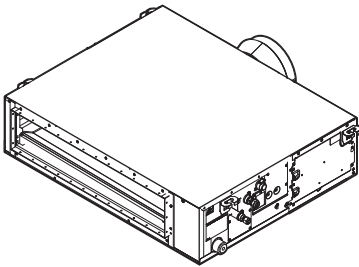




Installation and operation manual

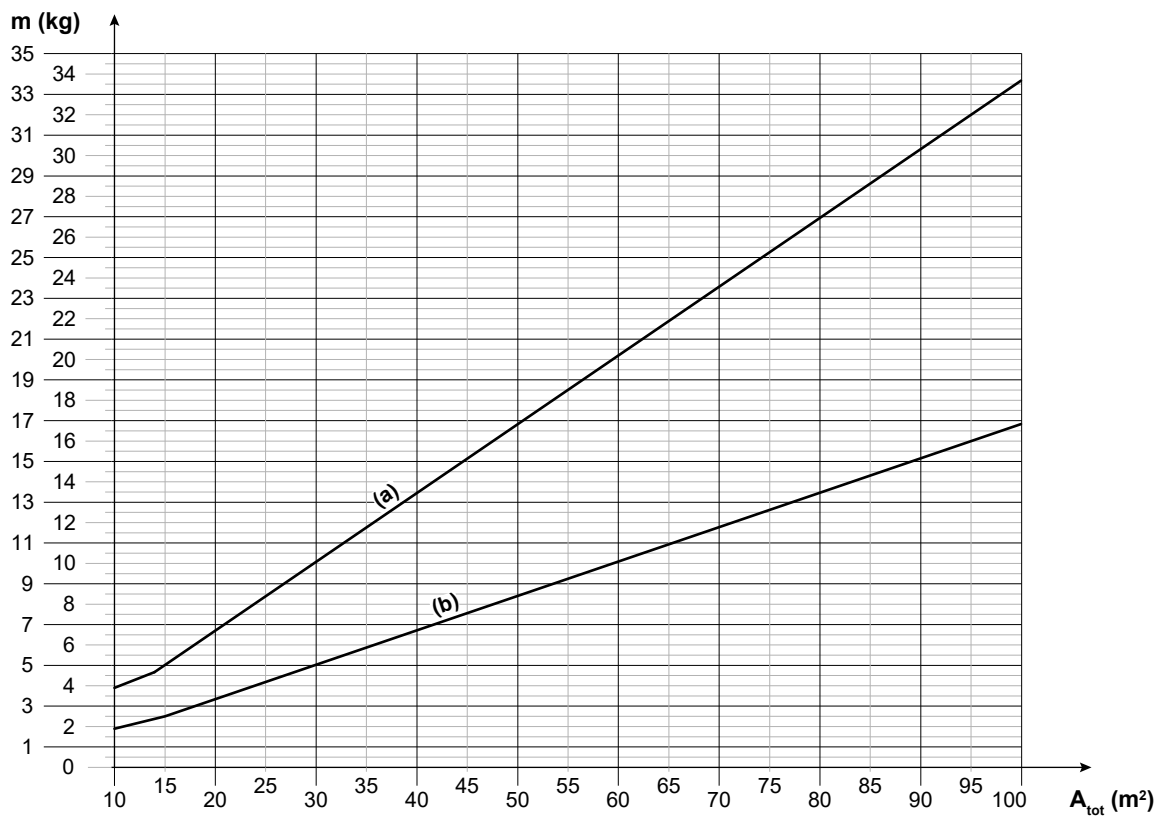
VRV system air conditioner



EKVDX32A2VEB
EKVDX50A2VEB
EKVDX80A2VEB
EKVDX100A2VEB

Installation and operation manual
VRV system air conditioner

English



A_{tot} (m ²)	m (kg)	A_{tot} (m ²)	m (kg)	A_{tot} (m ²)	m (kg)
10	3.9 ^(a) / 1.9 ^(b)	41	13.8 ^(a) / 6.9 ^(b)	72	24.3 ^(a) / 12.1 ^(b)
11	4.1 ^(a) / 2.0 ^(b)	42	14.1 ^(a) / 7.0 ^(b)	73	24.6 ^(a) / 12.3 ^(b)
12	4.3 ^(a) / 2.1 ^(b)	43	14.5 ^(a) / 7.2 ^(b)	74	24.9 ^(a) / 12.4 ^(b)
13	4.5 ^(a) / 2.2 ^(b)	44	14.8 ^(a) / 7.4 ^(b)	75	25.3 ^(a) / 12.6 ^(b)
14	4.7 ^(a) / 2.3 ^(b)	45	15.1 ^(a) / 7.6 ^(b)	76	25.6 ^(a) / 12.8 ^(b)
15	5.0 ^(a) / 2.5 ^(b)	46	15.5 ^(a) / 7.7 ^(b)	77	26.0 ^(a) / 13.0 ^(b)
16	5.4 ^(a) / 2.7 ^(b)	47	15.8 ^(a) / 7.9 ^(b)	78	26.3 ^(a) / 13.1 ^(b)
17	5.7 ^(a) / 2.8 ^(b)	48	16.2 ^(a) / 8.1 ^(b)	79	26.6 ^(a) / 13.3 ^(b)
18	6 ^(a) / 3.0 ^(b)	49	16.5 ^(a) / 8.2 ^(b)	80	27.0 ^(a) / 13.5 ^(b)
19	6.4 ^(a) / 3.2 ^(b)	50	16.8 ^(a) / 8.4 ^(b)	81	27.3 ^(a) / 13.6 ^(b)
20	6.7 ^(a) / 3.3 ^(b)	51	17.2 ^(a) / 8.6 ^(b)	82	27.6 ^(a) / 13.8 ^(b)
21	7 ^(a) / 3.5 ^(b)	52	17.5 ^(a) / 8.7 ^(b)	83	28.0 ^(a) / 14.0 ^(b)
22	7.4 ^(a) / 3.7 ^(b)	53	17.8 ^(a) / 8.9 ^(b)	84	28.3 ^(a) / 14.1 ^(b)
23	7.7 ^(a) / 3.8 ^(b)	54	18.2 ^(a) / 9.1 ^(b)	85	28.7 ^(a) / 14.3 ^(b)
24	8.1 ^(a) / 4.0 ^(b)	55	18.5 ^(a) / 9.2 ^(b)	86	29.0 ^(a) / 14.5 ^(b)
25	8.4 ^(a) / 4.2 ^(b)	56	18.9 ^(a) / 9.4 ^(b)	87	29.3 ^(a) / 14.6 ^(b)
26	8.7 ^(a) / 4.3 ^(b)	57	19.2 ^(a) / 9.6 ^(b)	88	29.7 ^(a) / 14.8 ^(b)
27	9.1 ^(a) / 4.5 ^(b)	58	19.5 ^(a) / 9.7 ^(b)	89	30.0 ^(a) / 15.0 ^(b)
28	9.4 ^(a) / 4.7 ^(b)	59	19.9 ^(a) / 9.9 ^(b)	90	30.3 ^(a) / 15.2 ^(b)
29	9.7 ^(a) / 4.9 ^(b)	60	20.2 ^(a) / 10.1 ^(b)	91	30.7 ^(a) / 15.3 ^(b)
30	10.1 ^(a) / 5.0 ^(b)	61	20.5 ^(a) / 10.3 ^(b)	92	31.0 ^(a) / 15.5 ^(b)
31	10.4 ^(a) / 5.2 ^(b)	62	20.9 ^(a) / 10.4 ^(b)	93	31.4 ^(a) / 15.7 ^(b)
32	10.8 ^(a) / 5.4 ^(b)	63	21.2 ^(a) / 10.6 ^(b)	94	31.7 ^(a) / 15.8 ^(b)
33	11.1 ^(a) / 5.5 ^(b)	64	21.6 ^(a) / 10.8 ^(b)	95	32.0 ^(a) / 16.0 ^(b)
34	11.4 ^(a) / 5.7 ^(b)	65	21.9 ^(a) / 10.9 ^(b)	96	32.4 ^(a) / 16.2 ^(b)
35	11.8 ^(a) / 5.9 ^(b)	66	22.2 ^(a) / 11.1 ^(b)	97	32.7 ^(a) / 16.3 ^(b)
36	12.1 ^(a) / 6.0 ^(b)	67	22.6 ^(a) / 11.3 ^(b)	98	33.0 ^(a) / 16.5 ^(b)
37	12.4 ^(a) / 6.2 ^(b)	68	22.9 ^(a) / 11.4 ^(b)	99	33.4 ^(a) / 16.7 ^(b)
38	12.8 ^(a) / 6.4 ^(b)	69	23.3 ^(a) / 11.6 ^(b)	100	33.7 ^(a) / 16.8 ^(b)
39	13.1 ^(a) / 6.5 ^(b)	70	23.6 ^(a) / 11.8 ^(b)		
40	13.5 ^(a) / 6.7 ^(b)	71	23.9 ^(a) / 11.9 ^(b)		

^(a) All other floors

^(b) Lowest underground floor

CE - DECLARATION OF CONFORMITY
CE - KONFORMITÄTSSERKLÄRUNG
CE - DICHAIRAZIONE DI CONFORMITÀ
CE - ΔΗΛΩΣΗ ΣΥΜΠΟΡΦΩΣΗΣ
CE - DECLARACIÓN DE CONFORMIDAD
CE - DICHAIRAZIONE DI CONFORMITÀ
CE - OVERENSTEMELSESERKLARING
CE - FORSKRÄNING OM ÖVERENSTEMELSE

CE - DECLARACIÓN DE CONFORMIDAD
CE - ЗАЯВЛЕНИЕ О СООТВЕТСТВИИ
CE - OVERENSTEMELSESERKLARING
CE - FORSKRÄNING OM ÖVERENSTEMELSE

CE - ERKLÄRUNG OM SAMSVAR
CE - ЛАВОНУС-ҲАДДИМАНУСИДУСТА
CE - DECLARAZIJA ZGODNOSTI
CE - DECLARAȚIE DE CONFORMITATE

CE - IZJAVA O SKLADNOSTI
CE - VASTANUSKELARUSTOON
CE - ДЕКЛАРАЦИЯ СООТВЕТСТВИЕ
CE - DECLARAȚIE DE CONFORMITATE

CE - ATTIKTES-DEKLARACIJA
CE - ATILI STIŠTES-DEKLARACIJA
CE - VYHLÁŠENIE ZHODY
CE - UYGUNLUK BEYANI

Daikin Industries Czech Republic s.r.o.

- 01 ⁰⁰⁰ declares under its sole responsibility that the equipment to which this declaration relates:
02 ⁰⁰ erklärt auf seine alleinige Verantwortung, daß die dieses Erklärung betrimmt ist:
03 ⁰⁰ déclare sous sa seule responsabilité que l'équipement visé par la présente déclaration:
04 ⁰⁰ verklaart hierop te eigen oorspronkelijke verantwoordelijkheid dat de afgeleverde apparatuur:
05 ⁰⁰ deklaa bipo su propia responsabilidad que el equipo al que hace referencia la declaración:
06 ⁰⁰ δηλώνει υπό αποκλειστική του ευθύνη ότι η εν λόγω δήλωση αφορά:
07 ⁰⁰⁰ obzaruje na svojomkome i odgovornosti, da je oprema na koju se ova izjava odnosi:
08 ⁰⁰ declara sub sua exclusiva responsabilidade que os equipamentos a que esta declaração se refere:

EKVDX32A2VEB*, EKVDX50A2VEB*, EKVDX80A2VEB*, EKVDX100A2VEB*,

* = . . . 1, 2, 3, ..., 9

- 01 are in conformity with the following standard(s) or other normative document(s), provided that these are used in accordance with our instructions:
02 unsern folgenden Normen) oder einem anderen Normdokument oder Dokumenten entsprechiensprechen, unter der Voraussetzung, daß sie gemäß
03 sont conformes à l(au)x norm(e) (s) ou autre(s) document(s) normatif(s), pour autant qu'ils soient utilisés conformément à nos instructions:
04 conform de volgende norm(en) / d(e)n of meer andere bindende documenten zijn, op voorwaarde dat ze worden gebruikt overeenkomstig onze
05 instructies:
06 están en conformidad con la(s) siguiente(s) norma(s) u otro(s) documento(s) normativo(s), siempre que sean utilizados de acuerdo con nuestras
07 instrucciones:
08 sono conformi agli (seguenti) standard(s) o altro(i) document(i) a carattere normativo, a patto che vengano usati in conformità alle nostre istruzioni:
09 είναι σύμφωνα με το(ι) (ακόλουθ) πρότυπο(ι) (ή άλλο έγγραφο) (ή κανονισμό), υπό την προϋπόθεση ότι χρησιμοποιείται (ο) πρότυπο(α) αντίστοιχα

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181 ⁰⁰ instrukcijami.

182 ⁰⁰

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1 About the documentation

1.1 About this document



INFORMATION

Make sure that the user has the printed documentation and ask him/her to keep it for future reference.

Target audience

Authorised installers + end users



INFORMATION

This appliance is intended to be used by expert or trained users in shops, in light industry and on farms, or for commercial use by lay persons.



WARNING

Make sure installation, servicing, maintenance, repair and applied materials follow the instructions from Daikin and, in addition, comply with applicable legislation and are performed by qualified persons only. In Europe and areas where IEC standards apply, EN/IEC 60335-2-40 is the applicable standard.

Documentation set

This document is part of a documentation set. The complete set consists of:

- **General safety precautions:**
 - Safety instructions that you must read before installing
 - Format: Paper (in the box of the outdoor unit)
- **Installation and operation manual:**
 - Installation and operation instructions
 - Format: Paper (in the box of the indoor unit)
- **Installer and user reference guide:**
 - Preparation of the installation, reference data,...
 - Detailed step-by-step instructions and background information for basic and advanced usage
 - Format: Digital files on <http://www.daikineurope.com/support-and-manuals/product-information/>

Latest revisions of the supplied documentation may be available on the regional Daikin website or via your dealer.

The original documentation is written in English. All other languages are translations.

Technical engineering data

- A **subset** of the latest technical data is available on the regional Daikin website (publicly accessible).
- The **full set** of latest technical data is available on the Daikin Business Portal (authentication required).

2 Specific installer safety instructions

Always observe the following safety instructions and regulations.

General



WARNING

Make sure installation, servicing, maintenance, repair and applied materials follow the instructions from Daikin and, in addition, comply with applicable legislation and are performed by qualified persons only. In Europe and areas where IEC standards apply, EN/IEC 60335-2-40 is the applicable standard.

Installation site (see "12.1 Preparing the installation site" ▶ 16))



WARNING

The appliance shall be stored in a room without continuously operating ignition sources (example: open flames, an operating gas appliance or an operating electric heater).



CAUTION

Appliance NOT accessible to the general public, install it in a secured area, protected from easy access.

This unit, both indoor and outdoor, is suitable for installation in a commercial and light industrial environment.

Duct installation (see "12.2.2 Guidelines when installing the ducting" ▶ 17))



WARNING

Do NOT install operating ignition sources (example: open flames, an operating gas appliance or an operating electric heater) in the duct work.



CAUTION

- Make sure the installation of the duct does NOT exceed the setting range of the external static pressure for the unit. Refer to the technical datasheet of your model for the setting range.
- Make sure to install the canvas duct so vibrations are NOT transmitted to the duct or ceiling. Use a sound-absorbing material (insulation material) for the lining of the duct and apply vibration insulation rubber to the hanging bolts.
- When welding, make sure NOT to spatter onto the drain pan.
- If the metal duct passes through a metal lath, wire lath or metal plate of the wooden structure, separate the duct and wall electrically.
- Install the outlet grille in a position where the airflow will not come into direct contact with people.
- Do NOT use booster fans in the duct.

Refrigerant piping installation (see "13 Piping installation" ▶ 18))



CAUTION

- Do NOT use mineral oil on flared part.
- Do NOT reuse piping from previous installations.
- NEVER install a drier to this unit to guarantee its lifetime. The drying material may dissolve and damage the system.



CAUTION

- Incomplete flaring may cause refrigerant gas leakage.
- Do NOT re-use flares. Use new flares to prevent refrigerant gas leakage.
- Use flare nuts that are included with the unit. Using different flare nuts may cause refrigerant gas leakage.



CAUTION

Install the refrigerant piping or components in a position where they are unlikely to be exposed to any substance which may corrode components containing refrigerant, unless the components are constructed of materials that are inherently resistant to corrosion or are suitably protected against corrosion.

Electrical installation (see "14 Electrical installation" ▶ 19))



DANGER: RISK OF ELECTROCUTION



WARNING

- All wiring MUST be performed by an authorised electrician and MUST comply with the applicable legislation.
- Make electrical connections to the fixed wiring.
- All components procured on-site and all electrical construction MUST comply with the applicable legislation.



WARNING

- If the power supply has a missing or wrong N-phase, equipment might break down.
- Establish proper earthing. Do NOT earth the unit to a utility pipe, surge absorber, or telephone earth. Incomplete earthing may cause electrical shock.
- Install the required fuses or circuit breakers.
- Secure the electrical wiring with cable ties so that the cables do NOT come in contact with sharp edges or piping, particularly on the high-pressure side.
- Do NOT use taped wires, stranded conductor wires, extension cords, or connections from a star system. They can cause overheating, electrical shock or fire.
- Do NOT install a phase advancing capacitor, because this unit is equipped with an inverter. A phase advancing capacitor will reduce performance and may cause accidents.



WARNING

ALWAYS use multicore cable for power supply cables.



WARNING

Use an all-pole disconnection type breaker with at least 3 mm between the contact point gaps that provide full disconnection under overvoltage category III.

2 Specific installer safety instructions



WARNING

If the supply cord is damaged, it **MUST** be replaced by the manufacturer, its service agent or similarly qualified persons in order to avoid a hazard.



WARNING

The VAM and the EKVDX indoor unit **MUST** share the same electrical safety devices and power supply.



CAUTION

- Each EKVDX unit has to be connected to a separate user interface. Only a safety system compatible remote controller can be used as the user interface. See technical data sheet for remote controller compatibility (e.g. H-type user interface like BRC1H52/82*).
- R32 refrigerant: the user interface **MUST** be installed in one of the rooms the EKVDX unit is discharging into.
- R410A refrigerant: the user interface can also be installed in e.g. the hallway.

2.1 Instructions for equipment using R32 refrigerant



WARNING: MILDLY FLAMMABLE MATERIAL

The refrigerant inside this unit is mildly flammable.



WARNING

- Do NOT pierce or burn refrigerant cycle parts.
- Do NOT use cleaning materials or means to accelerate the defrosting process other than those recommended by the manufacturer.
- Be aware that the refrigerant inside the system is odourless.



WARNING

The appliance shall be stored so as to prevent mechanical damage and in a well-ventilated room without continuously operating ignition sources (example: open flames, an operating gas appliance or an operating electric heater) and have a room size as specified below.



WARNING

Make sure installation, servicing, maintenance and repair comply with instructions from Daikin and with applicable legislation and are executed **ONLY** by authorised persons.



WARNING

If one or more rooms are connected to the unit using a duct system, make sure:

- there are **NO** operating ignition sources (example: open flames, an operating gas appliance or an operating electric heater) in the room where the unit is installed, in case the floor area is less than the minimum floor area A_{\min} (m²) of the rooms that are served.
- NO** auxiliary devices, which may be a potential ignition source, are installed in the duct work (example: hot surfaces with a temperature exceeding 700°C and electric switching device);
- only auxiliary devices approved by the manufacturer are used in the duct work;
- the air outlet can be connected directly to multiple rooms by ducting. Do **NOT** use spaces such as a false ceiling as a duct for the air outlet.
- the height of the air extraction opening from the room **MUST** be equal or below the refrigerant release point.



NOTICE

- Precautions shall be taken to avoid excessive vibration or pulsation to refrigeration piping.
- Protection devices, piping and fittings shall be protected as far as possible against adverse environmental effects.
- Provision shall be made for expansion and contraction of long runs of piping.
- Piping in refrigerating systems shall be designed and installed such as to minimise the likelihood of hydraulic shock damaging the system.
- The indoor equipment and pipes shall be securely mounted and guarded such that accidental rupture of equipment or pipes cannot occur from events such as moving furniture or reconstruction activities.



CAUTION

Do **NOT** use potential sources of ignition in searching for or detection of refrigerant leaks.



NOTICE

- Do **NOT** re-use joints and copper gaskets which have been used already.
- Joints made in installation between parts of refrigerant system shall be accessible for maintenance purposes.

2.1.1 Installation space requirements

If the system uses R32 refrigerant, extra safety measures are required because R32 refrigerant is mildly flammable. This means that the system is restricted with respect to the total refrigerant charge and/or the floor area that is served.



WARNING

In case the appliance contains R32 refrigerant, refer to "[2.1.2 To determine the charge limitations](#)" [7].

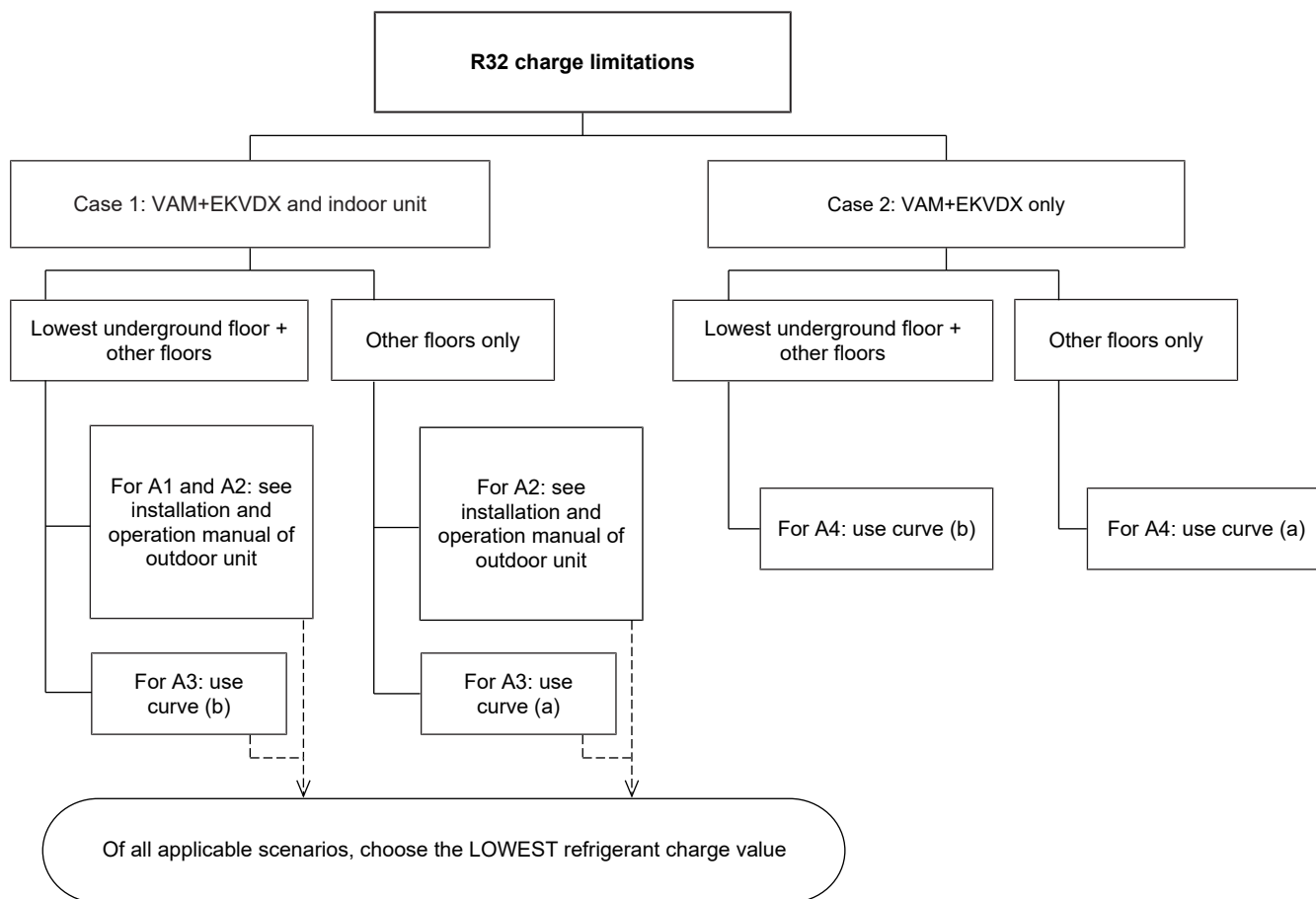


NOTICE

- Pipework shall be protected from physical damage.
- Installation of pipework shall be kept to a minimum.

2.1.2 To determine the charge limitations

Overview



Graph and table for EKVDX

When total floor area A_3 is determined, use the graph or table (see "Figure 1" ▶ 2] at the beginning of this manual) to determine the total refrigerant charge limit in the system. For A_1 and A_2 , use the graph or table from the outdoor unit installation manual.

- | | |
|-----------------------------|--|
| m | Total refrigerant charge limit in the system |
| A_{tot} | Total room area |
| (a) | All other floors (=All other floors) |
| (b) | Lowest underground floor (=Lowest underground floor) |
| m | Total refrigerant charge limit in the system |
| A_{tot} | Total room area |
| (a) | All other floors (=All other floors) |
| (b) | Lowest underground floor (=Lowest underground floor) |

Note: When multiple outdoor units are servicing the same space, use calculations on the room area based on the outdoor unit with the largest refrigerant charge.

Note: The factory charge depends on the outdoor unit in the system. The examples used below consider a VRV 5-S R32 outdoor unit.

Note: Make sure the total refrigerant charge amount is lower than:

- 15.96 kg x the total number of connected indoor units and EKVDX units.
- 63.84 kg.

Case 1: VAM+EKVDX and indoor unit(s) combined

Step 1 – determine:

- A_1 – the area of the smallest room in the lowest underground floor in which an indoor unit is present (if applicable). See outdoor unit installation manual.
- A_2 – the area of the smallest room not in the lowest underground floor, in which an indoor unit is present. See outdoor unit installation manual.

- A_3 – the total area of all the rooms which the EKVDX is discharging air into. See "2.1.3 To determine the floor area" ▶ 8].

Note: The EKVDX can be discharging into the same room as a normal indoor unit. The area of this room must also be taken into account for A_3 .

Note: For VAM+EKVDX, only consider rooms that are continuously served. E.g. In case of zonal dampers in the duct between EKVDX and a room, this room cannot be considered as part of the total room area. Only exception are zonal dampers only used for fire safety.

Use A_1 , A_2 and A_3 in the following steps to determine the maximum allowable total charge of the system.

Step 2 – see the installation manual of the outdoor unit for choosing the correct curve depending on the installation height of the indoor unit. For EKVDX units, installation height should always be ≥ 2.2 m.

Step 3 – in case there are underground floors, determine the maximum allowable charge limit in the system for each area (A_1 , A_2 and A_3):

- For the room with the smallest area containing an indoor unit not on the lowest underground floor/on the lowest underground floor: see the outdoor unit installation manual on R32 charge limitations.
- For the total room area for the VAM+EKVDX system when it contains:
 - no room in the lowest underground floor, refer to curve (a).
 - at least one room in the lowest underground floor, refer to curve (b).

Once the maximum allowable charge has been calculated for all applicable scenarios, use the lowest value as the upper limit.

3 User safety instructions

Step 4 – determine the total amount of allowable refrigerant charge in the system based on the above curves.

Step 5 – the total refrigerant charge in the system must be less than the maximum allowable total refrigerant charge value derived from step 4. If not:

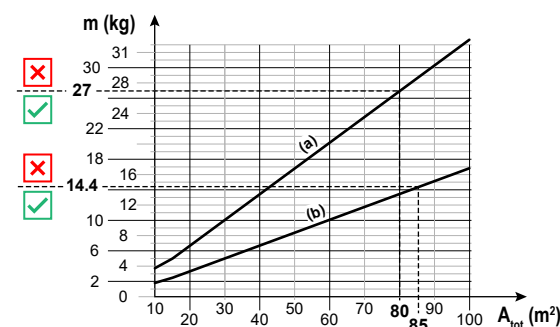
- 1 Change the installation. Do one of the following:
 - Increase the area of smallest room.
 - Decrease the piping length by changing the system layout (if practical).
 - Increase the total floor area of the VAM+EKVDX system.
 - Add additional countermeasures as described in the applicable legislation.
- 2 Repeat all of the above steps.

Example

VRV system with an EKVDX and ceiling mounted indoor units serving 4 rooms. The total room area of all 4 rooms is 80 m², the smallest room with an indoor unit has an area of 16 m². No underground floor in the building.

- To check the maximum allowable charge for the total room area of 80 m² with an EKVDX unit in the system, use curve (a) (see "2-1 Example" ▶ 8). **Result:** 27 kg.
- To check the maximum allowable charge, for a room of 16 m² with a ceiling mounted unit, see the outdoor unit manual section on charge limitations. **Result:** 10.4 kg.

Charge in system	10.4 kg
Factory charge	3.4 kg
Maximum field piping charge	7.0 kg



2-1 Example

Case 2: VAM+ EKVDX only

Step 1 – determine A_t : the total area of all the rooms which the EKVDX unit is discharging air into. See "2.1.3 To determine the floor area" ▶ 8].

Step 2 – (see step 2 of case 1)

Step 3 – in case the EKVDX:

- is not discharging into any room in the lowest underground floor, refer to curve (a).

- can discharge to a combination of rooms in the lowest underground floor and other floors, refer to curve (b).

Step 4 – (see step 4 of case 1)

Step 5 – (see step 5 of case 1)

Example

VRV system with an EKVDX serving 5 rooms. The total room area is 85 m², the smallest room with a ceiling mounted indoor unit on other floors has an area of 14 m². There are multiple underground floors in the building and the smallest room with an indoor unit in the lowest underground floor has an area of 24 m².

- To check the maximum allowable charge for a total room area of 85 m² with an EKVDX unit in the system, use curve (b) (see "2-1 Example" ▶ 8). **Result:** 14.4 kg.
- To check the maximum allowable charge, see the outdoor unit manual for the following calculations:
 - for a room of 14 m² with a ceiling mounted unit not in the lowest underground floor. **Result:** 9.3 kg.
 - for the smallest room of 24m² of the lowest underground floor with a wall mounted indoor unit. **Result:** 8.1 kg.

8.1<9.3<14.4 kg, therefore the maximum allowable refrigerant charge is 8.1 kg (smallest value).

Charge in system	8.1 kg
Factory charge	3.4 kg
Maximum field piping charge	4.7 kg

2.1.3 To determine the floor area

Follow these rules to determine the room area:

- Determine the room area by projecting the walls, doors and partitions to the floor and calculating the enclosed area.
- Do not consider spaces connected by only false ceilings, ductwork or similar connections as a single space.
- If the partition between 2 rooms on the same floor meets certain requirements, the rooms are considered as one room and the areas of the rooms may be added up. This way it is possible to increase the room area value used to calculate the maximum allowed charge.

When considering the smallest single room (for other indoor units only, NOT for EKVDX), one of the following 2 requirements MUST be followed:

- Rooms on the same floor that are connected with a permanent opening that extends to the floor and is intended for people to walk through can be considered as one room.
- Rooms on the same floor connected with openings that fulfil certain requirements (see the installation and operation manual of the outdoor unit) can be considered as a single room. The opening must consist out of at least 2 parts to allow for air circulation.

For the user

3 User safety instructions

Always observe the following safety instructions and regulations.

3.1 General



WARNING

If you are NOT sure how to operate the unit, contact your installer.

WARNING

This appliance can be used by children aged from 8 years and above and persons with reduced physical, sensory or mental capabilities or lack of experience and knowledge if they have been given supervision or instruction concerning use of the appliance in a safe way and understand the hazards involved.

Children **SHALL NOT** play with the appliance.

Cleaning and user maintenance **SHALL NOT** be made by children without supervision.

WARNING

To prevent electrical shocks or fire:

- Do NOT rinse the unit.
- Do NOT operate the unit with wet hands.
- Do NOT place any objects containing water on the unit.

CAUTION

- Do NOT place any objects or equipment on top of the unit.
- Do NOT sit, climb or stand on the unit.

- Units are marked with the following symbol:



This means that electrical and electronic products may NOT be mixed with unsorted household waste. Do NOT try to dismantle the system yourself: the dismantling of the system, treatment of the refrigerant, of oil and of other parts **MUST** be done by an authorised installer and **MUST** comply with applicable legislation.

Units **MUST** be treated at a specialised treatment facility for reuse, recycling and recovery. By ensuring this product is disposed of correctly, you will help to prevent potential negative consequences for the environment and human health. For more information, contact your installer or local authority.

- Batteries are marked with the following symbol:



This means that the batteries may NOT be mixed with unsorted household waste. If a chemical symbol is printed beneath the symbol, this chemical symbol means that the battery contains a heavy metal above a certain concentration.

Possible chemical symbols are: Pb: lead (>0.004%).

Waste batteries **MUST** be treated at a specialised treatment facility for reuse. By ensuring waste batteries are disposed of correctly, you will help to prevent potential negative consequences for the environment and human health.

3.2 Instructions for safe operation

WARNING

- Do NOT modify, disassemble, remove, reinstall or repair the unit yourself as incorrect dismantling or installation may cause an electrical shock or fire. Contact your dealer.
- In case of accidental refrigerant leaks, make sure there are no naked flames. The refrigerant itself is entirely safe and non-toxic. R410A is a non-combustible refrigerant, and R32 is a mildly flammable refrigerant, but they will generate a toxic gas when they accidentally leak into a room where combustible air from fan heaters, gas cookers, etc. is present. Always have qualified service personnel confirm that the point of leakage has been repaired or corrected before resuming operation.

CAUTION

This unit is equipped with electrically powered safety measures, such as a refrigerant leak detector. In order to be effective, the unit must be electrically powered at all times after installation, except for short service periods.

CAUTION

NEVER touch the internal parts of the controller.

WARNING

This unit contains electrical and hot parts.

3 User safety instructions

WARNING

Before operating the unit, be sure the installation has been carried out correctly by an installer.

CAUTION

It is unhealthy to expose your body to the air flow for a long time.

CAUTION

To avoid oxygen deficiency, ventilate the room sufficiently if equipment with burner is used together with the system.

CAUTION

Do NOT operate the system when using a room fumigation-type insecticide. Chemicals could collect in the unit, and endanger the health of people who are hypersensitive to chemicals.

CAUTION

NEVER expose little children, plants or animals directly to the airflow.

WARNING

Do NOT place objects below the indoor and/or outdoor unit that may get wet. Otherwise condensation on the unit or refrigerant pipes, dirt or drain blockage may cause dripping, and objects under the unit may get dirty or damaged.

WARNING

Do NOT place a flammable spray bottle near the air conditioner and do NOT use sprays near the unit. Doing so may result in a fire.

Maintenance and service (see ["7 Maintenance and service"](#) [p 13])

WARNING

NEVER replace a fuse with a fuse of a wrong ampere ratings or other wires when a fuse blows out. Use of wire or copper wire may cause the unit to break down or cause a fire.

CAUTION

After a long use, check the unit stand and fitting for damage. If damaged, the unit may fall and result in injury.

CAUTION

Before accessing terminal devices, make sure to interrupt all power supply.

WARNING

Be careful with ladders when working in high places.

CAUTION

Turn off the unit before cleaning the air outlet.

WARNING

Do NOT let the indoor unit get wet.
Possible consequence: Electrical shock or fire.

About the refrigerant (see ["7.1 About the refrigerant"](#) [p 13])

WARNING: MILDLY FLAMMABLE MATERIAL

The R32 refrigerant (if applicable) in this unit is mildly flammable. Refer to the outdoor unit specifications for the type of refrigerant to be used.

WARNING

The appliance using R32 refrigerant shall be stored so as to prevent mechanical damage and in a well-ventilated room without continuously operating ignition sources (e.g. open flames, an operating gas appliance, or an operating electric heater). The room size shall be as specified in the General safety precaution.

WARNING

- Do NOT pierce or burn refrigerant cycle parts.
- Do NOT use cleaning materials or means to accelerate the defrosting process other than those recommended by the manufacturer.
- Be aware that the refrigerant inside the system is odourless.

⚠ WARNING

R410A is a non-combustible refrigerant, and R32 is a mildly flammable refrigerant; they normally do NOT leak. If the refrigerant leaks in the room and comes into contact with fire from a burner, a heater, or a cooker, this may result in a fire (in case of R32), or the formation of a harmful gas.

Turn off any combustible heating devices, ventilate the room, and contact the dealer from where you purchased the unit.

Do NOT use the unit until a service person confirms that the part from which the refrigerant leaked has been repaired.

⚠ WARNING

It is necessary to replace the R32 refrigerant leakage sensor after every detection or at the end of the lifetime. ONLY authorised persons may replace the sensor.

⚠ WARNING

The heat reclaim ventilation unit filters MUST be cleaned after a drop in airflow rate has been detected. ONLY authorised personnel can execute this.

Troubleshooting (see "8 Troubleshooting" ▶ 14)

⚠ WARNING

Stop operation and shut OFF the power if anything unusual occurs (burning smells etc.).

Leaving the unit running under such circumstances may cause breakage, electrical shock or fire. Contact your dealer.

⚡ DANGER: RISK OF ELECTROCUTION

To clean the air conditioner, be sure to stop operation and turn all power supplies OFF. Otherwise, an electrical shock and injury may result.

4 About the system**WARNING**

- Do NOT modify, disassemble, remove, reinstall or repair the unit yourself as incorrect dismantling or installation may cause an electrical shock or fire. Contact your dealer.
- In case of accidental refrigerant leaks, make sure there are no naked flames. The refrigerant itself is entirely safe and non-toxic. R410A is a non-combustible refrigerant, and R32 is a mildly flammable refrigerant, but they will generate a toxic gas when they accidentally leak into a room where combustible air from fan heaters, gas cookers, etc. is present. Always have qualified service personnel confirm that the point of leakage has been repaired or corrected before resuming operation.

**NOTICE**

Do NOT use the system for other purposes. In order to avoid any quality deterioration, do NOT use the unit for cooling precision instruments, food, plants, animals, or works of art.

**NOTICE**

For future modifications or expansions of your system:

A full overview of allowable combinations (for future system extensions) is available in technical engineering data and should be consulted. Contact your installer to receive more information and professional advice.

**CAUTION**

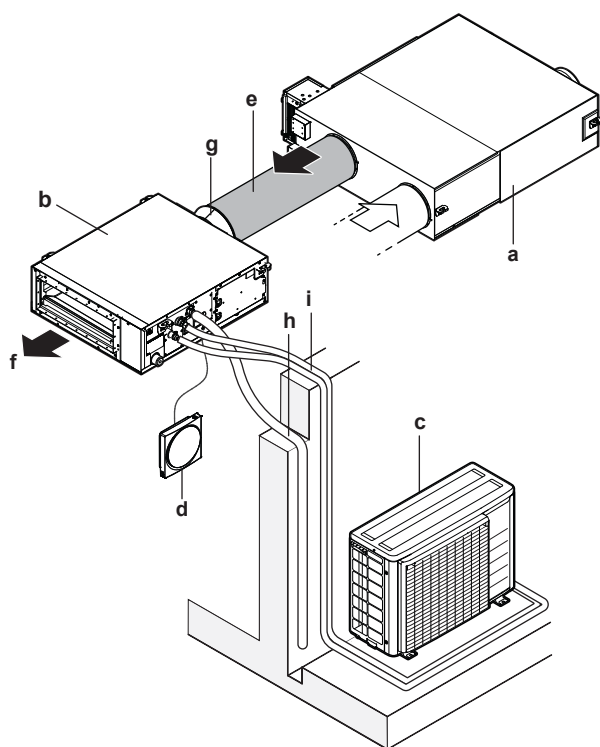
This unit is equipped with electrically powered safety measures, such as a refrigerant leak detector. In order to be effective, the unit must be electrically powered at all times after installation, except for short service periods.

4.1 System layout

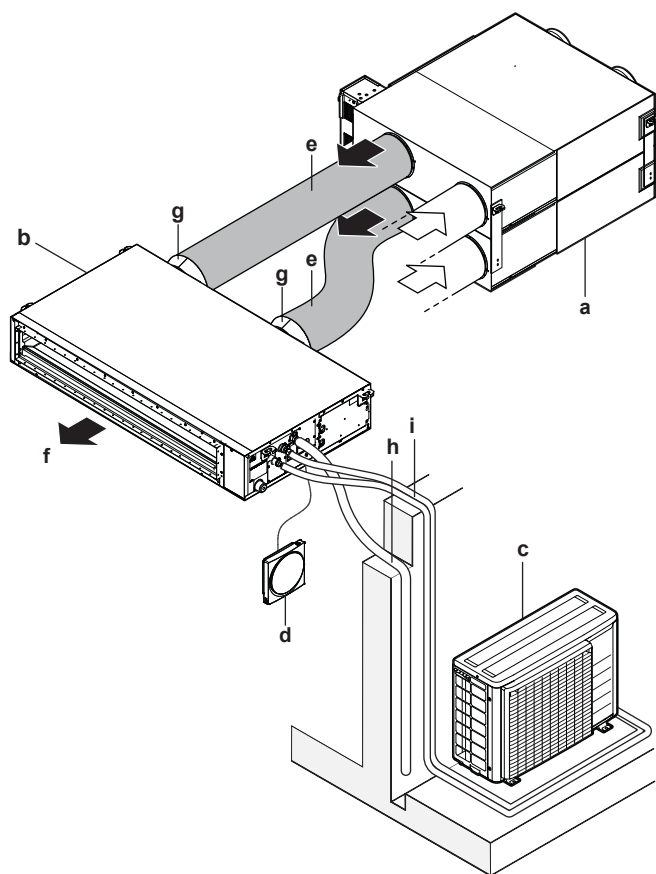
The EKVDX is an airconditioning unit for pretreatment of incoming supply air from a VAM heat reclaim ventilation unit. For comfort temperature control, it is still required to install a normal indoor unit.

Do not place the EKVDX before the heat reclaim ventilation unit.

5 User interface



4-1 For VAM500~1000 and EKVDX32~80



4-2 For VAM1500+2000 and EKVDX100

- a Heat reclaim ventilation unit (VAM)
- b EKVDX indoor unit
- c Outdoor unit
- d User interface
- e Air inlet duct for EKVDX indoor unit
- f Discharge air
- g Duct flange(s)
- h Drain pipe
- i Refrigerant piping + transmission cable

4.2 Compatibility with VAM models

	EKVDX32A2	EKVDX50A2	EKVDX80A2	EKVDX100A2
VAM500J8	X	—	—	—
VAM650J8	—	X	—	—
VAM800J8	—	X	—	—
VAM1000J8	—	—	X	—
VAM1500J8	—	—	—	X
VAM2000J8	—	—	—	X

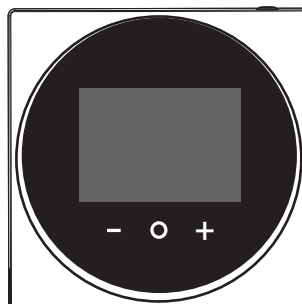
— Not compatible

X Compatible in pair

The EKVDX option is not available for VAM350J8.

5 User interface

Each EKVDX unit MUST be connected to a separate user interface. The user interface BRC1H* (or a compatible H-type user interface) MUST be used.



NOTICE

Do NOT wipe the controller operation panel with benzene, thinner, chemical dust cloth, etc. The panel may get discoloured or the coating peeled off. If it is heavily dirty, soak a cloth in water-diluted neutral detergent, squeeze it well and wipe the panel clean. Wipe it with another dry cloth.

This operation manual offers a non-exhaustive overview of the main functions of the system.

For more information about the user interface, see the operation manual of the installed user interface.

6 Operation

6.1 Operation range

For safe and effective operation:

- In case an EKVDX unit is connected, the maximum allowed outdoor unit temperature is 46°C (even if the outdoor unit is capable to go higher if no EKVDX is connected).
- The supply air coming from the heat reclaim ventilation unit should correspond to the following temperature and humidity ranges.

	Cooling	Heating
Air supply temperature	11~35°C DB	
Indoor humidity ^(a)	≤80%	
Setting temperature range	13~30°C	24~45°C

^(a) To avoid condensation and water dripping out of the unit. If the temperature or the humidity is beyond these conditions, safety devices may be put in action and the air conditioner may not operate.



INFORMATION

The EKVDX is a pretreatment unit. Therefore, the temperature setpoints:

- are not displayed on the user interface.
- can only be modified with field settings (see "15.3 Field settings" [p 22] for the appropriate field settings).

6.2 About operation modes



INFORMATION

Depending on the installed system, some operation modes will not be available.

- If the main power supply is turned off during operation, operation will restart automatically after the power turns back on again.
- Setpoint.** Target temperature for the Cooling, Heating, and Auto operation modes.
- Setback.** A function that keeps the room temperature in a specific range when the system is turned off (by the user, the schedule function, or the OFF timer).

For more information, refer to the user interface manual.

6.2.1 Basic operation modes

The indoor unit can operate in various operation modes.

Icon	Operation mode
	Cooling. In this mode, cooling will be activated as required by the setpoint, or by Setback operation.
	Heating. In this mode, heating will be activated as required by the setpoint, or by Setback operation.
	Fan only / Ventilation only. In this mode, air circulates without heating or cooling.
	Auto. In Auto mode, the indoor unit automatically switches between heating and cooling mode, as required by the setpoint.

6.2.2 Special heating operation modes

Operation	Description
Defrost^(a)	<p>To prevent a loss of heating capacity due to frost accumulation in the outdoor unit, the system will automatically switch to defrost operation.</p> <p>The supply air fan will stop operation while the exhaust air fan will resume operation as before defrost operation started.</p> <p>The following icon will appear on the home screen:</p> <p>The system will resume normal operation after approximately 6 to 8 minutes.</p>

Operation	Description
Hot start^(a)	<p>The supply air fan will stop operation while the exhaust air fan will resume operation as before hot start operation started.</p> <p>The following icon will appear on the home screen:</p>

^(a) The operation of the supply and exhaust fans depends on the VAM field setting 17(27)-5.

6.3 To operate the system



INFORMATION

For setting of the operation mode or other settings, see the reference guide or operation manual of the user interface.

7 Maintenance and service

7.1 About the refrigerant



CAUTION

See "3 User safety instructions" [p 8] to acknowledge all related safety instructions.

This product contains fluorinated greenhouse gases. Do NOT vent gases into the atmosphere.

The EKVDX contains either R32 or R410A refrigerant.

The EKVDX has an automatic refrigerant detection function. You do not need to select the refrigerant.

	Refrigerant type	
	R32	R410A
Global warming potential (GWP)	675	2087.5



NOTICE

Applicable legislation on **fluorinated greenhouse gases** requires that the refrigerant charge of the unit is indicated both in weight and CO₂ equivalent.

Formula to calculate the quantity in CO₂ equivalent tonnes: GWP value of the refrigerant × total refrigerant charge [in kg] / 1000

Please contact your installer for more information.

7.1.1 About R32 leakage safety



NOTICE

Functionality of the safety measures are periodically automatically checked. In case of malfunction, an error code will be displayed on the user interface.



NOTICE

The R32 refrigerant leakage sensor is a semiconductor detector which may incorrectly detect substances other than R32 refrigerant. Avoid using chemical substances (e.g. organic solvents, hair spray, paint) in high concentrations, in the close proximity of the EKVDX because this may cause misdetection of the R32 refrigerant leakage sensor.

8 Troubleshooting



INFORMATION

Lifetime of the sensor is 10 years. The user interface displays error "CH-05" 6 months before the end of the sensor lifetime and error "CH-02" after the end of the sensor lifetime. For more information refer to the reference guide of the user interface and contact your dealer.



INFORMATION

To stop alarm of the user interface see the reference guide of the user interface.



INFORMATION

The minimum airflow during normal operation or during the refrigerant leakage detection is always >240 m³/h.

In case detection occurs when the unit is on standby:

- User interface displays error "A0-11", emits alarm sound and status indicator is blinking.
- The fan of the heat reclaim ventilation unit begins rotating at ultra high speed.
- Contact your dealer immediately. For more information, see the installation manual of the outdoor unit.

Airflow rate threshold levels

Airflow rates too low imply a safety concern in case there is R32 leakage. Therefore, when the R32 safety settings are active, three airflow rate threshold levels are taken into account.

Level	Airflow rate	System response	Action required
1	Lower than normal	User interface displays error "A6-30".	Auto recovery: no action required. The error disappears. If not, contact your dealer to check for a dirty air filter, leakage in ducting, ...
2	Too low	<ul style="list-style-type: none"> • User interface displays error "A6-29" or "UJ-38". • VAM and EKVDX both shut down. 	Contact your dealer to: <ul style="list-style-type: none"> • clean the filter. • check the installation for loose ducting, closed dampers, ... • reset the user interface (also possible by user).
3	Below critical airflow threshold	<ul style="list-style-type: none"> • User interface displays error "A6-28" or "UJ-37". • In case there is a leak, it will be detected but because airflow is below the legal limit, the system will automatically start refrigerant recovery operation to store all refrigerant into the outdoor unit. When recovery is finished, the system unit goes in locked status. Service is needed to repair and re-activate the system. Refer to the service manual for more information. 	Contact your dealer to repair and re-activate the system. Refer to the service manual for more information.

7.2 To clean the air outlet



WARNING

Do NOT let the indoor unit get wet. **Possible consequence:** Electrical shock or fire.

Clean with a soft cloth. If it is difficult to remove stains, use water or a neutral detergent.

8 Troubleshooting

If one of the following malfunctions occur, take the measures shown below and contact your dealer.

The system MUST be repaired by a qualified service person.

Malfunction	Measure
If a safety device such as a fuse, a circuit breaker or a residual current device frequently actuates or the ON/OFF switch does NOT function properly.	Turn OFF all main power supply switches to the unit.
If water leaks from the unit.	Stop operation.
The operation switch does NOT function properly.	Turn OFF the power supply.
If the user interface displays	Notify your installer and report the error code. To display an error code see the reference guide of the user interface.

If the system does NOT operate properly except for the above mentioned cases and none of the above mentioned malfunctions is evident, investigate the system in accordance with the following procedures.



INFORMATION

Refer to the reference guide located on <http://www.daikineurope.com/support-and-manuals/product-information/> for more troubleshooting tips.

If after checking all above items, it is impossible to fix the problem yourself, contact your installer and state the symptoms, the complete model name of the unit (with manufacturing number if possible) and the installation date (possibly listed on the warranty card).



WARNING

Stop operation and shut OFF the power if anything unusual occurs (burning smells etc.).

Leaving the unit running under such circumstances may cause breakage, electrical shock or fire. Contact your dealer.

9 Relocation

Contact your dealer for removing and reinstalling the total unit. Moving units requires technical expertise.

10 Disposal



NOTICE

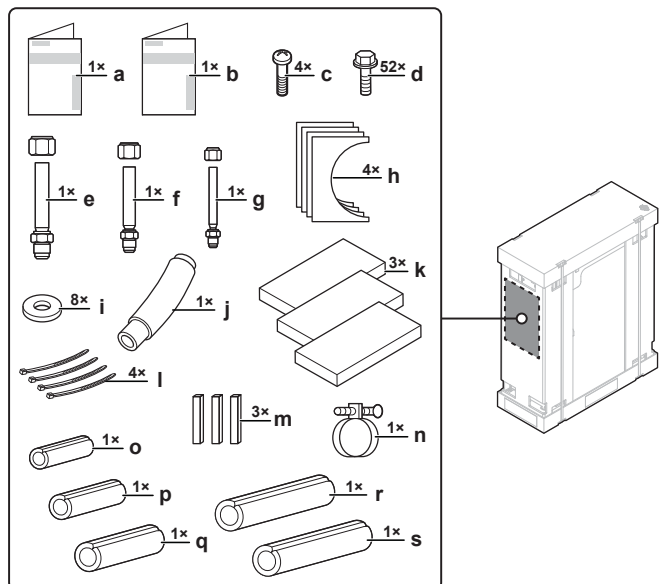
Do NOT try to dismantle the system yourself: dismantling of the system, treatment of the refrigerant, oil and other parts MUST comply with applicable legislation. Units MUST be treated at a specialised treatment facility for reuse, recycling and recovery.

For the installer

11 About the box

11.1 Indoor unit

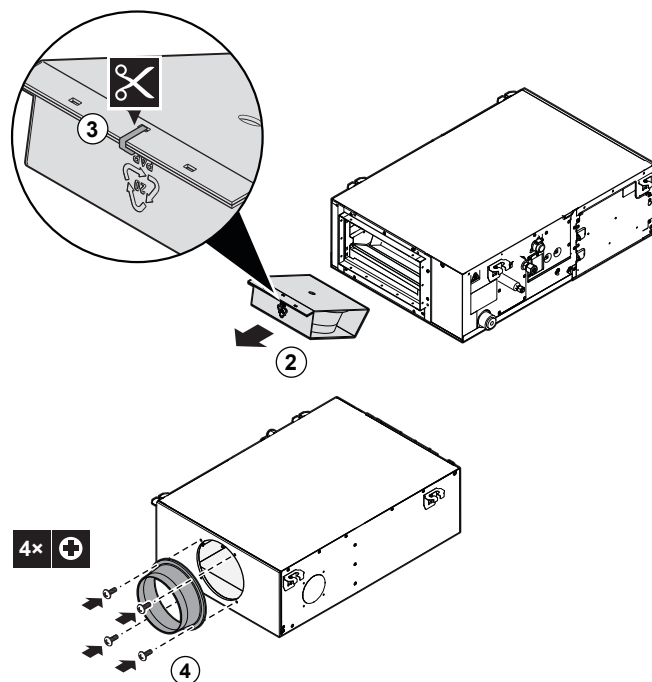
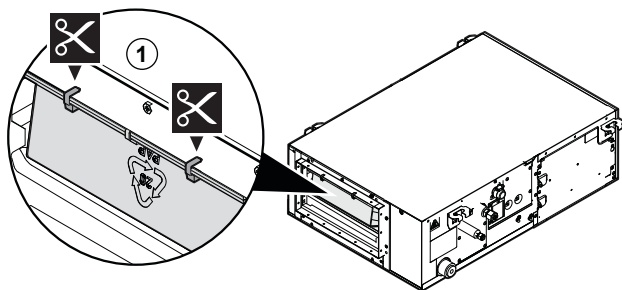
11.1.1 To remove the accessories from the indoor unit



- a Installation and operation manual
- b General safety precautions
- c Screws for duct flanges (EKVDX32A2)
- d Screws for duct flanges (EKVDX50~100A2)
- e Auxiliary pipe (gas) (Ø15.9 mm)
- f Auxiliary pipe (gas) (Ø12.7 mm)
- g Auxiliary pipe (liquid) (Ø9.5 mm)
- h Sealing for duct flanges (EKVDX50~100A2)
- i Washers for hanger bracket
- j Drain hose
- k Sealing pads: drain pipe, gas pipe and liquid pipe
- l Tie wraps
- m Sealing strips for cables (switchbox and option box cable entry)
- n Metal clamp
- o Insulation tube (Ø10-26mm, length 65 mm)
- p Insulation tube (Ø13-29mm, length 65 mm)
- q Insulation tube (Ø15-31mm, length 70 mm)
- r Insulation tube (Ø26-42mm, length 250 mm)
- s Insulation tube (Ø32-52mm, length 250 mm)

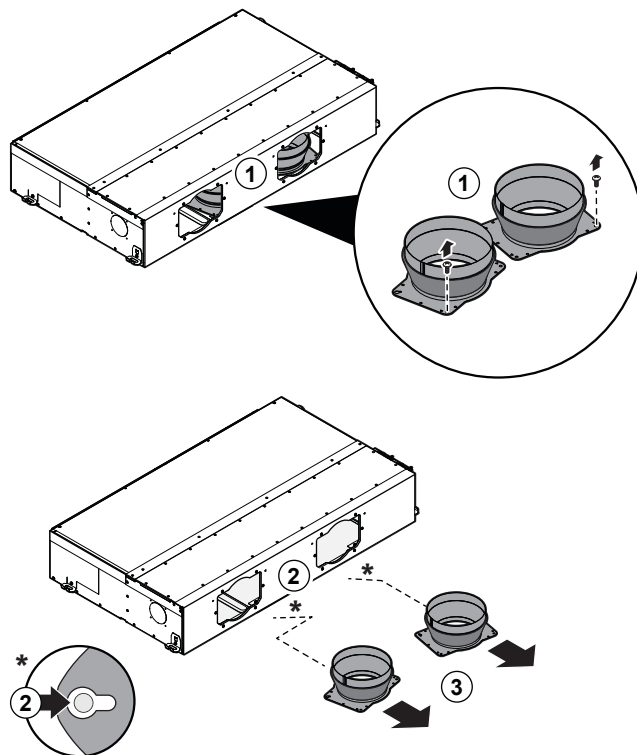
11.1.2 To remove the duct flanges from the indoor unit

Duct flange for EKVDX32A2

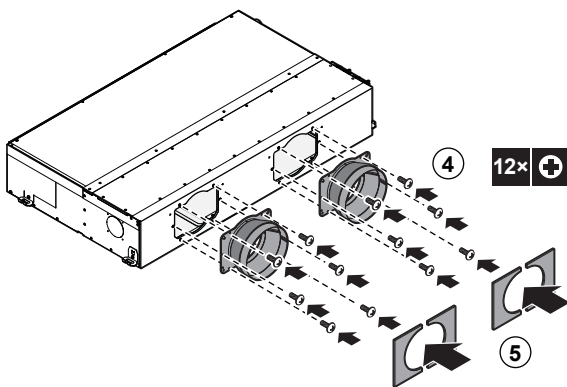


Duct flange(s) for EKVDX50~100A2

The procedure below shows the EKVDX100A2 but is similar for the EKVDX50-80A2 that only have 1 duct flange (reducer).



12 Unit installation



12 Unit installation



WARNING

In case of R32 refrigerant, the installation **MUST** comply with the requirements that apply to this R32 equipment. For more information, see ["2.1 Instructions for equipment using R32 refrigerant"](#) [p. 6].

12.1 Preparing the installation site

Avoid installation in an environment with a lot of organic solvents such as ink and siloxane.

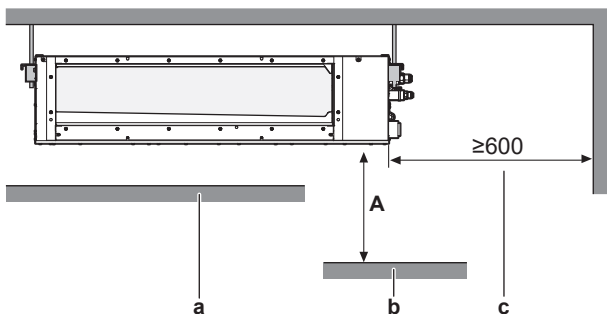
12.1.1 Installation site requirements of the indoor unit



INFORMATION

The sound pressure level is less than 70 dBA.

- **Spacing.** Mind the following requirements:

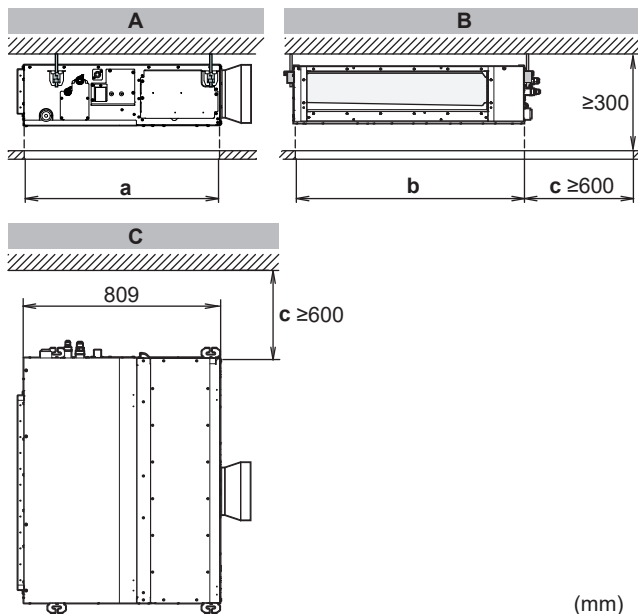


- A 2.7 m minimum distance to the floor (to avoid accidental touching)
- a Ceiling
- b Floor surface
- c Service space

- **Discharge grille.** Minimum requirement installation height of discharge grille ≥ 1.8 m.

Service space and ceiling opening size

Make sure ceiling opening is big enough to ensure a sufficient clearance for maintenance and service.



- A Side view: refrigerant piping, drain piping, control box
- B Side view: air outlet
- C Bottom view
- a Ceiling opening – width:
900 mm (EKVDX32A2)
950 mm (EKVDX50~100A2)
- b Ceiling opening – length:
550 mm (EKVDX32A2)
700 mm (EKVDX50A2)
1000 mm (EKVDX80A2)
1400 mm (EKVDX100A2)
- c Service space

Total floor area requirements



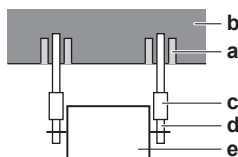
CAUTION

The total R32 refrigerant charge in the system **MUST** comply with the calculations in chapter ["2.1.2 To determine the charge limitations"](#) [p. 7].

12.2 Mounting the indoor unit

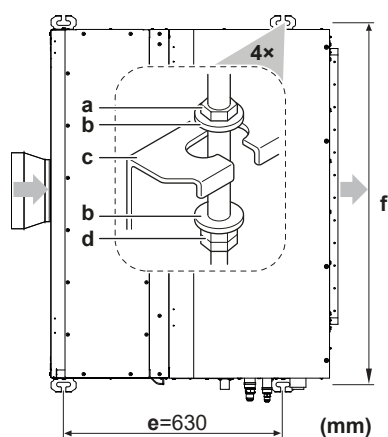
12.2.1 Guidelines when installing the indoor unit

- **Ceiling strength.** Check whether the ceiling is strong enough to support the weight of the unit. If there is a risk, reinforce the ceiling before installing the unit.
 - For existing ceilings, use anchors.
 - For new ceilings, use sunken inserts, sunken anchors or other field supplied parts.



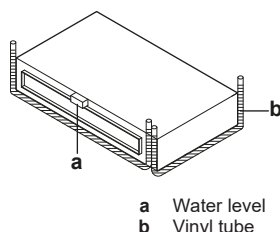
- a Anchor
- b Ceiling slab
- c Long nut or turnbuckle
- d Suspension bolt
- e Indoor unit

- **Suspension bolts.** Use M10 suspension bolts for installation. Attach the hanger bracket to the suspension bolt. Fix it securely using a nut and washer from the upper and lower sides of the hanger bracket.



- a Nut (field supply)
- b Washer (accessories)
- c Hanger bracket
- d Double nut (field supply)
- e Suspension bolt pitch (width)
- f Suspension bolt pitch (length):
588 mm (EKVDX32A2)
738 mm (EKVDX50A2)
1038 mm (EKVDX80A2)
1438 mm (EKVDX100A2)

- **Level.** Make sure the unit is level at all four corners using a level or a water-filled vinyl tube.



- a Water level
- b Vinyl tube



NOTICE

Do NOT install the unit tilted. **Possible consequence:** If the unit is tilted against the direction of the condensate flow (the drain piping side is raised), the float switch might malfunction and cause water to drip.

12.2.2 Guidelines when installing the ducting



WARNING

Do NOT install operating ignition sources (example: open flames, an operating gas appliance or an operating electric heater) in the duct work.



CAUTION

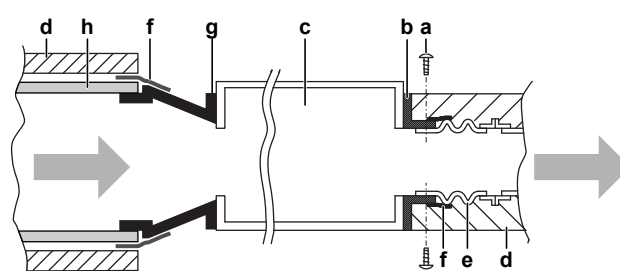
See "2 Specific installer safety instructions" [▶ 5] to make sure this installation complies with all safety regulations.

Minimum duct lengths:

- Supply air duct between VAM and EKVDX:
 - for VAM500J8+EKVDX32A2: ≥ 500 mm
 - for all other combinations: ≥ 750 mm
- Minimum outdoor air, return air and exhaust air duct length: ≥ 1.5 m
- Ducting after EKVDX: no minimum length limit

The ducting must be field supplied.

- 1 Connect the canvas duct to the inside of the flange on the outlet side. For connecting the canvas duct, use accessory screws.
- 2 Connect the duct to the canvas duct.

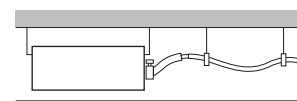
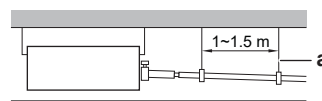


- a Screws for duct flanges (accessory)
- b Duct flange, rectangular (installed on the unit)
- c Indoor unit
- d Insulation (field supply)
- e Canvas duct (field supply)
- f Aluminium tape (field supply)
- g Duct flange, round reducer (installed on the unit)
- h Round duct

- 3 Wind aluminium tape around the flange and duct connections. Make sure there are no air leaks at any other connection.
- 4 Insulate the inlet and outlet ducts to prevent condensation. Use glass wool or polyethylene foam 25 mm thick.

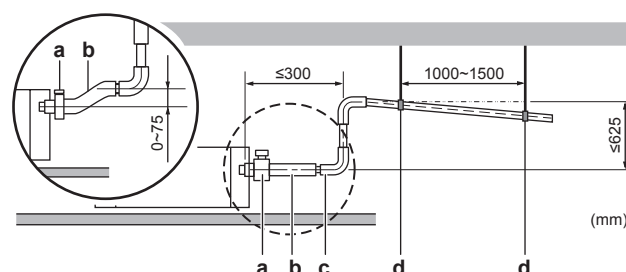
12.2.3 Guidelines when installing the drain piping

- **Pipe length.** Keep drain piping as short as possible.
- **Pipe size.** Keep the pipe size equal to or greater than that of the connecting pipe (vinyl pipe of 20 mm nominal diameter and 26 mm outer diameter).
- **Slope.** Make sure the drain piping slopes down (at least 1/100) to prevent air from being trapped in the piping. Use hanging bars as shown.



- a Hanging bar
- ✓ Allowed
- ✗ Not allowed

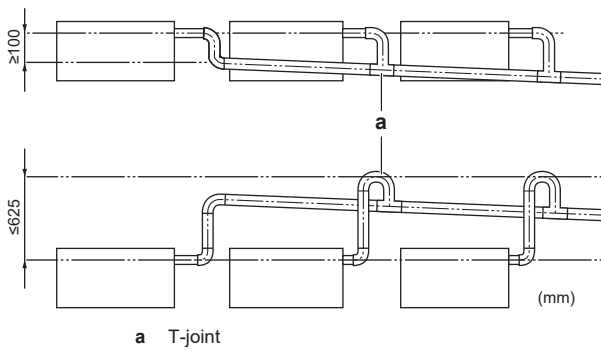
- **Condensation.** Take measures against condensation. Insulate the complete drain piping in the building.
- **Rising piping.** If necessary to make the slope possible, you can install rising piping.
 - Drain hose inclination: 0~75 mm to avoid stress on the piping and to avoid air bubbles.



- a Metal clamp (accessory)
- b Drain hose (accessory)
- c Rising drain piping (vinyl pipe nominal $\varnothing 20$ mm and outer $\varnothing 26$ mm)
- d Hanging bars (field supply)
- e

- **Combining drain pipes.** You can combine drain pipes. Make sure to use drain pipes and T-joints with the correct gauge for the operating capacity of the units.

13 Piping installation

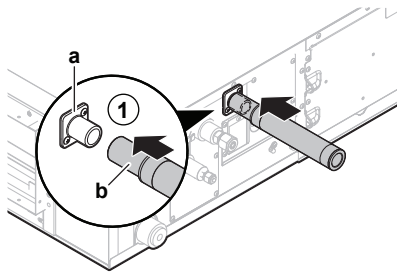


12.2.4 To connect the drain piping to the indoor unit

! NOTICE

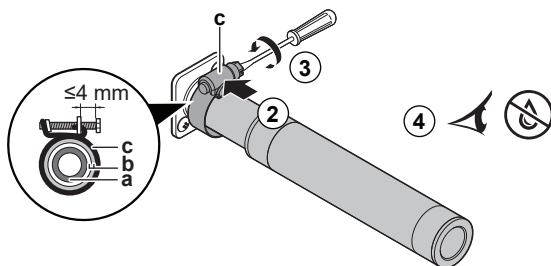
Incorrect connection of the drain hose might cause leaks, and damage the installation space and surroundings.

- 1 Push the drain hose as far as possible over the drain pipe connection.



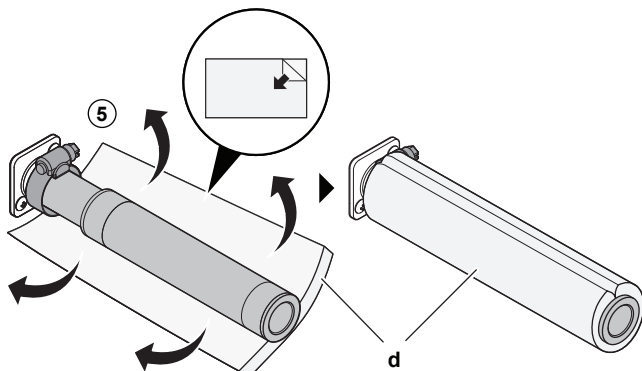
- a Drain pipe connection (attached to the unit)
- b Drain hose (accessory)

- 2 Install the metal clamp.
- 3 Tighten the metal clamp until the screw head is less than 4 mm from the metal clamp part.
- 4 Gradually put approximately 1 l of water in the drain pan, and check for water leaks.



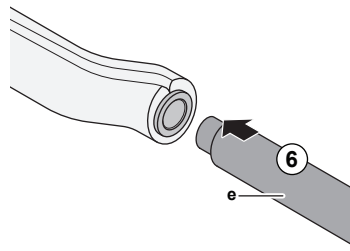
- a Drain pipe connection (attached to the unit)
- b Drain hose (accessory)
- c Metal clamp (accessory)

- 5 Wind the self-adhesive sealing pad (accessory) around the metal clamp and drain hose.



- d Sealing pad (accessory)

- 6 Connect the drain piping to the drain hose.



- e Drain piping (field supply)

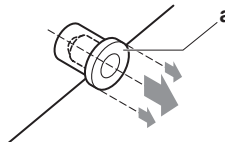


NOTICE

- Do NOT remove the drain pipe plug. Water might leak out.
- Use the drain outlet only to discharge the water before maintenance.
- Insert and remove the drain plug gently. Excessive force may deform the drain socket of the drain pan.

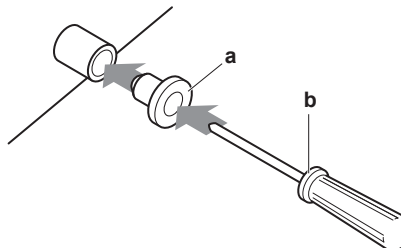
Pull out the plug.

- Do NOT wiggle the plug up and down.



Push in the plug.

- Set the plug and push it in using a Phillips screwdriver.



- a Drain plug
- b Phillips screwdriver

13 Piping installation

13.1 Preparing refrigerant piping

13.1.1 Refrigerant piping requirements



CAUTION

Piping MUST be installed according to instructions given in "13 Piping installation" [▶ 18]. Only mechanical joints (e.g. braze+flare connections) that are compliant with the latest version of ISO14903 can be used.



NOTICE

The piping and other pressure-containing parts shall be suitable for refrigerant. Use phosphoric acid deoxidised seamless copper for refrigerant.

- Foreign materials inside pipes (including oils for fabrication) must be ≤30 mg/10 m.

Refrigerant piping diameter


For piping connections of the indoor unit use the following piping diameters.

Model	Pipe outer diameter (mm)			
	R410A		R32 ^(a)	
	Gas	Liquid	Gas	Liquid
EKVDX32A2	Ø12.70	Ø6.35	Ø9.52	Ø6.35
EKVDX50A2	Ø12.70	Ø6.35	Ø12.70	Ø6.35
EKVDX80A2	Ø15.90	Ø9.52	Ø12.70	Ø6.35
EKVDX100A2	Ø15.90	Ø9.52	Ø15.90	Ø9.52

^(a) For R32 refrigerant, accessory pipes may be required for certain units. Accessory pipes are supplied with the unit.

Refrigerant piping material

- **Piping material:** Phosphoric acid deoxidised seamless copper.
- **Flare connections:** Only use annealed material.
- **Piping temper grade and thickness:**

Outer diameter (Ø)	Temper grade	Thickness (t) ^(a)	
6.4 mm (1/4")	Annealed (O)	≥0.8 mm	
9.5 mm (3/8")			
12.7 mm (1/2")			
15.9 mm (5/8")			

^(a) Depending on the applicable legislation and the maximum working pressure of the unit (see "PS High" on the unit name plate), larger piping thickness might be required.

13.1.2 Refrigerant piping insulation

- Use polyethylene foam as insulation material:
 - with a heat transfer rate between 0.041 and 0.052 W/mK (0.035 and 0.045 kcal/mh°C)
 - with a heat resistance of at least 120°C
- Insulation thickness

Pipe outer diameter (Ø _p)	Insulation inner diameter (Ø _i)	Insulation thickness (t)
6.4 mm (1/4")	8~10 mm	≥10 mm
9.5 mm (3/8")	10~14 mm	≥13 mm
12.7 mm (1/2")	14~16 mm	≥13 mm
15.9 mm (5/8")	16~20 mm	≥13 mm



If the temperature is higher than 30°C and the humidity is higher than RH 80%, the thickness of the insulation materials should be at least 20 mm to prevent condensation on the surface of the insulation.

13.2 Connecting the refrigerant piping



DANGER: RISK OF BURNING/SCALDING

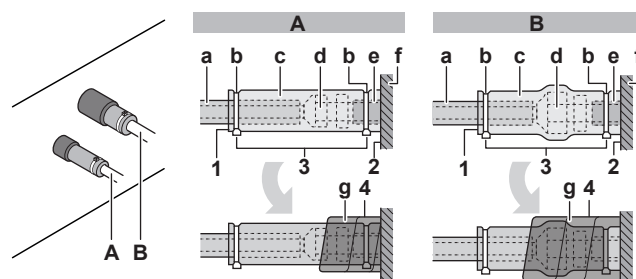
13.2.1 To connect the refrigerant piping to the indoor unit



CAUTION

Install the refrigerant piping or components in a position where they are unlikely to be exposed to any substance which may corrode components containing refrigerant, unless the components are constructed of materials that are inherently resistant to corrosion or are suitably protected against corrosion.

- **Pipe length.** Keep refrigerant piping as short as possible.
- **Flare connections.** Connect refrigerant piping to the unit using flare connections.
- **Insulation.** Insulate the refrigerant piping on the indoor unit as follows:



A Liquid piping
B Gas piping

a Insulation material (field supply)
b Tie wrap (field supply)
c Insulation tubes: Large (gas pipe), small (liquid pipe) (accessories)
d Flare nut (attached to the unit)
e Refrigerant pipe connection (attached to the unit)
f Unit
g Sealing pads: gas pipe, liquid pipe (accessories)

- 1 Turn up the seams of the insulation pieces.
- 2 Attach to the base of the unit.
- 3 Tighten the tie wrap on the insulation pieces.
- 4 Wrap the sealing pad from the base of the unit to the top of the flare nut.

In case of R32 refrigerant, for some connections an auxiliary pipe (accessory) must be installed and insulated using the correct insulation tube (accessory):

Model	Auxiliary pipe / insulation tube (mm)	
	Gas	Liquid
EKVDX32A2	Ø12.7/Ø13-29 (L65)	—
EKVDX50A2	—	—
EKVDX80A2	Ø15.9/Ø15-31 (L70)	Ø9.5/Ø10-26 (L65)
EKVDX100A2	—	—



NOTICE

Make sure to insulate all refrigerant piping. Any exposed piping might cause condensation.

14 Electrical installation



CAUTION

See "2 Specific installer safety instructions" [p. 5] to make sure this installation complies with all safety regulations.

14 Electrical installation

14.1 Specifications of standard wiring components

Component		
Power supply cable	MCA ^(a)	0.22 A
	Voltage	220~240 V
	Phase	1~
	Frequency	50/60 Hz
	Wire sizes	1.5 mm ² (3-core wire) H07RN-F (60245 IEC 66)
Transmission wiring	For specification refer to the installation manual of the outdoor unit	
User interface cable	0.75 to 1.25 mm ² (2-core wire) H05RN-F (60245 IEC 57) Length ≤300 m	
Cable between VAM and EKVDX	Length ≤100 m	
Recommended field fuse	EKVDX32~80A2	6 A
	EKVDX100A2	16 A
Residual current device	Must comply with applicable legislation	

^(a) MCA=Minimum circuit ampacity. Stated values are maximum values (see electrical data of indoor unit for exact values).

14.2 To connect the electrical wiring to the indoor unit



CAUTION

See "2 Specific installer safety instructions" ▶ 5] to make sure this installation complies with all safety regulations.



NOTICE

- Follow the wiring diagram (delivered with the unit, located at the inside of the service cover).
- For instructions on how to connect the optional equipment, see the installation manual delivered with the optional equipment.
- Make sure the electrical wiring does NOT obstruct proper reattachment of the service cover.

It is important to keep the power supply and the transmission wiring separated from each other. In order to avoid any electrical interference the distance between both wirings should ALWAYS be at least 50 mm.



NOTICE

Be sure to keep the power line and transmission line apart from each other. Transmission wiring and power supply wiring may cross, but may NOT run parallel.

- Remove the service cover.
- User interface cable (≤300 m):** Route the cable through the frame, connect the wires to the terminal block (symbols P1, P2).
- Transmission cable connection with VAM (≤100 m):** Route the cable through the frame, connect the wires to the terminal block (symbols P1, P2).
- Transmission cable connection with outdoor unit and/or other EKVDX units:** Route the cable through the frame, connect the wires to the terminal block (symbols F1, F2).



NOTICE

The F1, F2 connection wiring located inside the outdoor unit MUST be shielded, when coming from the EKVDX.



NOTICE

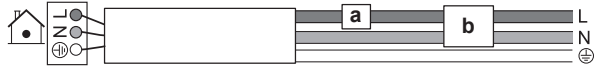
Group control connection is NOT allowed.

- Power supply cable:** Route the cable through the frame and connect the wires to the terminal block (L, N, earth).

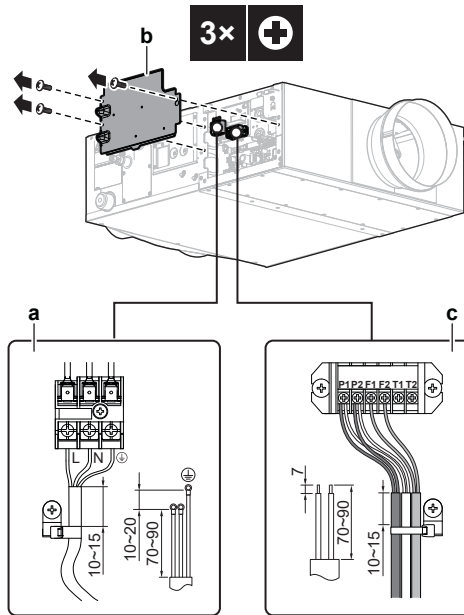


WARNING

The VAM and the EKVDX indoor unit MUST share the same electrical safety devices and power supply.



- a Circuit breaker
b Residual current device



- a Power supply and earth wiring
b Service cover with wiring diagram
c Transmission wiring

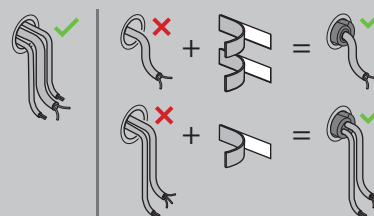
- Fix the cables** with tie wraps (see accessory bag) to the plastic clamps. **Note:** One of the remaining two tie wraps from the accessory bag is for the relay PCB wiring and one is a spare tie wrap.



WARNING

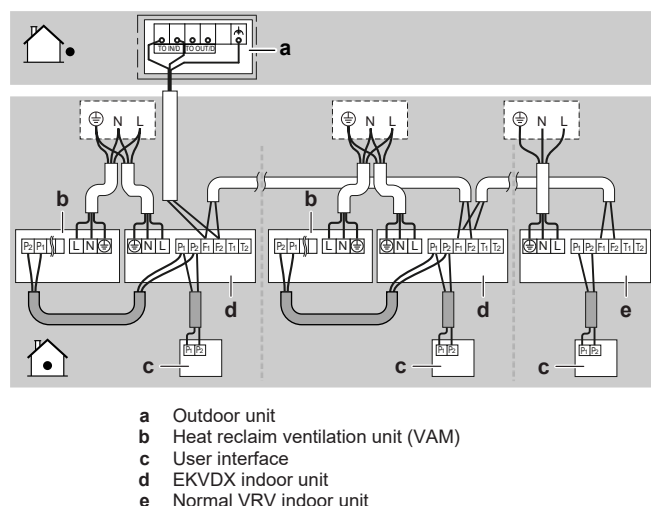
If a gap is present at the cable entry, wrap the cable (or cables) with the sealing material from the accessory bag.

This will prevent small objects (such as children's fingers, ... etc.) as well as fluid droplets from entering the unit.



- Reattach the service cover.

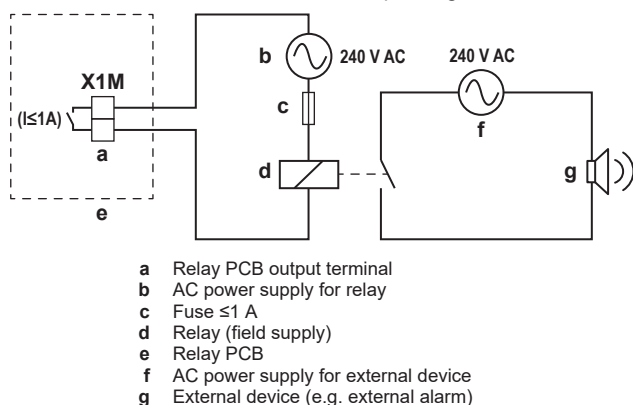
System example



14.3 To connect the external outputs

The applied current of the external device **MUST** be less or equal than 1 A. Install a fuse ≤ 1 A to protect the internal PCB contact.

If the applied current of the external device is more than 1 A, the use of a field supplied external relay is mandatory to limit the current in the internal PCB contact. See the example diagram below:



In case of R32 refrigerant, the user interface built-in alarm **MUST** be 15 dB louder than the background noise of the room. If this is not the case:

- 1 Mount an external alarm (field supply) in every EKVDX.
- 2 Connect the external alarm to the relay PCB of each EKVDX or to the SVS output channel of the outdoor unit.
- 3 Turn off the user interface built-in alarm if the external alarm is installed in the same space as the user interface.

Note: The refrigerant leakage alarm **MUST** be set to ON. The user interface will generate a visible and audible warning sign in case of R32 refrigerant leakage detection or sensor failure/disconnection.



INFORMATION

Sound data about the refrigerant leakage alarm are available in the technical data sheet of the user interface. E.g. the BRC1H52* controller generates an alarm of 65 dB (sound pressure, measured at 1 m distance from the alarm).

14.4 To connect the external input



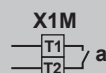
INFORMATION

For details about the different user interface modes and how to set up, refer to the installation and operation manual delivered with the user interface.



WARNING

In case of R32 refrigerant, terminal connections T1/T2 are for fire alarm input **ONLY**. Fire alarm has a higher priority than R32 safety and shuts the entire system down.



NOTICE

The user interface has to be in fully functional mode or in alarm only mode.

15 Configuration



NOTICE

In case an EKVDX indoor unit is installed, extreme setpoints can result in constant thermostat ON behaviour. To prevent this, slightly increase (decrease) the respective cooling (heating) setpoint.



INFORMATION

In case combined with EKVDX, on VAM, mode numbers 17, 18 and 19 **CANNOT** be used. Use 27, 28, 29.

Field settings via user interface: for EKVDX, choose indoor unit 0. For VAM, choose indoor unit 1.

15.1 To set the discharge temperature correction factor

The setpoint on the user interface of the EKVDX is related to the target discharge temperature (Th4c), not to the target room temperature. Therefore, the measured air temperature is not an accurate representation of the room temperature. Set a correction factor 'c' to compensate for heat transfer in the duct between the EKVDX and the room.

Formula: 'c' = ducting length $\times 0.10^{\circ}\text{C}$

Example: For 10 m of duct: c = 1°C .

15.2 To deactivate the R32 safety system

During a test run of the system and during maintenance, deactivate the R32 safety system (active by default):

- 1 Set VAM setting 19(29)-15-01
- 2 Set one of the two EKVDX settings: 15(25)-13-3 (=OFF for 24 hours) OR 15(25)-13-1 (=OFF)

After completion of test run or maintenance, activate the R32 safety system again:

- 3 Set VAM setting 19(29)-15-02
- 4 Set EKVDX setting 15(25)-13-02

15.3 Field settings

Refer to the installer and user reference guide of the user interface for more information on how to change field settings.

EKVDX field settings (user interface: indoor unit 0)

Mode	SW	SW description	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15
10 (20) ^(a)	13	Discharge temperature correction factor (°C)	0	0.5	1	1.5	2	2.5	3	3.5	4	4.5	5	5.5	6	6.5	7
12(22) ^(a)	1	External input switching (T1 T2)	Forced stop (default)	External input (ON/OFF operation)	Protective device input	Forced stop B (multi-tenant setting)	—	—	—	—	—	—	—	—	—	—	—
14 (24) ^(a)	10	Cooling blowout temperature setpoint	13°C	15°C	16°C	17°C	18°C	19°C	20°C	21°C	22°C	23°C	24°C	25°C	26°C	28°C	30°C
14 (24) ^(a)	11	Heating blowout temperature setpoint	24°C	26°C	27°C	28°C	29°C	30°C	31°C	32°C	33°C	35°C	37°C	39°C	41°C	43°C	45°C
15 (25)	13	R32 safety system ^(a)	OFF	ON	OFF for 24 hours	—	—	—	—	—	—	—	—	—	—	—	—
	15	External contact output settings ^(f)	Disable	Enable	—	—	—	—	—	—	—	—	—	—	—	—	—

^(a) Factory settings are marked with a grey background.

^(b) This field setting cannot be modified via the remote controller menu.

^(c) In case of R32 refrigerant, terminal connections T1 T2 are for fire alarm input ONLY.

^(d) The VAM field setting 18(28)-13/-14 (see table below) MUST be identical to the EKVDX field setting. Set the EKVDX first (EKVDX=primary, VAM=secondary)

^(e) In case R410A is used, set to 15(25)-13-1.

^(f) 15(25)-15-2 is required when R32 refrigerant is used.

VAM field settings (user interface: indoor unit 1)

Mode	SW	SW description	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15
17(27)	4	Initial fan speed ^(a)	High	Ultra-high	—	—	—	—	—	—	—	—	—	—	—	—	—
	5 ^(b)	Yes/No setting for duct connection with VRV system	Without duct	With duct	Without duct	Without duct	Without duct	Without duct	Without duct	Without duct	Without duct	Without duct	Without duct	Without duct	Without duct	Without duct	Without duct
		Setting for cold areas when heater thermostat is OFF ^(c)	—	—	Stop/Stop	Low/Low	Stop/stop	Low/Low	—	—	—	—	—	—	—	—	—
		Fan operation when defrost/oil return/hot start ^(d)	—	—	Stop/Stop	Stop/Stop	Stop/Stop	Stop/Stop	Stop/—	Stop/Stop	Stop/—	—	—	—	—	—	—
18(28)	6	Nighttime free cooling (fan settings) ^(a)	High	Ultra-high	—	—	—	—	—	—	—	—	—	—	—	—	—
	0	External signal ^(e) JCI/J2	Last command	Priority on external input	Priority on operation	Disable nighttime free cooling / Perform forced stop	—	24 hours ventilation ON/OFF	Disable JCI/J2	—	—	—	—	—	—	—	—
	1	Direct power ON ^(b)	OFF	ON	—	—	—	—	—	—	—	—	—	—	—	—	—
	2	Auto restart ^(b)	OFF	ON	—	—	—	—	—	—	—	—	—	—	—	—	—
	8	External input terminal function selection ^(a) (JCI J1)	Fresh-up	Error output	Error output and stop operation	Forced off	Fan forced off	Air-flow up	—	—	—	—	—	—	—	—	—
	10	EKVDX connected? ^(a)	No	Yes	—	—	—	—	—	—	—	—	—	—	—	—	—
	13	Cooling set point (with EKVDX)	13°C	15°C	16°C	17°C	18°C	19°C	20°C	21°C	22°C	23°C	24°C	25°C	26°C	28°C	30°C
	14	Heating set point (with EKVDX)	24°C	26°C	27°C	28°C	29°C	30°C	31°C	32°C	33°C	35°C	37°C	39°C	41°C	43°C	45°C
19(29)	15	R32 safety system ^(f)	OFF	ON	—	—	—	—	—	—	—	—	—	—	—	—	—

^(a) When connected to an EKVDX, set to 2 or 4.

^(b) When connected to an EKVDX, 17(27)-5 can be set to 1, 3, 4, 7 or 8.

^(c) (Supply air/Exhaust air), e.g. Low/Low means: Supply air low/Exhaust air low.

^(d) In case VAM and EKVDX are combined and the R32 safety system of the VAM is active, the nighttime free cooling is disabled.

^(e) When connected to an EKVDX, JCI/J2 cannot be used. Set to 18(28)-0-7. Instead, use T1 T2 of the EKVDX. See the EKVDX Installation and operation manual.

^(f) When connected to an EKVDX, do not change the default settings.

^(g) When connected to an EKVDX, JCI/J1 cannot be used. Instead, use T1 T2 of the EKVDX. See the EKVDX Installation and operation manual.

^(h) When connected to an EKVDX, set to 18(28)-10-2.

⁽ⁱ⁾ When connected to an EKVDX, setting 2 (safety ON) is required in case R32 refrigerant is used. Setting 1 (safety OFF) is required in case R410A refrigerant is used.

16 Commissioning



NOTICE

ALWAYS operate the unit with thermistors and/or pressure sensors/switches. If NOT, burning of the compressor might be the result.

16.1 Checklist before commissioning

After the installation of the unit, first check the items listed below. Once all checks are fulfilled, the unit MUST be closed. Power-up the unit after it is closed.

General

<input type="checkbox"/>	You read the complete installation and operation instructions, as described in the installer and user reference guide .
<input type="checkbox"/>	The indoor unit is properly mounted.
<input type="checkbox"/>	The outdoor unit is properly mounted.
<input type="checkbox"/>	Make sure drain piping is properly installed, insulated and drainage flows smoothly. Check for water leaks. Possible consequence: Condensate water might drip.
<input type="checkbox"/>	The ducting is properly installed and insulated.
<input type="checkbox"/>	The reducer(s) is (are) properly installed and insulated.
<input type="checkbox"/>	The refrigerant pipes (gas and liquid) are installed correctly and thermally insulated.
<input type="checkbox"/>	There are NO refrigerant leaks .
<input type="checkbox"/>	There are NO missing phases or reversed phases .
<input type="checkbox"/>	The system is properly earthed and the earth terminals are tightened.
<input type="checkbox"/>	The fuses or locally installed protection devices are installed according to this document, and have NOT been bypassed.
<input type="checkbox"/>	The power supply voltage matches the voltage on the identification label of the unit.
<input type="checkbox"/>	There are NO loose connections or damaged electrical components in the switch box.
<input type="checkbox"/>	There are NO damaged components or squeezed pipes on the inside of the indoor and outdoor units.
<input type="checkbox"/>	The stop valves (gas and liquid) on the outdoor unit are fully open.

VAM and EKVDX combination

<input type="checkbox"/>	ALL field settings related to VAM and EKVDX combination are set correctly. See " 15.3 Field settings " [p 22] for an overview of the required settings.
<input type="checkbox"/>	User interface connected to EKVDX (not VAM).
<input type="checkbox"/>	P1/P2 connection between HRV-EKVDX is <100 m.
<input type="checkbox"/>	NO F1/F2 connection between VAM and EKVDX (only P1/P2 connection allowed).
<input type="checkbox"/>	NO group control.
<input type="checkbox"/>	Power supply and electrical safety devices are shared between VAM and EKVDX.



Each VAM unit is connected to only ONE EKVDX unit (via duct and electrical connection). There is NO connection of the VAM to any other indoor unit, linkage or multiple EKVDX units.



ALL ducting is insulated on the side of VAM and EKVDX.

16.2 To perform a test run



INFORMATION

- Perform the test run according to the instructions in the outdoor unit manual.
- The test run is only completed if there is no malfunction code displayed on the user interface or the outdoor unit 7-segment display.
- See the service manual for the complete list of error codes and a detailed troubleshooting guideline for each error.



NOTICE

Do NOT interrupt the test run.



INFORMATION

During a test run of the system or during maintenance, the R32 safety needs to be deactivated. Refer to "[15.2 To deactivate the R32 safety system](#)" [p 21].

Set the relevant field settings on EKVDX, then on VAM, before performing the test run. See "[15.3 Field settings](#)" [p 22].

17 Troubleshooting

17.1 Solving problems based on error codes

If the unit runs into a problem, the user interface displays an error code. It is important to understand the problem and to take measures before resetting an error code. This should be done by a licensed installer or by your local dealer.

This chapter gives you an overview of most possible error codes and their descriptions as they appear on the user interface.



INFORMATION

See the service manual for:

- The complete list of error codes
- A more detailed troubleshooting guideline for each error

17.1.1 Error codes: Overview

In case other error codes appear, contact your dealer.

Code	Description
<i>RQ-11</i>	The R32 sensor has detected a refrigerant leak
<i>RQICH</i>	Safety system error (leak detection)
<i>RE-28</i>	VAM air flow rate dropped below the legal threshold limit (for R32 application)
<i>RE-29</i>	VAM air flow approaches legal threshold limit (for R32 application)
<i>RE-30</i>	VAM warning for air flow rate drop (for R32 application)
<i>CH-01</i>	R32 sensor malfunction
<i>CH-02</i>	R32 sensor end of lifetime

18 Disposal

Code	Description
CH-05	6 months before the R32 sensor end of lifetime
R1	Malfunction of indoor unit PCB
R3	Drain level control system abnormality
R9	Malfunction of electronic expansion valve
RF	Malfunction of a humidifier system
RJ	Malfunction of capacity setting (Indoor unit PCB)
LC	Malfunction of liquid pipe thermistor for heat exchanger
LS	Malfunction of gas pipe thermistor for heat exchanger
LA	Malfunction of suction air thermistor
LD	Malfunction of discharge air thermistor
LT	Room temperature thermistor in remote controller abnormality
US-04	Non H-type remote control is connected
U9-01	An error has occurred on another indoor on the same F1 F2 line, but EKVDX /indoor can still operate
U9-02	An error has occurred on another indoor on the same F1 F2 line, EKVDX /indoor cannot operate anymore
UJ-34	Capacity mismatch between VAM and EKVDX
UJ-35	VAM abnormality. There are three possible causes: <ul style="list-style-type: none"> The VAM has an error. Find the cause in the error history. Communication loss between VAM and EKVDX . The local VAM setting does not identify with the EKVDX connection: 18(28)-10 is not -02.
UJ-37	VAM: A6-28 error (for R32 application) occurred
UJ-38	VAM: A6-29 error (for R32 application) occurred

18 Disposal



NOTICE

Do NOT try to dismantle the system yourself: dismantling of the system, treatment of the refrigerant, oil and other parts MUST comply with applicable legislation. Units MUST be treated at a specialised treatment facility for reuse, recycling and recovery.

19 Technical data

- A **subset** of the latest technical data is available on the regional Daikin website (publicly accessible).
- The **full set** of latest technical data is available on the Daikin Business Portal (authentication required).

19.1 Wiring diagram

See the internal wiring diagram supplied with the unit (on the inside of the indoor unit switch box cover). The abbreviations used are listed below.

Unified legend

For applied parts and numbering, refer to the wiring diagram on the unit. Part numbering is by Arabic numbers in ascending order for each part and is represented in the overview below by "*" in the part code.

Symbol	Meaning	Symbol	Meaning
	Circuit breaker		Protective earth
	Connection		Protective earth (screw)
	Connector		Rectifier
	Earth		Relay connector
	Field wiring		Short-circuit connector
	Fuse		Terminal
	Indoor unit		Terminal strip
	Outdoor unit		Wire clamp
	Residual current device		

Symbol	Colour	Symbol	Colour
BLK	Black	ORG	Orange
BLU	Blue	PNK	Pink
BRN	Brown	PRP, PPL	Purple
GRN	Green	RED	Red
GRY	Grey	WHT	White
		YLW	Yellow

Symbol	Meaning
A*P	Printed circuit board
BS*	Pushbutton ON/OFF, operation switch
BZ, H*O	Buzzer
C*	Capacitor
AC*, CN*, E*, HA*, HE*, HL*, HN*, HR*, MR*_A, MR*_B, S*, U, V, W, X*A, K*R_*, NE	Connection, connector
D*, V*D	Diode
DB*	Diode bridge
DS*	DIP switch
E*H	Heater
FU*, F*U, (for characteristics, refer to PCB inside your unit)	Fuse
FG*	Connector (frame ground)
H*	Harness
H*P, LED*, V*L	Pilot lamp, light emitting diode
HAP	Light emitting diode (service monitor green)
HIGH VOLTAGE	High voltage
IES	Intelligent eye sensor
IPM*	Intelligent power module
K*R, KCR, KFR, KHuR, K*M	Magnetic relay
L	Live
L*	Coil
L*R	Reactor
M*	Stepper motor
M*C	Compressor motor
M*F	Fan motor
M*P	Drain pump motor
M*S	Swing motor

Symbol	Meaning
MR*, MRCW*, MRM*, MRN*	Magnetic relay
N	Neutral
n=*, N=*	Number of passes through ferrite core
PAM	Pulse-amplitude modulation
PCB*	Printed circuit board
PM*	Power module
PS	Switching power supply
PTC*	PTC thermistor
Q*	Insulated gate bipolar transistor (IGBT)
Q*C	Circuit breaker
Q*DI, KLM	Earth leak circuit breaker
Q*L	Overload protector
Q*M	Thermo switch
Q*R	Residual current device
R*	Resistor
R*T	Thermistor
RC	Receiver
S*C	Limit switch
S*L	Float switch
S*NG	Refrigerant leak detector
S*NPH	Pressure sensor (high)
S*NPL	Pressure sensor (low)
S*PH, HPS*	Pressure switch (high)
S*PL	Pressure switch (low)
S*T	Thermostat
S*RH	Humidity sensor
S*W, SW*	Operation switch
SA*, F1S	Surge arrester
SR*, WLU	Signal receiver
SS*	Selector switch
SHEET METAL	Terminal strip fixed plate
T*R	Transformer
TC, TRC	Transmitter
V*, R*V	Varistor
V*R	Diode bridge, Insulated-gate bipolar transistor (IGBT) power module
WRC	Wireless remote controller
X*	Terminal
X*M	Terminal strip (block)
Y*E	Electronic expansion valve coil
Y*R, Y*S	Reversing solenoid valve coil
Z*C	Ferrite core
ZF, Z*F	Noise filter

Translation of text on wiring diagram

English	Translation
Notes	Notes
X35A is connected when optional accessories are being used, see wiring diagram of this accessory	X35A is connected when optional accessories are being used, see wiring diagram of this accessory

English	Translation
An EKVDX unit and its corresponding VAM-J8 unit should be connected to a common power supply. Refer to the installation manual of the EKVDX unit for further details.	An EKVDX unit and its corresponding VAM-J8 unit should be connected to a common power supply. Refer to the installation manual of the EKVDX unit for further details.
Transmission wiring	Transmission wiring
Ext. output - error state	External output - error state
Ext. output - R32 alarm	External output - R32 alarm
Gas sensor circuit	Gas sensor circuit
Wired remote controller	Wired remote controller
Control box layout	Control box layout





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