DAIKIN

R-32

Air Handling Unit kits

for connection to DX outdoor units EKEACB/EKEXVA

Expansion valve kit and control box for easy connection between DX outdoor unit and air handling unit

- Create an optimal indoor comfort for commercial spaces
- Integration of an AHU into a DX system ensures a fast response to changing loads, high energy efficiency and easy design
- No space is too small or too big with expansion valve kits ranging from 5 up to 69.3 kW
- Future proof system minimising carbon footprint
- Customised control possibilities thanks to five different control algorithms

Why use DX outdoor units with Air Handling Units?

High comfort levels

- Rapid response of supply air temperature to changing loads, results in a steady indoor temperature
- VRV offers the ultimate comfort thanks to continuous heating, also during defrost

Low carbon footprint and operating costs

- DX heat pumps are highly efficient inverter units using a lower GWP refrigerant
- By integrating a VRV heat recovery system, excess heat from rooms in cooling can be reused to heat up incoming fresh air

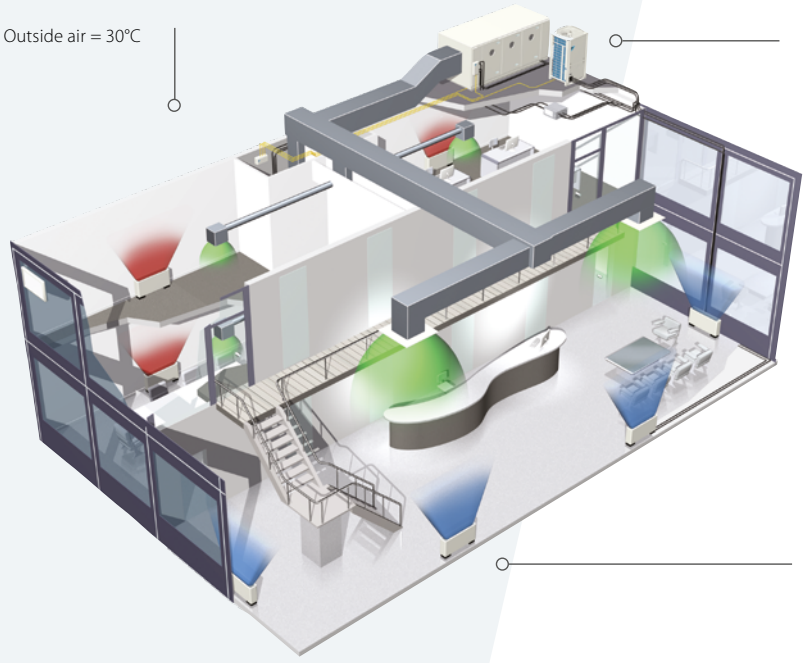
Easy design, all components integrated

- A DX system is an all-in-one system, no boilers, tanks or pumps are needed reducing the total investment cost

One-stop shop, Daikin's fresh air package

- A plug & play package with a Daikin DX outdoor unit and Daikin Air Handling Unit
- One point of contact for the design, installation and commissioning, streamlining the process

Total solution operation example



Daikin Air Handling Unit kits for connection to DX outdoor units

R-32

NEW Expansion valve kits

- **3 new capacities** (300, 350, 400) offer a complete range of expansion valve kits **from 5 to 69.3kW**
- **Improved flexibility** thanks to combination ratio from 65% up to 110%
- Unified range connectable both to **R-32 and R-410A** systems
- Can be used in the most **extreme outdoor conditions**, down to -20°C
- F**ully compliant to IEC60335-2-40**, thanks to Shîrudo Technology

Extended operation range
-20°CWB > 52°CDB

NEW Control box

- Complete offer of **5 control possibilities**
- Daikin **integrated** or **third-party controller**
- Control of return air or fresh air supply temperature
- All **control methods** unified in **one box**
- Hinged door for **easy servicing**

Expansion valve set (EKEXVA*)

- Controls the refrigerant flow in the AHU DX coil
- Fully brazed and wired in case of a Daikin AHU

Control box (EKEACB)

- Controls the expansion valve set and outdoor unit(s) capacity
- Mounted and wired in case of a Daikin AHU

Specifications

EKEXVA – Expansion valve kit

Ventilation	EKEXVA				50	63	80	100	120	140	200	250	300	350	400	450	500
Dimensions	Unit			mm	404x217x80.5												
Weight	Unit			kg	2.9												
Operation range	On coil temperature	Heating	Min.	°CDB	10.0												
		Cooling	Max.	°CDB	35.0												
Ambient installation conditions	Min.			°CDB	-20.0												
	Max			°CDB	52.0												
Sound pressure level	Cooling	Nom.		dBA	36.5	37.5	38.6	39.5	40.5	41.1	42.5	43.5	44.3	45.1	45.6	46.1	46.5
	Nom.			dBA	24.8	25.8	26.8	27.8	28.8	29.4	30.8	31.8	32.5	33.3	33.8	34.3	34.8
Refrigerant	Type / GWP				R-32 / 675 R-410A / 2,087.5												
Piping connections	Liquid	Type		mm	Braze connection (only liquid line connected)												
		OD		mm		6.35				9.52				12.7			

EKEACB – Control box

				EKEACB
Layout				Pair | Multi | Mix
Dimensions	Unit		mm	300x400x150
Weight	Unit		kg	5.1
Ambient installation conditions	Min		°CDB	-20
	Max		°CDB	52
Power supply	Phase			1~
	Frequency		Hz	50/60
	Voltage		V	220-240/220

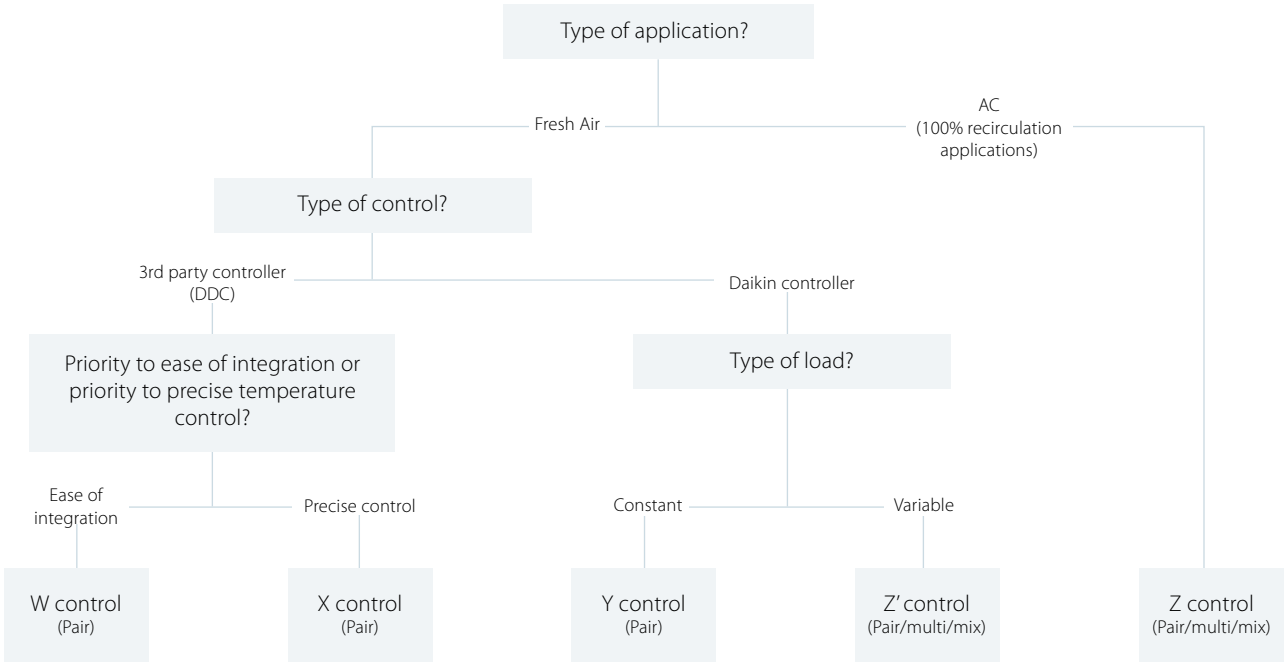
Click for more information on **EKEACB** or **EKEXVA** outdoor units

Air Handling Unit kits

Control possibilities

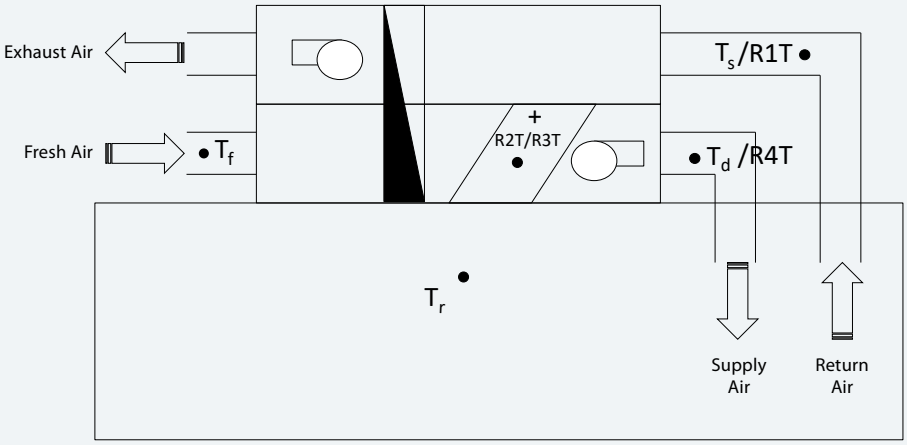
Every application is different. Is there a constant load or not, how to control your temperature and which controls are available? **With our complete offering of 5 control possibilities**, anything is possible.

Flow chart to select your control type



Control type benefits	Sensor Used	Controller
W control – control of supply or return air temperature ▪ **Responds to load variation** (capacity is changed as a function of measured temperature, but slower than X- control) ▪ **Air temperature control** ▪ **Easy to integrate, as no additional programming** is needed for most standard AHU controllers	**Td, Ts/f or Tr** (field supplied)	External controller (DDC) using a proportional 0~10 V signal for capacity control **(5 steps)**
X control – control of supply or return air temperature ▪ **Fastest response to load variation** (capacity is immediately changed as a function of measured temperature) ▪ **Precise air temperature control** ▪ **Ideal for comfort sensitive applications.** This is also used **by default** in Daikin AHU controls	**Td, Ts/f or Tr** (field supplied)	External controller (DDC) using a proportional 0~10 V signal for capacity control **(Stepless)**
Y control – control of evaporating/condensing temperature ▪ **Cost effective and simple solution**, no additional DDC controller required ▪ **Fixed evaporating/condensing temperature**, no direct temperature control ▪ **Ideal for applications with a constant cooling/heating load**	**R2T/R3T** (Daikin supplied)	**3rd party thermostat** (Daikin controller for field settings)

Sensors used



Legend

T_d : discharge (supply) air temperature
T_s : suction (return) air temperature
T_f : fresh air temperature
T_r : room air temperature
R2T/R3T : Refrigerant (liquid/gas line) temperature

Control type benefits	Sensor Used	Controller
Z' control – control of supply air temperature ▪ **Cost efficient and simple** solution, no additional DDC controller required ▪ You can **combine VRV indoor units and AHUs** in one system or connect **several AHUs to 1 outdoor unit** ▪ **Ideal for pre-conditioning of fresh air** via Td temperature control ▪ Less accurate room temperature control compared to X/W/Z control	**R4T** Daikin supplied)	Daikin controller (set point can be set via field setting)
Z control – return air temperature control ▪ Cost **efficient and simple solution**, no additional DDC controller required ▪ You **can combine VRV indoor units** and AHUs in one system or connect **several AHUs to 1 outdoor unit** ▪ **Ideal for AHU's that operate at 100% recirculation** like indoor units or if no particular supply temperature required ▪ **No supply temperature control**	**R1T** (Daikin supplied)	Daikin controller (set point can be set via remocon or via C1C2)

Air Handling Unit kits

Layout possibilities

With our wide capacity range and different control options, a variety of layout possibilities to match your application:

- **Pair layout:** one or more outdoor units combined with 1 air handling unit
- **Multi layout:** one outdoor unit combined with multiple air handling units
- **Mix layout:** one outdoor unit combined with an air handling unit AND indoor units

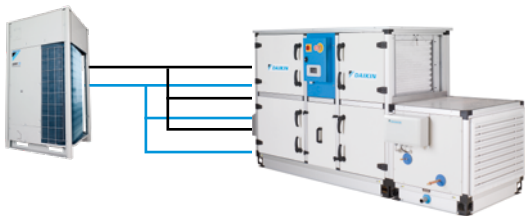
Pair layout

One ERA or VRV heat pump (system) connected to one AHU through one refrigerant circuit

- with W, X, Y, Z, Z' control
- not allowed for VRV H/R

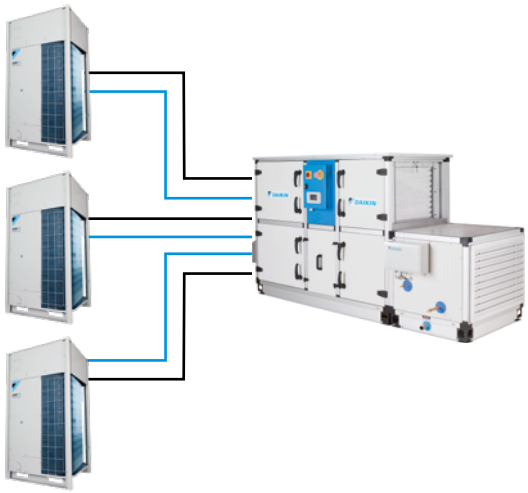
One VRV heat pump (system) connected to the interlaced coil of one AHU through several refrigerant circuits

- with W, X, Y control
- not allowed for VRV H/R and VRV-i



Several ERA or VRV heat pumps connected to the interlaced coil of one AHU through several refrigerant circuits

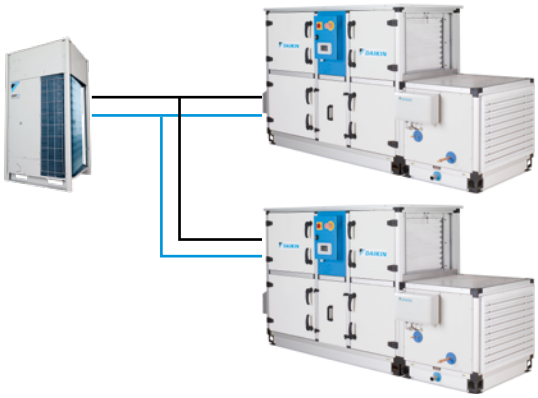
- with W, X, Y control
- not allowed for VRV H/R and VRV-i



Multi layout

One VRV heat pump connected to several AHUs

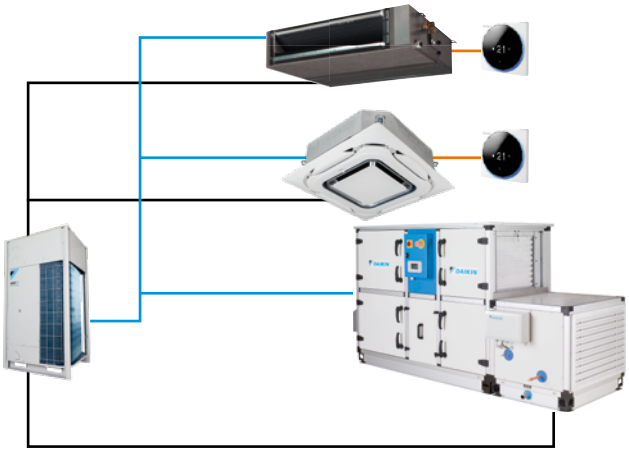
- with Z, Z' control and field supplied controls on AHU side.
- not allowed for VRV H/R
- no interlaced coil possible



Mix layout

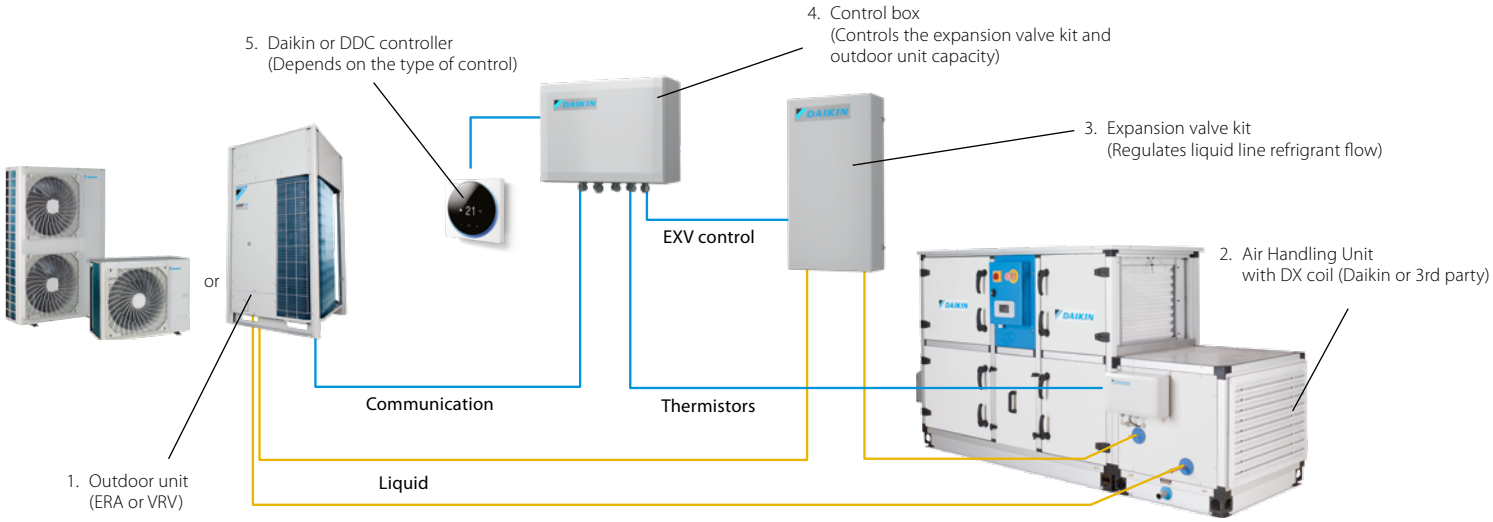
VRV indoor units and AHU(s) mixed in the same VRV heat pump or heat recovery system

- with Z, Z' control and field supplied controls on AHU side
- no interlaced coil possible
- hydrobox not possible



Refrigerant piping
F1-F2
P1-P2

Main components with detailed piping and wiring principle



Detailed combination table

Range	Outdoor Unit	Control box	Expansion valve kits EKEXVA											
		EKEACBVE	50	63	80	100	125	140	200	250	300	350	400	450	500
ERA	ERA100A7V1B	P	-	P(a)	P(b)	P(b)	-	-	-	-	-	-	-		
	ERA125A7V1B	P	-	-	-	P(b)	P(b)	-	-	-	-	-	-		
	ERA140A7V1B	P	-	-	-	P(a)	P(b)	P(b)	-	-	-	-	-		
	ERA100A7Y1B	P	-	P(a)	P(b)	P(b)	-	-	-	-	-	-	-	-	-
	ERA125A7Y1B	P	-	-	-	P(b)	P(b)	-	-	-	-	-	-	-	-
	ERA140A7Y1B	P	-	-	-	P(a)	P(b)	P(b)	-	-	-	-	-	-	-
	ERA200AMYFB	P	-	-	-	-	-	P(b)	P(b)	-	-	-	-	-	-
	ERA250AMYFB	P	-	-	-	-	-	-	P(b)	P(b)	-	-	-	-	-
	ERA250AMYFB	P	-	-	-	-	-	-	P(a)	P(b)	P(b)	-	-	-	-

DX coil volume limitations when combined with ERA:
Please follow the AHU HEX volume limitations according to the table below:

Capacity class	Minimum heat exchanger volume [dm³]		Maximum heat exchanger volume [dm³]
	Pair combination (a)	Pair combination (b)	Pair combination
63	1,18	1,02	2,08
80	1,64	1,42	2,64
100	1,74	1,51	3,30
125	2,29	1,98	4,12
140	2,94	2,54	4,62
200	3,49	3,02	6,60
250	4,58	3,97	8,25
300	5,23	4,53	9,90

VRV IV & VRV IV+	H/P (RYYQ, RXYQ, RXYSQ, RXYTQ, RXYLQ, RXYS(C)Q, RWEYQ (H/P))	P/M	Pair and multi: 65% (1) < CR < 110% Mix: CR < 110% and 50% < IU CR < 110%
	VRV-i (RKXYQ)	P(2)/M	Pair and multi: 65%(1) < CR < 110% Mix: CR < 110% and 50% < IU CR < 110%
	H/R (REYQ, RWEYQ (H/R))	M(3)	Multi(3) : 65%(1) < CR < 110% Mix: CR < 110% and 50% < IU CR < 110%
VRV 5	H/P (RXYSA, RXYA)	P/M	Pair and multi: 65%(1) < CR < 110% Mix: CR < 110% and 50% < IU CR < 110%
	H/R REYA	M(3)	Multi(3): 65%(1) < CR < 110% Mix: CR < 110% and 50% < IU CR < 110%

P: Pair layout - One or more outdoor units connected to an (interlaced) coil of one AHU
M: Mix or multi layout - Combination of (multiple) AHU(s) with (mix combination) or without (multi combination) VRV DX indoor(s). Only Z or Z' control possible (no interlaced coils)
(1): For 65%<CR<75% please refer to the specifically required coil size
(2): Only Z or Z' control possible (no interlaced coils)
(3): Technically is possible to connect H/R in pair combination, but there's no benefit to do it

DAIKIN

R-32

Growing together towards a sustainable future

ERA-AYF

ERA-AY/AV

INVERTER

Condensing unit range connectable to Air Curtains and Direct Expansion (DX) Air Handling Units (AHUs) for fresh air and recirculation applications.

R-32

Range based on inverter technology with the use of lower GWP R-32 refrigerant for capacities from 6,3 kW up to 30 kW.

AUTO

Securing the highest comfort conditions due to the quick response of DX systems and the available control logics.

NEW

Presenting the Daikin ERA

- New line up with low GWP refrigerant R-32 up to 12 HP
- Immediate cooling and heating under any ambient or room conditions
- Better management of load for medium size spaces due to VRV technology
- Continuous Heating: Avoid cold drafts during defrost cycle
- Benefit from the high efficiency and fast response time of ERA units for changing loads
- Energy saving due to inverter technology
- Wide range of expansion valve kits available for capacities of 6,3 to 30 kW

ERA-AYF ERA-AY/AV

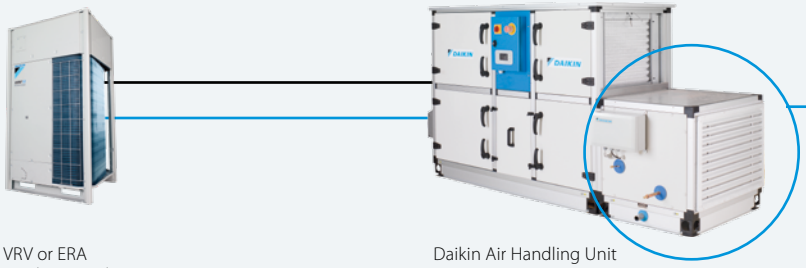
ERA-AV ERA-AY ERA-AYF

				ERA100AV	ERA125AV	ERA140AV	ERA100AY	ERA125AY	ERA140AY	ERA200AYF	ERA250AYF	ERA300AYF
Capacity range			HP	4	5	6	4	5	6	8	10	12
Cooling capacity	Prated,c		kW	12.1	14.0	15.5	12.1	14.0	15.5	22.4	28.0	33.5
Heating capacity	Prated, h		kW	12.1	14.0	15.5	12.1	14.0	15.5	22.4	28.0	33.5
	Max.		kW	14.2	16.0	18.0	14.2	16.0	18.0	25.0	31.5	37.5
Dimensions	HxWxD		mm	869x1,100x460						1,430x940x320	1,615x940x460	
Weight			kg	102						144	180	
Sound power level	Cooling		dB(A)	67.0	68.1	69.0	67.0	68.1	69.0	73.2	74.0	76.1
	Heating		dB(A)	69.0	70.0	71.0	69.0	70.0	71.0	73.5	74.0	76.0
Sound pressure level	Cooling		dB(A)	49.0	51.0		49.0	51.0		58.1	57.0	60.0
Operation range	Cooling	Min °C	°CDB	-5 ~ 46						-5 ~ 52		
	Heating	Max °C	°CWB	-20 ~ 16						-20 ~ 15.5		
Refrigerant	Type/GWP			R-32 / 675.0						R-32 / 675.0		
	Charge	tCO2eq/ kg	kg	3.40/2.30						5.2/3.51	7/4.73	7.1/4.79
Piping connections	Liquid OD		mm	9.52						9.5		12.7
	Gas OD		mm	15.9						19.1		22.2
	Max piping length		m	50						50		
Power supply	Phase/Freq./ Voltage		Hz/V	1~/50/220-240			3N~/50/380-415			3N~/50/380-415		
Current - 50Hz	Max. fuse amps (MFA)		A	32			16			25		32

Daikin Fresh Air package

What is included?

- A **plug & play package** with a Daikin DX outdoor unit and Daikin Air Handling Unit
- Factory fitted and welded **DX coil, expansion valve kit** and **control box**
- **One point of contact**



VRV or ERA
outdoor condensing unit

Daikin Air Handling Unit

Factory fitted and welded DX coil,
expansion valve kit and control box

Simplified business

- Unique **total solution approach** of heating, cooling and ventilation
- Off-the-shelf **compatibility** between Daikin outdoor unit and Daikin AHU
- Plug&play control for **outstanding reliability**
- **Peace-of-mind** thanks to a single point of contact

Simple selection in 2 steps

STEP 1

Select your design in
ASTRA software

Share with
Xpress

STEP 2

Add the AHU design in Xpress
(including capacity, dimensions,
refrigerant connection location,…)

Complete range of possibilities

750 m3/h up to 144,000 m3/h

D-AHU Professional

- Infinite variable sizes
- Tailored to the individual customer

500 m³/h up to 25,000 m³/h

D-AHU
Modular R

- Pre-configured sizes
- Plug and play concept
- EC Fan technology
- Heat recovery wheel
  (sorption and sensible technology)
- Comact design

500 m3/h up to 25,000 m3/h

D-AHU
Modular P

- Pre-configured sizes
- Plug and play concept
- EC Fan technology
- High efficiency aluminium counter flow PHE
- Comact design

Integration with 3rd party Air Handling Units

Also for the integration with 3rd party AHU's Daikin provides expert support for the design and installation.

Selection of the expansion valve kit – Fresh air application

- Define the required heating/cooling load of your project
- Define 3rd party AHU heat exchanger capacity
- Use the Xpress selection software or the below table to select the correct expansion valve kit
- The 3rd party AHU design should respect the allowed heat exchanger volume
- Xpress selection software will select the correct outdoor unit at the design ambient temperatures.

Cooling

	EKEXVA Class	Allowed heat exchanger capacity (kW)			Allowed heat exchanger volume (dm³)*		
					Minimum		Maximum
		Minimum	Nominal	Maximum	General Limits	(65%<CR<75%) Only for pair and multi layout	Maximum
	50	5.0	5.6	6.2	0.95	1.09	1.65
	63	6.3	7.1	7.8	1.02	1.18	2.08
	80	7.9	9.0	9.9	1.42	1.64	2.64
	100	10.0	11.2	13.1	1.51	1.74	3.30
	125	13.2	14.0	15.4	1.98	2.29	4.12
	140	15.5	16.0	21.0	2.54	2.94	4.62
	200	21.1	22.4	24.6	3.02	3.49	6.60
	250	24.7	28.0	30.8	3.97	4.58	8.25
NEW	300	30.9	33.5	36.9	4.53	5.25	9.9
NEW	350	37.0	40.0	44.0	5.48	6.32	11.55
	400	44.1	45.0	49.5	6.04	6.97	13.2
NEW	450	49.6	50.4	55.4	6.99	8.07	14,5
	500	55.5	56.0	61.6	7.55	8.72	16.5

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

* Applicable when connected to VRV outdoor units. For the corresponding DX coil limitations when the DX coil is connected to ERA units, please refer to the table on page 7.

Heating

	EKEXVA Class	Allowed heat exchanger capacity (kW)			Allowed heat exchanger volume (dm³)*		
					Minimum		Maximum
		Minimum	Nominal	Maximum	General Limits	(65%<CR<75%) Only for pair and multi layout	Maximum
	50	5.6	6.3	7.0	0.95	1.09	1.65
	63	7.1	8.0	8.8	1.02	1.18	2.08
	80	8.9	10.0	11.1	1.42	1.64	2.64
	100	11.2	12.5	14.7	1.51	1.74	3.30
	125	14.8	16.0	17.3	1.98	2.29	4.12
	140	17.4	18.0	23.6	2.54	2.94	4.62
	200	23.7	25.0	27.7	3.02	3.49	6.60
	250	27.8	31.5	34.7	3.97	4.58	8.25
NEW	300	34.8	37.5	41.5	4.53	5.23	9.9
NEW	350	41.6	45.0	49.5	5.48	6.32	11.55
	400	49.6	50.0	55.7	6.04	6.97	13.2
NEW	450	55.8	56.5	62.4	6.99	8.07	14.85
	500	62.5	63.0	69.3	7.55	8.72	16.5

Saturated evaporating temperature: +46°C
Air temperature: +20°C DB

* Applicable when connected to VRV outdoor units. For the corresponding DX coil limitations when the DX coil is connected to ERA units, please refer to the table on page 7.

Selection of the expansion valve kit – Recirculation application

- Define the required heating/cooling load of your project
- Use the Xpress selection software or the below table to select the correct expansion valve, following the procedure used as for standard VRV indoor units
- The 3rd party AHU design should respect the allowed heat exchanger (DX coil) volume limitations which in are in place for VRV (above on this page) and ERA (page 7)
- Xpress selection software will select the correct outdoor unit at the design ambient temperatures

Cooling

	EKEXVA Class	On-coil air temperature [°C]						
		14WB 20DB	16WB 23DB	18WB 26DB	19WB 27DB	20WB 28DB	22WB 30DB	24WB 32DB
		kW	kW	kW	kW	kW	kW	kW
	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
NEW	300	22.6	26.9	31.3	33.5	35.3	36.1	36.9
NEW	350	27.0	32.2	37.4	40.0	42.1	43.1	44.0
	400	30.4	36.2	42.1	45.0	47.4	48.5	49.5
NEW	450	34.0	40.5	47.2	50.4	53.1	54.3	55.4
	500	37.8	45.0	52.4	56.0	59.0	60.4	61.6

Heating

	EKEXVA Class	On-coil air temperature [°C]						
		10.0	16.0	18.0	20.0	21.0	22.0	24.0
		kW	kW	kW	kW	kW	kW	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	33.1	31.5	30.5	29.5	27.5
NEW	300	39.4	39.4	39.4	37.5	36.3	35.1	32.7
NEW	350	47.2	47.2	47.2	45.0	43.6	42.1	39.2
	400	52.4	52.4	52.4	50.0	48.4	46.8	43.6
NEW	450	59.2	59.2	59.2	56.5	54.7	52.9	49.3
	500	66.0	66.0	66.0	63.0	61.0	59.0	54.9

Daikin, your partner

in decarbonising your building

Every building requires a different solution to match its unique properties. That's why it is important to have an HVAC-R partner with expert knowledge and a product portfolio designed to achieve your objectives while staying within budget.

How will Daikin enable you to lower your carbon footprint?

- We continuously develop products with lower CO_2 footprints by using **lower GWP refrigerants** such as R-32
- We reuse materials where possible, even refrigerants through the **LOOP by Daikin programme** aimed at reusing available resources and fully supporting the EU circular economy
- We maximise **real life seasonal efficiencies**, delivered in a transparent and trustworthy way
- Our **team of experts goes beyond product support** to reach your green objectives by providing in-depth knowledge in the use of EPDs, EPDB legislation and green building schemes such as BREEAM, LEED, WELL, etc.
- We provide **support** to continuously monitor our systems, ensuring they operate as intended, keeping running costs low and maximising uptime **throughout the entire building life cycle**
- We **help customers make the right choice** by offering easy to use tools to select the best solutions for their residential, commercial or industrial building

We're there for you!

Let's act now to decarbonise buildings, creating a healthy environment for generations to come.

Contact us here: **https://www.daikin.eu/en_us/about/environmental-responsibility/epd.html**

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