

PROPOSED LIDL FOOD STORE
BLACKMOORFOOT ROAD, CROSLAND MOOR,
HUDDERSFIELD, HD4 5RA

ENERGY EFFICIENCY MEASURES STATEMENT

Client:

Lidl Great Britain Ltd



Revision/Issue	00	01	02	03
Remarks	Issued for planning approval and to discharge condition 17.			
Date	28-08-2025			
Prepared By	S. Ogden			
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Signature				
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CONTENTS

1.0	INTRODUCTION	4
1.1	General.....	4
1.2	Site Location.....	4
1.3	Planning Condition 17	5
2.0	ENERGY EFFICIENCY AND WATER CONSERVATION MEASURES	6
2.1	Fabric Performance, Thermal Mass and Solar Shading	6
2.2	Photovoltaics (PV)	7
2.3	Mechanical Ventilation Systems	10
2.4	Air Source Heat Pumps	12
2.5	Low Energy Lighting and Controls.....	15
2.6	Building Energy Management System	16
2.7	Energy Sub-Metering	17
2.8	Water Conservation	18
2.9	Waste and Recycling	20
	APPENDIX A: PVSOL DOCUMENT	21
	APPENDIX B: SALES AREA AHU01 TECHNICAL DATA	22
	APPENDIX C: BOH AHU02 TECHNICAL DATA.....	23
	APPENDIX D: DAIKIN VRV HEAT PUMP TECHNICAL DATA (SCOP AND SEER)	24
	APPENDIX E: DAIKIN SPLIT-SYSTEM TECHNICAL DATA (SEER).....	25
	APPENDIX F: TRILUX INTERNAL LIGHTING LAYOUT	26
	APPENDIX G: SIGNIFY EXTERNAL LIGHTING LAYOUT.....	27

1.3 Planning Condition 17

The Planning Officer has issued some Conditions, which includes the following in respect of energy efficiency measures:

‘Prior to above ground works commencing, details of insulation, on-site micro-generation, or other measures to be incorporated into the development to reduce carbon emissions associated with it shall be submitted to and approved in writing by the Local Planning Authority. The approved measures shall be incorporated into the development during construction and shall thereafter be retained as such.

Reason: *To ensure that the proposed development contributes to the council’s target of achieving ‘net zero’ carbon emissions by 2038 and thereby reducing the causes of climate change, and to accord with the aims of Policy LP24(d) of the Kirklees Local Plan’.*

To help discharge Condition 17, this document will provide a brief overview of the building’s fabric performance, fixed building services and renewables, which will be incorporated into the store design.

2.0 ENERGY EFFICIENCY AND WATER CONSERVATION MEASURES

2.1 Fabric Performance, Thermal Mass and Solar Shading

2.1.1 Fabric Performance

The design of the building has focused on the fabric thermal performance and will ensure reduced conductive heat loss during winter months and conductive heat gains during summer months. This allows the internal environmental conditions to be better managed, with reduced reliance on heating, ventilation and air-conditioning systems. This will in turn reduce energy demand, running cost and carbon emissions, whilst offering enhanced occupancy satisfaction.

The store incorporates a high-performance glazing system, which is an improvement over Building Regulation Part L minimum standards and will minimise the heat losses, whilst minimising summertime solar gains to avoid overheating. Automatic internal sun blinds are installed to reduce potential glare risk within the Checkout Area.

The following table confirms Lidl's standard fabric performance, which has been incorporated into the store design.

Table 1: U-value Comparison.

Exposed Element	New Part L2 2021 Minimum Standards	Lidl's U-values	Improvement over Part L2
Roof	0.18 W/m ² ·K	0.16 W/m ² ·K	11.1%
Walls	0.26 W/m ² ·K	0.25 W/m ² ·K	3.8%
Ground Floor	0.18 W/m ² ·K	0.18 W/m ² ·K	0%
Curtain-walling	1.6 W/m ² ·K	1.31 W/m ² ·K (g-value = 0.395)	18.1%
Window	1.6 W/m ² ·K	1.43 W/m ² ·K (g-value = 0.395)	10.6%
Loading Bay Door	1.3 W/m ² ·K	1.3 W/m ² ·K	0%
Pedestrian Door	1.6 W/m ² ·K	1.6 W/m ² ·K	0%
High-usage Entrance Door	3.0 W/m ² ·K	1.7 W/m ² ·K	43.3%

2.1.2 Thermal Mass

The concrete floor slab across the store has been specified to give a relatively high thermal mass, which will assist in reducing internal temperature fluctuations, due to external temperature variations. This will provide a more easily controlled environment inside the building. The building is considered to have low to medium thermal mass.

2.1.3 Solar Shading

The store design incorporates an external overhang above the main shop curtain-walling and main entrance, as shown in Fig 2.

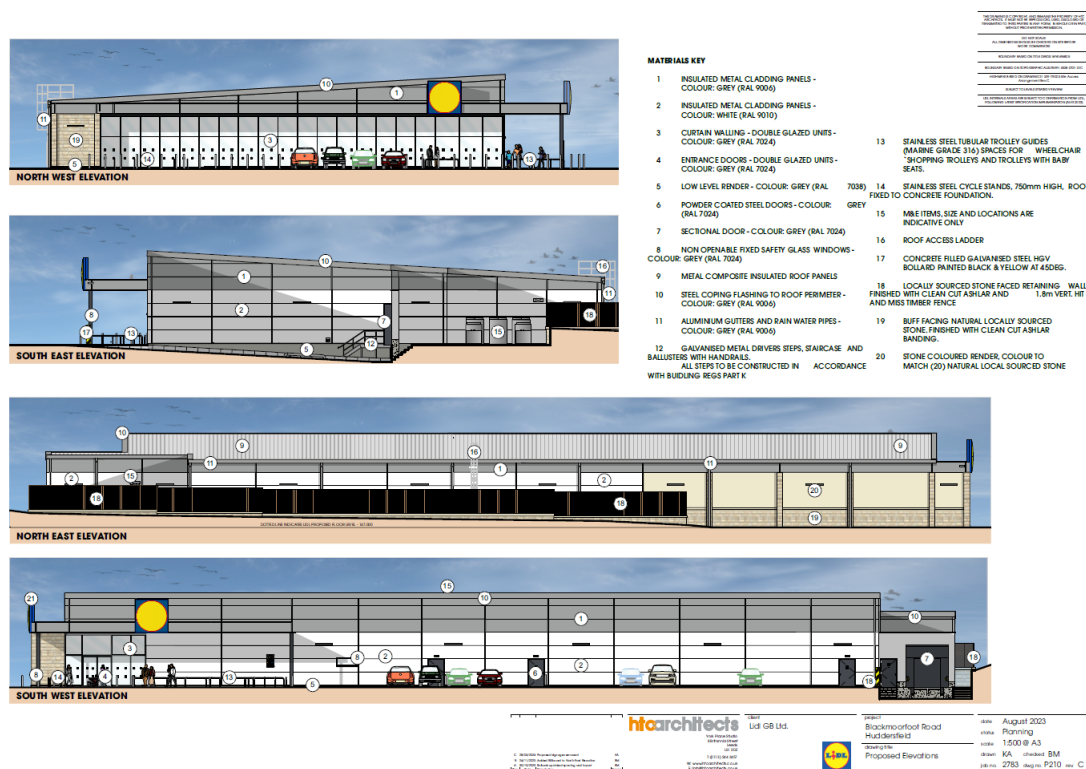


Fig 2: External Overhang Above Front and Side Curtain-Walling.

The overhang provides some solar shading and in combination with the high-performance curtain-walling, and internal blinds, will help ensure mechanical cooling loads, energy consumption and carbon emissions are minimised.

2.2 Photovoltaics (PV)

2.2.1 PV Overview

The store will be provided with a 180kWp PV system, which maximises the available roof area, as shown in Fig 3.



Page 8 of 27

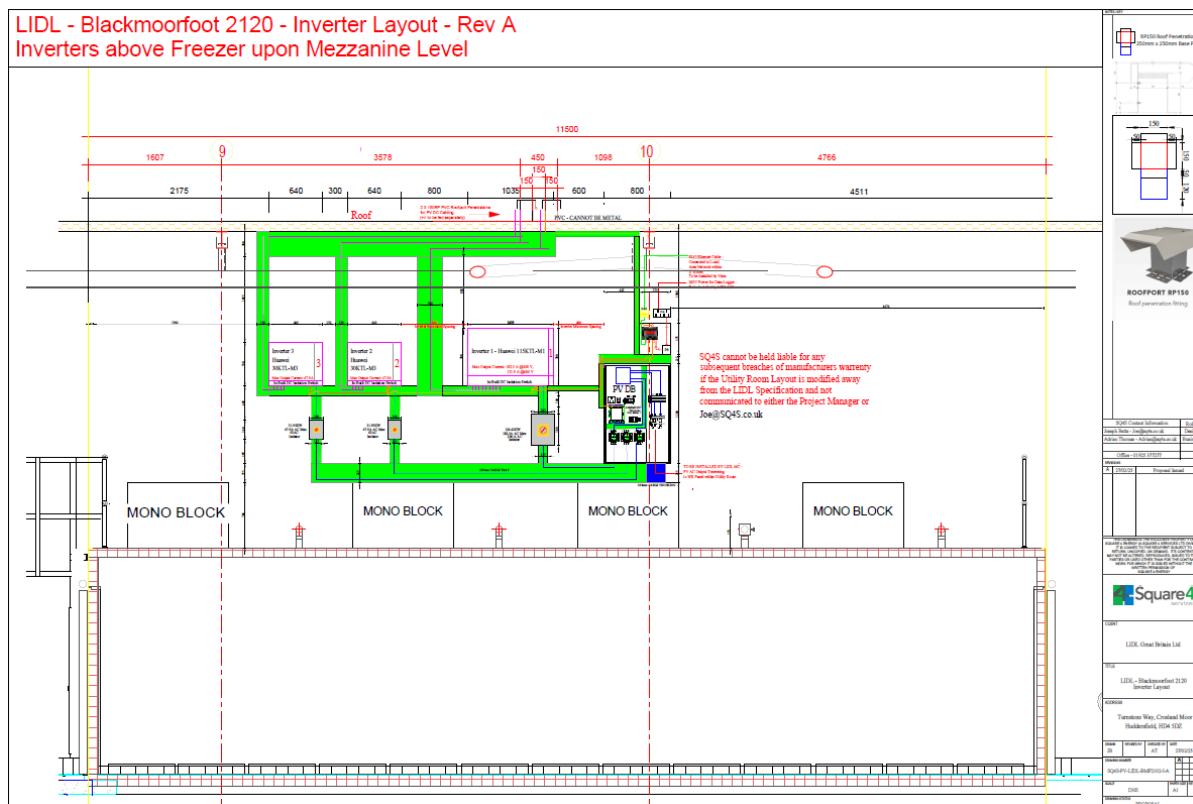


Fig 4: Inverters Above the Freezer Coldroom.

The PV system will be installed, tested and commissioned by Square 4 Solar Limited, who is Lidl's approved PV installer.

The PV system briefly comprises of:

- 396 x JA Solar 455W modules with a maximum efficiency of 22.8%.
- 1 No Huawei 115kW inverter, and
- 2 No Huawei 30kW inverters.

Direct-current (DC) strings connect the roof mounted modules to the 3 No inverters, located above the Freezer Coldroom in the Warehouse.

The PVsol document found in Appendix A, confirms the PV system is expected to generate an annual yield in the first year of 145,420.00kWh/annum. This will reduce the store carbon emissions by 28,196.00kg/CO₂/annum.

The performance of the PV system will be monitored by Lidl's Energy Team on a continual basis, via their central control system, known as GLT.

2.3 Mechanical Ventilation Systems

2.3.1 Sales Area Central Ventilation System

The Sales Area will be heated, cooled and ventilated by a centralised air handling unit (AHU) with heat recovery, as shown in Fig 5.

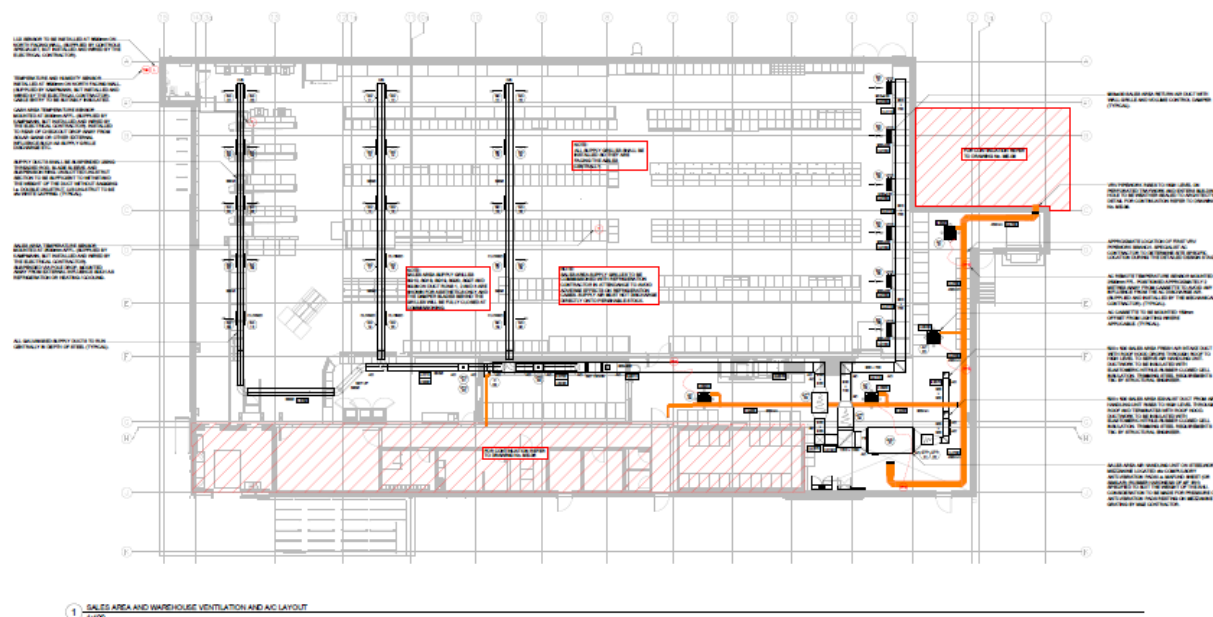


Fig 5: Sales Area Centralised AHU.

The AHU will be installed on a steelwork mezzanine in the corner of the Warehouse.

The heat recovery device in the AHU is a thermal wheel, which has an efficiency greater than 80%. The thermal wheel is designed to recovery heat from the extract airstream in the winter condition, which is used to temper the incoming fresh air stream, thus reducing the heating capacity of the AHU. The thermal wheel also absorbs heat from the incoming fresh airstream in the summer condition, which is rejected to outside air, thus reducing the cooling capacity of the AHU.

Energy efficient EC supply and extract fans are specified to reduce auxiliary loads. The low energy consuming fans have improved specific fan powers, when compared to limiting efficiencies detailed in *Approved Document Part L2, Table 6.9, Maximum specific fan power (SFP) in air distribution systems in new and existing buildings.*

The AHU incorporates a R410A direct-expansion (DX) coil, which provides heating and cooling into the Sales Area. This coil served via 2 No variable refrigerant volume (VRV) air source heat pumps (a recognised Low Zero Carbon technology), which will be installed in the External Plant Area. Further details on the heat pumps can be found in Section 2.4.

The AHU technical data is provided Appendix B and confirms the efficiency of the thermal wheel and EC fans.

2.3.2 Back of House Ventilation System

The Back of House rooms will be ventilated by a smaller air handling unit (AHU02), as shown in Fig 6.

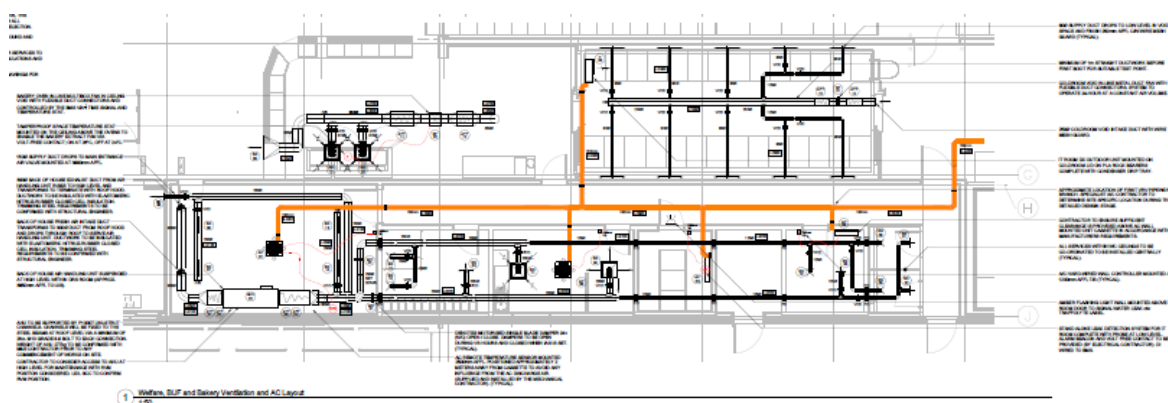


Fig 6: Back of House AHU.

The AHU will ventilate the Main Entrance, DRS Room, Cloaks, Canteen, Cash Office and Staff Toilets.

The AHU will be mounted at high level in the DRS Room and supported from the roof steelwork.

The heat recovery device in the AHU is plate heat exchanger, which has an efficiency greater than 75%. The plate heat exchanger is designed to recovery heat from the room extract airstream in the winter condition, which is used to temper the incoming fresh air stream, thus reducing heating fresh air loads into each room. The plate heat exchanger also absorbs heat from the incoming fresh airstream in the summer condition, which is rejected to outside air, thus reducing the cooling fresh air load into each room.

Energy efficient EC supply and extract fans are specified to reduce auxiliary loads. The low energy consuming fans have improved specific fan powers, when compared to limiting efficiencies detailed in *Approved Document Part L2, Table 6.9, Maximum specific fan power (SFP) in air distribution systems in new and existing buildings*.

The technical data for AHU 02 is provided Appendix C and confirms the efficiency of the plate heat exchangers and EC fans.

2.3.3 Local Supply & Extract Fans

Supply and extract fans provided for the Cold Rood Voids, Customer Toilet and Bakery will be driven by an EC rotor motor, which are 100% speed controllable. This means the design air volumes can be commissioned to ensure no more air is extracted, than required.

2.4 Air Source Heat Pumps

2.4.1 Sales Area Central Ventilation System Heat Pump Systems

As referred to in Section 2.3.1, the heating and cooling energy for the central ventilation system will be provided by 2 No Variable Refrigerant Volume (VRV) 2-pipe heat pumps.

The VRV heat pump outdoor units (C04 and C05) will be installed in the External Plant Area towards the rear of the store, as shown in Fig 7.

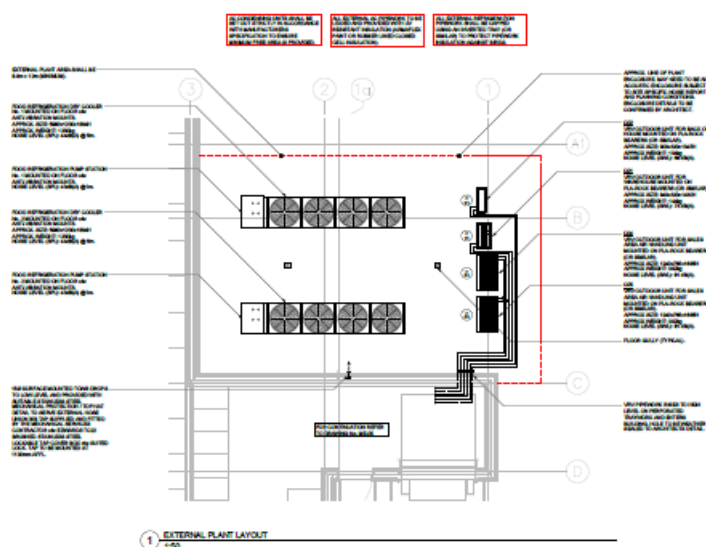


Fig 7: External VRV Heat Pumps.

The 2 No VRV heat pumps serving the central ventilation system will be manufactured by Daikin, their model reference RXYLQ12T.

The Seasonal Co-efficient of Performance (SCOP) in heating, exceeds the minimum efficiencies detailed in *Approved Document Part L2, Table 6.8, Minimum COP for heat pumps in new and existing buildings*. Table 2 provides a comparison and confirms the percentage improvement.

Table 2: C04 & C05 Heat Pump COP Comparison.

Part L2 2021 COP Minimum Standards	RXYLQ12T Heat Pump SCOP	Improvement over Part L2
2.5	3.50	40.0%

The Seasonal Energy Efficiency Ratio (SEER) in cooling, exceeds the minimum efficiencies detailed in *Approved Document Part L2, Table 6.6, Minimum seasonal energy efficiency ratio for comfort cooling*. Table 3 provides a comparison and confirms the percentage improvement.

Table 3: C04 & C05 Comfort Cooling SEER Comparison.

Part L2 2021 SEER Minimum Standards	RXYLQ12T Heat Pump SEER	Improvement over Part L2
5.0	6.90	38.0%

The manufacturers technical data sheet provided in Appendix D, confirms the SCOP and SEER figures for the RXYLQ12T heat pump systems.

2.4.2 Warehouse Heat Pump System

The Delivery and Storage Warehouses will be served by a 2-pipe VRV heat pump system, which can provide heating and cooling to each area.

The VRV heat pump outdoor unit (C01) will be installed in the External Plant Area towards the rear of the store, as shown in Fig 7 above.

The VRV heat pump will be manufactured by Daikin, their model reference RXYSQ8TY1.

The Seasonal Co-efficient of Performance (SCOP) in heating, exceeds the minimum efficiencies detailed in *Approved Document Part L2, Table 6.8, Minimum COP for heat pumps in new and existing buildings*. Table 4 provides a comparison and confirms the percentage improvement.

Table 4: C01 Heat Pump COP Comparison.

Part L2 2021 COP Minimum Standards	RXYSQ8TY1 Heat Pump SCOP	Improvement over Part L2
2.5	4.20	68.0%

The Seasonal Energy Efficiency Ratio (SEER) in cooling, exceeds the minimum efficiencies detailed in *Approved Document Part L2, Table 6.6, Minimum seasonal energy efficiency ratio for comfort cooling*. Table 5 provides a comparison and confirms the percentage improvement.

Table 5: C01 Comfort Cooling SEER Comparison.

Part L2 2021 SEER Minimum Standards	RXYSQ8TY1 Heat Pump SEER	Improvement over Part L2
5.0	6.30	26.0%

The manufacturers technical data sheet provided in Appendix D, confirms the SCOP and SEER figures for the RXYSQ8TY1 VRV heat pump system.

2.4.3 Back of House Heat Pump System

The Canteen, Cash Office and DRS Room will be served by a 2-pipe VRV heat pump system, which can provide heating and cooling to each area.

The VRV heat pump outdoor unit (C02) will be installed in the External Plant Area towards the rear of the store, as shown in Fig 7 above.

The VRV heat pump will be manufactured by Daikin, their model reference RXYSQ4TV9.

The Seasonal Co-efficient of Performance (SCOP) in heating, exceeds the minimum efficiencies detailed in *Approved Document Part L2, Table 6.8, Minimum COP for heat pumps in new and existing buildings*. Table 6 provides a comparison and confirms the percentage improvement.

Table 6: C02 Heat Pump COP Comparison.

Part L2 2021 COP Minimum Standards	RXYSQ4TV9 Heat Pump SCOP	Improvement over Part L2
2.5	4.40	76.0%

The Seasonal Energy Efficiency Ratio (SEER) in cooling, exceeds the minimum efficiencies detailed in *Approved Document Part L2, Table 6.6, Minimum seasonal energy efficiency ratio for comfort cooling*. Table 7 provides a comparison and confirms the percentage improvement.

Table 7: C02 Comfort Cooling SEER Comparison.

Part L2 2021 SEER Minimum Standards	RXYSQ4TV9 Heat Pump SEER	Improvement over Part L2
5.0	7.00	40.0%

The manufacturers technical data sheet provided in Appendix D, confirms the SCOP and SEER figures for the RXYSQ4TV9 VRV heat pump system.

2.4.4 IT Room Cooling System

The IT Room will be served by a split-system heat pump, which will provide cooling for the IT data racks.

The split-system outdoor unit (C03) will be installed above Freezer Coldroom, as shown in Fig 6 above.

The split-system heat pump will be manufactured by Daikin, their model reference RXM20A.

The Seasonal Energy Efficiency Ratio (SEER) in cooling, exceeds the minimum efficiencies detailed in *Approved Document Part L2, Table 6.6, Minimum seasonal energy efficiency ratio for comfort cooling*. Table 8 provides a comparison and confirms the percentage improvement.

Table 8: C03 Comfort Cooling SEER Comparison.

Part L2 2021 SEER Minimum Standards	RXM20A Heat Pump SEER	Improvement over Part L2
5.0	9.47	89.4%

The manufacturers technical data sheet provided in Appendix E, confirms the SEER figure for the RXM20A heat pump system.

2.5 Low Energy Lighting and Controls

2.5.1 Internal Lighting

The internal lighting throughout the store will be energy efficient LED luminaires.

The lighting efficacy ranges from 105 to 170 luminaire lumens per circuit-watt. This is more than the minimum efficiencies detailed in *Approved Document Part L2, paragraph 6.6*, which states a minimum of 95 luminaire lumens per circuit-watt.

The LED luminaires have very low energy consumption and a life expectancy exceeding that of conventional light bulbs. This reduces both energy use and waste.

The lighting in the Main Entrance and Sales will be fully dimmable.

The Main Entrance and Sales Area lighting will be automatically controlled by the Building Management System (BMS), based on the following strategy:

- Once the store is opened and the intruder alarm unset, 1/3 lighting will turn ON i.e. every third luminaire.
- 15-minutes before store opening, all lighting will be switched ON i.e. 1/3 and 2/3 lighting.
- The lighting will remain ON for the duration of store opening.
- 30-minutes after the store is closed, the lighting will be switched back to 1/3.
- Once the store is closed and the intruder alarm is set, all the lights will switch OFF after a delay of 10-seconds, except for one single light in the Main Entrance.
- Upon activation of the confirmed intruder alarm signal, all lighting will be turned ON.
- Once the activation has been cleared, the lighting will be turned OFF.

In addition to the above control, the Main Entrance, Store Entrance and Checkout lighting will be controlled by photo-electric sensors (dynamic dimming). The lighting output will be varied depending on the natural lighting contribution through the main curtain-wallings. The rest of the Sales Area lighting will be dimmed down (static dimming) to a pre-set level of 80% output.

Lighting control throughout the Warehouse and all Side Rooms will be by infra-red motion sensors. The lighting will only turn ON, when the rooms are occupied. The lighting will turn OFF after 2-minutes, when the rooms are un-occupied.

The site-specific internal lighting drawing, which has been prepared by Lidl's approved supplier (Trilux) can be found in Appendix F and includes a luminaire schedule.

2.5.2 External Lighting

The external lighting throughout the Car Park will use energy efficient LED heads. An example is shown in Fig 8.



Fig 8: External LED Lighting.

The average luminaire efficacy of the external lighting is not less than 60 luminaire lumens per circuit-watt.

All external lighting will be automatically controlled by the Building Management System and outside photo-cell sensor, to prevent operation during daylight hours.

The control strategy for the external lighting will be:

- When the Intruder Alarm is unset, the Car Park lighting turns ON 30-minutes before store opening and remain ON 60-minutes after store closing, providing the outside light level is $\leq 80\text{Lux}$.
- When the outside light level is $\geq 110\text{Lux}$, all Car Park lighting will be OFF.
- When the Intruder Alarm is set, the Car Park lighting will remain ON for 15-minutes, then turn OFF.

The site-specific external lighting drawing, which has been prepared by Lidl's approved supplier (Signify) can be found in Appendix G and includes a luminaire schedule.

2.6 Building Energy Management System

The store will be provided with a Building Energy Management System (BEMS) to ensure main plant and lighting is controlled and operated efficiently.

The BEMS control panel will be installed on the AHU steelwork mezzanine in the Warehouse, as shown in Fig 9.



Fig 9: BEMS Control Panel.

The BEMS will provide automatic controls, interfacing, monitoring and alarm functions associated with the operation of the mechanical and electrical systems in the store.

2.7 Energy Sub-Metering

Energy sub-metering will be incorporated into all the distribution boards, so end-use consumption can be monitored and benchmarked.

This has obvious financial and sustainable benefits, allowing for financial verification with regards to consumption vs cost, as well as allowing for consumption to be monitored and any out-of-range values easily identified, and energy wastage eliminated.

A full schedule of Lidl's standard meters is provided in Fig 10.

METER SCHEDULE

REF	DESCRIPTION	LOCATION	METER RATIO
[MB-9]	GRID IMPORT	MAIN DB	400:5
[MB-96]	STORE CONSUMPTION	MAIN DB	400:5
[MB-99]	HVAC (BUILDING TECHNOLOGY DB)	MAIN DB	250:5
[MB-101]	TOTAL ELECTRIC VEHICLE CHARGER	MAIN DB	250:5
[MB-110]	EXTERNAL PACKING STATION	MAIN DB	DIRECT
[MB-170]	PV GENERATION	MAIN DB	400:5
[MB-40]	SALES AREA & WAREHOUSE LIGHTING	L&AP DB	DIRECT
[MB-41]	CAR PARK & ADVERTISING LIGHTING	L&AP DB	DIRECT
[MB-52]	ANCILLARY AREA LIGHTING	L&AP DB	DIRECT
[MB-72]	COLD ROOMS [BUC & BUF]	REFRIDGE DB	250:5
[MB-80]	CHILLERS [INC. M&P & DRY COOLERS]	REFRIDGE DB	250:5
[MB-83]	FREEZERS	REFRIDGE DB	250:5
[MB-26]	VENTILATION	BUILDING TECHNOLOGY DB	DIRECT
[MB-27]	HEATING & COOLING DX SYSTEMS	BUILDING TECHNOLOGY DB	250:5
[MB-93]	BAKERY OVENS	BAKERY DB	250:5
[MB-1]	WATER	UTILITY ROOM	-

Fig 10: Energy Sub-metering Schedule.

The BEMS control panel is used to connect the various energy meters and water meter in the building, via M-Bus. This will allow a gateway for communication and information (data) exchange between the BEMS control panel and Lidl's Central Building Control System (GLT).

2.8 Water Conservation

2.8.1 Standard Lidl Specification

Mains cold-water consumption in the store will be reduced through water efficiency.

To monitor and conserve water-usage, the main water meter in the Utility Room will be monitored by the BEMS control panel.

All hot and cold water outlets are fitted with local service valves with flow restrictors.

Examples of each are shown in Fig 11 and 12.



Fig 11: Main Water Meter in the Utility Room.



Fig 12: Canteen Flow Restrictors.

The incoming mains cold water supply is metered, using a smart meter, to allow Lidl to easily monitor water consumption. The meter is connected to the BEMS control panel, to monitor and record water

consumption. The water consumption is monitored by Lidl on a regular basis, via their central control system (GLT).

During the commissioning period, the flowrate from the wash hand basins and sinks will be witnessed by filling a 1-litre jug and timing how long it takes to fill the jug. This is a specific requirement requested by Lidl, so the store can be certified under the EGDE sustainability certification scheme. The water fittings will be tested to ensure the flowrates in Table 9 are not exceeded.

Table 9: Water Efficiency.

Fitting	Flowrate (L·s)
Wash hand basins	0.048 litres/second
Canteen sink	0.08 litres/second
Sluice and Bakery sink	0.12 litres/second
WC's	4 litres/flush
Dishwasher	12 litres/cycle

2.9 Waste and Recycling

Lidl's waste will be stored within the building close to the servicing bay, to enable easy collection by vehicles servicing the site. There will be no external storage of either stock or waste.

Lidl operates a policy of reloading empty delivery HGVs with store waste to return to the depot for recycling. This reduces the number of on-site vehicle movements required. Empty pallets and TKT boxes along with waste and recycling are returned to the warehouse on the same HGV.

Lidl is committed to developing innovative ways to effectively manage waste streams to ensure that packaging requirements are reduced, more is recycled, and surplus food is redistributed to charity.

Lidl boast an award-winning recycling and waste management programme. In-store and warehouse waste management concepts are integral to Lidl's Zero Waste Commitment. Through the commitment of Lidl's logistics and procurement teams and all store and warehouse employees, Lidl achieved Zero Waste to Landfill and are working hard to maintain this. Much of Lidl's waste is cardboard, which is reused for paper and packaging. Segregation is key to the programme's success by increasing Lidl's recycling streams and reducing their environmental impact.

APPENDIX A: PVSOL DOCUMENT

Lidl Great Britain Ltd

Square 4 Services Limited
Stone Cross Place
Golborne, Warrington, WA3 2SH
UK

Contact person:
Adrian Thomas

Customer No.: 2120
Project Name: LIDL - Blackmoorefoot 2120 - PVSOL - Rev B
Offer no.: 2120

28/02/2025

Your PV system from Square 4 Services Limited

Address of Installation

Turnstone Way, Crosland Moor, Huddersfield HD4 5DZ



Project Description:

Rev A - 2023 International Specification

Type 13 - Mirrored

396 x JA - JAM54D40-455/LB

Huawei 115KTL + 30KTL + 30KTL

Huawei 115KTL NPR (DC/AC) = $115.70 / 115 = 1.005$

Huawei 30KTL NPR (DC/AC) = $32.31 / 30 = 1.077$

Huawei 30KTL NPR (DC/AC) = $32.31 / 30 = 1.077$

FOR MOUNTING - PLEASE SEE PROJECT MOUNTING MATERIALS SHEET / MOUNTING REPORT



Project Overview

PV System

Grid-connected PV System

Climate Data	Huddersfield, GBR (2005 - 2020)
Values source	PVGIS-SARAH2/ERA5
PV Generator Output	180.18 kWp
PV Generator Surface	791.3 m ²
Number of PV Modules	396
Number of Inverters	3

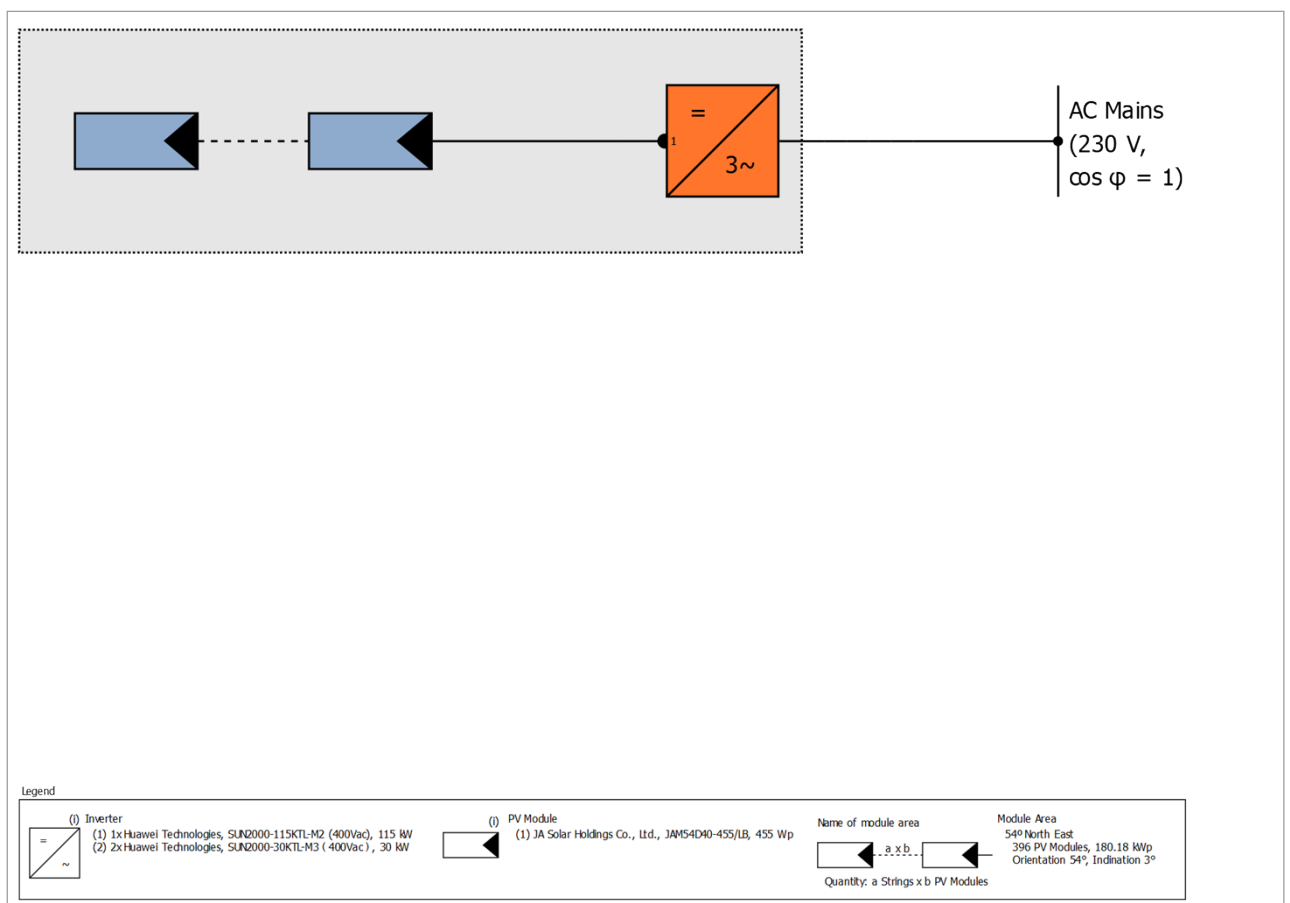


Figure: Schematic diagram

Production Forecast

Production Forecast

PV Generator Output	180.18 kWp
Spec. Annual Yield	810.81 kWh/kWp
Performance Ratio (PR)	92.66 %
Grid Export	146,156 kWh/Year
Grid Export in the first year (incl. module degradation)	145,420 kWh/Year
Standby Consumption (Inverter)	65 kWh/Year
CO ₂ Emissions avoided	28,196 kg / year

The results have been calculated with a mathematical model calculation from Valentin Software GmbH (PV*SOL algorithms). The actual yields from the solar power system may differ as a result of weather variations, the efficiency of the modules and inverter, and other factors.

Set-up of the System

Overview

System Data

Type of System	Grid-connected PV System
----------------	--------------------------

Climate Data

Location	Huddersfield, GBR (2005 - 2020)
Values source	PVGIS-SARAH2/ERA5
Data resolution	1 min
Simulation models used:	
- Diffuse Irradiation onto Horizontal Plane	Hofmann
- Irradiance onto tilted surface	Hay & Davies

Module Areas

1. Module Area - 54° North East

PV Generator, 1. Module Area - 54° North East

Name	54° North East
PV Modules	396 x JAM54D40-455/LB (v2)
Manufacturer	JA Solar Holdings Co., Ltd.
Inclination	3 °
Orientation	Northeast 54 °
Installation Type	Roof parallel
PV Generator Surface	791.3 m ²

Inverter configuration

Configuration 1

Module Area	54° North East
Inverter 1	
Model	SUN2000-115KTL-M2 (400Vac) (v1)
Manufacturer	Huawei Technologies
Quantity	1
Sizing Factor	100.5 %
Configuration	MPP 1: 2 x 18
	MPP 2: 2 x 18
	MPP 3: 2 x 18
	MPP 4: 2 x 18
	MPP 5: 2 x 18
	MPP 6: 2 x 18
	MPP 7: 2 x 19
	MPP 8: not allocated
	MPP 9: not allocated
	MPP 10: not allocated

Inverter 2

Model	SUN2000-30KTL-M3 (400Vac) (v1)
Manufacturer	Huawei Technologies
Quantity	1
Sizing Factor	107.7 %
Configuration	MPP 1: 1 x 17
	MPP 2: 1 x 18
	MPP 3: 1 x 18
	MPP 4: 1 x 18

Inverter 3

Model	SUN2000-30KTL-M3 (400Vac) (v1)
Manufacturer	Huawei Technologies
Quantity	1
Sizing Factor	107.7 %
Configuration	MPP 1: 1 x 17
	MPP 2: 1 x 18
	MPP 3: 1 x 18
	MPP 4: 1 x 18

AC Mains

AC Mains

Number of Phases	3
Mains voltage between phase and neutral	230 V
Displacement Power Factor (cos phi)	+/- 1

Simulation Results

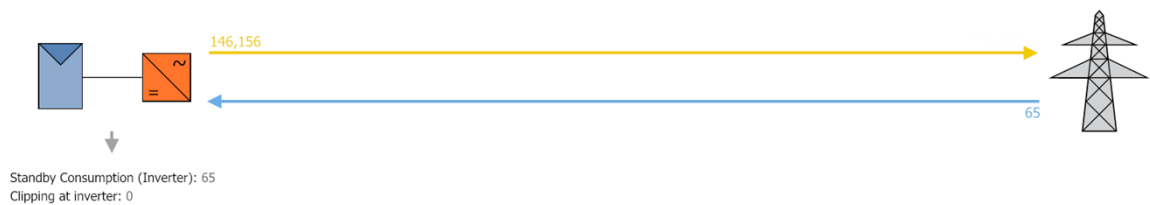
Results Total System

PV System

PV Generator Output	180.18 kWp
Spec. Annual Yield	810.81 kWh/kWp
Performance Ratio (PR)	92.66 %
Grid Export	146,156 kWh/Year
Grid Export in the first year (incl. module degradation)	145,420 kWh/Year
Standby Consumption (Inverter)	65 kWh/Year
CO ₂ Emissions avoided	28,196 kg / year

Energy Flow Graph

Project: LIDL - Blackmoorefoot 2120 - PVSOL - Rev B



All values in kWh
Small deviations in the totals can occur due to rounding
created with PVSOL

Figure: Energy flow

Plans and parts list

Circuit Diagram

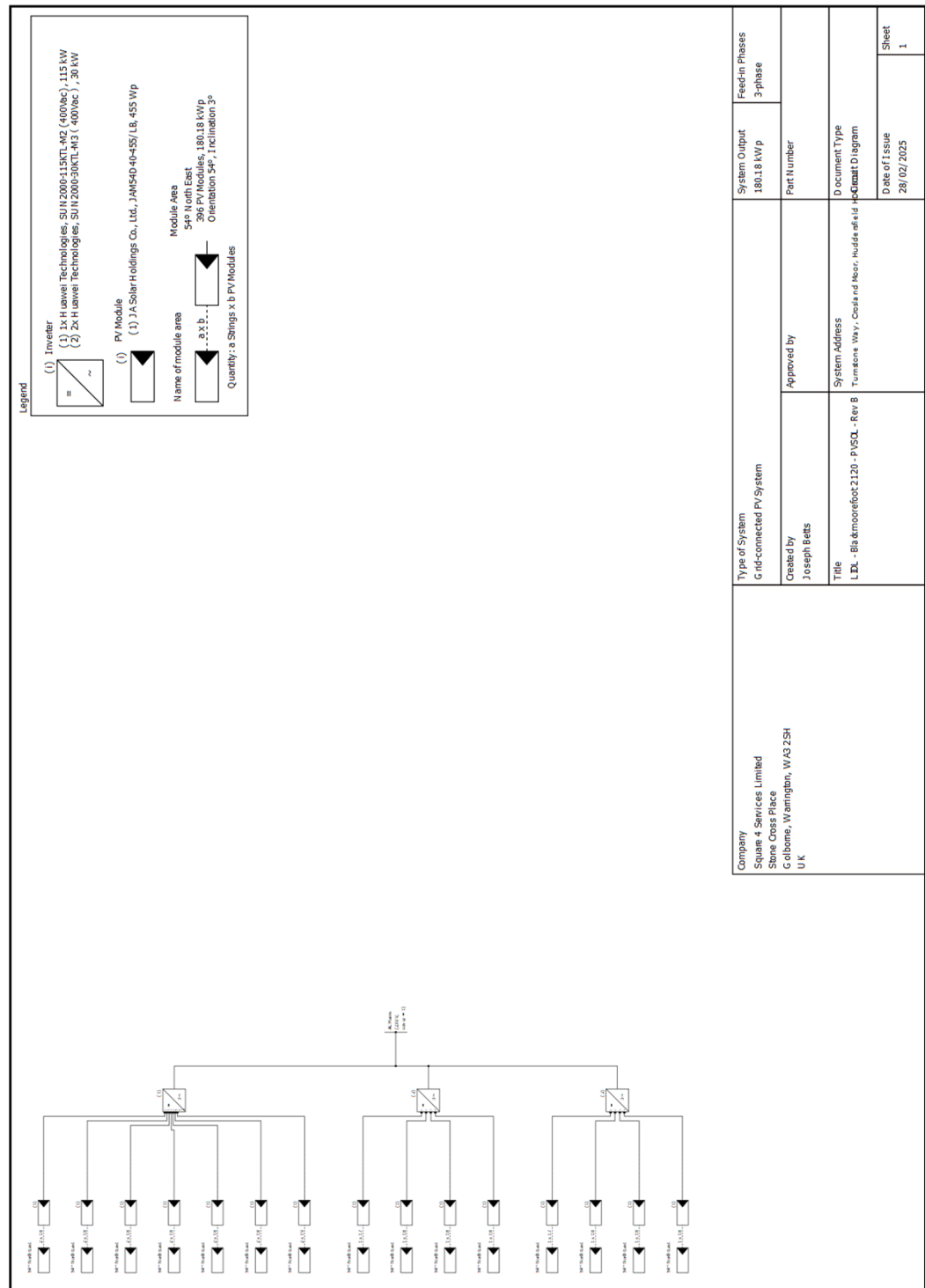


Figure: Circuit Diagram

LIDL - Blackmoorefoot 2120 - PVSOL - Rev B

Square 4 Services Limited
Offer Number: 2120

Parts list

Parts list

#	Type	Item number	Manufacturer	Name	Quantity	Unit
1	PV Module		JA Solar Holdings Co., Ltd.	JAM54D40-455/LB	396	Piece
2	Inverter		Huawei Technologies	SUN2000-115KTL-M2 (400Vac)	1	Piece
3	Inverter		Huawei Technologies	SUN2000-30KTL-M3 (400Vac)	2	Piece

Further pictures



Figure: Location



Figure: UK

APPENDIX B: SALES AREA AHU01 TECHNICAL DATA

Technical data sheet



Artikelgruppe **Lidl UK 2024**
Artikelnummer **Konzept International - Type 13**
Geräte Nr. **24-03730** seq. no **13G**

edited
vom **17.09.2024** Offer



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Series Universal II	Certification / Execution	= Indoor Unit VDI 6022
Energy efficiency class =	Erp 2018 met acc. To Enforcement Regulation 1253/2014/EC	
Type according to EU regulation	BVU / NRvu	
Spec. fan power SFPint [W/(m³/s)]	777	external air leakage rate -400Pa [%] 0,14
Internal pressure drop [Pa]	532	external air leakage rate +400Pa [%] 0,14
Supply air fan system efficiency [%]	68,39	internal air leakage rate 250Pa [%] 8,00
Exhaust air fan system efficiency [%]	68,54	
drive form	variable speed	

Unit definition	Supply air	General data
Unit size	K11/20-150/3/K3/RT/MSR	<u>Casing:</u>
total number of units	1	Thickness [mm] 55, P60VU 0,75 / 1,00 / 0,75
Length [mm] 3481	Width [mm] 1974	Height [mm] 1134
Weight [kg] 1984		Panel inside galvanized steel
Airflow [m³/h] 15.012		Panel inside bottom galvanized steel
air velocity at unit cross section [m/s] 2,3	Class V5	Panel outside galvanized steel
	Profiles GI	fully covered color RAL 7046

Housing data according to EN 1886 (MB):

Profile : Hollow chamber plastic profile with steel reinforcement
Insulation : Mineral fibre 100 kg/m³ volume weight fully bonded, fire class A1 according to DIN4102
Corrosion class : C4 (long - 480 h)- if coated RAL 7035 according to DIN EN ISO 12944
Thermal insulation : T2 (M) / Thermal bridge factor : TB1 (M)
Mechanical stability : D1 (M) / Housing leakage : L1 (M)

print-out of components in airflow direction

Offer	24-03730	seq. No.	13G	Plant	Konzept International - Type			Page	2 / 11
Filter		5 R	L:	520.5 mm	Casing internal	GI	112 kg	Delta P	41 Pa
Manufacture	Volz	Type	V F7-360	Filter surface [m²]				13,50	
				Bag length [mm]				360	
initial pressure [Pa]	18			Cells pcs x size HxW [mm]	3 x		490 x	592	
final pressure [Pa]	54				3 x		287 x	592	
Airflow [m³/h]	5.040								
energy efficiency class	E			Annual energy consumption [kWh/		2.010			
If the filter pressure is more than 100 Pa above the max. pressure the airflow must be reduced, resulting mechanical damage is not covered by warranty.									
system of filter handling		Lateral extension		Filterrahmen in Breite geteilt					
Material filterframe		STST		Guides				AL	
Filter bags with pure air-side seal									
acc. DIN EN ISO 16890	ePM2.5 70%			corresponds measurement: ePM1:	55 %	ePM2,5:	70 %	ePM10:	89 %
Filter mounting frame split in width									
total number of filters in width		3		splits in width		1			
Number of filters front		2		Width extension front [mm]		1216			
Number of filters back		1		Width extension back [mm]		608			
1 Pcs	pressure difference switch DS205_B 50-500 Pa							Mounted	
1 set	measuring tube reg. VDI 6022							Mounted	
	Der Signalgeber zum Anschluss an den Differenzdruckschalter liegt in der bauseitigen Verantwortung							not mounted	
	Bag filter mount plastic frame								
Revision door with lever lock									
<u>Damper:</u>		ODA						Mounted	Yes
slat parallel to long side									
driven by		setting lever On access side							
with insulation cover		incl. damper actuator							
Airflow [m³/h]	15.012	Dimensions		Width	1783 mm	Height	943 mm		
air velocity [m/s]	2,48	Torque per lever [Nm]			12				
Execution	Air tight acc. to DIN			material fins / frame		AL		/ AL	
	according to DIN 1946 part 4, with gearwheels outside of air flow								
positioning drive electr.									
		Typ		SF24..230A-TP		auxiliary contact		none	
Quantity	1	Mode		on/off		Volt [V]	AC24..240/DC24..125		
torque [Nm]	20,000	Protection		IP54		Delivery mode	Mounted		

Offer	24-03730		seq. No.	13G	Plant	Konzept International - Type			Page 3 / 11	
Heat wheel in casing			5 R		L:	520.5 mm	Casing internal	GI		Delta P 230 Pa
			Type RRS-N-E14-1420/1420-1300							
<u>Heating condition</u>			<u>Cooling condition</u>							
Exhaust [m³/h]	5.040				Exhaust [m³/h]	5.040				
Entering [°C]	20,00	Hum. [%]		40,0	Entering [°C]	23,00	Hum. [%]		55,0	
Leaving [°C]	-0,80	Hum. [%]		82,0	Leaving [°C]	35,60	Hum. [%]		51,0	
Supply [m³/h]	5.040				Supply [m³/h]	5.040				
Entering [°C]	-5,00	Hum. [%]		100,0	Entering [°C]	38,00	Hum. [%]		50,0	
Leaving [°C]	15,80	Hum. [%]		48,0	Leaving [°C]	25,50	Hum. [%]		57,0	
Tot. recovery capacity [kW]	47,52				Tot. recovery capacity [kW]	60,58				
Sens. recovery capacity [kW]	35,44				Sens. recovery capacity [kW]	22,18				
Heat recovery efficiency [%]	83,3				Heat recovery efficiency [%]	83,1				
humidity recovery efficiency [%]	86,9				humidity recovery efficiency [%]	81,9				
<u>EN 13053 A1 / EN 308</u>			<u>Data test conditions EN 308</u>							
Temperature efficiency	83,30				at outside air temp. 5°C					
Energy efficiency	80,20				at exhaust air temp. 25°C					
Replacement measure acc. BESA	Yes				Supply air temp. [° C]		21,66			
head recovery class	H1				Capacity [kW]		28,13			
Power index	26,54				Pressure loss dry cond. [Pa]		215		total for supply and exhaust air	
control type	MICROMAX 180 R				Rotary heat exchanger in non-split design					
Casing for rotary heat exchanger as only 1 delivery section, no casing split between supply and exhaust air										
2	set	measuring tube reg. VDI 6022							Mounted	
controller mounted and wired (at heat recovery section)										
no purge sector										
Revision cover with handle										
Circular air			5 R		L:	520.5 mm	Casing internal	GI	69 kg	Delta P
Fresh air / Recircle air										
Revision door with lever lock										
Cooling coil			3 R		L:	280 mm	Casing internal	GI	201 kg	Delta P 45 Pa
X	Airflow [m³/h]	12.000	Medium	25 [%]	Antifrogen	<u>Materials:</u>				
	Air velocity# [m/s]	2,40	Med. Flow [l/s]		0,5280	Fins	AL			
	Air in [°C]	24,10	Med. in [°C]		15,00	Pipe	CU			
	Humidity [%]	57,0	Med. out [°C]		20,00	Header	CU			
	Air out [°C]	21,60	Med. pres. Drop [kPa]		40,74	Frames	STST			
	Humidity [%]	65,0	Content [litr]		15,000	Guides	AL			
	Capacity [kW]	10,22								
Pipe	3	Circuits	6	Fin space [mm]	3,20	Connection in/out "		0 3/4		
in air direktion left angled No										
Hydraulik gem. Standard montiert										
Paneel with bracket lock										
Drain pan		Quality STST								

Offer	24-03730		seq. No.	13G	Plant	Konzept International - Type			Page 4 / 11		
Cooling coil				4 R	L:	373 mm	Casing internal	GI	138 kg	Delta P	54 Pa
X	Airflow [m³/h]	12.000	Medium			R410A	Materials:				
	Air velocity# [m/s]	2,46	Evaporating temp. [°C]			6,00	Fins		AL		
	Air in [°C]	21,60	Overheating [°C]			5,00	Pipe		CU		
	Humidity [%]	65,0	Temp. by cont. valve [°C]			48,00	Header		CU		
	Air out [°C]	13,00	Content [ltr]			19,500	Frames		STST		
	Humidity [%]	89,7									
	Capacity [kW]	52,90									
Pipe	4	Circuits	8	Fin space [mm]	2,50	refrigeration cycle	4 ci	Guides	AL		
in air direktion left				angled		No					
The design of the chiller on site must be matched to the specification of the evaporator integrated in the air handling unit.											
Panel with bracket lock											
Drain pan			Quality	STST							

Heating coil				3 R	L:	280 mm	Casing internal	GI	113 kg	Delta P	57 Pa
X	Airflow [m³/h]	12.000	Medium	with 25 [%]		Glykol	Materials:				
	air velocity [m/s]	2,37	Med. Flow [l/s]			0,5250	Fins		AL		
	Air in [°C]	13,00	Med. in [°C]			20,00	Pipe		CU		
	Humidity [%]	95,0	Med. out [°C]			15,35	Header		CU		
	Air out [°C]	15,50	Med. pres. drop [kPa]			15,09	Frames		GI		
	Humidity [%]	81,0	Content [ltr]			16,000	Guides		AL		
	Capacity [kW]	10,19									
Pipe	3	Circuits	10	Fin space [mm]	2,50	Connection in/out '			0 3/4		
in air direktion left				angled		No					
Panel with bracket lock											
Drain pan			Quality	STST		draining side wards	drain size	1 1/4 "			

Empty section				3 R	L:	280 mm	Casing internal	GI	37 kg	Delta P	
Revision cover with handle											

Offer	24-03730	seq. No.	13G	Plant	Konzept International - Type					Page	5 / 11							
Plug fan				7 R	L:	706.5 mm	Casing internal	GI	188 kg	Delta P								
Supply air				in parallel operation				EC-Motor	E11233	Quantity	2							
Fan				2 St.	EBM-Papst		VBH0500CTRNS		Control with signal 0 – 10 V									
Air volume [m³/h]				15.012 overall				Protection	IP55									
External press [Pa]				300				Insulation class	F									
ext. press. Suction side [%]				33				Power [kW]	2,500									
Dyn. Pres. [Pa]				49				Speed [1/min]	2.070 at 10 volt control voltage									
Tot. pres. [Pa]				783				Current [A]	3,90									
Speed [1/min]				1.972 / 2.070 max.				Voltage [V]	3x400 / 50									
								Efficiency Class	IE5									
fan system efficiency				see header data														
static impeller efficiency of the fan [%]				78,18														
Efficiency optimum [%]				73,3														
Spec. fan power SFPv [W/(m³/s)]				SFP2 / 962														
Power class				P1														
Delivery Class				1														
SFPv data according to EN16798-3																		
Fan octave band sound power level Lw [dB]								Total-										
								Level in										
Mid-Freq. [Hz]								63	125	250	500	1000	2000	4000	8000	dB(A)	Control voltage at operating point [V]	9,26
Inlet								65,9	72,3	70,6	70,1	69,2	69,2	71,5	62,8	76,6	max. control voltage [V]	10
Outlet								69,3	74,5	73,5	75,3	76,7	74,2	73,2	64,9	81,1	max. effect. elect. power Pm/Pmref [kW]	4,43 / 6,16
Tolerances reg. Delivery Class 1 DIN 24166																act. press. Drop [Pa]	670	
																Nozzle coefficients per fan	290	
1 set	outside leaded pressure drawing hole with hose								Mounted									
1 Pcs	volume flow indicator NOVA-V analog 0-10V preset								Mounted									
Fan partition wall galvanized																		
EC-motor wiring diagramm 21RP4																		
Revision door with lever and twist-on lock																		
Fan access door tool actuated, acc. to ISO 12100 no additional contact safety guard required																		
Antivibration connection frame				AL	Dimensions				Width	1783 mm	Height	943 mm	Mounted	Yes				
1	1 joint maintenance switch for supply and exhaust fan								Mounted									
sound power [dB]								Tolerances reg. Delivery Class 1 DIN 24166 (De)										
Mid-Freq. [Hz]				63	125	250	500	1000	2000	4000	8000	sound level summary [dB(A)]						
Inlet				60,9	67,3	64,6	60,1	58,2	58,2	60,5	51,8	66,1						
Outlet				72,3	77,5	76,5	78,3	79,7	77,2	76,2	67,9	84,1						
beside unit max.				59,1	56,1	56,6	51,5	45,2	39,5	23,2	56,9							
Hüllfläche gem. DIN EN ISO 3746				64,8	61,3	59,6	53,5	48,3	44,5	28,0	60,2							

Offer	24-03730	seq. No.	13G	Plant	Konzept International - Type				Page	6 / 11	
Unit definition		Exhaust air				General data					
Unit size		K11/20-150/3/K3/RT/MSR				Casing:					
total number of units		1				Thickness [mm]		55, P60VU 0,75 / 1,00 / 0,75			
Length [mm]		3481	Width [mm]		1974	Height [mm]		1134	Panel inside		galvanized steel
						Panel inside bottom		galvanized steel			
Airflow [m³/h]		15.012				Panel outside		galvanized steel			
air velocity at unit cross section [m/s]		2,3	Class		V5	Profiles		GI	fully covered color RAL 7046		
<u>Housing data according to EN 1886 (MB):</u>											
Profile : Hollow chamber plastic profile with steel reinforcement											
Insulation : Mineral fibre 100 kg/m³ volume weight fully bonded, fire class A1 according to DIN4102											
Corrosion class : C4 (long - 480 h)- if coated RAL 7035 according to DIN EN ISO 12944											
Thermal insulation : T2 (M) / Thermal bridge factor : TB1 (M)											
Mechanical stability : D1 (M) / Housing leakage : L1 (M)											
print-out of components in airflow direction											

Empty section	5 R	L:	519.5 mm	Casing internal	GI	105 kg	Delta P
Revision door with lever lock							
<u>Antivibration connection frame</u>	AL	Dimensions	Width	1783 mm	Height	943 mm	Mounted Yes

Filter	5 R	L: 467 mm	Casing internal	GI	111 kg	Delta P	180 Pa
Manufacture	Volz	Type	V F7-360	Filter surface [m²]	15,30		
				Bag length [mm]	360		
initial pressure [Pa]	130			Cells pcs x size HxW [mm]	3 x	592 x	592
final pressure [Pa]	230				3 x	287 x	592
Airflow [m³/h]	15.012						
energy efficiency class	E			Annual energy consumption [kWh/	2.010		
If the filter pressure is more than 100 Pa above the max. pressure the airflow must be reduced, resulting mechanical damage is not covered by warranty.							
system of filter handling	demounting through service section						
Material filterframe	GI						
Filter bags with pure air-side seal							
acc. DIN EN ISO 16890	ePM2.5 70%	corresponds measurement: ePM1: 55 %			ePM2,5: 70 %	ePM10: 89 %	
1 Pcs	pressure difference switch DS205_B 50-500 Pa					Mounted	
1 set	measuring tube reg. VDI 6022					Mounted	
	Der Signalgeber zum Anschluss an den Differenzdruckschalter liegt in der bauseitigen Verantwortung					not mounted	

Empty section	5 R	L:	467 mm	Casing internal	GI	92 kg	Delta P
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Offer	24-03730	seq. No.	13G	Plant	Konzept International - Type										Page	7 / 11						
Plug fan				6 R				L:	560 mm	Casing internal				GI	203 kg	Delta P						
Exhaust air				in parallel operation				EC-Motor				E11233				Quantity		2				
Fan				2	St.	EBM-Papst		VBH0500CTRNS				Control with signal 0 – 10 V										
Air volume [m³/h]				15.012				overall				Protection				IP55						
External press [Pa]				250				Insulation class				F										
ext. press. Suction side [%]				33				Power [kW]				2,500										
Dyn. Pres. [Pa]				49				Speed [1/min]				2.070				at 10 volt control voltage						
Tot. pres. [Pa]				745				Current [A]				3,90										
Speed [1/min]				1.938 / 2.070				max.				Voltage [V]				3x400 / 50						
												Efficiency Class				IE5						
fan system efficiency				see header data																		
static impeller efficiency of the fan [%]				78,31																		
Efficiency optimum [%]				73,3																		
Spec. fan power SFPv [W/(m³/s)]				SFP2 / 936				Output 10V at volume flow display NOVA-V corresponds to a volume flow of [m³/h]				18014										
Power class				P1				Input k factor at NOVA-V [1.000Pa]				580										
Delivery Class				1																		
SFPv data according to EN16798-3																						
Fan octave band sound power level Lw [dB]										Total- Level in												
Mid-Freq. [Hz]										63	125	250	500	1000	2000	4000	8000	dB(A)	Control voltage at operating point [V]		9,00	
Inlet										65,8	71,7	70,0	69,6	69,0	69,1	71,5	62,4	76,4	max. control voltage [V]		10	
Outlet										69,1	74,0	72,9	75,0	76,3	73,9	73,2	64,5	80,9	max. effect. elect. power Pm/Pmref [kW]		4,19 / 5,86	
Tolerances reg. Delivery Class 1 DIN 24166																				act. press. Drop [Pa]		670
																				Nozzle coefficients per fan		290
1 set				outside leaded pressure drawing hole with hose														Mounted				
1 Pcs				volume flow indicator NOVA-V analog 0-10V preset														Mounted				
				Fan partition wall galvanized																		
				EC-motor wiring diagramm 21RP4																		
				Electrical switch for power circuit																		
Poles				3	With 2 auxiliary contactor 1 break 1 make contact																	
Type				RLT32/3 - ÖS				Protection				IP65				Power [kW]		11,000	Current [A]		32,00	
Anzahl Reparaturschalter:																						
Circular air				4 R				L:	426.5 mm	Casing internal				GI	74 kg	Delta P		43 Pa				
Fresh air / Recircle air																						
Revision door with lever and twist-on lock																						
Damper:				RCA				aligument internal				Mounted				Yes						
slat parallel to long side																						
driven by				setting lever On access side incl. damper actuator																		
Airflow [m³/h]				15.012																		
air velocity [m/s]				8,09				Torque per lever [Nm]				3										
Execution				Air tight acc. to DIN				material fins / frame				AL				/ AL						
				according to DIN 1946 part 4, with gearwheels outside of air flow																		
positioning drive electr.																						
				Type				NF24A-SR-TP				auxiliary contact				none						
Quantity				1				Mode				modulating				Volt [V]		1x24				
torque [Nm]				10,000				Protection				IP54				Delivery mode		Mounted				
Heat wheel in casing				5 R				L:	520.5 mm	Casing internal				GI		Delta P		211 Pa				

Offer	24-03730	seq. No.	13G	Plant	Konzept International - Type				Page	8 / 11
Intake / Outlet section		5 R		L:	520.5 mm	Casing internal	GI	130 kg	Delta P	5 Pa
Revision door with lever lock										
<u>Damper:</u>		EHA				Mounted		Yes		
slat parallel to long side										
driven by		setting lever On access side								
with insulation cover		incl. damper actuator								
Airflow [m³/h]	15.012	Dimensions	Width	1783 mm	Height	943 mm				
air velocity [m/s]	2,48	Torque per lever [Nm]	12							
Execution	Air tight acc. to DIN	material fins / frame				AL	/ AL			
according to DIN 1946 part 4, with gearwheels outside of air flow										
positioning drive electr.										
		Typ	SF24..230A-TP				auxiliary contact		none	
Quantity	1	Mode	on/off			Volt [V]	AC24..240/DC24..125			
torque [Nm]	20,000	Protection	IP54			Delivery mode	Mounted			

sound power [dB]		Tolerances reg. Delivery Class 1 DIN 24166 (De)							
Mid-Freq. [Hz]	63	125	250	500	1000	2000	4000	8000	sound level summary [dB(A)]
Inlet	67,8	73,7	71,0	69,6	68,0	68,1	70,5	61,4	75,6
Outlet	68,1	73,0	71,9	74,0	75,3	72,9	72,2	63,5	79,9
beside unit max.		58,6	55,5	56,3	51,1	44,9	39,5	22,8	56,6
Hüllfläche gem. DIN EN ISO 3746		65,8	62,4	62,7	57,2	51,3	46,5	29,7	63,0

1	set	Bottom sealing		
1	Pcs	Nameplate Kampmann	Mounted	
1	set	Set Gehäuseverbindungen innen	not mounted	
1		Closing the intake / exhaust openings with adhesive film		
1	set	instruction sign for filter service reg. VDI 6022		

Dimensions of delivery sections without height of possible unit base frames and without protruding add-on components					
The dimensions on the unit drawing are also to be regarded					
<u>Delivery sections</u>					
	no.	Width	Height	Length	Weight
	1	1974 mm	2161 mm	2440 mm	1331 Kg
	2	1974 mm	2161 mm	1041 mm	653 Kg

MSR Zusammenfassung	
MSR Regelungsfunktionen (anlagenspezifische Auswahl)	
<u>Regler Typ / Fabrikat</u>	
KaSchaltschrank inkl. Last Typ 3240161	
Außentemperaturfühler	
<u>Ausführung Schaltschrank, -montage und -verdrahtung</u>	
Schaltschrank außen montiert und verkabelt	
Anfahrtsweg einfache Distanz in km	
Funktionsprüfung und Einweisung durch Werkskundendienst	
MSR Komponente	
Aussenluft Öffnung bestehend aus :	
1	Pcs Klappenstellantrieb SF24..230A-TP am Gerät montiert
1	Psch. Verdrahtung Stellmotor am Gerät montiert

Offer	24-03730	seq. No. 13G	Plant	Konzept International - Type	Page 9 / 11
		Zuluft Öffnung bestehend aus :			
1	Pcs	Kanalkombifühler Temperatur / Feuchte KFTF-U, PT1000A L=235mm			am Gerät montiert
1	Psch.	Verdrahtung Sensor			am Gerät montiert
		Abluft Öffnung bestehend aus :			
1	Pcs	Kanalkombifühler Temperatur / Feuchte KFTF-U, PT1000A L=235mm			am Gerät montiert
1	Pcs	Kanalluftqualitätsensor KCO2			am Gerät montiert
2	Psch.	Verdrahtung Sensor			am Gerät montiert
		Fortluft Öffnung bestehend aus :			
1	Pcs	Klappenstellantrieb SF24..230A-TP			am Gerät montiert
1	Psch.	Verdrahtung Stellmotor			am Gerät montiert
		Umluft Öffnung bestehend aus :			
1	Pcs	Klappenstellantrieb NF24A-SR-TP			am Gerät montiert
1	Pcs	Kanalkombifühler Temperatur / Feuchte KFTF-U, PT1000A L=235mm			am Gerät montiert
1	Psch.	Verdrahtung Sensor			am Gerät montiert
1	Psch.	Verdrahtung Stellmotor			am Gerät montiert
		Filterüberwachung bestehend aus :			
1	Pcs	Differentdruckschalter DS205_B			am Gerät montiert
1	Pcs	Differentdruckschalter DS205_B			am Gerät montiert
2	Psch.	Verdrahtung Sensor			am Gerät montiert
		Ventilatorsteuerung bestehend aus :			
2	set	Ventilatorsteuerung mit EC-Motor bis 3kW			im Schaltschrank montiert
1	Pcs	Volumenstromanzeige NOVA V			am Gerät montiert
2	set	Ventilatorsteuerung mit EC-Motor bis 3kW			im Schaltschrank montiert
1	Pcs	Volumenstromanzeige NOVA V			am Gerät montiert
1	Pcs	Rep.-Schalterüberwachung			im Schaltschrank montiert
2	Psch.	Verdrahtung Sensor			am Gerät montiert
2	Psch.	Verdrahtung Last ungeschirmt 3,0kW			am Gerät montiert
2	Psch.	Verdrahtung Last ungeschirmt 3,0kW			am Gerät montiert
4	Psch.	Verdrahtung Steuerung			am Gerät montiert
		Erhitzer-Regelung bestehend aus :			
1	Pcs	Pumpensteuerung drehzahl geregelt			im Schaltschrank montiert
1	Pcs	Regelventil			lose geliefert
		FEHLT FEHLT FEHLT			lose geliefert
3	Psch.	Verdrahtung Sensor			am Gerät montiert
2	Pcs	Anlegetemperaturfühler ALTF2 Pt1000A			am Gerät montiert
		Kühler-Regelung bestehend aus :			
1	Pcs	Pumpensteuerung			im Schaltschrank montiert
1	Pcs	Regelventil Direktlieferung Kampmann			lose geliefert
4	set	VRF-Einheiten nur Datenpunkte			im Schaltschrank montiert
		WRG-Regelung bestehend aus :			
1	Pcs	Rotorregelgerät MicroMax			am Gerät montiert
1		FEHLT FEHLT			lose geliefert
1	Pcs	Rotationswärmetauschersteuerung			im Schaltschrank montiert
1	Psch.	Verdrahtung Steuerung			am Gerät montiert
1	Psch.	Verdrahtung Last 230V			am Gerät montiert
		Schaltschrank bestehend aus :			
1	Pcs	KaControl Schaltschrank IP65 inkl. LCD-Display Typ: 3240161			am Gerät montiert

Weights specified as tare weight / Instanced manufactures are exemplary
 Max. service pressure for copper / aluminium water heat exchanger 16 bar
 Galvanized means coil-coated / V2A means material no. 1.4301
 The surface of galvanized sheet metal may have different structures. For this reason we recommend usage of coated sheet metal
 Aforementioned color specifications are subject to the usual color tolerances
 Including of baseframe / feet is recommended because of better ventilation of casing ground
 The air exhaust data of the cooler do not refer to unit exhaust but on the state of the cooled air directly behind the cooler.
 By units for outside installation it is necessary to equip the tub expiries and siphons with a protection against frost
 for internal piping in the unit on site breaking through the unit housing is assigned to customers charge
 cabling from one delivery section to the other has to be realized on site by customer
 abzustimmen und mit Rückgabe der freigegebenen Auftragsbestätigung inkl. Datenblätter und Geräteskizzen zu benen
 clarified with NOVA and must be designated with return of the released order confirmation including unit data sheets and drawings. Otherwise the housing break through cannot be carried out by NOVA.
 Obliging data are to be taken only from the data sheets of the order confirmation.
 Base factors: Air S.G. 1.2 kg / m³, temperature 20 ° C
 RLT guideline 01 in actual edition is recommended as state-of-the-art
 Info by internet at www.rlt-geraete.de
 Letter symbol for material execution : FEZ=galvanized / FEZL=galvanized painted / FEZC=galvanized coated
 V2A=stainless steel mat.-no. 1.4301 / PP=Polypropylen
 MB= Modelbox

Accuracy Class 1

Flow + / - 2.5%, increase in pressure + / - 2.5%, driving power + / - 3% efficiency + / - 2%

Accuracy Class 2

Flow + / - 5% increase in pressure + / - 5%, drive + / - 8% efficiency + / - 5%

The measurements for the accuracy classes are test measurements

The parameters in the data sheets are only valid for the given air flow volumes.

Settings and control sequences has to be changed accordingly if the unit is running with other air flow volumes.

For design details see NOVA union catalogue rev. 10/2010

As far as not specified in the fan technical data the frequency converter (also for motors with integrated frequency converter) is not preset before delivery.

Note: The specified nom. airflow does not take into account the leakage from the casing and the heat recovery unit. These must already be taken into account during the planning stage.

We point out that air-conditioning and ventilation units must comply currently Buildings Energy Act (GEG) and applicable prescriptions (SFP 4 or better and heat recovery min. class H3 at 4000 m³/h and more).

.

Delivery from 01.01.2016 / 01.01.2018 only possible if the requirements acc. 1253/2014/EC (ERP 2016/2018) are met

Do not pass documents on to third parties

The requirements from the lightning protection concept for the electrical installation of the AHU must be specified according to DIN EN 62305-4 (VDE 0185-305-4):2017-02. The AHU including the operating equipment must be installed in lightning protection area LBZ 0B.

If required, the sup. and exh. air duct system must be fitted with airtight dampers on the building side to prevent the backflow of humid room air when system standstill (Condensate formation during cooldown).

In the case of counterflows, cross counterflows and heat wheels, leakages between supply air and extract air or outside air and exhaust air are due to the design.

Notes on control / refrigeratio

1. the calculation is based on the assumption that the work during regular working hours will be carried out by (Mon-Fri 7:00 - 16:30 o'clock, without holidays) with a single arrival.
2. Our collectively agreed surcharges shall apply to work outside regular working hours.
3. for commissioning, the plant must be completed, ready for operation and freely accessible.
4. the place of installation and the working area must be freely accessible over the entire length in accordance with the dimensions specified by us.
5. all necessary media (e.g. water, voltage, etc.) must be available in sufficient quantity.
The heating system must be filled, vented and all valves open.
6. for commissioning, an electrician on site is required for functional testing, who knows the installation positions as well as the functional white of components supplied on site.
This must be completely available to our fitter.
7. excess cable lengths (so-called anxiety meters) of cables laid on site at our switch cabinet must be sensibly selected and labelled.
8. the control cabinet supply must be checked for correct voltage, fuse protection and clockwise rotating field.
A fully completed and signed VDE 0100 measurement protocol must be available.

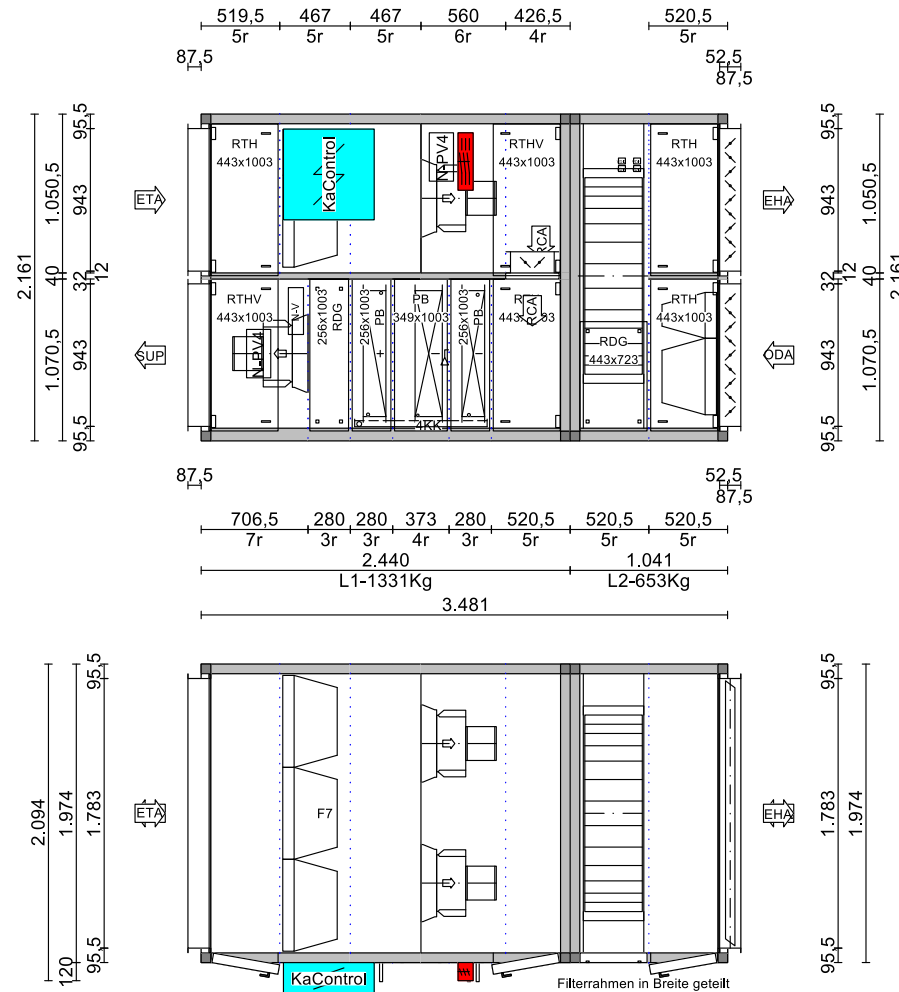
If these conditions are not fulfilled, we are forced to charge an additional journey and corresponding costs for the additional expenditure.

Additional services that are not included in the scope of the order will be charged at the current NOVA rates.

The offer is based on the currently valid standards and general rules of technology.
Factory standards of the operator are not considered. (Unless we explicitly state so.)

The following is not included in our scope of delivery and services:

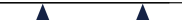
1. attaching counter flanges, screws and gaskets of the control valves as well as register connections, etc.
2. setting of valves, butterfly valves, flowmeters and water side connection.
3. setting of thermowells, sleeves and installation of encoders in on-site pipelines.
4. masonry work, breakthroughs, caulking and opening and closing of false ceilings and raised floors.
5. placing ladders and scaffolding above 2.0 m working height.
(especially for refrigeration installation for the transport of gas cylinders)
6. provision of conveying facilities such as cranes, pulley blocks, forklifts, lift trucks or elevators
7. measuring the air volumes and adjusting the external ventilation ducts.
8. The possible regulation of the air or pressure quantities must be defined in advance by the ventilation company.
9. setting of external sensors and actuators incl. Wiring
10. connection incl. data point test of our MSR technology to an on-site BMS.
(Unless we explicitly point this out.)
11. insulation of refrigerant pipes other than suction gas pipes. The suction gas line is insulated with Armaflex.
Metal protection or plastic sheathing must be provided by the customer.
12. vibration damped mounting of external capacitors or condensing units is durch den Anlagenbauer.
13. fixing points for external refrigerant lines (e.g. for external condensers) must be provided by the customer.
(for installation on flat roofs with plastic film, gravel fill or similar)
14. In the case of control cabinets supplied loose, the wiring is laid on site by the electrical trade in accordance with the NOVA cable pull list. The cross-sections and the type of cable must be checked and, if necessary, optimise installation according to the type of installation, cable length, cable heap and cable screening.
15. Necessary measurements according to VDE must be carried out by the customer.
16. all lines installed by the customer must be marked according to the NOVA cable pull list and inserted into the respective equipment. If terminal boxes are required for the wiring, these are included in the Leistungsumfang des Gewerk Elektro enthalten.
17. all field devices supplied by the customer (e.g. volume flow controllers, fire dampers, pumps, fans, external signals, control elements of control loops provided by the customer, etc.) must be connected to the field device completely by the customer's electrical trade with a note in the NOVA circuit diagram.
We only connect to the switch cabinet.
18. the commissioning and adjustment of field devices supplied by the customer (e.g. volume flow controllers, external fans, air inlets and outlets, cooling ceilings, wall heatings, etc.) shall be carried out by the respective supplier on site.
19. The lines withdrawn for delivery in delivery units must be laid back to the switch cabinet by the system builder in the course of device assembly.



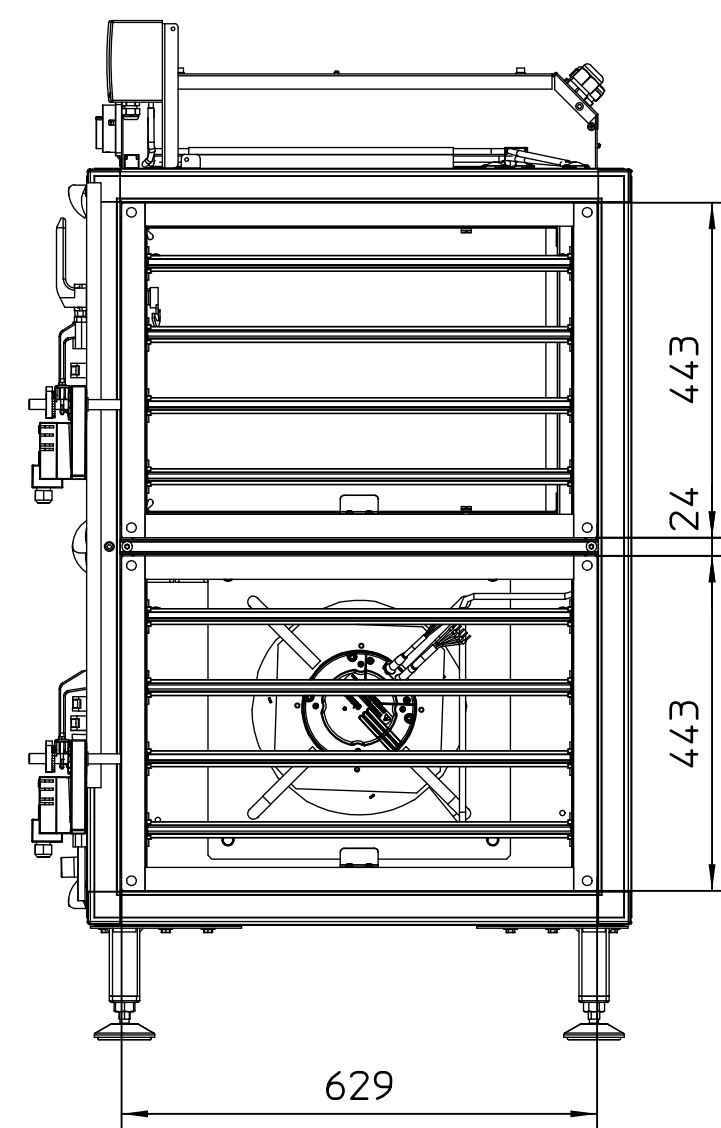
Light switch	AU	Fresh air	RDG	Revision cover with handle
Maintenance switch	SUP	Supply air	PB	Panel with bracket lock
Lighting	AB	Exhaust air	RTB	Revision door with bracket lock
Air direction	FO	waste air	RTH	Revision door with lever lock
			RTHD	Revision door with double lever lock
			RTHV	Revision door with lever and twist-on lock

Essential for base frame design is only the details sketch attached to the order confirmation
 Dimensions for fan outlet +/- 30 mm
 Flanges for air duct joints 30 mm SBM frame
 Informations reg. transport units as Lx (x=no. of transport unit), plate and rotating heat exchanger always 1 unit, with splitted heat wheel also casing is splitted in 2 delivery sections

Graphic representation of doors only symbolic, opening direction can be deviating left or right

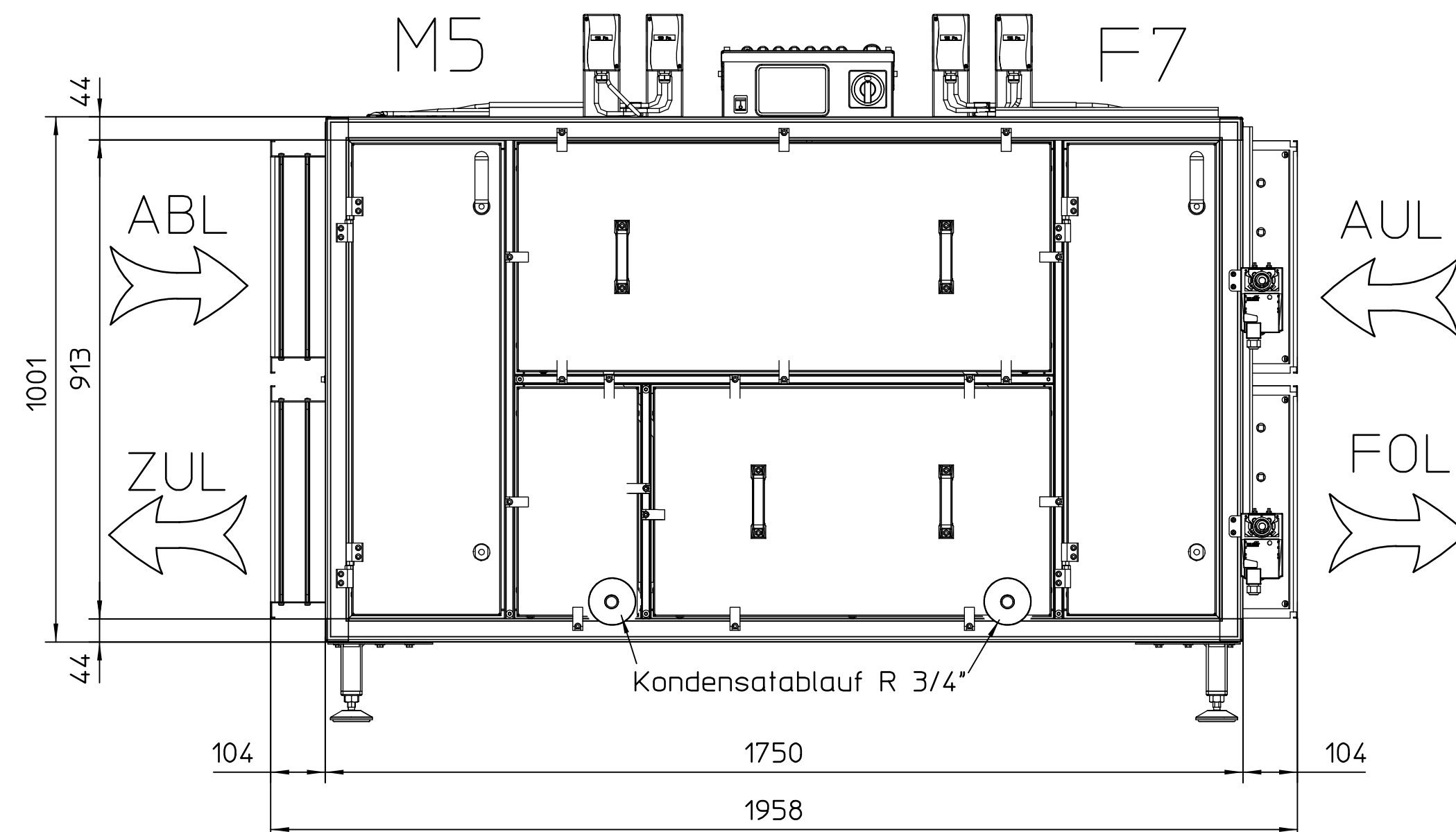
Preliminary	checked and approved	Index	Date	Change	Client: Kampmann GmbH	Proj. No.: 24-03730		 Genau mein Klima.
			25.10.2022		Location: Lingen	Serial no.: 13G		
					Com.: Lidl UK 2024	Position:		
					Instal.: Konzept International - Type 13	Quantity: 1	Drawn by:	Date: 17.09.2024
					Type: K11/20-150/3/K3/RT/MSR scale: 1:50	Drw. no.:	Index	Weight: 1985 kg

APPENDIX C: BOH AHU02 TECHNICAL DATA

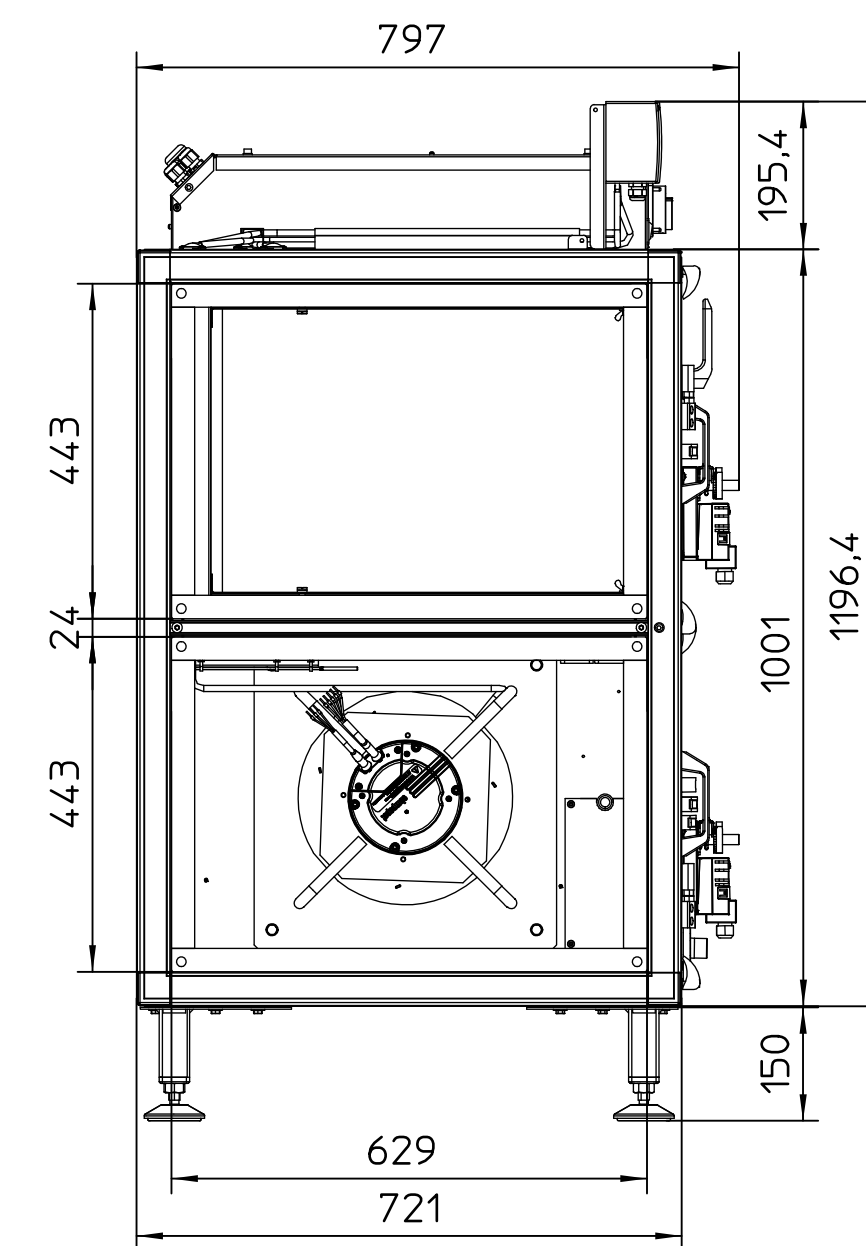


SA rechts1

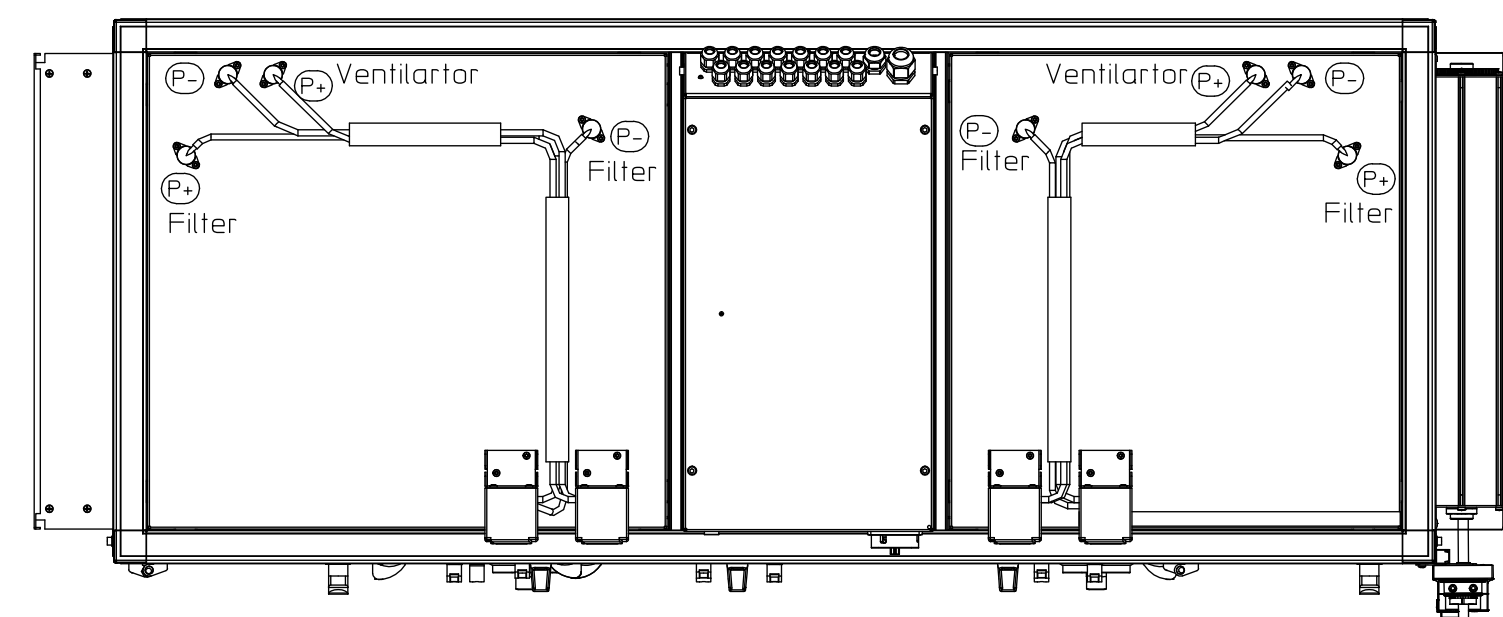
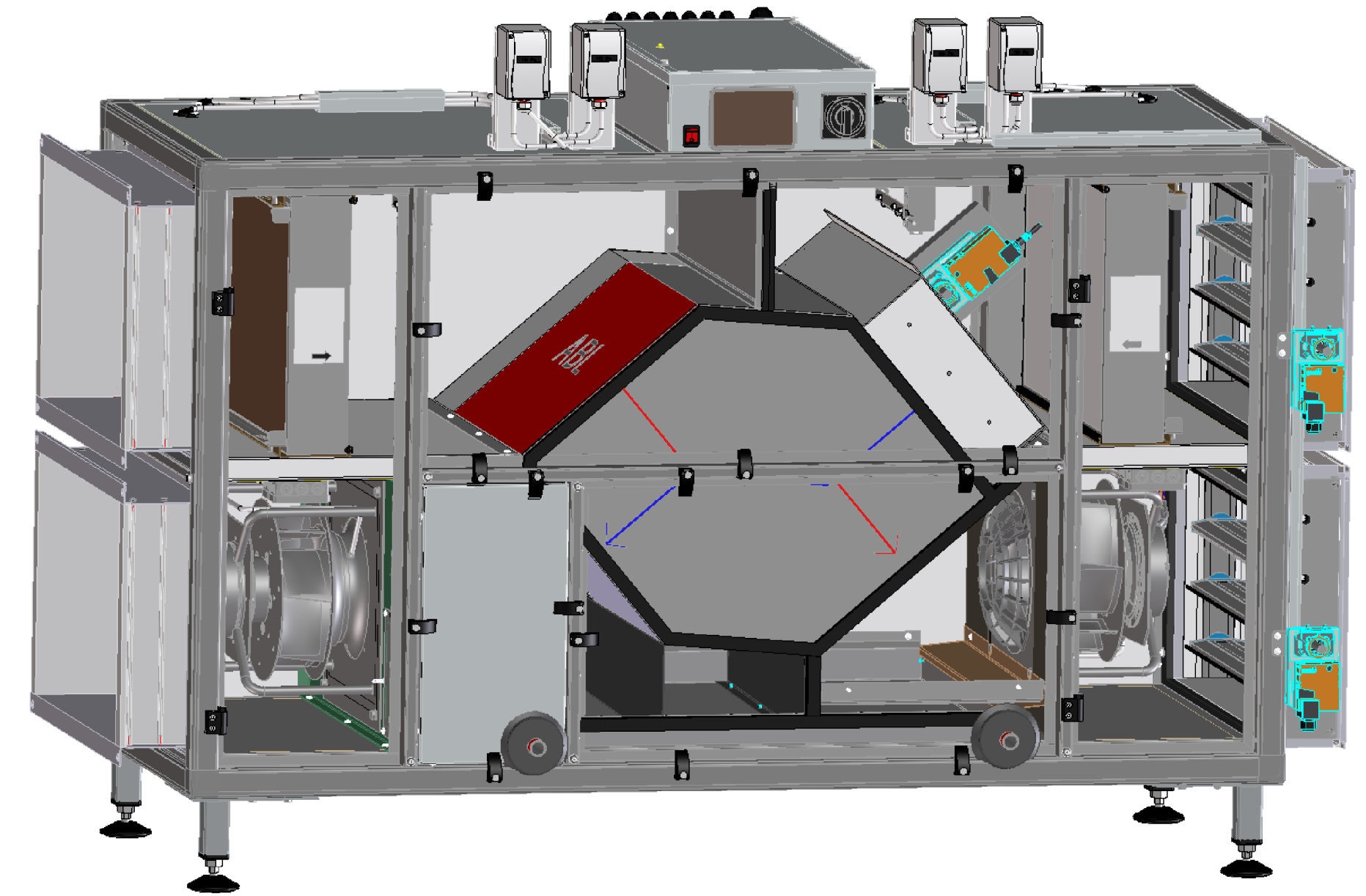
Rahmenabmessungen
Aussen 629x443
Innen 567x381



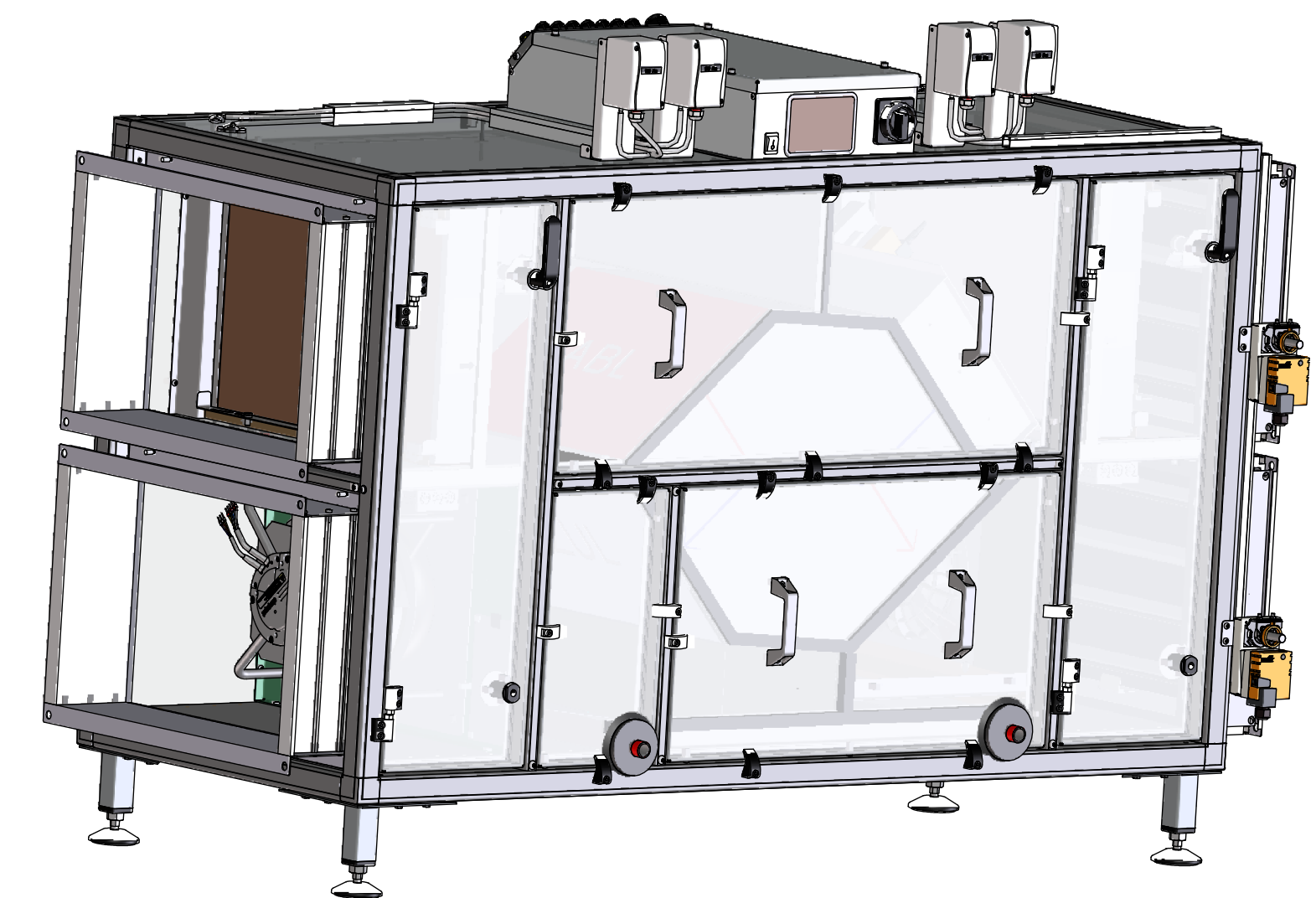
Vorderansicht1



SA links1



Draufsicht1



Allg.Ansicht1

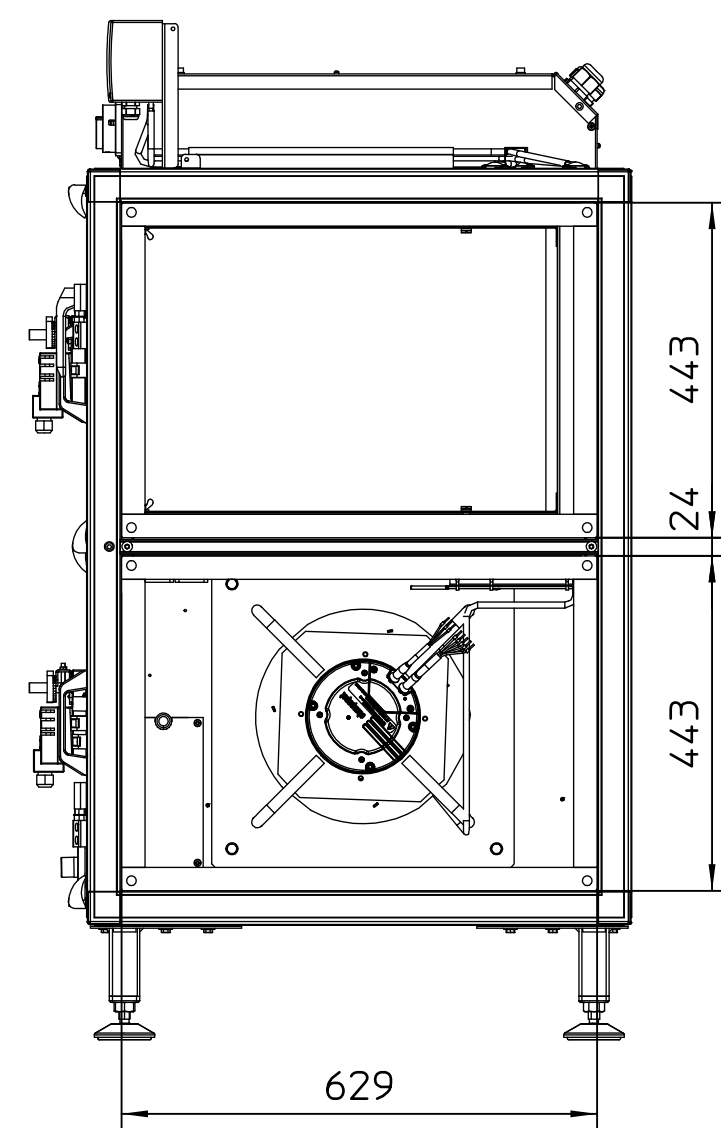
KaControl MC

1500m³/h

ABL-LI

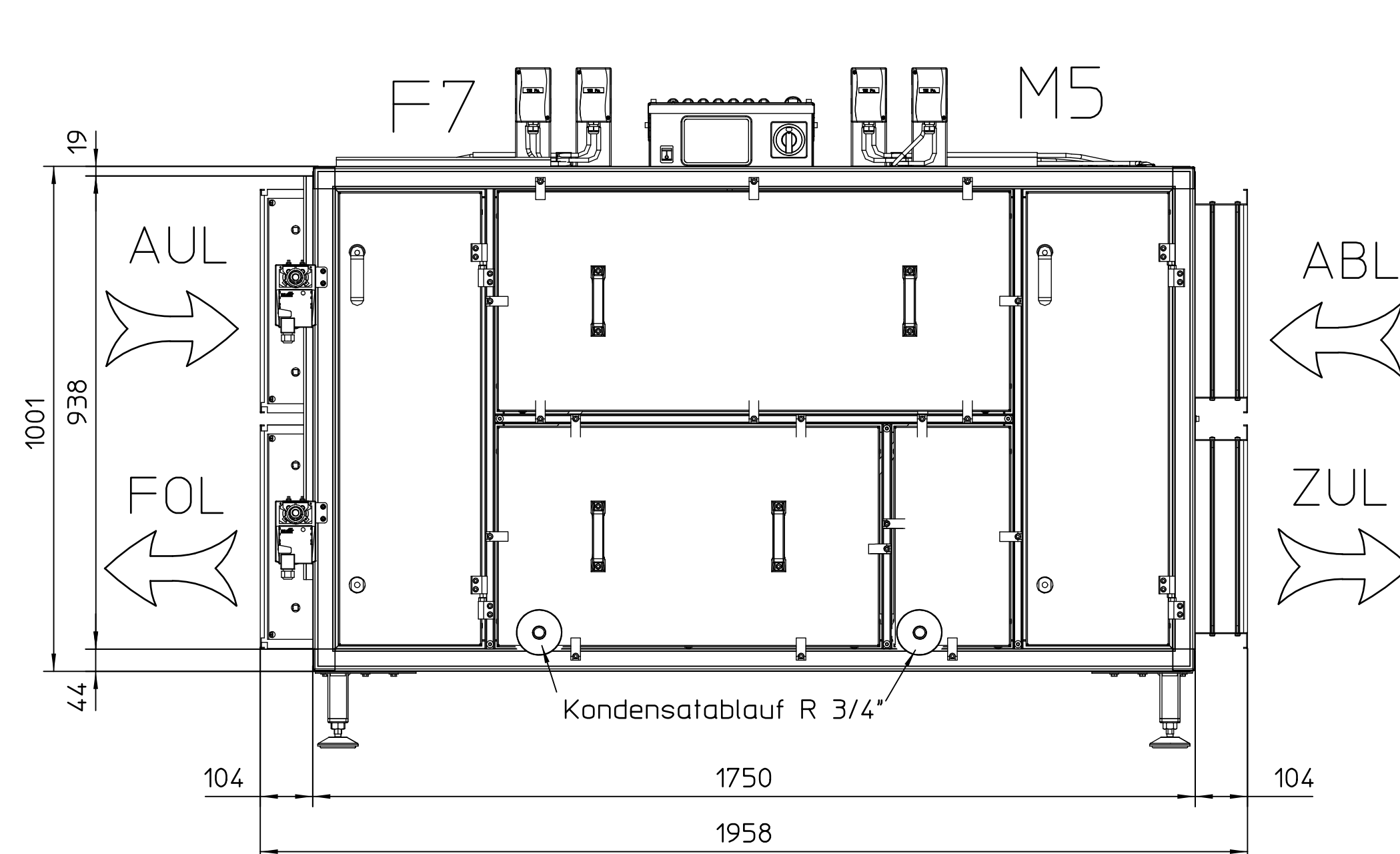
Gehäuse von aussen RAL 7035

Anzahl	Stamm-Nr.	Index	Anderung	Name	Datum
Stamm-Nr.	Folge-Nr.				
Projekt-Nr.	Erst: 010223 Ander: 010223 Gepr.: 010223 STL-Nr.	Format 1 462 1832147 925040 1	SAP-Nr. 1832147 925040 1	CAD-Nr. 925040 1	Vers. 1
	Freig.	Werkstoff M 1:10 Abm.	Zul.Abw. ISO 2768-m	Revision 1	Bl. 1
		KLG BG15 horiz. ABL-LI, KaC-MC 1001 x 1750 x 721KaControl-MC, KaCompact KG			

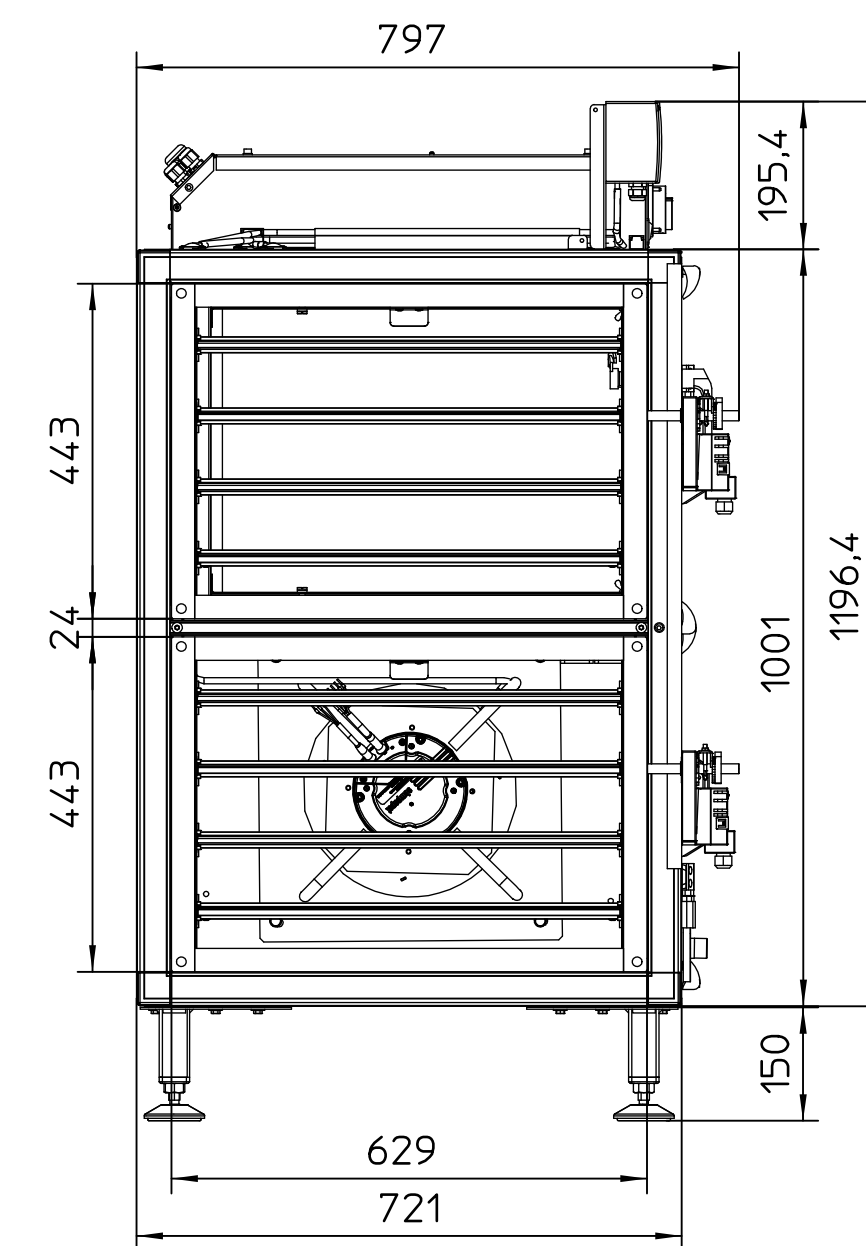


SA rechts1

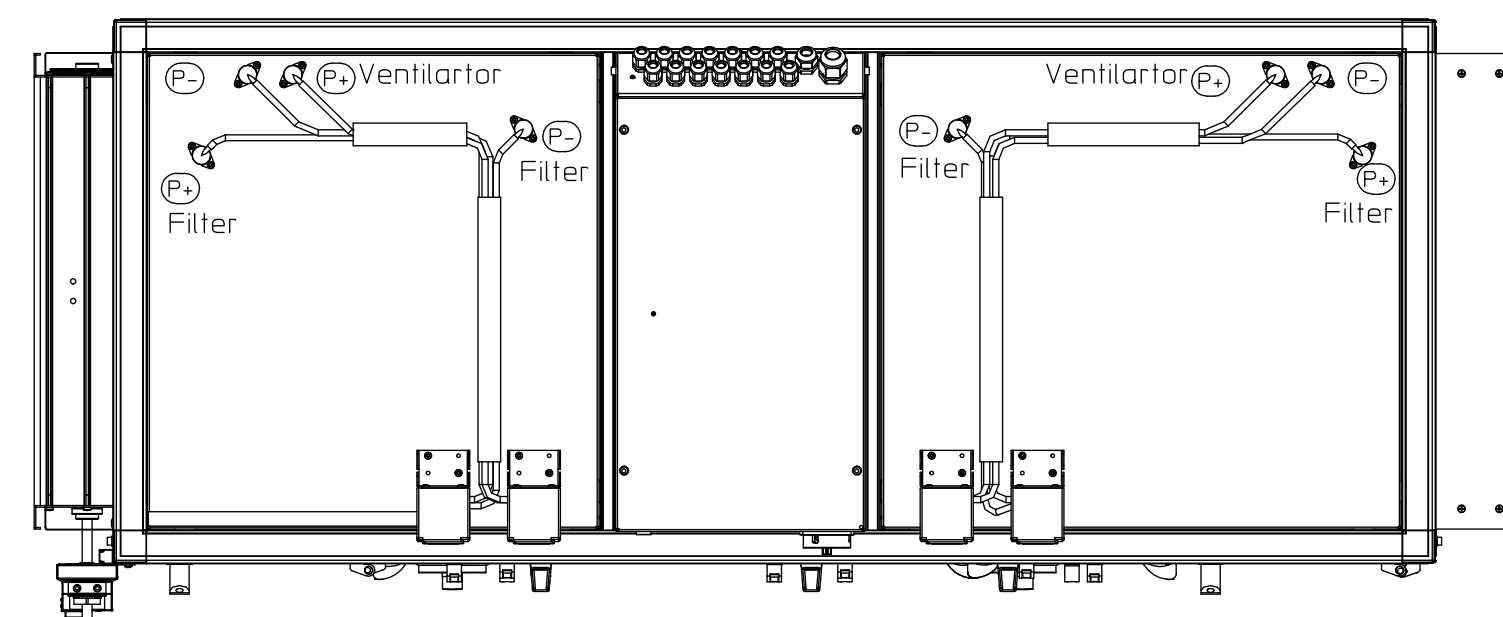
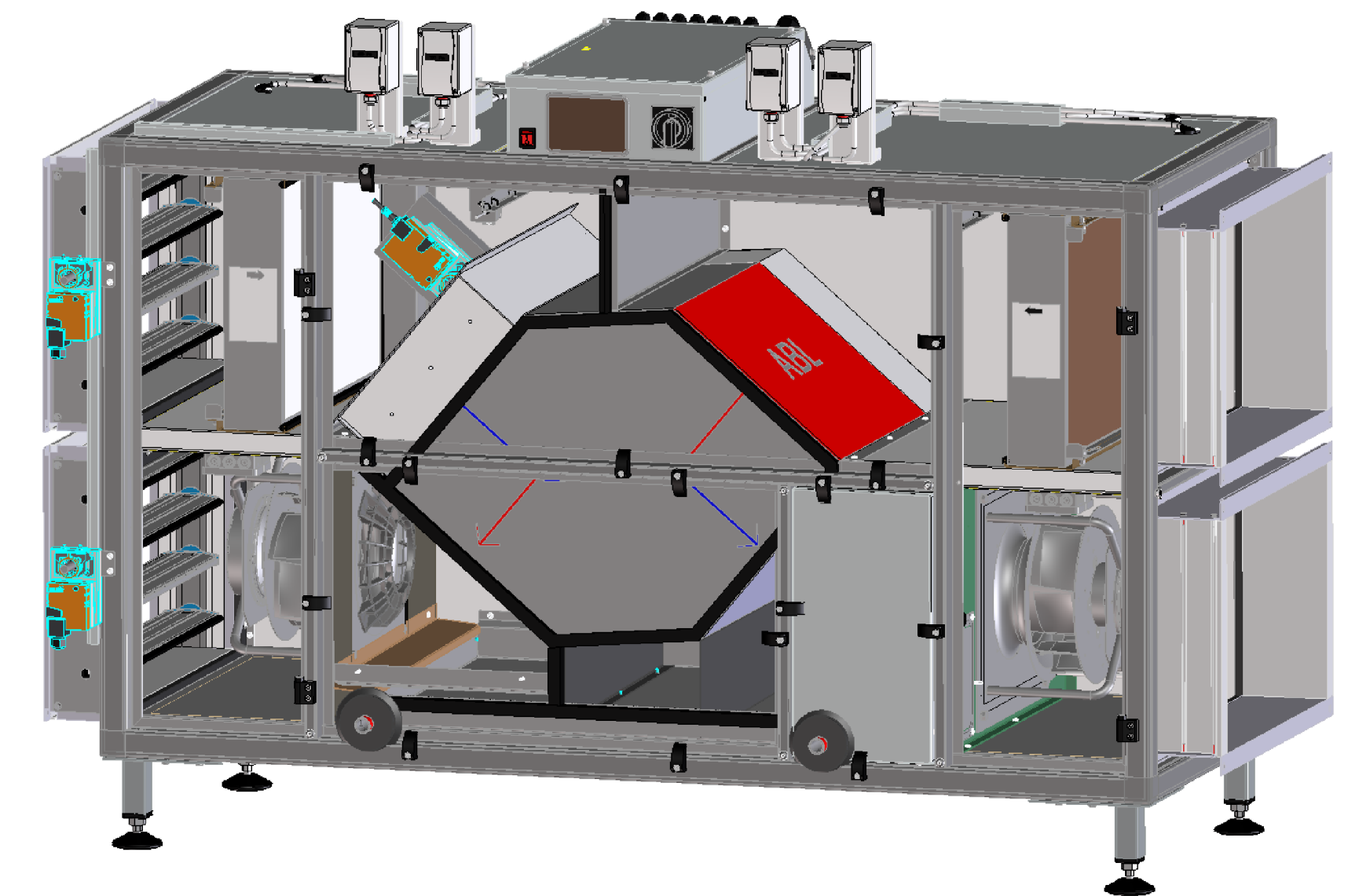
Rahmenabmessungen
Aussen 629x443
Innen 567x381



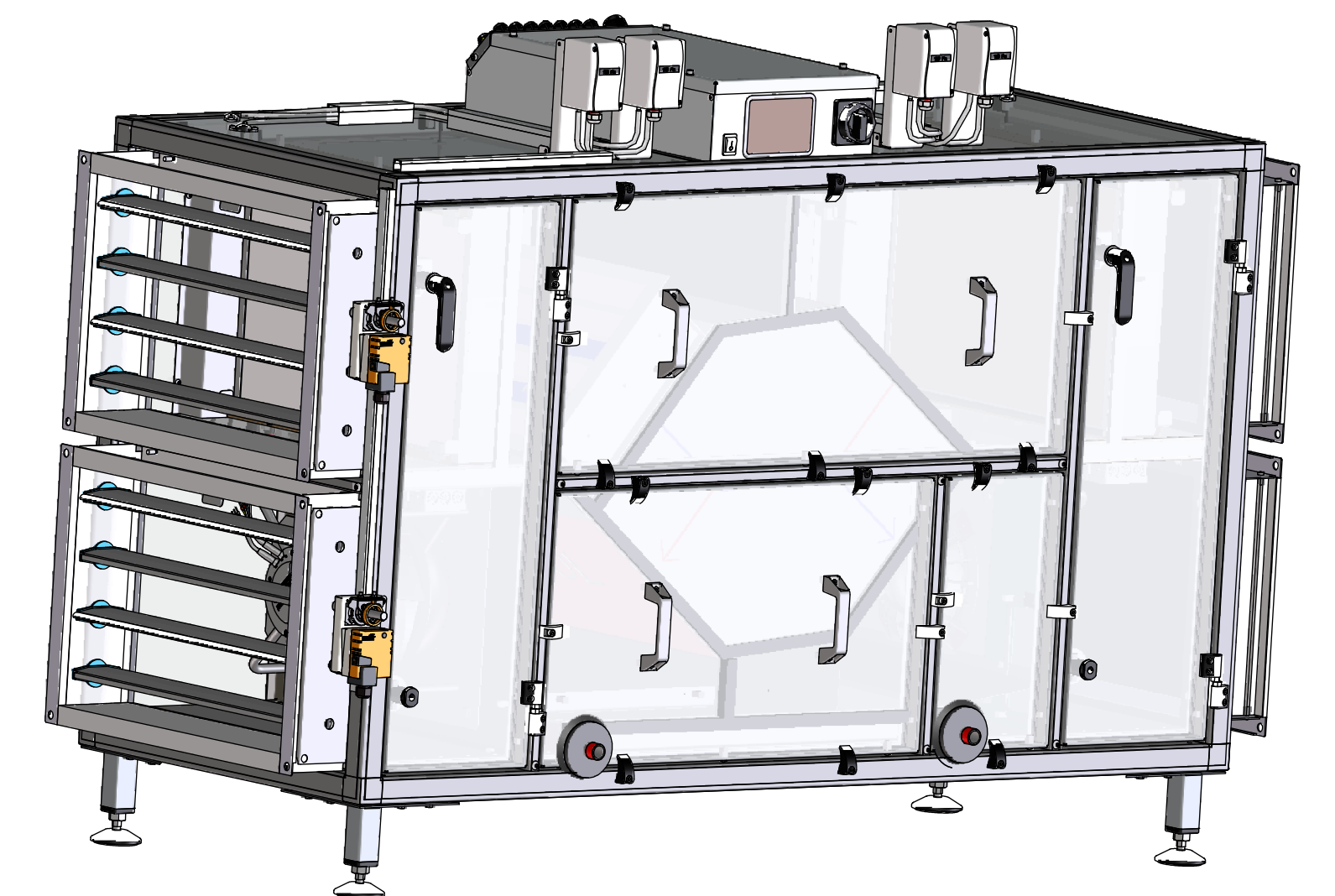
Vorderansicht1



SA links1



Draufsicht1



Allg.Ansicht1

KaControl MC

1500m³/h

ABL-RE

Gehäuse von aussen RAL 7035

Anzahl							
Stamm-Nr.	Stammteil-Nr. Folge-Nr.	 49511 Lingen Tel. 0591-7108-0	Index	Anderung		Name	Datum
Projekt-Nr.	Erst, 010223 mjosch		Format	Art-Gr.	SAP-Nr.	CAD-Nr.	Vers.
Auftr.-Nr.	Änder, 010223 mjosch		1	462	1832761	925078	1
STL-Nr.	Gepr., 010223 mjosch		Werkstoff	Nr.			
			M 1:10	Abm.	Zul.Abw. ISO 2768-m		
5	Freig. BG15 horiz. ABL-RE, KaC-MC 1001 x 1750 x 721, KaControl-MC, KaCompact KG						
							Revision 1 Bl.

Product description

Kampmann KaCompact KG compact ventilation unit with heat recovery for indoor installation. Intended for use in conjunction with downstream, decentralised terminal units for independent, extremely energy-saving operation with separate ventilation and temperature control or with built-in LPHW reheater.

The unit is specifically designed to minimise the operating weight. Single-section housing made of self-supporting steel profiles with 40 mm sheet steel panels with bonded, web-oriented mineral fibre, outer painted RAL 7035 and inner galvanised. Fully accessible from the operator's side for fast maintenance.

Supply air and extract air fan, energy-saving EC design with backward-tilted impeller for low-noise and efficient operation, designed to comply with DIN VDE 0530, Part 1, 7/91 in thermal class F, IP class IP54 according to EN 60529. Operating voltage 400 V / 3-phase / 50 Hz control input via 0-10 V or 4 - 20 mA. Includes motor current limit via fault output.

Blockage protection, soft start, RS485 Modbus interface, overtemperature protection and phase failure detection integrated.

The fan unit is dynamically balanced to G 6.3 in accordance with DIN ISO 1940.

Heat recovery by means of a salt water-resistant aluminium plate heat exchanger, counterflow design.

The compact filter is inserted air-tight into the filter frame by means of clamping elements. Hygiene-compliant in accordance with VDI 6022 in conjunction with a differential pressure display.

Louvres positioned in the outside air and exhaust air consist of 2 mm thick hollow aluminium profiles, arranged opposite each other with plastic cogs.

Connection of the on-site air ducts with a sound-decoupled connecting frame (30 mm connection profile).

Repair switch accessible from outside for voltage activation of the fans.

Stand-alone control fitted and wired to the KaCompact KG.

Scope of ventilation applications: supply air, extract air and heat recovery. Heating or cooling by downstream coils or downstream terminal units.

Hardware: Metal housing with screw-on cover, microprocessor control including integral control unit, dimensions WxHxD: 326 x 165 x 776 mm.

Sensors and actuators fitted and wired in the KaCompact KG:

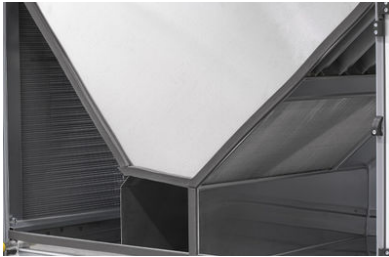
Artikelnummer: 462015310010M3

- filter differential pressure measurement
- volumetric flow measurement
- Temperature sensor
- servo motors for louvre slats and bypass damper
- Supply air and extract air fan

Connection options: outside and room temperature sensors, air quality sensor, external operating unit, 6 relay outputs as a changeover contact for the control of the hydraulics or for messages to external systems (parametrisable functions). Depending on the system configuration, up to 6 multifunctional inputs for external access (parametrisable functions). Functions (software): timer program, back-up mode, either supply temperature control or exhaust air (room) air supply air temperature cascade, either speed control or trench pressure control, air quality control, free night cooling, heating and cooling power function, summer-winter changeover, filter monitoring, secondary air group control, switch-off via potential-free normally closed contact (BMA), cold smoke extraction via potential-free normally open contact, sensor monitoring, alarm management.

Model size	15
Unit design	without register
air duct connection	horizontal
extract air side	left
Indoor installation	
Weight	kg 249

Detailed views



- Efficient heat recovery by means of aluminium heat exchangers operating on a counter-current principle
- Bypass for thermal bypass, e.g. for cooling during the night in summer
- Fully visible for maintenance and cleaning purposes



- EC fan unit with high-output, direct-driven radial impeller
- Fan can be directly operated without frequency converter, in a continuously variable and energy-saving manner



- easy-to-remove compact filter within a circumferential frame
- simple filter change by loosening the clamp rails
- complies with the hygiene requirements of VDI 6022
- filter class: ISO ePM10 55% for extract air and ISO ePM1 70% for supply air



- single-section KaCompact KG housing, consisting of steel profiles and double-walled and insulated steel panels
- made of galvanised metal, externally coated and fully bonded for maximum corrosion protection



- Generously sized housing openings for ease of access and simple filter change
- Easy-open service hatch with strap closure for ease of access to all components

KaCompact KG

Artikelnummer: 462015310010M3

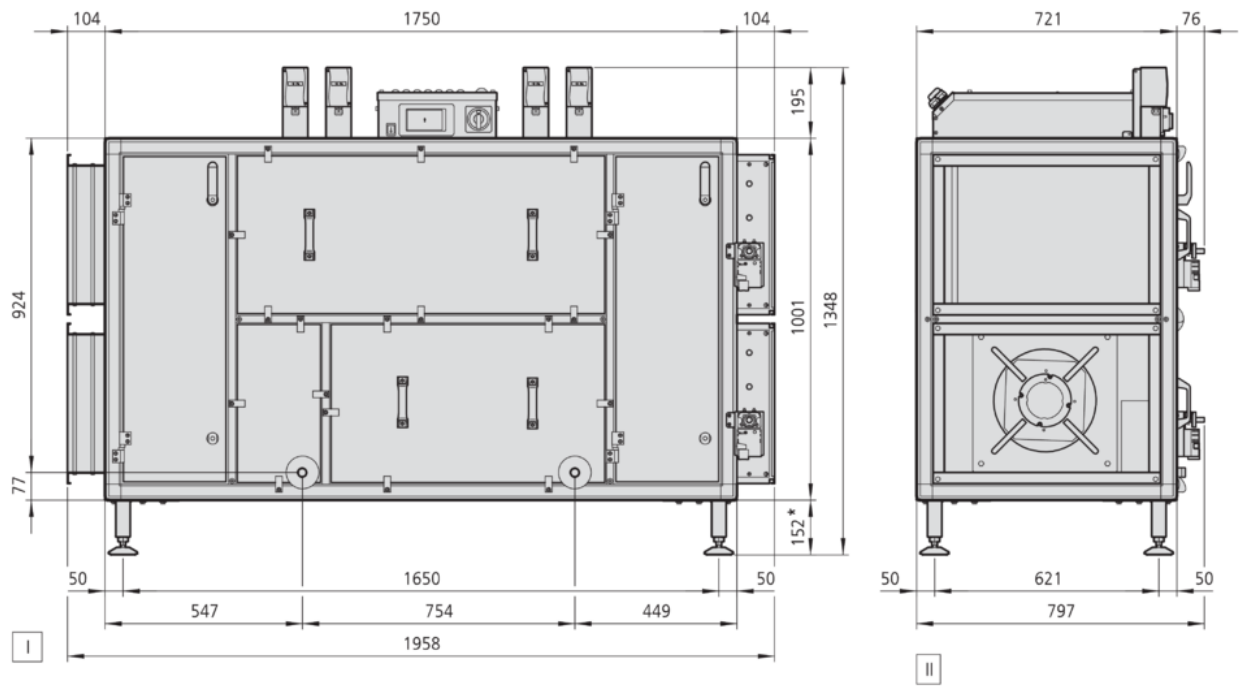


- stand-alone control version
- unit is operational once the supply voltage has been connected
- volume flow control is activated according to the timer program
- expansion options
-
- system control version
- interaction with secondary air units
- connection to building control technology
- switch-over of the generator medium
-
- Also available without control on the terminal strip.

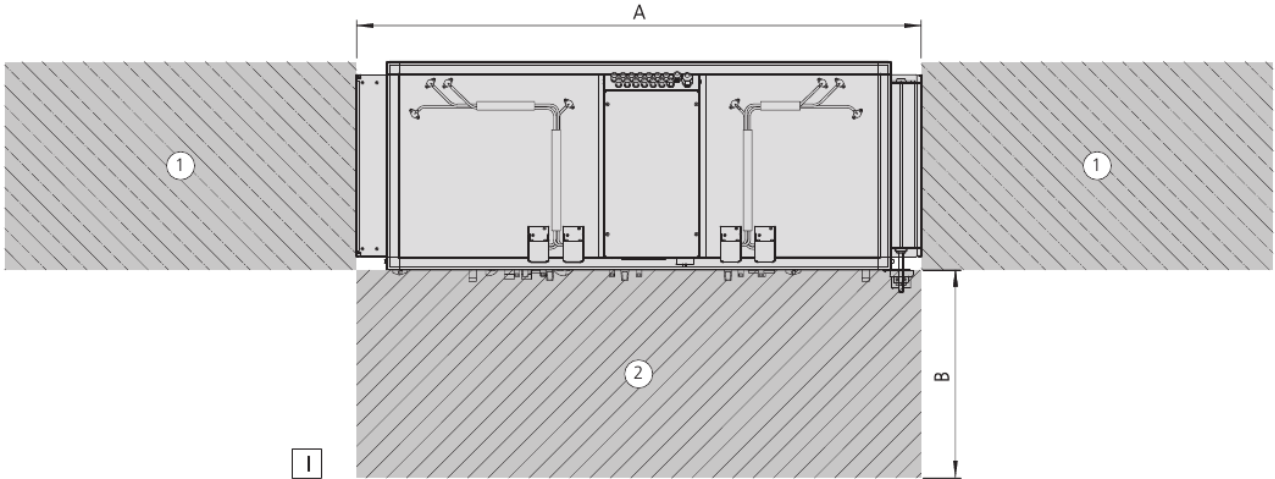
Design information



Technical drawing



installation drawing



Calculation results

AIR FLOW	M ³ /H	1210	1500	1250	1000	750
External pressure	Pa	190	300	300	300	300
control voltage supply air	V	7	8.9	7.8	6.9	6.3
control voltage extract air	V	6.7	8.5	7.5	6.8	6.1
Power consumption	W	491	936	660	474	348
Kühlfall (Sommer)						
degree of heat recovery, wet	%	78	77	78	79	80
degree of heat recovery, dry	%	78	77	78	79	80
heat recovery output	W	4484	5481	4622	3750	2861
heat recovery output, sensitive	W	4484	5481	4622	3750	2861
heat recovery output, latent	W	0	0	0	0	0
heat recovery condensate volume	l/h	0	0	0	0	0
Supply air temperature	°C	26.4	26.6	26.4	26.3	26.1
extract air temperature after heat recovery	°C	34.8	34.6	34.8	34.9	35.1
outside air temperature	°C	38				
outside air humidity	%	50				
extract air temperature	°C	23				
extract air humidity	%	55				
Heizfall (Winter)						
degree of heat recovery, wet	%	79	78	79	80	82
degree of heat recovery, dry	%	78	76	78	79	80
heat recovery output	W	8126	9943	8378	6790	5173
heat recovery output, sensitive	W	6885	8307	7084	5828	4530

AIR FLOW	M ³ /H	1210	1500	1250	1000	750
heat recovery output, latent	W	1240	1636	1294	962	643
heat recovery condensate volume	l/h	1.8	2.4	1.9	1.4	0.9
Supply air temperature	°C	14.7	14.4	14.7	15	15.3
extract air temperature after heat recovery	°C	3.9	4.3	3.9	3.5	2.9
outside air temperature	°C	-5				
outside air humidity	%	90				
extract air temperature	°C	20				
extract air humidity	%	40				
Sound power leveloutside air	dB(A)	56	57	57	56	54
Sound power levelsupply air	dB(A)	72	77	75	72	69
Sound power levelextract air	dB(A)	58	61	61	59	58
Sound power levelexhaust air	dB(A)	70	75	72	69	66
Sound power levelhousing	dB(A)	51	56	53	50	47
housing sound pressure level measured at a distance of 1 m	dB(A)	43	48	45	42	39

octaves

AIR FLOW	M³/H	1210	1500	1250	1000	750
Outdoor air						
Total	dB(A)	56	57	56	55	54
63 Hz	dB	54	59	57	55	54
125 Hz	dB	50	52	52	50	49
250 Hz	dB	45	52	47	44	41
500 Hz	dB	50	55	52	49	47
1000 Hz	dB	54	53	54	54	53
2000 Hz	dB	47	50	49	46	44
4000 Hz	dB	38	44	40	36	33
8000 Hz	dB	30	37	32	28	26
Extract air						
Total	dB(A)	58	61	60	59	57
63 Hz	dB	54	58	57	55	54
125 Hz	dB	49	53	52	51	49
250 Hz	dB	45	53	48	45	43
500 Hz	dB	51	56	54	51	49
1000 Hz	dB	56	57	58	58	56
2000 Hz	dB	50	55	54	51	49
4000 Hz	dB	40	48	44	41	38
8000 Hz	dB	33	43	38	35	32
Exhaust air						
Total	dB(A)	69	74	71	68	66
63 Hz	dB	59	64	61	59	57
125 Hz	dB	63	65	64	62	61
250 Hz	dB	62	68	64	61	59
500 Hz	dB	63	67	64	62	59
1000 Hz	dB	64	69	66	64	61
2000 Hz	dB	65	70	68	65	62
4000 Hz	dB	58	65	61	58	55
8000 Hz	dB	54	63	58	53	50
Supply air						
Total	dB(A)	71	77	74	71	68
63 Hz	dB	62	66	64	62	61

AIR FLOW	M³/H	1210	1500	1250	1000	750
125 Hz	dB	65	65	65	65	64
250 Hz	dB	65	71	68	64	61
500 Hz	dB	64	69	66	64	61
1000 Hz	dB	66	71	69	66	63
2000 Hz	dB	67	72	70	67	64
4000 Hz	dB	62	67	65	61	58
8000 Hz	dB	59	67	63	59	55
Housing						
Total	dB(A)	50	55	52	50	47
63 Hz	dB	51	55	53	51	50
125 Hz	dB	53	54	54	53	52
250 Hz	dB	51	57	54	50	48
500 Hz	dB	47	52	49	46	44
1000 Hz	dB	47	52	49	46	44
2000 Hz	dB	41	46	43	40	38
4000 Hz	dB	26	32	29	26	22
8000 Hz	dB	20	29	24	20	16

14-02-2024 - Technische Änderungen vorbehalten

APPENDIX D: DAIKIN VRV HEAT PUMP TECHNICAL DATA (SCOP AND SEER)



VRV Selection

Project Report

Report details

Produced on: 5/16/2025

Application version: 2025.4.14.1

Project details

Project name: LIDL Blackmoorfoot

Solution name: DDA AC req doc 14.05.25

Client Name: Dave Dickinson Associates

Customer reference:

Quotation reference:

Project number: 1653439/2048950

The output of the VRV Xpress software is based on Daikin-genuine capacity tables that relate to the Japanese Industry Standard. The VRV Xpress software provides a selection of outdoor and indoor units with optimal efficiency to fit cooling and heating load requirements.



Material list

Model	Quantity	Description
RXYLQ12T	2	RXYLQ-T (VRV IV Optimized for Heating)
RXYSQ4TV9	1	RXYSQ-TV9 (VRV IV Mini Standard 1 phase)
RXYSQ8TY1	1	RXYSQ-TY1 (VRV IV Mini Large 3 phase)
FXAQ20A	1	FXAQ-A - Wall mounted unit
FXFQ40B	4	FXFQ-B - Round Flow Round flow cassette
FXZQ25A	1	FXZQ-A - Fully flat cassette
FXZQ50A	1	FXZQ-A - Fully flat cassette
EKEXVA140	4	Expansion valve kit for air handling applications
KHRQ22M20T	4	Refnet branch piping kit
KHRQ22M29T9	1	Refnet branch piping kit
KHRQ22M64T	2	Refnet branch piping kit
DCM601B51	1	Intelligent Touch Manager
DMS504B51	1	LonWorks Networks Compatible Gateway - up to 64 units can be connected per DMS-IF
BRC1H52W	7	Remote controller (white)
BYCQ140E	4	Standard decoration panel
BYFQ60CW	2	New decoration panel (white)
EKEACB	4	Unified control box
KRCS01-4	1	Remote sensor
KRCS01-7B	4	External wired temperature sensor

Piping	Liquid	Suction	Total
	m	m	m
1/4"	46.0	0.0	46.0
3/8"	151.0	0.0	151.0
1/2"	96.0	46.0	142.0
5/8"	0.0	46.0	46.0
3/4"	0.0	105.0	105.0
1 1/8"	0.0	96.0	96.0



Indoor unit details

Table of abbreviations

Abbreviation	Description
Name	Logical name of the device
FCU	Device model name
Tmp C	Indoor conditions in cooling
Rq TC	Required total cooling capacity
Rv TC	Revised total cooling capacity (asked from outdoor)
Max TC	Available total cooling capacity
Rq SC	Required sensible cooling capacity
Tevap	Evaporating temperature of indoor unit coil
Tdis C	Indoor unit discharge air temperature in cooling based on required capacities
Max SC	Available sensible cooling capacity
PIC	Power input in cooling mode @ 50Hz
Tmp H	Indoor temperature in heating
Rq HC	Required heating capacity
Max HC	Available heating capacity
Tdis H	Indoor unit discharge air temperature in heating based on required capacities
PIH	Power input in heating mode @ 50Hz
Sound	Sound pressure level low and high
PS	Power supply (voltage and phases)
MCA	Minimum Circuit Amps
MFA	Maximum Fuse Amps
WxHxD	WidthxHeightxD
Weight	Weight of the device
Min coil	Minimum coil volume
Max coil	Maximum coil volume
Air Flow Rate	Air Flow Rate
Mrel	Maximum Refrigerant Amount that can be released. Equals the total refrigerant charge in the system when there are no shut-off valves.

CU- 1 Warehouse - RXYSQ8TY1

Capacity data at conditions and connection ratio (80) as entered

Name	FCU	Cooling							
		Tmp C	Rv TC	Max TC	Rq SC	Tevap	Tdis C	Max SC	PIC
		°C (DBT/RH)	kW	kW	kW	°C	°C	kW	kW
AC- 1	FXFQ40B	23.0/50%	3.6	3.7	2.7	6.0	14.1	3.0	0.018
AC- 2	FXFQ40B	23.0/50%	3.6	3.7	2.7	6.0	14.1	3.0	0.018
AC- 3	FXFQ40B	23.0/50%	3.6	3.7	2.7	6.0	14.1	3.0	0.018
AC- 4	FXFQ40B	23.0/50%	3.6	3.7	2.7	6.0	14.1	3.0	0.018

Name	FCU	Heating					Air Flow Rate
		Tmp H	Rq HC	Max HC	Tdis H	PIH	
		°C	kW	kW	°C	kW	l/s
AC- 1	FXFQ40B	17.0	1.7	5.2	22.6	0.018	246.67
AC- 2	FXFQ40B	17.0	1.7	5.2	22.6	0.018	246.67
AC- 3	FXFQ40B	17.0	2.4	5.2	24.9	0.018	246.67
AC- 4	FXFQ40B	17.0	2.4	5.2	24.9	0.018	246.67

Name	FCU	Room	Sound	PS	MCA	MFA	WxHxD	Weight
			dBA				mm	kg
AC- 1	FXFQ40B	Delivery Warehouse	29 - 33	220V 1ph	0.3	Factory Std	840 x 204 x 840	19.0
AC- 2	FXFQ40B	Delivery Warehouse	29 - 33	220V 1ph	0.3	Factory Std	840 x 204 x 840	19.0
AC- 3	FXFQ40B	Storage Warehouse	29 - 33	220V 1ph	0.3	Factory Std	840 x 204 x 840	19.0
AC- 4	FXFQ40B	Storage Warehouse	29 - 33	220V 1ph	0.3	Factory Std	840 x 204 x 840	19.0

Remarks

Outdoor vs. indoor position

Outdoor unit placed at the same level as the indoor units.

Minimum room area

Minimum room area to meet toxicity limit: 8.50 m². Considered room height: 2.5 m.

CU- 2 Back of House - RXYSQ4TV9

Capacity data at conditions and connection ratio (95) as entered

Name	FCU	Cooling							
		Tmp C	Rv TC	Max TC	Rq SC	Tevap	Tdis C	Max SC	PIC
		°C (DBT/RH)	kW	kW	kW	°C	°C	kW	kW
AC- 5	FXAQ20A	23.0/50%	1.5	1.8	1.1	6.0	17.1	1.8	0.020
AC- 6	FXZQ50A	23.0/50%	4.0	4.6	3.0	6.0	12.9	3.6	0.048
AC- 7	FXZQ25A	30.0/50%	2.2	3.0	1.6	6.0	21.4	1.9	0.020

Name	FCU	Heating					Air Flow Rate
		Tmp H	Rq HC	Max HC	Tdis H	PIH	
		°C	kW	kW	°C	kW	l/s
AC- 5	FXAQ20A	21.0	0.5	2.4	23.7	0.030	151.67



Name	FCU	Heating					Air Flow Rate
		Tmp H	Rq HC	Max HC	Tdis H	PIH	
		°C	kW	kW	°C	kW	
AC- 6	FXZQ50A	21.0	1.1	6.1	24.7	0.048	241.67
AC- 7	FXZQ25A	16.0	1.2	3.4	22.5	0.020	150.00

Name	FCU	Room	Sound	PS	MCA	MFA	WxHxD	Weight
			dBA				mm	kg
AC- 5	FXAQ20A	Cash Office	29 - 33	230V 1ph	0.3	Factory Std	795 x 290 x 266	12.0
AC- 6	FXZQ50A	Welfare	33 - 43	220V 1ph	0.6	Factory Std	575 x 260 x 575	18.5
AC- 7	FXZQ25A	DRS	26 - 33	220V 1ph	0.3	Factory Std	575 x 260 x 575	15.5

Remarks

Outdoor vs. indoor position

Outdoor unit placed 2.0m above the indoor units.

Minimum room area

Minimum room area to meet toxicity limit: 8.50 m². Considered room height: 2.5 m.

CU- 4 AHU DX Coil Circuit 1-2 - RXYLQ12T

Capacity data at conditions and connection ratio (93) as entered

Name	FCU	Cooling		
		Rq TC	Max TC	Tevap
		kW	kW	°C
AHU 1 box 1	EKEXVA140	13.2	14.2	6.0
AHU 1 box 2	EKEXVA140	13.2	14.2	6.0

Name	FCU	Heating			Min coil	Max coil	Air Flow Rate
		Rq HC	Max HC	PIH			
		kW	kW	kW	dm ³	dm ³	
AHU 1 box 1	EKEXVA140	17.4	18.7		2.54	4.62	n/a
AHU 1 box 2	EKEXVA140	17.4	18.7		2.54	4.62	n/a

Name	FCU	Room	Sound	PS	MCA	MFA	WxHxD	Weight
			dBA				mm	kg
AHU 1 box 1	EKEXVA140		-	230V 1ph			401 x 215 x 78	2.9
AHU 1 box 2	EKEXVA140		-	230V 1ph			401 x 215 x 78	2.9

Remarks

Under capacity

The sum of the required indoor unit capacities is 26.5kW for cooling. However, the selected outdoor unit has a cooling capacity of 26.1kW (= -1.3%). Be aware that an undersized system may lead to reduced comfort levels, different noise levels or increased wear and tear.



Outdoor vs. indoor position

Outdoor unit placed at the same level as the indoor units.

Minimum room area

Minimum room area to meet toxicity limit: 18.00 m². Considered room height: 2.5 m.

CU- 5 AHU DX Coil Circuit 3-4 - RXYLQ12T

Capacity data at conditions and connection ratio (93) as entered

Name	FCU	Cooling		
		Rq TC	Max TC	Tevap
		kW	kW	°C
AHU 1 box 3	EKEXVA140	13.2	14.2	6.0
AHU 1 box 4	EKEXVA140	13.2	14.2	6.0

Name	FCU	Heating			Min coil	Max coil	Air Flow Rate
		Rq HC	Max HC	PIH			
		kW	kW	kW	dm ³	dm ³	l/s
AHU 1 box 3	EKEXVA140	17.4	18.7		2.54	4.62	n/a
AHU 1 box 4	EKEXVA140	17.4	18.7		2.54	4.62	n/a

Name	FCU	Room	Sound	PS	MCA	MFA	WxHxD	Weight
			dBA		A		mm	
AHU 1 box 3	EKEXVA140		-	230V 1ph			401 x 215 x 78	2.9
AHU 1 box 4	EKEXVA140		-	230V 1ph			401 x 215 x 78	2.9

Remarks

Under capacity

The sum of the required indoor unit capacities is 26.5kW for cooling. However, the selected outdoor unit has a cooling capacity of 26.1kW (= -1.3%). Be aware that an undersized system may lead to reduced comfort levels, different noise levels or increased wear and tear.

Outdoor vs. indoor position

Outdoor unit placed at the same level as the indoor units.

Minimum room area

Minimum room area to meet toxicity limit: 18.00 m². Considered room height: 2.5 m.

Outdoor unit details

Table of abbreviations

Abbreviation	Description
Name	Logical name of the device
Model	Device model name
CR	Connection ratio
Tmp C	Outdoor conditions in cooling
WFR	Water flow per outdoor unit module
CC	Available cooling capacity
Rq CC	Required cooling capacity
PIC	Power input in cooling mode
InC	Water inlet temperature in cooling mode
OutC	Water outlet temperature in cooling mode
Tmp H	Outdoor conditions in heating (dry bulb temp. / RH)
HC	Available heating capacity (integrated heating capacity)
Rq HC	Required heating capacity
PIH	Power input in heating mode
InH	Water inlet temperature in heating mode
OutH	Water outlet temperature in heating mode
Piping	Largest distance from indoor unit to outdoor unit
Bse Refr	Standard factory refrigerant charge (16.4ft actual piping length) excluding extra refrigerant charge. For calculation of extra refrigerant charge refer to the databook
Ex Refr	Extra refrigerant charge
PS	Power supply (voltage and phases)
MCA	Minimum Circuit Amps
MFA	Maximum Fuse Amps
FLA	Fan Motor Input
FCIDI	Fan Compressor Inverter Drive Input
RLA	Nominal Running Amps
WxHxD	WidthxHeightxD
Weight	Weight of the device
EER	EER value at nominal condition
EER2	EER2 value at nominal condition
IEER	IEER value at nominal condition
COP47	COP value at nominal condition and at ambient temperature of 8°C
COP17	COP value at nominal condition and at ambient temperature of -8°C

Outdoor details

Name	Model	CR	Cooling			Heating			Piping
			Tmp C	CC	Rq CC	Tmp H	HC	Rq HC	
		%	°C	kW	kW	°C (DBT/RH)	kW	kW	m
CU- 1 Warehouse	RXYSQ8TY1	80.0	38.0	14.9	14.4	-5.0/60%	18.6	8.2	73.6
CU- 2 Back of House	RXYSQ4TV9	95.0	38.0	8.6	7.7	-5.0/60%	8.5	2.8	106.4
CU- 4 AHU DX Coil Circuit 1-2	RXYLQ12T	93.3	38.0	26.1	26.5	-5.0/60%	35.4	34.8	53.5
CU- 5 AHU DX Coil Circuit 3-4	RXYLQ12T	93.3	38.0	26.1	26.5	-5.0/60%	35.4	34.8	53.5

Name	Model	PS	MCA	MFA	RLA	FLA	WxHxD	Weight
			A	A	A	A	mm	kg
CU- 1 Warehouse	RXYSQ8TY1	400V 3Nph	18.5	25.0	9.6		940 x 1,430 x 320	144.0
CU- 2 Back of House	RXYSQ4TV9	230V 1ph	29.1	32.0	14.0		900 x 1,345 x 320	104.0
CU- 4 AHU DX Coil Circuit 1-2	RXYLQ12T	400V 3Nph	24.0	32.0	15.0		1,240 x 1,685 x 765	302.0
CU- 5 AHU DX Coil Circuit 3-4	RXYLQ12T	400V 3Nph	24.0	32.0	15.0		1,240 x 1,685 x 765	302.0

Sound Data

Name	Model	Sound Power		Sound Pressure	
		Cooling	Heating	Cooling	Heating
		dBA	dBA	dBA	dBA
CU- 1 Warehouse	RXYSQ8TY1	73	-	55	-
CU- 2 Back of House	RXYSQ4TV9	68	-	50	-
CU- 4 AHU DX Coil Circuit 1-2	RXYLQ12T	81	-	59	-
CU- 5 AHU DX Coil Circuit 3-4	RXYLQ12T	81	-	59	-

Name	Model	$\eta_{s,h}$ heating	$\eta_{s,c}$ cooling	SCOP	SEER	CSPF
		%	%			
CU- 1 Warehouse	RXYSQ8TY1	165.8	247.3	4.20	6.30	-
CU- 2 Back of House	RXYSQ4TV9	171.6	278.9	4.40	7.00	-
CU- 4 AHU DX Coil Circuit 1-2	RXYLQ12T	137.6	274.4	3.50	6.90	-
CU- 5 AHU DX Coil Circuit 3-4	RXYLQ12T	137.6	274.4	3.50	6.90	-

For more information go to: <https://energylabel.daikin.eu/>.

Refrigerant information

Name	Model	Refrigerant type	GWP	Base charge kg	Extra charge kg	Total refrigerant charge kg	Total CO2 equivalent tonnes
CU- 1 Warehouse	RXYSQ8TY1	R410A	2087.5	5.50	3.80	9.30	19.40
CU- 2 Back of House	RXYSQ4TV9	R410A	2087.5	3.60	5.65	9.25	19.32
CU- 4 AHU DX Coil Circuit 1-2	RXYLQ12T	R410A	2087.5	11.80	8.00	19.80	41.32
CU- 5 AHU DX Coil Circuit 3-4	RXYLQ12T	R410A	2087.5	11.80	8.00	19.80	41.32

The system(s) contain fluorinated greenhouse gases.

The extra charge is calculated based on the pipe lengths specified. This may differ from the actual pipe lengths on site and therefore also from the real extra charge and the real TCO2 equivalent.

CU- 1 Warehouse - RXYSQ8TY1

Model	Quantity	Description
RXYSQ8TY1	1	RXYSQ-TY1 (VRV IV Mini Large 3 phase)
FXFQ40B	4	FXFQ-B - Round Flow Round flow cassette
KHRQ22M20T	2	Refnet branch piping kit
KHRQ22M29T9	1	Refnet branch piping kit
BRC1H52W	2	Remote controller (white)
BYCQ140E	4	Standard decoration panel
KRCS01-7B	4	External wired temperature sensor

Piping	Liquid	Suction	Total
	m	m	m
1/4"	25.0	0.0	25.0



3/8"	55.0	0.0	55.0
1/2"	0.0	25.0	25.0
5/8"	0.0	27.0	27.0
3/4"	0.0	28.0	28.0

Refrigerant information

Refrigerant type	GWP	Base charge kg	Extra charge kg	Total refrigerant charge kg	Total CO2 equivalent tonnes
R410A	2087.5	5.50	3.80*)	9.30	19.40

The system(s) contain fluorinated greenhouse gases.

*) Extra refrigerant charge = $55.0 \text{ m } (\varnothing 3/8 \text{ "}) \times 0.059 + 25.0 \text{ m } (\varnothing 1/4 \text{ "}) \times 0.022 = 3.8 \text{ kg}$

The extra charge is calculated based on the pipe lengths specified. This may differ from the actual pipe lengths on site and therefore also from the real extra charge and the real TCO2 equivalent.

Pipe capacities

Maximum Connection Index	Diameters
149.9	3/8"x5/8"
199.9	3/8"x3/4"
289.9	3/8"x7/8"
419.9	1/2"x1 1/8"
639.9	5/8"x1 1/8"
919.9	3/4"x1 3/8"
> 919.9	3/4"x1 5/8"
Main pipe size up	1/2"x7/8"

Piping limitations

Description	Value
Maximum total length	300.0m
Maximum longest actual length	100.0m
Maximum longest equivalent length	130.0m
Maximum main pipe length (size up of main pipe required if longer)	-
Maximum length first branch to indoor unit(size up of intermediate pipes required if longer)	40.0m
Maximum length first branch to indoor unit	40.0m
Maximum length of indoor units to nearest branch	40.0m
Maximum length difference between longest and shortest distance to indoor units	40.0m
Maximum height difference, outdoor unit below indoor units	40.0m
Minimum connection ratio, outdoor unit below indoor units	-
Maximum height difference, outdoor unit above indoor units	50.0m
Minimum connection ratio, outdoor unit above indoor units	-
Maximum height difference in technical cooling, outdoor unit below indoor units	40.0m
Maximum height difference in technical cooling, outdoor unit above indoor units	50.0m
Maximum height difference between indoor units	15.0m
Connection ratio range	50.0% - 130.0%
Refrigerant pipe diameters	1/2" (liquid) x 7/8" (gas)
Maximum equivalent length from BP unit or VRV indoor to VRV REFNET (size up of intermediate pipes required if longer)	-
Maximum equivalent length from BP unit or VRV indoor to VRV REFNET	40.0m
Maximum actual length between CM and HM	-
Maximum height difference between CM and HM	-

CU- 2 Back of House - RXYSQ4TV9

Model	Quantity	Description
RXYSQ4TV9	1	RXYSQ-TV9 (VRV IV Mini Standard 1 phase)
FXAQ20A	1	FXAQ-A - Wall mounted unit
FXZQ25A	1	FXZQ-A - Fully flat cassette
FXZQ50A	1	FXZQ-A - Fully flat cassette
KHRQ22M20T	2	Refnet branch piping kit
BRC1H52W	3	Remote controller (white)
BYFQ60CW	2	New decoration panel (white)
KRCS01-4	1	Remote sensor

Piping	Liquid	Suction	Total
	m	m	m
1/4"	21.0	0.0	21.0
3/8"	88.0	0.0	88.0
1/2"	0.0	21.0	21.0
5/8"	0.0	11.0	11.0
3/4"	0.0	77.0	77.0



Refrigerant information

Refrigerant type	GWP	Base charge kg	Extra charge kg	Total refrigerant charge kg	Total CO2 equivalent tonnes
R410A	2087.5	3.60	5.65*)	9.25	19.32

The system(s) contain fluorinated greenhouse gases.

*) Extra refrigerant charge = $88.0 \text{ m } (\varnothing 3/8 \text{ "}) \times 0.059 + 21.0 \text{ m } (\varnothing 1/4 \text{ "}) \times 0.022 = 5.7 \text{ kg}$

The extra charge is calculated based on the pipe lengths specified. This may differ from the actual pipe lengths on site and therefore also from the real extra charge and the real TCO2 equivalent.

Pipe capacities

Maximum Connection Index	Diameters
149.9	3/8"x5/8"
199.9	3/8"x3/4"
289.9	3/8"x7/8"
419.9	1/2"x1 1/8"
639.9	5/8"x1 1/8"
919.9	3/4"x1 3/8"
> 919.9	3/4"x1 5/8"
Main pipe size up	3/8"x3/4"

Piping limitations

Description	Value
Maximum total length	300.0m
Maximum longest actual length	120.0m
Maximum longest equivalent length	150.0m
Maximum main pipe length (size up of main pipe required if longer)	-
Maximum length first branch to indoor unit(size up of intermediate pipes required if longer)	40.0m
Maximum length first branch to indoor unit	40.0m
Maximum length of indoor units to nearest branch	40.0m
Maximum length difference between longest and shortest distance to indoor units	40.0m
Maximum height difference, outdoor unit below indoor units	40.0m
Minimum connection ratio, outdoor unit below indoor units	-
Maximum height difference, outdoor unit above indoor units	50.0m
Minimum connection ratio, outdoor unit above indoor units	-
Maximum height difference in technical cooling, outdoor unit below indoor units	40.0m
Maximum height difference in technical cooling, outdoor unit above indoor units	50.0m
Maximum height difference between indoor units	15.0m
Connection ratio range	50.0% - 130.0%
Refrigerant pipe diameters	3/8" (liquid) x 3/4" (gas)
Maximum equivalent length from BP unit or VRV indoor to VRV REFNET (size up of intermediate pipes required if longer)	-
Maximum equivalent length from BP unit or VRV indoor to VRV REFNET	40.0m
Maximum actual length between CM and HM	-
Maximum height difference between CM and HM	-

CU- 4 AHU DX Coil Circuit 1-2 - RXYLQ12T

Model	Quantity	Description
RXYLQ12T	1	RXYLQ-T (VRV IV Optimized for Heating)
EKEXVA140	2	Expansion valve kit for air handling applications
KHRQ22M64T	1	Refnet branch piping kit
BRC1H52W	1	Remote controller (white)
EKEACB	2	Unified control box

Piping	Liquid m	Suction m	Total m
3/8"	4.0	0.0	4.0
1/2"	48.0	0.0	48.0
5/8"	0.0	4.0	4.0
1 1/8"	0.0	48.0	48.0

Refrigerant information

Refrigerant type	GWP	Base charge kg	Extra charge kg	Total refrigerant charge kg	Total CO2 equivalent tonnes
R410A	2087.5	11.80	8.00*)	19.80	41.32



The system(s) contain fluorinated greenhouse gases.

*) Extra refrigerant charge = $2.0 \text{ (B)} + 48.0 \text{ m } (\varnothing 1/2 \text{ "}) \times 0.12 + 4.0 \text{ m } (\varnothing 3/8 \text{ "}) \times 0.059 = 8.0\text{kg}$

The extra charge is calculated based on the pipe lengths specified. This may differ from the actual pipe lengths on site and therefore also from the real extra charge and the real TCO₂ equivalent.

Pipe capacities

Maximum Connection Index	Diameters
149.9	3/8"x5/8"
199.9	3/8"x3/4"
289.9	3/8"x7/8"
419.9	1/2"x1 1/8"
639.9	5/8"x1 1/8"
919.9	3/4"x1 3/8"
> 919.9	3/4"x1 5/8"
Main pipe size up	5/8"x1 1/8"

Piping limitations

Description	Value
Maximum total length	10,000.0m
Maximum longest actual length	50.0m
Maximum longest equivalent length	55.0m
Maximum main pipe length (size up of main pipe required if longer)	-
Maximum length first branch to indoor unit(size up of intermediate pipes required if longer)	40.0m
Maximum length first branch to indoor unit	40.0m
Maximum length of indoor units to nearest branch	40.0m
Maximum length difference between longest and shortest distance to indoor units	40.0m
Maximum height difference, outdoor unit below indoor units	40.0m
Minimum connection ratio, outdoor unit below indoor units	-
Maximum height difference, outdoor unit above indoor units	40.0m
Minimum connection ratio, outdoor unit above indoor units	-
Maximum height difference in technical cooling, outdoor unit below indoor units	40.0m
Maximum height difference in technical cooling, outdoor unit above indoor units	40.0m
Maximum height difference between indoor units	15.0m
Connection ratio range	65.0% - 130.0%
Refrigerant pipe diameters	5/8" (liquid) x 1 1/8" (gas)
Maximum equivalent length from BP unit or VRV indoor to VRV REFNET (size up of intermediate pipes required if longer)	-
Maximum equivalent length from BP unit or VRV indoor to VRV REFNET	40.0m
Maximum actual length between CM and HM	-
Maximum height difference between CM and HM	-

CU- 5 AHU DX Coil Circuit 3-4 - RXYLQ12T

Model	Quantity	Description
RXYLQ12T	1	RXYLQ-T (VRV IV Optimized for Heating)
EKEXVA140	2	Expansion valve kit for air handling applications
KHRQ22M64T	1	Refnet branch piping kit
BRC1H52W	1	Remote controller (white)
EKEACB	2	Unified control box

Piping	Liquid m	Suction m	Total m
3/8"	4.0	0.0	4.0
1/2"	48.0	0.0	48.0
5/8"	0.0	4.0	4.0
1 1/8"	0.0	48.0	48.0

Refrigerant information

Refrigerant type	GWP	Base charge kg	Extra charge kg	Total refrigerant charge kg	Total CO2 equivalent tonnes
R410A	2087.5	11.80	8.00*)	19.80	41.32



The system(s) contain fluorinated greenhouse gases.

*) Extra refrigerant charge = $2.0 \text{ (B)} + 48.0 \text{ m } (\phi 1/2 \text{ "}) \times 0.12 + 4.0 \text{ m } (\phi 3/8 \text{ "}) \times 0.059 = 8.0\text{kg}$

The extra charge is calculated based on the pipe lengths specified. This may differ from the actual pipe lengths on site and therefore also from the real extra charge and the real TCO₂ equivalent.

Pipe capacities

Maximum Connection Index	Diameters
149.9	3/8"x5/8"
199.9	3/8"x3/4"
289.9	3/8"x7/8"
419.9	1/2"x1 1/8"
639.9	5/8"x1 1/8"
919.9	3/4"x1 3/8"
> 919.9	3/4"x1 5/8"
Main pipe size up	5/8"x1 1/8"

Piping limitations

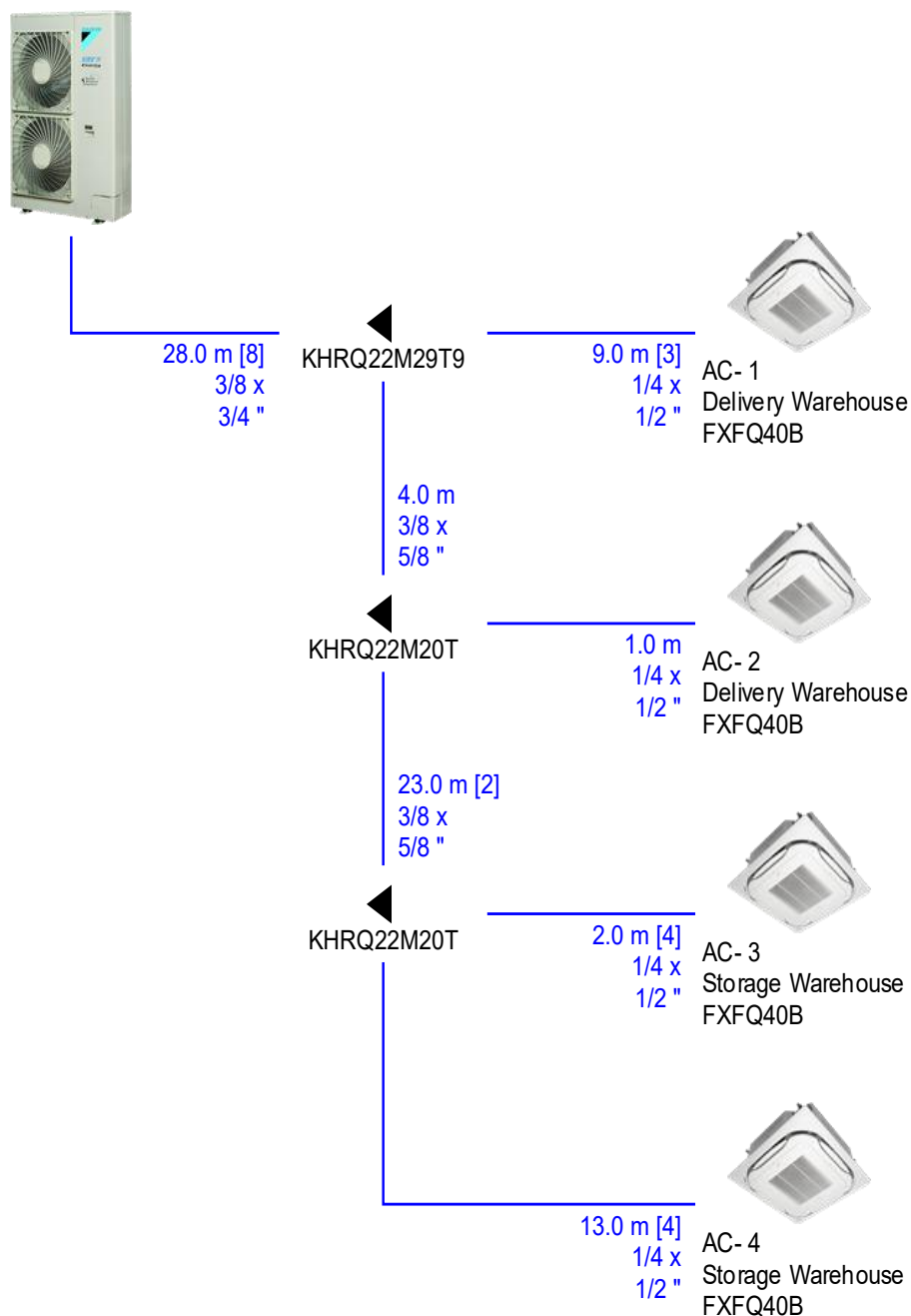
Description	Value
Maximum total length	10,000.0m
Maximum longest actual length	50.0m
Maximum longest equivalent length	55.0m
Maximum main pipe length (size up of main pipe required if longer)	-
Maximum length first branch to indoor unit(size up of intermediate pipes required if longer)	40.0m
Maximum length first branch to indoor unit	40.0m
Maximum length of indoor units to nearest branch	40.0m
Maximum length difference between longest and shortest distance to indoor units	40.0m
Maximum height difference, outdoor unit below indoor units	40.0m
Minimum connection ratio, outdoor unit below indoor units	-
Maximum height difference, outdoor unit above indoor units	40.0m
Minimum connection ratio, outdoor unit above indoor units	-
Maximum height difference in technical cooling, outdoor unit below indoor units	40.0m
Maximum height difference in technical cooling, outdoor unit above indoor units	40.0m
Maximum height difference between indoor units	15.0m
Connection ratio range	65.0% - 130.0%
Refrigerant pipe diameters	5/8" (liquid) x 1 1/8" (gas)
Maximum equivalent length from BP unit or VRV indoor to VRV REFNET (size up of intermediate pipes required if longer)	-
Maximum equivalent length from BP unit or VRV indoor to VRV REFNET	40.0m
Maximum actual length between CM and HM	-
Maximum height difference between CM and HM	-



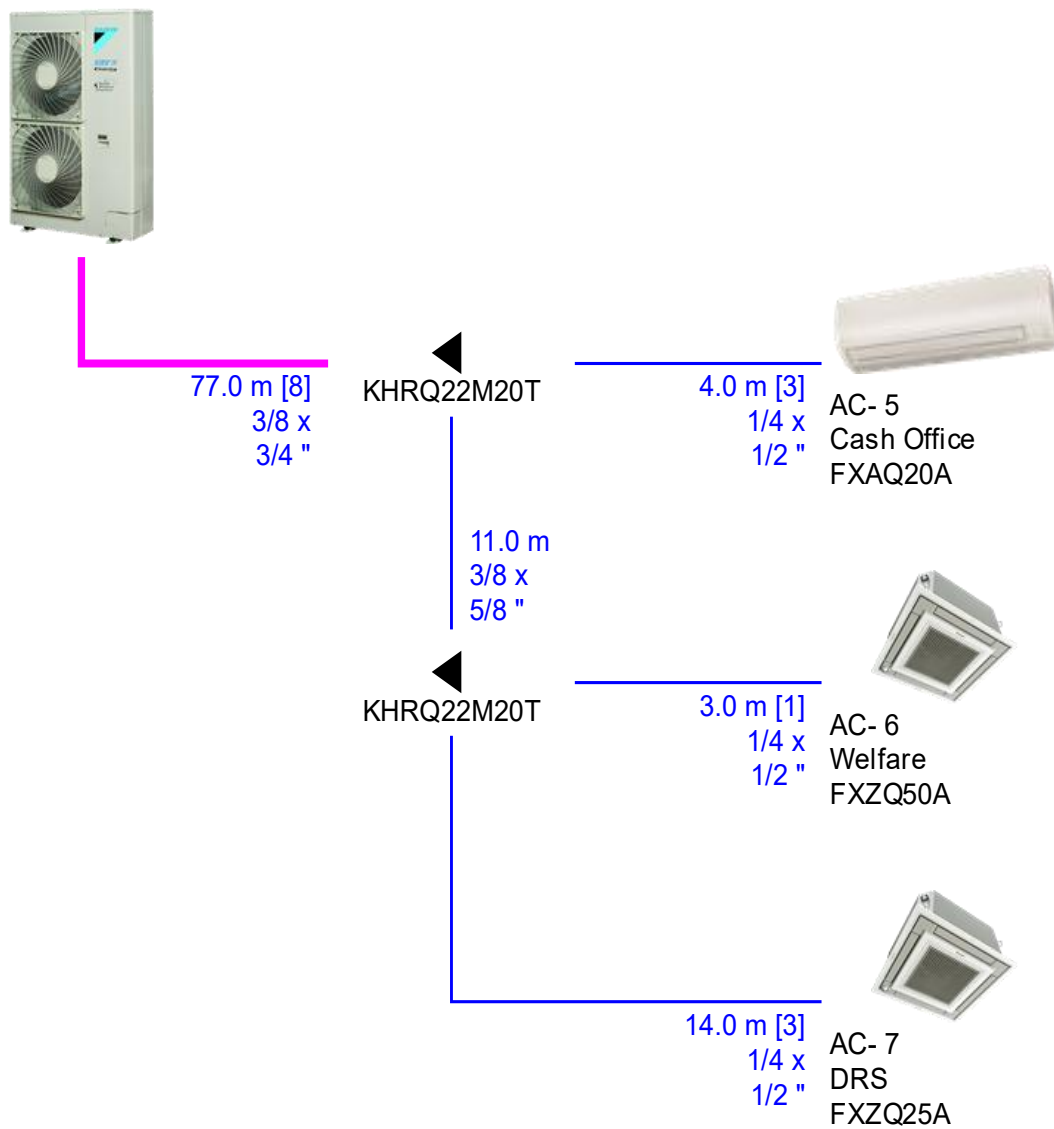
Piping diagrams

Piping CU- 1 Warehouse

CU- 1 Warehouse
RXYSQ8TY1

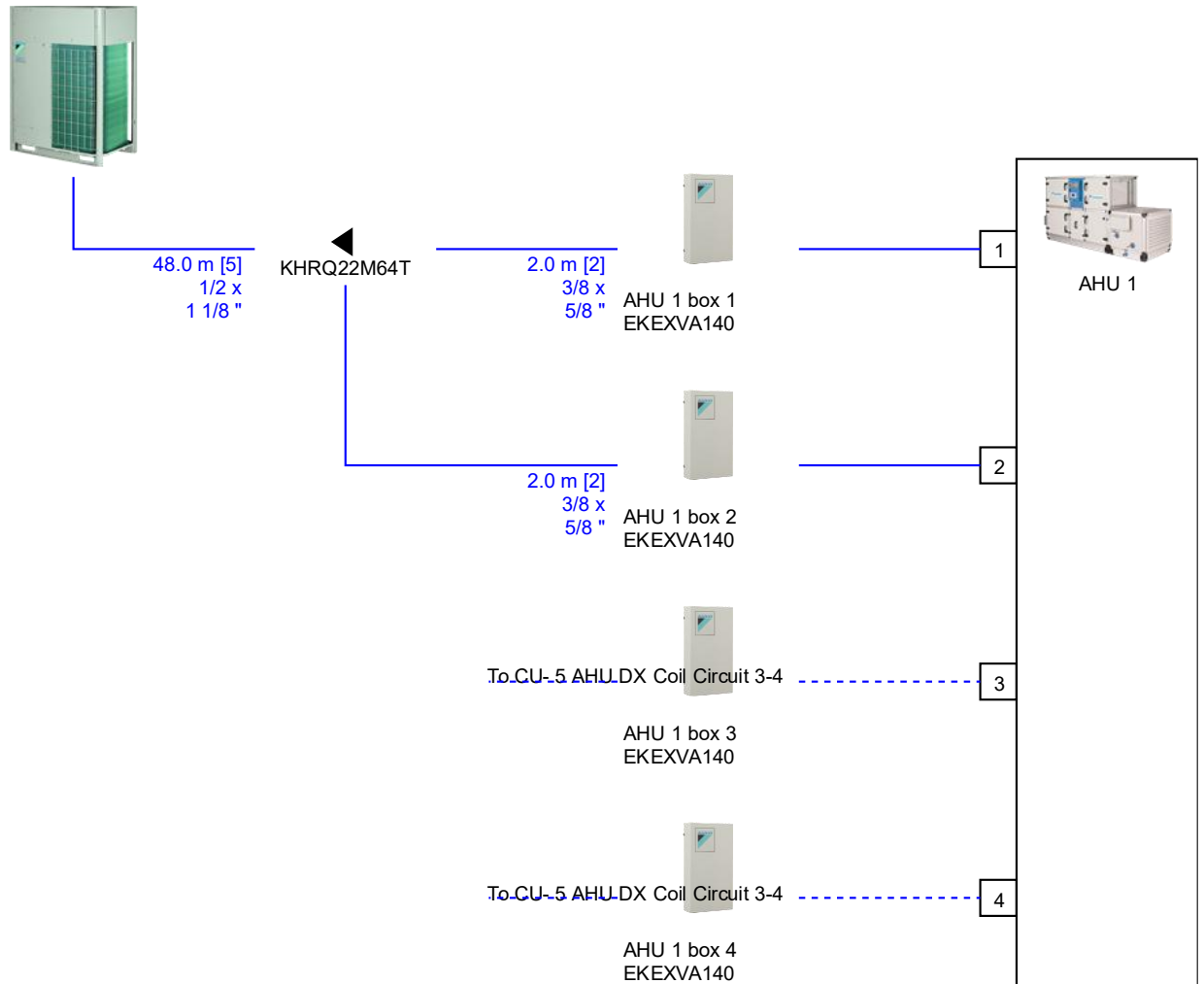


CU- 2 Back of House
RXYSQ4TV9



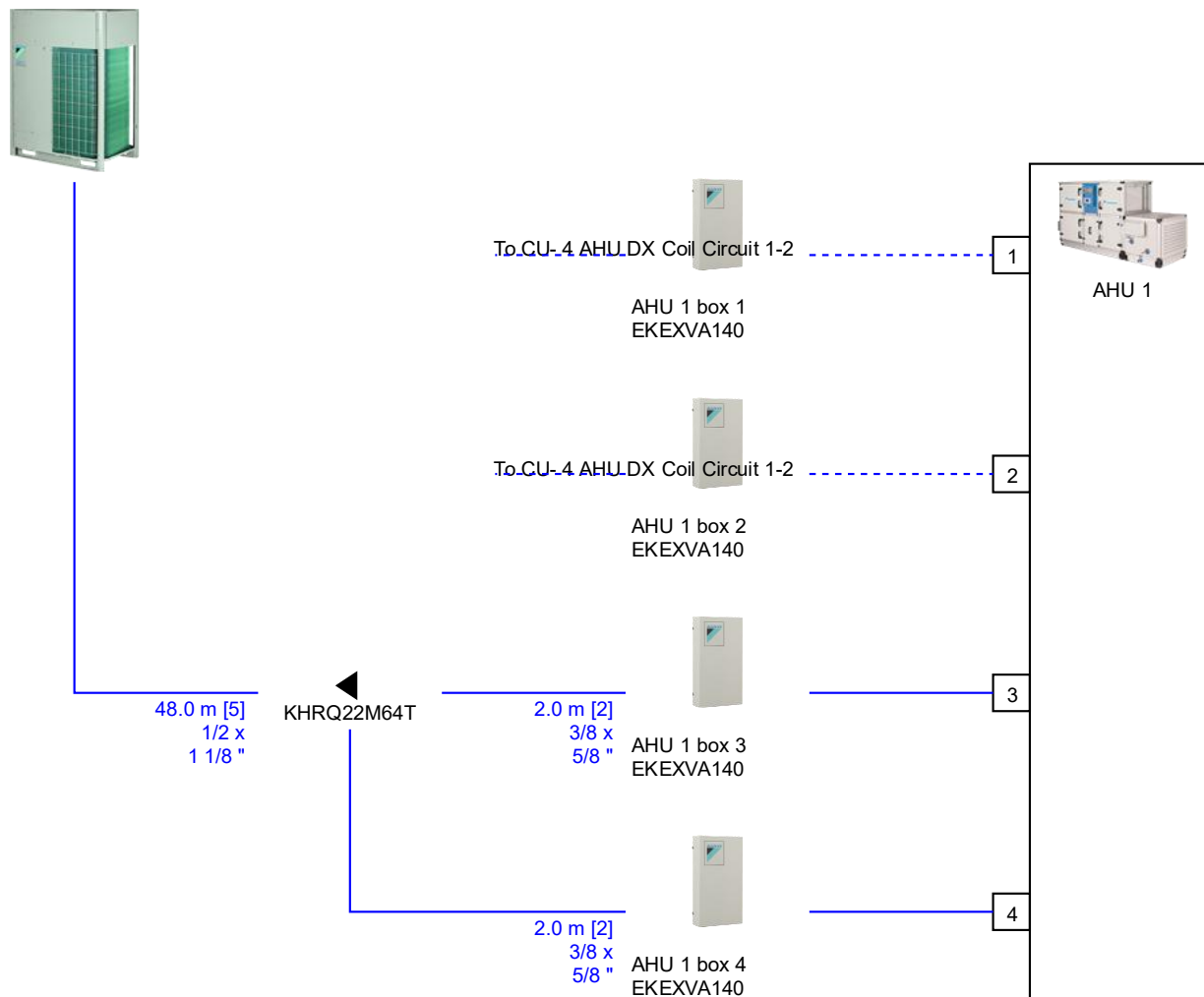
Piping CU- 4 AHU DX Coil Circuit 1-2

CU- 4 AHU DX Coil Circuit 1-2
RXYLQ12T



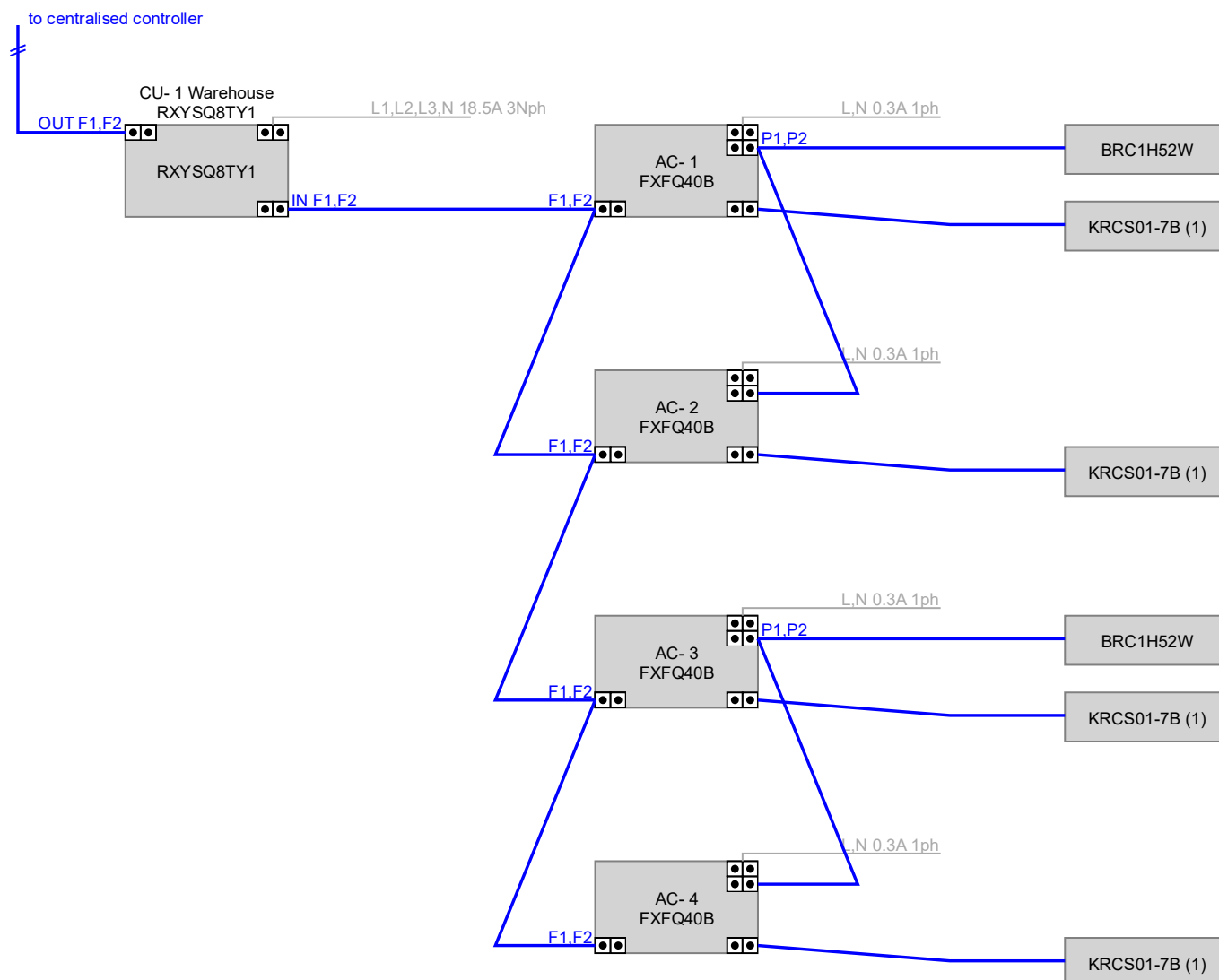
Piping CU- 5 AHU DX Coil Circuit 3-4

CU- 5 AHU DX Coil Circuit 3-4
RXYLQ12T



Wiring diagrams

Wiring CU- 1 Warehouse



Remarks

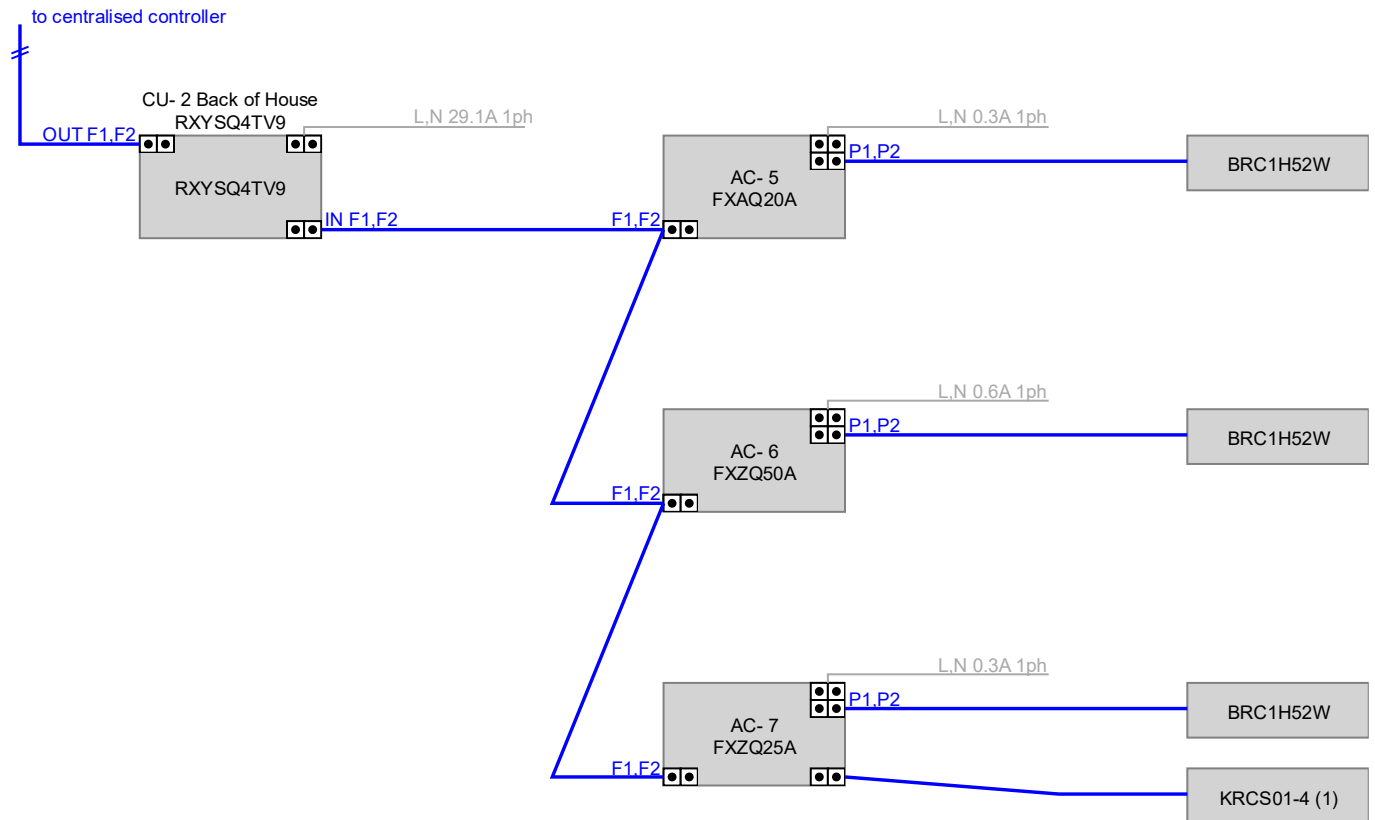
P1P2 = 0,75 - 1,25 mm², max 500m length - always refer to local code for further information.

F1F2 OUT->IN : transmission wiring, use 2-core wires of 0,75 to 1,25 mm² size cables, without shield. (But shielded cable can be used if local regulation prescribes it.)

F1F2 OUT-OUT OUT-CENTRALIZED: transmission wiring, use 2-core wires of 0,75 to 1,25 mm² size cables, without shield. (But shielded cable can be used if local regulation prescribes it.)

Note: The shield should only be earthed at outdoor unit side, not at the indoor units!

Wiring CU- 2 Back of House



Remarks

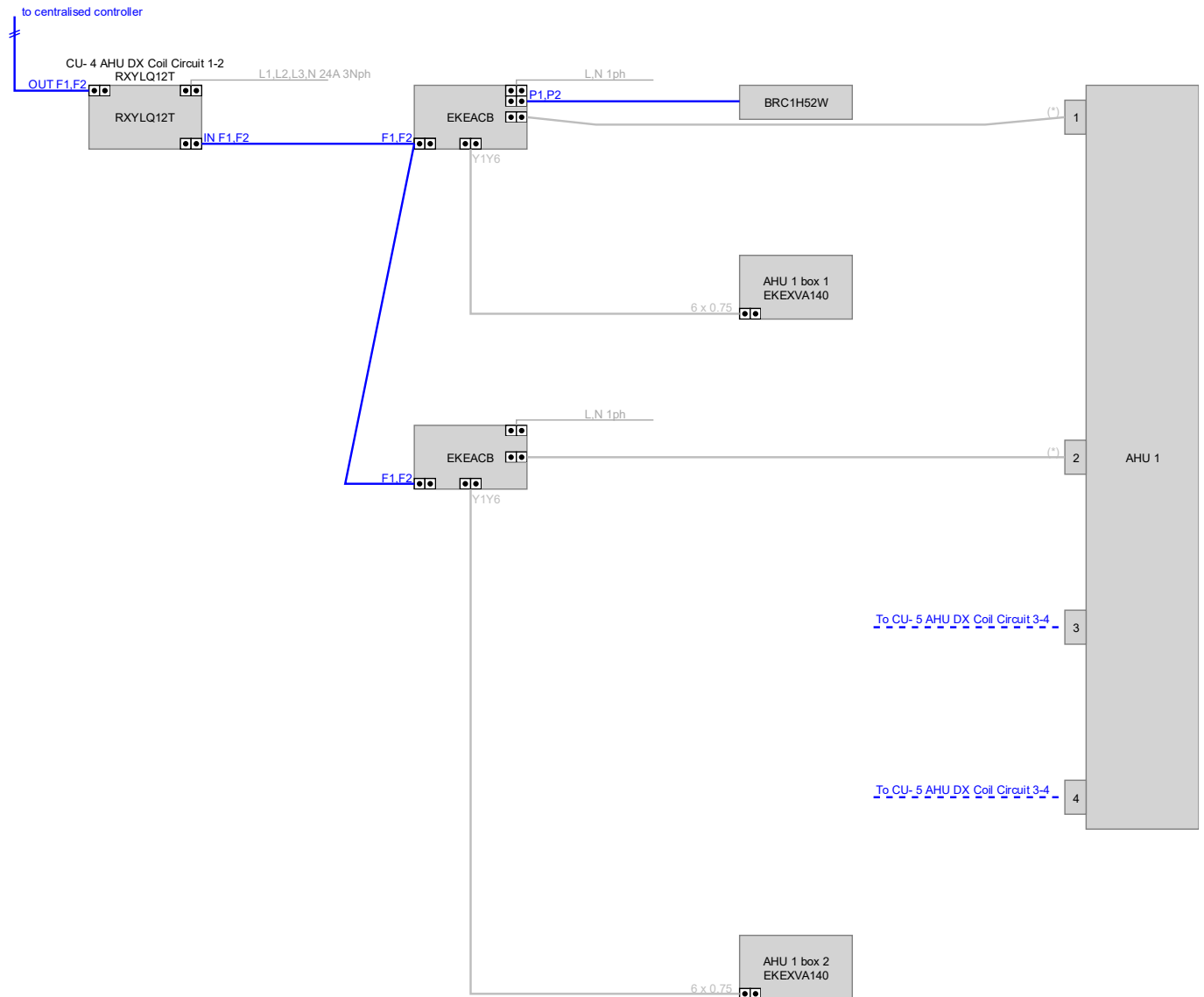
P1P2 = 0,75 - 1,25 mm², max 500m length - always refer to local code for further information.

F1F2 OUT->IN: transmission wiring use 2-core wires of 0,75 to 1,25 mm² size cables, with shield.

F1F2 OUT-OUT OUT-CENTRALIZED: transmission wiring, use 2-core wires of 0,75 to 1,25 mm² size cables, with shield.

Note: The shield should only be earthed at outdoor unit side, not at the indoor units!

Wiring CU- 4 AHU DX Coil Circuit 1-2



Remarks

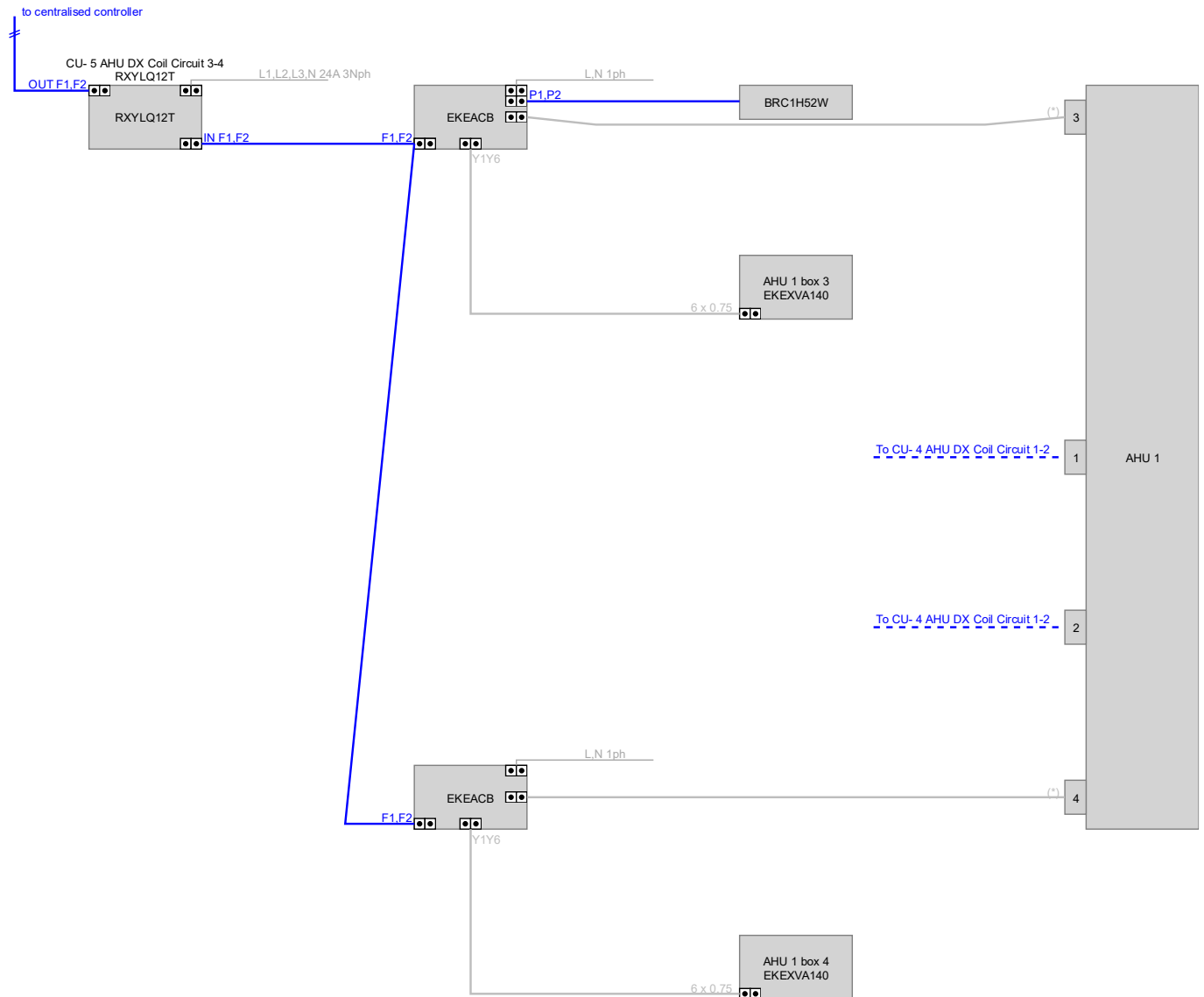
P1P2 = 0,75 - 1,25 mm², max 500m length - always refer to local code for further information.

F1F2 OUT->IN : transmission wiring, use 2-core wires of 0,75 to 1,25 mm² size cables, without shield. (But shielded cable can be used if local regulation prescribes it.)

F1F2 OUT-OUT OUT-CENTRALIZED: transmission wiring, use 2-core wires of 0,75 to 1,25 mm² size cables, without shield. (But shielded cable can be used if local regulation prescribes it.)

Note: The shield should only be earthed at outdoor unit side, not at the indoor units!

Wiring CU- 5 AHU DX Coil Circuit 3-4



Remarks

P1P2 = 0,75 - 1,25 mm², max 500m length - always refer to local code for further information.

F1F2 OUT->IN : transmission wiring, use 2-core wires of 0,75 to 1,25 mm² size cables, without shield. (But shielded cable can be used if local regulation prescribes it.)

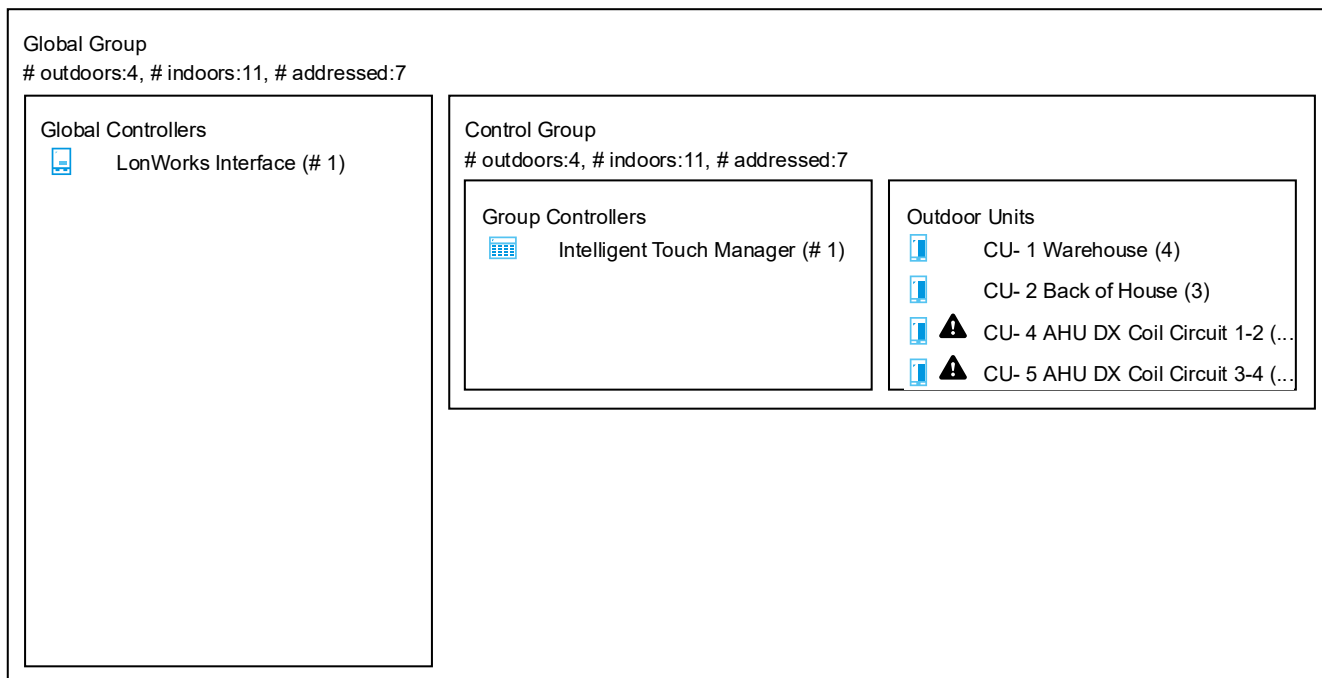
F1F2 OUT-OUT OUT-CENTRALIZED: transmission wiring, use 2-core wires of 0,75 to 1,25 mm² size cables, without shield. (But shielded cable can be used if local regulation prescribes it.)

Note: The shield should only be earthed at outdoor unit side, not at the indoor units!



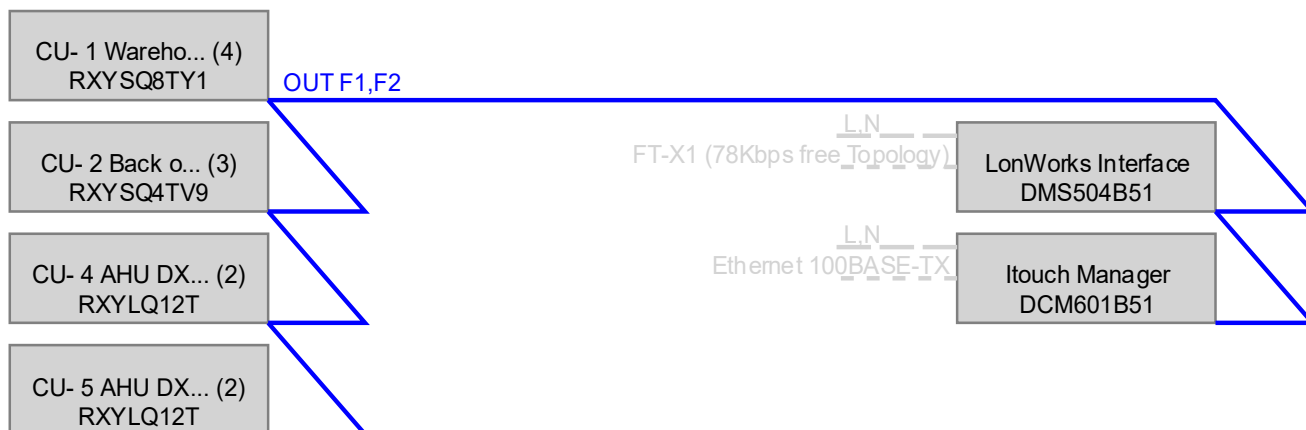
Centralised controllers

Concept



Controller wiring diagrams

Control Group







Best Practices

Residual Current Circuit Breaker

For better protection of installations against the risk of fire, power supply of indoor and outdoor units must be protected with a Residual Current Circuit Breaker. For protection against fire, we recommend a sensitivity of 300mA. The selected RCCB should be of the type B, suitable for inverter devices and indicated by the symbols here below. Further electrical characteristics of the RCCB must be selected in accordance with local regulation.



For a complete list of all required safety precautions, warnings and attention points, please consult the “general safety precautions manual” delivered with the unit.

APPENDIX E: DAIKIN SPLIT-SYSTEM TECHNICAL DATA (SEER)



FTXM-A/R / RXM-A/R

New Class 60-71 available mid 2024

Indoor Units			FTXM20A	FTXM25A	FTXM35A	FTXM42A	FTXM50A	FTXM60R	FTXM71R
Capacity	UK Total Cooling	kW	1.95	2.44	3.42	4.11	4.89	5.86	6.94
	UK Sensible Cooling	kW	1.79	2.15	2.59	2.87	3.25	3.84	4.57
	Nominal Cooling	kW	2.0	2.5	3.4	4.2	5.0	6.0	7.1
	Nominal Heating	kW	2.5	2.8	4.0	5.4	5.8	7.0	8.2
Seasonal Efficiency (EN14825) COOLING	Energy Label		A+++	A+++	A+++	A++	A++	A++	A++
	P _{design}	kW	2.0	2.5	3.4	4.2	5.0	6.0	7.1
	SEER		9.47	9.47	9.25	8.11	7.80	6.90	6.2
	Annual Energy Consumption	kWh	74	92	132	181	224	304	401
Seasonal Efficiency (EN14825) HEATING	Energy Label		A+++	A+++	A+++	A++	A++	A+	A+
	P _{design}	kW	2.3	2.4	2.5	4.0	4.5	4.8	6.2
	SCOP		5.20	5.20	5.20	5.00	4.80	4.30	4.10
	Annual Energy Consumption	kWh	619	647	673	1120	1312	1562	2117
Air Flow Rate (Cooling)		High / Med / Low / Silent	m ³ /sec	0.196 / 0.148 / 0.105 / 0.082	0.196 / 0.148 / 0.105 / 0.077	0.222 / 0.163 / 0.120 / 0.083	0.211 / 0.173 / 0.130 / 0.098	0.278 / 0.233 / 0.197 / 0.152	0.282 / 0.250 / 0.203 / 0.167
Dimensions	Height	mm	298	298	298	298	298	299	299
	Width	mm	804	804	804	804	804	998	998
	Depth	mm	252	252	252	252	252	292	292
Weight		kg	11.5	11.5	11.5	11.5	11.5	14.5	14.5
Sound Pressure (Cooling)		High / Med / Low / Silent	dBA	41 / 33 / 25 / 19	41 / 33 / 25 / 19	45 / 37 / 29 / 21	46 / 40 / 33 / 27	46 / 42 / 37 / 30	47 / 43 / 38 / 32
Sound Pressure (Heating)		High / Med / Low / Silent	dBA	39 / 34 / 26 / 20	39 / 34 / 27 / 20	39 / 35 / 28 / 20	45 / 37 / 29 / 21	46 / 41 / 34 / 31	45 / 41 / 36 / 33
Sound Power (Cooling)			dBA	54	54	58	60	60	60
Outdoor Units			FXM20A	FXM25A	FXM35A	FXM42A	FXM50A	FXM60R	FXM71R
Dimensions		Height x Width x Depth	mm	610 x 923 x 367	610 x 923 x 367	610 x 923 x 367	610 x 923 x 367	734 x 954 x 401	734 x 954 x 401
Weight		kg	36	36	36	40	49	49	55
Electrical Details	Power Supply		1ph	1ph	1ph	1ph	1ph	1ph	1ph
	Maximum Input Current (MCA)	A	9.19	10.01	10.11	11.54	14.28	15.09	19.78
	Max Fuse Size	A	10	13	13	13	16	16	20
	Cable / Cable size		3+E / 1.5	3+E / 1.5	3+E / 1.5	3+E / 1.5	3+E / 1.5	3+E / 1.5	3+E / 1.5
Piping Connections		Liquid / Gas	Inches (mm)	1/4 (6.4) / 3/8 (9.5)	1/4 (6.4) / 3/8 (9.5)	1/4 (6.4) / 3/8 (9.5)	1/4 (6.4) / 3/8 (9.5)	1/4 (6.4) / 1/2 (12.7)	1/4 (6.4) / 5/8 (15.9)
Pipework	Maximum Length	m	20	20	20	30	30	30	30
	Maximum Vertical Rise	m	15	15	15	20	20	20	20
	Precharged to	m	10	10	10	10	10	10	10
	Additional Charge	g/m	20	20	20	20	20	20	20
	Holding Charge	kg	0.95	0.95	0.95	0.95	1.10	1.15	1.15
	Sound Pressure (Cooling)		Nominal	dBA	46	46	47	48	48
Sound Pressure (Heating)		Nominal	dBA	47	47	49	49	49	48
Sound Power (Cooling)			dBA	59	59	60	60	63	66
Operating Range (Cooling)		Min / Max	°CDB	-10 / 50	-10 / 50	-10 / 50	-10 / 50	-10 / 50	-10 / 46
Operating Range (Heating)		Min / Max	°CWB	-21 / 18	-21 / 18	-21 / 18	-21 / 18	-21 / 18	-15 / 18
Air Flow Rate (Cooling)		Nominal	m ³ /sec	0.642	0.642	0.652	0.668	0.967	0.817
Meets ETL criteria				•	•	•	•	•	•

Accessories:

Accessory Ref	Description
ERB21	Wired remote control - connection cable required
BRCD73*	3m extension cord required for wired remote controller BRCD73
BRCD901A03	3m extension cord required for wired remote controller BRCD73
BRCD901A08	3m extension cord required for wired remote controller BRCD73
KCGM	Condensing unit guard (1150 x 1150 x 650)
KCGS	Condensing unit guard (750 x 1150 x 460)
KCW990-2	Wall bracket (90kg, 500mm support arm)
KDIT1	Condensate drip tray for use with KCW990-2
KNX-IOV3*	KNX interface for Split type systems
KRP413A15*	Adaptor PCB for remote on/off control - constant/pulse contact
KRP22BA25*	Adaptor PCB for interface to Daikin centralised control systems
RTD-RA*	Adaptor PCB for Modbus connection and/or extended system functions

Notes & Features:

- › All fan coils are supplied with infrared remote controller ARC46A86 (7-day schedule timer)
- › All fan coils have auto restart after power failure
- › Wired controller, KLIC-DDV3 and RTD-RA options cannot be combined
- › Night set mode
- › Air purification using Flash Streamer technology
- › New static air filter treated with an active (ionpure) substance to improve efficiencies
- › Presence sensor and 2-area intelligent eye
- › Five fan speeds can be selected; from high to super low
- › Heat boost function to reach set point quicker during start-up
- › Can be connected with R410A Mini VRF using BPMK boxes
- › R00M20-35A can reduce the sound power by a further 6 dBA)
- › DCS Residential Ready

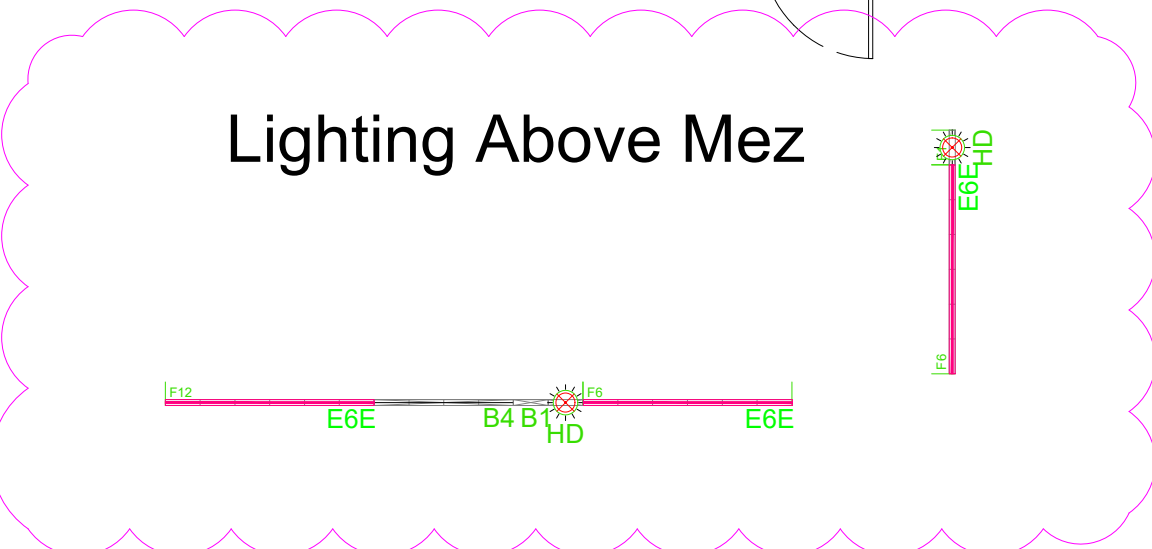
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FSC

Daikin Europe NV participates in the Eurovent Certification programme for Air conditioners (AC), Liquid Chilling Packages (LCP), Air handling units (AHU) and Fan coil units (FCU). Check ongoing validity of certificate online: www.eurovent-certification.com or using: www.certiflash.com

APPENDIX F: TRILUX INTERNAL LIGHTING LAYOUT



Store Number and Name :	10 Generic SBO BBS 2023 (Type 13)	Fruit & Veg :	26 Bays and 10 Bay Chiller
Store Size :	5 Aisle 1337 sqm (Type 13)	Meat & Poultry :	16 Bay Upright Cabinets
Inner Length :	58.00m	Chiller :	31 Bays & 5 Bay RIM
Inner Width :	22.70m	Non-Food Tables :	39 Tables
Ceiling Height :	NA	Food Presenters :	12 Food Presenters

Location and origin of the ceiling grid assumed!

LEGEND lighting proposal

Dish ceiling output, E7= ceiling output, P= power consumption													
Symbol	Figure	Number	Product	Technic	Qcto	Prod.-Code	AdMater	E(Times)	weight	P	Th.Nr.		
Lighting Proposal													
01 Display													
		22	E-Line Next Fix B19QD L27 L Spot (recess)	LED E1W 3715mm	Reflector MF	white RAL 9016		0	1.1kg	30W	50291168		
03 Checkouts													
		5	E-Line Next Fix Insert L175 B19QDQ2	LED R2 840 3200mm	Lens W19	white RAL 9016		0	1.0kg	18W	10203761		
		9	E-Line Next Fix Insert L150 B19QD	LED R2 840 5800mm	Lens W19	white RAL 9016		0	1.8kg	31W	10203643		
		6	E-Line Next Fix Insert L150 B19QDE	LED R2 840 5800mm	Lens W19	white RAL 9016		0	2.2kg	35W	10204488		
04 Sales Area													
		5	E-Line Next Fix Insert L75 E2QD	LED R2 840 3200mm	Lens W	white RAL 9016		0	1.0kg	18W	10204485		
		18	E-Line Next Fix Insert L150 E4QD	LED R2 840 5800mm	Lens W	white RAL 9016		0	1.8kg	31W	10197996		
		5	E-Line Next Fix Insert L150 E4QDE	LED R2 840 5800mm	Lens W	white RAL 9016		0	2.2kg	35W	10204486		
		69	E-Line Next Fix Insert L225 E6QD	LED R2 840 8900mm	Lens W	white RAL 9016		0	2.3kg	49W	10197998		
		39	E-Line Next Fix Insert L225 E6QDE	LED R2 840 8900mm	Lens W	white RAL 9016		0	2.8kg	54W	10198002		
05 E-Line Trunking													
		4	E-Line Next Fix Trunking	Accessory		white RAL 9016		0	0.8kg	0W	0	10184142	
		2	E-Line Next Fix Trunking	Accessory		white RAL 9016		0	1.8kg	0W	0	10184143	
		9	E-Line Next Fix Trunking	Accessory		white RAL 9016		0	2.8kg	0W	0	10184144	
		10	E-Line Next Fix Trunking	Accessory		white RAL 9016		0	3.8kg	0W	0	10184145	
		26	E-Line Next Fix Trunking	Accessory		white RAL 9016		0	5.4kg	0W	0	10184146	
		3	E-Line Next Fix Trunking	Accessory		white RAL 9016		0	0.8kg	0W	0	10234530	
06 E-Line Accessories													
		17	E-Line Next Fix Blank B1	Accessory		white RAL 9016		0	0.0kg	0W	0	10183796	
		1	E-Line Next Fix Blank B3	Accessory		white RAL 9016		0	0.2kg	0W	0	10183794	
		4	E-Line Next Fix Blank B4	Accessory		white RAL 9016		0	0.2kg	0W	0	10183793	
		4	E-Line Next Fix Blank B6	Accessory		white RAL 9016		0	0.3kg	0W	0	10183791	
07 E-Line Standard Accessories													
		340	ED3X - Flxing Clip (Suspended)									41421	
		60	D11x m - Flxing Clip (Surface)									50041884	
			07650 Ka 01 - End Cap									10180861	
		50	07660V - Wiring Connector									414241	
08 Controls													
		11	E-Line Next Fix Presence Sensor HD	Sensor				0	0.8kg	0W	10383427		
		2	E-Line next Fix Daylight Sensor SE	Sensor				0	0.8kg	0W	10383425		
		2			1m			0	0.1kg	0W	10325427		
			2 SENS HYT METAL SURF MT BOX WHITE H465W									10359700	
			DALI Dimmer Box (Pre-Programmed)						kg	0W	10414614		
			1 SENS REMOTE CONTROL HRC-11									10330568	
09 Bakery Preparation													
		14	Tako Downlight Ø54 Lmm	LED R30 3500mm	Reflector VFL	white RAL 9016		100	0.8kg	22W	50294831		
10 Warehouse E-Line													
		2	E-Line Next Fix Insert L150 E4E	LED 840 5800mm	Lens W	white RAL 9016		0	1.8kg	35W	10203051		
			E-Line Next Fix L225 E6	LED 840 8900mm	Lens W	white RAL 9016		0	2.3kg	49W	1019816		
			E-Line Next Fix Insert L225 E6E	LED 840 8900mm	Lens W	white RAL 9016		0	2.8kg	54W	10198000		
11 Welfare													
		2	E-Line Next Fix Insert L150 B19	LED 840 5800mm	Lens W19	white RAL 9016		0	1.8kg	31W	10195819		
			Oleumfin D19 Corrosion Resistant L58	LED 840 6000mm	W	RAL 7035		0	2.5kg	44W	10173642		
			Oleumfin D19 Corrosion Resistant L58E	LED 840 6000mm	W	RAL 7035		0	3.7kg	49W	10173654		
		5	Axiatis C07 Downlight L59	LED 840 2000mm	Diffuser L	white RAL 9016		228	45	0.8kg	24W	10143835	
		19	Stella C9 Recessed L84	LED 840 2800mm	Prisms W19	white RAL 9016	5954050	160	1.1kg	22W	10312506		
			L64 AC01 - V-Axis-Met Van-LE2 with cpl									10076883	
		19	L64 AC02 - Axis-Light V-F301-V3-500 GB118355									10002959	
12 Emergency													
		5	Briton Energy Ballast B8	LED 100mm		white RAL 9016		0	0.0kg	3W	10146492		
			Alumicon D19 EM1	LED 297mm		white RAL 9016		42	35	0.3kg	3W	10103656	
			Alumicon D19 EM2	LED 232mm		white RAL 9016		0	0.4kg	3W	10339702		
			MAXIMARWHSURJAL Surface Exit EX-SUR	LED		white RAL 9016		0	1.7kg	0W	10215200		
			MOLESADOM3 Recessed Exit EX-SUR	LED		white RAL 9016		0	1.8kg	0W	10146551		

APPENDIX G: SIGNIFY EXTERNAL LIGHTING LAYOUT

LiAS Design Notes

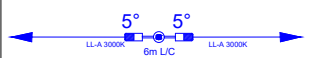
This preliminary design is produced by the Lighting Application Specialist (LiAS) team of Signify UK based on information supplied by the Customer for the purpose of identifying suitable products and costing the proposal. This design cannot be used for Construction, as this design does not purport to eliminate health and safety risks as a CDM Regulation risk assessment has not been undertaken.

Depending on the level of information received, a number of assumptions may have been applied in order to create an indicative lighting proposal and costing model, according to lighting industry guidelines and incorporating industry best practice methods. These assumptions are documented below and will require confirmation by the Principal Designer (which is not Signify UK) during the detailed design phase.

Project Specific Design Comments:

- Where 'Lighting Classes' have not been provided/specified, the calculations have been produced using Lidl Specification lighting classes
- Where column heights have not been provided/specified, these have been assumed to be 6m.
- Where wall/ceiling mounting heights have not been provided/specified, these have been assumed to be 3.25m.
- It has been assumed that luminaires on columns will be mounted post-top or on 0.5m outreach brackets.
- It has been assumed that canopy luminaires will be ceiling mounted.
- It has been assumed that LL-E/LL-E EM luminaires will be wall mounted.
- Signify has not undertaken any emergency lighting calculations. Luminaires marked as emergency fittings are for indicative purposes only. It is the responsibility of the Principal Designer to ensure emergency lighting calculations are performed and that all emergency evacuation routes are lit to a suitable standard.
- Preliminary Design proposals produced by the Signify LiAS Team are not to be used for installation purposes. It is the responsibility of the Principal Designer and/or Principal Contractor to ensure all Installation and Maintenance can be done in a safe manner, carried out by competent persons, based on their agreed Risk Assessments and Method Statements.
- The Luminaire Maintenance Factors have been based on 6-year cleaning intervals within an E3/E4 Environmental Zone and it is assumed that lamp/luminaire failures will be replaced on a 'spot replacement'.
- Energy consumptions have been based on the luminaire/s having Constant Light Output (CLO) enabled and the quoted wattage/s are the average over 100,000 hours (without dimming).
- The design calculations produced by Signify do not account for the effect obstructions, such as trees, will cause.
- Signify has not been provided with utility plans showing Buried, Above Ground or Overhead utilities. Therefore, all column/luminaire locations are indicative and are subject to review/verification by the Principal Designer.
- Unless stated otherwise, Signify has not visited site. Therefore, all column/luminaire locations are indicative and are subject to an onsite verification arranged/performed by the Principal Designer.
- Signify has not produced any Private Cable Network electrical calculations or reviewed the DNO network to confirm power supplies to the proposed lighting.
- Signify has not performed any asset condition testing and therefore assumes that any existing lighting columns/wall mounted brackets are structurally capable of supporting the weight & windage of the proposed luminaire/s. This must be verified by the Principal Designer before installation works commence.
- Unless stated otherwise, Signify is not supplying the new lighting columns (including brackets etc) and therefore it is the responsibility of the Principal Designers to confirm that all proposed equipment is suitable for the intended locations (e.g. raise & lower, ground condition, foundation type, saline environment, etc).
- Unless stated otherwise, luminaires will be supplied in their standard colour.

Luminaire Schedule

Luminaire Schedule			
Symbol	Qtys Lanterns	Luminaire Type	Lumens
	4	2 X LED Luminaires and 1 x 6 m Column with 0.5m bracket. (Lantern Ref: LL-A 3000K)	4900
	3	1 X LED Luminaire and 1 x 6 m Column with 0.5m bracket. (Lantern Ref: LL-A 3000K)	4900
	2	1 X LED Luminaire and 1 x 6 m Column with 0.5m bracket. (Lantern Ref: LL-C BL2 3000K)	7500
	3	1 X LED Luminaire and 1 x 8 m Column with 0.5m bracket. (Lantern Ref: LL-C BL2 3000K)	7500
	3	1 X LED Luminaire and 1 x 6 m Column with 0.5m bracket. (Lantern Ref: LL-C 3000K)	7500
	2	1 X 1300mm LED Luminaire Luminaire mounted at 3.25m. (Luminaire Ref: LL-E 3000K) with LiDL adjustable bracket.	3900
	19	1 X 1300mm LED Luminaire Luminaire mounted at 3.25m. (Luminaire Ref: LL-E EM-EL3 3000K) with LiDL adjustable bracket.	360
	16	1 X Recessed Downlighter (Luminaire Ref: LL-CANOPY)	2260
	1	1 X Recessed Downlighter (Luminaire Ref: LL-CANOPY EM-EL3)	
	0	Columns with backplates installed	

All Lanterns installed at tilt angles indicated adjacent to the luminaire positions indicated on the drawing.
Where possible all columns should be placed 0.75m away from the curb line.
Perimeter lighting to be considered by client including any emergency lighting requirements.
Footpaths/Stairs/Ramps not considered in these proposals.
Where required Lighting columns should be protected by barriers from vehicle impact damages.
These lighting values do not take into account any obstructions from trees, vehicles, objects etc.

NOTE: "Signify has not undertaken any emergency lighting calculations. Luminaires marked as emergency fittings are for indicative purposes only. It is the responsibility of the Principle Designer to ensure emergency lighting calculations are performed and that all emergency evacuation routes are lit to a suitable standard."

Calculation Summary based on maintenance factor of 0.79								
Label	Units	Avg	Min	Max	Min/Avg	Height	Grid Points	UWLR
Main Carpark	Lux	15.0	3.7	61.4	0.25	0m	1.5m	1%

Signify Contacts:

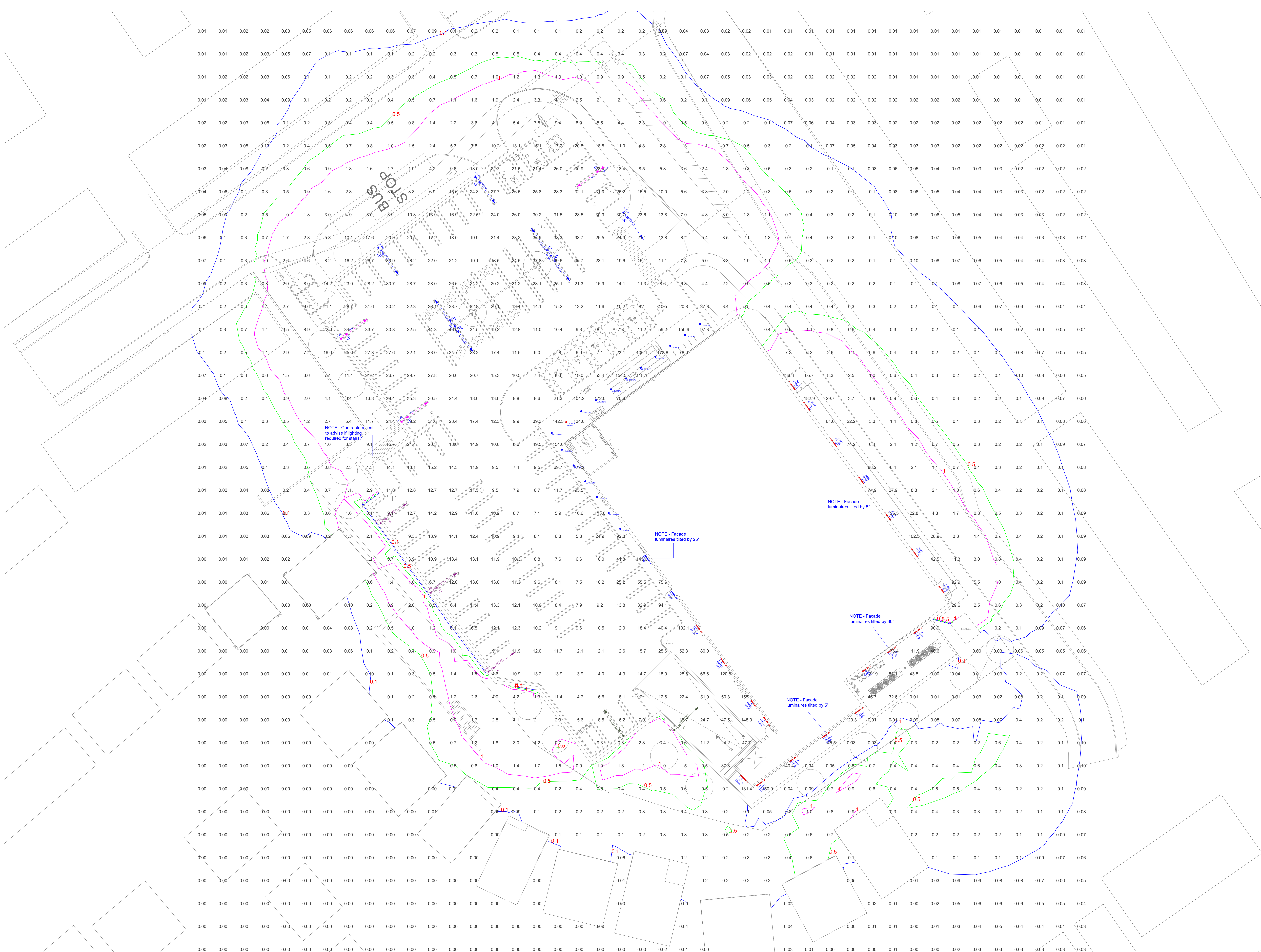
Key Account Manager, Name, Richard Fortune - 07787 004900, richard.fortune@signify.com

Rev	DSR no.	Comment	Date	LiAS	KAM	Project Number	Project Name
	0	D-6208117 INITIAL PROPOSAL	14/05/25	HSR	RF	502377667	LiDL BLACKMOORFOOT ROAD HUDDERSFIELD
	1	D-6257163 NEW SITE PLAN DRAWING	02/06/25	HSR	RF		
	2	D-6257163 LIGHTING PROPOSAL REVISED FOR SPILL LIGHT	24/06/25	HSR	RF	Scale & Sheet Size	Drawing Name
						NTS @ A3	LiAS DESIGN NOTES & LUMINAIRE SCHEDULE
						Sheet No	
						DWG 00	

Lighting Proposal Terms and Conditions of Use
These terms apply to the use of this preliminary proposal produced by Signify UK. This “**Proposal**” is understood to mean this document, a CAD drawing, lighting calculations, written documents, verbal conversations or any medium used to demonstrate or communicate the proposed lighting scheme using products from Signify’s brands. A “**Customer**” is the person or organisation for whom the Proposal is intended. The “**CDM Regulations**” means The Construction, Design and Management Regulations 2015, the Safety, Health & Welfare at Work Act 2005, The Construction (Design & Management) Regulations (Northern Ireland) 2015.
This Proposal is for guidance only and cannot be relied upon for purposes of installation or Health and Safety.
The supply and installation of this lighting scheme are subject to a contract being agreed between Customer and Signify.

PROPOSAL
(NOT FOR CONSTRUCTION)





Luminaire Schedule				
Symbol	Qty	Lanterns	Luminaire Type	Lumens
	4		2 X LED Luminaire and 1 x 6 m Column with 0.5m bracket. (Lantern Ref: LL-A 3000K)	4900
	3		1 X LED Luminaire and 1 x 6 m Column with 0.5m bracket. (Lantern Ref: LL-A 3000K)	4900
	2		1 X LED Luminaire and 1 x 6 m Column with 0.5m bracket. (Lantern Ref: LL-C BL2 3000K)	7500
	3		1 X LED Luminaire and 1 x 6 m Column with 0.5m bracket. (Lantern Ref: LL-C BL2 3000K)	7500
	3		1 X LED Luminaire and 1 x 6 m Column with 0.5m bracket. (Lantern Ref: LL-C 3000K)	7500
	2		1 X 1200mm LED Luminaire Luminaire mounted at 3.25m. (Luminaire Ref: LL-E 3000K) with LED adjustable bracket.	3500
	19		1 X 1200mm LED Luminaire Luminaire mounted at 3.25m. (Luminaire Ref: LL-E EMEL3)	360
	16		1 X Recessed Downlighter (Luminaire Ref: LL-CANDOPY)	2260
	1		1 X Recessed Downlighter (Luminaire Ref: LL-CANDOPY EMEL3)	
	0		Columns with backplates installed	

All Lanterns installed at tilt angles indicated adjacent to the luminaire positions indicated on the drawing.
Where possible all columns should be placed 0.75m away from the curb line.
Permanent lighting to be considered by client including any emergency lighting requirements.
Footpaths/Green/Walkways not considered in these proposals.
Where required Lighting columns should be protected by barriers from vehicle impact damages.
These lighting values do not take into account any obstructions from trees, vehicles, objects etc.
NOTE: Signify has not undertaken any emergency lighting calculations. Luminaires marked as emergency fittings are for indicative purposes only. It is the responsibility of the Principle Designer to ensure emergency lighting calculations are performed and that all emergency evacuation routes are fit to a suitable standard."

Calculation Summary based on maintenance factor of 0.79									
Label	Units	Avg	Min	Max	Min/Avg	Height	Grid Points	UWLR	
Main Carpark	Lux	15.0	3.7	61.4	0.25	0m	1.5m	1%	

Horizontal Spill Light - Maintenance Factor 1

Spill light Isoline Legend

- 0.1lx
- 0.5lx
- 1.0lx



- Notes:
- Unless agreed otherwise, the lighting proposal produced by the Lighting Application Specialist (LIAS) team of Philips Lighting UK&I is not intended for construction purposes, as it does not take into account the elimination of health and safety risks at this stage. For further details please refer to sheet number **DWG 00**
 - Do not scale for this drawing

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Rev	DSR no.	Comment	Date	LIAS	KAM	Project Number	Project Name
0	D-6208117	INITIAL PROPOSAL	14/05/25	HSR	RF	502377667	LiDL BLACKMOORFOOT ROAD HUDDERSFIELD
1	D-6257163	NEW SITE PLAN DRAWING	02/06/25	HSR	RF	Scale & Sheet Size	Drawing Name
2	D-6257163	LIGHTING PROPOSAL REVISED FOR SPILL LIGHT	24/06/25	HSR	RF	1:200 @ A0	PROPOSED LIGHTING LAYOUT
						Sheet No	
						DWG 01	