PROJECT 3
architects



Lower Campfield, Manchester
Lower Byrom Street, M3 4FP

FUL Planning Application Conditions
Condition 12

FUL Planning Application Condition 12

(a) Prior to the first use of the development, details of any externally mounted ancillary plant, equipment and servicing shall be submitted for approval in writing by the City Council, as Local Planning Authority. For the avoidance of doubt, externally mounted plant, equipment and servicing shall be selected and/or acoustically treated in accordance with a scheme designed so as to achieve a rating level of 5 db (Laeq) below the typical background (La90) level at the nearest noise sensitive location.

(b) Prior to the first use of the development, a verification report will be required to validate that the work undertaken conforms to the recommendations and requirements approved as part of part (a) of this planning condition. The verification report shall include post completion testing to confirm the noise criteria has been met. In instances of non-conformity, these shall be detailed along with mitigation measures required to ensure compliance with the noise criteria. A verification report and measures shall be agreed until such a time as the development complies with part (a) of this planning condition.

Any mitigation measures shall be implemented in accordance with a timescale to be agreed with the City Council, as Local Planning Authority. Any measures shall thereafter retained and maintained in situ.

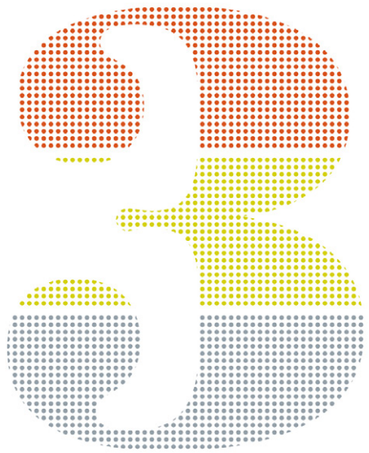
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Attatched information to satisfy FUL Planning Condition 12

01 *- PDF - Solutions - Ventilation and Heating and Cooling Drawings*

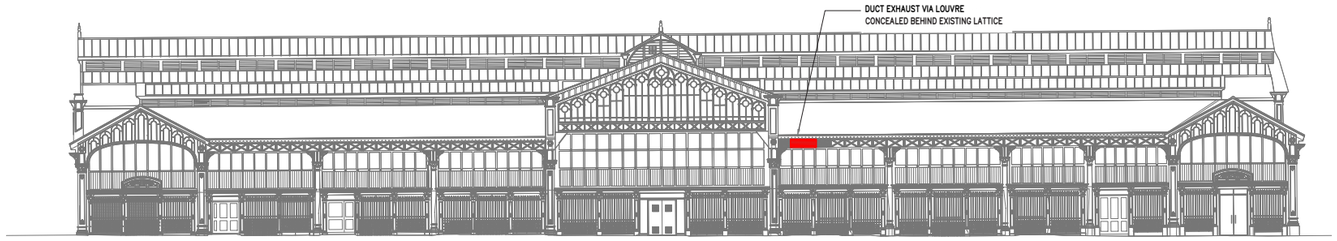
02 *- PDF - Solutions - DATA Sheets*

03 *- Project 3 Architects - Plant Room Images*

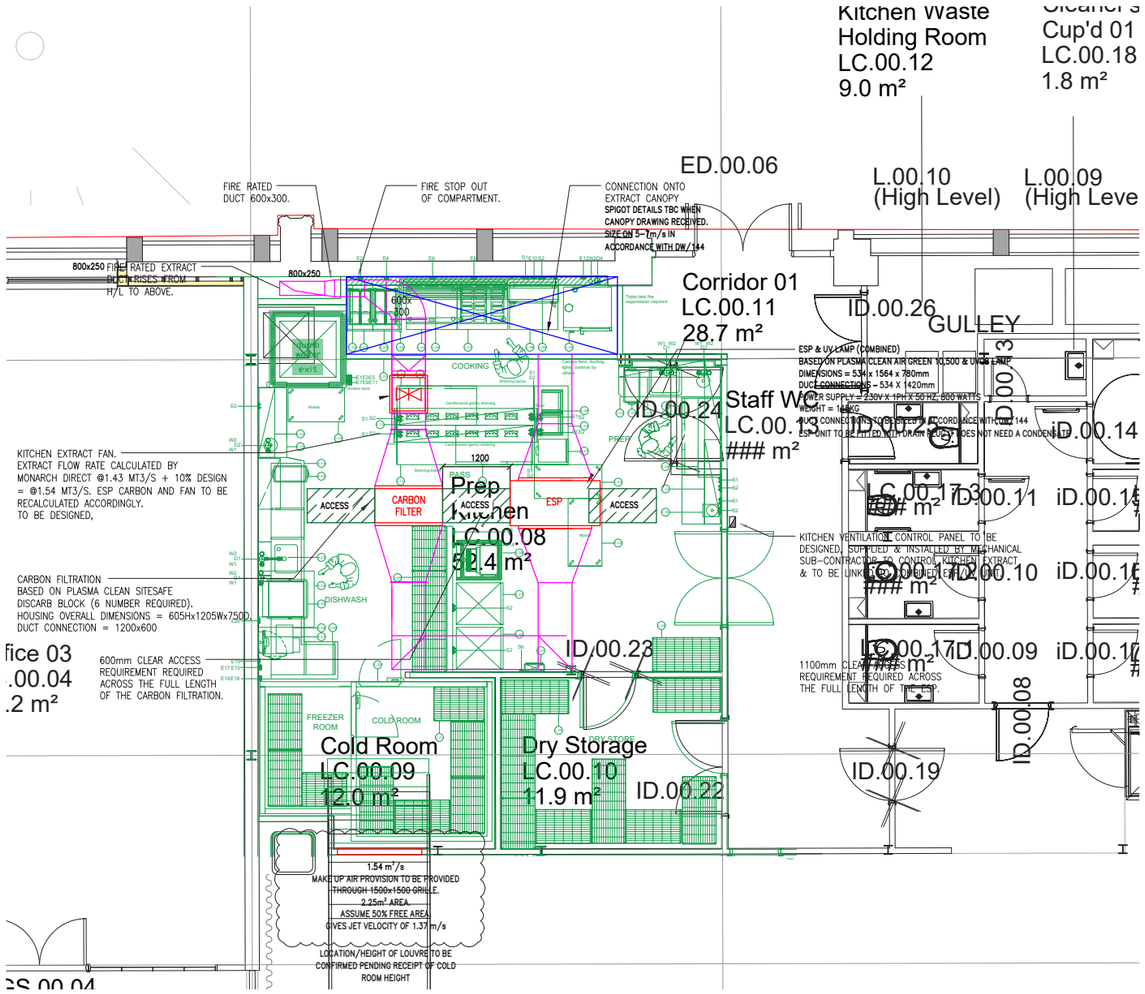


Section 01

The following section contains Solutions Ventilation and Heating and Cooling Drawings.



NORTH FACING ELEVATION



CONSTRUCTION

C3	UPDATED INLINE WITH COMMENTS RECEIVED	13.11.24	K.H	J.H	construction
C2	UPDATED INLINE WITH COMMENTS RECEIVED	28.10.24	K.H	J.H	construction
C1	UPDATED INLINE WITH COMMENTS RECEIVED AND NEW BUILDING LAYOUT, CONSTRUCTION ISSUE	07.10.24	K.H	J.H	construction
P3	UPDATED INLINE WITH COMMENTS RECEIVED AND NEW BUILDING LAYOUT	09.07.24	K.H	A.M	planning
P2	UPDATED	13.06.24	K.H	A.M	planning
	PRELIMINARY	23.04.24	K.H	A.M	planning
	Revision description	Date	Drawn by	Checked by	Dwg Status

Client: Amspec

Project: Lower Campfield

Title: Ventilation Kitchen

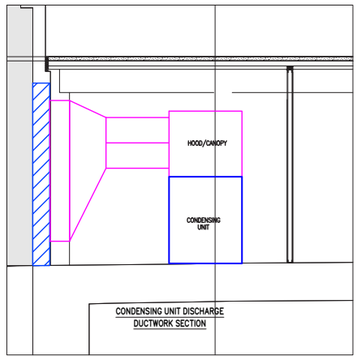
Solution environmental services

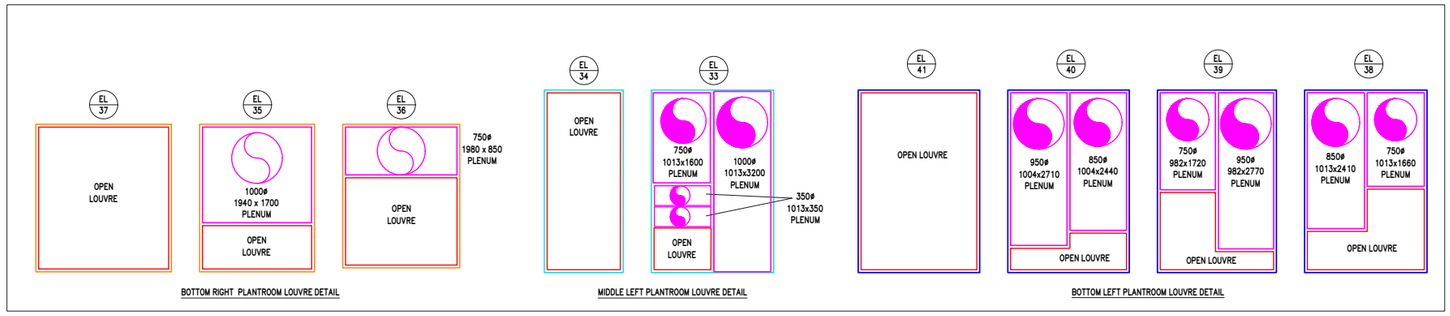
Pure Office, Brooks Drive,
Cheadle Royal Business Park, Cheadle, SK8 3TD
Tel: 0161 532 9460
www.solution-es.co.uk

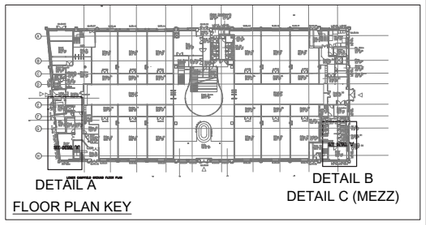
Drawn by	Checked by	Scale	Sheet Size	Date
K.H	A.M	1:100	A1	13.11.24

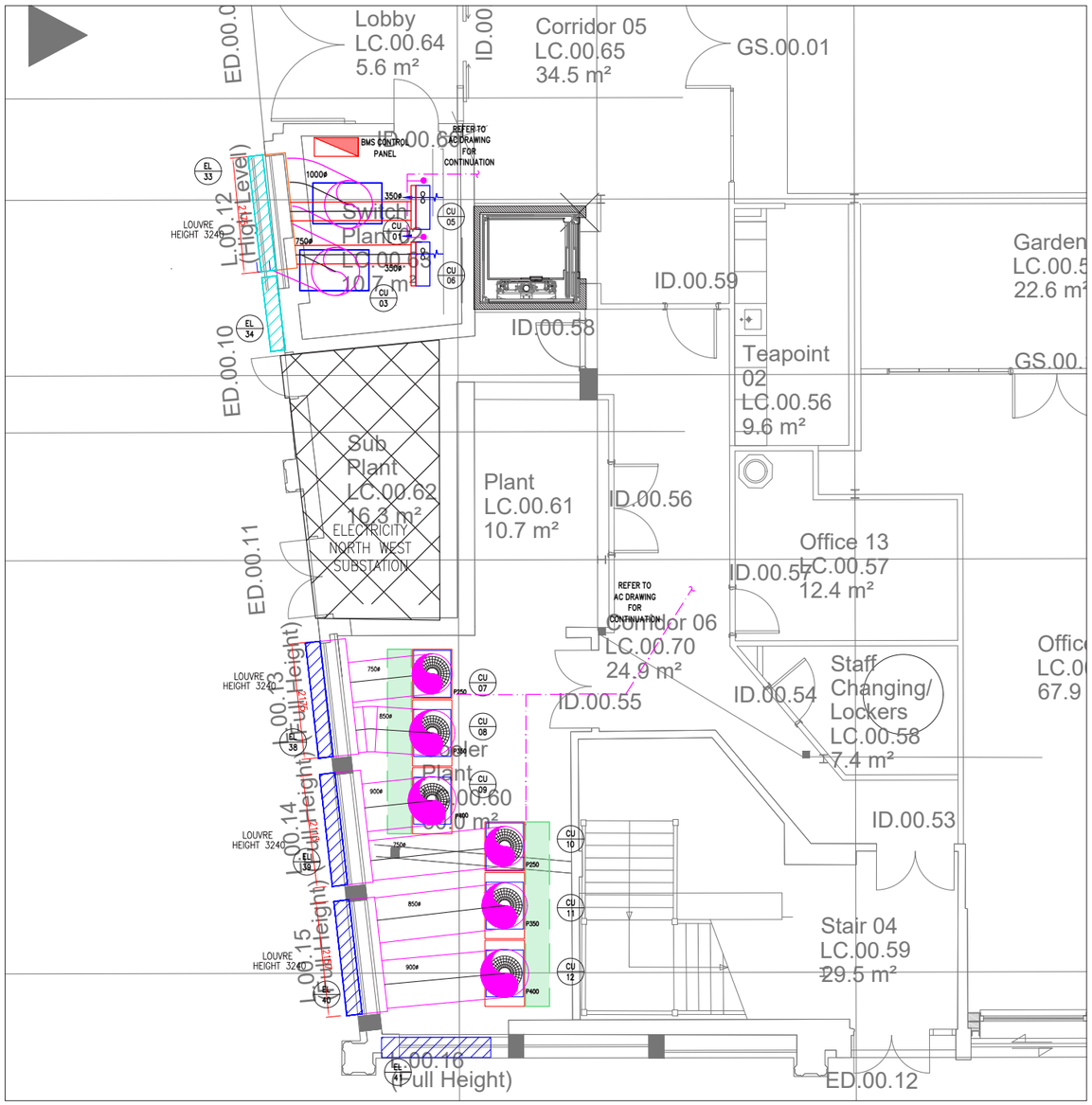
Drawing No.: SE4704/AM/M11

Revision: C3

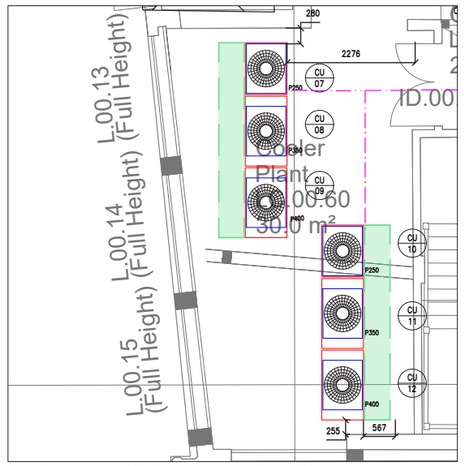




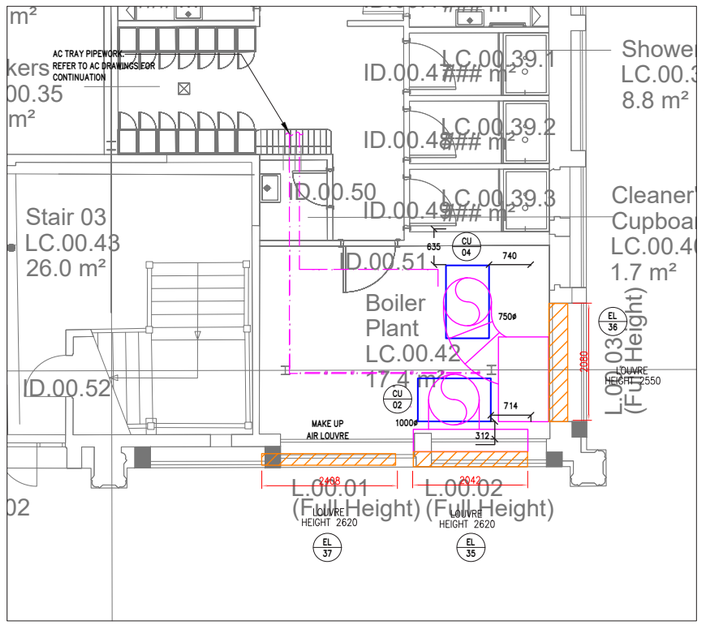




DETAIL A - GROUND FLOOR PLANT SPACE



GROUND FLOOR PLANT SPACE



DETAIL B - GROUND FLOOR PLANT SPACE

CONSTRUCTION

Rev	Description	Date	Drawn by	Checked by
C1	UPDATED INLINE WITH COMMENTS RECEIVED AND NEW BUILDING LAYOUT, CONSTRUCTION ISSUE	07.10.24	K.H	A.M
P4	UPDATED INLINE WITH COMMENTS RECEIVED AND UPDATED BUILDING LAYOUT	09.07.24	K.H	A.M
P3	UPDATED INLINE WITH PROPOSED AC DESIGN	24.05.24	K.H	A.M
P2	BUILDING LAYOUT UPDATED & UPDATED INLINE WITH COMMENTS	14.05.24	K.H	A.M
P1	PRELIMINARY	23.04.24	K.H	A.M

Revision description

Client: Amspec

Project: Lower Campfield

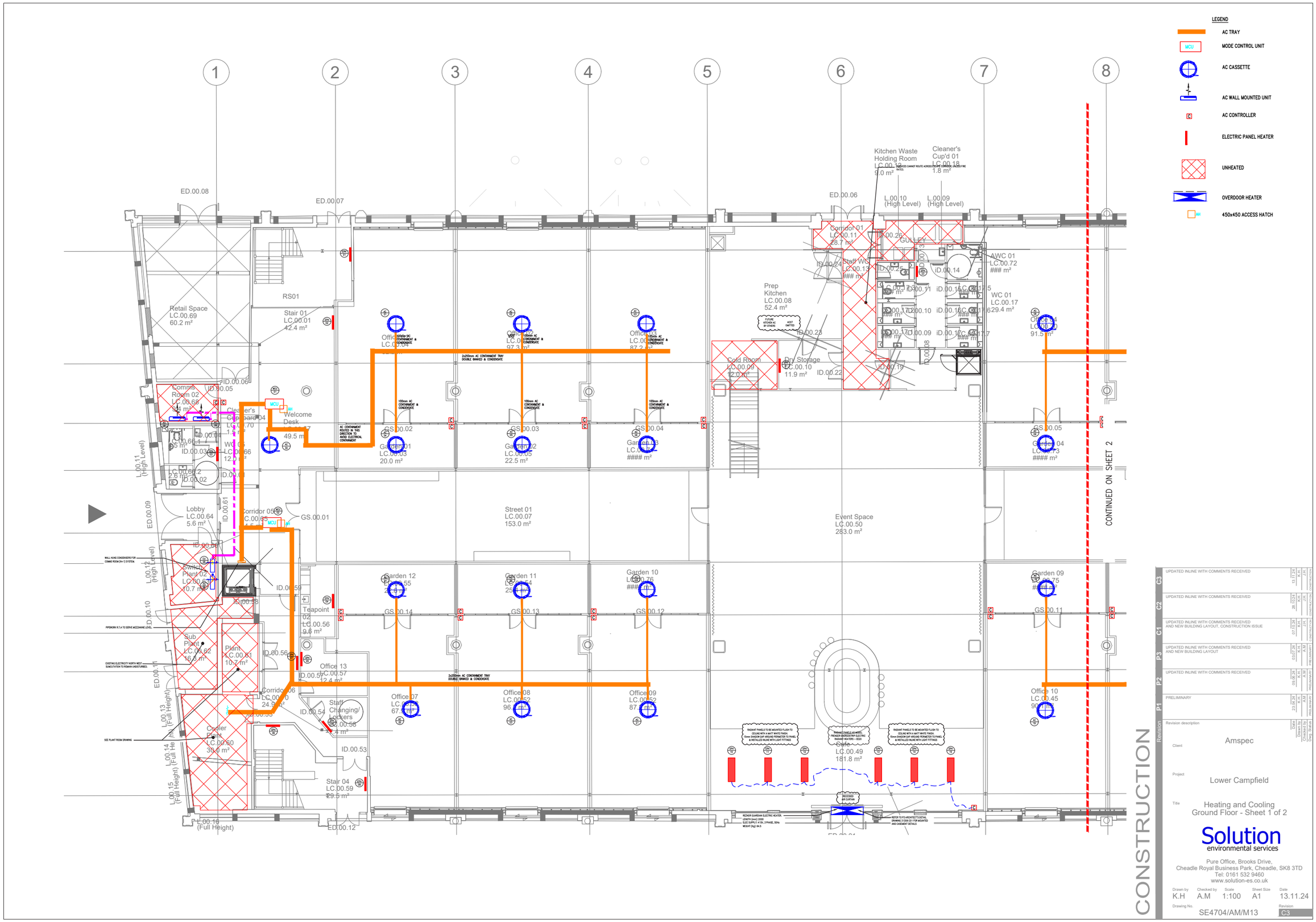
Title: Plantrooms Ground Floor & Mezzanine

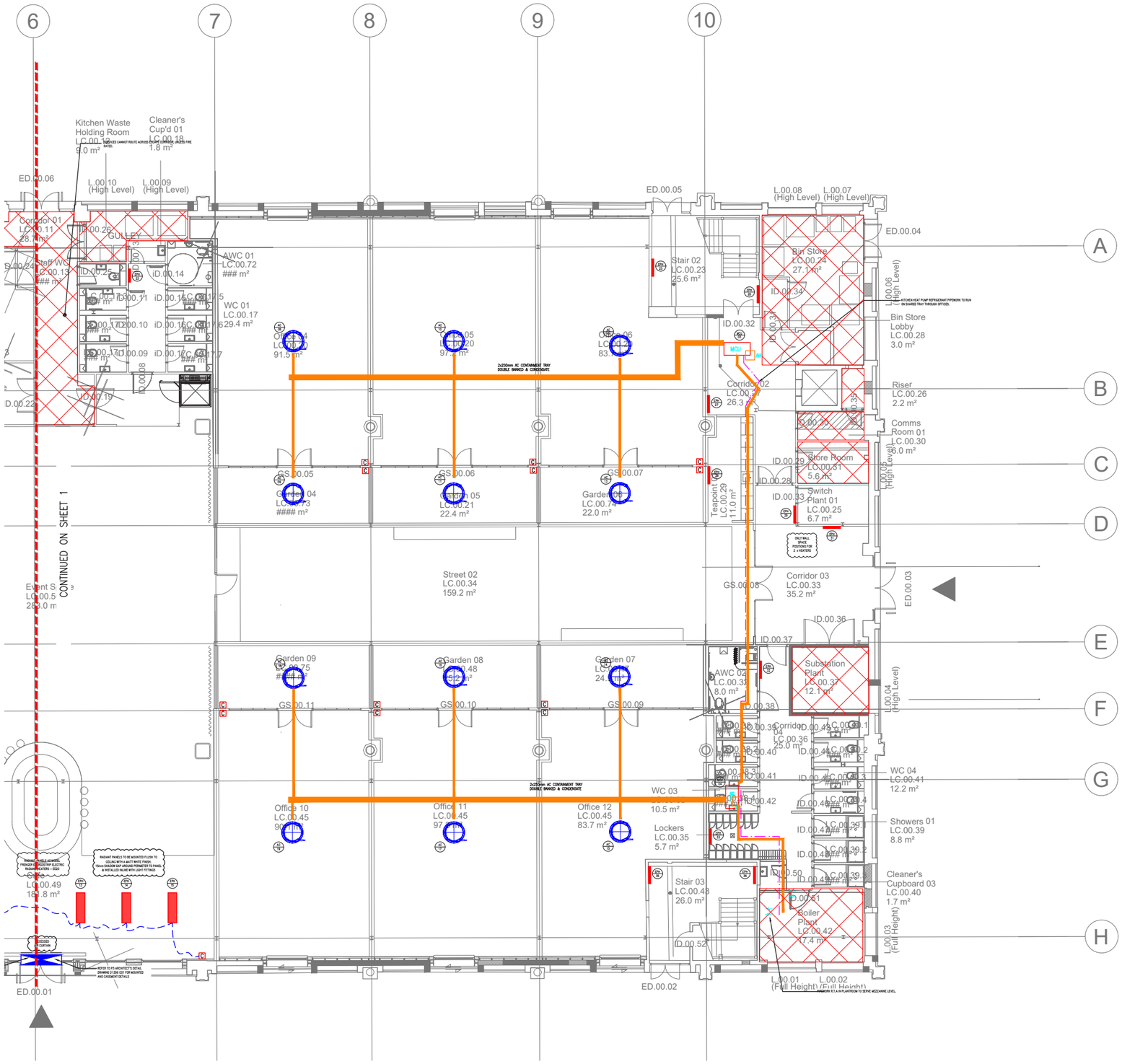
Solution environmental services

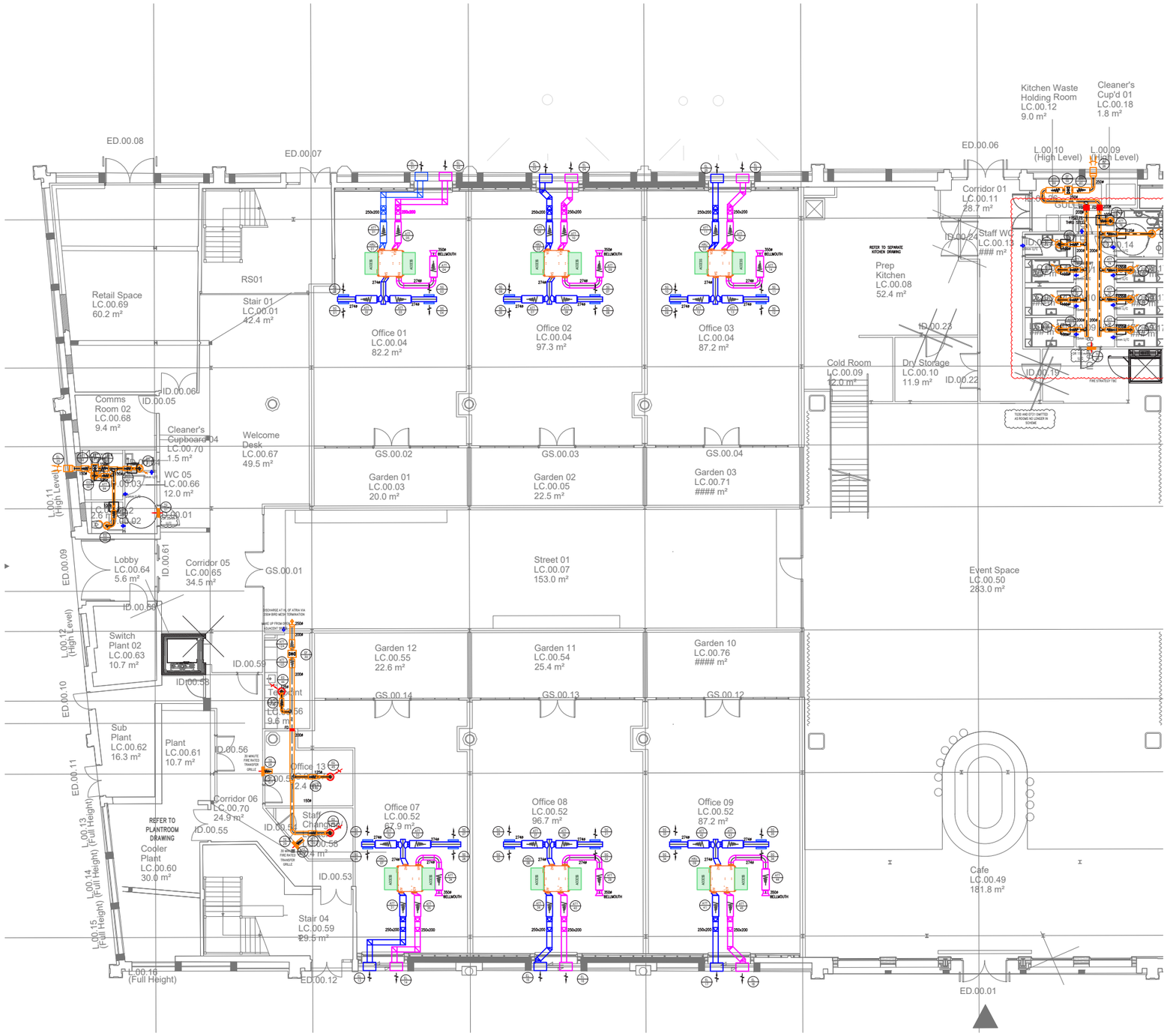
Pure Office, Brooks Drive, Cheadle Royal Business Park, Cheadle, SK8 3TD
Tel: 0161 532 9460
www.solution-es.co.uk

Drawn by	Checked by	Scale	Sheet Size	Date
K.H	A.M	1:100	A1	07.10.24

Drawing No. SE4704/AM/M12 — Revision C1


LEGEND
AC TRAY
MODE CONTROL UNIT
AC CASSETTE
AC WALL MOUNTED UNIT
AC CONTROLLER
ELECTRIC PANEL HEATER
UNHEATED
OVERDOOR HEATER
450x450 ACCESS HATCH
1
2
3
4
5
6
7
8
Retail Space LC.00.69 60.2 m²
Stair 01 LC.00.01 42.4 m²
RS01
Compr. Room 02 LC.00.68 9.4 m²
Cleaner's Cupboard 04 LC.00.70 1.4 m²
Welcome Desk LC.00.67 49.5 m²
WC 05 LC.00.66 12.0 m²
Lobby LC.00.64 5.6 m²
Corridor 05 LC.00.65 44.6 m²
Office 01 LC.00.71 87.3 m²
Garden 01 LC.00.03 20.0 m²
Office 02 LC.00.72 87.2 m²
Garden 02 LC.00.05 22.5 m²
Office 03 LC.00.73 87.2 m²
Garden 03 LC.00.74 ##### m²
Street 01 LC.00.07 153.0 m²
GS.00.01
GS.00.02
GS.00.03
GS.00.04
Kitchen Waste Holding Room LC.00.12 9.0 m²
Cleaner's Cup'd 01 LC.00.18 1.8 m²
Corridor 01 LC.00.11 28.7 m²
Staff WC LC.00.13 ### m²
GULLEY
AWC 01 LC.00.72 ### m²
WC 01 LC.00.17 629.4 m²
Prep Kitchen LC.00.08 52.4 m²
Cold Room LC.00.09 12.0 m²
Dry Storage LC.00.10 11.9 m²
Office 04 LC.00.75 91.5 m²
GS.00.05
Garden 04 LC.00.73 ##### m²
Event Space LC.00.50 283.0 m²
Swim Pool Plant 02 LC.00.63 10.7 m²
Sub Plant LC.00.62 16.5 m²
Plant LC.00.61 10.7 m²
Teapoint 02 LC.00.56 9.6 m²
Office 13 LC.00.57 12.4 m²
Corridor 06 LC.00.60 24.9 m²
Staff Changing/ Lockers LC.00.58 29.3 m²
Cooler Plant LC.00.60 30.0 m²
Stair 04 LC.00.59 29.5 m²
Garden 12 LC.00.55 25.0 m²
Garden 11 LC.00.54 25.0 m²
Garden 10 LC.00.76 ##### m²
Garden 09 LC.00.75 ##### m²
Office 07 LC.00.51 67.9 m²
Office 08 LC.00.52 96.6 m²
Office 09 LC.00.52 87.7 m²
Office 10 LC.00.45 90.1 m²
GS.00.14
GS.00.13
GS.00.12
GS.00.11
Cafe LC.00.49 181.8 m²
ED.00.08
ED.00.07
ED.00.06
ED.00.12
L.00.10 (High Level)
L.00.09 (High Level)
L.00.11 (High Level)
L.00.12 (High Level)
L.00.13 (Full Height)
L.00.14 (Full Height)
L.00.15 (Full Height)
L.00.16 (Full Height)
CONTINUED ON SHEET 2
CONSTRUCTION
Revision
Revision description
Date
Drawn by
Checked by
Drag Symbol
C3 UPDATED INLINE WITH COMMENTS RECEIVED 13.11.24 K.H J.H
C2 UPDATED INLINE WITH COMMENTS RECEIVED 28.10.24 K.H J.H
C1 UPDATED INLINE WITH COMMENTS RECEIVED AND NEW BUILDING LAYOUT, CONSTRUCTION ISSUE 07.10.24 K.H J.H
P3 UPDATED INLINE WITH COMMENTS RECEIVED AND NEW BUILDING LAYOUT 03.07.24 K.H A.M
P2 UPDATED INLINE WITH COMMENTS RECEIVED 09.06.24 K.H A.M
P1 PRELIMINARY 23.04.24 K.H A.M
Client
Amspec
Project
Lower Campfield
Title
Heating and Cooling
Ground Floor - Sheet 1 of 2
Solution
environmental services
Pure Office, Brooks Drive,
Cheadle Royal Business Park, Cheadle, SK8 3TD
Tel: 0161 532 9460
www.solution-es.co.uk
Drawn by K.H
Checked by A.M
Scale 1:100
Sheet Size A1
Date 13.11.24
Drawing No. SE4704/AM/M13
Revision C3


6
7
8
9
10
A
B
C
D
E
F
G
H
Kitchen Waste Holding Room LC.00.12 9.0 m²
Cleaner's Cup'd 01 LC.00.18 1.8 m²
Corridor 01 LC.00.11 28.1 m²
Staff WC LC.00.13 ### m²
AWC 01 LC.00.72 ### m²
WC 01 LC.00.17 29.4 m²
Office 04 LC.00.20 91.5 m²
Office 05 LC.00.20 97.1 m²
Office 06 LC.00.20 83.7 m²
Stair 02 LC.00.23 25.6 m²
Bin Store LC.00.24 27.1 m²
Bin Store Lobby LC.00.28 3.0 m²
Riser LC.00.26 2.2 m²
Corridor 02 LC.00.27 26.3 m²
Comms Room 01 LC.00.30 6.0 m²
Store Room LC.00.31 5.6 m²
Switch Plant 01 LC.00.25 6.7 m²
Teapoint 01 LC.00.29 11.0 m²
Corridor 03 LC.00.33 35.2 m²
Substation Plant LC.00.37 12.1 m²
Street 02 LC.00.34 159.2 m²
Garden 04 LC.00.73 #### m²
Garden 05 LC.00.21 22.4 m²
Garden 07 LC.00.74 22.0 m²
Garden 08 LC.00.48 ### m²
Garden 09 LC.00.75 ### m²
Garden 10 LC.00.49 191.8 m²
Office 10 LC.00.45 90.[illegible] m²
Office 11 LC.00.45 97.[illegible] m²
Office 12 LC.00.45 83.7 m²
AWC 02 LC.00.32 8.0 m²
Corridor 04 LC.00.36 25.0 m²
WC 03 LC.00.42 10.5 m²
Lockers LC.00.35 5.7 m²
WC 04 LC.00.41 12.2 m²
Showers 01 LC.00.39 8.8 m²
Stair 03 LC.00.43 26.0 m²
Cleaner's Cupboard 03 LC.00.40 1.7 m²
Boiler Plant LC.00.42 17.4 m²
GS.00.05
GS.00.06
GS.00.07
GS.00.08
GS.00.09
GS.00.10
GS.00.11
ED.00.01
ED.00.02
ED.00.04
ED.00.05
ED.00.06
L.00.01 (Full Height)
L.00.02 (Full Height)
L.00.03 (Full Height)
L.00.04 (High Level)
L.00.06 (High Level)
L.00.07 (High Level)
L.00.08 (High Level)
L.00.09 (High Level)
L.00.10 (High Level)
MCU
2x250mm AC CONTAINMENT TRAY DOUBLE BANKED & CONSIDATE
CONTINUED ON SHEET 1
LEGEND
AC TRAY
MODE CONTROL UNIT
AC CASSETTE
AC WALL MOUNTED UNIT
AC CONTROLLER
ELECTRIC PANEL HEATER
UNHEATED
OVERDOOR HEATER
450x450 ACCESS HATCH
CONSTRUCTION
Revision
Revision description
Date
Drawn by
Checked by
C3 UPDATED INLINE WITH COMMENTS RECEIVED 13.11.24 K.H J.H
C2 UPDATED INLINE WITH COMMENTS RECEIVED 28.10.24 K.H J.H
C1 UPDATED INLINE WITH COMMENTS RECEIVED AND NEW BUILDING LAYOUT, CONSTRUCTION ISSUE 07.10.24 K.H J.H
P3 UPDATED INLINE WITH COMMENTS RECEIVED AND NEW BUILDING LAYOUT 03.07.24 K.H A.M
P2 UPDATED INLINE WITH COMMENTS RECEIVED 09.06.24 K.H A.M
P1 PRELIMINARY 23.04.24 K.H A.M
Client
Amspec
Project
Lower Campfield
Title
Heating and Cooling
Ground Floor - Sheet 2 of 2
Solution
environmental services
Pure Office, Brooks Drive,
Cheadle Royal Business Park, Cheadle, SK8 3TD
Tel: 0161 532 9460
www.solution-es.co.uk
Drawn by K.H
Checked by A.M
Scale 1:100
Sheet Size A1
Date 13.11.24
Drawing No. SE4704/AM/M14
Revision C3



CONTINUED ON SHEET 2

NOTES

1.0 ALL GRILLES AND DIFFUSERS BRANCHES TO HAVE OPPOSED BLADE DAMPERS.

2.0 ALL DUCTWORK TO DW144/DW172 (WHERE APPLICABLE).

3.0 FLEX TO BE USED ONLY STRAIGHT-ALL BENDS TO BE RIGID.

4.0 FIRE DAMPERS TO BE LOCATED IN ACCORDANCE WITH FIRE STRATEGY DRAWING REQUIREMENTS.

5.0 ACCESS DOORS TO BE LOCATED ADJACENT TO FIRE DAMPERS AND EVERY 3M.

6.0 ALL BRANCH CONNECTIONS SHALL HAVE VCD'S.

7.0 ALL DIFFUSERS AND GRILLES TO BE SUPPORTED BY STRUCTURE.

8.0 IN POSITIONS OF RESTRICTED HEADROOM, DUCTS MAY BE SUPPORTED WITH FLAT BAR FORMED TO DUCT SHAPE WITH FIXINGS AT SIDES ON BENT LUGS.

9.0 ALL DUCTWORK BRACKETS TO HAVE AN ACOUSTIC SOFT RUBBER OR NEOPRENE INTERFACE LAYER TO THE DUCT.

10.0 ALL SUPPLY DUCTWORK, INCLUDING SUPPLY PLENUM BOXES TO BE THERMALLY INSULATED.

11.0 ALL REFERENCES TO SPECIFIC MANUFACTURERS ARE MADE FOR DESIGN SPECIFICATION PURPOSES, INSTALLED EQUIPMENT SHOULD BE OF EQUAL STANDARD AND APPROVED.

12.0 SMOKE FIRE DAMPERS SHALL BE INSTALLED WHERE DUCTWORK PASSES THROUGH AN ESCAPE ROUTE AND THESE SHALL BE CONTROLLED VIA A PROPRIETARY SMOKE DAMPER CONTROL SYSTEM. THE CONTROL PANEL FOR THIS SYSTEM SHALL BE INSTALLED ADJACENT THE FIRE ALARM PANEL AND EACH SMOKE FIRE DAMPER SHALL HAVE A 240V POWER SUPPLY PROVIDED ADJACENT TO POWER THE CONTROL ACTUATOR FOR THE DAMPER. EACH DAMPER SHALL BE POWER OPEN/FAIL CLOSE.

MECHANICAL VENTILATION LAYOUT LEGEND

- EXISTING SERVICES
- SUPPLY DUCTWORK (SA)
- EXTRACT DUCTWORK (EA)
- DIRTY EXTRACT DUCTWORK (DE)
- SUPPLY GRILLE
- EXTRACT GRILLE
- DIRTY EXTRACT GRILLE
- AIR VALVE
- ATTENUATOR/CROSS-TALK ATTENUATOR
- VOLUME CONTROL DAMPER (VCD)
- MOTORISED DAMPER (MD)
- LOUVRE
- FIRE DAMPER (FD)
- ACCESS HATCH (AH)
- FLEXIBLE DUCT CONNECTION
- PASSIVE INFRARED SENSOR (PIR)
- HEAT RECOVERY UNIT
- DUCTED FAN COIL UNIT
- SUPPLY/EXTRACT FAN
- PLANT REFERENCE
- 15mm U/C — 15mm DOOR UNDERCUT
- TRANSFER GRILLE

CONSTRUCTION

C2	UPDATED INLINE WITH COMMENTS RECEIVED	13.11.24	K.H	J.H
C1	UPDATED INLINE WITH COMMENTS RECEIVED AND NEW BUILDING LAYOUT, CONSTRUCTION ISSUE	07.10.24	K.H	J.H
P3	UPDATED INLINE WITH COMMENTS RECEIVED AND NEW BUILDING LAYOUT	03.07.24	K.H	A.M
P2	UPDATED INLINE WITH COMMENTS RECEIVED	09.05.24	K.H	A.M
P1	PRELIMINARY	23.04.24	K.H	A.M

Revision description | Date | Drawn by | Checked by | Design Stage | Construction

Client: Amspec

Project: Lower Campfield

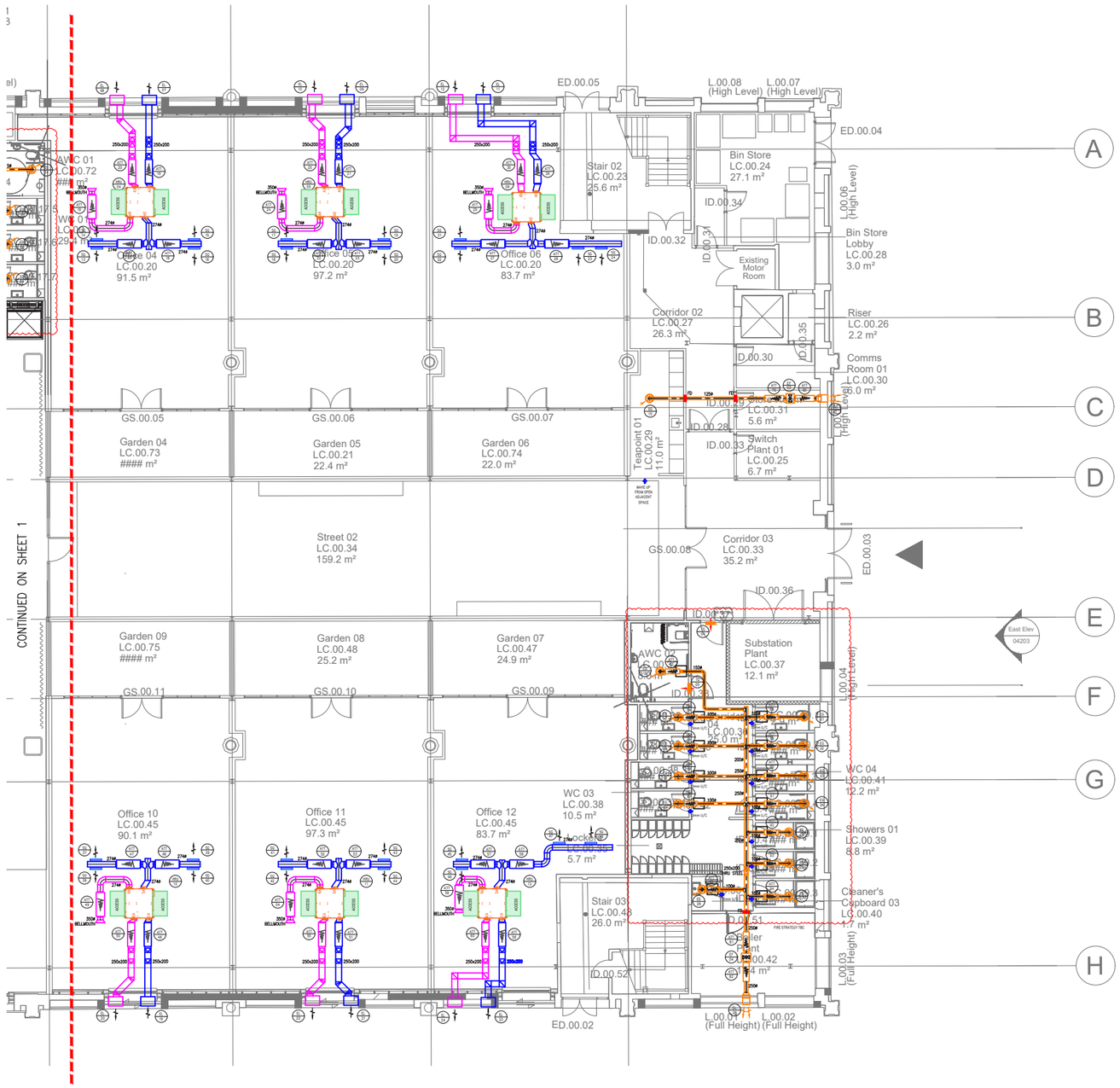
Title: Ventilation Ground Floor - Sheet 1 of 2

Solution environmental services

Pure Office, Brooks Drive, Cheadle Royal Business Park, Cheadle, SK8 3TD
Tel: 0161 532 9460
www.solution-es.co.uk

Drawn by	Checked by	Scale	Sheet Size	Date
K.H	A.M	1:100	A1	13.11.24

Drawing No. SE4704/AM/M19 | Revision C2



NOTES

1.0 ALL GRILLES AND DIFFUSERS BRANCHES TO HAVE OPPOSED BLADE DAMPERS.

2.0 ALL DUCTWORK TO DW144/DW172 (WHERE APPLICABLE).

3.0 FLEX TO BE USED ONLY STRAIGHT—ALL BENDS TO BE RIGID.

4.0 FIRE DAMPERS TO BE LOCATED IN ACCORDANCE WITH FIRE STRATEGY DRAWING REQUIREMENTS.

5.0 ACCESS DOORS TO BE LOCATED ADJACENT TO FIRE DAMPERS AND EVERY 3M.

6.0 ALL BRANCH CONNECTIONS SHALL HAVE VCD'S.

7.0 ALL DIFFUSERS AND GRILLES TO BE SUPPORTED BY STRUCTURE.

8.0 IN POSITIONS OF RESTRICTED HEADROOM, DUCTS MAY BE SUPPORTED WITH FLAT BAR FORMED TO DUCT SHAPE WITH FIXINGS AT SIDES ON BENT LUGS.

9.0 ALL DUCTWORK BRACKETS TO HAVE AN ACOUSTIC SOFT RUBBER OR NEOPRENE INTERFACE LAYER TO THE DUCT.

10.0 ALL SUPPLY DUCTWORK, INCLUDING SUPPLY PLENUM BOXES TO BE THERMALLY INSULATED.

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12.0 SMOKE FIRE DAMPERS SHALL BE INSTALLED WHERE DUCTWORK PASSES THROUGH AN ESCAPE ROUTE AND THESE SHALL BE CONTROLLED VIA A PROPRIETARY SMOKE DAMPER CONTROL SYSTEM. THE CONTROL PANEL FOR THIS SYSTEM SHALL BE INSTALLED ADJACENT THE FIRE ALARM PANEL AND EACH SMOKE FIRE DAMPER SHALL HAVE A 240V POWER SUPPLY PROVIDED ADJACENT TO POWER THE CONTROL ACTUATOR FOR THE DAMPER. EACH DAMPER SHALL BE POWER OPEN/FAIL CLOSE.

MECHANICAL VENTILATION LAYOUT LEGEND

- EXISTING SERVICES
- SUPPLY DUCTWORK
- SA — EXTRACT DUCTWORK
- EA — DIRTY EXTRACT DUCTWORK
- DE
- SUPPLY GRILLE
- EXTRACT GRILLE
- DIRTY EXTRACT GRILLE
- AIR VALVE
- ATTENUATOR/CROSS-TALK ATTENUATOR
- VCD — VOLUME CONTROL DAMPER
- MD — MOTORISED DAMPER
- LOUVRE
- FD — FIRE DAMPER
- AH — ACCESS HATCH
- FLEXIBLE DUCT CONNECTION
- PIR — PASSIVE INFRARED SENSOR
- HEAT RECOVERY UNIT
- DUCTED FAN COIL UNIT
- SUPPLY/EXTRACT FAN
- PLANT REFERENCE
- 15mm U/C — 15mm DOOR UNDERCUT
- TRANSFER GRILLE

CONSTRUCTION

C2	UPDATED INLINE WITH COMMENTS RECEIVED	13.11.24	K.H	J.H
C1	UPDATED INLINE WITH COMMENTS RECEIVED AND NEW BUILDING LAYOUT, CONSTRUCTION ISSUE	07.10.24	K.H	J.H
P3	UPDATED INLINE WITH COMMENTS RECEIVED AND NEW BUILDING LAYOUT	03.07.24	K.H	A.M
P2	UPDATED INLINE WITH COMMENTS RECEIVED	09.05.24	K.H	A.M
P1	PRELIMINARY	23.04.24	K.H	A.M

Revision description | Date | Drawn by | Checked by

Amspec

Lower Campfield

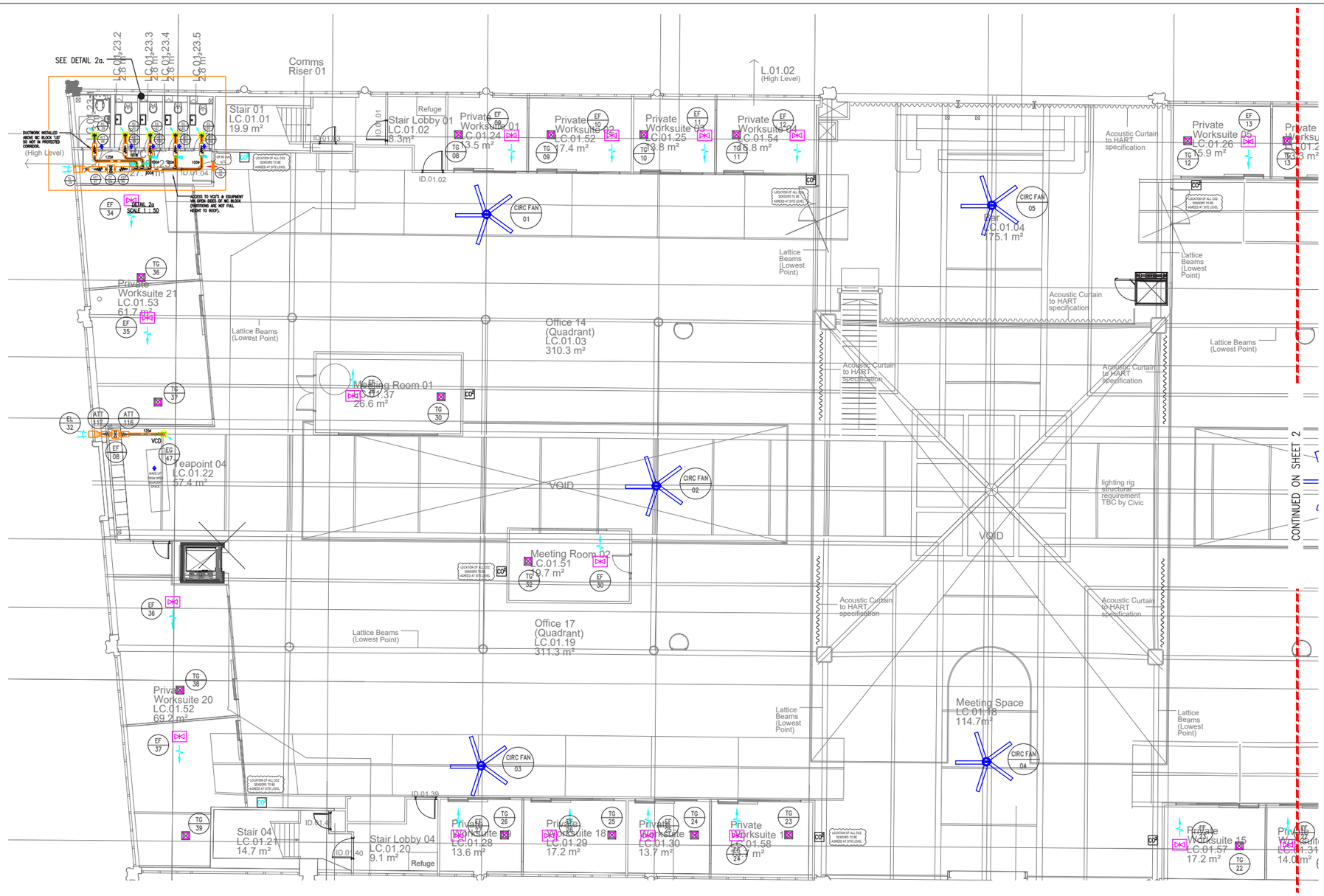
Ventilation
Ground Floor - Sheet 2 of 2

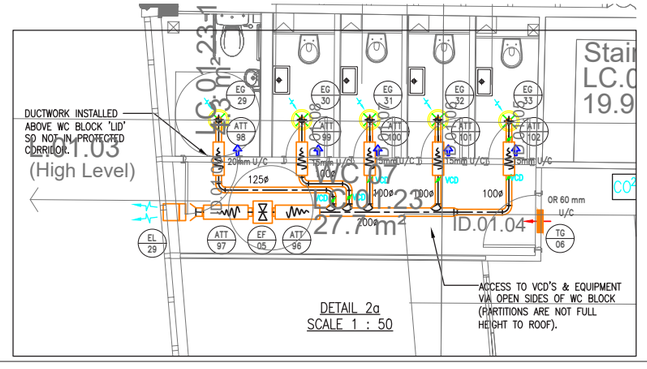
Solution environmental services

Pure Office, Brooks Drive,
Cheadle Royal Business Park, Cheadle, SK8 3TD
Tel: 0161 532 9460
www.solution-es.co.uk

Drawn by	Checked by	Scale	Sheet Size	Date
K.H	A.M	1:100	A1	13.11.24

Drawing No. SE4704/AM/M20 | Revision C2





MECHANICAL VENTILATION LAYOUT LEGEND

- EXISTING SERVICES
- SA — SUPPLY DUCTWORK
- EA — EXTRACT DUCTWORK
- DE — DIRTY EXTRACT DUCTWORK
- SUPPLY GRILLE
- EXTRACT GRILLE
- DIRTY EXTRACT GRILLE
- AIR VALVE
- ATTENUATOR/CROSS-TALK ATTENUATOR
- VCD — VOLUME CONTROL DAMPER
- MD — MOTORISED DAMPER
- LOUVRE
- FD — FIRE DAMPER
- AH — ACCESS HATCH
- FLEXIBLE DUCT CONNECTION
- PIR — PASSIVE INFRARED SENSOR
- HEAT RECOVERY UNIT
- DUCTED FAN COIL UNIT
- SUPPLY/EXTRACT FAN
- PLANT REFERENCE
- 15mm U/C — 15mm DOOR UNDERCUT
- TRANSFER GRILLE

NOTES

1.0 ALL GRILLES AND DIFFUSERS BRANCHES TO HAVE OPPOSED BLADE DAMPERS.

2.0 ALL DUCTWORK TO DW144/DW172 (WHERE APPLICABLE).

3.0 FLEX TO BE USED ONLY STRAIGHT–ALL BENDS TO BE RIGID.

4.0 FIRE DAMPERS TO BE LOCATED IN ACCORDANCE WITH FIRE STRATEGY DRAWING REQUIREMENTS.

5.0 ACCESS DOORS TO BE LOCATED ADJACENT TO FIRE DAMPERS AND EVERY 3M.

6.0 ALL BRANCH CONNECTIONS SHALL HAVE VCD'S.

7.0 ALL DIFFUSERS AND GRILLES TO BE SUPPORTED BY STRUCTURE.

8.0 IN POSITIONS OF RESTRICTED HEADROOM, DUCTS MAY BE SUPPORTED WITH FLAT BAR FORMED TO DUCT SHAPE WITH FIXINGS AT SIDES ON BENT LUGS.

9.0 ALL DUCTWORK BRACKETS TO HAVE AN ACOUSTIC SOFT RUBBER OR NEOPRENE INTERFACE LAYER TO THE DUCT.

10.0 ALL SUPPLY DUCTWORK, INCLUDING SUPPLY PLENUM BOXES TO BE THERMALLY INSULATED.

11.0 SMOKE FIRE DAMPERS SHALL BE INSTALLED WHERE DUCTWORK PASSES THROUGH AN ESCAPE ROUTE AND THESE SHALL BE CONTROLLED VIA A PROPRIETARY SMOKE DAMPER CONTROL SYSTEM. THE CONTROL PANEL FOR THIS SYSTEM SHALL BE INSTALLED ADJACENT THE FIRE ALARM PANEL AND EACH SMOKE FIRE DAMPER SHALL HAVE A 240V POWER SUPPLY PROVIDED ADJACENT TO POWER THE CONTROL ACTUATOR FOR THE DAMPER. EACH DAMPER SHALL BE POWER OPEN/FAIL CLOSE.

CONSTRUCTION

C3	UPDATED INLINE WITH COMMENTS RECEIVED	13.11.24	K.H	J.H
C2	UPDATED INLINE WITH COMMENTS RECEIVED	29.10.24	K.H	J.H
C1	UPDATED INLINE WITH COMMENTS RECEIVED AND NEW BUILDING LAYOUT, CONSTRUCTION ISSUE	07.10.24	K.H	J.H
P4	UPDATED INLINE WITH NEW BUILDING LAYOUT	19.08.24	K.H	A.M
P3	UPDATED INLINE WITH COMMENTS RECEIVED AND NEW BUILDING LAYOUT	03.07.24	K.H	A.M
P2	UPDATED INLINE WITH COMMENTS RECEIVED	09.06.24	K.H	A.M
P1	PRELIMINARY	23.04.24	K.H	A.M

Revision description | Date | Drawn by | Checked by

Client: Amspec

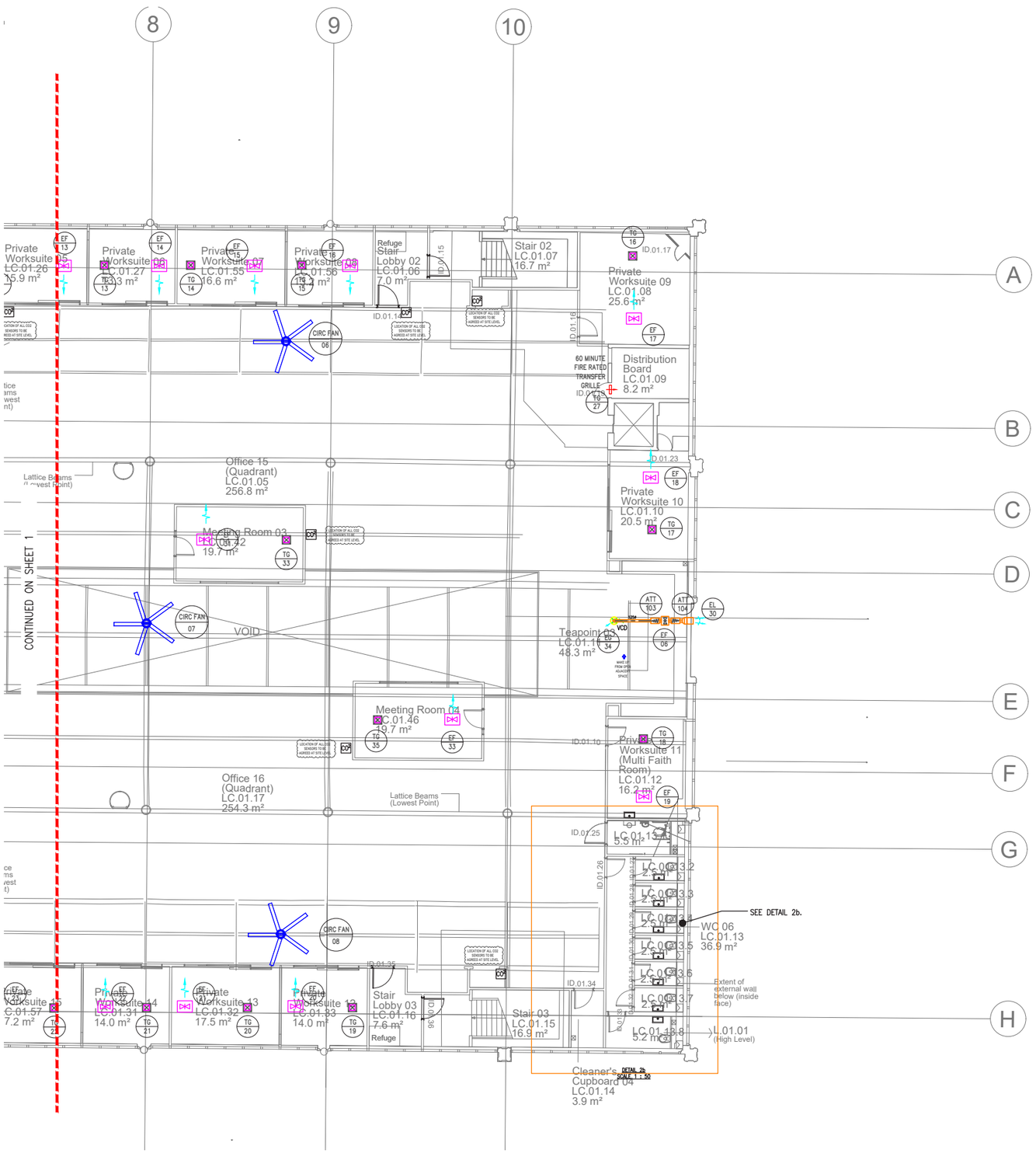
Project: Lower Campfield

Title: Ventilation Mezzanine - Sheet 1 of 2

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www.solution-es.co.uk

Drawn by	Checked by	Scale	Sheet Size	Date
K.H	A.M	1:100	A1	13.11.24

Drawing No. SE4704/AM/M21 | Revision C3



NOTES

1.0 ALL GRILLES AND DIFFUSERS BRANCHES TO HAVE OPPOSED BLADE DAMPERS.

2.0 ALL DUCTWORK TO DW144/DW172 (WHERE APPLICABLE).

3.0 FLEX TO BE USED ONLY STRAIGHT–ALL BENDS TO BE RIGID.

4.0 FIRE DAMPERS TO BE LOCATED IN ACCORDANCE WITH FIRE STRATEGY DRAWING REQUIREMENTS.

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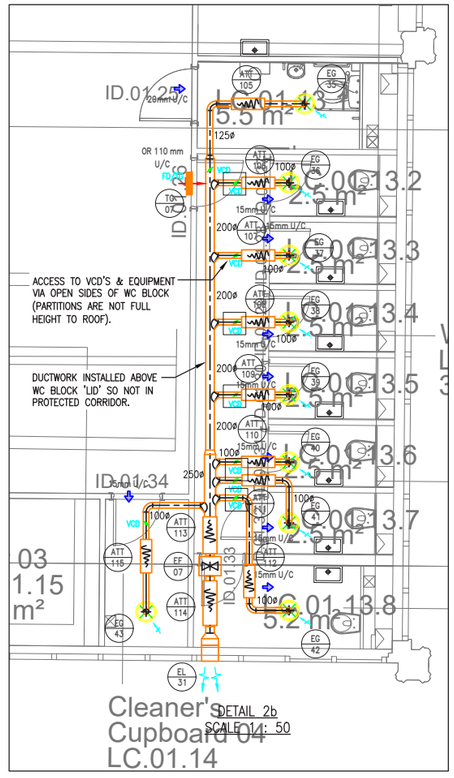
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MECHANICAL VENTILATION LAYOUT LEGEND

- EXISTING SERVICES
- SA — SUPPLY DUCTWORK
- EA — EXTRACT DUCTWORK
- DE — DIRTY EXTRACT DUCTWORK
- SUPPLY GRILLE
- EXTRACT GRILLE
- DIRTY EXTRACT GRILLE
- AIR VALVE
- ATTENUATOR/CROSS–TALK ATTENUATOR
- VCD — VOLUME CONTROL DAMPER
- MD — MOTORISED DAMPER
- LOUVRE
- FD — FIRE DAMPER
- AH — ACCESS HATCH
- FLEXIBLE DUCT CONNECTION
- PIR — PASSIVE INFRARED SENSOR
- HEAT RECOVERY UNIT
- DUCTED FAN COIL UNIT
- SUPPLY/EXTRACT FAN
- PLANT REFERENCE
- 15mm U/C — 15mm DOOR UNDERCUT
- TRANSFER GRILLE



CONSTRUCTION

C3	UPDATED INLINE WITH COMMENTS RECEIVED	13.11.24	K.H	J.H
C2	UPDATED INLINE WITH COMMENTS RECEIVED	28.10.24	K.H	J.H
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P2	UPDATED INLINE WITH COMMENTS RECEIVED	06.06.24	K.H	A.M
	PRELIMINARY	23.04.24	K.H	A.M

Revision description | Date | Drawn by | Checked by | Design Stage

Client: Amspec

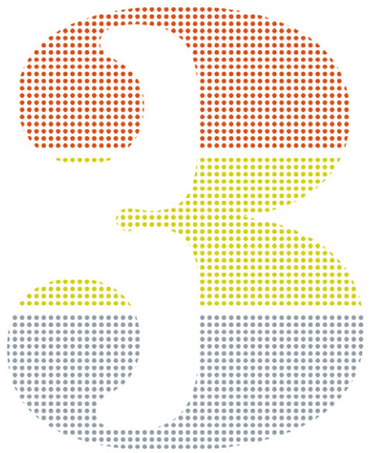
Project: Lower Campfield

Title: Ventilation Mezzanine - Sheet 2 of 2

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K.H	A.M	1:100	A1	13.11.24

Drawing No. SE4704/AM/M22 — Revision C3



Section 02

The following section contains data sheets of specified plant.

Specifications

ERV





Model Name					AN026JSKLKN/EU	AN035JSKLKN/EU	AN050JSKLKN/EU	AN080JSKLKN/EU	AN100JSKLKN/EU
Power Supply				Φ, ℜ, V, Hz	1,220-240,50/60	1,220-240,50/60	1,220-240,50/60	1,220-240,50/60	1,220-240,50/60
Performance	Air Volume			m³/h	260	350	500	800	1000
	Temperature Exchange Efficiency	Cooling	Turbo/High/Low	%	70/70/74	70/70/74	70/70/74	70/70/74	70/70/74
		Heating	Turbo/High/Low	%	74/74/75	78/78/79	74/74/75	77/77/78	74/74/75
	Effective Enthalpy Exchange Efficiency	Cooling	Turbo/High/Low	%	50/50/55	50/50/55	50/50/55	50/50/55	50/50/55
		Heating	Turbo/High/Low	%	70/70/76	70/70/76	70/70/76	70/70/76	70/70/76
Power	Power Input		Turbo/High/Low	W	115/80/45	115/80/50	175/120/65	330/230/125	450/280/155
	Current Input		Turbo	A	0,7	0,7	1,1	2,1	2,9
Fan	Air Flow Rate		Turbo/High/Low	m³/h	260/250/180	350/350/256	500/500/360	800/800/560	1000/1000/690
	External Static Pressure		Turbo/High/Low	Pa	100/65/55	155/100/83	165/100/85	155/90/80	155/90/75
Noise Level	Sound Pressure*		Turbo/High/ Low/Quiet	dB	31/28/25/22	32/29/26/23	35/32/28/24	36/33/29/25	37/34/30/26
	Sound Power			dBA					
Field Wiring	Power Source Wire			mm²	1.5~2.5	1.5~2.5	1.5~2.5	1.5~2.5	1.5~2.5
	Transmission Cable			mm²	0.75~1.5	0.75~1.5	0.75~1.5	0.75~1.5	0.75~1.5
Dimensions	Net Weight			kg	28,5	42,5	42,5	67	67
	Net Dimensions (W×H×D)			mm	600 x 350 x 660	1012 x 270 x1000	1012 x 270 x 1000	1220 x 340 x 1135	1220 x 340 x 1135
	Supply/Return/Exhaust/ Outside Duct Flange (Ø)			mm	150	200	200	250	250

*Sound level was acquired in an anechoic room. Thus actual noise level may be different depending on the installation conditions.

Accessories	
CO2 Sensor	Individual Control System



MOS-C1

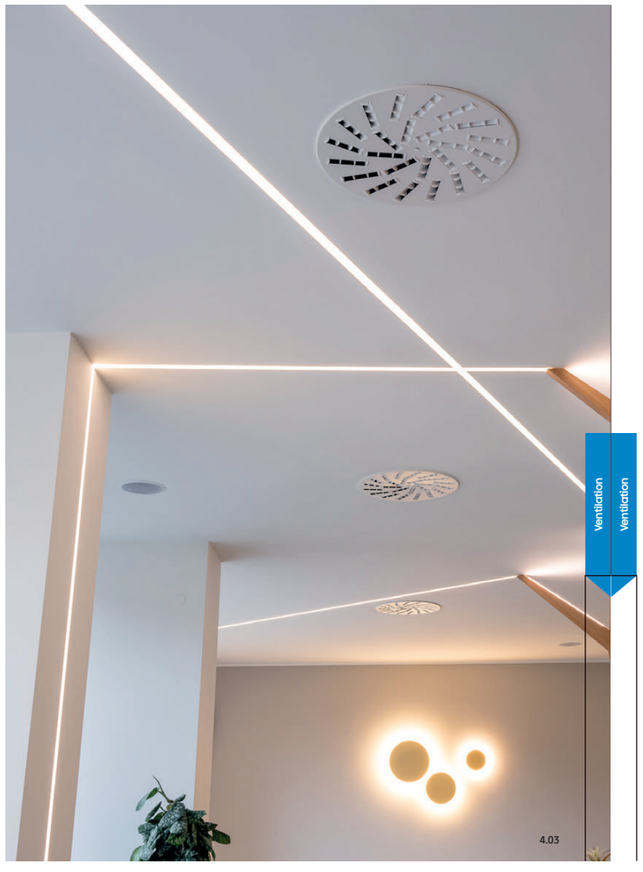


MWR-VH12N



MWR-WE13N

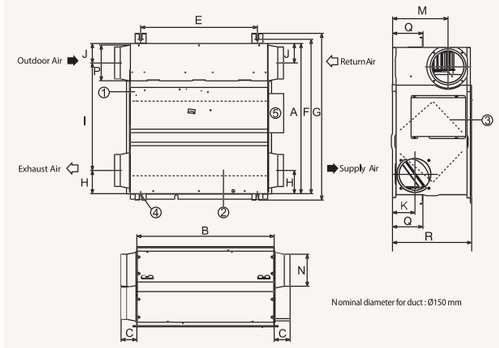
Note: Please order MOS-P1050 separately. Differential pressure switch (model code: MOS-P1050) is mandatory accessory for all ERV and ERV Plus units in EU countries according to Ecodesign Directive 1253/2014.



Ventilation

Dimensional Drawings

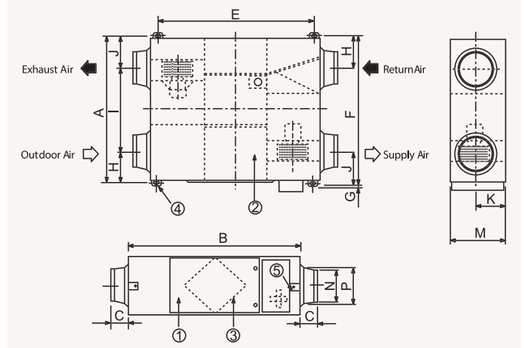
AN026JSKLKN/EU



No.	Name	Quantity
1	Maintenance cover	1
2	Heat exchange element	1
3	Dust filter	2
4	Hanger	4
5	Electrical component box	1

Model	A	B	C	E	F	G	H	I	J	K	M	N	P	Q	R
	Length (mm)										Diameter (mm)		Length (mm)		
026	600	660	70	510	675	729	102	470	85	98	242	140	156	133	350

035/050 - 080/100



No.	Name	Quantity
1	Maintenance cover	1
2	Heat exchange element	2
3	Dust filter	4
4	Hanger	4
5	Electrical component box	1

Model	Nominal diameter for duct (mm)
035/050	200
080/100	250

Model	A	B	C	E	F	G	H	I	J	K	M	N	P
	Length (mm)											Diameter (mm)	
035/050	1000	1012	99	940.6	1036.4	26	130	617	253	135	270	194	241.5
080/100	1135	1220	84	1110	1183	25	184	613.25	387.75	170	340	244	270

Ventilation

FRQ5-4/10/16A

english

Frequency inverter for 3 ~ fans

Operating Instructions



Speed controller with 5-step switch for presetting the fan speed

Software version: D2731A from Version 1.05

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1 General notes

1.1 Structure of the operating instructions

Before installation and start-up, read this manual carefully to ensure correct use! We emphasize that these operating instructions apply to specific units only, and are in no way valid for the complete system!

Use these operating instructions to work safely with and on the device. They contain safety instructions that must be complied with as well as information that is required for failure-free operation of the device.

Keep these operating insturctions together with the device. It must be ensured that all persons that are to work on the device can refer to the operating instructions at any time. Keep the operating instructions for continued use. They must be passed-on to all successive owners, users and final customers.

1.2 Target group

The operating instructions address persons entrusted with planning, installation, commissioning and maintenance and servicing and who have the corresponding qualifications and skills for their job.

1.3 Exclusion of liability

Concurrence between the contents of these operating instructions and the described hardware and software in the device has been examined. It is still possible that non-compliances exist; no guarantee is assumed for complete conformity. To allow for future developments, construction methods and technical data given are subject to alteration. We do not accept any liability for possible errors or omissions in the information contained in data, illustrations or drawings provided.

We accept no liability for damage caused by misuse, incorrect use, improper use or as a consequence of unauthorized repairs or modifications.

1.4 Copyright

These operating instructions contain copyright protected information. The operating instructions may be neither completely nor partially photocopied, reproduced, translated or put on data medium without previous explicit consent. Infringements are liable for damages. All rights reserved, including those that arise through patent issue or registration on a utility model.

2 Safety instructions

This chapter contains instructions to prevent personal injury and property damage. These instructions do not lay claim to completeness. In case of questions and problems, please consult our company technicians.

2.1 Intended use

The equipment is to be used solely for the purposes specified and confirmed in the order. Other uses which do not coincide with, or which exceed those specified will be deemed unauthorised unless contractually agreed. Damages resulting from such unauthorised uses will not be the liability of the manufacturer. The user will assume sole liability.

Reading these operating instructions and complying with all contained instructions - especially the safety notifications contained therein - are considered part of intended use. To consider is also the manual of attached components. Not the manufacturer, rather the operator of the device is liable for any personal harm or material damage arising from non-intended use!

2.2 Explanations of symbols

Safety instructions are highlighted with warning triangles and are depicted according to the degree of hazard as follows.

⚠	**Attention!** General hazardous area. Death or severe injury or significant property damage can occur if the corresponding precautions are not taken!
⚠	**Danger due to electric current** Danger by dangerous, electric voltage! Death or severe injury can occur if the corresponding precautions are not taken!
i	**Information** Important additional information and advice for user.

2.3 Product safety

The device conforms to the state of the art at the time of delivery and is fundamentally considered to be reliable. The device and its accessories must only be used in a flawless condition and installed and operated in compliance with the assembly instructions and/or operating instructions. Operating outside the device's technical specifications (☞ name plate and attachment / technical data) can lead to a defect in the device and additional damage!

In the case of a malfunction or a failure of the equipment check all functions with alarms in order to prevent injury to persons or property. Note possibility of back-up operation. If used in intensive animal environments, any malfunctions in the air supply must be detected as soon as possible to prevent the development of a life-threatening situation for the animals. The design and installation of the system must comply with local regulations and directives. In Germany these include DIN VDE 0100, the animal protection and the keeping of working animals ordinance and the pig-keeping ordinance etc. Also note the instructions of AEL, DLG, VdS.

2.4 Requirements placed on the personnel / due diligence

Persons entrusted with the planning, installation, commissioning and maintenance and servicing in connection with the frequency inverter must have the corresponding qualifications and skills for these jobs.

In addition, they must be knowledgeable about the safety regulations, EU directives, rules for the prevention of accidents and the corresponding national as well as regional and in-house regulations. Personnel to be trained or instructed and apprentices are only permitted to work on the device under the supervision of an experienced person. This also applies to personnel undergoing general training. Comply with the legal minimum age.

This device is not intended to be used by people (including children) who have restricted mental, sensory or intellectual abilities or who have a lack of experience and/or knowledge.

2.5 Start-up and during operation

⚠ **Attention!**

- During commissioning, unexpected and hazardous conditions can arise in the entire installation due to defective adjustments, defective components or incorrect electrical connections. Remove all persons and objects from the hazardous area.
- During operation, the device must be closed or installed in a control cabinet. Fuses may only be replaced by new ones and must not be repaired or bypassed. The data for the maximum line fuse are to be considered absolutely (☞Technical data). Use only fuses specified in schematic diagrams.
- Any faults detected in the electric system/modules/operating equipment must be corrected immediately. If these faults are not corrected, the device/system is potentially very dangerous. The device/system must therefore not be operated when it is faulty.
- Pay attention to smooth, low vibration running of the motor/fan, the appropriate instructions in the drive documentation must be observed!

2.6 Working on device / Hazards through “residual voltage”

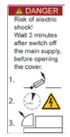
i **Information**

Mounting, electrical connection, and start-up operation may only be carried out by an electrical specialist in accordance with electrotechnical regulations (e.g. EN 50110 or EN 60204)!

⚠ **Danger due to electric current**

- It is generally forbidden to carry out work on electrical live parts. Protection class of the device when open is IP00! It is possible to touch hazardous voltages directly.
- The safe isolation from the supply must be checked using a **two-pole** voltage detector.
- Even after disconnecting the mains voltage, life-threatening charges can appear between the protective ground “PE” and the mains connection.
- The protective earth is conducting high discharge currents (dependent on the switching frequency, current-source voltage and motor capacity). Earthing in compliance

with EN specifications shall therefore be observed even for testing and trial conditions (EN 50 178, Art. 5.2.11). Without earthing, dangerous voltages can be present on the motor housing.



Waiting period at least 3 minutes!
Through use of capacitors, danger of death exists even after switching off the device through directly touching the energized parts or due to parts that have become energized due to faults.
It is only permitted to remove the housing cover after waiting for 3 minutes once the line supply cable has been shut down. Should measurement or adjustment work be unavoidable on the opened unit while still powered, then this may only be performed by qualified personnel acquainted with the thereby associated hazards.

Attention!
Automatically restart after a power failure or mains disconnection!

2.7 Modifications / interventions in the device

Attention!
For reasons of safety, no unauthorized interventions or modifications may be made on the device. All planned modifications must be authorized by the manufacturer in writing.

Only use the manufacturer's original spare parts / wearing parts / accessories. These parts are specially designed for this device. If parts from other sources are used, there is no guarantee that they are designed and produced for the proper loads and with the required level of safety.
Parts and special equipment not supplied by the manufacturer are not approved for use.

2.8 Operator's obligation of diligence

- The contractor or owner must also ensure that the electric systems and equipment are operated and maintained in accordance with electro-technical regulations.
- The owner is obliged to ensure that the device is operated in perfect working order only.
- The device may only be used as intended (☞ "Application").
- You must periodically examine the safety equipment for their properly functioning condition.
- The assembly instructions and/or operating instructions are always readily available at the location where the device is being used, are complete and are in legible condition.
- These persons are regularly instructed in all applicable questions regarding occupational safety and environmental protection and are knowledgeable regarding the assembly instructions and/or operating instructions and, especially, are familiar with the safety instructions contained therein.

- All safety and warning notices attached to the device are never removed and remain legible.

2.9 Employment of external personnel

Maintenance and service work are frequently carried out by external employees who often do not recognize the specific situations and the thus resulting dangers.These persons must be comprehensively informed about the hazards in their area of activity. You must monitor their working methods in order to intervene in good time if necessary.

3 Product overview

3.1 Operational area

Frequency inverter for the speed control of a single fan motor with FU-capability of the insulation system and mounting.
Only suitable for drives with low set-off torque (e.g.: fans or pumps).
We expressly point out that control of standard fans in parallel operation is not possible in this series without endangering the motors.
The delivery programme includes frequency inverters with integrated sinefilters for trouble-free parallel operation.

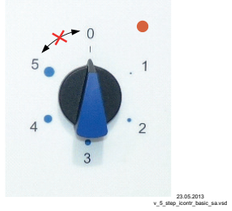
3.2 Functional description

The frequency inverters generate their 3~ output with variable voltage and frequency from the three-phase mains on the input.
The devices are constructed in accordance with the general requirement in DIN EN 61800-2 for Adjustable speed electrical power systems and is intended for one-quadrantdrives.

The fan speed is preset with the 5-step switch.

Step	Output frequency *
0	0 Hz
1	10 Hz
2	20 Hz
3	30 Hz
4	40 Hz
5	50 Hz

Direct switching from step "0" to step "5" or from step "5" to step "0" is not possible!



* *The output frequency can be adapted by an internal potentiometer if necessary (☞ inverter output: U/f-characteristic curve).*

Danger due to electric current
In **step "0" the frequency inverter is not switched off electrically** but only no speed preset signal applied (= 0 V).

3.3 Maintenance

The device must be checked for soiling and, if necessary, cleaned in periodic intervals.

3.4 Transport

- The device is packed ex factory to suit the transport method previously agreed.
- Always use the original packaging materials when transporting the device.
- Avoid shocks and impacts to the device during the transport.
- During manual handling the human lifting and carrying restrictions must be observed and adhered to.

3.5 Storage

- The device must be stored in its original packaging in a dry and weather-proof room.
- Avoid exposure to extreme heat and cold.
- Avoid prolonged storage; we recommend a maximum of one year (consult the manufacturer before starting if stored for longer).

3.6 Disposal / recycling

Disposal must be carried out professionally and environmentally friendly in accordance with the legal stipulations.

4 Mounting

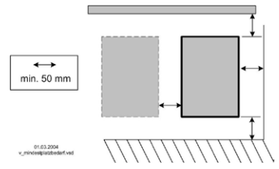
4.1 General notes

Attention!
The following points must be complied with during the mechanical installation to avoid causing a defect in the device due to assembly errors or environmental influences:

- Before installation remove the device from the packing and check for any possible shipping damage!
- Assemble the device on a clean and stable base. Do not distort during assembly! Use the appropriate mounting devices for proper installation of the unit!
- When mounted onto lightweight walls, there must be no impermissibly high vibrations or shock loads. Any banging shut of doors that are integrated into these lightweight walls, can result in extremely high shock loads. Therefore, we advise you to decouple the devices from the wall.
- Do not allow drilling chips, screws and other foreign bodies to reach the device interior!
- Maintain the stated minimum clearances to ensure unobstructed cooling- air feed as well as unobstructed outgoing air discharge (☞minimum space requirement)!
- The device should be installed in a location where it will not be disturbed, but at the same time can be easily accessed!
- Use fitted plugs or alternatively screw glands for the cable inlets. Seal inlets which are not required!
- Care must be taken to avoid direct radiation from the sun!
- The device is designed for vertical installation (cable inlet down). A horizontal or reclined installation is only permissible after technical release of the manufacturer!
- Be sure to observe proper heat dissipation (☞ Technical data, heat dissipation).

4.2 Minimum space requirement

In order to ensure sufficient ventilation of the device, clearance on all sides of at least 50 mm has to be maintained to the housing walls, switch cabinet doors, wiring ducts, etc. The same clearance applies to the installation of several devices next to each other. When installing several devices on top of each other, the danger of reciprocal heating exists. This layout is only then permissible when the air suctioned from the upper unit does not become warmer than the permissible ambient temperature (☞ Technical data). I.e., a correspondingly larger clearance or thermal shielding is required.



4.3 Outdoor installation

Outdoor installation is possible up to -20 °C when the controller supply is not switched off. Installation must be protected from the effects of weather as much as possible, including protection from direct sunlight!

4.4 Installation location for agriculture

In order to avoid damage caused by ammoniac vapours, the controller shall not be installed in the stable, but rather in an outhouse wherever possible.

4.5 Temperature influences during commissioning

Avoid condensation in the controller and functional faults attributable to condensation by storing the controller at room temperature!

5 Electrical installation

5.1 Safety precautions

Danger due to electric current

- **Work on electric components may only be carried out by trained electricians or by persons instructed in electricity under the supervision of an electrician in accordance with electrical engineering regulations.**
- The 5 electrical safety rules must be observed!
- **It is forbidden to carry out work on electrically live parts. Even after disconnection, the dc-link is still live. Always wait at least 3 minutes.**
- Other measures may be necessary to achieve safe electrical isolation.
- **A second person must always be present when working on energized parts or lines who disconnects in case of emergency.**
- **Inspect electrical equipment periodically: retighten loose connections – immediately replace damaged lines and cables.**
- **Always keep switch cabinets and all electrical supply facilities locked. Access is only allowed for authorized persons using a key or special tool.**
- **Operating the device with the housing cover removed is prohibited because energized, exposed parts are present inside the device. Disregarding this regulation can lead to severe personal injury.**
- **For metal cable inlets the necessary protective earth connection to the bottom of the housing is made by screws. The device may only be started up when these screws are fitted properly.**
- The device owner is responsible for the EMC of the entire plant according to the locally applicable standards.
- **Never clean electrical equipment with water or similar liquids.**

Information
The respective connections are represented in the enclosure of this manual (☞ Connection diagram)!

5.2 EMC-compatible installation

5.2.1 Interference emission and installation of cables

In order to prevent faults attributable to interference and to ensure compliance with the radio interference level, the connecting leads must be kept as short as possible both in the motor terminal box as well as in the controller. Spacing between supply cables, motor cable and signal cable should thereby be kept as large as possible.
The so-called “pig-tails” of the screen are to be avoided when connecting screened cables. The screen shall be laid close up to the terminals and taken from here to the protective conductor connection by the shortest possible route, laid flat (low induction) and without loops.
When installing the controller in a switching cabinet, attention shall be paid that “live” (interference) cables and interference-suppressed cables are not routed in the duct.

5.2.2 Motor cable

The screening of the motor cables (U1, V1, W1, PE) must be two-fold (both ends), i.e. connected to the protective conductor at the controller and at the motor.
The use of a screened motor cable of max. 10 m in length will ensure compliance with the limiting value class B in accordance with EN 55011.
The screening of the thermostats “TB” or thermistor “TP” connection cable for motor protection may only be connected to the protective conductor at one end at the controller.
Because of possible coupling unbalances they may not be routed in the same cable harness as the motor cables.

5.2.3 Control cables

Pay attention to sufficient distance from powerlines and motor wires to prevent interferences. The control cable may not be longer than 30 m. Screened control cables must be used when the cable length is longer than 20 m. When using a shielded cable connect the shielding to one side only, i.e. only to the control unit with the protective ground (keep cable short and with as little inductance as possible!).

5.2.4 Harmonics current for devices ≤ 16 A

According to EN 61000-3-2 these devices are to be classified as “professional” devices.
The application is therefore limited to use by trade, certain vocations or industries.
Connection to a low voltage supply (public networks) is allowed insofar as this has been clarified with the respective energy supply company responsible.

5.3 Mains connection

5.3.1 Line voltage

Power from the mains is connected to terminals: PE, L1, L2, L3. Here, it must be strictly observed that the mains voltage lies within the allowable tolerance specifications (☞ Technical data and nameplate affixed to the side).

Danger due to electric current
Not suitable for IT system!

5.3.2 Required quality attributes for the mains voltage

Danger due to electric current
The mains voltage must comply with the EN 50160 quality characteristics and the defined standard voltages in IEC 60038!

5.3.3 Leakage current, securely attached, protective earth conductor

Danger due to electric current
The maximum leakage current depends on the type of device and the connected mains voltage (☞ Technical Data). With regard to fixed connection and the type of PE conductor connection, the specification for the leakage current must be observed under consideration of the locally valid standards (for Europe☞ EN 50178 Section 5.2.11 or 5.3.2.1 etc.).
Minimum cross-section for PE conductor for fixed connection = 1.5 mm^2!

5.4 Residual-current-operated protective device

Danger due to electric current
For an installation of r.c.d. protection, it shall be observed that this must be of “universal-current sensitivity” (Type B). In accordance with EN 50 178, Section. 5.2. other types of current-operated protective devices may not be used. To ensure as high a degree of reliability as possible , we recommend a tripping current of 300 mA.

5.5 Inverter output

5.5.1 Motor connection

The motor leads are connected to the terminals: PE, U, V, W. Comply with the motor data (rating plate) regarding the type of connection (Y or D) (☞U / f-characteristic curve and technical data).

Information
- **For each Controller can be attached only one motor, parallel operation of several motors is not allowed!**
- **The maximum length of the screened motor cable is 10 m, a longer cable is not permissible!**

5.5.2 Disconnection between controller and motor (repair switch)

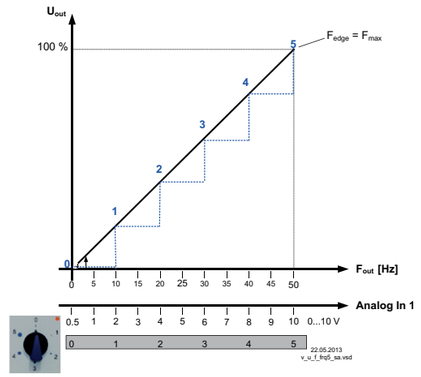
Ideally, a repair switch should be installed **before the controller** (supply line disconnect).
In the case of complete disconnection (entire load) after the controller, the enable (controller OFF / ON) must be disconnected simultaneously. I.e., an additional control contact is needed. Switching on the motor while simultaneously issuing the enable (ON) achieves secure energizing with low saturation of the controller.

Attention!
When switching on the motor plus existing release: under certain circumstances, this can occur under full modulation of the controller.

5.5.3 U/f-characteristic curve

A control signal for setting the output frequency is switched to the analog input of the device by the 5-step switch (0 - 10 V ≙ 0 - 50 Hz).

Diagram setting signal and U/f curve (linear)



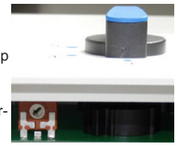
Analog In: Speed preset signal by 5-step switch
Fout: Output frequency
Uout: Output voltage
Ustart: Start-up voltage
Foff: Shutdown Freq.
Fedge: Edgefrequency
Fmax: Maximum frequency

Potentiometer for step adaptation
The device operates with the respective possible maximum frequency (☞ diagram) in every step in the as-delivered state.
The setting signal (0 - 10 V) for every step and thus the output frequency can be reduced with the internal potentiometer.
The reduction acts on all steps (1 – 5) in percentage relation. It might therefore be possible to prevents interference noises caused by resonances at certain frequencies.

Potemtiometer adjustable with a screwdriver

- Left stop: No reduction, i.e. output frequency e.g. in step 5 = 50 Hz (factory setting ☞ diagram)
- Right stop: Maximum reduction 25 %, i.e. output frequency, e.g. in step 5 = 37.5 Hz)

The value of the output frequency can be checked with a suitable measuring instrument!



Potentiometer for step adaptation

Danger due to electric current

- It is generally forbidden to carry out work on electrical live parts. Protection class of the device when open is IP00! It is possible to touch hazardous voltages directly.
- The device must have been disconnected from the line voltage for at least 3 minutes before opening!
- Observe the safety information!

5.6 Motor protection

Motor protection is possible by connecting thermostats “TB” (thermal contacts) or thermistors “TP” (PTC).

The jumper “J1” in the connection space must be plugged according to the used thermal protectors.	
Motor with thermistors “TP” For motor with thermistors “TP” jumper plugged at top (factory setting). A maximum of six individual thermistors (DIN 44081 or DIN 44082) may be connected in series to a single device.	TP J1
Motor with thermostats “TB” For motor with thermostats “TB” the jumper “J1” must be plugged at the bottom.	TB J1

When a connected thermostat or thermistor responds (interruption between the two terminals “TB/TP”) the device switches off and does not switch back on.
Relais “K1” is de-energized, terminals “13” - “14” interrupted. The signal lamp flashes in code 15 (☞Diagnostics / faults).
Possibilities for re-starting after the drive has cooled down (terminals “TB/TP” bridged) by:

- By switching the mains voltage off and then on again.
- Via a digital input for remote control (ON/OFF enable).

Danger due to electric current

- **Use a separate screend connection cable for temperature monitoring.**
- **An outside voltage may never be connected to the terminals “TB/TP” and/or!**

5.7 Voltage supply for external devices (+24V, GND)

A voltage supply is integrated for external devices e. g. a sensor (max. current load ☞ technical data).
In case of overload or short circuit (24 V – GND), the external power supply is shut down (multi-fuse). The device performs a “Reset” and continues operation.
It is not permissible to connect outputs of several devices to each other!

5.8 Enable, Device ON / OFF (Digital In 1 = D1)

Electronic disconnection and Reset after motor fault via floating contact at terminals “D1”- “24V” (input resistance and voltage range ☞ Technical data).

- Device “ON” for closed contact.
- Controller “OFF” with opened contact.

Activation via floating contacts, a low voltage of approx. 24 V DC is connected.

Danger due to electric current

- No disconnection (isolation) when turned off by remote, in accordance with VBG4 §6)!
- Never apply line voltage to the digital input!

5.9 Relay outputs (K1)

An operating message or activation of a damper control motor is possible via the potential-free contacts of the relay “K1” (max. contact load ☞technical data and connection diagram).
At a modulation above 5 Hz the relay energizes, i.e. the terminals “13” and “14” are bridged.
At low modulation (below 3 Hz), switch off by the enable, switch off of line voltage or in case of a fault, the relay de-energizes.

5.10 Bypass circuit

Please observe the following during bypass switching (controller shunt with mains voltage):

- Mutual locking of mains contactor and bypass protection.
- Time delay of at least 1 second during switching.
- When the contactor is switched off at the inverter output, the “enable” (ON / OFF) must also be opened and closed again when it is switched back on. When switching off, wait at least 90 seconds before switching back on!
- Never apply line voltage to the inverter output!

5.11 Potential at control voltage connections

The control voltage connections (< 50 V) relate to the joint GND potential (Exception: Relay contacts are potential free). There is a potential separation between the control voltage connections and the protective earth. It must be ensured that the maximum external voltage at the control voltage connections cannot exceed 50 V (between “GND” terminals and “PE” protective earth). If necessary, a connection to the protective earth potential can be established, install bridge between “GND” terminal and the “PE” connection (terminal for screening).

6 Start-up

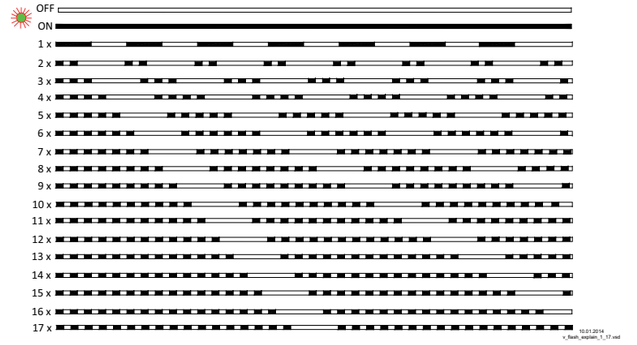
6.1 Prerequisites for commissioning

Attention!

1. You must mount and connect the device in accordance with the operating instructions.
2. Double check that all connections are correct.
3. The mains voltage must match the information on the rating plate.
4. The rated current on the rating plate will not be exceeded.
5. Make sure that no persons or objects are in the hazardous area.

7 Diagnostics / Faults

Operating conditions are indicated by the status LED with flashing code.



Code	Relay K1	Explanation	Reaction of Controller
			Adjustment
OFF	de-energized, 13 - 14 interrupted	No line voltage	In the event of a mains interruption the unit switches “OFF” and automatically “ON” when the voltage has been restored. Check line voltage and pre-fusing.
ON	Energized at modulation above 5 Hz (terminals 13 - 14 bridged). De-energized at modulation below 3 Hz (13 - 14 interrupted).	Normal operation without fault	

Code	Relay K1	Explanation	Reaction of Controller Adjustment
1	de-energized, 13 - 14 interrupted	**No enable = OFF** Terminals “D1” - “24 V” (Digital In 1) not bridged.	Switch off by external contact (☞ enable, device ON / OFF).
2	Energized at modulation above 5 Hz (terminals 13 - 14 bridged). De-energized at modulation below 3 Hz (13 - 14 interrupted).	**Active temperature management** The device has an active temperature management to protect it from damage due to too high inside temperatures. In case of a temperature rise above the fixed limits, the modulation is reduced linearly. To prevent the complete system being switched off externally (in this operation permissible for the controller) in case of reduced operation due to too high an internal temperature, no fault message is sent via the relay.	With a drop in temperature the modulation rises again llinear. Check cooling of the controller
4	de-energized, 13 - 14 interrupted	**line failure** The device is provided with a built-in phase-monitoring function for the mains supply. In the event of a mains interruption (failure of a fuse or mains phase) the unit switches off after a delay (approx. 15 s). Only functioning with an adequate load for the controller.	Following a shutoff, a startup attempt is made after approximately 5 seconds, if the voltage supply is high enough. This keeps occurring until all 3 supply phases are available again. Check line voltage.
6	de-energized, 13 - 14 interrupted	**IGBT Fault** Earth fault or short-circuit at inverter output.	The device switches off, renewed attempt to start after about 60 s☞ Code 9. Final switch off when error is detected after the third start attempt at an interval < 60 s. Reset by enable or line voltage ON/OFF.
7	de-energized, 13 - 14 interrupted	**DC over voltage** Intermediate circuit voltage below a fixed limit for longer than 75 s.	The modulation is switched off immediately at undervoltage, error message after 75 s. Automatic switching back on and switching off of error message when the voltage exceeds the fixed limit for at least 5 s. Check line voltage.

Code	Relay K1	Explanation	Reaction of Controller Adjustment
8	de-energized, 13 - 14 interrupted	**DC over voltage** Intermediate circuit voltage above fixed limit for longer than 75s. Reason for excessively high line voltage or alternator motor operation.	The modulation is switched off immediately at overvoltage, error message after 75 s. Automatic switching back on and switching off of error message when the voltage drops below the fixed limit for at least 15 s. Check line voltage. Prevent generator motor operation.
9	de-energized, 13 - 14 interrupted	**IGBT cooling down period** IGBT cooling down period for approx. 60 sec.	Final shutoff after 2 cooling-off intervals ☞ Code 6.
12	de-energized, 13 - 14 interrupted	**Line voltage too low** Line voltage below a fixed limit for longer than 75 s.	The modulation is switched off immediately at undervoltage, error message after 75 s. Automatic switching back on and switching off of error message when the voltage exceeds the fixed limit for at least 5 s. Check line voltage.
13	de-energized, 13 - 14 interrupted	**Line voltage too high** Line voltage above fixed limit for longer than 75 s.	The modulation is switched off immediately at overvoltage, error message after 75 s. Automatic switching back on and switching off of error message when the voltage drops below the fixed limit for at least 15 s. Check line voltage.
14	de-energized, 13 - 14 interrupted	**Error Peak current** If the output current increases above the specified limit (even in a short time-frame) the device will switch-off.	After a switch off the controller waits for 30 seconds then the controller attempt a start. If 10 switch offs take place consecutively within 60 s (time to next respective error), final switch off takes place with an error message. Should no further switch off be exceeded in 90 sec. the counter will be reset.
15	de-energized, 13 - 14 interrupted	**Motor fault** A connected thermostat or thermistor has tripped the circuit or interruption between both terminals “TB / TP”. Plug for “TB” or “TP” in wrong position.	The unit cuts out and does not switch on again. Check motor and connection then reset (☞ Motor protection).

Code	Relay K1	Explanation	Reaction of Controller Adjustment
16	de-energized, 13 - 14 interrupted	**Sine filter to hot** (only in version with integrated sine filter)	Switch off at to high temperature, restarting after cooling down. Check temperature in controller, Check cooling of the controller.
17	de-energized, 13 - 14 interrupted	**Overload fault** The controller was switched off by the current limitation.	The error is set after detecting 4 times (I^2t-process; maximum overload applied for 60 s). After every detection (IGTB Recovery Flag is set) there is a 30 s wait until a new attempt is started. The respective errors must alway have a shorter interval than 5 minutes (started after restart). The modulation is switched off immediately after every detection. Check load of the device. Reset by enable or line voltage ON/OFF.

8 Enclosure

8.1 Technical data

Type	FRQ5-4A	FRQ5-10A	FRQ5-16A
Part-No.	36229 (308274-42)	36230 (308275-42)	37274 (308299-42)
Rated current output {1}	4 A	10 A	16 A
Rated current input {2} (**I** fundamental component @ 50 Hz)	3.8 A (3.5 A)	9.4 A (8.6 A)	15.2 A (14.0 A)
Recommended motor output {3}	1.5 kW	4.0 kW	7.5 kW
Max. line fuse {4}	10 A	16 A	20 A
Max. leakage current according to the defined networks of DIN EN 60990	< 3.5 mA	< 3.5 mA	approx. 5 mA
Max. heat dissipation approx. {2}	60 W	150 W	290 W
Rated temperature	40 °C	50 °C	55 °C
Weight	2,6 kg	5.6 kg	6.0 kg

{1} Rated current output ≙ current indication rating plate @ rated voltage, @ rated temperature (cos φ 0.8 at the output)
{2} At rated voltage (cos φ 0.8 at the output), values for different specifications on request.
{3} Example for power of a 4 pole motor. For the dimension of the frequency inverter size the rated current of the motor is crucial!
{4} Max. supply side line fuse according to DIN EN 60204-1 classification VDE0113 chapter 1

Line voltage*	3 ~ 208...480 V (-15 up to +10 %), 50/60 Hz
Rated voltage	400 V
Maximal output voltage	approx. 95 % from U_{Line}
Maximal output frequency	50 Hz
Edgefrequency	50 Hz
U/f-characteristic curve	linear
Switching frequency	16 - 8 kHz (is adapted automatically depending on the internal heating, 8 kHz at maximum inside temperature of the device)
Rampup time	20 sec
Rampdown time	20 sec
Current limit	FRQ5-4A: 120 %, FRQ5-10A: 110 %, FRQ5-10A: 120 %
Power factor	> 0.9
Voltage supply for external devices	+24 V ± 20 %, I_{max} 70 mA
Heat dissipation in standby operation	approx. 3 W
Max. contact rating of the internal relay	2 A / 250 VAC

Max. permissible ambient temperature	55 °C
Min. permissible ambient temperature	0 °C (if mains voltage is not switched off up to -20 °C)
Permissible temperature range for storage and transport	-30...+80 °C
Max. permissible installation height	0...4000 m amsl above 1000 m amsl the rated current is to be reduced by 5 % / 1000 m
Permissible rel. humidity	85 % no condensation
Electromagnetic compatibility for the standard voltage 230 / 400 V according to DIN IEC 60038	Interference emission EN 61000-6-3 (domestic household applications)
	Interference immunity EN 61000-6-2 (industrial applications)
Harmonics current	EN 61000-3-2 for a “professional unit” ☞ Electrical installation / harmonics current
	Please ask manufacturer for the individual harmonic oscillation levels of the current as a percentage of the fundamental oscillation of the rated current.
Vibratory strength (for vertical installation, i.e. cable inlet down).	Broadband noise (simulated life-endurance test) in accordance with EN 61373, category 1 class B. Shock test according to EN 61373, category 1
Max. cross section/diameter of the conductors for line and motor connection	Conductor cross section single-wire 4 mm^2 Conductor cross-section fine-wire: 4 mm^2, with wire end ferrule 2.5 mm^2 Conductor (AWG): 12
Housing protection	IP54

** Regarding the mains connection, these devices are to be classified as category “C2” devices according to the relevant DIN EN 61800-3. The increased requirements placed on electrical interference > 2 kHz for category “C1” devices are complied with in addition.*

8.1.1 Max. load dependent on ambient temperature and line voltage.

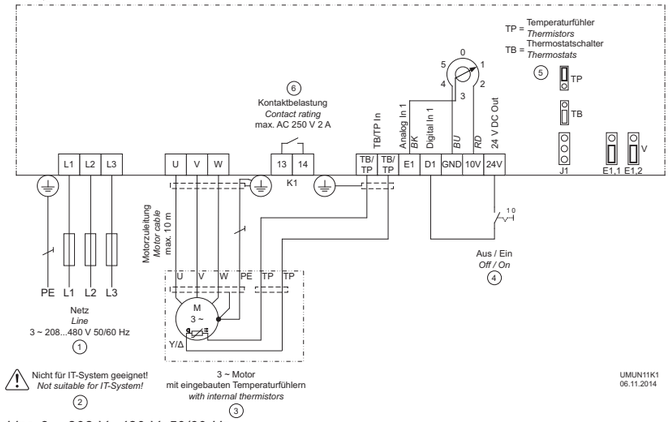
The maximum permissible temperature for the rated current at rated voltage is specified as rated temperature.
Since the dissipation of the power loss (heat development) in the device is decisively dependent on the ambient temperature, the max. load must be reduced at an ambient temperature above the rated temperature (☞ following table)!

The average value measured during a 24 h period must be 5 K under the max. ambient temperature. For installation in a switch cabinet, the device’s dissipation and its possible affect on the ambient temperature must be taken into consideration!
Since the power loss in the device increases with rising line voltage, the following table must be observed.

Maximal load depending on line voltage and ambient temperature							
	208 V (-15 %)...415 V (+6 %)				over 415 V (+6 %)...480 V (+10 %)		
Type	**40 °C**	**50 °C**	**55 °C**		**40 °C**	**50 °C**	**55 °C**
FRQ(5)-4A	4.0 A	3.2 A	2.8 A		3.6 A	2.8 A	2.5 A
FRQ(5)-10A	10.0 A	10.0 A	9.5 A		10.0 A	9.0 A	8.5 A
FRQ(5)-16A	16.0 A	16.0 A	16.0 A		16.0 A	16.0 A	16.0 A

8.2 Connection diagram

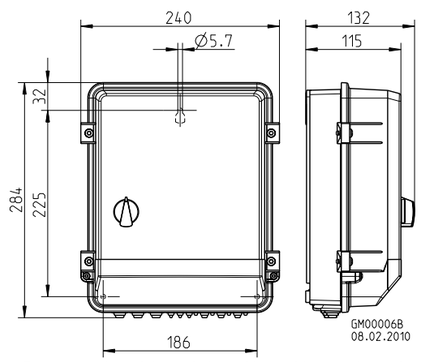
FRQ5-4/10/16A



1 Line 3 ~ 208 V...480 V, 50/60 Hz
2 Not suitable for IT system!
3 3 ~ Motor with internal thermistors
4 Enable Device Off / On
5 TP = thermistors, TB = thermostats
6 Contact rating max. 2A / 250 V AC

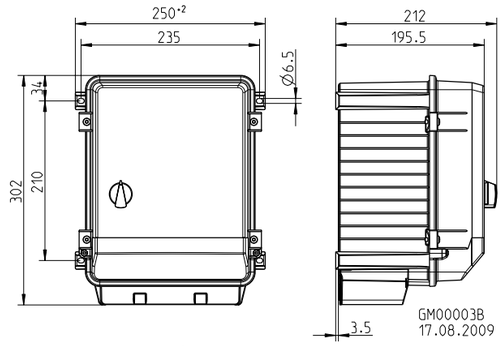
8.3 Dimensions [mm]

FRQ5-4A



Representation of the switch position subject to change!

FRQ5-10/16A



Representation of the switch position subject to change!

8.4 Manufacturer reference CE

Our products are manufactured in accordance with the relevant international regulations. If you have any questions concerning the use of our products or plan special uses, please contact:

Systemair
Industrievägen 3
73930 Skinnskatteberg
Telefon:+46 (0) 222 440 00
Telefax:+46 (0) 222 440 99
mailbox@systemair.se
www.systemair.se



FRQ Frequency converter

Frequency converter for energy-efficient control of motors

- Reliable control
- Plug & Play
- Energy efficient
- Integrated motor-protection with PTC/PTO
- Maximum output: 50Hz

Types:

- Type FRQ5: with integrated 5-step switch
- Type FRQ: with 0-10V input
- Type FRQ(5)S: with all-pole sine filter

Find more details in our online catalogue

Energy-efficient speed control

FRQ frequency inverters are one of the most energy-efficient ways of controlling motors.

Integrated pole sine filters

The FRQ**S**/FRQ5**S** frequency converters have integrated all pole sine filters as standard. Therefore there is no need for shielded cables for the installation. So they are suitable for retrofitting too.
They can also control motors which, due to their design, are not usually suitable for frequency inverters, e.g. external rotor motors.

Plug & Play

The Systemair FRQ series is pre-configured in the factory to ensure a quick and cost-efficient commissioning process. It also makes them suitable for retrofitting.

The frequency converters provide an easy and energy-efficient solution for controlling motors.
Motor protection is provided by connecting thermal-contacts or thermistors directly to the converter.
In operating with explosion-proof fans, the converters have to be placed outside the EX-zone.
FRQ5(S)
have a 5-step switch with a LED to indicate the operating status. Step 0 = 0Hz; Step 1 = 10Hz; Step 2 = 20Hz; Step 3 = 30Hz; Step 4 = 40Hz; Step 5 = 50Hz
FRQ
have an analogue 0-10V-input to control motor-speed nearly steady. Parallel operation of several motors are not allowed. Maximum cable length of external potentiometer is 100m. Maximum motor cable length is 10m (shielded). Connection with 10VDC for speed control with external potentiometer is integrated.
FRQS/FRQ5S
have an integrated all pole sine filters as standard. This means that there is no need to use shielded cables for the installation and so the unit is suitable for retrofitting existing systems too. The units are also able to reliably control motors which, due to their particular design, are not usually considered suitable for frequency inverter operations, such as external rotor motors.
All types have:

- External contact for enabling
- Potential-free operating signal contact
- Interference emission EN 61000-6-3

- Interference immunity EN 61000-6-2
- Protection IP54

Technical parameters

Nominal data		
Rated voltage	208 to 480	V
Frequency	50; 60	Hz
Phases	3~	
Maximum current	10	A

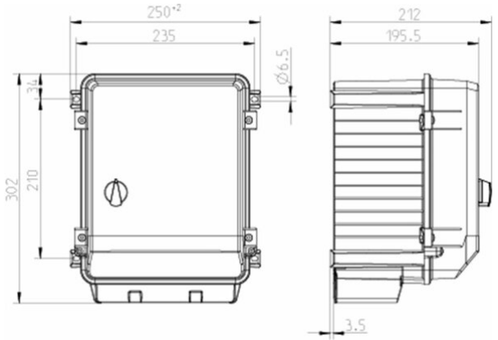
Protection/Classification		
Enclosure class	IP54	

Controller and Sensors		
Recommended fuse	16 A	

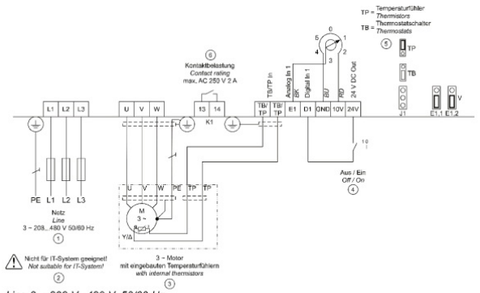
Ambient and duct temperature		
Permitted ambient temperature	max 40	°C

Dimensions and weights		
Weight	5.1	kg

Dimension



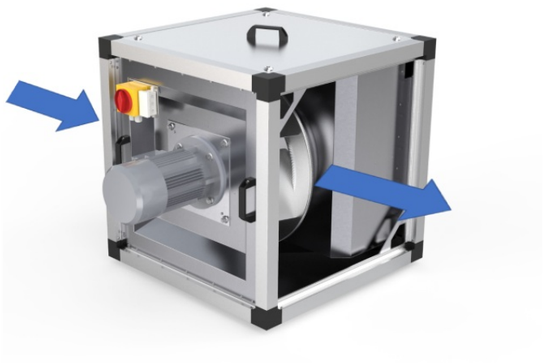
Wiring



1 *Line 3 ~ 208 V...480 V, 50/60 Hz*
2 *Not suitable for IT system!*
3 *3 ~ Motor with internal thermistors*
4 *Enable Device Off / On*
5 *TP = thermistors, TB = thermostats*
6 *Contact rating max. 2A / 250 V AC*

Documents

- IMO FRQ5-4A_10A_16A V2_EN.PDF
- UKCA Declaration of conformity_004



MUB/T Insulated duct fans

Powerful and efficient exhaust fans for medium temperatures up to 120°C

- For kitchen and industrial environments
- Up to 120°C medium temperature, continuous operation
- Drip pan and drain plug included
- Acoustic and thermal insulation 30 mm
- Flexible airflow direction
- Indoor and outdoor installation
- Modular system of accessories
- Available with AC and EC motors for 50 and 60Hz

Find more details in our online catalogue

Application

The MUB/T fans are specially designed to **extract** air from **kitchen environments** or **industrial applications**, where **motor** must be placed **outside of air stream**. **Drip pan** with **drain plug** on bottom (except MUB/T 100 630D4-K2-L) are constructed for **collecting** a draining **dust, oil, water**.
By MUB/T and MUB/T-S fans an easy **maintenance** is provided through **service door** with handle.

Flexibility

Depending on the type, MUB/T fans are designed for **straight through** or **90°** airflow. The **air direction** can be easily **changed** on site. The construction of the casing and thermal insulation permits **outdoor** and **indoor** use.

Performance

High-performance aluminium impeller together with **highly efficient** motors are designed to ensure high-level performance to **minimise power consumption** and **maximise efficiency**.

Modularity

Thanks to variety types of **accessories** as flexible connections, dampers, roof, base frame, etc. it is easy to design any ventilation system according to your demand.
By using special **modular systems**, where some accessories as **heaters, coolers, silencers, filters** or **carbon filters** are built-in in **the same type of casing**, you can even design a simple supply or exhaust **air handing unit.**

Features

Construction

The casing consists of a corrosion-resistant **aluminium frame** with **fibreglass reinforced plastic corners of PA6**; highly shock-resistant. **Panels** made of **double skin galvanised** sheet steel with **30 mm acoustic** and **thermal** rockwool **insulation**.
The **MUB/T** and **MUB/T-ECO** fans are designed for **90° airflow**.
The **MUB/T-S** fans are designed for **straight through airflow**.
Air direction can be easily **rebuilt** on site by **changing** with **service doors (MUB/T).**
Revision switch is **included** and **prewired for MUB/T** and **MUB/T-S.**
The **MUB/T-ECO** is **without revision switch** and **service door.**
Aluminium drip with **drain plug is** placed on **bottom** of casing (except MUB/T 100 630D4-K2-L).

Impeller

The MUB/T fans use **radial** impeller with **backward curved blades**. These are made out of aluminium, dynamically **balanced** and paired with corresponding **IEC motor** with efficiency **IE3 or EC motor**.

Motor

Depending on the type, MUB/T fans are equipped with **AC** or **EC** external rotor motors. Motors are suitable for **50Hz** and **60Hz.**

Motor protection

Depending on the type, **AC** motors have an **integrated** thermal protection with manual (electrical) reset, pre-wired integral **thermocontact TK** or **thermistor PTC** with leads to a **motor protection device**.
Fans with **EC** motors have an **integrated** electronic **thermal protection** including **locked-rotor protection** and **soft-start**.

Control

EC motors with **built-in potentiometer** to adjust working point can be also controlled by external **signal 0-10V.**
EC motors, depending on the type are also equipped with **ModBus** communication **or alarm signal.**
AC motors can be controlled by **5-step, stepless** speed regulator, **D/Y** switch or **frequency converter.**

Installation

For correct drainage the MUB/T fans must be installed in position with drip pan down. Fans can be installed in any position **indoor** and together **with weather protection roof** also **outdoor**. With mounted **base frame** the MUB/T fans can stand **on floor**. For **preventing vibration** to the duct it is recommended to use **flexible connections.**

Technical parameters

Nominal data		
Voltage (nominal)	400	V
Frequency	50; 60	Hz
Phases	3~	
Input power	2,803	W
Input power kW	2.803	kW
Input current	4.2	A
Impeller speed	1,410	rpm
Air flow	max 3.4558	m³/s
Temperature of transported air	max 120	°C
Max temperature of transported air, when speed controlled	120	°C

Protection/Classification	
Enclosure class, motor	IP55
Insulation class	H

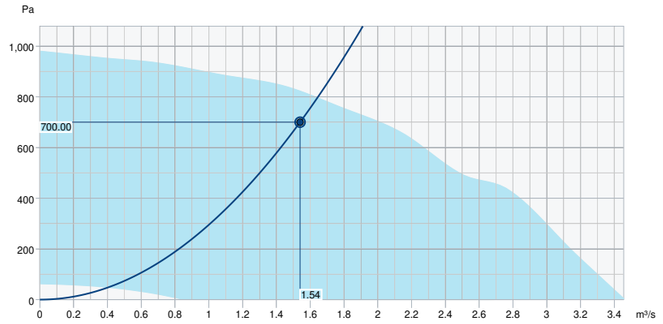
Data according to ErP	
ErP ready	Not ErP relevant

Dimensions and weights		
Weight	152.5	kg

Others	
Duct connection type	Square
Motor type	EC

Performance

Performance curve

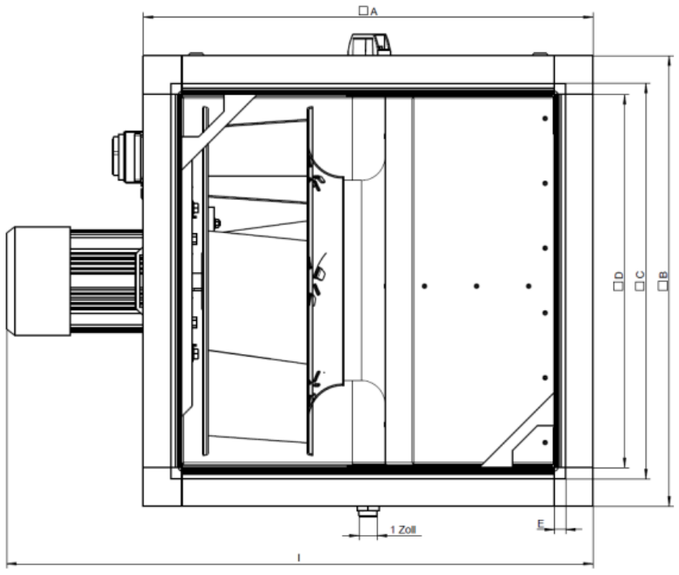


Hydraulic data	
Required air flow	1.54 m³/s
Required static pressure	700 Pa
Working air flow	1.54 m³/s
Working static pressure	700 Pa
Air density	1.204 kg/m³
Power	2,088.0 W
Fan control - RPM	1,310 rpm
Current	3.16 A
SFP	1.356 kW/m³/s
Control voltage	9.3 V
Supply voltage	400 V

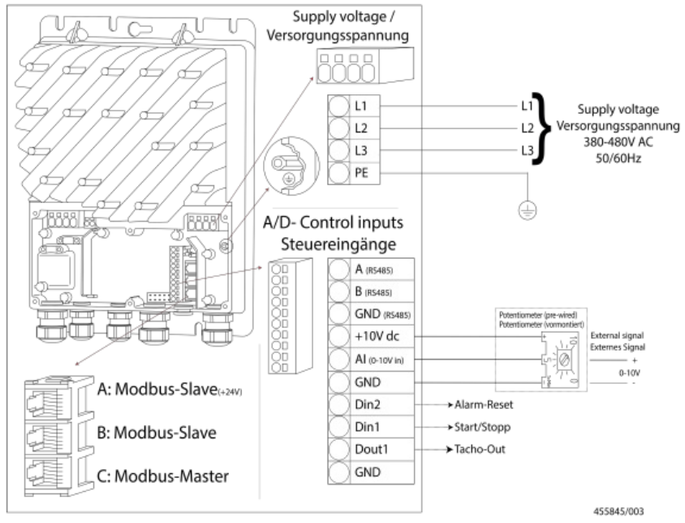
Sound power level		63	125	250	500	1k	2k	4k	8k	Total
Inlet	dB(A)	57	77	76	79	78	76	71	66	85
Outlet	dB(A)	59	78	78	80	79	77	72	67	86
Surrounding	dB(A)	41	65	62	51	51	51	44	34	67
Sound pressure level at 3m (20m² Sabine)	dB(A)	-	-	-	-	-	-	-	-	60
Sound pressure level at 3m free field	dB(A)	-	-	-	-	-	-	-	-	46

Dimension

MUB/T-S 062	□A	□B	□C	□D	E	I
560EC	820	820	720	678	21	1050



Wiring



Accessories

- CXE/AVC Modbus (37256)
- EC-Basic-H humidity (24807)
- EC-Basic-U universal 0-10V (24806)
- EC-Vent Room Unit (3018)
- MTP 10, 10K, Speed control (32731)
- Potentiometer MTP 20, 0-10V (310220)
- Step switch S-5EC, 0-10V (76738)
- TUNE-AHU-DE008-062-718x718-M0 (79882)
- UGS 062/630 adapter flex 120°C (38371)
- WSD 062 (860x860x70) complete (31482)
- WSG 062 MUB/T complete (36067)
- HR1 Room Humidistat (215150)
- RT 0-30 Room Thermostat (5151)
- CCM outlet MUB062 d630 (311681)
- CCMI outlet 062 d630 KIT 30mm (239096)
- KKF 30 062-filter-section (93312)
- KKF-CAR 062-filter-section (277347)
- KKF-KITCHEN 062-filter-section (277364)
- KKS 062 silencer-section (276852)
- EC-Basic-CO2 and temperature (24808)
- EC-Basic-T temperature (24805)
- EC-Vent control board (3115)
- FGV 062/716-716 flex. conn. (4198)
- MTV-1/010 Controller 0..10V+ (30650)
- SD-MUB Vibration pad set (37324)
- Step switch S-5EC-2, 0-10V (449084)
- UGS 062/500 adapter flex 120°C (38370)
- UGS 062/630 adapter flex. (4358)
- WSD MUB/T-S large (37496)
- FGV 062/716-716 flex. 120°C (38362)
- Presence detector/IR24-P (6995)
- CCM outlet MUB062 d560 (311684)
- CCMI outlet 062 d560 KIT 30mm (239095)
- GRU 062-820/100 (276662)
- KKF-ALU 062-filter-section (376816)
- KKF-CAR 100-filter-section (277348)
- KKF-KITCHEN 100-filter-section (277367)
- SDM Service Door MUB 062 30mm (273935)

Documents

- Installation, Operation and Maintenance instruction_001
- COMMISSIONING REPORT_FANS_160628_EN_001.PDF

Air Conditioning | Product Information

MITSUBISHI ELECTRIC

Y Series VRF

Standard Efficiency (101-124kW)

Heat Pump Outdoor Unit (Heating or Cooling)

CITY MULTI

City Multi **Y Series VRF** Heat Pump technology provides a simple and flexible solution where there is demand for one outdoor unit to provide all or selected indoor units with heating or cooling at a given time.

These modular Heat Pump systems provide complete design flexibility for applications such as open-plan offices, call centres and retail spaces.

R410A

Key Features & Benefits:

- Energy efficient Heat Pump system
- Delivers high levels of thermal and acoustic comfort
- 2-pipe system for ease of installation and maintenance
- Adjustable noise level options to suit application
- Connectable to a broad choice of indoor unit types and capacities



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Air Conditioning | Product Information

Y Series VRF
Standard Efficiency (101-124kW)
Heat Pump Outdoor Unit (Heating or Cooling)



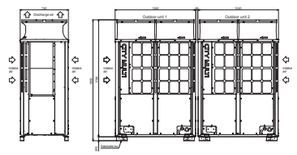
R410A

OUTDOOR UNITS		PUHY-P900YSNW-A2	PUHY-P950YSNW-A2	PUHY-P1000YSNW-A2	PUHY-P1050YSNW-A2	PUHY-P1100YSNW-A2
CAPACITY (kW)	Heating (nominal)	112.0	121.5	126.5	131.5	140
	Cooling (nominal)	100.0	108.0	113	118	125.0
	High Performance Heating (UK)	100.8	109.4	113.9	118.4	126.0
	COP Priority Heating (UK)	96.3	104.5	108.8	113.1	120.4
	Cooling (UK)	89.5	96.7	101.1	105.6	111.9
POWER INPUT (kW)	Heating (nominal)	33.03	33.19	35.04	36.93	38.88
	Cooling (nominal)	38.91	38.84	42.48	46.09	46.99
	High Performance Heating (UK)	37.32	37.50	39.60	41.73	43.93
	COP Priority Heating (UK)	32.04	32.19	33.99	35.82	37.71
	Cooling (UK)	24.90	24.86	27.19	29.50	30.07
COP / EER (nominal)		3.39 / 2.57	3.66 / 2.78	3.61 / 2.66	3.56 / 2.56	3.60 / 2.66
MAX NO. OF CONNECTABLE INDOOR UNITS		50	50	50	50	50
MAX CONNECTABLE CAPACITY		50~130% OU Capacity	50~130% OU Capacity	50~130% OU Capacity	50~130% OU Capacity	50~130% OU Capacity
AIRFLOW (m^3/min)	High	305 / 305	185 / 270 / 270	185 / 270 / 300	185 / 300 / 300	270 / 270 / 300
PIPE SIZE mm (in)	Gas	41.28 (1-5/8")	41.28 (1-5/8")	41.28 (1-5/8")	41.28 (1-5/8")	41.28 (1-5/8")
	Liquid	19.05 (3/4")	19.05 (3/4")	19.05 (3/4")	19.05 (3/4")	19.05 (3/4")
SOUND PRESSURE LEVEL (dBA)	Heating / Cooling	74.0 / 68.5	68.5 / 66.5	70.0 / 68.0	70.5 / 69.0	70.5 / 68.5
SOUND POWER LEVEL (dBA)	Heating / Cooling	93.0 / 87.0	88.0 / 84.0	89.0 / 85.0	90.0 / 86.0	90.0 / 86.0
WEIGHT (kg)		293 + 293	213 + 277 + 277	213 + 277 + 277	213 + 277 + 277	277 + 277 + 277
DIMENSIONS (mm)	Width	1240 + 1240	920 + 1240 + 1240	920 + 1240 + 1240	920 + 1240 + 1240	1240 + 1240 + 1240
	Depth	740	740	740	740	740
(1798mm without legs)	Height	1858	1858	1858	1858	1858
ELECTRICAL SUPPLY*1		380-415v, 50Hz	380-415v, 50Hz	380-415v, 50Hz	380-415v, 50Hz	380-415v, 50Hz
PHASE*1		Three	Three	Three	Three	Three
STARTING CURRENT (A)*1		8	8	8	8	8
NOMINAL SYSTEM RUNNING CURRENT (A)*1	Heating / Cooling [MAX]	52.9 / 62.4 [37.1 + 37.1]	53.2 / 62.2 [17.8 + 26.4 + 26.4]	56.1 / 68.1 [17.8 + 26.4 + 31.9]	59.2 / 73.9 [17.8 + 31.9 + 31.9]	62.3 / 75.3 [26.4 + 26.4 + 31.9]
GUARANTEED OPERATING RANGE (°C)	Heating / Cooling	-20~15.5 / -5~52	-20~15.5 / -5~52	-20~15.5 / -5~52	-20~15.5 / -5~52	-20~15.5 / -5~52
FUSE RATING (MCB sizes BS EN 60947-2) - (A)*1		1 x 40 / 1 x 40	1 x 20 / 1 x 32 / 1 x 32	1 x 20 / 1 x 32 / 1 x 32	1 x 20 / 1 x 32 / 1 x 32	1 x 32 / 1 x 32 / 1 x 32
MAINS CABLE No. Cores*1		4 + earth / 4 + earth	4 + earth / 4 + earth	4 + earth / 4 + earth / 4 + earth	4 + earth / 4 + earth / 4 + earth	4 + earth / 4 + earth / 4 + earth
CHARGE REFRIGERANT (kg) / CO_2 EQUIVALENT (T) R410A (GWP 2088)		21.6 / 45.1	26.1/ 54.5	26.1 / 54.5	26.1 / 54.5	29.4 / 61.4
MAX ADDITIONAL REFRIGERANT (KG) / CO_2 EQUIVALENT (T) R410A (GWP 2088)		46.4 / 96.9	45.9 / 95.8	45.9 / 95.8	45.9 / 95.8	45.6 / 95.2

Notes: *SEER/SCOP available separately in the 'City Multi VRF Seasonal Efficiency' document. Based on Ecodesign Lot 21/6 to EN14825 standard.
*1 A separate power supply is required for each module. Where more than one figure is quoted there are multiple modules.

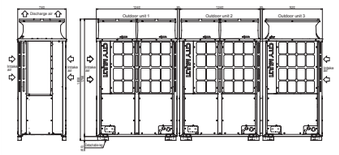
PUHY-P900YSNW-A2 DIMENSIONS

SIDE VIEW FRONT VIEW



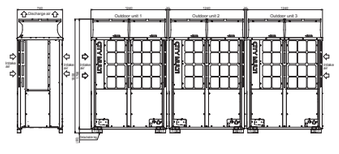
PUHY-P950/1000/1050YSNW-A2 DIMENSIONS

SIDE VIEW FRONT VIEW



PUHY-P1100YSNW-A2 DIMENSIONS

SIDE VIEW FRONT VIEW



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Note: Refer to 'Installation Manual' and 'Instruction Book' for further 'Technical Information'. The fuse rating is for guidance only and please refer to the relevant databook for detailed specification. It is the responsibility of a qualified electrician/electrical engineer to select the correct cable size and fuse rating based on current regulation and site specific conditions. Mitsubishi Electric's air conditioning equipment and heat pump systems contain a fluorinated greenhouse gas, R410A (GWP:2088), R32 (GWP:675), R407C (GWP:1774), R134a (GWP:1430), R513A (GWP:631), R454B (GWP:466), R1234ze (GWP:7) or R1234yf (GWP:4). *These GWP values are based on Regulation (EU) No 517/2014 from IPCC 4th edition. In case of Regulation (EU) No.626/2011 from IPCC 3rd edition, these are as follows. R410A (GWP:1975), R32 (GWP:550), R407C (GWP:1650) or R134a (GWP:1300).

Effective as of September 2022

Green Gateway greengateway.mitsubishielectric.co.uk

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Specifications

WindFree™ Deluxe R32

- Three-step cooling: Fast Cooling mode, Dehumidification mode and WindFree™ Cooling mode
- Wi-Fi Control with SmartThings and Bixby voice controls (optional)
- Equipped with Easy Filter Plus



			Indoor Unit	AC026TNXDKG/EU	AC035TNXDKG/EU	AC052TNXDKG/EU	AC071TNXDKG/EU
			Outdoor Unit - Mono-Phase	AC026RXADKG/EU	AC035RXADKG/EU	AC052RXADKG/EU	AC071RXADKG/EU
			Outdoor Unit - Tri-Phase	-	-	-	-
Capacity							
	Cooling (Min/Nominal/Max)	kW		1.0 / 2.6 / 4.0	1.0 / 3.5 / 4.5	1.5 / 5.0 / 6.8	2.0 / 7.1 / 8.7
	Heating up to +7 °C (Min/Nominal/Max)	kW		0.8 / 3.3 / 4.0	0.8 / 4.0 / 4.8	1.0 / 6.0 / 6.5	1.6 / 8.0 / 9.0
	Heating @ -5 °C	kW		-	-	-	-
	Heating @ -15 °C	kW		-	-	-	-
Performance							
Energy Efficiency Cooling	SEER[1]	W/W		7.0/ A++	6.9/ A++	6.9/ A++	6.8/ A++
	Consumption	kWh/a		130	178	254	365
	Pdesignc	kW		2.6	3.5	5.0	7.1
	EER	W/W		4.06	3.50	3.57	3.09
Energy Efficiency Heating	SCOP[1]	W/W		4.1/ A+	4.1/ A+	3.9/ A	4.0/ A+
	Consumption	kWh/a		717	717	862	1260
	Pdesignh (average)	kW		2.1	2.1	2.4	3.6
	COP	W/W		3.75	3.31	3.43	3.4
Airflow Rate	Indoor Unit (High/Mid/Low)	m³/min		10.3 / 8.4 / 7.0	12.2 / 9.8 / 7.9	16.7 / 13.9 / 11.8	17.8 / 15.2 / 13.2
Sound Power	Indoor Unit	dB(A)		56	59	60	61
	Outdoor Unit	dB(A)		59	61	62	65
Sound Pressure	Indoor Unit (Silent/Low/Mid/High)	dB(A)		36 / 30 / 24 / 21	40 / 34 / 28 / 23	42 / 37 / 32 / 25	44 / 39 / 35 / 30
	Outdoor Unit	dB(A)		46/47	48/48	48/48	49/51
Fan/Outdoor Unit	Type			Crossflow Fan	Crossflow Fan	Crossflow Fan	Crossflow Fan
	Power	W		27	27	27	27
	Number	EA		1	1	1	1
Operating Temperature Range	Cooling	°C		-15 ~ 46	-15 ~ 46	-15 ~ 50	-15 ~ 50
	Heating	°C		-20 ~ 24	-20 ~ 24	-20 ~ 24	-20 ~ 24
Electrical Data							
Power Source	Indoor Unit	Φ, #, V, Hz		1Φ, 2, 220-240 V, 50 Hz	1Φ, 2, 220-240 V, 50 Hz	1Φ, 2, 220-240 V, 50 Hz	1Φ, 2, 220-240 V, 50 Hz
	Outdoor Unit 1P	Φ, #, V, Hz		1Φ, 2, 220-240 V, 50 Hz	1Φ, 2, 220-240 V, 50 Hz	1Φ, 2, 220-240 V, 50 Hz	1Φ, 2, 220-240 V, 50 Hz
	Outdoor Unit 3P	Φ, #, V, Hz		-	-	-	-
Compressor Type	Outdoor Unit	Type		Single BLDC	Single BLDC	Twin BLDC	Twin BLDC
Power (Min/Nominal/Max)	Cooling	kW		0.18 / 0.64 / 1.20	0.19 / 1.00 / 1.40	0.24 / 1.40 / 2.20	0.39 / 2.30 / 3.40
	Heating	kW		0.15 / 0.88 / 1.35	0.15 / 1.21 / 1.40	0.20 / 1.75 / 2.05	0.33 / 2.35 / 3.30
Current Input	Cooling (Min/Std/Max)	A		1.4 / 3.1 / 5.5	1.4 / 4.6 / 6.0	1.5 / 6.3 / 9.6	2.5 / 10.0 / 14.7
	Heating (Min/Std/Max)	A		1.2 / 4.2 / 6.0	1.2 / 5.6 / 6.2	1.3 / 7.8 / 8.8	2.0 / 10.3 / 14.5
Dimensions							
Net Dimensions (W x H x D)	Indoor Unit	mm		820 x 299 x 215	820 x 299 x 215	1,055 x 299 x 215	1,055 x 299 x 215
	Outdoor Unit	mm		790 x 548 x 285	790 x 548 x 285	880 x 638 x 310	880 x 798 x 310
	Indoor Unit	kg		9.1	9.1	11.5	12.2
	Outdoor Unit	kg		32.5	32.5	43.0	51.0

[1] Energy labels as shown are according to EU No 626/2011 (LOT 10) label classification 2019, on a scale from D to A+++.



			Indoor Unit	AC026TNXDKG/EU	AC035TNXDKG/EU	AC052TNXDKG/EU	AC071TNXDKG/EU
			Outdoor Unit - Mono-Phase	AC026RXADKG/EU	AC035RXADKG/EU	AC052RXADKG/EU	AC071RXADKG/EU
			Outdoor Unit - Tri-Phase	-	-	-	-
Refrigerant							
Refrigerant	Type			R32 (contains fluorinated greenhouse gases. GWP = 675)			
	Factory charging	kg		0.9 / 20 m	0.9 / 20 m	1.2 / 10 m	1.7 / 15 m
	Charging Ton equivalent CO_2	tCO_2e		0.61	0.61	0.81	1.15
	Additional refrigerant charging	g / m		-	-	15	25
Piping Connections	Liquid Pipe	Φ.inch		1 / 4	1 / 4	1 / 4	1 / 4
	Gas Pipe	Φ.inch		3 / 8	3 / 8	1 / 2	5 / 8
Piping Length	Min / Max	m		3 / 20	3 / 20	3 / 30	3 / 50
Piping Height	Max	m		15	15	20	30
Piping Connections	Drain pipe	Φ.mm		ID 18	ID 18	ID 18	ID 18

Controls and Accessories



Wireless Remote Controller	Wireless Remote Controller	Touch Controller	Advanced Wired Remote Controller	Touch Centralised Controller	Wi-Fi Kit
AR-CH01E	AR-EH03E	MWR-SH11N	MWR-WG01JN/MWR-WG01KN	MCM-A300BN	MIM-H04EN



External Thermostat	DMS 2.5	BACnet/Lonworks/PIM	ON/OFF Controller
MRW-TA	MIM-D01AN	MIM-B17BN/B18BN/B16N	MCM-A202DN

SAMSUNG
Climate Solutions



DVM S2 High Efficiency Heat Recovery (3-Pipe)

DVM S2 High Efficiency Heat Recovery (3-Pipe)

- Erp (Ecodesign) compliant and Eurovent certified.
- Advanced Flash Injection™ technology.
- Active AI Pressure Control.
- Active AI Defrost.
- Active AI Refrigerant analysis.
- Durafin™ Ultra Heat Exchanger Fin.
- Optional Slimmer Liquid Pipe.
- On-device Inverter Checker™.

Specifications







Model			AM080AXVGGR/EU	AM100AXVGGR/EU	AM120AXVGGR/EU	AM140AXVGGR/EU	AM160AXVGGR/EU
Electrical							
Power Supply		**Φ, #, V, Hz**	3Φ, 4, 380~415 V, 50 Hz	3Φ, 4, 380~415 V, 50 Hz	3Φ, 4, 380~415 V, 50 Hz	3Φ, 4, 380~415 V, 50 Hz	3Φ, 4, 380~415 V, 50 Hz
Minimum SSC value		**MVA**	3.0	3.4	4.0	4.4	5.2
MCA		**A**	18.0	21.2	25.0	27.0	32.0
MFA		**A**	25	32	32	32	40
Interconnecting Communication Cable		**mm²**	Screened 0.75-1.5mm², 2 Core, F1 F2 Connection				
Performance[1]							
Horsepower		**HP**	8	10	12	14	16
Capacity (Rated)	**Nominal Cooling Capacity**	**kW**	22.4	28.0	33.6	40.0	45.0
	Nominal Heating Capacity	**kW**	22.4	28.0	33.6	40.0	45.0
	Max Heating Capacity	**kW**	25.2	31.5	37.8	45.0	50.4
Operating Temperature Range	**Cooling**	**°C**	-5 ~ 50	-5 ~ 50	-5 ~ 50	-5 ~ 50	-5 ~ 50
	Heating	**°C**	-25 ~ 24	-25 ~ 24	-25 ~ 24	-25 ~ 24	-25 ~ 24
Maximum quantity of connectable indoor units		**ea**	14	18	21	26	29
Energy Efficiency[2]							
Seasonal Efficiency (Ducted)	**SEER**	**W/W**	7.20	6.90	6.90	6.70	6.90
	SCOP	**W/W**	4.50	4.40	4.56	4.25	4.30
	ηs,c	**%**	285.0	273.0	273.0	265.0	273.0
	ηs,h	**%**	177.0	173.0	179.4	167.0	169.0
Seasonal Efficiency (Cassettes)	**SEER**	**W/W**	7.78	7.22	7.22	6.94	7.25
	SCOP	**W/W**	4.53	4.39	4.41	4.35	4.35
	ηs,c	**%**	308.2	285.8	285.8	274.6	287
	ηs,h	**%**	178.2	172.6	173.4	171.0	171.0
Fan							
Type		**-**	Propeller	Propeller	Propeller	Propeller	Propeller
Discharge Direction			Top	Top	Top	Top	Top
Number of Fans		**ea**	1	1	1	2	2
Fan Motor	**Model**	**-**	BLDC	BLDC	BLDC	BLDC	BLDC
	Output x n	**W**	630 x 1	630 x 1	630 x 1	620 x 2	620 x 2
Airflow Rate		**m³/min**	164	181	196	291	292
		l/s	2738	3019	3260	4852	4866
Static Pressure	**Max**	**Pa**	110	110	110	110	110
Compressor							
Type		**-**	Inverter Scroll x 1	Inverter Scroll x 1	Inverter Scroll x 1	Inverter Scroll x 1	Inverter Scroll x 1
Output x n		**kW**	4.60 x 1	6.67 x 1	6.67 x 1	6.67 x 1	8.93 x 1
Piping Connections							
Liquid Pipe		**ø, mm (inch)**	9.52 (3/8)	9.52 (3/8)	12.70 (1/2)	12.70 (1/2)	12.70 (1/2)
Gas Pipe		**ø, mm (inch)**	19.05 (3/4)	22.22 (7/8)	28.58 (1-1/8)	28.58 (1-1/8)	28.58 (1-1/8)
Discharge Gas Pipe		**ø, mm (inch)**	15.88 (5/8)	19.05 (3/4)	19.05 (3/4)	22.22 (7/8)	22.22 (7/8)
Refrigerant							
Type			R410A (Fluorinated greenhouse gas, GWP=2088)				
Factory Charging		**kg**	7.0	7.0	7.0	8.0	10.5
		tCO_2e	14.62	14.62	14.62	16.70	21.92
Sound							
Sound Pressure Level	**Cooling**	**dB(A)**	53	56	61	58	58
	Heating	**dB(A)**	58	60	63	61	61
Sound Power Level		**dB(A)**	75	78	81	81	81
Dimensions							
Net Weight		**kg**	199	211	211	237	268
Net Dimensions	**(W x H x D)**	**mm**	930 x 1695 x 765	930 x 1695 x 765	930 x 1695 x 765	1295 x 1695 x 765	1295 x 1695 x 765

1 Performances are based on the following test conditions.
- Cooling: Indoor temperature 27°CDB, 19°CWB, Outdoor temperature 35°CDB, 24°CWB
- Heating: Indoor temperature 20°CDB, 15°CWB, Outdoor temperature 7°CDB, 6°CWB
- Equivalent refrigerant pipe length 7.5m, Level differences 0m

2 Efficiencies shown are according to EU No 2016/2281 (LOT 21) Ecodesign requirements for heat pumps/air conditioners.

Specifications







Model			AM180AXVGGR/EU	AM200AXVGGR/EU	AM220AXVGGR/EU	AM240AXVGGR/EU	AM260AXVGGR/EU
Electrical							
Power Supply		**Φ, #, V, Hz**	3Φ, 4, 380~415 V, 50 Hz	3Φ, 4, 380~415 V, 50 Hz	3Φ, 4, 380~415 V, 50 Hz	3Φ, 4, 380~415 V, 50 Hz	3Φ, 4, 380~415 V, 50 Hz
Minimum SSC value		**MVA**	6.4	7.0	7.4	9.3	10.2
MCA		**A**	39.2	43.0	46.0	55.0	60.0
MFA		**A**	50	63	63	63	75
Interconnecting Communication Cable		**mm²**	Screened 0.75-1.5mm², 2 Core, F1 F2 Connection				
Performance[1]							
Horsepower		**HP**	18	20	22	24	26
Capacity (Rated)	**Nominal Cooling Capacity**	**kW**	50.4	56.0	61.6	67.2	72.8
	Nominal Heating Capacity	**kW**	50.4	56.0	61.6	67.2	68.0
	Max Heating Capacity	**kW**	56.7	63.0	69.3	75.6	81.9
Operating Temperature Range	**Cooling**	**℃**	-5 ~ 50	-5 ~ 50	-5 ~ 50	-5 ~ 50	-5 ~ 50
	Heating	**℃**	-25 ~ 24	-25 ~ 24	-25 ~ 24	-25 ~ 24	-25 ~ 24
Maximum quantity of connectable indoor units		**ea**	32	36	40	43	47
Energy Efficiency[2]							
Seasonal Efficiency (Ducted)	**SEER**	**W/W**	7.50	6.50	6.20	5.90	5.40
	SCOP	**W/W**	4.80	4.50	4.30	3.90	3.90
	ηs,c	**%**	297.0	257.0	245.0	233.0	213.0
	ηs,h	**%**	189.0	177.0	169.0	153.0	153.0
Seasonal Efficiency (Cassettes)	**SEER**	**W/W**	7.05	6.81	7.04	5.94	5.45
	SCOP	**W/W**	4.45	4.27	4.39	3.9	3.90
	ηs,c	**%**	279.0	269.4	278.6	234.6	215.0
	ηs,h	**%**	175.0	167.8	172.6	153.0	153.0
Fan							
Type		**-**	Propeller	Propeller	Propeller	Propeller	Propeller
Discharge Direction			Top	Top	Top	Top	Top
Number of Fans		**ea**	2	2	2	2	2
Fan Motor	**Model**	**-**	BLDC	BLDC	BLDC	BLDC	BLDC
	Output x n	**W**	620 x 2	620 x 2	620 x 2	620 x 2	620 x 2
Airflow Rate		**m³/min**	313	313	342	365	365
		l/s	5209	5209	5698	6089	6089
Static Pressure	**Max**	**Pa**	110	110	110	80	80
Compressor							
Type		**-**	Inverter Scroll x 1	Inverter Scroll x 1	Inverter Scroll x 2	Inverter Scroll x 2	Inverter Scroll x 2
Output x n		**kW**	8.93 x 1	8.93 x 1	6.67 x 2	6.67 x 2	6.67 x 2
Piping Connections							
Liquid Pipe		**ø, mm (inch)**	15.88 (5/8)	15.88 (5/8)	15.88 (5/8)	15.88 (5/8)	19.05 (3/4)
Gas Pipe		**ø, mm (inch)**	28.58 (1-1/8)	28.58 (1-1/8)	28.58 (1-1/8)	34.92 (1-3/8)	34.92 (1-3/8)
Discharge Gas Pipe		**ø, mm (inch)**	22.22 (7/8)	28.58 (1-1/8)	28.58 (1-1/8)	28.58 (1-1/8)	28.58 (1-1/8)
Refrigerant							
Type			R410A (Fluorinated greenhouse gas, GWP=2088)				
Factory Charging		**kg**	10.5	10.5	10.5	14.0	14.0
		tCO_2e	21.92	21.92	21.92	29.23	29.23
Sound							
Sound Pressure Level	**Cooling**	**dB(A)**	59	61	64	65	65
	Heating	**dB(A)**	63	63	65	67	67
Sound Power Level		**dB(A)**	81	84	86	87	87
Dimensions							
Net Weight		**kg**	274	274	309	332	332
Net Dimensions	**(W x H x D)**	**mm**	1295 x 1695 x 765	1295 x 1695 x 765	1295 x 1695 x 765	1295 x 1695 x 765	1295 x 1695 x 765

1 Performances are based on the following test conditions.
- Cooling: Indoor temperature 27°CDB, 19°CWB, Outdoor temperature 35°CDB, 24°CWB
- Heating: Indoor temperature 20°CDB, 15°CWB, Outdoor temperature 7°CDB, 6°CWB
- Equivalent refrigerant pipe length 7.5m, Level differences 0m

2 Efficiencies shown are according to EU No 2016/2281 (LOT 21) Ecodesign requirements for heat pumps/air conditioners.

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K Circular Duct Fans

High Quality radial fan for circular ducts

- Available with AC and EC motors
- Indoor and outdoor installation
- Reliable and airtight
- Mounting bracket included
- Noise and energy optimized impeller

Find more details in our online catalogue

Flexibility

The K fans are intended to use for **supply** or **extract** air, designed to be installed in **any position.** This ensures that the fans can be used in a variety of **commercial** and **domestic** applications.

Reliability

The unit's **airtight casing** and corrosion resistance permits **outdoor** and **indoor** use. The combination of reliable casing and motor construction ensures, to minimize the need for maintenance of the fans and allows long **continuous operation.**

Performance

Sound optimized radial impeller together with **high efficient** external rotor motor are designed to ensure high-level performance to **minimize power consumption** and **maximize efficiency**.

Accessories

K fans can be selected together with variety types of **accessories** as fast clamps, heaters, filters, dampers, etc.

Certifications

Ecodesign (ErP) compliant

Features

Construction

Casing made of **galvanised sheet steel**, corrosion **class C3** is fully **air tight class C** according to EN1751. The fans are equipped with an external **terminal box with** protection class **IP55**.

Impeller

K fans use backward curved **radial** impellers. These are from lightweight, hard-wearing fiberglass reinforced **polyamide**, dynamically **balanced** and paired with corresponding external rotor motors.

Motor

Depending on type, K fans are equipped with **AC** or high efficient **EC** external rotor motors. All motors are suitable for **50Hz** and **60Hz**.

Motor protection

Fans with **AC** motors have **integrated** thermal protection with manual (electrical) reset. Size 100 and 125 has an impedance motor protection.
Fans with **EC** motors have an **integrated** electronic **thermal protection** including **locked-rotor protection** and **soft-start**.

Control

EC motor with **built-in potentiometer** to adjust working point can be also controlled by external **signal 0-10V.**
AC motor can be controlled by **5-step** or **stepless** speed regulator.

Installation

K fans can be installed in **any** position **indoor** and **outdoor** by included **mounting brackets** . All models have a spigot with 25 mm length which is perfectly designed to connect circular duct by **fast clamps preventing vibration** to the duct. Installation can be combined with filter boxes, sound attenuators, and other mechanical accessories from recommended list.

Technical parameters

Nominal data		
Voltage (nominal)	230	V
Frequency	50	Hz
Phases	1~	
Input power	30	W
Input power kW	0.03	kW
Input current	0.163	A
Impeller speed	2,481	rpm
Air flow	max 0.05	m³/s
Temperature of transported air	max 70	°C
Max temperature of transported air, when speed controlled	70	°C

Sound data		
Sound pressure level at 3m (20m² Sabin)	38	dB(A)

Protection/Classification		
Enclosure class, motor	IP44	
Insulation class	B	

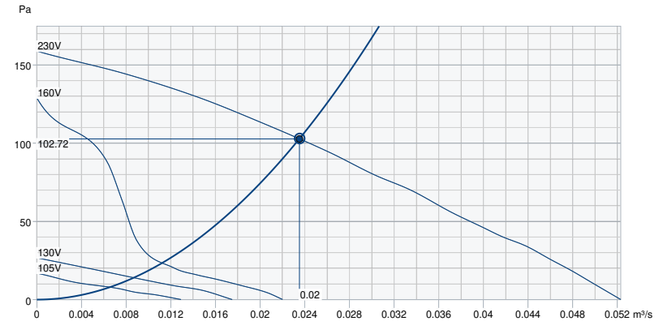
Data according to ErP		
Energy class, Basic unit	F	
Energy class, Local demand	D	
ErP ready	ErP 2018	

Dimensions and weights		
Duct dimension; Circular, inlet	100	mm
Duct dimension; Circular, outlet	100	mm
Weight	2.3	kg

Others	
Duct connection type	Circular
Motor type	AC

Performance

Performance curve



Hydraulic data	
Required air flow	0.02 m³/s
Required static pressure	103 Pa
Working air flow	0.02 m³/s
Working static pressure	103 Pa
Air density	1.204 kg/m³
Power	27.8 W
Fan control - RPM	2,553 rpm
Current	0.16 A
SFP	1.183 kW/m³/s
Control voltage	230.0 V
Supply voltage	230 V

Sound power level		**63**	**125**	**250**	**500**	**1k**	**2k**	**4k**	**8k**	**Total**
Inlet	dB(A)	48	59	58	59	53	50	37	27	64
Outlet	dB(A)	52	60	61	51	53	46	35	29	64
Surrounding	dB(A)	17	21	24	40	41	38	26	24	45
Sound pressure level at 3m (20m² Sabine)	dB(A)	-	-	-	-	-	-	-	-	38
Sound pressure level at 3m free field	dB(A)	-	-	-	-	-	-	-	-	24

Ecodesign

Product		
Trade name	Systemair	
Product name	K 100 M Sileo	

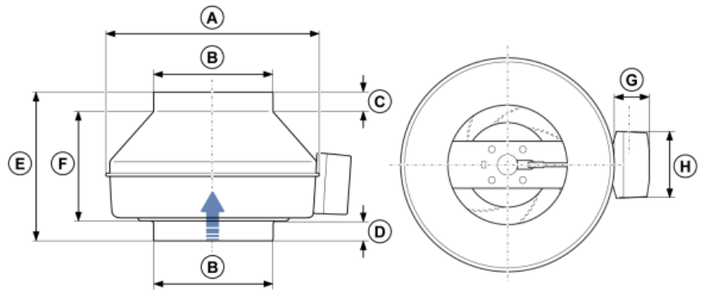
Basic unit		
ErP compliance	2018	
SEC Average	-6.7	kWh/(m².a)
SEC Cold	-23.1	kWh/(m².a)
SEC Warm	2.7	kWh/(m².a)
SEC Class	F	
Unit category	RVU	
Unit type	UVU	
Drive	External MSD or VSD	
Heat recovery type	nan	
Temperature ratio (UVU)	Not applicable	
qv max	86	m³/h
P max	29	W
Sound power (LWA)	30	dB(A)
qv ref	0.017	m³/s
Ps ref	50	Pa
SPI	0.333	W/(m³/h)
CTRL	1	
MISC	1.1	
x-value	1.5	
External Leakage	0	%
AEC average	419	kWh
AHS Cold	419	kWh
AEC warm	419	kWh
AHS Average	1,715.2	kWh/a
AHS Cold	3,355.3	kWh/a
AHS Warm	775.6	kWh/a

systemair K 100 M sileo Item Number: **#1001** Operating Mode: **230V 1~ 50Hz**

Units with local demand control		
ErP compliance	2018	
SEC Average	-22.8	kWh/(m².a)
SEC Cold	-49.87	kWh/(m².a)
SEC Warm	-7.3	kWh/(m².a)
SEC Class	D	
Unit category	RVU	
Unit type	UVU	
Drive	External MSD or VSD	
Heat recovery type	nan	
Temperature ratio (UVU)	Not applicable	
qv max	86	m³/h
P max	28	W
Sound power (LWA)	32	dB(A)
qv ref	0.0171	m³/s
Ps ref	50	Pa
SPI	0.335	W/(m³/h)
CTRL	0.65	
MISC	1.1	
x-value	1.5	
External Leakage	0	%
AEC average	219.8	kWh
AEC cold	219.8	kWh
AEC warm	219.8	kWh
AHS Average	2,830	kWh/a
AHS Cold	5,536.2	kWh/a
AHS Warm	1,279.7	kWh/a

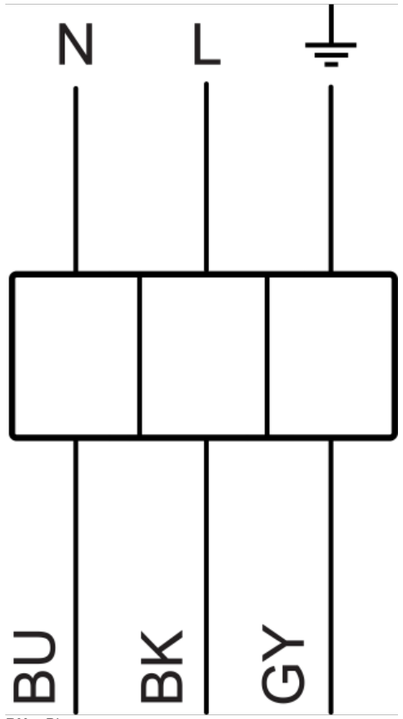
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Dimension



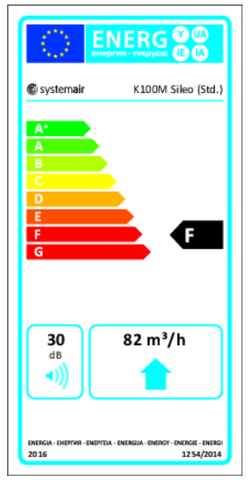
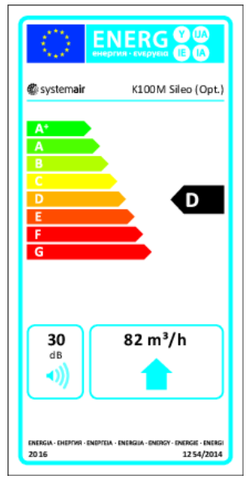
ØA	ØB	C	D	E	F	G	H
218	99	26	26	218	166	40	88

Wiring



BU = Blue
BK = Black
GY = Green/Yellow

Energy class label

Energy class, Basic unit	Energy class, Local demand
	

Accessories

- Frequency converter FRQ5SE-6A (37421)
- REE 1 Speed control (5314)
- REU 1.5 Speed control (5004)
- SG 100 Protection guard (5606)
- DTV500A (96807)
- HR1 Room Humidistat (215150)
- Presence detector/IR24-P (6995)
- CB 100-0,4 230V/1 Duct heater (5288)
- CBM 100-0,6 230V/1 Duct heater (5479)
- CWK 100-3-2,5 Duct cooler,circ (30019)
- FGR 100 Filter cassette (1802)
- LDC 100-300 Silencer (8180)
- LDC 100-900 Silencer (5189)
- THB 160 Hood w. cover pl. Red (2034)
- THS 160 Hood w. cover pl. Red (2044)
- VBC 100-2 Water heating batt (5456)
- VBF 100 Water heating battery (1724)
- RE 1,5 Speed control (5000)
- REPT 6 Digital regulator (5698)
- REV-3POL/03-7,5kW R/Y (33978)
- VKK-100 Back draft damper (1623)
- Frequency converter FRQSE-6A (37419)
- IGK-100 Wall Grid (1630)
- RT 0-30 Room Thermostat (5151)
- CB 100-0,6 230V/1 Duct heater (5376)
- CBMF 100-0,6 230V/1 Duct heate (12241)
- FFR 100 Filter cassette (1766)
- FK 100 Fast clamp (1607)
- LDC 100-600 Silencer (5188)
- RSK-100 Back draft damper (5597)
- THB 160 Hood w.cover pl. black (1764)
- THS 160 Hood w.cover pl. black (1839)
- VBC 100-3 Water heating batt (9838)

Documents

- INSTALLATION__OPERATION_AND_MAINTENANCE_INSTRUCTION_K__KV__PRIO__EN_010.PDF
- COMMISSIONING_RECORD_FANS__EN.PDF
- K fan mounting.wmv



K Circular Duct Fans

High Quality radial fan for circular ducts

- Available with AC and EC motors
- Indoor and outdoor installation
- Reliable and airtight
- Mounting bracket included
- Noise and energy optimized impeller

Find more details in our online catalogue

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Reliability

The unit's **airtight casing** and corrosion resistance permits **outdoor** and **indoor** use. The combination of reliable casing and motor construction ensures, to minimize the need for maintenance of the fans and allows long **continuous operation.**

Performance

Sound optimized radial impeller together with **high efficient** external rotor motor are designed to ensure high-level performance to **minimize power consumption** and **maximize efficiency**.

Accessories

K fans can be selected together with variety types of **accessories** as fast clamps, heaters, filters, dampers, etc.

Certifications

Ecodesign (ErP) compliant

Features

Construction

Casing made of **galvanised sheet steel**, corrosion **class C3** is fully **air tight class C** according to EN1751. The fans are equipped with an external **terminal box with** protection class **IP55**.

Impeller

K fans use backward curved **radial** impellers. These are from lightweight, hard-wearing fiberglass reinforced **polyamide**, dynamically **balanced** and paired with corresponding external rotor motors.

Motor

Depending on type, K fans are equipped with **AC** or high efficient **EC** external rotor motors. All motors are suitable for **50Hz** and **60Hz**.

Motor protection

Fans with **AC** motors have **integrated** thermal protection with manual (electrical) reset. Size 100 and 125 has an impedance motor protection.
Fans with **EC** motors have an **integrated** electronic **thermal protection** including **locked-rotor protection** and **soft-start**.

Control

EC motor with **built-in potentiometer** to adjust working point can be also controlled by external **signal 0-10V.**
AC motor can be controlled by **5-step** or **stepless** speed regulator.

Installation

K fans can be installed in **any** position **indoor** and **outdoor** by included **mounting brackets** . All models have a spigot with 25 mm length which is perfectly designed to connect circular duct by **fast clamps preventing vibration** to the duct.
Installation can be combined with filter boxes, sound attenuators, and other mechanical accessories from recommended list.

Technical parameters

Nominal data		
Voltage (nominal)	230	V
Frequency	50	Hz
Phases	1~	
Input power	53	W
Input power kW	0.053	kW
Input current	0.232	A
Impeller speed	2,379	rpm
Air flow	max 464	m³/h
Capacitance of capacitor	1.5	µF
Temperature of transported air	max 70	°C
Max temperature of transported air, when speed controlled	70	°C

Sound data		
Sound pressure level at 3m (20m² Sabin)	40	dB(A)

Protection/Classification		
Enclosure class, motor	IP44	
Insulation class	B	

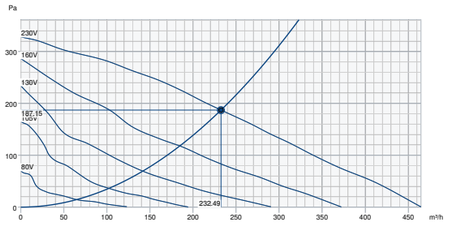
Data according to ErP		
Energy class, Basic unit	E	
Energy class, Local demand	B	
ErP ready	ErP 2016; ErP 2018	

Dimensions and weights		
Duct dimension; Circular, inlet	150	mm
Duct dimension; Circular, outlet	150	mm
Weight	3.3	kg

Others	
Duct connection type	Circular
Motor type	AC

Performance

Performance curve



Hydraulic data	
Required air flow	232 m³/h
Required static pressure	187 Pa
Working air flow	232 m³/h
Working static pressure	187 Pa
Air density	1.204 kg/m³
Power	52.2 W
Fan control - RPM	2,397 rpm
Current	0.23 A
SFP	0.808 kW/m³/s
Control voltage	230.0 V
Supply voltage	230 V

Sound power level		63	125	250	500	1k	2k	4k	8k	Total
Inlet	dB(A)	47	57	57	58	58	57	55	42	65
Outlet	dB(A)	41	54	51	57	57	55	53	41	63
Surrounding	dB(A)	19	13	28	38	38	38	38	27	44
Sound pressure level at 3m (20m² Sabine)	dB(A)	-	-	-	-	-	-	-	-	37
Sound pressure level at 3m free field	dB(A)	-	-	-	-	-	-	-	-	23

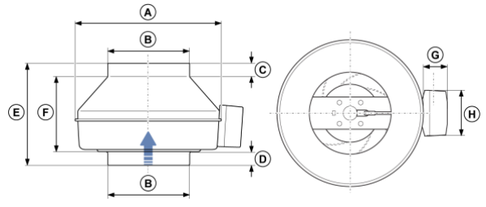
Ecodesign

Product	
Trade name	Systemair
Product name	K 150 M Sileo

Basic unit		
ErP compliance	2016	
SEC Average	-13.4	kWh/(m².a)
SEC Cold	-29.8	kWh/(m².a)
SEC Warm	-4	kWh/(m².a)
SEC Class	E	
Unit category	RVU	
Unit type	UVU	
Drive	External MSD or VSD	
Heat recovery type	None	
Temperature ratio (UVU)	Not applicable	
qv max	338	m³/h
P max	52	W
Sound power (LWA)	37	dB(A)
qv ref	0.066	m³/s
Ps ref	50	Pa
SPI	0.12	W/(m³/h)
CTRL	1	
MISC	1.1	
x-value	1.5	
External Leakage	0	%
AEC average	150.7	kWh
AHS Cold	150.7	kWh
AEC warm	150.7	kWh
AHS Average	1,715.2	kWh/a
AHS Cold	3,355.3	kWh/a
AHS Warm	775.6	kWh/a

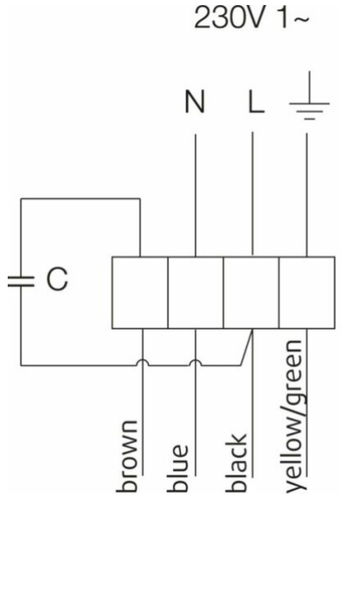
Units with local demand control		
ErP compliance	2018	
SEC Average	-26.3	kWh/(m².a)
SEC Cold	-53.4	kWh/(m².a)
SEC Warm	-10.8	kWh/(m².a)
SEC Class	B	
Unit category	RVU	
Unit type	UVU	
Drive	External MSD or VSD	
Heat recovery type	None	
Temperature ratio (UVU)	Not applicable	
qv max	340	m³/h
P max	52	W
Sound power (LWA)	37	dB(A)
qv ref	0.0661	m³/s
Ps ref	50	Pa
SPI	0.12	W/(m³/h)
CTRL	0.65	
MISC	1.1	
x-value	1.5	
External Leakage	0	%
AEC average	79	kWh
AEC cold	79	kWh
AEC warm	79	kWh
AHS Average	2,830	kWh/a
AHS Cold	5,536.2	kWh/a
AHS Warm	1,279.7	kWh/a

Dimension



ØA	ØB	C	D	E	F	G	H
286	149	25	25	202	152	40	88

Wiring



Accessories

- IGK-160 Wall Grid (1632)
- REE 1 Speed control (5314)
- RETP 6 Temp/Pressure regulator (32293)
- REV-3POL/03-7,5kW R/Y (33978)
- DTV500A (96807)
- Presence detector/IR24-P (6995)
- Safety switch 2-pole grey (210679)
- CB 150-1,2 230V/1 Duct heater (5378)
- CB 150-2,7 230V/1 Duct heater (5380)
- CBM 150-2,1 230V/1 Duct heater (5481)
- FFR 150 Filter cassette (1769)
- FK 150 Fast clamp (1609)
- LDC 150-600 Silencer (5199)
- THB 160 Hood w.cover pl. black (1764)
- Room hygrostat HR-S (286251)
- RE 1,5 Speed control (5000)
- REPT 6 Digital regulator (5698)
- REU 1.5 Speed control (5004)
- SG 150 Protection guard (5555)
- HR1 Room Humidistat (215150)
- RT 0-30 Room Thermostat (5151)
- T 120 Timer (5165)
- CB 150-2,1 230V/1 Duct heater (5379)
- CB 150-5,0 400V/2 Duct heater (5381)
- CBMF 150-2,1 230V/1 Duct heate (12243)
- FGR 150 Filter cassette (1807)
- LDC 150-300 Silencer (53723)
- RSK-150 Back draft damper (5599)
- THS 160 Hood w.cover pl. black (1839)

Documents

- INSTALLATION__OPERATION_AND_MAINTENANCE_INSTRUCTION_K__KV__PRIO__EN_010.PDF
- COMMISSIONING_RECORD_FANS__EN.PDF
- K fan mounting.wmv



K Circular Duct Fans

High Quality radial fan for circular ducts

- Available with AC and EC motors
- Indoor and outdoor installation
- Reliable and airtight
- Mounting bracket included
- Noise and energy optimized impeller

Find more details in our online catalogue

Flexibility

The K fans are intended to use for **supply** or **extract** air, designed to be installed in **any position.** This ensures that the fans can be used in a variety of **commercial** and **domestic** applications.

Reliability

The unit's **airtight casing** and corrosion resistance permits **outdoor** and **indoor** use. The combination of reliable casing and motor construction ensures, to minimize the need for maintenance of the fans and allows long **continuous operation.**

Performance

Sound optimized radial impeller together with **high efficient** external rotor motor are designed to ensure high-level performance to **minimize power consumption** and **maximize efficiency**.

Accessories

K fans can be selected together with variety types of **accessories** as fast clamps, heaters, filters, dampers, etc.

Certifications

Ecodesign (ErP) compliant

Features

Construction

Casing made of **galvanised sheet steel**, corrosion **class C3** is fully **air tight class C** according to EN1751. The fans are equipped with an external **terminal box with** protection class **IP55**.

Impeller

K fans use backward curved **radial** impellers. These are from lightweight, hard-wearing fiberglass reinforced **polyamide**, dynamically **balanced** and paired with corresponding external rotor motors.

Motor

Depending on type, K fans are equipped with **AC** or high efficient **EC** external rotor motors. All motors are suitable for **50Hz** and **60Hz**.

Motor protection

Fans with **AC** motors have **integrated** thermal protection with manual (electrical) reset. Size 100 and 125 has an impedance motor protection.
Fans with **EC** motors have an **integrated** electronic **thermal protection** including **locked-rotor protection** and **soft-start**.

Control

EC motor with **built-in potentiometer** to adjust working point can be also controlled by external **signal 0-10V.**
AC motor can be controlled by **5-step** or **stepless** speed regulator.

Installation

K fans can be installed in **any** position **indoor** and **outdoor** by included **mounting brackets** . All models have a spigot with 25 mm length which is perfectly designed to connect circular duct by **fast clamps preventing vibration** to the duct.
Installation can be combined with filter boxes, sound attenuators, and other mechanical accessories from recommended list.

Technical parameters

Nominal data		
Voltage (nominal)	230	V
Frequency	50	Hz
Phases	1~	
Input power	102	W
Input power kW	0.102	kW
Input current	0.442	A
Impeller speed	2,529	rpm
Air flow	max 0.211	m³/s
Capacitance of capacitor	2.5	µF
Temperature of transported air	max 70	°C
Max temperature of transported air, when speed controlled	70	°C

Sound data		
Sound pressure level at 3m (20m² Sabin)	45	dB(A)

Protection/Classification		
Enclosure class, motor	IP44	
Insulation class	F	

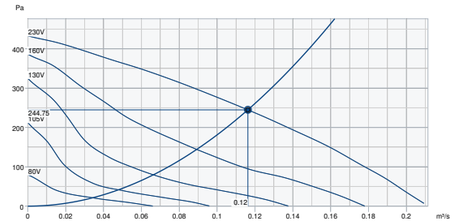
Data according to ErP	
ErP ready	ErP 2016; ErP 2018

Dimensions and weights		
Duct dimension; Circular, inlet	200	mm
Duct dimension; Circular, outlet	200	mm
Weight	4.1	kg

Others	
Duct connection type	Circular
Motor type	AC

Performance

Performance curve



Hydraulic data	
Required air flow	0.12 m³/s
Required static pressure	245 Pa
Working air flow	0.12 m³/s
Working static pressure	245 Pa
Air density	1.204 kg/m³
Power	99.0 W
Fan control - RPM	2,530 rpm
Current	0.44 A
SFP	0.851 kW/m³/s
Control voltage	230.0 V
Supply voltage	230 V

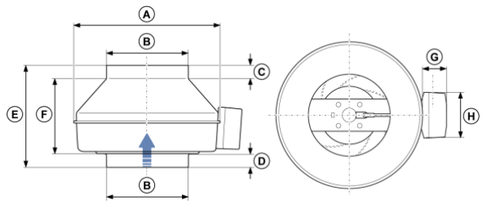
Sound power level		63	125	250	500	1k	2k	4k	8k	Total
Inlet	dB(A)	43	63	62	64	62	62	57	50	70
Outlet	dB(A)	46	58	64	64	62	62	57	49	70
Surrounding	dB(A)	14	23	37	46	43	43	38	29	50
Sound pressure level at 3m (20m² Sabine)	dB(A)	-	-	-	-	-	-	-	-	43
Sound pressure level at 3m free field	dB(A)	-	-	-	-	-	-	-	-	29

Ecodesign

Product	
Trade name	Systemair
Product name	K 200 M Sileo

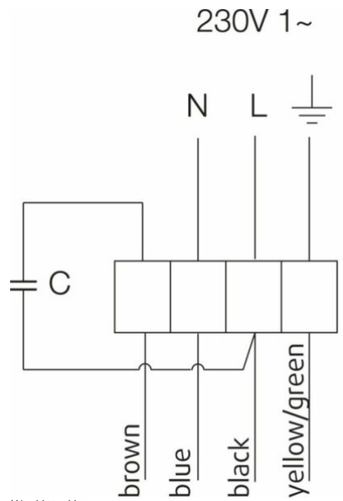
Ecodesign		
ErP compliance	2018	
Unit category	NRVU	
Drive	External MSD or VSD	
Unit type	UVU	
Heat recovery type	nan	
Temperature ratio (UVU)	Not applicable	
qv nom	0.1163	m³/s
P nom	0.099	kW
Ps nom	245	Pa
Fan efficiency	29	%
External Leakage	0	%
Sound power (LWA)	43	dB(A)

Dimension



ØA	ØB	C	D	E	F	G	H
336	199	27	30	205	148	40	88

Wiring



U1 = blue = blau
U2 = black = schwarz
Z = brown = braun
PE = yellow/green = grün-gelb



KVK DUO Insulated duct fans

Run & Standby fan in one casing for non-stop operation

- Twin fan – Run & Standby
- Low noise level
- Suitable for External installation as standard
- Safe and maintenance free operation

Find more details in our online catalogue

Run & Standby

KVK DUO is intended to use for **supply** or **extract** air in a variety of **commercial** and **domestic** applications with high demand for **non-interruptive ventilation**, required according to regulation. For transportation of **clean** or **contaminated** air.

Reliability

Corrosion resistance casing, thermal insulation and external terminal box with high protection class permits **outdoor** and **indoor** use. The combination of reliable casing and motor construction ensures to minimize the need for maintenance of the fans and allows long **continuous operation.**

Low noise level

KVK DUO has **fully insulated casing**. That ensures a good acoustic insulation in terms of the radiated sound. A wide range of recommended silencers for inlet and outlet allows further noise reduction.

Easy maintainance

To ensure long lifecycle it is recommended to inspect the fan according to the manual. The detachable service lid simplify this process and makes the fan **easy to maintain.**

Certifications

Ecodesign (ErP) compliant

Features

Construction

Casing of **EC** models made of magnesium zinc plated sheet metal with corrosion **class C5.** Casing of **AC** models made of galvanized sheet steel, corrosion **class C3.**
Casing of all fans is completely acoustically/thermally insulated and has internal surface liner that prevents the migration of insulation fibers into the airstream.
All casings has circular connection **spigots** with **rubber seals. EC** models are also equipped with an external **terminal box** with protection class **IP65**.

Impeller

AC models use double inlet radial fans with forward-curved impellers made of sheet steel.
EC models use backward curved **radial** impellers. These are from lightweight, hard-wearing fiberglass reinforced **polyamide**.
All impellers dynamically **balanced** and paired with corresponding external rotor motors.

Motor

Depends on type, fans are equipped with **AC** or high efficient **EC** external rotor motors. All motors are suitable for **50Hz** and **60Hz**.
The input voltage for **EC motors** single phase can vary between 200 and 277V, for three phase between 380 and 480V.

Motor protection

Models with **AC** motors have prewired integral **thermal contacts TK** with leads to external **motor protection device**.
Models with **EC** motors have an **integrated** electronic **thermal protection**, including **locked-rotor protection** and **soft-start**.

Control

EC motor with **built-in potentiometer** to adjust working point can be also controlled by external **signal 0-10V.**
AC motor can be controlled by **5-step** or **stepless** speed regulator
Fans can be **demand controlled** via additional accessories like sensors and controllers for CO2, temperature, humidity, presence indication, etc.

Installation

KVK DUO fans can be installed in any position **indoor** and **outdoor**. Circular spigot with rubber seals is perfectly designed to connect to the circular ducts by using **fast clamps FK preventing vibration** to the duct. A service cover with screw connection and hinges with pins make cleaning and maintenance easy.

Technical parameters

Nominal data		
Voltage (nominal)	230	V
Frequency	50	Hz
Phases	1~	
Input power	69	W
Input power kW	0.069	kW
Input current	0.301	A
Impeller speed	1,943	rpm
Air flow	max 0.105	m³/s
Capacitance of capacitor	2	µF
Temperature of transported air	max 55	°C
Max temperature of transported air, when speed controlled	55	°C

Sound data		
Sound pressure level at 3m (20m² Sabin)	37	dB(A)

Protection/Classification		
Enclosure class	IP54	
Enclosure class, motor	IP44	
Insulation class	F	

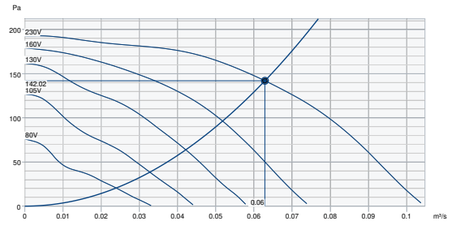
Data according to ErP		
Energy class, Basic unit	E	
Energy class, Local demand	C	
ErP ready	ErP 2016; ErP 2018	

Dimensions and weights		
Duct dimension; Circular, inlet	160	mm
Duct dimension; Circular, outlet	160	mm
Weight	19	kg

Others	
Duct connection type	Circular
Motor type	AC

Performance

Performance curve



Hydraulic data	
Required air flow	0.06 m³/s
Required static pressure	142 Pa
Working air flow	0.06 m³/s
Working static pressure	142 Pa
Air density	1.204 kg/m³
Power	62.2 W
Fan control - RPM	2,371 rpm
Current	0.27 A
SFP	0.989 kW/m³/s
Control voltage	230.0 V
Supply voltage	230 V

Sound power level		63	125	250	500	1k	2k	4k	8k	Total
Inlet	dB(A)	41	56	55	52	45	39	33	26	60
Outlet	dB(A)	51	58	63	64	60	59	54	49	69
Surrounding	dB(A)	<10	31	41	40	30	22	20	12	44
Sound pressure level at 3m (20m² Sabine)	dB(A)	-	-	-	-	-	-	-	-	37
Sound pressure level at 3m free field	dB(A)	-	-	-	-	-	-	-	-	23

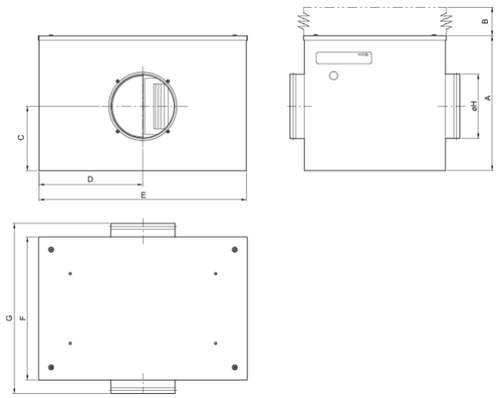
Ecodesign

Product	
Trade name	Systemair
Product name	KVK DUO 160 Circular duct fan

Basic unit		
ErP compliance	2016	
SEC Average	-12.4	kWh/(m².a)
SEC Cold	-28.8	kWh/(m².a)
SEC Warm	-3	kWh/(m².a)
SEC Class	E	
Unit category	RVU	
Unit type	UVU	
Drive	External MSD or VSD	
Heat recovery type	nan	
Temperature ratio (UVU)	Not applicable	
qv max	288	m³/h
P max	64	W
Sound power (LWA)	35	dB(A)
qv ref	0.056	m³/s
Ps ref	50	Pa
SPI	0.151	W/(m³/h)
CTRL	1	
MISC	1.1	
x-value	1.5	
External Leakage	5	%
AEC average	188.6	kWh
AHS Cold	188.6	kWh
AEC warm	188.6	kWh
AHS Average	1,715.2	kWh/a
AHS Cold	3,355.3	kWh/a
AHS Warm	775.6	kWh/a

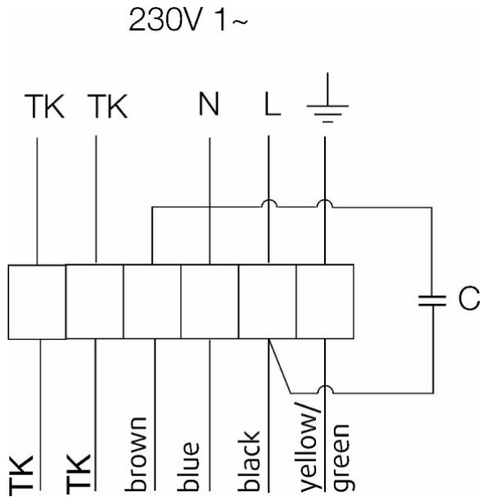
Units with local demand control		
ErP compliance	2018	
SEC Average	-25.8	kWh/(m².a)
SEC Cold	-52.9	kWh/(m².a)
SEC Warm	-10.3	kWh/(m².a)
SEC Class	C	
Unit category	RVU	
Unit type	UVU	
Drive	External MSD or VSD	
Heat recovery type	nan	
Temperature ratio (UVU)	Not applicable	
qv max	287	m³/h
P max	64	W
Sound power (LWA)	35	dB(A)
qv ref	0.0557	m³/s
Ps ref	50	Pa
SPI	0.151	W/(m³/h)
CTRL	0.65	
MISC	1.1	
x-value	1.5	
External Leakage	5	%
AEC average	98.8	kWh
AEC cold	98.8	kWh
AEC warm	98.8	kWh
AHS Average	2,830	kWh/a
AHS Cold	5,536.2	kWh/a
AHS Warm	1,279.7	kWh/a

Dimension



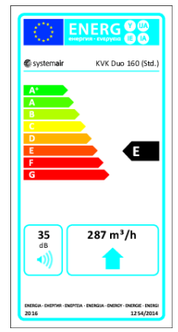
KVK DUO	A	B	C	D	E	F	G	øH
125	333	275	165	255	510	350	425	125
160	333	275	165	255	510	350	425	160
200	386	325	190	300	600	400	475	200
250	460	400	207	360	720	500	615	250

Wiring

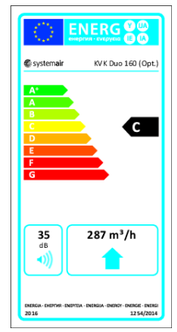


Energy class label

Energy class, Basic unit



Energy class, Local demand





KVK DUO Insulated duct fans

Run & Standby fan in one casing for non-stop operation

- Twin fan – Run & Standby
- Low noise level
- Suitable for External installation as standard
- Safe and maintenance free operation

Find more details in our online catalogue

Run & Standby

KVK DUO is intended to use for **supply** or **extract** air in a variety of **commercial** and **domestic** applications with high demand for **non-interruptive ventilation**, required according to regulation. For transportation of **clean** or **contaminated** air.

Reliability

Corrosion resistance casing, thermal insulation and external terminal box with high protection class permits **outdoor** and **indoor** use. The combination of reliable casing and motor construction ensures to minimize the need for maintenance of the fans and allows long **continuous operation.**

Low noise level

KVK DUO has **fully insulated casing**. That ensures a good acoustic insulation in terms of the radiated sound. A wide range of recommended silencers for inlet and outlet allows further noise reduction.

Easy maintainance

To ensure long lifecycle it is recommended to inspect the fan according to the manual. The detachable service lid simplify this process and makes the fan **easy to maintain.**

Certifications

Ecodesign (ErP) compliant

Features

Construction

Casing of **EC** models made of magnesium zinc plated sheet metal with corrosion **class C5.** Casing of **AC** models made of galvanized sheet steel, corrosion **class C3.**
Casing of all fans is completely acoustically/thermally insulated and has internal surface liner that prevents the migration of insulation fibers into the airstream.
All casings has circular connection **spigots** with **rubber seals. EC** models are also equipped with an external **terminal box** with protection class **IP65**.

Impeller

AC models use double inlet radial fans with forward-curved impellers made of sheet steel.
EC models use backward curved **radial** impellers. These are from lightweight, hard-wearing fiberglass reinforced **polyamide**.
All impellers dynamically **balanced** and paired with corresponding external rotor motors.

Motor

Depends on type, fans are equipped with **AC** or high efficient **EC** external rotor motors. All motors are suitable for **50Hz** and **60Hz**.
The input voltage for **EC motors** single phase can vary between 200 and 277V, for three phase between 380 and 480V.

Motor protection

Models with **AC** motors have prewired integral **thermal contacts TK** with leads to external **motor protection device**.
Models with **EC** motors have an **integrated** electronic **thermal protection**, including **locked-rotor protection** and **soft-start**.

Control

EC motor with **built-in potentiometer** to adjust working point can be also controlled by external **signal 0-10V.**
AC motor can be controlled by **5-step** or **stepless** speed regulator
Fans can be **demand controlled** via additional accessories like sensors and controllers for CO2, temperature, humidity, presence indication, etc.

Installation

KVK DUO fans can be installed in any position **indoor** and **outdoor**. Circular spigot with rubber seals is perfectly designed to connect to the circular ducts by using **fast clamps FK preventing vibration** to the duct. A service cover with screw connection and hinges with pins make cleaning and maintenance easy.

Technical parameters

Nominal data		
Voltage (nominal)	230	V
Frequency	50	Hz
Phases	1~	
Input power	200	W
Input power kW	0.2	kW
Input current	0.878	A
Impeller speed	1,999	rpm
Air flow	max 0.219	m³/s
Mininum static back pressure	0	Pa
Capacitance of capacitor	4	µF
Temperature of transported air	max 70	°C
Max temperature of transported air, when speed controlled	70	°C

Sound data		
Sound pressure level at 3m (20m² Sabin)	43	dB(A)

Protection/Classification	
Enclosure class	IP54
Enclosure class, motor	IP44
Insulation class	F

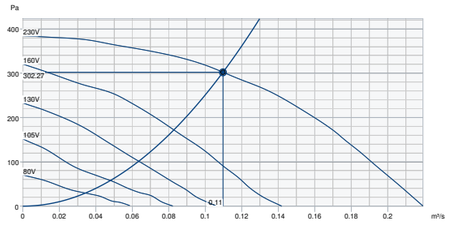
Data according to ErP	
ErP ready	ErP 2016; ErP 2018

Dimensions and weights		
Duct dimension; Circular, inlet	200	mm
Duct dimension; Circular, outlet	200	mm
Weight	29.2	kg

Others	
Duct connection type	Circular
Motor type	AC

Performance

Performance curve



Hydraulic data	
Required air flow	0.11 m³/s
Required static pressure	302 Pa
Working air flow	0.11 m³/s
Working static pressure	302 Pa
Air density	1.204 kg/m³
Power	149.4 W
Fan control - RPM	2,476 rpm
Current	0.65 A
SFP	1.362 kW/m³/s
Control voltage	230.0 V
Supply voltage	230 V

Sound power level		63	125	250	500	1k	2k	4k	8k	Total
Inlet	dB(A)	59	54	58	53	50	47	38	32	63
Outlet	dB(A)	63	66	65	67	67	67	63	57	74
Surrounding	dB(A)	32	39	46	46	42	36	29	22	50
Sound pressure level at 3m (20m² Sabine)	dB(A)	-	-	-	-	-	-	-	-	43
Sound pressure level at 3m free field	dB(A)	-	-	-	-	-	-	-	-	29

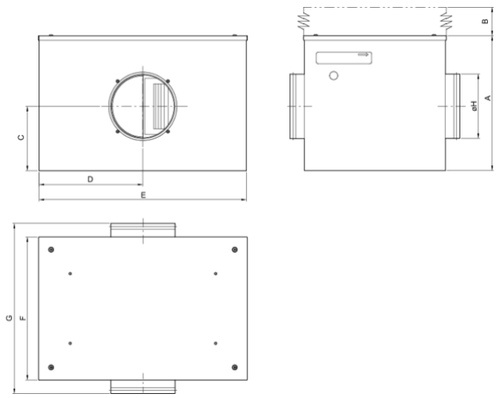
Ecodesign

Product	
Trade name	Systemair
Product name	KVK DUO 200 Circular duct fan

Basic unit		
ErP compliance	2016	
SEC Average	-4.8	kWh/(m².a)
SEC Cold	-21.2	kWh/(m².a)
SEC Warm	4.6	kWh/(m².a)
SEC Class	F	
Unit category	RVU	
Unit type	UVU	
Drive	External MSD or VSD	
Heat recovery type	nan	
Temperature ratio (UVU)	Not applicable	
qv max	688	m³/h
P max	191	W
Sound power (LWA)	50	dB(A)
qv ref	0.134	m³/s
Ps ref	50	Pa
SPI	0.395	W/(m³/h)
CTRL	1	
MISC	1.1	
x-value	1.5	
External Leakage	5	%
AEC average	494	kWh
AHS Cold	494	kWh
AEC warm	494	kWh
AHS Average	17	kWh/a
AHS Cold	34	kWh/a
AHS Warm	8	kWh/a

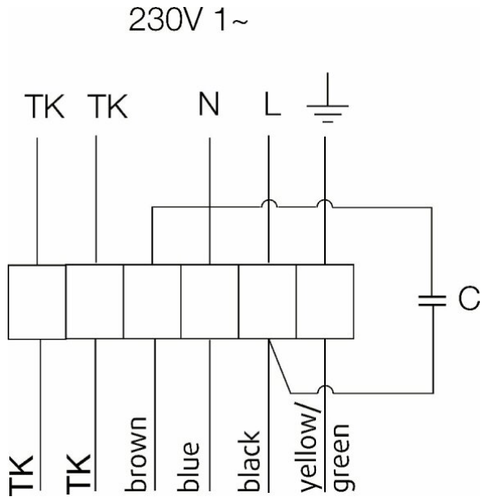
Units with local demand control		
ErP compliance	2018	
SEC Average	-21.8	kWh/(m².a)
SEC Cold	-48.9	kWh/(m².a)
SEC Warm	-6.3	kWh/(m².a)
SEC Class	D	
Unit category	RVU	
Unit type	UVU	
Drive	External MSD or VSD	
Heat recovery type	nan	
Temperature ratio (UVU)	Not applicable	
qv max	688	m³/h
P max	191	W
Sound power (LWA)	50	dB(A)
qv ref	0.1337	m³/s
Ps ref	50	Pa
SPI	0.395	W/(m³/h)
CTRL	1	
MISC	1.1	
x-value	1.5	
External Leakage	5	%
AEC average	259	kWh
AEC cold	259	kWh
AEC warm	259	kWh
AHS Average	28	kWh/a
AHS Cold	55	kWh/a
AHS Warm	13	kWh/a

Dimension



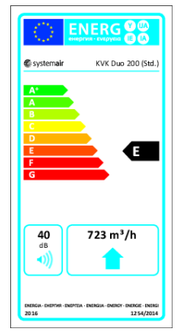
KVK DUO	A	B	C	D	E	F	G	øH
125	333	275	165	255	510	350	425	125
160	333	275	165	255	510	350	425	160
200	386	325	190	300	600	400	475	200
250	460	400	207	360	720	500	615	250

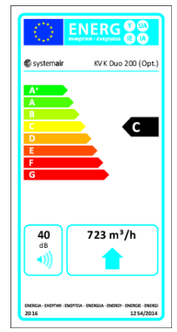
Wiring



Energy class label

Energy class, Basic unit	Energy class, Local demand







KVK DUO Insulated duct fans

Run & Standby fan in one casing for non-stop operation

- Twin fan – Run & Standby
- Low noise level
- Suitable for External installation as standard
- Safe and maintenance free operation

Find more details in our online catalogue

Run & Standby

KVK DUO is intended to use for **supply** or **extract** air in a variety of **commercial** and **domestic** applications with high demand for **non-interruptive ventilation**, required according to regulation. For transportation of **clean** or **contaminated** air.

Reliability

Corrosion resistance casing, thermal insulation and external terminal box with high protection class permits **outdoor** and **indoor** use. The combination of reliable casing and motor construction ensures to minimize the need for maintenance of the fans and allows long **continuous operation.**

Low noise level

KVK DUO has **fully insulated casing**. That ensures a good acoustic insulation in terms of the radiated sound. A wide range of recommended silencers for inlet and outlet allows further noise reduction.

Easy maintainance

To ensure long lifecycle it is recommended to inspect the fan according to the manual. The detachable service lid simplify this process and makes the fan **easy to maintain.**

Certifications

Ecodesign (ErP) compliant

Features

Construction

Casing of **EC** models made of magnesium zinc plated sheet metal with corrosion **class C5.** Casing of **AC** models made of galvanized sheet steel, corrosion **class C3.**
Casing of all fans is completely acoustically/thermally insulated and has internal surface liner that prevents the migration of insulation fibers into the airstream.
All casings has circular connection **spigots** with **rubber seals. EC** models are also equipped with an external **terminal box** with protection class **IP65**.

Impeller

AC models use double inlet radial fans with forward-curved impellers made of sheet steel.
EC models use backward curved **radial** impellers. These are from lightweight, hard-wearing fiberglass reinforced **polyamide**.
All impellers dynamically **balanced** and paired with corresponding external rotor motors.

Motor

Depends on type, fans are equipped with **AC** or high efficient **EC** external rotor motors. All motors are suitable for **50Hz** and **60Hz**.
The input voltage for **EC motors** single phase can vary between 200 and 277V, for three phase between 380 and 480V.

Motor protection

Models with **AC** motors have prewired integral **thermal contacts TK** with leads to external **motor protection device**.
Models with **EC** motors have an **integrated** electronic **thermal protection**, including **locked-rotor protection** and **soft-start**.

Control

EC motor with **built-in potentiometer** to adjust working point can be also controlled by external **signal 0-10V.**
AC motor can be controlled by **5-step** or **stepless** speed regulator
Fans can be **demand controlled** via additional accessories like sensors and controllers for CO2, temperature, humidity, presence indication, etc.

Installation

KVK DUO fans can be installed in any position **indoor** and **outdoor**. Circular spigot with rubber seals is perfectly designed to connect to the circular ducts by using **fast clamps FK preventing vibration** to the duct. A service cover with screw connection and hinges with pins make cleaning and maintenance easy.

Technical parameters

Nominal data		
Voltage (nominal)	230	V
Frequency	50	Hz
Phases	1~	
Input power	266	W
Input power kW	0.266	kW
Input current	1.18	A
Impeller speed	1,458	rpm
Air flow	max 0.296	m³/s
Mininum static back pressure	30	Pa
Capacitance of capacitor	4	µF
Temperature of transported air	max 41	°C
Max temperature of transported air, when speed controlled	41	°C

Sound data		
Sound pressure level at 3m (20m² Sabin)	40	dB(A)

Protection/Classification	
Enclosure class	IP54
Enclosure class, motor	IP44
Insulation class	F

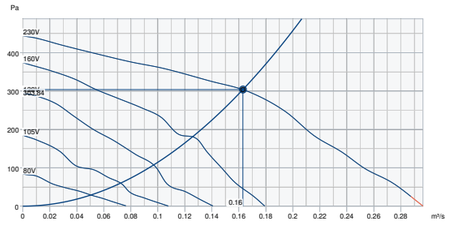
Data according to ErP	
Energy class, Basic unit	F
Energy class, Local demand	C
ErP ready	ErP 2016; ErP 2018

Dimensions and weights		
Duct dimension; Circular, inlet	250	mm
Duct dimension; Circular, outlet	250	mm
Weight	39.8	kg

Others	
Duct connection type	Circular
Motor type	AC

Performance

Performance curve



Hydraulic data	
Required air flow	0.16 m³/s
Required static pressure	304 Pa
Working air flow	0.16 m³/s
Working static pressure	304 Pa
Air density	1.204 kg/m³
Power	177.5 W
Fan control - RPM	2,506 rpm
Current	0.78 A
SFP	1.089 kW/m³/s
Control voltage	230.0 V
Supply voltage	230 V

Sound power level		63	125	250	500	1k	2k	4k	8k	Total
Inlet	dB(A)	60	59	61	55	52	51	46	40	66
Outlet	dB(A)	61	70	66	68	69	69	65	59	76
Surrounding	dB(A)	37	35	44	39	37	38	32	23	47
Sound pressure level at 3m (20m² Sabine)	dB(A)	-	-	-	-	-	-	-	-	40
Sound pressure level at 3m free field	dB(A)	-	-	-	-	-	-	-	-	26

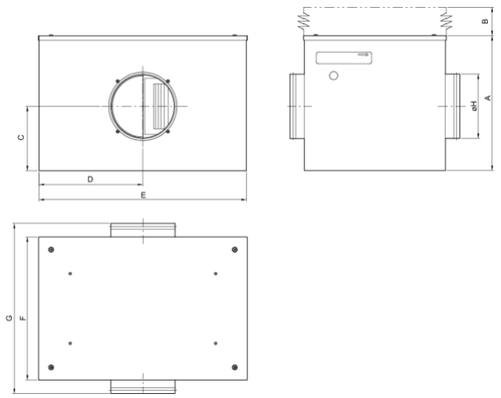
Ecodesign

Product	
Trade name	Systemair
Product name	KVK DUO 250 Circular duct fan

Basic unit		
ErP compliance	2016	
SEC Average	-9.8	kWh/(m².a)
SEC Cold	-26.2	kWh/(m².a)
SEC Warm	-0.4	kWh/(m².a)
SEC Class	F	
Unit category	RVU	
Unit type	UVU	
Drive	External MSD or VSD	
Heat recovery type	nan	
Temperature ratio (UVU)	Not applicable	
qv max	770	m³/h
P max	214	W
Sound power (LWA)	35	dB(A)
qv ref	0.15	m³/s
Ps ref	50	Pa
SPI	0.234	W/(m³/h)
CTRL	1	
MISC	1.1	
x-value	1.5	
External Leakage	5	%
AEC average	293	kWh
AHS Cold	293	kWh
AEC warm	293	kWh
AHS Average	17	kWh/a
AHS Cold	33	kWh/a
AHS Warm	8	kWh/a

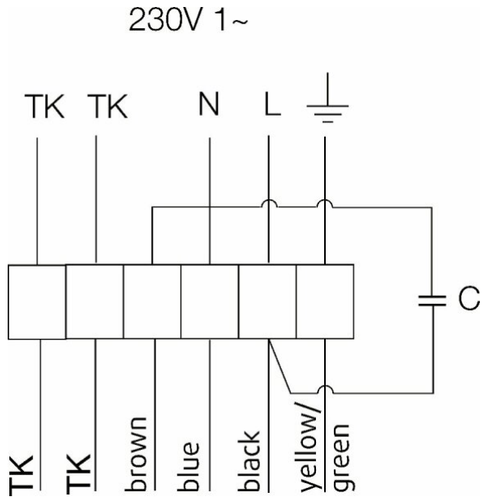
Units with local demand control		
ErP compliance	2018	
SEC Average	-24.5	kWh/(m².a)
SEC Cold	-51.5	kWh/(m².a)
SEC Warm	-8.9	kWh/(m².a)
SEC Class	C	
Unit category	RVU	
Unit type	UVU	
Drive	External MSD or VSD	
Heat recovery type	nan	
Temperature ratio (UVU)	Not applicable	
qv max	770	m³/h
P max	214	W
Sound power (LWA)	35	dB(A)
qv ref	0.1498	m³/s
Ps ref	50	Pa
SPI	0.234	W/(m³/h)
CTRL	0.65	
MISC	1.1	
x-value	1.5	
External Leakage	5	%
AEC average	153	kWh
AEC cold	153	kWh
AEC warm	153	kWh
AHS Average	28	kWh/a
AHS Cold	55	kWh/a
AHS Warm	13	kWh/a

Dimension



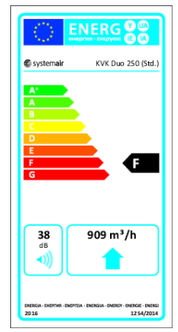
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Wiring

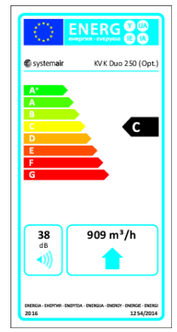


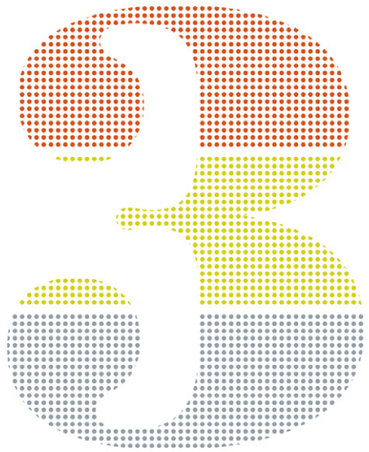
Energy class label

Energy class, Basic unit



Energy class, Local demand

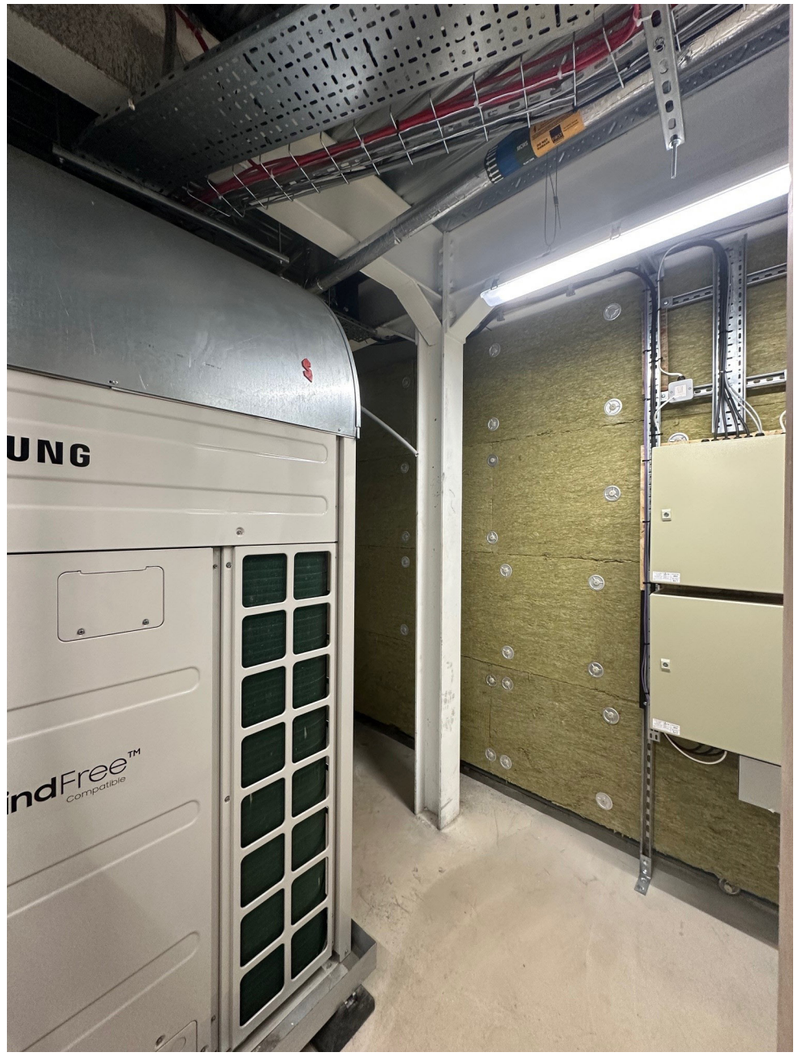




Section 03

The following section contains images of the specified plant.


SAMSUNG
DVM S2 WindFree™
DVM


UNG
indFree™
Compatible

