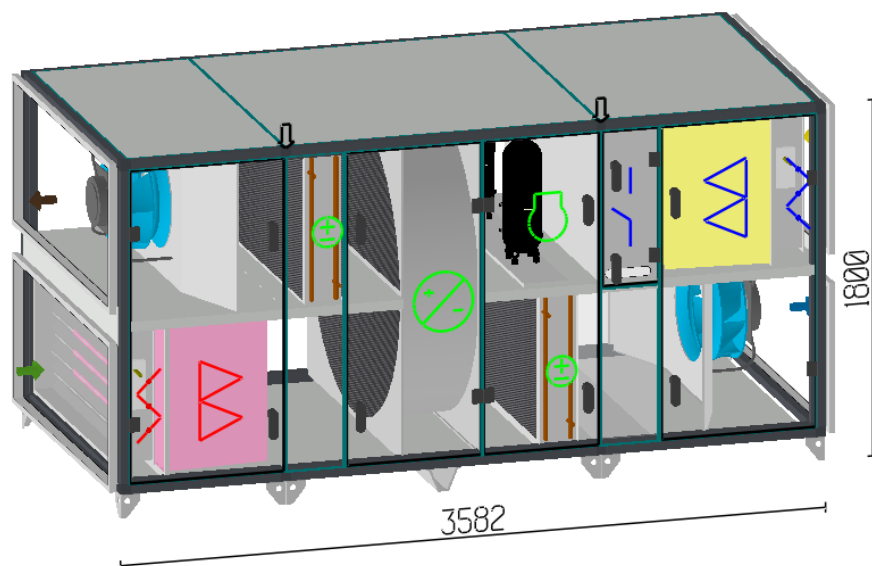
iQ Echo Street Manchester
iQ Echo Street, Manchester
AHU.RF.001/

Unit no.: 10
Date 03/04/2024
Page 1/12

Description: Geniox 16

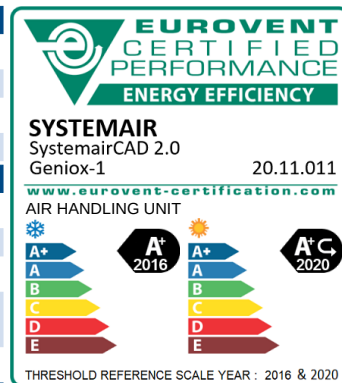
Unit width / Weight: 1682 mm / 1472 kg

Delivery: 3 sections; Feet are supplied mounted on the unit casing.



Unit			
Unit color Insulation Hygienic		ZincMagnesium 60 mm mineral wool / Density 60 kg/m3 Standard	
Control system		Access control system	
Power supply Unit		L1 + L2 + L3 + N + PE (3x400V) 50 Hz / 44.2 A	
Sound break out Supply air		60 dB(A) 81 dB(A)	
Supply Air/fan data		Air density 1.205 kg/m ³	
Airflow Face velocity Ext. Δp		2.32 m ³ /s 2.00 m/s 220 Pa	
Supply air, Winter Summer		20.0°C / RH 18% 20.0°C / RH 78%	
Filter Stages		F7 - ePM1 60%	
Integrated cooling with heat pump Winter / Summer		2.5 (14) kW COP 6 / 2.1 (9) kW EER 4.1; Refrigerant R410A	
Fan Voltage Rated current RPM		3.50 kW 3x400 V 5.60 A 1626 RPM	
Extract Air/fan data		Air density 1.205 kg/m ³	
Airflow Face velocity Ext. Δp		2.32 m ³ /s 2.00 m/s 220 Pa	
Filter Stages		M6 - ePM2.5 50%	
Fan Voltage Rated current RPM		3.50 kW 3x400 V 5.60 A 1634 RPM	
Energy	Dimensioning	Average	Fans [8760 hours]
Heat Recovery EN308 (Dry)	77.8 % 77.8 %	77.8 % 77.8 %	
SFPv *)	1.64 kW/(m ³ /s)	1.64 kW/(m ³ /s)	33377 kWh

*) Values include speed control; SFPv = clean - and SFPe = dimensional-filter pressure drop



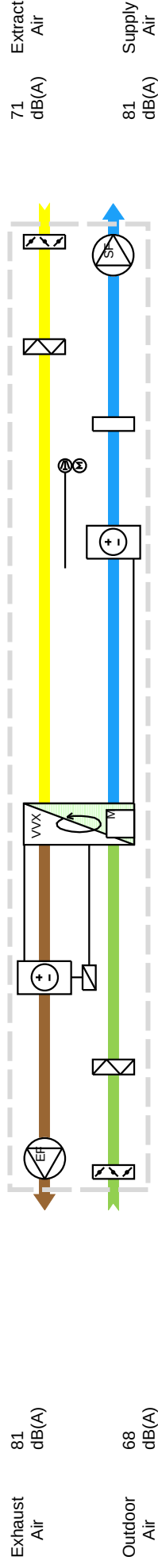
Systemair Fans&Spares Ltd.

Telephone :+44 1213220200
www.systemair.co.uk
info@systemair.co.uk



Winter	Temperature after [°C]	-1.6	-1.6	-2.0	0.6	20.0	20.0	20.0	20.0
	Humidity after [%]	97	97	100	100	30	30	30	30
	Pressure drop [pa]	0	28	93	136	108	3	220	220
	Pressure after function [pa]	-	0	-595	-469	-331	-	-223	-220
			Efficiency 72.1% (Total Pressure)				M6 - ePM2.5 50% Filter		

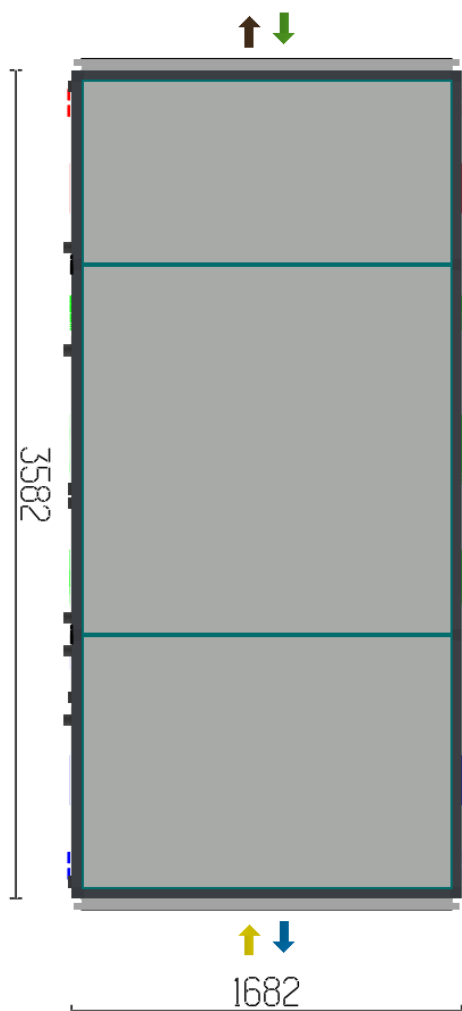
Summer	Temperature after [°C]	30.5	30.5	30.1	26.2	20.0	20.0	20.0
	Humidity after [%]	27	27	27	34	50	50	50



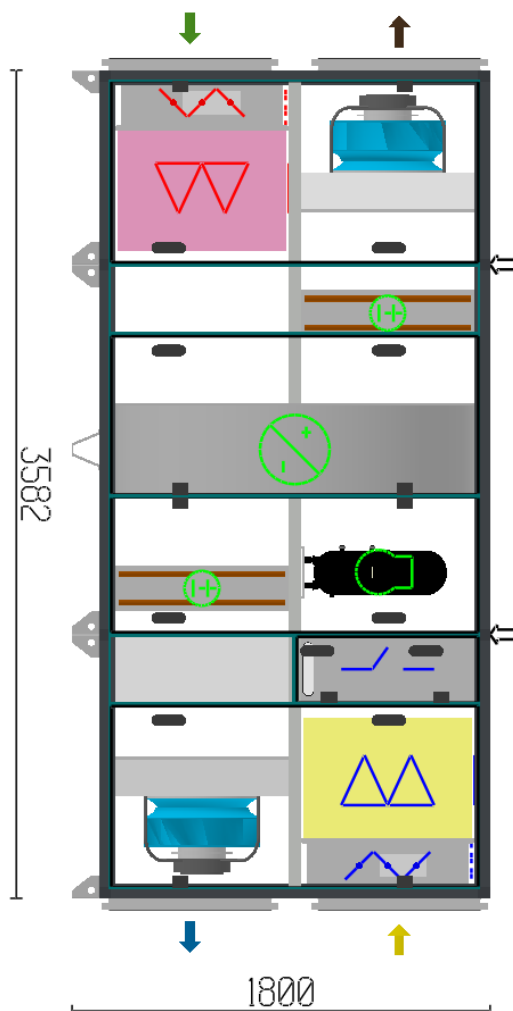
Winter	Temperature after [°C]	-5.0	-5.0	-5.0	14.4	19.5	19.5	20.0	20.0
	Humidity after [%]	100	100	100	26	19	19	18	18
	Pressure drop [pa]	0	3	123	136	68	3	28	220
	Pressure after function [pa]	-0	-3	-125	-261	-333	-365	220	-
				F7 - ePM1 60% Filter	77.8/77.8% Wet/dry			Efficiency 72.0% (Total Pressure)	

Summer	Temperature after [°C]	28.0	28.0	28.0	21.8	19.5	19.5	20.0	20.0
	Humidity after [%]	50	50	50	72	80	80	78	78
					77.8% wet				

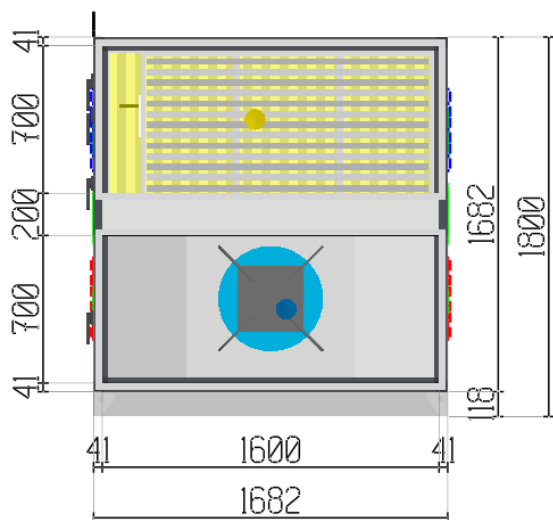
Plan view



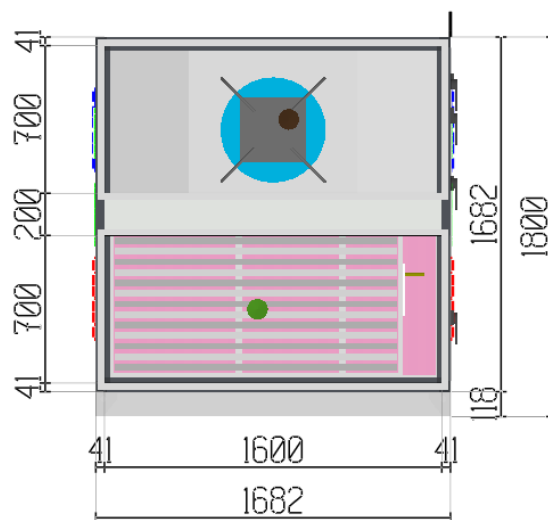
Access side



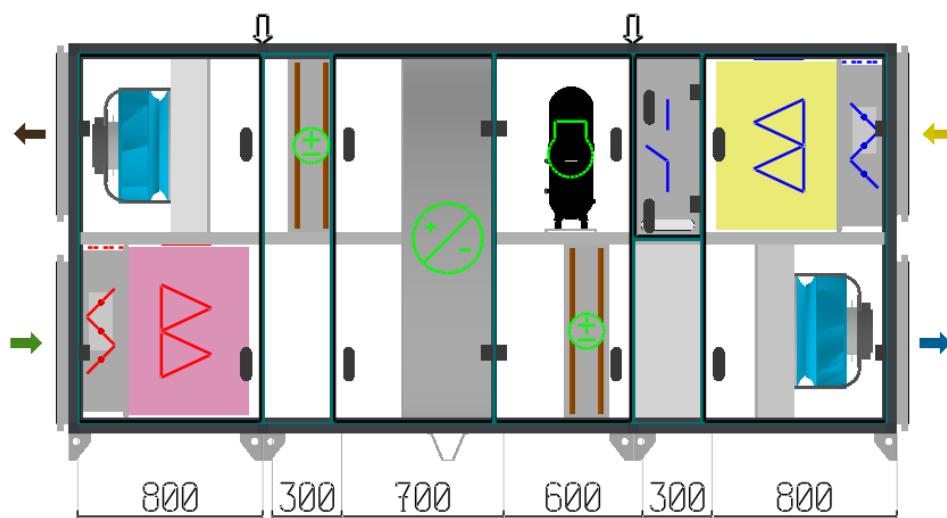
Right end



Left end



Doors and panels dimensions



Technical specification

Unit

Frequency band [Hz]	63	125	250	500	1K	2K	4K	8K	Total
Sound power level	[dB]	[dB]	[dB]	[dB]	[dB]	[dB]	[dB]	[dB]	[dB(A)]
Supply air	76	83	77	79	76	73	70	66	81
Outdoor air	71	77	70	68	57	51	44	38	68
Exhaust air	76	82	77	79	76	74	71	66	81
Extract air	70	76	70	69	66	61	59	55	71
Sound break out	69	71	55	55	53	49	44	30	60

Casing		
Panels	Steel sheets coated with ZM310, corrosion class C5	
Frame profiles	Steel profiles coated with z225 painted, corrosion class C4	
Mullion profiles	Steel profiles coated with ZM310, corrosion class C5	
Corners	PA6 fiber reinforced	
Insulation	60 mm mineral wool / Density 60 kg/m3	
Corrosion protection	Class C4 according to EN ISO 12944-2:2018	
Operating pressure	0 - 2000 Pa (Geniox10 - Geniox31)	
Operating temperatures	-40/+40 °C (Standard)	
	-40/+60 °C (Special design)	
Classifications	EN 1886, 2. edition 2008	
Mechanical Strength	Class D1(M)*	
Casing air leakage	-400 Pa: Class L1(M)*	
	+700 Pa: Class L1(M)*	
Filter by-pass leakage	-400 Pa: Class G1-F9	
	+400 Pa: Class G1-F9	
Thermal transmittance	Class T2(M)*	
Thermal bridging factor	Class TB2(M)*	
Acoustic insulation of casing	Octave band Hz	Insulation dB
	63	10
	125	17
	250	24
	500	27
	1000	28
	2000	28
	4000	32
	8000	40

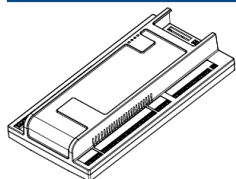
* (M) = Classification according to EN1886 Modelbox test

Access control system

The air handling unit is built with a complete and fully integrated control system - based on the Access control unit mounted in the control cabinet and the Access NaviPad control panel (optional) with a graphical user interface. The air handling unit can either run stand-alone or managed from a Building Management System (BMS).

Order-specific functions are configured, and all settings are stored as factory settings in the control unit from factory. Component labels inside the air handling unit do not have project specific reference naming

Access control unit CU40-C

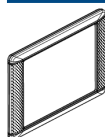


Physical Inputs/Outputs	40 (10 AI, 12 DI, 4 UI, 6 AO, 8 DO)	
Degree of protection	IP20	
Operation temperatures	0...50	°C
Storage temperature	-20...+70	°C
Input voltage	24	V DC
External communication	Modbus RS485, Modbus TCP/IP or BACnet IP (B-AAC), Systemair connect (Cloud service)	

Access Application Tool

PC based tool for managing the Access application. The tool provides a complete range of functions for software upgrade, backup and restore, configuration, automated commissioning record and trend logg. Access Application Tool is available for download at www.systemair.com

Access NaviPad



Panel type	IPS, capacitive	
Resolution	1024x600 (16:9)	
Colors	16.7M	
Screen size (diagonal)	7"	
Degree of protection	IP54, shock resistance 1m drop	
Operation temperatures	0...50	°C
Storage temperature	-20...+70	°C
Input voltage (20 to 48VDC)	24	V DC
Cable length (max total length 100m)	3	m

Control cabinet

Voltage	3x400	VAC
Hz	50	Hz
Switched power supply	24	V DC
Cable entry position	Cable entry in bottom	
Cable gland for main supply cable	M40	
Fuse for supply air fan (in main cabinet)	10	A
Fuse for extract air fan (in main cabinet)	10	A
Fuse for heat pump (in cabinet for heat pump)	40	A
Rated fuse PSCC max (in main cabinet)	6	kA
Max. consumed current	44.2	A
Max. consumed current in neutral wire	33.0	A

The installer must ensure that protection of the mains power supply relating to frequency converters is according to local statutory requirements. By one or more 400 VAC motors, Residual Current Circuit Breaker type B must be installed. By one or more 400 VAC motors, HPFI type B must be installed.

The electrical installation (wiring, mounting of components, connection plugs, etc.) for the unit is done as an machine installation according to 60204-1

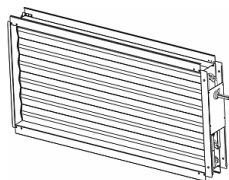
Power supply connections

Object	Pre fuse	I max	* Main switch	Rated voltage
Control cabinet	gG/C 50 A	44 A	No	3x400V + N + PE

*) Main switch; Yes= loose delivered from Systemair, No= Not supplied from systemair, Mounted = Factory installed and connected

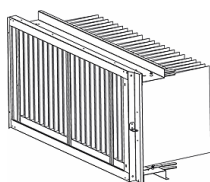
The supply unit consist of

Damper



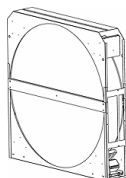
Pressure drop	3	Pa
Damper blades	Standard	
Number of dampers	1	pcs
Number of shafts	1	
Damper actuator - Spring return	1	pcs
Damper actuator - Voltages	24	V
Damper actuator - Torque	10	Nm

Filter



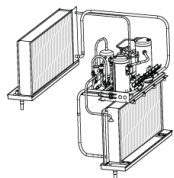
Dimensioning pressure drop	123	Pa
Initial pressure drop/Final pressure drop	73/173	Pa
Velocity, face area	2.66	m/s
Velocity, filter area	0.16	m/s
Filter class	F7 - ePM1 60%	
Filter size	2x[592x592x25] + 1x[287x592x25]	
Filter length	520	mm
Filter description	Camfil Hi-Flo II XLT	

Rotary heat exchanger



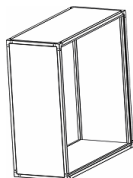
	Supply	Extract	
Air flow	2.32	2.32	m³/s
Pressure drop	136	136	Pa
WINTER			
Air temperature before/after	-5.0/14.4	20.0/0.6	°C
Air relative humidity before/after	100/26	30/100	%
Capacity	55.95		kW
Temperature efficiency	77.8		%
Dry efficiency according to EN 308 at 2.32 m³/s	77.8		%
Humidity efficiency	7.8		%
Energy class for heatrecovery (EN13053)		H1	
SUMMER			
Air temperature before/after	28.0/21.8	20.0/26.2	°C
Air relative humidity before/after	50/72	50/34	%
Capacity	17.88		kW
Temperature efficiency		77.8	%
Humidity efficiency		0.0	%
Heat exchanger type	P - Condensation (Temperature)		
Efficiency (Wave height)		C - Medium	
Wheel Diameter		Ø1480	
Description		P160_430_2-1480*	
Speed controller: Exchanger		Variable speed	
Electrical data		1x230V, 85W, 0.4Amp	
Purging sector		1	pcs

Integrated cooling with heat pump



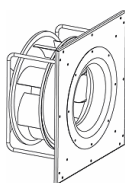
	Supply	Extract	
Air flow	2.32	2.32	m³/s
Pressure drop	68	93	Pa
Droplet eliminator	33	33	Pa
Face velocity for the coil	2.5	2.5	m/s
WINTER			
Air temperature before/after *	14.4/19.5	0.6/-2.0	°C
Air relative humidity before/after	25.8/18.7	99.9/99.9	%
Capacity *	14.4	12.0	kW
Refrigerant temperature	24.9	-5.9	°C
Condensate		0.1	l/min
Used capacity at working conditions	41.7		%
Absorbed power, at operating point	2.5		kW
COP, compressor system *	5.8		
COP total, compressor system + rotary heat exchanger *	28.1		
* Energy for the defrosting is not considered in the winter calculation. The heat pumps cannot run continuously with refrigerant temperatures below -2°C without defrosting. The defrosting will cause temperature drop in the supply air for a short period.			
SUMMER			
Air temperature before/after	21.8/19.5	26.2/30.1	°C
Air relative humidity before/after	72.5/80.2	34.3/27.4	%
Capacity	8.8	11.0	kW
Refrigerant temperature	15.8	35.2	°C
Sensible cooling in % of total cooling	71		%
Condensate	0.1		l/min
Used capacity at working conditions	14.6		%
Absorbed power, at operating point	2.1		kW
EER, compressor system	4.1		
EER total, compressor system + rotary heat exchanger	12.3		
Tube material	Cu	Cu	
Fin material	Al	Al	
Fin spacing	2.5	2.5	mm
Code for supply air coil	TDZ-16-CD-Z-5-11-675-1358-2.5-Cu-Al-H-1 1/8		
Code for extract air coil	TCZ-16-CD-Z-6-8-675-1358-2.5-Cu-Al-V-1 1/8		
Drip tray material	Stainless steel	Stainless steel	
Diameter of pipe from drip tray		40	mm
Refrigerant / Amount	R410A	9.7	kg
Compressor	ZPD72+ZP72		
External connections			
Current (is included in the main cabinet)	3*400V+N+PE, 50Hz	30.0	A
Start signal (Heating) / Cooling demand	Potential free contact set		
Control signal		0 - 10	V,DC
Potential-free alarm signal		1	pcs

Empty section



Pressure drop	3	Pa
Length	300	mm

Fan, Plug



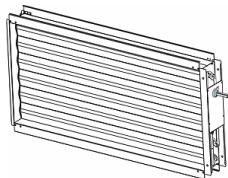
Air flow	2.32	m³/s
External pressure	220	Pa
Pressure drop	28	Pa
Static pressure (Designed at wet conditions)	612	Pa
Total pressure	636	Pa
Fan speed	1626	RPM
Maximum fan speed	1950	RPM
Total efficiency by static pressure, incl. motor and speed control	69.3	%
Total efficiency by total pressure, incl. motor and speed control	72.0	%
K-factor (p=1.2 kg/m³)	280	
Fan type - Large - Impeller ZAmid	GR50I-ZID.GG.CR	
ErP efficiency n(stat,A)	75.2	%
ErP efficiency class N(actual)/ N(target)	80.0 / 62	
ErP-conformity	Yes	
Direct drive		

Motor

Motor type	EC motor	
Motor types-size	ZID.GG.CR	
Motor protection		
Rated power	3.50	kW
Speed (nominal)	1950	RPM
Current, Amp.	5.60	A
Voltage	3x400	V
Consumed power from mains power supply, including speed control	2.06	kW
SFPV, clean filters including speed control	0.81	kW/(m³/s)
Winter: Temperature before / after	19.5 / 20.0	°C
Summer: Temperature before / after	19.5 / 20.0	°C
Winter: Humidity before / after	19 / 18	%
Summer: Humidity before / after	80 / 78	%

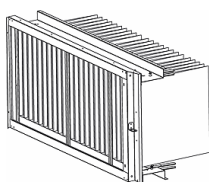
The extract unit consist of

Damper



Pressure drop	3	Pa
Damper blades	Standard	
Number of dampers	1	pcs
Number of shafts	1	
Damper actuator - On/Off	1	pcs
Damper actuator - Voltages	24	V
Damper actuator - Torque	10	Nm

Filter



Dimensioning pressure drop	108	Pa
Initial pressure drop/Final pressure drop	58/158	Pa
Velocity, face area	2.66	m/s
Velocity, filter area	0.16	m/s
Filter class	M6 - ePM2.5 50%	
Filter size	2x[592x592x25] + 1x[287x592x25]	
Filter length	520	mm
Filter description	Camfil Hi-Flo II XLT	

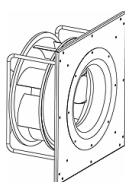
Integrated cooling with heat pump

Data are stated on supply.

Rotary heat exchanger

Data are stated on supply.

Fan, Plug



Air flow	2.32	m³/s
External pressure	220	Pa
Pressure drop	28	Pa
Static pressure (Designed at wet conditions)	623	Pa
Total pressure	647	Pa
Fan speed	1634	RPM
Maximum fan speed	1950	RPM
Total efficiency by static pressure, incl. motor and speed control	69.4	%
Total efficiency by total pressure, incl. motor and speed control	72.1	%
K-factor (p=1.2 kg/m³)	280	
Fan type - Large - Impeller ZAmid	GR50I-ZID.GG.CR	
ErP efficiency n(stat,A)	75.2	%
ErP efficiency class N(actual)/ N(target)	80.0 / 62	
ErP-conformity	Yes	
Direct drive		

Quotation no.
Project
Plant no.

iQ Echo Street Manchester
iQ Echo Street, Manchester
AHU.RF.001/

Unit no.: 10
Date 03/04/2024
Page 11/12

Motor		
Motor type	EC motor	
Motor types-size	ZID.GG.CR	
Motor protection		
Rated power	3.50	kW
Speed (nominal)	1950	RPM
Current, Amp.	5.60	A
Voltage	3x400	V
Consumed power from mains power supply, including speed control	2.08	kW
SFPv, clean filters including speed control	0.83	kW/(m³/s)
Winter: Temperature before / after	-2.0 / -1.6	°C
Summer: Temperature before / after	30.1 / 30.5	°C
Winter: Humidity before / after	100 / 97	%
Summer: Humidity before / after	27 / 27	%

Other parts

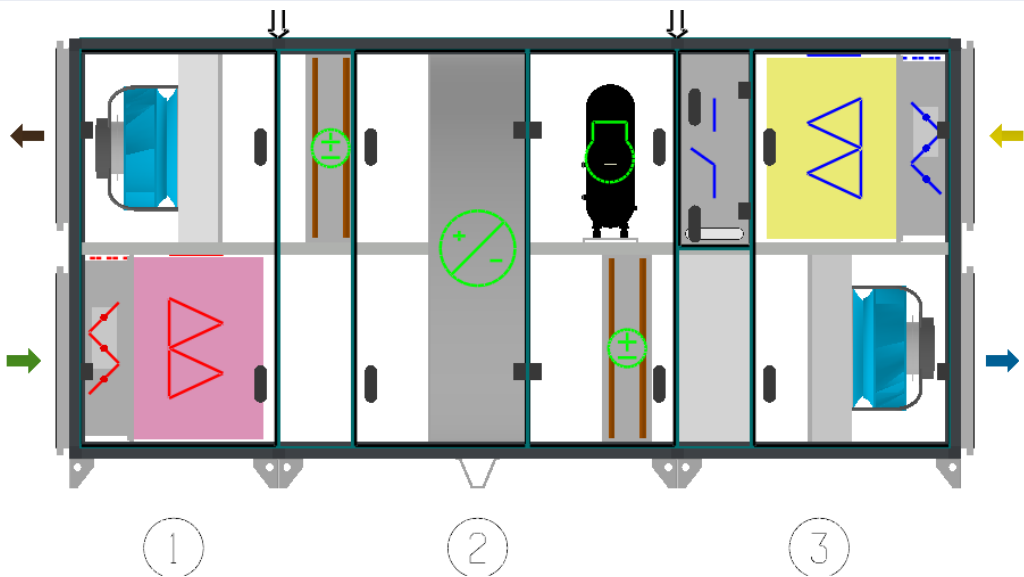
Feet or baseframe		
Feet or baseframe	Feet	
Height of feet or baseframe	118	mm
Corrosion protection	Surface protection of Magnelis	

Rigid duct connection, 30 mm METU profile		
Product	Dimensions (width x height)	
Outdoor	1600x700 mm	
Supply	1600x700 mm	
Extract	1600x700 mm	
Exhaust	1600x700 mm	

Section about shipping

Unit sections	Dimensions (width x height x length), incl. packaging	Weight, Inc. Packaging	Weight of unit
Section 1	1782 x 1800 x 971 mm	272 kg	272 kg
Section 2	1782 x 1800 x 1680 mm	854 kg	853 kg
Section 3	1782 x 1800 x 1271 mm	349 kg	348 kg
Feet are supplied mounted on the unit casing.			

Weights



Section No	Section Code	Function Code	Weight of function kg	Weight of section kg
1	Casing Length 841 mm			252
		Casing	153	
		Damper	22	
		Filter	15	
		Fan	62	
2	Casing Length 1600 mm			844
		Casing	21	
		Rotary heat exchanger	145	
		Integrated cooling	678	
3	Casing Length 1141 mm			328
		Casing	209	
		Empty section	0.1	
		Fan	62	
		Damper	22	
		Filter	15	
		Control system	20	
	Other components			49
	Weight of unit			1472

	0	1	2	3	4	5	6	7	8	9																																																						
A	<table><tr><th>Project reference</th><th>Component reference</th><th>Description</th></tr><tr><td></td><td>BG32</td><td>Rotor guard: exchanger</td></tr><tr><td></td><td>BP1:A</td><td>Pressure transmitter: Supply air Fan (flow)</td></tr><tr><td></td><td>BP1:B</td><td>Pressure transmitter: Extract air filter</td></tr><tr><td></td><td>BP2:A</td><td>Pressure transmitter: Extract air Fan (flow)</td></tr><tr><td></td><td>BP2:B</td><td>Pressure transmitter: Supply air filter</td></tr><tr><td></td><td>BT1</td><td>Temperature sensor: Intake air</td></tr><tr><td></td><td>BT2</td><td>Temperature sensor: Exhaust air</td></tr><tr><td></td><td>BT3</td><td>Temperature sensor: Extract air</td></tr><tr><td></td><td>BT4</td><td>Temperature sensor: Efficiency</td></tr><tr><td></td><td>BT5</td><td>Temperature sensor: Supply air</td></tr><tr><td></td><td>GQ1</td><td>EC fan: Supply air</td></tr><tr><td></td><td>GQ2</td><td>EC fan: Extract air</td></tr><tr><td></td><td>GXU-HP</td><td>Reversible heat pump</td></tr><tr><td></td><td>HMI</td><td>HMI Control panel</td></tr><tr><td></td><td>QM31S</td><td>Damper actuator: Outdoor (supply) air, spring return</td></tr><tr><td></td><td>QM32</td><td>Damper actuator: Extract air</td></tr><tr><td></td><td>TA2</td><td>Speed controller: Exchanger</td></tr></table>			Project reference	Component reference	Description		BG32	Rotor guard: exchanger		BP1:A	Pressure transmitter: Supply air Fan (flow)		BP1:B	Pressure transmitter: Extract air filter		BP2:A	Pressure transmitter: Extract air Fan (flow)		BP2:B	Pressure transmitter: Supply air filter		BT1	Temperature sensor: Intake air		BT2	Temperature sensor: Exhaust air		BT3	Temperature sensor: Extract air		BT4	Temperature sensor: Efficiency		BT5	Temperature sensor: Supply air		GQ1	EC fan: Supply air		GQ2	EC fan: Extract air		GXU-HP	Reversible heat pump		HMI	HMI Control panel		QM31S	Damper actuator: Outdoor (supply) air, spring return		QM32	Damper actuator: Extract air		TA2	Speed controller: Exchanger	When air handling unit operation is stopped: Extract air fan EF stops after a settable time delay. Supply air fan SF stops after a settable time delay. Outdoor air damper QM31S closes. Extract air damper QM32 closes. In case of a power failure: Outdoor air damper QM31S closes on spring return. Extended operation Digital inputs starts and extends air handling unit operation at normal speed. Extended air handling unit operation is ended after a settable stop delay. Rotary heater exchanger Rotary exchanger TA2 starts and is controlled by supply air temperature controller. At increasing heating demand rotary exchanger TA2 speed increases. At stopped operation, rotary exchanger turns periodically for purging the rotor during longer time of inactivity. Cool recovery When extract air temperature BT3 is lower than the settable temperature difference to intake air temperature BT1 during cooling operation. Exchanger increase towards 100% rotor operation Reversible heat pump Heat pump GXU-HP is controlled by supply air temperature controller. At increased heating demand heat pump (heating mode) GXU-HP output increases. At increased cooling demand heat pump (cooling mode) GXU-HP output increases. Control Temperature control Extract air temperature BT3 is maintained at setpoint by controlling supply air temperature setpoint between settable min- and max limit.			Supply air temperature BT5 is maintained at set point by sequential control. Settable offset min and max limit at reversible heat pump Integrated cooling in operation. Sequence order at increasing heating demand: 1. Exchanger VVX 2. Reversible heat pump Integrated cooling (heating mode) Sequence order at increasing cooling demand: 1. Exchanger VVX (cool recovery) 2. Reversible heat pump Integrated cooling (cooling mode) Fan control Supply air flow BP1:A is maintained at setpoint by controlling speed of supply air fan SF Extract air flow BP2:A is maintained at setpoint by controlling speed of extract air fan EF Protection and monitoring Rotation monitoring An alarm is generated if rotor guard BG32 does not indicate rotation, during 100% rotor operation. Efficiency calculation Exchanger temperature efficiency is calculated using intake air temperature BT1, extract air temperature BT3 and exchanger supply air temperature (efficiency temperature) BT4 during 100% exchanger operation. An alarm is generated if exchanger temperature efficiency is lower then min limit, during 100% exchanger operation Energy insight SFP is calculated and logged. Supply air fan SF energy usage is monitored and logged. Extract air fan EF energy usage is monitored and logged. Exchanger energy recovery is calculated and logged. Reversible heat pump An alarm is generated if reversible heat pump GXU-HP alarm			A
Project reference	Component reference	Description																																																														
	BG32	Rotor guard: exchanger																																																														
	BP1:A	Pressure transmitter: Supply air Fan (flow)																																																														
	BP1:B	Pressure transmitter: Extract air filter																																																														
	BP2:A	Pressure transmitter: Extract air Fan (flow)																																																														
	BP2:B	Pressure transmitter: Supply air filter																																																														
	BT1	Temperature sensor: Intake air																																																														
	BT2	Temperature sensor: Exhaust air																																																														
	BT3	Temperature sensor: Extract air																																																														
	BT4	Temperature sensor: Efficiency																																																														
	BT5	Temperature sensor: Supply air																																																														
	GQ1	EC fan: Supply air																																																														
	GQ2	EC fan: Extract air																																																														
	GXU-HP	Reversible heat pump																																																														
	HMI	HMI Control panel																																																														
	QM31S	Damper actuator: Outdoor (supply) air, spring return																																																														
	QM32	Damper actuator: Extract air																																																														
	TA2	Speed controller: Exchanger																																																														
B										B																																																						
C										C																																																						
D										D																																																						
E	Operation General Air handling unit is started at Normal speed according to settable time schedules. At start up: Outdoor air damper QM31S opens. Extract air damper QM32 opens. Exchanger VVX starts and runs at 100% operation for a settable time. Extract air fan EF starts. Supply air fan SF starts after a settable time delay. If intake air temperature BT1 is lower then min limit heater starts at 100% operation Air handling unit runs in Auto operation, according to settable time schedules speed.									E																																																						
F										F																																																						

Operation

General

Air handling unit is started at Normal speed according to settable time schedules. At start up:
Outdoor air damper QM31S opens.
Extract air damper QM32 opens.
Exchanger VVX starts and runs at 100% operation for a settable time.
Extract air fan EF starts.
Supply air fan SF starts after a settable time delay.
If intake air temperature BT1 is lower then min limit heater starts at 100% operation
Air handling unit runs in Auto operation, according to settable time schedules speed.



Project: iQ Echo Street, Manchester
Unit no.: 10 / Geniox 16
Plant no.: AHU.RF.001 /

Function description

SystemairCAD 2.0 Geniox-1/C2024-01.28.J9

Quotation no.:

Calc by. / Date
Mark Tunnicliffe - 03/04/2024

Total sheet:
2

Sheet:
1

	0	1	2	3	4	5	6	7	8	9	
A	feedback is triggered. Reversible heat pump GXU-HP defrost periodically during low exhaust air temperature.			SF Alarm fan supply air EF Alarm fan extract air BT5 Deviation alarm supply air temperature BP1:A Deviation alarm supply air BP2:A Deviation alarm extract air BT5 Low temperature V VX Low efficiency exchanger							A
B	Fire alarm An alarm is generated if external fire alarm is triggered. Generated fire alarm stops air handling unit operation. Supply air fan SF is stopped. Outdoor air damper QM31S closes. Extract air fan EF is stopped. Extract air damper QM32 closes.			BT1 Sensor error intake air temperature BT2 Sensor error exhaust air temperature BT3 Sensor error extract air temperature BT4 Sensor error efficiency temperature BT5 Sensor error supply air temperature BP2:B Sensor error supply air filter pressure BP1:B Sensor error extract air filter pressure BP1:A Sensor error supply air fan flow BP2:A Sensor error extract air fan flow Device alarm (communication device) Communication fault BMS (watchdog)							B
C	Filter Supply air filter pressure BP2:B is monitored towards a calculated alarm limit, determined by a settable max limit and supply air flow BP1:A. An alarm is generated if supply air filter pressure BP2:B exceeds a calculated max limit. Extract air filter pressure BP1:B is monitored towards a calculated alarm limit, determined by a settable max limit and extract air flow BP2:A. An alarm is generated if extract air filter pressure BP1:B exceeds a calculated max limit.										C
D	Flow control An alarm is generated if supply air flow BP1:A deviates a settable amount from its setpoint. An alarm is generated if extract air flow BP2:A deviates a settable amount from its setpoint.										D
E	Supply air temperature control An alarm is generated if supply air temperature BT5 deviates a settable amount from its setpoint.										E
F	Alarms BP2:B Supply air filter BP2:B Extract air filter V VX Malfunction exchanger alarm GXU-HP Malfunction Reversible heat pump SF Malfunction fan supply air EF Malfunction fan extract air										F

	0	1	2	3	4	5	6	7	8	9
A	Project reference	Component reference	Description	Type	Item number	Delivered options				
		BG32	Rotor guard: exchanger			Factory installed and connected				
		BP1:A	Pressure transmitter: Supply air Fan (flow)	DPT DUAL-MOD		Factory installed and connected				
		BP1:B	Pressure transmitter: Extract air filter	DPT DUAL-MOD		Factory installed and connected				
		BP2:A	Pressure transmitter: Extract air Fan (flow)	DPT DUAL-MOD		Factory installed and connected				
B		BP2:B	Pressure transmitter: Supply air filter	DPT DUAL-MOD		Factory installed and connected				
		BT1	Temperature sensor: Intake air	PT1000	72083010	Factory installed and connected				
		BT2	Temperature sensor: Exhaust air	PT1000		Factory installed and connected				
		BT3	Temperature sensor: Extract air	PT1000	72083030	Factory installed and connected				
		BT4	Temperature sensor: Efficiency	PT 1000		Factory installed and connected				
C		GQ1	EC fan: Supply air			Factory installed and connected				
		GQ2	EC fan: Extract air			Factory installed and connected				
		GXU-HP	Reversible heat pump	GXU-HP		Factory installed and connected				
		QM31S	Damper actuator: Outdoor (supply) air, spring return	SF24A-MOD	72083216	Factory installed and connected				
		QM32	Damper actuator: Extract air	SM24A-MOD	72083224	Factory installed and connected				
D		TA2	Speed controller: Exchanger	NOVA 370		Factory installed and connected				
		BT5	Temperature sensor: Supply air	TG-KH/PT1000	72083040	Supplied with cable				
		HMI	HMI Control panel	PD70-C	72081200	Supplied with cable				
E										
F										

63073-ABE-XX-ZZ-SC-M-57000- Ventilation Schematic

