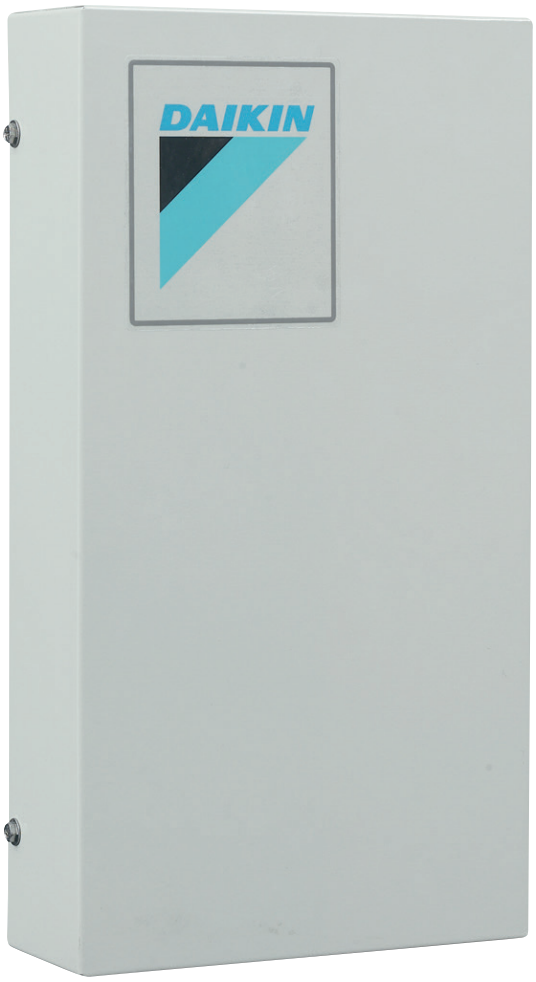
Expansion valve kit for air handling applications Technical data book

EKEXV



EKEXV50
EKEXV63
EKEXV80
EKEXV100
EKEXV125
EKEXV140
EKEXV200
EKEXV250
EKEXV400
EKEXV500

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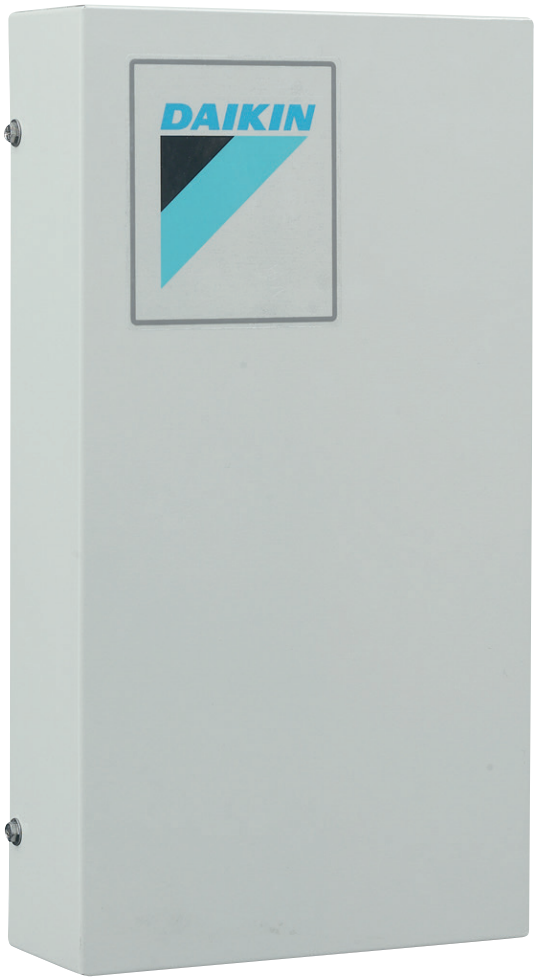
EKEXV

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1 Features

1 - 1 EKEXV

› The system provides optimized air conditions such as fresh air and humidity control etc. and can be used in small warehouses, showrooms and offices.
› Wide range of units offers maximum application potential and flexible control options
› Control box and expansion valve kit are required for each combination plus an air handling unit
› Both option kits are designed for indoor and outdoor installation and can be wall mounted.



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2 Specifications

1 - 1 EKEXV

Technical Specifications					EKEXV50	EKEXV63	EKEXV80	EKEXV100	EKEXV125	EKEXV140
Connection ratio	Outdoor units	with only ventilation units connected	Minimum	%	50					
			Maximum	%	110					
	Ventilation units	when combined with VRV® indoor	Maximum	%	30					
Dimensions	Unit	Height		mm	401					
		Width		mm	215					
		Depth		mm	78					
	Packed unit	Height		mm	457					
		Width		mm	270					
		Depth		mm	120					
Weight	Unit			kg	2.9					
	Packed unit			kg	3.4					
Packing	Material				Carton					
	Weight			kg	0.29					
Packing 2	Material				EPS					
	Weight			kg	0.066					
Casing	Colour				Ivory white					
	Material				Metal					
Operation range	Cooling	Min.		°CDB	-5.0					
		Max.		°CDB	46.0					
	On coil temperature	Heating	Min.	°CDB	10 (6)					
		Cooling	Max.	°CDB	35 (7)					
Sound pressure level	Nom.			dBA	45					
Piping connections	Liquid	Type			Braze connection					
		OD		mm	6.35	9.52				
	Gas	Type			Braze connection					
		OD		mm	6.35	9.52				
	Piping length	OU - IU	Min.	m	0 (1)					
			Max.	m	5					
	Level difference	IU - IU	Max.		See manual, depends on the outdoor unit					
	Heat insulation				Both inlet and outlet					

Technical Specifications					EKEXV200	EKEXV250	EKEXV400	EKEXV500
Connection ratio	Outdoor units	with only ventilation units connected	Minimum	%	50			
			Maximum	%	110			
	Ventilation units	when combined with VRV® indoor	Maximum	%	30			
Dimensions	Unit	Height		mm	401			
		Width		mm	215			
		Depth		mm	78			
	Packed unit	Height		mm	457			
		Width		mm	270			
		Depth		mm	120			
Weight	Unit			kg	2.9			
	Packed unit			kg	3.4			
Packing	Material				Carton			
	Weight			kg	0.29			
Packing 2	Material				EPS			
	Weight			kg	0.066			
Casing	Colour				Ivory white			
	Material				Metal			
Operation range	Cooling	Min.		°CDB	-5.0			
		Max.		°CDB	46.0			
	On coil temperature	Heating	Min.	°CDB	10 (6)			
		Cooling	Max.	°CDB	35 (7)			
Sound pressure level	Nom.			dBA	45			
Piping connections	Liquid	Type			Braze connection			
		OD		mm	9.52		12.7	15.9
	Gas	Type			Braze connection			
		OD		mm	9.52			
	Piping length	OU - IU	Min.	m	0 (1)			
			Max.	m	5			
	Level difference	IU - IU	Max.		See manual, depends on the outdoor unit			
	Heat insulation				Both inlet and outlet			

(1)Minimum and maximum piping length refer to the piping between the expansion valve kit (EKEXV) and the air handling unit |
Maximum installation height difference: See manual; depends on outdoor unit |
The sound pressure value is the maximum value measured at 10cm from the motor.

3 Combination table

3 - 1 Combination Table

EKEXV

Outdoor unit			Control box			Expansion valve kit										Options			
			EKEQDCBV3	EKEQFCBAV3	EKEQMCBAV3	EKEXV50	EKEXV63	EKEXV80	EKEXV100	EKEXV125	EKEXV140	EKEXV200	EKEXV250	EKEXV400	EKEXV500	EKDK04	KWC26B160	KWC26B280	KRC19-26A6
System -A-	-1-phase	ERQ100	P	P		-	P	P	P	P	-	-	-	-	-	0	-	-	0
		ERQ125	P	P		-	P	P	P	P	P	-	-	-	-	0	-	-	0
		ERQ140	P	P		-	-	P	P	P	P	-	-	-	-	0	-	-	0
	-3-phase	ERQ125	P	P		-	P	P	P	P	P	-	-	-	-	-	0	-	0
		ERQ200	P	P		-	-	-	P	P	P	P	P	-	-	-	-	0	0
		ERQ250	P	P		-	-	-	-	P	P	P	P	-	-	-	-	0	0
System -B-	VRV III				n1	n1	n1	n1	n1	n1	n1	n1	n1	n1	n1	See note -1-.			
System -B-	VRV IV			1 ~ 3	n2	n2	n2	n2	n2	n2	n2	n2	n2	n2	n2	See note -1-.			

P (pair application): combination depends on the capacity of the air handling unit
n1 (multi application: combination of air handling units and -VRV DX- indoor units): to determine the quantity, refer to -3D090229-.
n2 (multi application: multiple air handling units, or the combination of air handling units and -VRV DX- indoor units): to determine the quantity, refer to -3D090229-.

Notes
1. See outdoor unit. The system can only be connected to the following DIII-NET devices: iTouch Manager II and Modbus Interface DIII.
2. Control box -EKEQD- can only be connected to an -ERQ- outdoor unit (pair application).
3. Control box -EKEQFA- can be connected to an -ERQ- outdoor unit in pair application.
   Control box -EKEQFA- can be connected to some types of -VRV IV- HP - outdoor unit system (with a maximum of -3- boxes per system; an outdoor unit system countains maximum -3- outdoor units).
   Do not combine -EKEQFA- control boxes with -VRV DX- indoor units, -RA- indoor units, or Hydroboxes.
   For details, refer to the combination table drawing of the outdoor unit.
4. The control box -EKEQMA- can only be connected to a VRV outdoor unit (system).
5. Depending on the type of air handling unit, an appropriate expansion valve kit -EKEXV- must be selected using following limitations: SH (superheat) = 5K and SC (subcool) = 3K.

Cooling

EKEXV Class	Allowed heat exchanger capacity [kW]		Allowed heat exchanger volume [dm³]	
	Minimum	Maximum	*Minimum*	*Maximum*
50	5,00	6,20	*1,33*	*1,65*
63	6,30	7,80	*1,66*	*2,08*
80	7,90	9,90	*2,09*	*2,64*
100	10,0	12,3	*2,65*	*3,30*
125	12,4	15,4	*3,31*	*4,12*
140	15,5	17,6	*4,13*	*4,62*
200	17,7	24,6	*4,63*	*6,60*
250	24,7	30,8	*6,61*	*8,25*
400	35,4	49,5	*9,26*	*13,2*
500	49,6	61,6	*13,2*	*16,5*

Saturated evaporating temperature: -6-°C
Air temperature: -27-°C DB / -19-°C WB

Heating

EKEXV Class	Allowed heat exchanger capacity [kW]		Allowed heat exchanger volume [dm³]	
	Minimum	Maximum	*Minimum*	*Maximum*
50	5,60	7,00	*1,33*	*1,65*
63	7,10	8,80	*1,66*	*2,08*
80	8,90	11,1	*2,09*	*2,64*
100	11,2	13,8	*2,65*	*3,30*
125	13,9	17,3	*3,31*	*4,12*
140	17,4	19,8	*4,13*	*4,62*
200	19,9	27,7	*4,63*	*6,60*
250	27,8	34,7	*6,61*	*8,25*
400	39,8	55,0	*9,26*	*13,2*
500	55,1	69,3	*13,2*	*16,5*

Saturated condensing temperature: -46-°C
Air temperature: -20-°C DB

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4 Capacity tables

4 - 1 Cooling Capacity Tables

EKEXV

AA : Capacity index

AB : On-coil air temperature

Evaporator capacity table

AA	AB						
	14WB	16WB	18WB	19WB	20WB	22WB	24WB
	20DB	23DB	26DB	27DB	28DB	30DB	32DB
	TC	TC	TC	TC	TC	TC	TC
50	3,8	4,5	5,2	**5,6**	5,9	6,0	6,2
63	4,8	5,7	6,6	**7,1**	7,5	7,7	7,8
80	6,1	7,2	8,4	**9,0**	9,5	9,7	9,9
100	7,6	9,0	10,5	**11,2**	11,8	12,1	12,3
125	9,5	11,3	13,1	**14,0**	14,8	15,1	15,4
140	10,8	12,9	15,0	**16,0**	16,9	17,3	17,6
200	15,1	18,0	21,0	**22,4**	23,6	24,2	24,6
250	18,9	22,5	26,2	**28,0**	29,5	30,2	30,8
400	30,4	36,2	42,1	**45,0**	47,4	48,5	49,5
500	37,8	45,0	52,4	**56,0**	59,0	60,4	61,6

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4 Capacity tables

4 - 2 Heating Capacity Tables

EKEXV

AA : Unit size

AB : On-coil air temperature [°C DB]

AA	AB						
	10,0 kW	16,0 kW	18,0 kW	20,0 kW	21,0 kW	22,0 kW	24,0 kW
50	6,6	6,6	6,6	6,3	6,1	5,9	5,5
63	8,4	8,4	8,4	8,0	7,7	7,5	7,0
80	10,5	10,5	10,5	10,0	9,7	9,4	8,7
100	13,1	13,1	13,1	12,5	12,1	11,7	10,9
125	16,8	16,8	16,8	16,0	15,5	15,0	13,9
140	18,9	18,9	18,9	18,0	17,4	16,8	15,7
200	26,2	26,2	26,2	25,0	24,2	23,4	21,8
250	33,1	33,1	33,0	31,5	30,5	29,5	27,5
400	52,4	52,4	52,4	50,0	48,4	46,8	43,6
500	66,0	66,0	66,0	63,0	61,0	59,0	54,9

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4 Capacity tables

4 - 3 Capacity Correction Factor

EKEXV

Combination with third-party air handling units: capacity calculation

Introduction

The air handling unit operates together with other indoor units connected to the outdoor unit. Therefore select the capacity of the air handling unit at standard cooling or heating operating conditions.

Capacity table

Take the capacity of the air handling unit heat exchanger at standard operating conditions. Determine its capacity class according to the table.

Heat exchanger capacity class for cooling operation

Capacity class	Capacity [kW]		
	Minimum	Standard	Maximum
50	5,0	5,6	6,2
63	6,3	7,1	7,8
80	7,9	9,0	9,9
100	10,0	11,2	12,3
125	12,4	14,0	15,4
140	15,5	16,0	17,6
200	17,7	22,4	24,6
250	24,7	28,0	30,8
400	35,4	45,0	49,5
500	49,6	56,0	61,6

The capacity of the heat exchanger is defined under the standard operating conditions of the indoor unit.

ST	6°C	Saturated evaporating temperature
SH	5K	Superheat
SC	3K	Subcooling
Suction air temperature	27/19 (°C WB/°C DB)	Degrees Celsius wet-bulb/dry-bulb

Heat exchanger capacity class for heating operation

Capacity class	Capacity [kW]		
	Minimum	Standard	Maximum
50	5,6	6,3	7,0
63	7,1	8,0	8,8
80	8,9	10,0	11,1
100	11,2	12,5	13,8
125	13,9	16,0	17,3
140	17,4	18,0	19,8
200	19,9	25,0	27,7
250	27,8	31,5	34,7
400	39,8	50,0	55,0
500	55,1	63,0	69,3

The capacity of the heat exchanger is defined under the standard operating conditions of the indoor unit.

ST	46°C	Saturated condensing temperature
SH	5K	Superheat
SC	3K	Subcooling
Suction air temperature	20°C DB	Degrees Celsius dry-bulb

Power input

Take the sum of the capacity index of each unit connected to the outdoor unit.
Refer to the capacity table of the outdoor unit for the matching power input.

Notes

The actual operation of a unit depends on its operating conditions: outdoor temperature, heating/cooling load, operation of other connected units, …
For the effect of long piping, the additional correction that has to be made when the correction ratio exceeds 100%, and other corrections, refer to the engineering databook of the outdoor unit.

Indoor unit connection limitations

Introduction

The outdoor unit determines how many indoor units can be connected to it. There are limitations in terms of:
1. The maximum allowed amount of units (Daikin or third-party) that can be connected.
2. The allowed connection ratio of the system.

Maximum allowed amount of connectable indoor units

For the maximum allowed amount of connectable indoor units, refer to the engineering databook or installation manual of the outdoor unit.

Minimum and maximum allowed capacity of the connectable indoor units

1. Calculate the total connection ratio of the air handling units by using the capacity index of EXEV used.
2. Calculate the total connection ratio of the VRV DX indoor units.
3. Make the sum of the total connection ratios of the air handling units and the VRV DX indoor units.

Connection ratio

The connection ratio is the ratio of the total capacity index of the indoor units (VRV DX indoor units + AHU unit) to the capacity class of the outdoor unit.
For standard indoor units, use their capacity class to calculate the connection ratio.
The allowed connection ratio of the system depends on the indoor unit combination pattern.

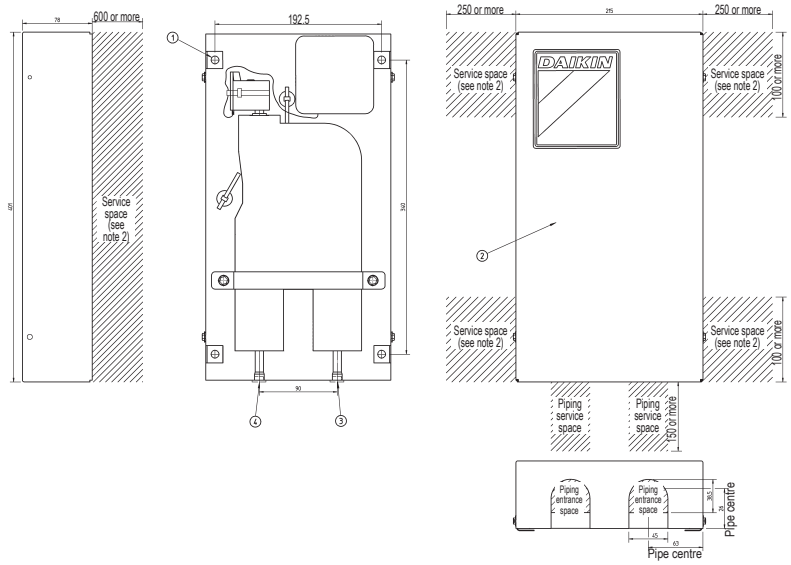
- When combining VRV DX indoor units with EKEQMA boxes, the connection ratio must be between 50% and 110%.
  The total connection ratio of the air handling units must be between 0% and 60%.
  The total connection ratio of the VRV DX indoor units must be between 50% and 110%.
- When only EKEQMA boxes are connected, the connection ratio must be between 90% and 110%.
- When only EKEQFA boxes are connected, the connection ratio must be between 90% and 110%.
  The maximum allowed amount of EKEQFA boxes that can be connected is 3. Refer to combination table 3D090631 for details about the allowed combinations.

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5 Dimensional drawings

5 - 1 Dimensional Drawings

EKEXV



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1	4 holes to fix the valve kit
2	Valve kit box lid
3	Inlet coming from the outdoor unit
4	Outlet to evaporator

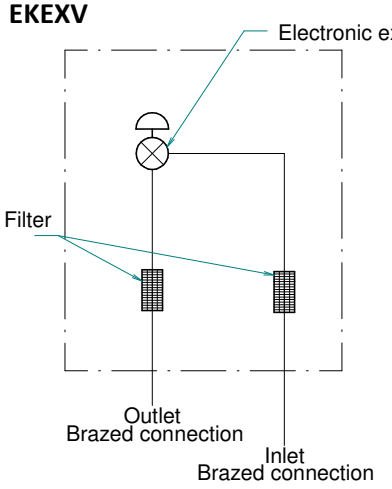
NOTES

1. Installation:
   Make sure that the expansion valve is installed vertically.
   The option boxes (expansion valve and electrical control box) can be installed inside and outside.
   Do not install the option boxes in or on the outdoor unit.
   Do not put the option boxes in direct sunlight. Direct sunlight will increase the temperature inside the option boxes and may reduce it's lifetime and influence it's operation.
   Choose a flat and strong mounting surface.
2. Service space:
   Keep enough free space for future maintenance.

6 Piping diagrams

6 - 1 Piping Diagrams

EKEXV



Notes

1. For the heat exchanger of the air handling unit, respect the following pipe sizes.

Capacity	Outside diameter [mm]	
	Gas pipe	Liquid pipe
~ 50	Ø12.7	Ø6.4
⚠ 63 ~ 140	Ø15.9	Ø9.5
200	Ø19.1	Ø9.5
250	Ø22.2	Ø9.5
400	Ø28.6	Ø12.7
500	Ø28.6	Ø15.9

2. The air handling unit needs to have a heat exchanger with 2 connections:
   - 1 gas connection
   - 1 liquid connection

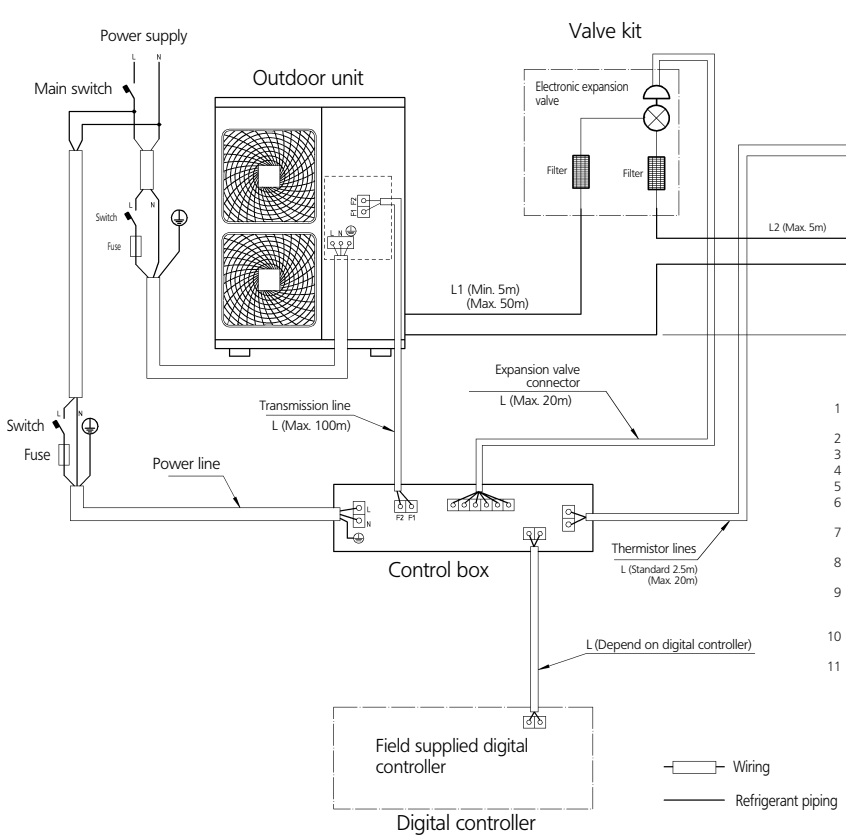
Piping diameter requirements		
Model	Outside diameter [mm]	
	Outlet	Inlet
EKEXV50	Ø6.40	Ø6.40
EKEXV63	Ø9.52	Ø9.52
EKEXV80	Ø9.52	Ø9.52
EKEXV100	Ø9.52	Ø9.52
EKEXV125	Ø9.52	Ø9.52
EKEXV140	Ø9.52	Ø9.52
EKEXV200	Ø9.52	Ø9.52
EKEXV250	Ø9.52	Ø9.52
EKEXV400	Ø12.70	Ø12.70
EKEXV500	Ø15.90	Ø15.90

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7 External connection diagrams

7 - 1 External Connection Diagrams

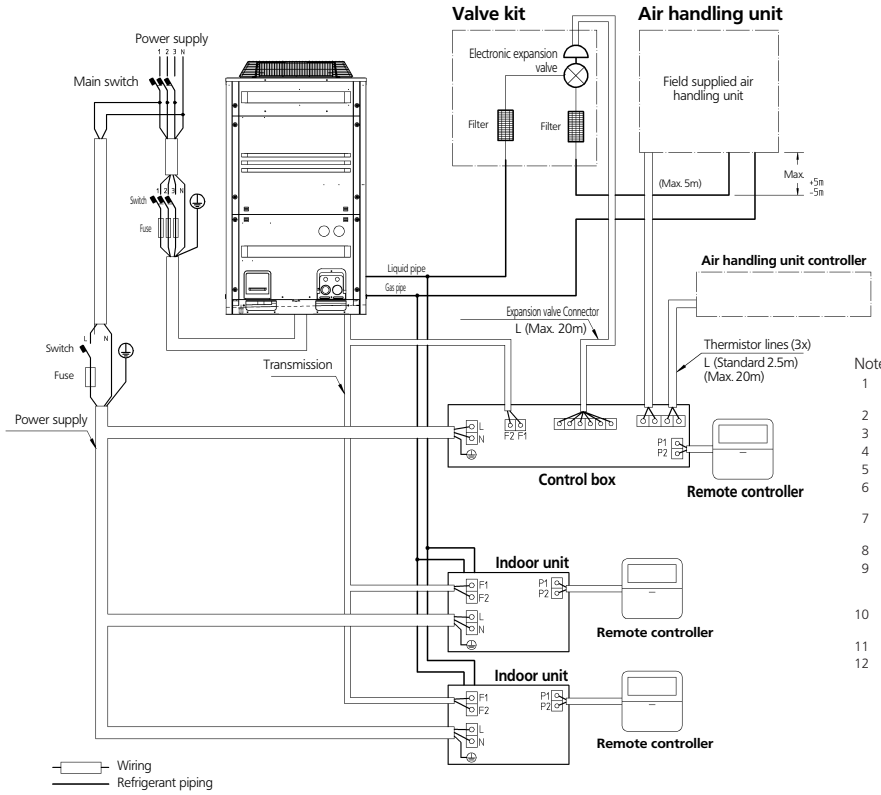
EKEXV



1 All wiring, components and materials to be produced on the site must comply with the applicable local and national codes.
2 Use copper conductors only.
3 For more details, see wiring diagram.
4 Install a circuit breaker for safety.
5 All field wiring and components must be installed by a licensed electrician.
6 The unit shall be grounded in compliance with the applicable local and national codes.
7 Wiring shown are general points-of-connection guides only and are not intended for or to include all details for a specific installation.
8 Be sure to install the switch and the fuse to the power line of each equipment.
9 Install the main switch that can interrupt all power sources in an integrated manner because this system consists of the equipment utilizing the multiple power sources.
10 For detailed control box side connection, see control box manual and wiring diagram.
11 For detailed pipe connections and limitations, see manuals.

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EKEXV



Notes:
1 All wiring, components and materials to be produced on the site must comply with the applicable local and national codes.
2 Use copper conductors only.
3 For more details, see wiring diagram.
4 Install a circuit breaker for safety.
5 All field wiring and components must be provided by a licensed electrician.
6 The unit shall be grounded in compliance with the applicable local and national codes.
7 Wiring shown are general points-of-connection guides only and are not intended for or to include all details for a specific installation.
8 Be sure to install the switch and the fuse to the power line of each equipment.
9 Install the main switch that can interrupt all power sources in an integrated manner because this system consists of the equipment utilizing the multiple power sources.
10 For detailed control box side connection, see control box manual and wiring diagram.
11 For detailed pipe connections and limitations, see manuals.
12 Connection appliance can be standard indoor unit or free choice of air handling unit.

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