Refra®
www.refra.eu

AIR CONDITIONING

Split systems | E Series; P Series; H Series
Multi-Split Systems
Light Commercial Series
VRF Systems
Bcase Condensing Unit
Galaxy Condensing Unit
Galaxy Chiller
Fan Coil Units

ABOUT COMPANY

JSC “Refra” is one of the leading companies in the field of manufacturing refrigeration equipment. The long-term work experience, cooperation with leading world producers of compressors and other parts of refrigeration equipment, the widest range of products, an individual approach to each client and professionalism - those advantages enabled our company to obtain wide publicity in refrigeration market segment. Production plant takes more than 15000 square meters and is divided into several departments:

> refrigeration and air conditioning department
> doors for cold-storage production department
> production of metal construction (frames and cover boxes) for central refrigerating systems
> painting department
> control equipment department

Due to the effective combination of the department’s work we able to offer non standart solutions for our customers and produce equipment in short terms. Moreover high qualified staff guarantees best quality of equipment.

Also using the “know how” technologies helps us to offer high quality and low price for all types of our products. Our products are compliant with next directives:

> EC Machines Directive 98/37/EC
> EC Low Voltage Directive 73/27/EEC
> EC Pressure Equipment Directive 97/23 (PED)
> EMC Directive 89/336/EEC

The refrigeration units have been designed and manufactured in conformity to European Standards EN349, EN378, EN12263, EN60204-1 and other normative requirements.

The refrigeration units are certified and conform to all the requirements of the European Union.

ISO 9001 BUREAU VERITAS Certification

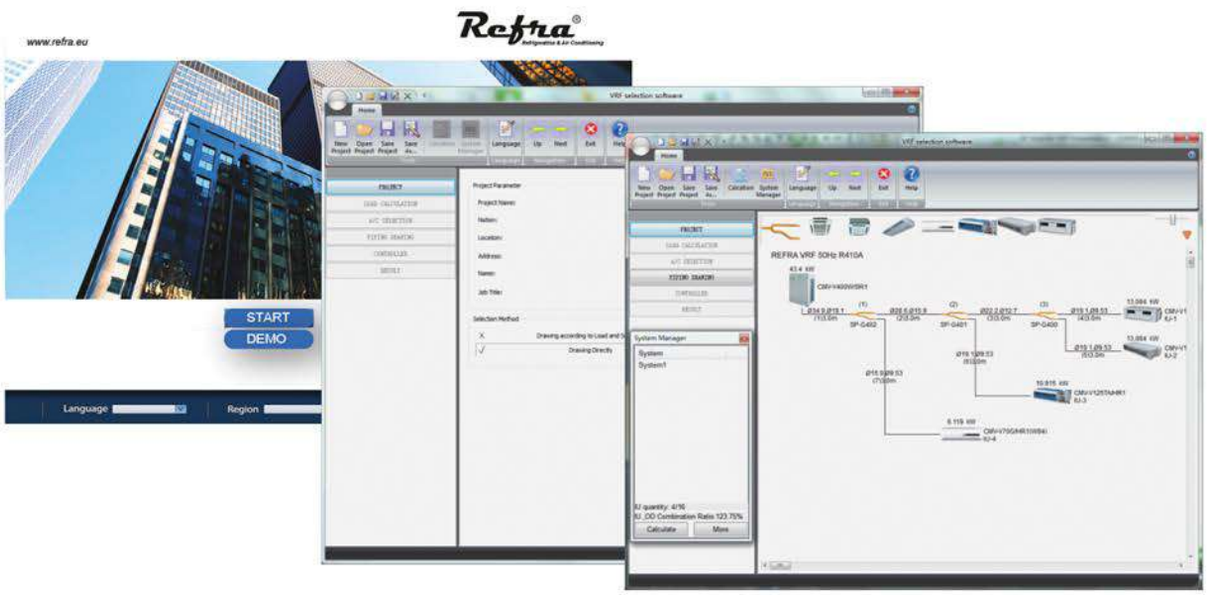
1399 AB28

REFRA SELECTION TOOL

Our aim is to be the most customer orientated company. Inspired of that idea we have developed selection software - “Refra Selection Tool” - it helps to choose the standart refrigeration equipment by capacity or model. Moreover you could place an order on-line mode or print out technical and operating data of selected unit.

VRF SELECTION SOFTWARE

VRF Selection software is specially developed for designers. Available in english or russian languages.



SPLIT SYSTEMS E SERIES

Wall mounted split air conditioner

Features and benefits:

- *Energy efficient*
- *Easy installation*
- *Easy maintenance*
- *Quiet operation*
- *Simple control*
- *Low voltage start-up*
- *Follow me*
- *Automatic operation*
- *Self-diagnosis*
- *Memory function*
- *24-hour timer*
- *Control lock*
- *Comfortable sleeping mode*
- *Drying operation*
- *Intelligent defrost*
- *3D Air delivery*

Comfortable energy saving mode

It offers a perfect balance between most comfortable temperature and least power consumption.

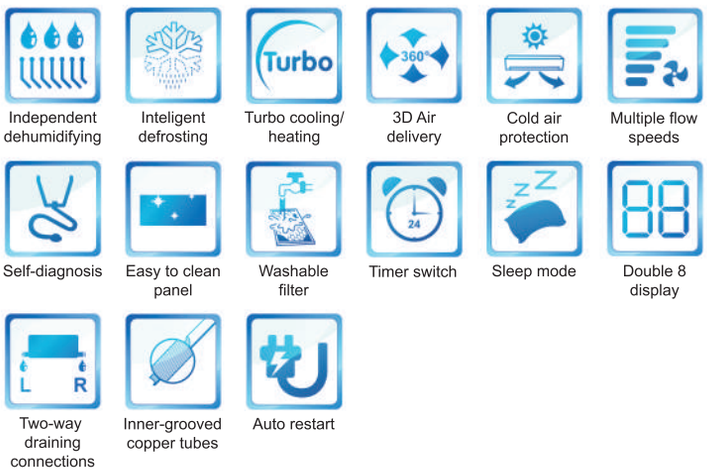
"TURBO" function

Press "Turbo" button on remote controller to enjoy a larger air flow, which enables the indoor temperature to reach the set temp in a shorter time.

Range is highly economical and environmentally friendly, using the good compressor and inverter technology keeping power consumption minimal, but at the same time providing you with powerful cooling and heating.

Intelligent defrosting

I-Defrosting is only performed when needed, which reduces energy waste by eliminating the unnecessary defrosting process.
Traditional defrosting works by setting time. E.g. defrosting process is on for 10 min for every 50 min.



Model	Indoor unit		RCSE09AR1	RCSE12AR1	RCSE18AR1	RCSE24AR1
	Outdoor unit		RCCE09AR1	RCCE12AR1	RCCE18AR1	RCCE24AR1
Capacity	Cooling	kW	2,5 (1,5 - 3,3)	3,5 (1,6 - 4,0)	5,1 (1,8 - 5,9)	7,0 (2,6 - 7,2)
	Heating		2,6 (1,3 - 3,4)	3,6 (1,6 - 4,2)	5,2 (1,8 - 6,1)	7,0 (2,0 - 7,5)
SEER/SCOP	W / W		6,2 / 4,0	6,1 / 4,0	6,1 / 4,0	5,6 / 4,0
Energy label			A++ / A+	A++ / A+	A++ / A+	A+ / A+
Power supply	F, V, Hz		1F,220~240V, 50Hz			
Power input	Cooling	W	780 (380 ~ 1200)	1090 (450 - 1400)	1600 (420 ~ 2100)	2180 (600 ~ 3450)
	Heating		720 (390 ~ 1200)	990 (370 - 1270)	1400 (410 ~ 2150)	1930 (580 ~ 3400)
Rated current	Cooling	A	3,5	4,9	7,2	9,4
	Heating		3,3	4,5	6,4	8,3
Indoor unit						
Outline dimension	H x W x D	mm	280 x 800 x 190	276 x 780 x 202	292 x 900 x 215	302 x 1080 x 220
Package dimension	H x W x D	mm	358 x 865 x 275	367 x 960 x 305	377 x 983 x 300	392 x 1275 x 318
Weight	Net / Gross	kg	10 / 12	10 / 12	14 / 17	16 / 20
Sound pressure level	SH / H / M / L	dB	30-38	28-40	42-46	42-48
Outdoor unit						
Outline dimension	H x W x D	mm	540 x 715 x 235	540 x 715 x 235	605 x 850 x 295	700 x 870 x 310
Package dimension	H x W x D	mm	600 x 851 x 335	600 x 851 x 335	690 x 995 x 415	770 x 990 x 410
Weight	Net / Gross	kg	28 / 33	28 / 33	40 / 45	52 / 57
Sound pressure level	dB		53	53	55	58
Operating temperature	Cooling	°C	-15°C ~ +43°C	-15°C ~ +43°C	-15°C ~ +43°C	-15°C ~ +43°C
	Heating		-15°C ~ +25°C	-15°C ~ +25°C	-15°C ~ +25°C	-15°C ~ +25°C
Piping connection	Gas	mm (in)	9,52 (3/8)	9,52 (3/8)	12,0 (1/2)	16,0 (5/8)
	Liquid		6,0 (1/4)	6,0 (1/4)	6,0 (1/4)	9,52 (3/8)
Max. piping level difference / length	m		5 / 15	5 / 15	5 / 15	5 / 15

Cooling: indoor temperature t=27ºC DB, t=19ºC WB, outdoor temperature t=35ºC DB, t=44ºC WB.
Heating: indoor temperature t=20ºC DB, t=15ºC WB, outdoor temperature t=37ºC DB, t=6ºC WB.
The above data may be changed without notice for future improvement on quality and performance.

SPLIT SYSTEMS P SERIES

Wall mounted split air conditioner

Features and benefits:

- *Energy efficient*
- *Easy installation*
- *Easy maintenance*
- *Quiet operation*
- *Simple control*
- *Low voltage start-up*
- *Follow me*
- *Automatic operation*
- *Self-diagnosis*
- *10°C heating*
- *Memory function*
- *24-hour timer*
- *Control lock*
- *Comfortable sleeping mode*
- *Drying operation*
- *Intelligent defrost*
- *3D Air delivery*
- *Soft LED setting*
- *Silver Ion filter*
- *Plasma*

3D Air delivery

360° air swing design allows air to reach every corner of a room within a wide angle.

More energy efficient, saving up to 30%

The 3D DC inverter is capable of delivering energy savings of up to 30%, compared to their normal counterparts. Twin rotary inverter compressors are used to improve cooling and heating efficiency.

Air purify filters

Several optional healthy filters provide more protection for your family health.

Plasma

Refra Plasma Ion Generator is new reliable technology which breaks down unpleasant odors and is able to reduce harmful particles. The air purifiers clean the air using positive and negative ions. These positive hydrogen and negative oxygen ions are extracted from the water molecules in the air. It's important to keep the air in the house fresh and healthy, not only for your nose, but especially for your airway!

The high-end unit is the most wanted and mainly installed indoor type. Also in commercial applications it is very important - especially becouse of the easy installation and maintenance

Maintain 10ºC room temperature during the winter heating. It greatly reduce the temperature difference between indoor side and outdoor side. Moreover it brings high level of comfort and helps to save energy.

Washable Filter

Patented disassembling technology offers easier detachment, so filter mesh must be cleaned easily.

Model	Indoor unit		RCSP09AR1	RCSP12AR1	RCSP18AR1	RCSP24AR1
	Outdoor unit		RCCP09AR1	RCCP12AR1	RCCP18AR1	RCCP24AR1
Capacity	Cooling	kW	2,6 (2,0 - 4,0)	3,6 (1,6 - 4,2)	5,1 (1,9 - 5,5)	7,0 (4,0 - 8,4)
	Heating		2,7 (1,9 - 4,2)	3,7 (1,6 - 4,6)	5,2 (2,0 - 6,2)	7,2 (3,5 - 9,5)
SEER/SCOP	W / W		6,6 / 4,0	6,6 / 4,0	6,1 / 4,0	5,6 / 4,0
Energy label	Cooling / Heating		A++ / A+	A++ / A+	A++ / A+	A+ / A+
Power supply	F, V, Hz		1F,220~240V, 50Hz			
Power input	Cooling	W	595 (460 - 1400)	1060 (350 - 1600)	1590 (660 - 1880)	2000 (900 - 3360)
	Heating		590 (420 - 1400)	1050 (360 - 1550)	1625 (670 - 1920)	1900 (360 - 3400)
Rated current	Cooling	A	2,7	4,8	6,9	8,8
	Heating		2,6	4,3	7,0	8,4
Indoor unit						
Outline dimension	H x W x D	mm	280 x 800 x 190	280 x 800 x 190	292 x 900 x 215	302 x 1080 x 220
Package dimension	H x W x D	mm	358 x 865 x 275	358 x 865 x 275	377 x 983 x 300	392 x 1275 x 318
Weight	Net / Gross	kg	10 / 12	10 / 12	14 / 17	16 / 20
Sound pressure level	SH / H / M / L	dB	30~38	30~40	42~46	42~48
Outdoor unit						
Outline dimension	H x W x D	mm	540 x 715 x 235	540 x 812 x 256	605 x 850 x 295	835 x 900 x 330
Package dimension	H x W x D	mm	600 x 851 x 335	595 x 920 x 335	690 x 995 x 415	960 x 1030 x 440
Weight	Net / Gross	kg	30 / 32	34 / 38	45 / 51	65 / 70
Sound pressure level	dB		53	52	55	58
Operating temperature	Cooling	°C	-20°C ~ +43°C	-20°C ~ +43°C	-20°C ~ +43°C	-20°C ~ +43°C
	Heating		-25°C ~ +24°C	-25°C ~ +24°C	-25°C ~ +24°C	-25°C ~ +24°C
Piping connection	Gas	mm (in)	9,52 (3/8)	9,52 (3/8)	12,0 (1/2)	16,0 (5/8)
	Liquid		6,0 (1/4)	6,0 (1/4)	6,0 (1/4)	9,52 (3/8)
Max. piping level difference / length	m		5 / 15	5 / 15	5 / 15	5 / 15

Cooling: indoor temperature t=27ºC DB, t=19ºC WB, outdoor temperature t=35ºC DB, t=44ºC WB.
Heating: indoor temperature t=20ºC DB, t=15ºC WB, outdoor temperature t=37ºC DB, t=6ºC WB.
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SPLIT SYSTEMS H SERIES

Wall mounted split air conditioner

Features and benefits:

- *I-FEEL function*
- *Energy efficient*
- *Easy installation*
- *Easy maintenance*
- *Quiet operation*
- *Wide-angle louvers*
- *Low voltage start-up*
- *Low temperature start-up*
- *LED display*
- *Automatic operation*
- *Self-diagnosis*
- *Memory function*
- *24-hour timer*
- *Control lock*
- *Removable washable panel*
- *Drying operation*
- *-15°C cooling*
- *-20°C heating*
- *Intelligent defrosting*

H series are Refra's high energy efficiency wall mounted split type air conditioners, equipped with Inverter technology which enables the unit to operate in ultra low frequency (50% energy saving, 16Hz frequency opertion) and to precisely control the indoor temperature.

H series air conditioner offers a perfect balance between most comfortable temperature and least power consumption, gives you maximum comfort.

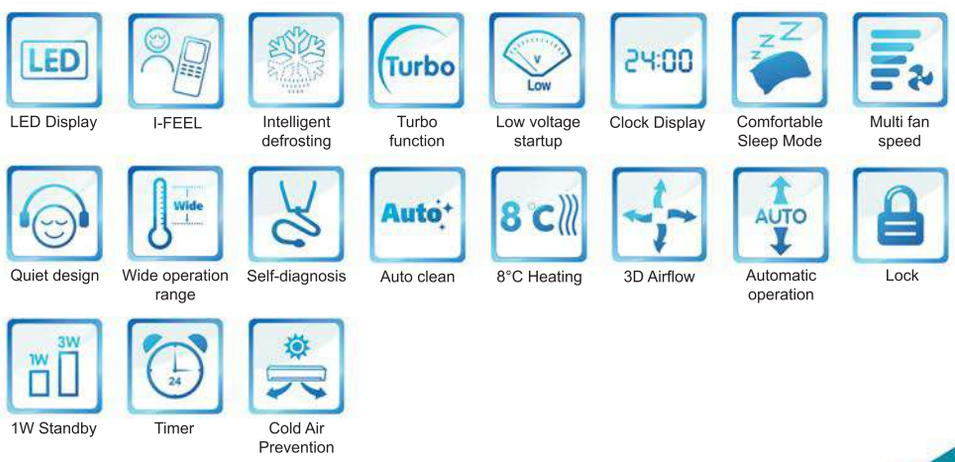
7 Fan speeds: from MUTE to TURBO, maximize your comfortable experience.

8ºC Heating: the unit is able to maintain 8ºC when heating mode in winter, which consumes less energy while brings more comfort by reducing the differnce between outdoor temperature and indoor temperature.

Advanced airflow design

10m overlong airflow (for 09 and 12 models);
Automatic horizontal airflow: horizontal louvers can swing left and right automatically, just to enjoy the maximum convenience;
Waterfall heating airflow: equipped with extra inner louver when heating, it directs the warm air to the floor vertically, just to enjoy the maximum warmth.

-15ºC Cooling: Cooling at -15ºC while keep a reliable operation. As the outdoor temperature changes, the frequency of compressor and the speed of fan atjust accordingly.
-20ºC Heating: Operate finely when heating at -20ºC. It is supported by REFRA's electrical heating chassis, preheating technology and frequency – adjusting compressor



Model	Indoor unit		RGSH09AR1	RGSH12AR1	RGSH18AR1	RGSH24AR1
	Outdoor unit		RGCH09AR1	RGCH12AR1	RGCH18AR1	RGCH24AR1
Capacity	Cooling	kW	2,50 (0,7 - 4,4)	3,50 (0,7 - 4,5)	5,30 (1,0 - 6,3)	7,00 (2,0 - 8,6)
	Heating		2,75 (0,72 - 4,8)	3,65 (0,72 - 5,5)	5,60 (1,0 - 6,8)	7,60 (1,9 - 9,0)
SEER/SCOP	W / W		7,5 / 4,6	7,0 / 4,6	6,4 / 4,0	6,3 / 4,0
Energy label	Cooling		A++	A++	A++	A++
	Heating		A++	A++	A+	A+
Power supply	F, V, Hz		1F, 220 - 240V, 50 Hz			
Power input	Cooling	W	520 (170 ~ 1350)	900 (182 ~ 1450)	1514 (400 ~ 2450)	2000 (450 ~ 3700)
	Heating		565 (150 ~ 1400)	895 (190 ~ 1700)	1600 (400 ~ 2500)	2170 (380 ~ 3700)
Rated current	Cooling	A	2,31	4,00	7,00	8,90
	Heating		2,51	3,97	7,10	9,63
Indoor unit						
Outline dimension	H x W x D	mm	291 x 866 x 210	291 x 866 x 210	319 x 1018 x 230	326 x 1178 x 264
Package dimension	H x W x D	mm	375 x 945 x 301	375 x 943 x 286	397 x 1097 x 340	414 x 1256 x 364
Weight	Net / Gross	kg	11,0 / 14,0	11,0 / 14,0	15,0 / 18,5	17,5 / 21,5
Sound pressure level	SH / H / HM / ML / L / SL	dB	42 / 36 / 34 / 32 / 28 / 24 / 21	43 / 36 / 34 / 32 / 28 / 24 / 22	46 / 44 / 42 / 40 / 38 / 36 / 34	51 / 50 / 46 / 44 / 42 / 40 / 37
Outdoor unit						
Outline dimension	H x W x D	mm	596 x 899 x 378	596 x 899 x 378	700 x 955 x 396	790 x 980 x 427
Package dimension	H x W x D	mm	645 x 948 x 420	645x 948 x 420	750 x 1029 x 458	855 x 1083 x 488
Weight	Net / Gross	kg	43,0 / 47,0	43,0 / 47,0	49,0 / 53,0	69,0 / 74,0
Sound pressure level	dB		49	50	56	58
Operating temperature	Cooling	°C	-15~+48	-15~+48	-15~+48	-15~+48
	Heating		-20~+30	-20~+30	-20~+24	-20~+24
Piping connection	Gas	mm (in)	9,52 (3/8)	9,52 (3/8)	16,00 (5/8)	16,00 (5/8)
	Liquid		6,0 (1/4)	6,0 (1/4)	6,0 (1/4)	6,0 (1/4)
Max piping level difference / length	m		10 / 15	10 / 20	10 / 25	10 / 25

Cooling: indoor temperature t=27ºC DB, t=19ºC WB, outdoor temperature t=35ºC DB, t=24ºC WB.
Heating: indoor temperature t=20ºC DB, t=15ºC WB, outdoor temperature t=7ºC DB, t=6ºC WB.
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MULTI-SPLIT SYSTEMS

Multi split air conditioner

Features and benefits:

- *Easy maintenance*
- *Quiet operation*
- *Simple control*
- *Attractive and efficient design*
- *Low voltage start-up*
- *Dry anti-mildew design*
- *LED display*
- *Automatic operation*
- *Self-diagnosis*
- *Memory function*
- *24-hour timer*
- *Control lock*
- *Comfortable sleeping mode*
- *Auto clean*
- *Drying operation*
- *Anti-cool wind*
- *Intelligent defrosting*

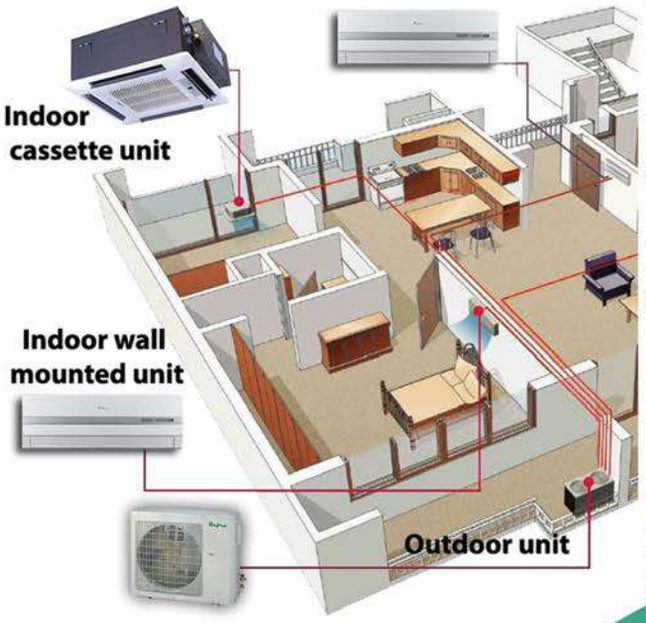
Multi split system

Multi split system is necessary to provide total comfort solution for a multi-room application. One outdoor unit is capable of operating 2, 3, 4 or 5 indoor units. They are compact and slimline and are designed to blend in with any room interior.

Powered by Inverter technology, the unit operates with lower power consumption, lower noise, more comfort.

The unit is designed with low temperature heating function, can operate heating mode under outdoor ambient of -15ºC.

Different units for choices, the same comfortable feeling for you.



Outdoor model			RG2M18AR1	RG3M24AR1	RG4M28AR1	RG4M36AR1	RG5M42AR1
Capacity	Cooling	kW	5,1 (2,1 - 6,4)	7,2 (2,2 - 10,2)	8,2 (2,3 - 10,2)	10,5 (3,1 - 11,0)	12,1 (3,6 - 14,0)
	Heating		5,7 (2,6 - 6,8)	8,7 (3,7 - 11,2)	9,6 (2,9 - 11,2)	11,3 (4,6 - 13,0)	13,3 (4,6 - 14,3)
SEER/SCOP	W / W		5,6 / 3,8	5,1 / 3,8	5,1 / 3,8	5,5 / 3,8	-
Power supply	F, V, Hz		1F,220~240V, 50Hz				
Power input	Cooling	W	1550 (500 ~ 2550)	2200 (650 ~ 4500)	2490 (650 ~ 4500)	3030 (1300 ~ 4600)	3590 (1300 ~ 4900)
	Heating		1550 (580 ~ 2700)	2350 (980 ~ 3950)	2580 (980 ~ 3950)	3100 (1300 ~ 4140)	3545 (1300 ~ 4400)
Outline dimension	HxWxD	mm	700 x 955 x 396	790 x 980 x 427	790 x 980 x 427	1103 x 1015 x 440	1103 x 1015 x 440
Package dimension	HxWxD	mm	750 x 1029 x 458	855 x 1083 x 488	855 x 1083 x 488	1235 x 1158 x 493	1235 x 1158 x 493
Weight	Net / Gross	kg	50,0 / 55,0	69,0 / 74,0	69,0 / 74,0	94,0 / 104,0	102,0 / 112,0
Sound pressure level	dB		56 / 53 / 50	58 / 54 / 52	59 / 56 / 53	54	54
Operative temperature	Cooling	°C	+18~+43	+18~+43	+18~+43	+18~+43	+18~+43
	Heating		-15~+24	-15~+24	-15~+24	-15~+24	-15~+24
Piping connection	Gas	mm(in)	2 x 9,52 (3/8)	3 x 9,52 (3/8)	4 x 9,52 (3/8)	15,9 (5/8), 12,7 (1/2), 2 x 9,52 (3/8)	15,9 (5/8), 12,7 (1/2), 3 x 9,52 (3/8)
	Liquid	mm(in)	2 x 6,35 (1/4)	3 x 6,35 (1/4)	4 x 6,35 (1/4)	9,52 (3/8), 3 x 6,35 (1/4)	9,52 (3/8), 4 x 6,35 (1/4)
	Height / Lenght	m	5 / 20	10 / 60	10 / 70	15 / 70	15 / 80
Max. connection pipe length (Simple one Indoor unit)		m	10	20	20	20	25

Wall-mounted type indoor unit model			RGSM07AR1	RGSM09AR1	RGSM12AR1	RGSM18AR1
Capacity	Cooling	kW	2,16	2,70	3,60	5,40
	Heating		2,70	2,90	3,90	6,00
Outline dimension	HxWxD	mm	265 x 790 x 174	265 x 790 x 174	275 x 845 x 180	298 x 940 x 200
Package dimension	HxWxD	mm	370 x 873 x 251	370 x 873 x 251	370 x 918 x 258	300 x 1013 x 383
Weight	Net / Gross	kg	9,0 / 12,0	9,0 / 12,0	10,0 / 13,0	13,0 / 17,0
Sound pressure level	SH/H/M/L	dB	36 / 34 / 31 / 28	37 / 34 / 31 / 28	38 / 34 / 32 / 30	46 / 43 / 40 / 36

Cassette type indoor unit model			RGKM12AR1	RGKM18AR1	RGKM24AR1
Capacity	Cooling	kW	3,50	5,00	7,10
	Heating		4,00	5,50	8,00
Main body outline dimension	HxWxD	mm	230 x 570 x 570	230 x 570 x 570	240 x 840 x 840
Main body package dimension	HxWxD	mm	325 x 851 x 731	325 x 851 x 731	325 x 963 x 963
Main body weight	Net / Gross	kg	18,0 / 23,0	18,0 / 23,0	30,0 / 38,0
Panel outline dimension	HxWxD	mm	50 x 650 x 650	50 x 650 x 650	130 x 1043 x 1028
Panel package dimension	HxWxD	mm	117 x 733 x 673	117 x 733 x 673	310 x 960 x 960
Panel weight	Net / Gross	kg	2,5 / 3,5	2,5 / 3,5	6,5 / 10,0
Sound pressure level	H/L	dB	42 / 46	42 / 46	39 / 35

Foor ceiling type indoor unit model			RGCM09AR1	RGCM12AR1	RGCM18AR1	RGCM24AR1
Capacity	Cooling	kW	2,50	3,50	5,00	7,10
	Heating	kW	2,60	4,00	5,50	8,00
Main body outline dimension	H x W x D	mm	700 x 1220 x 225	700 x 1220 x 225	700 x 1220 x 225	700 x 1220 x 225
Main body package dimension	H x W x D	mm	823 x 1343 x 315	823 x 1343 x 315	823 x 1343 x 315	823 x 1343 x 315
Main body weight	Net / Gross	kg	40 / 50	40 / 50	40 / 50	40 / 50
Sound pressure level	H / L	dB	40 / 36	40 / 36	45 / 40	48 / 44

Cooling: indoor temperature t=27ºC DB, t=19ºC WB, outdoor temperature t=35ºC DB, t=24ºC WB.
Heating: indoor temperature t=20ºC DB, t=15ºC WB, outdoor temperature t=7ºC DB, t=6ºC WB.
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Duct type indoor unit model			RGDM09AR1	RGDM12AR1	RGDM18AR1	RGDM24AR1
Capacity	Cooling	kW	2,50	3,50	5,00	7,10
	Heating	kW	2,60	4,00	5,50	8,00
Air flow		m³/h	450	550	700	1000
Main body outline dimension	H x W x D	mm	200 x 700 x 615	200 x 700 x 615	200 x 900 x 615	200 x 1100 x 615
Main body package dimension	H x W x D	mm	305 x 893 x 743	305 x 893 x 743	305 x 1123 x 743	305 x 1323 x 743
Main body weight	Net / Gross	kg	22,0 / 27,0	24,0 / 29,0	27,0 / 36,0	31,0 / 41,0
Sound pressure level	H / L	dB	37 / 31	39 / 32	41 / 33	42 / 34

Cooling: indoor temperature t=27ºC DB, t=19ºC WB, outdoor temperature t=35ºC DB, t=24ºC WB.
Heating: indoor temperature t=20ºC DB, t=15ºC WB, outdoor temperature t=7ºC DB, t=6ºC WB.
The above data may be changed without notice for future improvement on quality and performance.

Multi split air conditioner combinations

	1 indoors unit	2 indoors units	
RG2M18AR1	7	7+7	7+9
	9	7+12	9+9
	12	9+12	-

	2 indoors units		3 indoors units		
RG3M24AR1	7+7	7+9	7+7+7	7+7+9	7+7+12
	7+12	7+18	7+7+18	7+9+9	7+9+12
	9+9	9+12	7+9+18	7+12+12	9+9+9
	9+18	12+12	9+9+12	9+9+18	9+12+12
	12+18	18+18	12+12+12	-	-

	2 indoors units		3 indoors units			4 indoors units		
RG4M28AR1	7+7	7+9	7+7+7	7+7+9	7+7+12	7+7+7+7	7+7+7+9	7+7+7+12
	7+12	7+18	7+7+18	7+9+9	7+9+12	7+7+7+18	7+7+9+9	7+7+9+12
	9+9	9+12	7+9+18	7+12+12	7+12+18	7+7+9+18	7+7+12+12	7+9+9+9
	9+18	12+12	9+9+9	9+9+12	9+9+18	7+9+9+12	9+9+9+9	9+9+9+12
	12+18	18+18	9+12+12	9+12+18	12+12+12	9+9+12+12	-	-
	-	-	12+12+18	-	-	-	-	-

	2 indoors units		3 indoors units			4 indoors units		
RG4M36AR1	7+12	12+12	7+7+7	7+12+24	9+12+24	7+7+7+7	7+7+12+24	9+9+9+9
	7+18	12+18	7+7+9	7+18+18	9+18+18	7+7+7+9	7+7+18+18	9+9+9+12
	7+24	12+24	7+7+12	7+18+24	9+18+24	7+7+7+12	7+9+9+9	9+9+9+18
	9+9	18+18	7+7+18	9+9+9	12+12+12	7+7+7+18	7+9+9+12	9+9+9+24
	9+12	18+24	7+7+24	9+9+12	12+12+18	7+7+7+24	7+9+9+18	9+9+12+12
	9+18	24+24	7+9+9	9+9+18	12+12+24	7+7+9+9	7+9+9+24	9+9+12+18
	9+24	-	7+9+12	9+9+24	12+18+18	7+7+9+12	7+9+12+12	9+9+18+18
	-	-	7+9+18	9+12+12	18+18+18	7+7+9+18	7+9+12+18	9+12+12+12
	-	-	7+9+24	9+12+18	-	7+7+9+24	7+9+18+18	9+12+12+18
	-	-	7+12+12	-	-	7+7+12+12	7+12+12+12	12+12+12+12
	-	-	7+12+18	-	-	7+7+12+18	7+12+12+18	-

	2 indoors units	3 indoors units		4 indoors units			5 indoors units		
RG5M42AR1	7+18	7+7+7	9+9+18	7+7+7+7	7+9+9+18	9+9+9+24	7+7+7+7+7	7+7+9+9+24	7+9+12+12+12
	7+24	7+7+9	9+9+24	7+7+7+9	7+9+9+24	9+9+12+12	7+7+7+7+9	7+7+9+12+12	7+9+12+12+18
	9+12	7+7+12	9+12+12	7+7+7+12	7+9+12+12	9+9+12+18	7+7+7+7+12	7+7+9+12+18	7+12+12+12+12
	9+18	7+7+18	9+12+18	7+7+7+18	7+9+12+18	9+9+12+24	7+7+7+7+18	7+7+9+12+24	7+12+12+12+18
	9+24	7+7+24	9+12+24	7+7+7+24	7+9+12+24	9+9+18+18	7+7+7+7+24	7+7+9+18+18	9+9+9+9+9
	12+12	7+9+9	9+18+18	7+7+9+9	7+9+18+18	9+9+18+24	7+7+7+9+9	7+7+12+12+12	9+9+9+9+12
	12+18	7+9+12	9+18+24	7+7+9+12	7+9+18+24	9+12+12+12	7+7+7+9+12	7+7+12+12+18	9+9+9+9+18
	12+24	7+9+18	9+24+24	7+7+9+18	7+12+12+12	9+12+12+18	7+7+7+9+18	7+7+12+18+18	9+9+9+9+24
	18+18	7+9+24	12+12+12	7+7+9+24	7+12+12+18	9+12+12+24	7+7+7+9+24	7+9+9+9+9	9+9+9+12+12
	18+24	7+12+12	12+12+18	7+7+12+12	7+12+12+24	9+9+12+18	7+7+7+12+12	7+9+9+9+12	9+9+9+12+18
	24+24	7+12+18	12+12+24	7+7+12+18	7+12+18+18	9+12+18+18	7+7+7+12+18	7+9+9+9+18	9+9+9+18+18
	-	7+12+24	12+18+18	7+7+12+24	7+12+18+24	9+18+18+18	7+7+7+12+24	7+9+9+9+24	9+9+12+12+12
	-	7+18+18	12+18+24	7+7+18+18	7+18+18+18	12+12+12+12	7+7+7+18+18	7+9+9+12+12	9+9+12+12+18
	-	7+18+24	12+24+24	7+7+18+24	9+9+9+9	12+12+12+18	7+7+9+9+9	7+9+9+12+18	9+12+12+12+12
	-	7+24+24	18+18+18	7+9+9+9	9+9+9+12	12+12+12+24	7+7+9+9+12	7+9+9+12+24	9+12+12+12+18
	-	9+9+9	18+18+24	7+9+9+12	9+9+9+18	12+12+18+18	7+7+9+9+18	7+9+9+18+18	12+12+12+12+12
	-	9+9+12	-	-	-	-	-	-	-

LIGHT COMMERCIAL SERIES

Light commercial series air conditioners

REFRA Inverter Heat Pump is the next generation of outdoor climate control technology. REFRA LIGHT COMMERCIAL SERIES is a kind of split type air conditioner that the outdoor unit can be connected to different types of indoor units (ducted, cassette and floor ceiling type), which can meet various indoor decoration requirements or residential and light commercial locations. The Super Inverter Series is designed with high efficient and environmental friendly refrigerant (R410A).

These environmentally friendly, energy efficient units come in various sizes to match a wide range of climate control challenges. The Inverter Heat Pump reduces outdoor noise down to a hushed 56 decibels while delivering powerful and efficient performance. It also eliminates the outdated stop-start methods of the typical fixed speed outdoor unit. R410A refrigerant makes REFRA Inverter Heat Pump the green option for today's business owner. The impressive range and capabilities of Inverter Heat Pump's technology, and its variable speed compressor provide powerful and stable climate control for a wide variety of commercial applications.

Features and benefits:

- *Heavy gauge steel cabinet*
- *Sound levels down to 56 DB*
- *R410A refrigerant*
- *Double ambient temperature sensor design makes a precision temperature monitoring*
- *Low start-up current thanks to power delay control design*
- *Higher efficiency thanks to sine wave DC inverter compressor control*
- *High reliability and easy maintenance thanks to one piece integrated PCB board*
- *With ice-melting function*

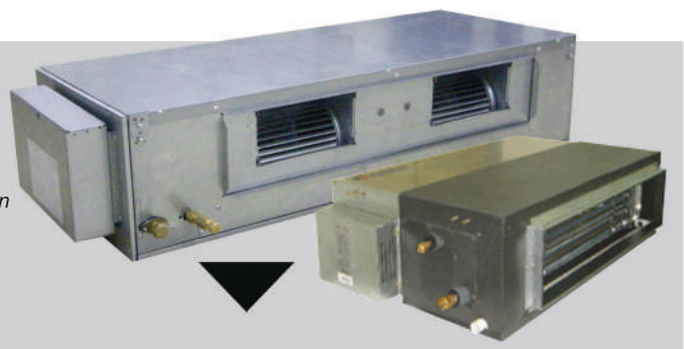
Built-in drain pump | High efficiency | Inteligent defrosting

Cold Air Prevention | Comprehersive protection | Compact design | Easier maintainability

Duct type indoor unit

Compact and powerful, the REFRA Concealed Duct indoor units offer the ultimate in flexibility and discretion. These slim indoor units are designed to be concealed above suspended ceilings or within open closet spaces to deliver conditioned air via ducting and suitable ceiling or wall grilles. This arrangement provides immense flexibility, in terms of both the distribution of conditioned air and the type of grille or diffuser that best compliments the room's styling. Each unit comes with an easy to operate wall mounted tether controller.

Benefits:
Medium static pressure
Reducing installation job thanks to simple wire connection design
Compact disign, minimum height is only 220mm
Drain pump fitted as standard with increased lift of 1100mm



Duct type air conditioner inverter, 1-phase

Model	Indoor unit		RGDY09AR1	RGDY12AR1	RGDY18AR1	RGDY24AR1	RGDY30AR1	RGDY36AR1	RGDY42AR1	RGDY48AR1
	Outdoor unit		RGOY09AR1	RGOY12AR1	RGOY18AR1	RGOY24AR1	RGOY30AR1	RGOY36AR1	RGOY42AR1	RGOY48AR1
Capacity	Cooling	kW	2,7 (0,8 - 3,4)	3,5 (1,0 - 3,9)	5,0 (1,6 - 5,8)	7,0 (2,0 - 8,5)	8,3 (2,4 - 8,7)	10,0 (3,2 - 11,5)	11,5 (3,6 - 12,5)	14,0 (6,0 - 14,5)
	Heating		2,9 (0,8 - 3,7)	3,8 (1,0 - 4,1)	5,6 (1,4 - 6,8)	8,0 (2,4 - 9,5)	9,2 (2,4 - 9,9)	12,0 (2,9 - 14,5)	13,5 (3,9 - 15,5)	15,5 (5,2 - 17,0)
SEER/SCOP			5,1 / 3,8	5,1 / 3,8	5,1 / 3,8	5,1 / 3,8	5,1 / 3,8	5,1 / 3,8	5,1 / 3,8	5,1 / 3,8
Energy label			A / A	A / A	A / A	A / A	A / A	A / A	A / A	A / A
Power Supply		F,V,Hz	1F,220~240V, 50Hz							
Power Input	Cooling	kW	0,84 (0,20 - 1,28)	1,17 (0,20 - 1,40)	1,55 (0,55 - 1,75)	2,18 (0,85 - 2,50)	2,67 (0,85 - 2,70)	3,20 (0,70 - 4,50)	4,00 (0,65 - 4,70)	4,70 (1,62 - 5,34)
	Heating	kW	0,80 (0,20 - 1,20)	1,05 (0,22 - 1,20)	1,55 (0,50 - 1,90)	2,21 (0,80 - 2,75)	2,57 (0,80 - 2,86)	3,40 (0,70 - 4,60)	3,90 (0,76 -4,75)	4,40 (1,30 - 5,50)
Rated Current	Cooling	A	3,7 (1,6 - 5,5)	4,8 (2,1 - 4,9)	7,0 (2,3 - 7,5)	9,6 (3,7 - 11,1)	11,2 (3,7 - 14,2)	13,8 (6,1 - 18,4)	15,2 (3,8 - 18,2)	20,0 (7,1 - 23,5)
	Heating	A	3,6 (1,5 - 4,8)	4,3 (1,8 - 5,2)	7,3 (2,1 - 8,2)	9,1 (3,5 - 11,8)	10,7 (3,5 - 12,2)	14,1 (5,5 - 16,2)	15,1 (3,3 - 16,3)	21,0 (6,4 - 23,5)
Refrigerant charge volume		kg	1,20	1,35	1,40	2,40	2,6	3,8	3,8	4,3
Indoor unit										
Outline Dimension	HxWxD	mm	250 x 880 x 665	266 x 980 x 721	266 x 980 x 721	268 x 1270 x 530	268 x 1270 x 530	290 x 1226 x 775	290 x 1226 x 775	330 x 1226 x 815
Package Dimension	HxWxD	mm	320 x 1023 x 748	323 x 1123 x 798	323 x 1123 x 798	283 x 1348 x 579	283 x 1348 x 597	305 x 1338 x 877	305 x 1338 x 877	345 x 1338 x 925
Weight	Net / Gross	kg	26,0 / 32,0	34,0 / 41,0	46,0 / 51,0	37,0 / 43,0	36,0 / 41,0	57,0 / 67,0	57,0 / 67,0	64,0 / 73,0
Sound pressure level		dB (SH/H/M/L)	36 / 34 / 28 / 26	37 / 36 / 34 / 28	40 / 39 / 36 / 28	47 / 46 / 44 / 40	47 / 46 / 44 / 40	53 / 52 / 48 / 44	53 / 52 / 48 / 44	55 / 53 / 49 / 45
Air flow volume		m^3/h	800 / 700 / 600	840 / 740 / 640	1000 / 800 / 600	1600 / 1400 / 1200	1500 / 1300 / 1100	2300 / 2110 / 1850	2300 / 2110 / 1850	2500 / 2300 / 2100
ESP	Rated	Pa	25	25	25	25	37	37	37	50
	Range	Pa	0 - 30	0 - 30	0 - 30	0 - 75	0 - 75	0 - 100	0 - 100	0 - 125
Outdoor unit										
Outline Dimension	HxWxD	mm	540 x 776 x 320	540 x 776 x 320	700 x 955 x 396	790 x 980 x 427	790 x 980 x 427	1100x1107x440	1100x1107x440	1365x1085x427
Package Dimension	HxWxD	mm	595 x 851 x 320	595 x 851 x 320	750 x 1029 x 458	855 x 1083 x 488	855 x 1083 x 488	1235x1158x493	1235x1158x493	1505x1143x478
Weight	Net / Gross	kg	28,0 / 32,0	30,0 / 34,0	48,0 / 53,0	65,0 / 70,0	68,0 / 74,0	90,0 / 101,0	90,0 / 101,0	116,0 / 128,0
Sound pressure level		dB	53	54	57	59	59	61	61	61
Operative temperature		˚C	18~48˚C/ -15~24˚C	18~48˚C/ -15~24˚C	18~48˚C/ -15~24˚C	18~48˚C/ -15~24˚C	18~48˚C/ -15~24˚C	18~48˚C/ -15~24˚C	18~48˚C/ -15~24˚C	18~48˚C/ -15~24˚C
Piping Connection	Gas	mm (in)	9,52 (3/8)	9,52 (3/8)	12,0 (1/2)	16,0 (5/8)	16,0 (5/8)	16,0 (5/8)	16,0 (5/8)	16,0 (5/8)
	Liquid	mm (in)	6,0 (1/4)	6,0 (1/4)	6,0 (1/4)	9,52 (3/8)	9,52 (3/8)	9,52 (3/8)	9,52 (3/8)	9,52 (3/8)
Piping max. distance	Height/ Lenght	m	15 / 20	15 / 20	15 / 20	15 / 30	15 / 30	15 / 30	30 / 50	30 / 50

Cooling: indoor temperature t=27 ˚C DB, t=19 ˚C WB, outdoor temperature t=35 ˚C DB, t=24 ˚C WB.
Heating: indoor temperature t=20 ˚C DB, t=15 ˚C WB outdoor temperature t=7 ˚C DB, t=6 ˚C WB.
The above data may be changed without notice for future improvement on quality and performance.

Duct type air conditioner inverter, 3-phase

Model	Indoor unit		RGDY36AR2	RGDY42AR1	RGDY48AR2	RGDY60AR1
	Outdoor unit		RGOY36FR1	RGOY42FR1	RGOY48FR1	RGOY60FR1
Capacity	Cooling	kW	10,0 (3,2 - 11,5)	11,5 (3,6 - 12,5)	14,0 (6,0 - 14,3)	16,0 (6,8 - 17,5)
	Heating		12,0 (2,9 - 14,5)	13,5 (3,9 - 15,5)	15,5 (5,2 - 17,0)	16,5 (5,3 - 18,8)
SEER/SCOP			5,1 / 3,8	5,1 / 3,8	5,1 / 3,8	5,1 / 3,8
Energy label			A / A	A / A	A / A	A / A
Power Supply		F,V,Hz	3F,380~415V, 50Hz			
Power Input	Cooling	kW	3,12 (0,85 - 4,6)	4,00 (0,70 - 4,80)	5,10 (1,40 - 5,60)	5,60 (1,40 - 6,60)
	Heating	kW	3,32 (0,65 - 4,80)	3,90 (0,76 - 4,75)	4,50 (1,30 - 5,50)	4,57 (1,30 - 6,40)
Rated Current	Cooling	A	13,8 (6,1 - 18,4)	15,2 (3,8 - 18,2)	20,0 (7,1 - 23,5)	7,8 (2,6 - 9,5)
	Heating	A	14,1 (5,5 - 16,2)	15,1 (3,3 - 16,3)	21,0 (6,4 - 23,5)	7,4 (2,2 - 8,2)
Refrigerant charge volume		kg	3,8	3,8	4,3	5,5
Indoor unit						
Outline Dimension	HxWxD	mm	290 x 1226 x 775	290 x 1226 x 775	330 x 1226 x 815	389 x 1463 x 799
Package Dimension	HxWxD	mm	305 x 1338 x 877	305 x 1338 x 877	345 x 1338 x 925	470 x 1543 x 883
Weight	Net / Gross	kg	57,0 / 67,0	57,0 / 67,0	64,0 / 73,0	87,0/115,0
Sound pressure level		dB (SH/H/M/L)	53 / 52 / 48 / 44	53 / 52 / 48 / 44	55 / 5 / 49 / 45	57 / 56 / 57 / 49
Air flow volume		m³/h	2300 / 2110 / 1850	2300 / 2110 / 1850	2500 / 2300 / 2100	3150 / 2900 / 2600
ESP	Rated	Pa	37	37	50	50
	Range	Pa	0 - 100	0 - 150	0 - 125	0 - 150
Outdoor unit						
Outline Dimension	HxWxD	mm	1100 x 1107 x 440	1100 x 1107 x 440	1365 x 1085 x 427	1365 x 1085 x 427
Package Dimension	HxWxD	mm	1235 x 1158 x 493	1235 x 1158 x 493	1505 x 1143 x 478	1505 x 1143 x 478
Weight	Net / Gross	kg	92,0 / 103	92,0 / 103,0	116,0/128,0	121,0 / 133
Sound pressure level		dB	61	61	61	63
Operative temperature		˚C	18~48˚C/ -15~24˚C	18~48˚C/ -15~24˚C	18~48˚C/ -15~24˚C	18~48˚C/ -15~24˚C
Piping Connection	Gas	mm (in)	16,0 (5/8)	16,0 (5/8)	16,0 (5/8)	25,0 (3/4)
	Liquid	mm (in)	9,52 (3/8)	9,52 (3/8)	9,52 (3/8)	9,52 (3/8)
Piping max. distance	Height/Lenght	m	15 / 30	30 / 50	30/50	30/50

Cooling: indoor temperature t=27˚C DB, t=19˚C WB, outdoor temperature t=35˚C DB, t=24˚C WB.
Heating: indoor temperature t=20˚C DB, t=15˚C WB outdoor temperature t=7˚C DB, t=6˚C WB.
The above data may be changed without notice for future improvement on quality and performance.

Cassette type

REFRA's Ceiling Cassette will inconspicuously provide quiet performance through innovative design. The Ceiling Cassette is extremely suitable for any room, and can be easy installed in suspended ceilings with only a discreet decorative discharge grille visible. REFRA's fan technology quietly and evenly distributes conditioned air throughout the room, and an internal condensate pump reliably disposes condensate water to a safe location. The Ceiling Cassette is ideal for light commercial applications which require comfort control in large, open spaces. Each Ceiling Cassette can be operated by an infrared remote control or wired tether controller, allowing maximum flexibility for any application.

Benefits:
4-way discharge air
Multi speed fan
Swing louver
Power failure recovery
Drain pump fitted as standard with increased lift of 1100mm
Compact and ligh weight
Special low noise fan design
Long life and washable filter
Different swing angle design for cooling and heating mode for better comfort
Wireless remote control fitted as standart

Cassette type air conditioner inverter, 1-phase

Model	Indoor unit		RGKY12AR1	RGKY18AR1	RGKY24AR1	RGKY30AR1	RGKY36AR1	RGKY42AR1	RGKY48AR1
	Outdoor unit		RGOY12AR1	RGOY18AR1	RGOY24AR1	RGOY30AR1	RGOY36AR1	RGOY42AR1	RGOY48AR1
	Decoration panel		RGKPYC	RGKPYC	RGKPYB	RGKPYB	RGKPYB	RGKPYB	RGKPYA
Capacity	Cooling	kW	3,5 (0,9 - 3,9)	5,0 (1,6 - 5,8)	7,0 (2,4 - 8,3)	8,3 (2,6 - 9,2)	10,0 (3,2 - 11,5)	11,0 (3,6 - 12,0)	14,0 (6,0 - 14,8)
	Heating	kW	3,8 (0,9 - 4,1)	5,5 (1,4 - 6,5)	8,0 (2,4 - 9,5)	9,2 (2,4 - 9,9)	12,0 (2,9 - 14,5)	12,5 (3,6 - 15,0)	16,0 (5,2 - 18,0)
SEER/SCOP			5,1 / 3,8	5,1 / 3,8	5,1 / 3,8	5,1 / 3,8	5,1 / 3,8	5,1 / 3,8	5,1 / 3,8
Energy label			A / A	A / A	A / A	A / A	A / A	A / A	A ++/ A
Power Supply		F,V,Hz	1F,220~240V, 50Hz						
Power Input	Cooling	kW	1,09 (0,30 - 1,40)	1,60 (0,55 - 1,75)	2,18 (0,85 - 2,50)	2,67 (0,85 - 2,70)	3,20 (0,75 - 4,50)	3,9 (0,53 - 4,65)	4,60 (1,30 - 5,50)
	Heating	kW	1,05 (0,22 - 1,20)	1,58 (0,50 - 1,90)	2,21 (0,80 - 2,75)	2,57 (0,80 - 2,86)	3,50 (0,60 - 4,80)	3,80 (0,64 - 4,80)	4,50 (1,20 - 5,40)
Rated Current	Cooling	A	4,6 (1,9 -5,9)	7,0 (2,3 - 7,5)	9,6 (3,7 - 11,1)	12,1 (3,7 - 13,2)	13,8 (4,6 - 18,5)	14,0 (4,0 - 18,7)	21,3 (5,8 - 26,0)
	Heating	A	4,6 (1,7 - 5,3)	7,3 (2,1 - 8,2)	9,8 (3,5 - 12,3)	11,6 (3,1 - 12,1)	13,5 (3,9 - 15,5)	14,7 (3,5 - 17,9)	20,8 (5,4 - 25,0)
Refrigerant charge volume		kg	1,35	1,40	2,40	2,60	3,80	3,80	4,00
Indoor unit									
Outline Dimension	HxWxD	mm	230 x 600 x 600	230 x 600 x 600	240 x 840 x 840	320 x 840 x 840	240 x 840 x 840	320 x 840 x 840	290 x 910 x 910
Package Dimension	HxWxD	mm	325 x 851 x 681	325 x 851 x 681	325 x 963 x 963	325 x 963 x 963	325 x 963 x 963	325 x 963 x 963	375 x 1023 x 993
Weight	Net / Gross	kg	20,0 / 27,0	27,0 / 36,0	27,0 / 36,0	32,0 / 43,0	32,0 / 43,0	32,0 / 43,0	43,0 / 50
Sound pressure level		dB (SH/H/M/L)	46 / 45 / 41 / 36	47 / 46 / 44 / 37	47 / 46 / 42 / 38	49 / 48 / 45 / 40	51 / 49 / 46 / 43	51 / 49 / 46 / 43	53 / 52 / 47 / 41
Panel	Outline Dimension	mm	50 x 650 x 650	50 x 650 x 650	60 x 950 x 950	60 x 950 x 950	60 x 950 x 950	60 x 950 x 950	65 x 1040 x 1040
	Package Dimension	mm	117 x 673 x 733	117 x 673 x 733	130x1028x1043	130x1028x1043	130x1028x1043	130x1028x1043	140x1137x1137
	Weigt netto/ gross	kg	2,5 / 3,5	2,5 / 3,5	6,5 / 10,0	6,5 / 10,0	6,5 / 10,0	6,5 / 10,0	8,0 / 12,0
Outdoor unit									
Outline Dimension	HxWxD	mm	540 x 776 x 320	700 x 396 x 955	790 x 980 x 427	790 x 980 x 427	1100 x 1107 x 440	1100 x 1107 x 440	1349 x 958 x 412
Package Dimension	HxWxD	mm	595 x 851 x 363	750 x 1029 x 458	855 x 1083 x 488	855 x 1083 x 488	1235 x 1158 x 493	1235 x 1158 x 493	1500x1043x453
Weight	Net / Gross	kg	30,0 / 34,0	48,0 / 53,0	65,0 / 70,0	68,0 / 74,0	90,0 / 101,0	90,0 / 101,0	105,0 / 111,0
Sound pressure level		dB	54	57	59	59	61	61	70
Operative temperature		˚C	18~48˚C/ -15~24˚C	18~48˚C/ -15~24˚C	18~48˚C/ -15~24˚C	18~48˚C/ -15~24˚C	18~48˚C/ -15~24˚C	18~48˚C/ -15~24˚C	18~48˚C/ -15~24˚C
Piping Connection	Gas	mm (in)	12,0 (1/2)	12,0 (1/2)	16,0 (5/8)	16,0 (5/8)	16,0 (5/8)	16,0 (5/8)	16,0 (5/8)
	Liquid	mm (in)	6,0 (1/4)	6,0 (1/4)	9,52 (3/8)	9,52 (3/8)	9,52 (3/8)	9,52 (3/8)	9,52 (3/8)
Piping max. distance	Height/ Lenght	m	15 / 20	15 / 20	15 / 30	15 / 30	15 / 30	30 / 50	30 / 50

Cooling: indoor temperature t=27˚C DB, t=19˚C WB, outdoor temperature t=35˚C DB, t=24˚C WB.
Heating: indoor temperature t=20˚C DB, t=15˚C WB outdoor temperature t=7˚C DB, t=6˚C WB.
The above data may be changed without notice for future improvement on quality and performance.

Cassette type air conditioner inverter, 3-phase

Model	Indoor unit		RGKY36AR1	RGKY42AR1	RGKY48AR1	RGKY60AR1
	Outdoor unit		RGOY36FR1	RGOY42FR1	RGOY48FR1	RGOY60FR1
	Decoration panel		RGKPYB	RGKPYB	RGKPYA	RGKPYA
Capacity	Cooling	kW	10,0 (3,0 - 11,5)	11,0 (3,3 - 12,0)	14,0 (6,0 - 14,8)	16,0 (6,8 - 17,5)
	Heating		12,0 (2,9 - 14,5)	12,5 (3,6 - 15,0)	16,0 (5,2 - 18,0)	16,5 (5,3 - 18,8)
SEER/SCOP			5,1 / 3,8	5,1 / 3,8	5,1 / 3,8	5,1 / 3,8
Energy label			A / A	A / A	A+ / A	A ++/ A+
Power Supply		F,V,Hz	3F,380~415V, 50Hz			
Power Input	Cooling	kW	3,12 (0,70 - 4,70)	3,90 (0,60 - 4,70)	5,15 (1,30 - 5,50)	5,60 (1,40 - 6,60)
	Heating	kW	3,32 (0,60 - 4,80)	3,80 (0,64 - 4,80)	4,50 (1,20 - 5,40)	4,57 (1,30 - 6,40)
Rated Current	Cooling	A	4,6 (1,6 - 6,1)	5,5 (1,6 - 6,5)	8,9 (2,2 - 9,5)	9,8 (2,20 - 11,20)
	Heating	A	4,5 (1,4 - 5,7)	5,0 (1,4 - 6,0)	7,8 (2,0 - 9,3)	8,2 (2,00 - 11,20)
Refrigerant charge volume		kg	3,80	3,80	4,00	5,00
Indoor unit						
Outline Dimension	HxWxD	mm	240 x 840 x 840	320 x 840 x 840	290 x 910 x 910	290 x 910 x 910
Package Dimension	HxWxD	mm	325 x 963 x 963	409 x 963 x 963	375 x 993 x 1023	375 x 993 x 1023
Weight	Net / Gross	kg	32,0 / 43,0	32,0 / 43,0	43,0 / 50,0	43,0 / 50,0
Sound pressure level		dB (SH/H/M/L)	51 / 49 / 46 / 43	51 / 49 / 46 / 43	53 / 52 / 47 / 41	55 / 53 / 47 / 41
Panel	Outline Dimension	mm	60 x 950 x 950	60 x 950 x 950	65 x 1040 x 1040	65 x 1040 x 1040
	Package Dimension	mm	130 x 1028 x 1043	130 x 1028 x 1043	140 x 1137 x 1137	140 x 1137 x 1137
	Weigt netto/gross	kg	6,5 / 10,0	6,5 / 10,0	8,0 / 12,0	8,0 / 12,0
Outdoor unit						
Outline Dimension	HxWxD	mm	1100 x 1107 x 440	1100 x 1107 x 440	1349 x 958 x 412	1365 x 1085 x 427
Package Dimension	HxWxD	mm	1235 x 1158 x 493	1235 x 1158 x 493	1500 x 1043 x 453	1505 x 1143 x 478
Weight	Net / Gross	kg	92,0 / 103,0	92,0 / 103,0	114,0 / 124,0	126,0 / 138,0
Sound pressure level		dB	61	61	70 / 59	75 / 63
Operative temperature		˚C	18~48˚C/ -15~24˚C	18~48˚C/ -15~24˚C	18~48˚C/ -15~24˚C	18~48˚C/ -15~24˚C
Piping Connection	Gas	mm (in)	16,0 (5/8)	16,0 (5/8)	16,0 (5/8)	25,0 (3/4)
	Liquid	mm (in)	9,52 (3/8)	9,52 (3/8)	9,52 (3/8)	9,52 (3/8)
Piping max. distance	Height/Lenght	m	15 / 30	30 / 50	30 / 50	30 / 50

Cooling: indoor temperature t=27˚C DB, t=19˚C WB, outdoor temperature t=35˚C DB, t=24˚C WB.
Heating: indoor temperature t=20˚C DB, t=15˚C WB outdoor temperature t=7˚C DB, t=6˚C WB.
The above data may be changed without notice for future improvement on quality and performance.

Floor ceiling type

REFRA's Universal Floor/Ceiling indoor units are designed to be suspended from a ceiling or mounted low on a wall. The slender and lightweight design is perfect for restaurants or hallways where wall space is limited. Aesthetically pleasing to the eye, the Universal Floor/ Ceiling units are a great fit beneath windows, in public or light commercial applications. Each unit can be operated by an infrared remote control or wired tether controller to allow maximum flexibility in any application.

Benefits:

4-way discharge air	*Plastic case*
Multi speed fan	*Low noise*
Swing louver	*Stand and ceiling covertible*
Power failure recovery	*Easy replacement of motor and fan blade thanks to clamp block propeller design*
3-D air flue design	*Different swing angle design for cooling and heating mode for better comfort*
Slim design	*Wireless remote control fitted as standart*

Floor ceiling type air conditioner inverter, 1-phase

Model	Indoor unit		RGCY09AR1	RGCY12AR1	RGCY18AR1	RGCY24AR1	RGCY30AR1	RGCY36AR1	RGCY42AR1	RGCY48AR1
	Outdoor unit		RGOY09AR1	RGOY12AR1	RGOY18AR1	RGOY24AR1	RGOY30AR1	RGOY36AR1	RGOY42AR1	RGOY48AR1
Capacity	Cooling	kW	2,7 (0,8 - 3,5)	3,5 (0,9 - 3,9)	5,0 (1,6 - 5,8)	7,0 (2,4 - 8,2)	8,5 (2,6 - 9,2)	10,0 (3,2 - 11,5)	11,5 (3,6 - 12,5)	14,0 (6,0 - 14,8)
	Heating		2,9 (0,8 - 3,8)	3,8 (0,9 - 4,1)	5,6 (1,4 - 6,8)	8,0 (2,4 - 9,0)	9,2 (2,4 - 9,9)	12,0 (2,9 - 14,5)	13,5 (3,9 - 15,5)	16,0 (5,2 - 18,0)
SEER/SCOP			5,1 / 3,8	5,1 / 3,8	5,1 / 3,8	5,1 / 3,8	5,1 / 3,8	5,1 / 3,8	5,1 / 3,8	5,1 / 3,8
Energy label			A / A	A / A	A / A	A / A	A / A	A / A	A / A	A / A
Power Supply		F,V,Hz	1F,220~240V, 50Hz							
Power Input	Cooling	kW	0,84 (0,20 - 1,28)	1,09 (0,26 - 1,40)	1,55 (0,55 - 1,75)	2,18 (0,85 - 2,50)	2,67 (0,85 - 2,70)	3,20 (0,80 - 4,60)	3,90 (0,60 - 4,70)	4,80 (1,40 - 5,60)
	Heating	kW	0,80 (0,20- 1,20)	1,05 (0,22 - 1,20)	1,55 (0,50 - 1,90)	2,21 (0,80 - 2,78)	2,57 (0,80 - 2,86)	3,40 (0,65 - 4,80)	3,70 (0,69 - 4,80)	4,30 (1,30 - 5,50)
Rated Current	Cooling	A	3,8 (1,8 - 5,2)	4,7 (1,7 - 5,6)	7,0 (2,3 - 7,5)	9,6 (3,7 - 11,1)	12,1 (3,7 - 13,2)	14,5 (4,7 - 17,7)	15,88 (3,7 - 17,8)	20,0 (5,1 - 21,8)
	Heating	A	3,3 (1,9 - 4,8)	4,1 (1,5 - 4,6)	7,3 (2,1 - 8,2)	9,8 (3,5 - 12,3)	11,6 (3,1 - 12,1)	14,1 (4,2 - 16,9)	15,35 (3,2 - 16,8)	21,0 (4,3 - 22,3)
Refrigerant charge volume		kg	1,20	1,35	1,40	2,40	2,6	3,8	3,8	4,3
Indoor unit										
Outline Dimension	HxWxD	mm	225 x 1220 x 700	225 x 1220 x 700	225 x 1220 x 700	225 x 1220 x 700	245 x 1420 x 700	245 x 1420 x 700	245 x 1420 x 700	245 x 1700 x 700
Package Dimension	HxWxD	mm	315 x 1343 x 823	315 x 1343 x 823	315 x 1343 x 823	315 x 1343 x 823	345 x 1548 x 828	345 x 1548 x 828	345 x 1548 x 828	345 x 1828 x 828
Weight	Net / Gross	kg	40,0 / 49,0	40,0 / 49,0	42,0 / 51,0	43,0 / 52,0	51,0 / 58,0	53,0 / 61,0	55,0 / 63,0	64,0 / 72,0
Sound pressure level		dB (SH/H/ M/L)	31 / 29 / 26 / 24	35 / 33 / 30 / 27	44 / 42 / 38 / 32	49 / 48 / 46 / 40	49 / 46 / 44 / 38	54 / 53 / 51 / 46	55 / 54 / 52 / 47	56 / 55 / 50 / 46
Outdoor unit										
Outline Dimension	HxWxD	mm	540 x 776 x 320	540 x 776 x 320	700 x 955 x 396	790 x 980 x 427	790 x 980 x 427	1100x1107x440	1100x1107x440	1365x1085x427
Package Dimension	HxWxD	mm	595 x 851 x 363	595 x 851 x 363	750 x 1029 x 458	855 x 1083 x 488	855 x 1083 x 488	1235x1158x493	1235x1158x493	1505x1143x478
Weight	Net / Gross	kg	28,0 / 32,0	30,0 / 34,0	48,0 / 53,0	65,0 / 70,0	68,0 / 74,0	90,0 / 101,0	90,0 / 101,0	116,0 / 128,0
Sound pressure level		dB	53	54	57	59	59	61	61	61
Operative temperature		°C	18~48°C/ -15~24°C	18~48°C/ -15~24°C	18~48°C/ -15~24°C	18~48°C/ -15~24°C	18~48°C/ -15~24°C	18~48°C/ -15~24°C	18~48°C/ -15~24°C	18~48°C/ -15~24°C
Piping Connection	Gas	mm (in)	9,52 (3/8)	12,0 (1/2)	12,0 (1/2)	16,0 (5/8)	16,0 (5/8)	16,0 (5/8)	16,0 (5/8)	16,0 (5/8)
	Liquid	mm (in)	6,0 (1/4)	6,0 (1/4)	6,0 (1/4)	9,52 (3/8)	9,52 (3/8)	9,52 (3/8)	9,52 (3/8)	9,52 (3/8)
Piping max. distance	Height/ Lenght	m	15 / 20	15 / 20	15 / 20	15 / 30	15 / 30	15 / 30	30 / 50	30 / 50

Cooling: indoor temperature t=27 °C DB, t=19 °C WB, outdoor temperature t=35 °C DB, t=24 °C WB.
Heating: indoor temperature t=20 °C DB, t=15 °C WB outdoor temperature t=7 °C DB, t=6 °C WB.
The above data may be changed without notice for future improvement on quality and performance.

Floor ceiling type air conditioner inverter, 3-phase

Model	Indoor unit		RGCY36AR1	RGCY42AR1	RGCY48AR1	RGCY60AR1
	Outdoor unit		RGOY36FR1	RGOY42FR1	RGOY48FR1	RGOY60FR1
Capacity	Cooling	kW	10,0 (3,2 - 11,50)	11,5 (3,6 - 12,5)	14,0 (6,0 - 14,8)	16,0 (6,35 - 16,5)
	Heating		2,0 (2,90 - 14,5)	13,5 (3,9 - 15,5)	16,0 (5,2 - 18,0)	17,0 (5,5 - 20,0)
SEER/SCOP			5,1 / 3,8	5,1 / 3,8	5,1 / 3,8	5,1 / 3,8
Energy label			A / A	A / A	A / A	A / A
Power Supply		F,V,Hz	3F,380~415V, 50Hz			
Power Input	Cooling	kW	3,12 (0,75 - 4,70)	3,90 (0,60 - 4,75)	5,00 (1,40 - 5,60)	5,70 (1,40 - 6,60)
	Heating	kW	3,32 (0,60 - 4,80)	3,74 (0,69 - 4,80)	4,50 (1,30 - 5,50)	4,70 (1,30 - 6,50)
Rated Current	Cooling	A	4,9 (1,7 - 6,0)	5,6 (1,7 - 6,4)	6,21 (2,2 - 7,7)	7,4 (2,3 - 9,0)
	Heating	A	4,7 (1,5 - 5,6)	5,4 (1,5 - 5,8)	6,5 (2,0 - 7,8)	7,2 (2,0 - 9,5)
Refrigerant charge volume		kg	3,8	3,8	4,3	5,5
Indoor unit						
Outline Dimension	HxWxD	mm	245 x 1420 x 700	245 x 1420 x 700	245 x 1700 x 700	245 x 1700 x 700
Package Dimension	HxWxD	mm	345 x 1548 x 828	345 x 1548 x 828	345 x 1828 x 828	345 x 1828 x 828
Weight	Net / Gross	kg	53,0 / 61,0	55,0 / 63,0	64,0 / 72,0	65,0 / 73,0
Sound pressure level		dB (SH/H/M/L)	54 / 53 / 51 / 46	55 / 54 / 52 / 47	56 / 55 / 50 / 46	58 / 56 / 52 / 46
Outdoor unit						
Outline Dimension	HxWxD	mm	1100 x 1107 x 440	1100 x 1107 x 440	1365 x 1085 x 427	1365 x 1085 x 427
Package Dimension	HxWxD	mm	1235 x 1158 x 493	1235 x 1158 x 493	1505 x 1143 x 478	1505 x 1143 x 478
Weight	Net / Gross	kg	92,0 / 103,0	92,0 / 103,0	116,0 / 128,0	121,0 / 133,0
Sound pressure level		dB	61	61	61	63
Operative temperature		˚C	18~48˚C/ -15~24˚C	18~48˚C/ -15~24˚C	18~48˚C/ -15~24˚C	18~48˚C/ -15~24˚C
Piping Connection	Gas	mm (in)	16,0 (5/8)	16,0 (5/8)	16,0 (5/8)	25,0 (3/4)
	Liquid	mm (in)	9,52 (3/8)	9,52 (3/8)	9,52 (3/8)	9,52 (3/8)
Piping max. distance	Height/Lenght	m	15 / 30	30 / 50	30 / 50	30 / 50

Cooling: indoor temperature t=27˚C DB, t=19˚C WB, outdoor temperature t=35˚C DB, t=24˚C WB.
Heating: indoor temperature t=20˚C DB, t=15˚C WB outdoor temperature t=7˚C DB, t=6˚C WB.
The above data may be changed without notice for future improvement on quality and performance.

VRF SYSTEMS

The Variable Refrigerant Flow air conditioning system

Benefits for USERS:

- *Livable environment creator*
- *Excellent in EER nd COP*
- *Oustanding comfort ability*
- *Wide operating range*
- *Improvements to reduce noise*
- *Low noise fan blade*
- *Silent mode, night time noise control*
- *Anti-snow function*
- *All outdoor units cycle operation*
- *Intelligent defrosting program*
- *Emergincy stop operation function*
- *Flexible for all kinds of rooms*
- *Environment friendly*

Benefits fos INSTALLERS:

- *4 units combinations*
- *Adjustable outdoor fan external static pressure*
- *Automatic addressing*
- *Adressing methods*
- *LED display on the PCB*
- *Service window on the electric control box*
- *Mode restruction*
- *Oil control technology*
- *3-Phase power protector*
- *Easy for transportation*
- *Long pipe and height difference*
- *Use 2-core shielded wire as signal wire*

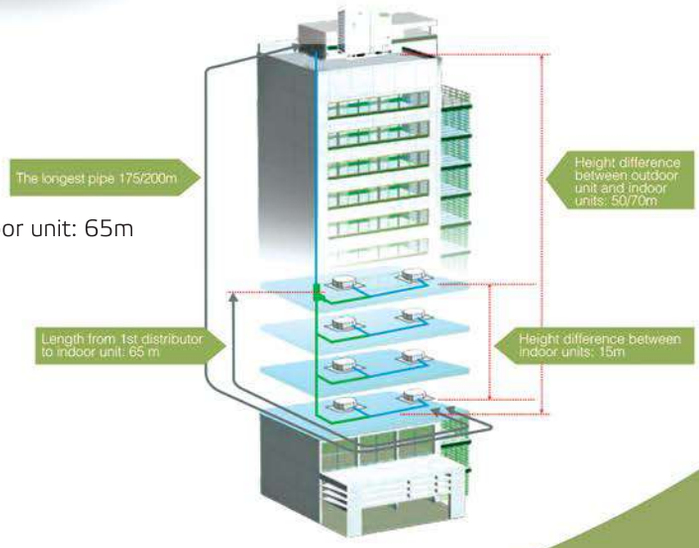
VRF Modular series

7 Improvements to reduce noise

Maximum 10dB(A) of operating sound decrease.

Long piping & height difference

- The total pipe length: 1000m
- The longest pipe :
  Actual length 175m
  Equivalent length 200m
- Equivalent length from first indoor distributor to last indoor unit: 65m
- Height deference between indoor and outdoor unit:
  Outdoor unit above <50m
  Outdoor unit below <70m
- Height difference between indoor units: 15m

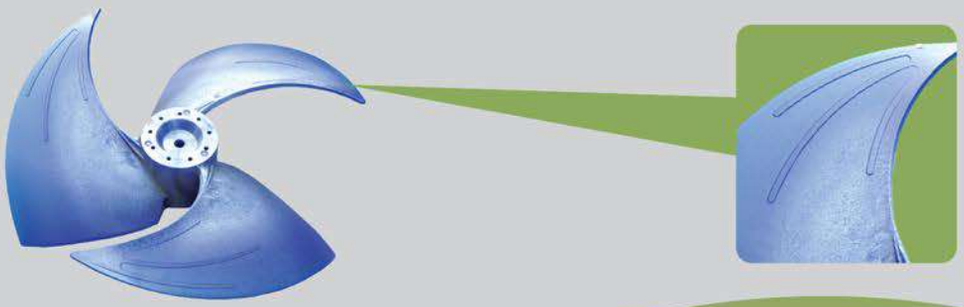


Benefits For Users

Livable environment creator

Refra focuses on starting point of AC system: create a friendly, comfortable and pleasant living environment as always. New VRF DC VRF system's comfort technologies include quick cooling and heating, precise temperature control, low noise, use environmental friendly refrigerant and so on, we strive to create livable environment for users...

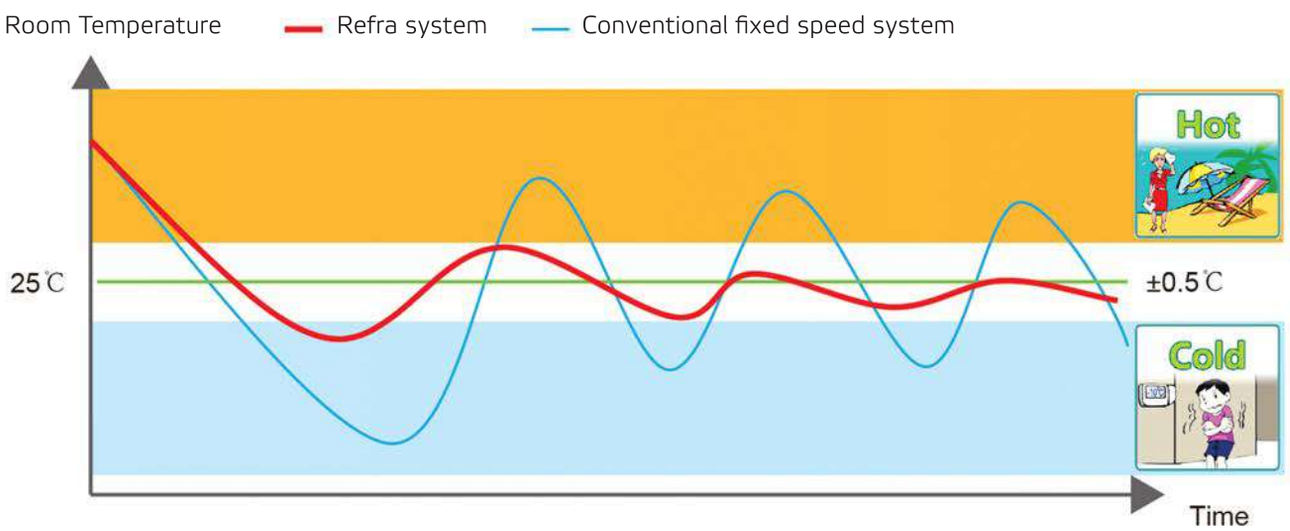
LOW NOISE FAN BLADE



- Anti-vibration forward fan blade.
- Special design to reduce the air vibration and disturbance.

OUTSTANDING COMFORT ABILITY

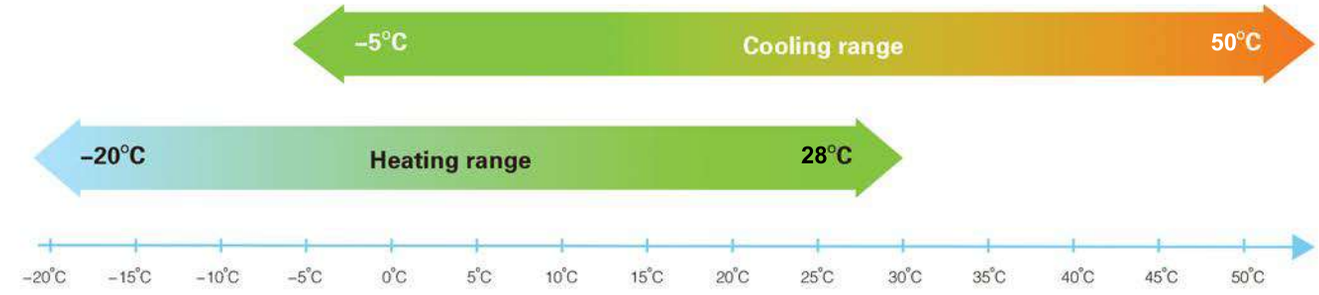
- Refra VRF system have excellent cooling & heating performance, thanks to the high efficiency DC fan motor, DC compressor and optimized refrigerant flow control logic.
- Precisely room temperature control by adopting 2000 pulse EXV. Indoor temperature fluctuation can be maintain within 0,5 ^{O}C, offers outstanding comfort ability.



Wide operation range

Cooling operating temperature is up to 50°C, suitable for the hot region.

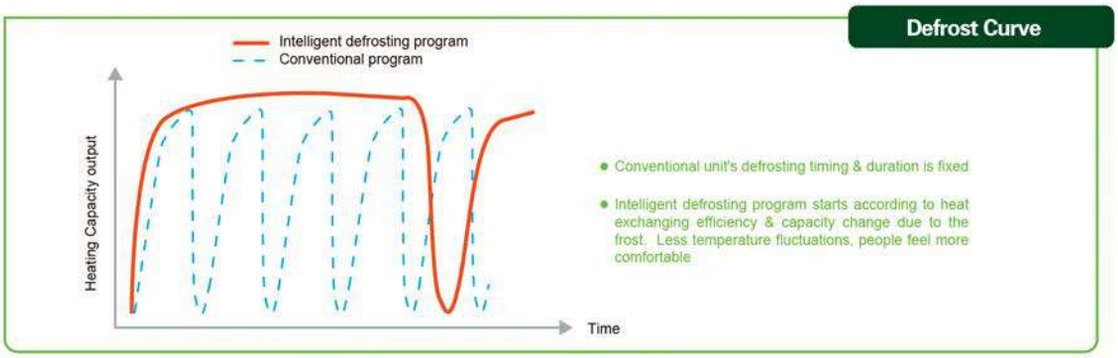
Heating operating temperature is down to -20°C. In the cold winter, VRF system can stably produce heat.



- Outdoor unit running at temperature above 50°C need customized in factory, please consult to sales engineer.

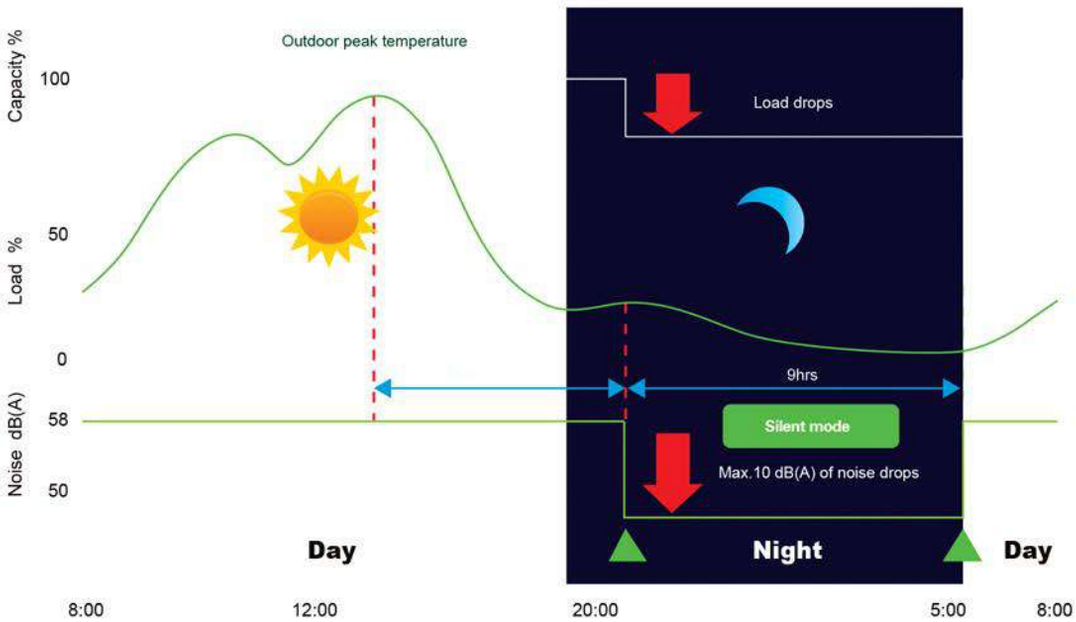
Intelligent defrosting program

Program starts only when unit needs to. Whereas conventional unit's defrosting timing & duration is fixed, causing fluctuations in temperature and personal comfort.



Silent mode, night time noise control

Compressor and fan motor rotating speed can be reduced to lower the noise at night.
Maximum 10dB(A) decrease.



Snow-proof function

In the cold weather, outdoor fan will start to run for a while at intervals, for preventing the snow to accumulate on fan blade. Because accumulated snow will freeze and block fan blade rotating, even worse it will damage the motor.

It only start when temperature is lower than 0°C.

The PHE economizer

PHE Economizer technology provide a additional sub cooling.

Improved heat exchanger + PHE economizer + Optimized control logic

Heating performance highly increased

The PHE economizer need customization.

3-Stage back up function

- Module back up function.
- When some modules are failure, the others can keep running by simply settings.

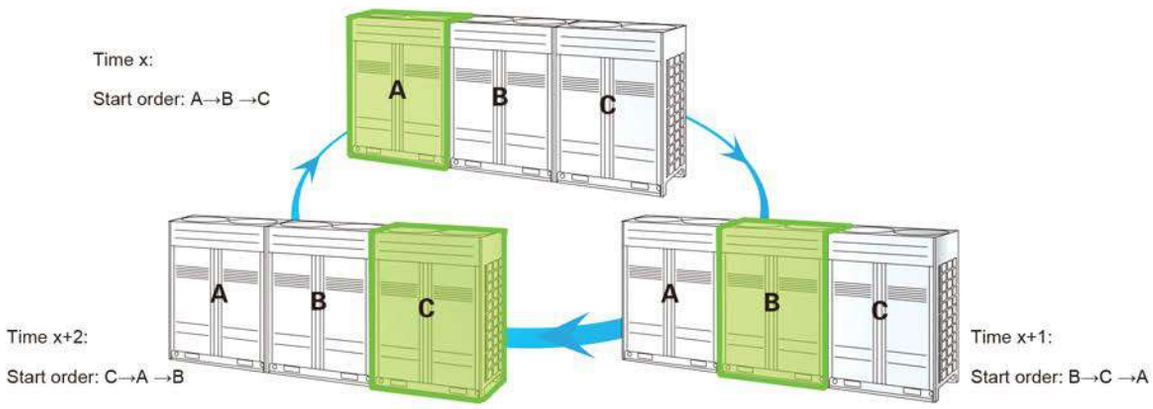
- Compressor back up function
- When one compressor is failure, the other one can keep running by simply settings.

- Fan motor back up function.
- When one fan motor is failure, the other one can keep running by simply settings.

All outdoors units cycle operation

In one combination system, any outdoor unit can run as master unit.

Balance the lifespan among outdoor units in one system.



DC Inverter modular series

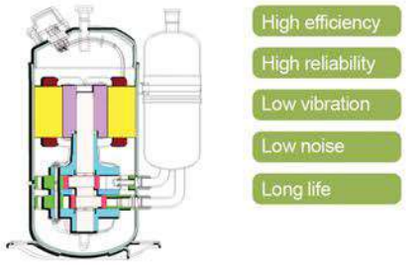
Benefits:
Long pipe and height difference
High efficiency DC inverter compressor
Core technologies make high efficiency
High efficiency DC motor
Stepless control
Supercooling flow path design
Cross flow fins

Model			RCOF252FR1	RCOF280FR1	RCOF335FR1	RCOF400FR1	RCOF450FR1	RCOF500FR1
Capacity	Cooling	kW	25,2	28,0	33,5	40,0	45,0	50,0
	Heating		27,4	31,5	37,5	45,0	50,0	56,0
EER / COP	W		4,35 / 4,66	4,04 / 4,38	3,95 / 4,26	3,78 / 4,10	3,54 / 4,02	3,46 / 3,96
Power supply	F, V, Hz		3F,380~415V, 50Hz					
Power input	Cooling	kW	5,79	6,93	8,48	10,58	12,71	14,45
	Heating		5,88	7,19	8,80	10,98	12,44	14,14
Refrigerant charge volume	kg		10,00	10,00	12,00	15,00	15,00	16,00
Compressor	Type		Scroll					
	Quantity	unit	1	1	1	2	2	2
Outline dimension	HxWxD	mm	1618x974x766	1618x974x766	1618x1264x766	1618x1264x766	1618x1264x766	1618x1264x766
Package dimension	HxWxD	mm	1750x1030x825	1618x1264x766	1750x1315x825	1750x1315x825	1750x1315x825	1750x1315x825
Weight	Net / Gross	kg	190	190	225	270	270	310
Sound pressure level	dB		58	58	58	60	60	60
Operating temperature	Cooling	°C	-5~+50	-5~+50	-5~+50	-5~+50	-5~+50	-5~+50
	Heating		-20~+28	--20~+28	-20~+28	-20~+28	-20~+28	-20~+28
Piping connection	Gas	mm (in)	22,2	25,4	28,6	28,6	28,6	31,8
	Liquid		12,7	12,7	12,7	15,9	15,9	15,9
Maximum indoor unit	Quantity	unit	13	16	20	23	26	29
Maximum total length of fitting pipe		m	200	200	200	200	200	200

Cooling: indoor temperature t=27ºC DB, t=19ºC WB, outdoor temperature t=35ºC DB, t=24ºC WB.
Heating: indoor temperature t=20ºC DB, t=15ºC WB, outdoor temperature t=7ºC DB, t=6ºC WB.
The above data may be changed without notice for future improvement on quality and performance.

VRF Mini

High efficiency DC inverter compressor

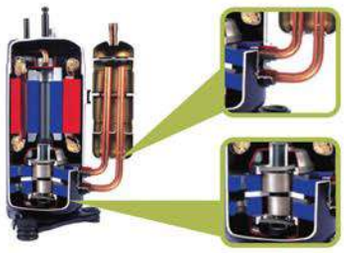


Twin-rotary DC inverter compressor
- Use high efficiency and reliability compressor
- Rotating speed can be down to 20RPS
- Has very good efficiency in part load condition

High Efficiency, Low Noise:
- Optimized the efficiency and noise during operation with the latest technology

Environmental Protection:
- Developed the compressor with alternative refrigerant which can protect environment.

Low Vibration:
- Reduced the vibration during compressor start and operation by using 2CYL Structure, simplified the match of air-conditioning.



High efficiency DC motor

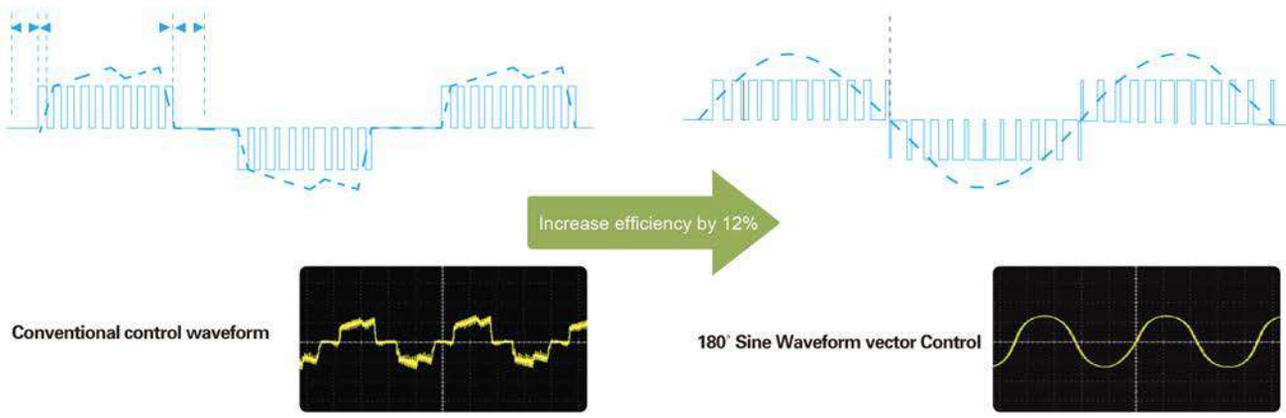
High efficiency DC motor

Low noise and high efficiency because of high-density wire winding engineering

Brushless with built-in sensor

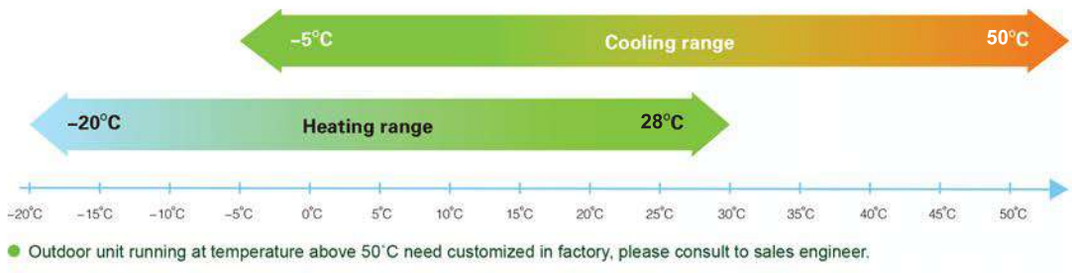
180° Sine wave control

The perfect combination of 180° Sine wave rotor frequency drive control technology and excellent IPM inverters, reduces the reactive loss of motor-driven, increases motor efficiency by 12%.



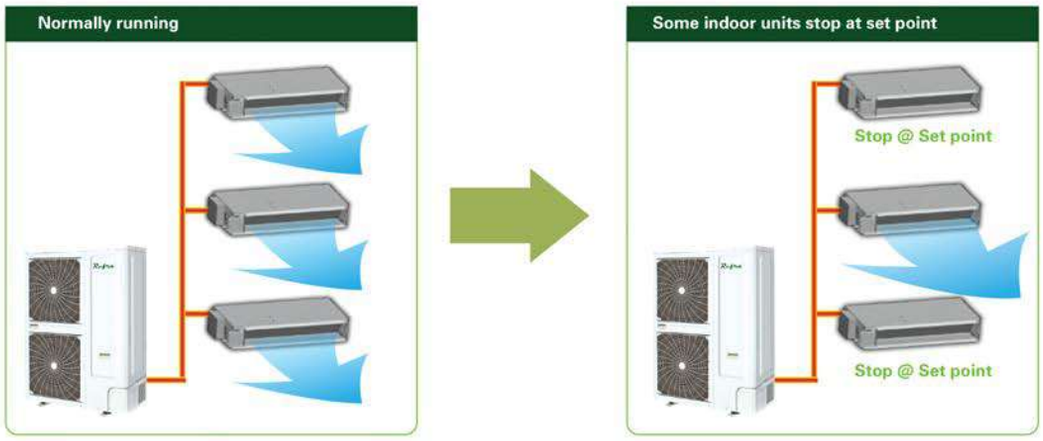
Wide outdoor operation range

Because global warming is getting worse, Max. cooling operating temperature is increased to 50°C.
Heating operating temperature is down to -20°C. In the cold winter, system can heat the room continuosly.

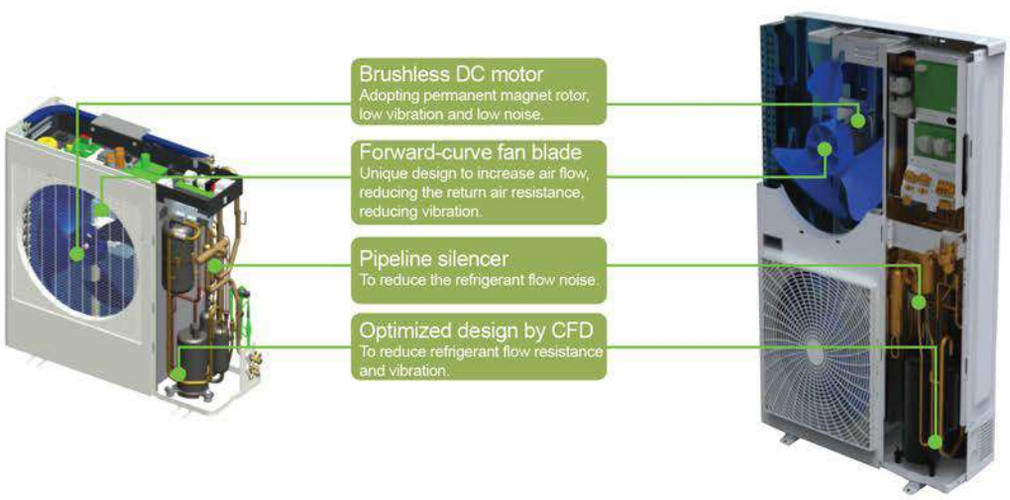


Fast cooling and heating

Every rooms meet set point most quickly and comfortably by optimized refrigerant control.

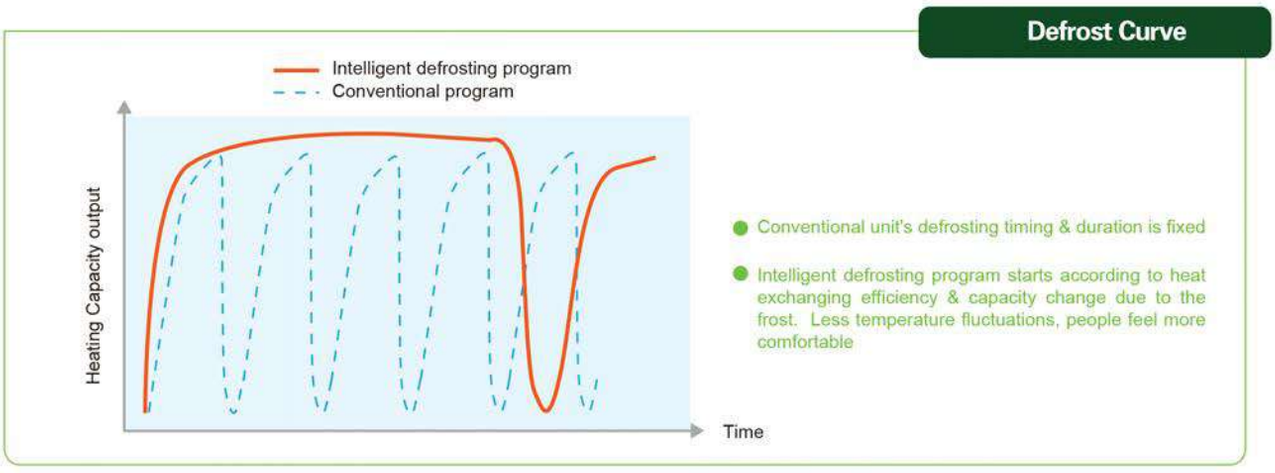


Silent technology



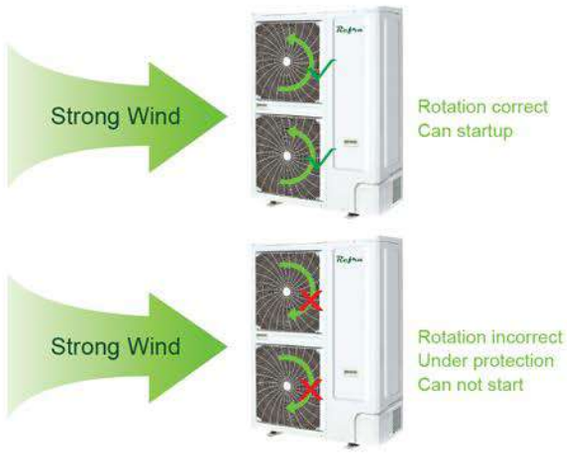
Intelligent defrosting program

Program starts only when unit neds to. Whereas conventional unit's defrosting timing & duration is fixed, causing fluctuations in temperature and personal comfort.



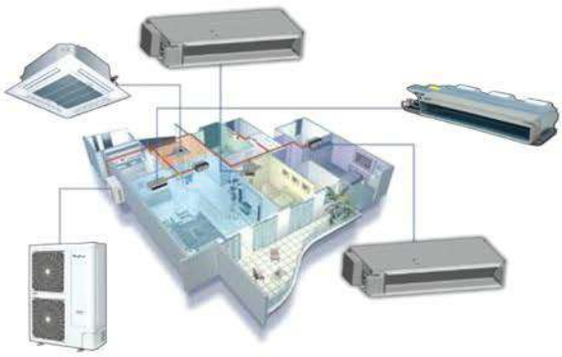
Fan reversal protection

If standby, if the outdoor fan motor is rotating in opposite direction at a high speed by the wind or other natural factors, the unit can't start so as to keep the fan motor from broken down. It will start when the fan motor speed slow down.



Space saving installation

Multiple indoor units can be connected to 1 outdoor unit, and long piping connection is also possible. Compare to one-drive-one type, the outdoor unit can be installed in various places to realize the space-saving installation.



Active PFC module

PFC: Power Factor Corrector

There will be a power loss because of the different phases between the voltage and current.

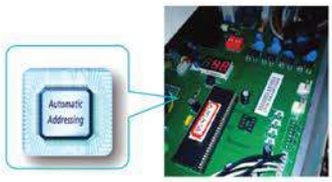
With the PFC module, the power utilization rate is higher, power factor can be up to 98%. System will be more efficiency.

- **Power factor** refers to the relationship between effective power and total power consumption, power factor is effective power divided by total power consumption.
- **Power factor** can measure power utilization rate, the power factor bigger, the higher power utilization rate.

Automatically addressing

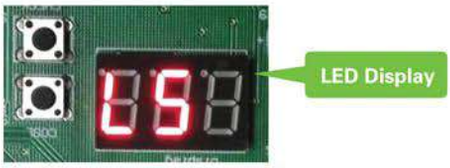
Automatically addressing: system will distribute address to indoor unit automatically

Automatic addressing will reduce artificial faults and manual works.

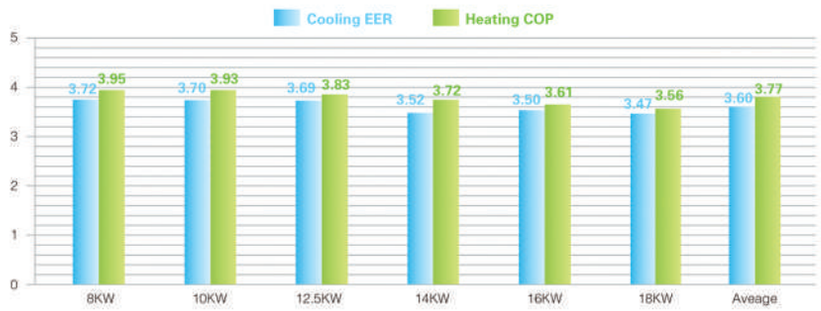


Led display on PCB

LED display on the PCB, it can show system's operation status and error codes.



EER & COP



Long piping & height difference

The total pipe length: 100m

The longest pipe:
- Actual length: 60m
- Equivalent length: 70m

Equivalent length from first indoor distributor to last indoor unit: 20m

Height deference between indoor and outdoor unit:
- Outdoor unit above <30m
- Outdoor unit below <20m

Height difference between indoor units: 8m

DC Inverter series, 1-phase

Model			RCOF080AR1	RCOF100AR1
Capacity	Cooling	kW	8,0	10,0
	Heating		9,0	11,0
EER / COP	W		3,72/3,95	3,7/3,93
Power supply	F, V, Hz		1F, 220~240V, 50HZ	
Power input	Cooling	kW	2,15	2,68
	Heating		2,28	2,8
Refrigerant charge volume	kg		3	3
Compressor	Quantity	unit	1	1
Outline dimension	HxWxD	mm	1054 x 994 x 399	1054 x 994 x 399
Package dimension	HxWxD	mm	1145 x 1120 x 475	1145 x 1120 x 475
Weight	Net / Gross	kg	80/92	80/92
Sound pressure level	dB		56	56
Operating temperature	Cooling	°C	-5~+50	-5~+50
	Heating		-20~+30	-20~+30
Piping connection	Gas	mm (in)	15,9 (5/8)	15,9 (5/8)
	Liquid		9,52 (3/8)	9,52 (3/8)
Maximum indoor unit	Quantity	unit	4	5
Maximum total length of fitting pipe	m		100	100

Benefits:
Long pipe and height difference
High efficiency DC inverter compressor
High efficiency DC motor
Fast cooling and heating
Intelligent defrosting program
Fan reversal protector
Active PFC (power factor corrector) module

DC Inverter series, 3-phase

Model			RCOF125FR1	RCOF140FR1	RCOF160FR1	RCOF180FR1	RCOF224FR1	RCOF260FR1	RCOF275FR1	RCOF330FR1
Capacity	Cooling	kW	12,5	14,0	16,0	18,0	22,4	26,0	28,0	33,5
	Heating		14,0	16,0	18,5	20,0	25	28,5	30,5	37,5
EER / COP	W		3,69 / 3,83	3,52 / 4,30	4,58 / 5,13	3,47/3,56	3,32/4,27	3,45 / 4,21	3,07 / 3,69	3,21 / 3,77
Power supply	F, V, Hz		3F,380~415V, 60Hz							
Power input	Cooling	kW	3,38	3,98	4,58	5,19	6,74	7,54	9,11	10,42
	Heating		3,66	4,30	5,13	5,62	5,85	6,77	8,54	9,93
Refrigerant charge volume	kg		3,10	3,45	4,20	4,55	6,1	6,10	8,00	8,00
Compressor	Quantity	unit	1	1	1	1	1	1	1	1
Outline dimension	HxWxD	mm	1328 x 900 x 345	1328 x 900 x 345	1328 x 900 x 345	900 x 1328 x 345	1120 x 1549 x 528	1579 x 1120 x 528	1579 x 1120 x 528	1579 x 1120 x 528
Package dimension	HxWxD	mm	1445 x 964 x 402	1445 x 964 x 402	1445 x 964 x 402	964 x 1445 x 402	1278 x 1703 x 560	1696 x 1278 x 560	1703 x 1278 x 560	1703 x 1278 x 560
Weight	Net / Gross	kg	90 / 101,0	90,0 / 101,0	102,0 / 113,0	102/112	102,0 / 113,0	145,0 / 165,0	176,0 / 196,0	176,0 / 196,0
Sound pressure level	dB		45 / 58	45 / 58	45 / 58	58	58	46~60	47~60	48~62
Operating temperature	Cooling	°C	-5~+50	-5~+50	-5~+50	-5~+50	-5~+50	-5~+50oC	-5~+50oC	-5~+50oC
	Heating		-20~+28	-20~+29	-20~+30	-20~+30	-20~+30	-20~+30oC	-20~+30oC	-20~+30oC
Piping connection	Gas	mm (in)	15,9 (5/8)	15,9 (5/8)	15,9 (5/8)	15,9 (5/8)	22,2 (7/8)	28,6 (1 1/8)	28,6 (1 1/8)	28,6 (1 1/8)
	Liquid		9,52 (3/8)	9,52 (3/8)	9,52 (3/8)	9,52 (3/8)	9,52 (3/8)	12,7 (1/2)	12,7 (1/2)	12,7 (1/2)
Maximum indoor unit	Quantity	unit	6	7	8	9	10	15	18	18
Maximum total length of fitting pipe	m		100	100	100	100	100	120	120	120

Cooling: indoor temperature t=27ºC DB, t=19ºC WB, outdoor temperature t=35ºC DB, t=24ºC WB.
Heating: indoor temperature t=20ºC DB, t=15ºC WB, outdoor temperature t=7ºC DB, t=6ºC WB.
The above data may be changed without notice for future improvement on quality and performance.

Outdoor units combination table

Cooling capacity								
Model	**kW**	**RCOF252FR1**	**RCOF280FR1**	**RCOF335FR1**	**RCOF400FR1**	**RCOF450FR1**	**RCOF500FR1**	**Max. Connected indoor unit**
RCOF252FR1	25,2	●						13
RCOF280FR1	28,0		●					16
RCOF335FR1	33,5			●				20
RCOF400FR1	40,0				●			23
RCOF450FR1	45,0					●		26
RCOF500FR1	53,2						●	29
RCOF560FR1	56,0		●●					33
RCOF615FR1	61,5		●	●				36
RCOF680FR1	68,0		●		●			39
RCOF730FR1	73,0		●			●		43
RCOF785FR1	78,5			●		●		46
RCOF850FR1	85,0				●	●		50
RCOF900FR1	90,0					●●		53
RCOF950FR1	95,0					●	●	56
RCOF1000FR1	100,0						●●	59
RCOF1065FR1	106,5		●	●		●		63
RCOF1130FR1	113,0		●		●	●		64
RCOF1180FR1	118,0		●			●●		64
RCOF1235FR1	123,5			●		●●		64
RCOF1300FR1	130,0				●	●●		64
RCOF1350FR1	135,0					●●●		64
RCOF1400FR1	140,0					●●	●	64
RCOF1450FR1	145,0					●	●●	64
RCOF1500FR1	150,0						●●●	64
RCOF1560FR1	156,0		●●				●●	64
RCOF1630FR1	163,0		●			●●●		64
RCOF1685FR1	168,5			●		●●●		64
RCOF1750FR1	175,0				●	●●●		64
RCOF1800FR1	180,0					●●●●		64
RCOF1850FR1	185,0					●●●	●	64
RCOF1900FR1	190,0					●●	●●	64
RCOF1950FR1	195,0					●	●●●	64
RCOF2000FR1	200,0						●●●●	64

Benefits:

Remote controller
4 way air delivering
Built-in drainage pump
Slim body, easy to install

Four-way cassette type indoor unit

Model (COMPACT CASSETTE TYPE)			RCKF022CAR1	RCKF028CAR1	RCKF036CAR1	RCKF045CAR1
Capacity	Cooling	kW	2,2	2,8	3,6	4,5
	Heating		2,5	3,2	4,0	5,0
Motor input		kW	0,065	0,065	0,070	0,075
Air flow		m³/h	500	500	600	750
Sound pressure level		dB	38 / 35	38 / 35	38 / 35	39 / 35
Main body	Outline dimension	HxWxD	275x633x580	276x633x580	277x633x580	278x633x580
	Packing dimension	HxWxD	375x745x675	375x745x675	375x745x675	375x745x675
Panel	Outline dimension	HxWxD	30x650x650	30x650x650	30x650x650	30x650x650
	Packing dimension	HxWxD	95x750x750	95x750x75	95x750x75	95x750x75
Body weight	Net / Gross	kg	23,0 / 25,0	23,0 / 25,0	26,0 / 28,0	26,0 / 28,0
Connecting pipe	Gas / Liquid	mm	9,53 / 6,35	9,53 / 6,35	12,7 / 6,35	12,7 / 6,35

Model			RCKF028BAR1	RCKF036BAR1	RCKF045BAR1	RCKF056BAR1	RCKF071BAR1	RCKF080BAR1
Capacity	Cooling	kW	2,8	3,6	4,5	5,6	7,1	8,0
	Heating		3,2	4,0	5,0	6,3	8,0	8,8
Motor input		kW	0,065	0,065	0,065	0,065	0,154	0,154
Air flow		m³/h	850	850	850	850	1150	1150
Sound pressure level		dB	38 / 35	38 / 35	38 / 35	38 / 35	39 / 36	39 / 36
Main body	Outline dimension	HxWxD	230x840x893	231x840x893	232x840x893	233x840x893	234x840x893	235x840x893
	Packing dimension	HxWxD	310x920x960	310x920x960	310x920x960	310x920x960	310x920x960	310x920x960
Panel	Outline dimension	HxWxD	50x950x950	50x950x950	50x950x950	50x950x950	50x950x950	50x950x950
	Packing dimension	HxWxD	105x1030x1030	105x1030x1030	105x1030x1030	105x1030x1030	105x1030x1030	105x1030x1030
Body weight	Net / Gross	kg	26,0 / 32,0	26,0 / 32,0	26,0 / 32,0	26,0 / 32,0	28,0 / 34,0	28,0 / 34,0
Connecting pipe	Gas / Liquid	mm	12,7 / 6,35	12,7 / 6,35	12,7 / 6,35	12,7 / 6,35	15,9 / 9,53	15,9 / 9,53

Model			RCKF090BAR1	RCKF0100BAR1	RCKF0112BAR1	RCKF125BAR1	RCKF140BAR1	RCKF160BAR1
Capacity	Cooling	kW	9,0	10,0	11,2	12,5	14,0	16,0
	Heating		10,0	11,0	12,5	13,5	14,5	17,0
Motor input		kW	0,170	0,170	0,170	0,170	0,170	0,170
Air flow		m³/h	1800	1800	1800	1800	1800	1800
Sound pressure level		dB	41 / 37	41 / 37	41 / 37	41 / 37	41 / 37	41 / 37
Main body	Outline dimension	HxWxD	285x840x893	286x840x893	287x840x893	288x840x893	289x840x893	290x840x893
	Packing dimension	HxWxD	375 x 920 x 960	375 x 920 x 960	375 x 920 x 960	375 x 920 x 960	375 x 920 x 960	375 x 920 x 960
Panel	Outline dimension	HxWxD	50x950x950	50x950x950	50x950x950	50x950x950	50x950x950	50x950x950
	Packing dimension	HxWxD	105x1030x1030	105x1030x1030	105x1030x1030	105x1030x1030	105x1030x1030	105x1030x1030
Body weight	Net / Gross	kg	32,0 / 38,0	32,0 / 38,0	32,0 / 38,0	32,0 / 38,0	32,0 / 38,0	32,0 / 38,0
Connecting pipe	Gas / Liquid	mm	19,1 / 9,53	19,1 / 9,53	19,1 / 9,53	19,1 / 9,53	19,1 / 9,53	19,1 / 9,53

Benefits:

Remote controller
Compact structure
Powerful and even air supply
Long life and washable filter
High efficiency air purifier
Harmonious appearance design

Wireless remote controllers
Indoor unit address inquiry
Indoor unit address setting
Temperature setting
Operation mode setting
Fan speed setting
Timer function

2-Way cassette type indoor unit

Model			RCXF045AR1	RCXF056AR1	RCXF071AR1
Capacity	Cooling	kW	4,5	5,6	7,1
	Heating		5,0	6,3	8,0
Motor input		kW	0,08	0,08	0,17
Air flow		m³/h	1020	1020	1150
Sound pressure level		dB	39 / 30	39 / 30	39 / 30
Main body	Outline dimension	HxWxD	295x1405x592	295x1405x592	295x1405x592
	Packing dimension	HxWxD	315x1180x652	315x1180x652	315x1180x652
Panel	Outline dimension	HxWxD	45x1340x680	45x1340x680	45x1340x680
	Packing dimension	HxWxD	90x1405x745	90x1405x745	90x1405x745
Body weight	Net / Gross	kg	36 / 42	36 / 42	37 / 43
Connecting pipe	Gas / Liquid	mm	12,7 / 6,35	12,7 / 6,53	15,9 / 9,53

Benefits:
Remote controller with LCD
2 way air direction
Super high air flow
Built-in with drainage pump

1-Way cassette type indoor unit

Model			RCZF022AR1	RCZF028AR1	RCZF036AR1
Capacity	Cooling	kW	2,2	2,8	3,6
	Heating		2,5	3,2	4,0
Motor input		kW	0,05	0,05	0,05
Air flow		m³/h	520	550	550
Sound pressure level		dB	35 / 30	36 / 30	37 / 31
Main body	Outline dimension	HxWxD	235x850x400	235x850x400	235x850x400
	Packing dimension	HxWxD	255x950x495	255x950x495	255x950x495
Panel	Outline dimension	HxWxD	50x1040x467	50x1040x467	50x1040x467
	Packing dimension	HxWxD	140x1105x532	140x1105x532	140x1105x532
Body weight	Net / Gross	kg	22,0 / 24,0	22,0 / 24,0	22,0 / 24,0
Connecting pipe	Gas / Liquid	mm	9,53 / 6,35	9,53 / 6,35	9,53 / 6,35

Benefits:
Remote controller with LCD
Slim body, easy to install
Buil-in with drainage pump
Fresh air, improved air quality

Benefits:
Remote controller
Built-in EXV
Suspended installation, saves valuable floor space
Wide angle air supply
Easy for installation

FLOOR CEILING UNIT

Model			RCCF045AR1	RCCF056AR1	RGCC056AR1	RGCC080AR1
Capacity	Cooling	kW	4,5	5,6	7,1	8,0
	Heating		5,0	6,3	8,0	8,8
Power input		kW	0,06	0,06	0,15	0,15
Air flow volume		m³/h	950	950	1300	1300
Sound pressure level		dB	46 / 37	46 / 37	48 / 39	48 / 39
Outline dimension	H x W x D	mm	225 x 1270 x 635	225 x 1270 x 635	225 x 1270 x 635	225 x 1270 x 635
Packing dimension	H x W x D	mm	325 x 1325 x 770	325 x 1325 x 770	325 x 1325 x 770	325 x 1325 x 770
Weight	Net / Gross	kg	36 / 42	36 / 42	36 / 42	36 / 42
Connecting pipe	Gas / Liquid	mm	12,7 / 6,35	12,7 / 6,35	15,88 / 9,53	15,88 / 9,53
Model			**RCCF090AR1**	**RCCF112AR1**	**RCCF140AR1**	**RCCF160AR1**
Capacity	Cooling	kW	9,0	11,2	14,0	16,0
	Heating		10,0	12,5	15,0	17,0
Power input		kW	0,40	0,26	0,26	0,26
Air flow volume		m³/h	1500	2300	2300	2300
Sound pressure level		dB	50 / 44	52 / 45	52 / 45	52 / 45
Outline dimension	H x W x D	mm	225 x 1270 x 635	225 x 1660 x 635	225 x 1660 x 635	225 x 1660 x 635
Packing dimension	H x W x D	mm	325 x 1325 x 770	325 x 1750 x 770	325 x 1750 x 770	325 x 1750 x 770
Weight	Net / Gross	kg	38 / 44	51 / 58	51 / 58	51 / 58
Connecting pipe	Gas / Liquid	mm	12,7 / 6,35	12,7 / 6,35	15,9 / 9,53	15,9 / 9,53

Benefits:

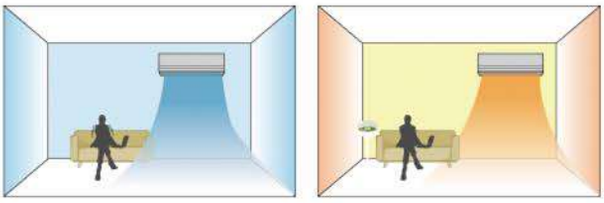
Remote controller with LCD
Trinal air fiter
Quit operation
Aero appearance
Wide air supply angle
Easily dismountable front panel

Wall mounted unit, EXV integrated

Model			RCSF022AR1	RCSF028AR1	RCSF036AR1	RCSF045AR1	RCSF056AR1	RCSF071AR1
Capacity	Cooling	kW	2,2	2,8	3,6	4,5	5,6	7,1
	Heating		2,5	3,2	4,0	5,0	6,2	7,8
Motor input		kW	0,06	0,06	0,06	0,06	0,06	0,06
Air flow		m³/h	540	540	600	780	1000	1000
Sound pressure level		dB	33 / 24	33 / 24	33 / 24	40 / 33	40 / 33	44 / 36
Outline dimension	HxWxD	mm	282x900x205	283x900x205	284x900x205	285x900x205	304x1080x221	304x1080x221
Packing dimen-sion	HxWxD	mm	367x973x290	367x973x290	367x973x290	367x973x290	382x1135x308	382x1135x308
Weight	Net/Gross		12,0 / 14,0	12,0 / 14,0	12,0 / 14,0	12,0 / 14,0	16,0 / 18,0	16,0 / 18,0
Connecting pipe	Gas/Liquid	mm	9,53 / 6,35	9,53 / 6,35	12,7 / 6,35	12,7 / 6,35	12,7 / 6,35	15,9 / 9,53

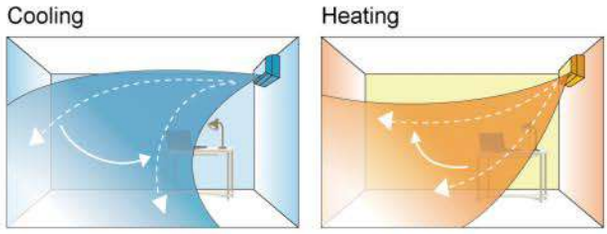
Anti cool air design

When heating in winter, intelligent anti cool air function is started. Unit only blows when inside the unit is pre-heated to prevent cool air from blowing out.



Vertical auto swing

When cooling, cool air is directed across the room and the sinks. When heating, warm air is directed across the floor and then rises.



Benefits:
Wired controller
Built-in drain pan
Built-in drain pump
Built-in EXV
Air return box
Short body, easy install

Duct type with low ESP, 30 Pa, short ceiling

Model			RCDLF022AR1	RCDLF028AR1	RCDLF036AR1	RCDLF045AR1	RCDLF056AR1	RCDLF071AR1
Capacity	Cooling	kW	2,2	2,8	3,6	4,5	5,6	7,1
	Heating		2,5	3,2	4,0	5,0	6,3	8,0
Motor input		kW	0,05	0,05	0,07	0,08	0,09	0,11
Air flow volume		m³/h	450	450	550	620	900	1100
Sound pressure level		dB	29 / 24	29 / 24	32 / 25	38 / 33	38 / 27	39 / 29
ESP	M / H	Pa	30	30	30	30	30	30
Outline dimension	H x W x D	mm	210x700x467	210x700x467	210x700x467	210x700x467	210x900x467	210x1100x467
Packing dimension	H x W x D	mm	240x900x530	240x900x530	240x900x530	240x900x530	240x1110x530	240x1310x530
Weight	Net / Gross	kg	16 / 19	16 / 19	16 / 19	16 / 19	19 / 22,5	22 / 26
Connecting pipe	Gas / Liquid	mm	9,53 / 6,35	9,53 / 6,35	12,7 / 6,35	12,7 / 6,35	12,7 / 6,35	15,9 / 9,53

Duct type with medium ESP, 70 Pa

Model			RCDMF071AR1	RCDMF080AR1	RCDMF090AR1	RCDMF100AR1	RCDMF120AR1	RCDMF150AR1
Capacity	Cooling	kW	7,1	8,0	9,0	10,0	12,0	15,0
	Heating		8,0	9,0	10,0	11,0	13,0	17,0
Motor input		kW	0,30	0,30	0,34	0,34	0,34	0,34
Air flow volume		m³/h	1220	1220	1850	2000	2000	2000
Sound pressure level		dB	41 / 36	41 / 36	43 / 38	44 / 40	44 / 40	44 / 40
ESP	M / H	Pa	70	70	70	70	70	70
Outline dimension	H x W x D	mm	260 x 1209 x 680	260 x 1209 x 680	260 x 1445 x 680	260 x 1445 x 680	260 x 1445 x 680	260 x 1445 x 680
Packing dimension	H x W x D	mm	320 x 1245 x 720	320 x 1245 x 720	320 x 1480 x 720	320 x 1480 x 720	320 x 1480 x 720	320 x 1480 x 720
Weight	Net / Gross	kg	33 / 37	33 / 37	46 / 50	46 / 50	46 / 50	46 / 50
Connecting pipe	Gas / Liquid	mm	15,9 / 9,53	15,9 / 9,53	15,9 / 9,53	15,9 / 9,53	15,9 / 9,53	15,9 / 9,53

Benefits:
Wired controller
Built-in EXV
Whole unit low noise design, silent operation
Two air return installation methods
Air return box
Filter

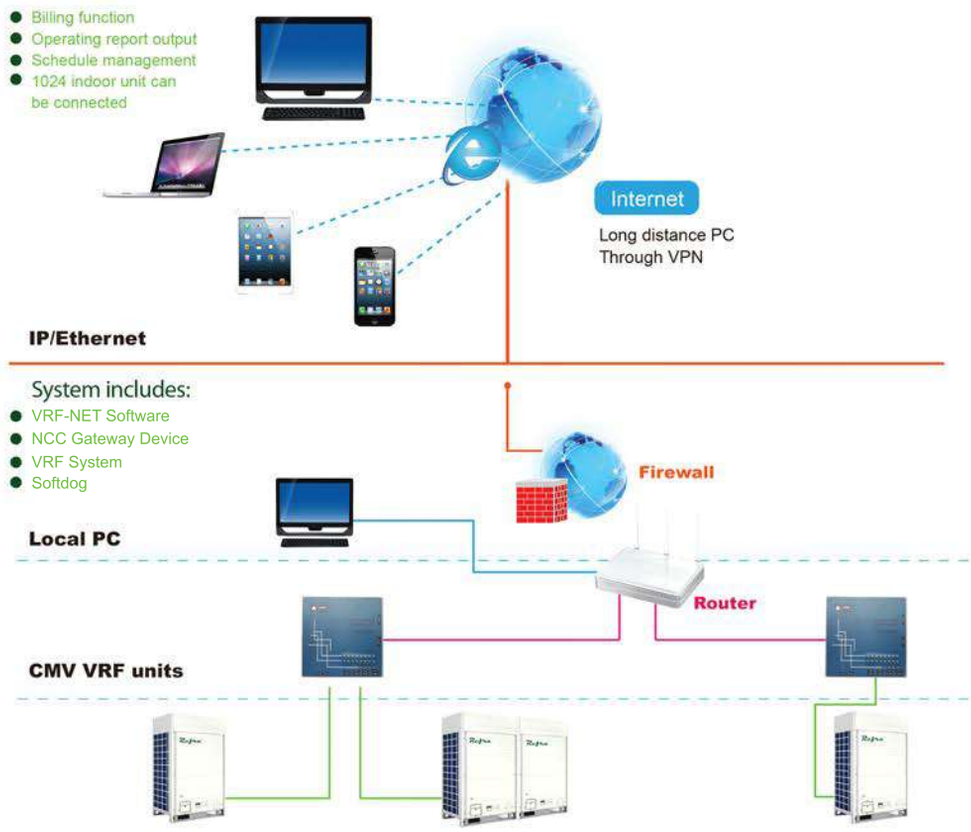
Benefits:
Wired controller
Built-in EXV
Slim body, saving suspended ceiling spaces
Can be used with various diffuserds
High static pressure
Air return box
Filter

Duct type with high ESP, 150 Pa

Model			RCDHF071AR1	RCDHF080AR1	RCDHF090AR1
Capacity	Cooling	kW	7,1	8,0	9,0
	Heating		8,0	9,0	10,0
Motor input		kW	0,34	0,34	0,34
Air flow volume		m³/h	1500	1500	1500
Sound pressure level		dB	42 / 40	42 / 40	42 / 40
ESP	M / H	Pa	150	150	150
Outline dimension	H x W x D	mm	260 x 1445 x 680	260 x 1445 x 680	260 x 1445 x 680
Packing dimension	H x W x D	mm	320 x 1480 x 720	320 x 1480 x 720	320 x 1480 x 720
Weight	Net / Gross	kg	46 / 50	46 / 50	46 / 50
Connecting pipe	Gas / Liquid	mm	15,9 / 9,53	15,9 / 9,53	15,9 / 9,53

Model			RCDHF100AR1	RCDHF120AR1	RCDHF150AR1	RCDHF200AR1	RCDHF250AR1	RCDHF280AR1
Capacity	Cooling	kW	10,0	12,0	15,0	20,0	25,0	28,0
	Heating		11,0	13,0	17,0	22,0	27,5	30,8
Motor input		kW	0,45	0,45	0,45	1,20	1,20	1,20
Air flow volume		m³/h	2300	2300	2300	4000	4200	4400
Sound pressure level		dB	52 / 44	52 / 44	52 / 44	53 / 45	54 / 45	55 / 45
ESP	M / H	Pa	150	150	150	150	150	150
Outline dimension	H x W x D	mm	370 x 1190 x 620	370 x 1190 x 620	370 x 1190 x 620	448 x 1465 x 811	448 x 1465 x 811	448 x 1465 x 811
Packing dimension	H x W x D	mm	445 x 1245 x 655	445 x 1245 x 655	445 x 1245 x 655	490 x 1510 x 870	490 x 1510 x 870	490 x 1510 x 870
Weight	Net / Gross	kg	47 / 51	47 / 51	47 / 51	102 / 106	102 / 106	102 / 106
Connecting pipe	Gas / Liquid	mm	15,9 / 9,53	15,9 / 9,53	15,9 / 9,53	22,2 / 12,7	22,2 / 12,7	22,2 / 12,7

VRF-NET Control software



Wireless remote controllers

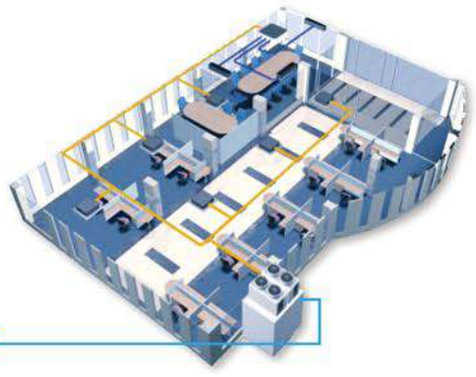
Wireless remote controllers
- Indoor unit address inquiry
- Indoor unit address setting
- Temperature setting
- Operation mode setting
- Fan speed setting
- Timer function

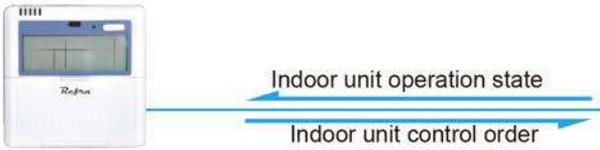
Wired controllers

- Bidirectional communication. Indoor unit's operating parameters (error code, temperature, address) can be inquired and displayed on the controller.
- Compact design
- Timer function

Simple centralized controller

- Easy to install. Controller connects to outdoor units only.
- Able to install this controller after building decoration.
- 1 Controller can controll max. 64 indoor units.
- Mode lock function, user can lock the running mode of indoor unit.





VRF-SMART (Smart centralized control app)

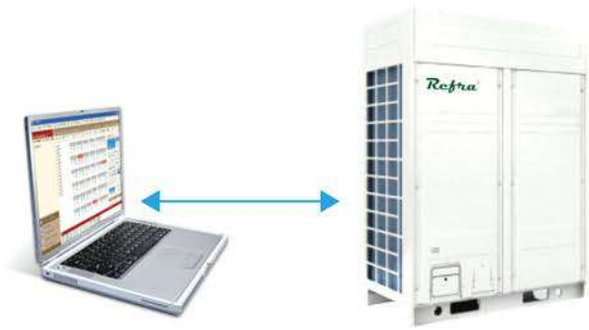
- Available on iOS and Android
- Single unit controller or group control
- Weekly schedule management
- 64 indoor unit can be controlled
- Operation parameter enquiry

BMS Gateway

- BACnet gateway
  Verified by BACnet International, fully compatible with all BACnet protocol product
- Modbus gateway
  Outdoor unit built in with Modbus gateway can be customized

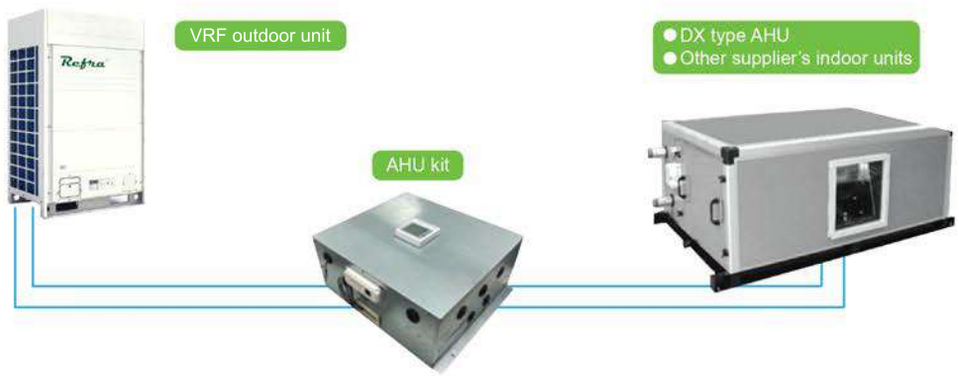
Doctor kit pro

- Operating statur, error codes inquiry.
- Compressors, sensors, valves operating parameter. real-time monitored and display.
- Commissioning results can be reported.
- Built-in with troubleshooting instruction.
- Automatic Data Backup



AHU Connection kit

- Refra AHU connection kit is an interface to allow 3rd party manufacturer's AHU connecting to Refra VRF outdoor units.
- 2 basic modules: 5HP/10HP
- Can be combined into bigger capacity.



VRF Selection software pro

BCASE

Condensing unit for Air Handling Unit

Basic unit equipment:

- *Polymer powder coated sheet steel casing with condenser protection grid*
- *Plastic locks and hinges*
- *Scroll compressor with crankcase heater*
- *Copper aluminium fin condenser*
- *High efficiency AC axial fans*
- *Cartridge pressostats on HP/LP lines*
- *Pressure gauges on HP/LP lines*
- *Electric panel includes phase rotation and phase loss monitoring relay, compressor and fan motor overheat protection, contactor and main switch*

Functions and features

Unit description

Condensing units are designed to satisfy the needs of medium-sized commercial or industrial air conditioning systems. Our units are equipped with high efficiency scroll compressors and work on R410A refrigerant which does not contribute to ozone depletion. The latest Scroll® compressors provide the highest annual energy efficiency levels, due to ESEER up to 4, along with superior reliability. When combined with EC high efficiency fans and oversized condenser coil the unit delivers the lowest annual electricity bills.
Bcase line condensing units are designed for operating in +46ºC - +5ºC ambient temperature range with basic unit equipment. Also we provide a variety of options which can improve an air conditioning system work.

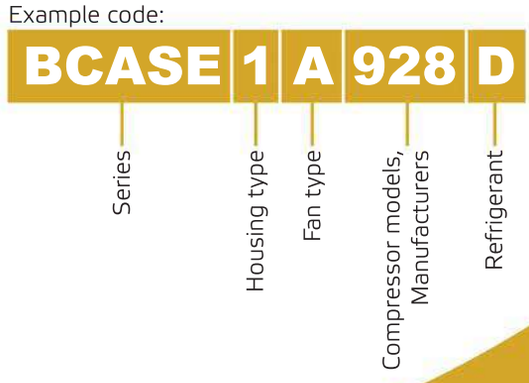
Additional options

BS - Suction line shut-off valve with service valve
EC - Fans with permanent magnet motor, reduces energy consumption and noise level
R - Liquid receiver with shut-off valve on outlet and pressure relief valve
FDB - Filter drier, sight glass and shut-off valve on liquid line
CHC - Check valve on condensing line stops unwanted migration of refrigerant from liquid receiver to condenser
FSC - Fan speed control provides operation down to -10ºC

Cooling capacity range

From 6 kW to 57 kW

Example code:



Technical data*

Bcase			1E920D	1E922D	1E925D	2E926D	2E927D	2E928D	2E929D	2E931D	2E932D
Cooling capacity [1]		kW	5,92	7,58	12,25	15,10	17,20	19,65	20,90	23,70	30,50
Unit power consumption		kW	2,25	2,73	4,49	5,25	6,09	6,84	7,40	8,50	8,83
EER			2,63	2,78	2,73	2,88	2,82	2,87	2,82	2,79	3,45
ESEER			4,65	4,52	4,19	4,42	4,33	4,25	4,08	3,95	3,95
Compressors	Quantity	nº	1								
	Type		Scroll								
	Refrigerant		R410A								
Condenser	Fan	nº	1			2					
Connections	Liquid line	Ø mm	12			16			18		
	Suction line	Ø mm	18		22					28	35
Electrical characteristics	Power supply	V/Ph/ Hz	380-420/ 3/50								
	Max. operating current	A	5,88	7,68	11,48	14,16	17,36	17,36	18,56	20,56	23,96
	Starting current	A	29,18	39,18	52,68	66,36	77,36	103,36	103,36	130,36	141,36
Sound pressure [2]	STD	dB (A)	39	39	40	43	43	43	44	44	44
Dimensions	Picture	nº	1			2					
	Length	mm	1315	1315	1315	1315	1315	1315	1315	1315	1450
	Width	mm	450	450	450	600	600	600	600	600	600
	Height	mm	740	740	740	1450	1450	1450	1450	1450	1450
Unit weight [3]		kg	99,00	100,00	114,00	169,00	169,00	169,00	170,00	172,00	191,00

[1] Calculations made due to +6ºC evaporating and +35ºC ambient temperatures
[2] Sound pressure level measured at 10 m from the unit according to ISO 3744
[3] Basic equipment unit weight
The above data may be changed without notice for future improvement on quality and performance.
* For correct data please use "REFRA Selection tool"

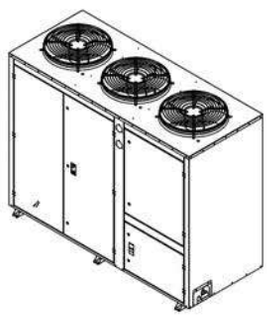
Technical data*

Bcase			4E933D	4E934D	3E934D	3E935D	4D936D
Cooling capacity [1]		kW	32,10	35,80	36,30	42,10	54,70
Unit power consumption		kW	11,54	13,08	12,21	14,16	18,48
EER			2,78	2,74	2,97	2,97	2,96
ESEER			4,21	4,21	4,51	4,32	3,92
Compressors	Quantity	nº	1				
	Type		Scroll				
	Refrigerant		R410A				
Condenser	Fan	nº	4	4	3	3	4
Connections	Liquid line	Ø mm	22				
	Suction line	Ø mm	35				
Electrical characteristics	Power supply	V/Ph/Hz	380-420/ 3/50				
	Max. operating current	A	29,72	35,72	34,54	37,54	44,72
	Starting current	A	122,72	144,68	143,54	177,54	229,72
Sound pressure [2]	STD	dB(A)	48	48	45	45	51
Dimensions	Picture	nº	3		4		
	Length	mm	1999	1999	1950	1950	1950
	Width	mm	666	666	870	870	870
	Height	mm	1467	1467	1550	1550	1467
Unit weight [3]		kg	233,00	236,00	262,00	262,00	324,00

[1] Calculations made due to +6ºC evaporating and +35ºC ambient temperatures
[2] Sound pressure level measured at 10 m from the unit according to ISO 3744
[3] Basic equipment unit weight
The above data may be changed without notice for future improvement on quality and performance.
* For correct data please use "REFRA Selection tool"

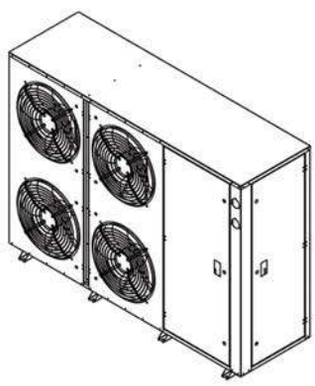
Picture 1

Picture 2

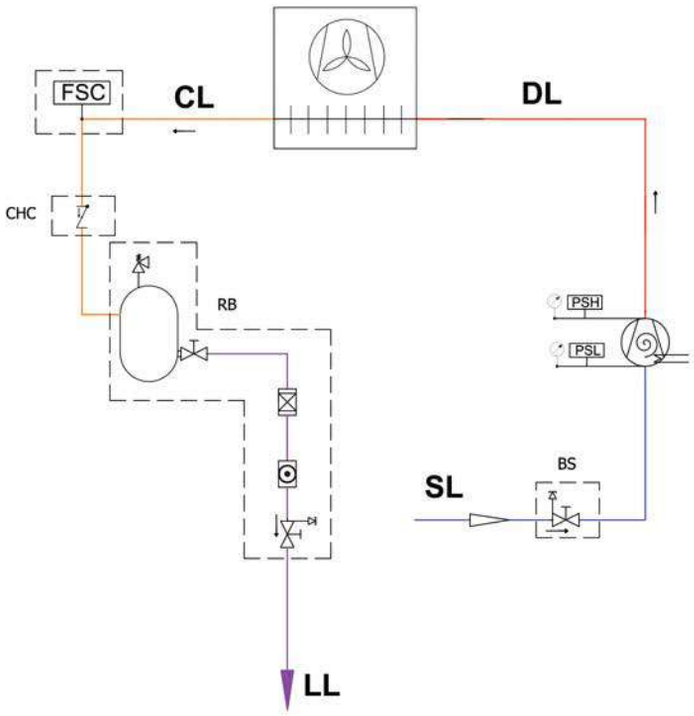


Picture 3

Picture 4



Hydraulic diagram of the unit



- Air-cooled condenser
- Scroll compressor
- Filter - drier
- Ball valve with access fitting
- Sight glass
- Check valve
- Shut off valve
- Crankcase heater
- HP/LP gauge
- Safety valve

PSH - Pressure limiter for high pressure protection

PSL - Pressure limiter for low pressure protection

CL - Condencing line

DL - Discharge line

LL - Liquid line

SL - Suction line

- An additional option marking

GALAXY

Condensing unit for air conditioning

Basic unit equipment:

- *Scroll compressors with crankcase heater*
- *Cartrige pressostats on HP/LP lines for each circuit*
- *High/Low pressure side gauges*
- *Pressure relief valves on each circuit*
- *Copper aliuminium finned condensers with AC axial fans*
- *Polymer powder coated steel frame with lifting hinges and rubber anti vibration mounts*
- *Electrical board includes: main switch, phase rotation and phase loss monitoring, relay, compressor/fan overload relays,contactor, transformer*

Additional options

CCH	-	Compressor compartment housing
CHC	-	Check valve on condensing line
FSC	-	Fan speed controller
BS	-	Shut-off valve on suction line
BL	-	Shut-off valve on liquid line
SF	-	Suction line filter drier
EC	-	Electronically commutated fans
DH	-	Desuperheater
R	-	Liquid receiver with rotalock valves and safety valve
FD	-	Filter drier and moisture indicator
BV	-	Shit-off valve on liquid lines
K	-	Low ambient temperature kit: condensation pressure regulator receiver pressure regulator, check valve on condensing line

Example code:

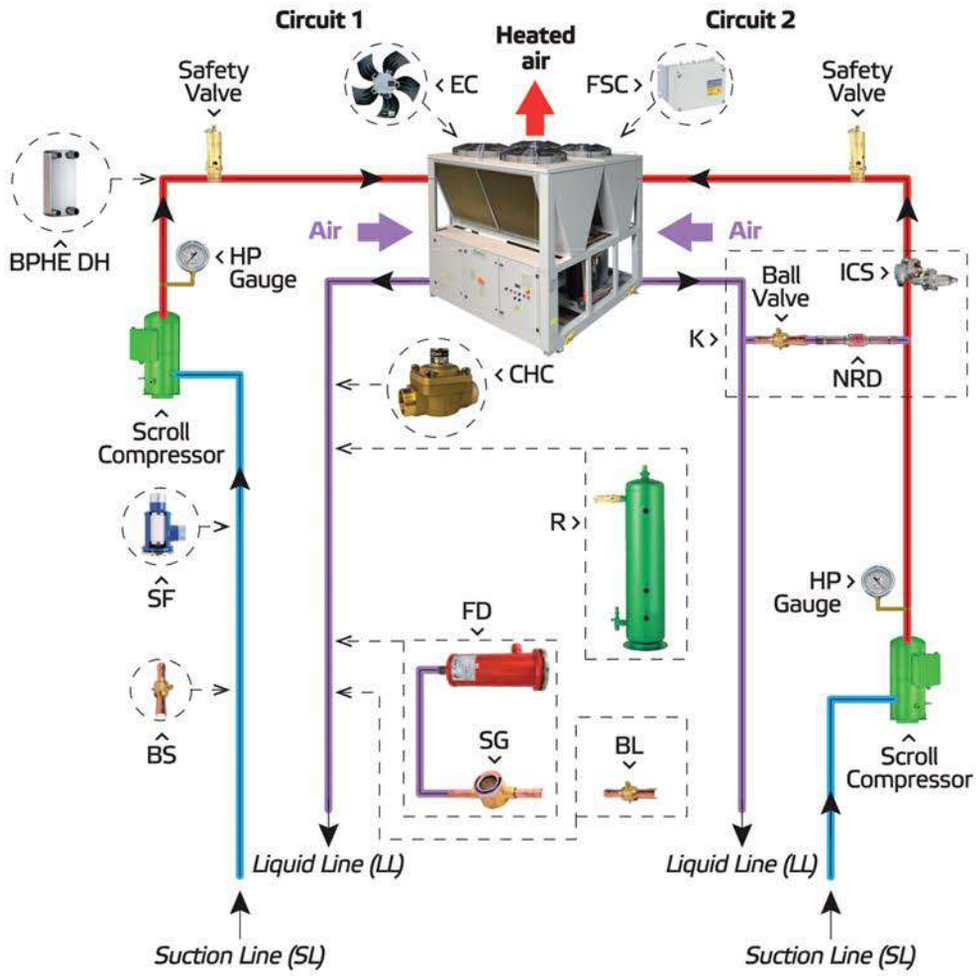
KWW	H	S	2	2	933	00	D
Series	Application temperature	Compressor type	Refrigerant circuits No	Compressor quantity	Compressor code	Reserved index	Refrigerant

Technical data

Galaxy KWW-HS2			292800D	293100D	293200D	293300D	293400D	293500D	293600D	493200D	493300D	493400D	493500D	493600D	693500D	693600D
Cooling capacity [1]		kW	42,6	52,4	61,4	67,4	75,8	86,6	107,8	122,8	134,8	151,6	173,2	215,6	259,8	323,4
Unit power consumption		kW	13,1	15,8	17,8	19,8	22,6	26,8	35,5	35,6	39,6	45,2	53,6	71,0	80,4	106,5
EER			3,23	3,31	3,44	3,39	3,34	3,22	3,03	3,44	3,39	3,34	3,22	3,03	3,22	3,03
ESEER			4,14	4,29	4,49	4,38	4,30	4,10	3,90	4,49	4,38	4,30	4,10	3,90	4,10	3,90
COP			4,53	4,34	4,44	4,19	4,01	3,75	3,39	4,44	4,19	4,01	3,75	3,39	3,75	3,39
Compressors	Quantity	nº	2							4					6	
	Type		Scroll													
Condenser	Quantity	nº	2							4					6	
	Rows of tube	nº	3							3					3	
	Surface area	m^2	247,6							495,2					742,8	
	Fans	nº	2							4					6	
	Diameter	mm	800							800					800	
	Air flow [2]	m^3/s	10,55							21,10					30,83	
System	Min. capacity	%	50							25					17	
	Refrigerant		R410A													
	Circuits	nº	2													
Connections	Suction line	mm	22	28	35	35	35	35	42	42	42	42	42	54	54	64
	Liquid line	mm	16	16	18	22	22	22	28	28	28	28	28	42	42	42
Electrical characteristics	Power supply	V/ Ph/ Hz	400 / 3+N / 50													
	Max. working current	A	30	51	53	59	70	77	89	106	118	140	154	178	228	264
	Starting current	A	140	156	164	167	188	232	282	217	226	258	309	370	377	458
Sound pressure [3]	STD	dB (A)	55							58					60	
Dimensions	Picture	nº	1							2					3	
Transportation dimensions	Length	mm	2200							2320					3750	
	Width	mm	1275							2300					2300	
	Height	mm	2450							2450					2450	
Unit weight [4]		kg	705	740	745	750	765	760	910	1260	1266	1293	1290	1570	1780	2245

[1] Calculations made due to 6ºC evaporation and 35ºC ambient temperatures according to EN 14511:2011
[2] Standart AC fans
[3] Sound pressure level measured at 10m from the unit according to ISO 3744
[4] Basic equipment unit weight
The above data may be changed without notice for future improvement on quality and performance.

2 Circuits application example



Schematic is for component location only, not a typical piping recommendation.

Dimensions and clearances

Dimension	A (mm)	B (mm)	C (mm)	A1 (mm)	B1 (mm)	C1 (mm)
Picture 1	1155	2200	2130	1080	2090	2450
Picture 2	2200	2300	2130	2130	2190	2450
Picture 3	2200	3750	2130	2130	3640	2450

Picture 1

Picture 2

Picture 3

GALAXY

Air cooled chiller for air conditioning

Basic unit equipment:

- *Scroll compressors with crankcase heater*
- *R410A system charge*
- *Cartrige pressostats on HP/LP lines for each circuit Filter drier with replaceble core, moisture indicator and shut-off valves on liquid line*
- *Thermostatic expansion valve (TEV)*
- *Solenoid valve on liquid line (SV)*
- *Copper aliuminium finned condensers with AC axial fans*
- *High/Low pressure side gauges*
- *Polymer powder coated steel frame with lifting hinges and rubber anti vibration mounts*
- *Electrical board includes: controller, main switch, phase rotation and phase loss monitoring, relay, compressor/fan overload relays, contactor, transformer*

Functions and features

Unit description

Air cooled chillers are designed to absorb the building heat using chilled water or chilled water and antifreeze mixtures and reject it to the ambient air using air cooled condenser. Galaxy series air cooled chillers are made for medium-large size commercial, industrial air conditioning or process cooling needs. These units could be connected to huge mount of room fan coil system, terminals, air handling units or proces cooling equipment.

Our units are equiped with latest model Scroll compressors made specialy for air cooled chiller systems on R410A refrigerant. Galaxy series units are equiped with highest quality copper tube and aliuminium fins condensers. When HyBlade axial fans are used it gives superior heat utilization level.

Air cooled chillers are all-in-one built package installs quickly and easily on the ground or the rooftop. The optional hydronic module is already built in - this cost less and saves space than installing individually.

Example code:

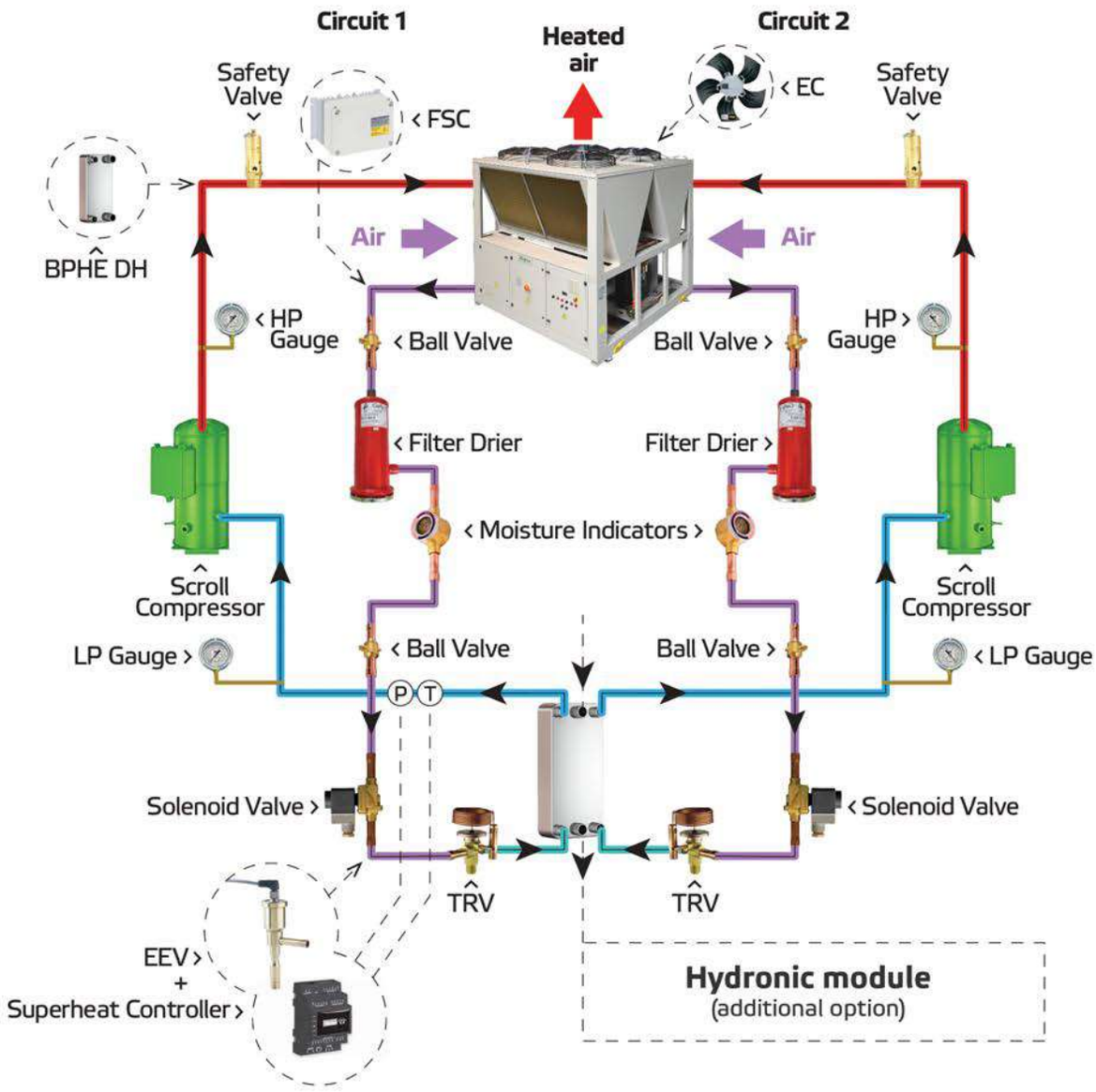
CWW	C	S	2	2	933	00	D
Series	Chiller type	Compressor type	Refrigerant circuits No	Compressor quantity	Compressor code	Reserved index	Refrigerant

Technical data

Galaxy CWW-CS2			293300D	293400D	293500D	293600D	493200D	493300D	493500D	493600D
Cooling capacity [1]		kW	58,2	67,4	75,0	92,4	106,4	116,4	150,0	184,8
Unit power consumption		kW	19,6	23,2	26,6	35,1	35,1	39,0	53,2	70,2
EER			2,97	2,90	2,82	2,63	3,03	2,97	2,82	2,63
ESEER			3,94	3,81	3,70	3,49	4,00	3,94	3,70	3,49
Compressors	Quantity	nº	2	2	2	2	4	4	4	4
	Type		Scroll							
Condenser	Quantity	nº	2	2	2	2	4	4	4	4
	Rows of tube	nº	3							
	Surface area	m^2	247,6	247,6	247,6	247,6	495,2	495,2	495,2	495,2
	Fans	nº	2	2	2	2	4	4	4	4
	Diameter	mm	800							
	Air flow [2]	m^3/s	10,28	10,28	10,28	10,28	20,56	20,56	20,56	20,56
Evaporator	Quantity	nº	1							
	Type		Brazed Plate Heat Exchanger (BPHE)							
	Water volume	l	5,0	5,5	6,4	7,4	9,3	9,7	12,2	28,2
	Pressure drop (water side)	kPa	31	30	32	38	35	39	26	21
	Water connections	Ø mm	65	65	65	80	80	100	100	100
System	Min.capacity	%	50	50	50	50	25	25	25	25
	Refrigerant		R410A							
	Circuits	nº	2							
	Charge per circuit	kg	12,0	12,3	12,5	12,6	23,4	23,5	23,7	24,0
Electrical characteristics	Power supply	V/Ph/Hz	400 / 3+N / 50							
	Max. working current	A	59	70	77	89	106	118	154	178
	Starting current	A	167	188	232	289	217	226	309	378
Sound pressure [3]	STD	dB (A)	55				58			
Dimensions	Picture	nº	1				2			
Transportation dimensions	Length	mm	2200				2320			
	Width	mm	1275				2300			
	Height	mm	2450				2450			
Unit weight [4]		kg	790	820	830	960	1300	1305	1320	1670

[1] Calculations made due to 7/12ºC leaving/entering water and 35ºC ambient temperatures according to EN 14511:2011
[2] Standart AC fans
[3] Sound pressure level measured at 10m from the unit according to ISO 3744
[4] Basic equipment unit weight
The above data may be changed without notice for future improvement on quality and performance.

2 Circuits application example

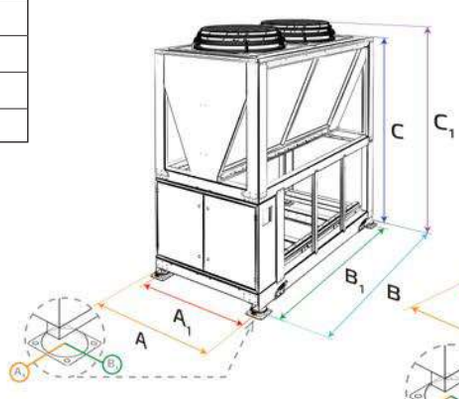


Schematic is for component location only, not a typical piping recommendation.

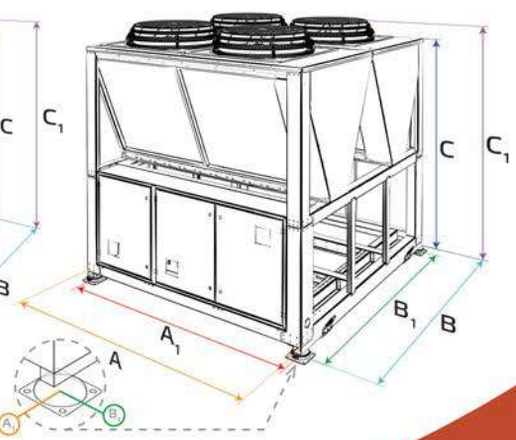
Dimensions and clearances

Picture n°	Picture 1	Picture 2
A (mm)	1155	2200
B (mm)	2200	2300
C (mm)	2130	2130
A1 (mm)	1080	2130
2090	2090	2190
C1 (mm)	2450	2450

Picture 1



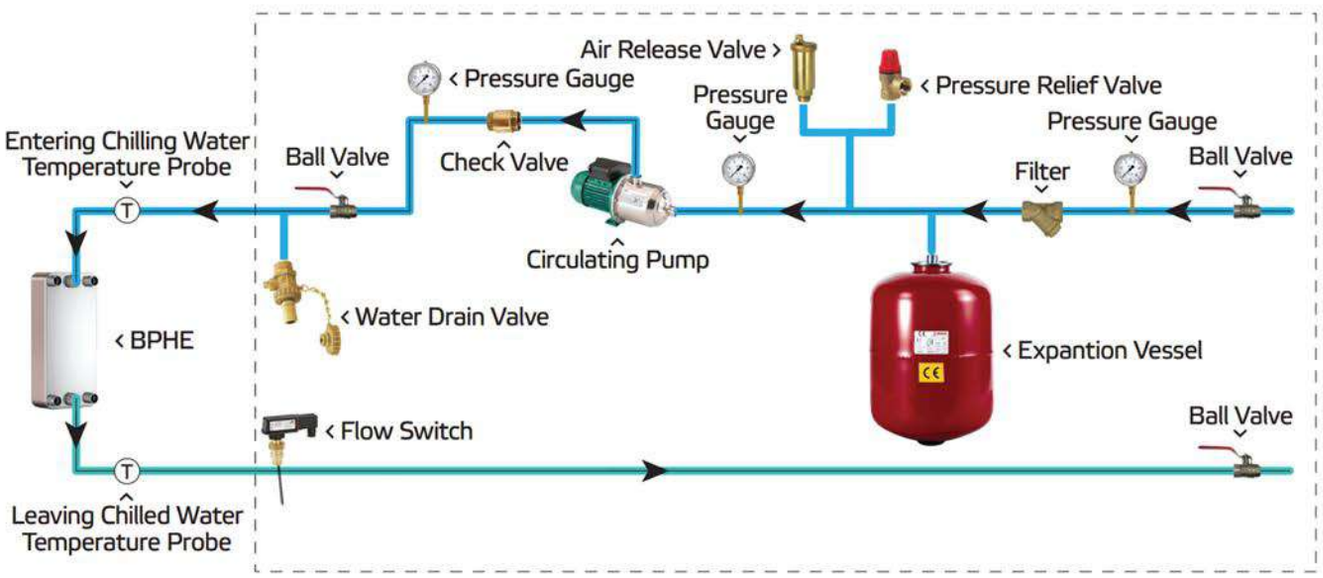
Picture 2



Additional options

CCH - Compressor compartment housing
DH - Desuperheater
HM/LM - Hight/low lift hydronic module: single or double circulating pumps, removable screen filter, embrane expansion tank, air release valve, safety relief valve, drain pan, shut-off valves
FSC - Fan speed controler
EC - Electronically commutated fans
EEV - Electronic expansion valve
WS - Winter set for opperaiting down to -10°C temperature

Principal hydronic module diagram



Hydronic module technical data

Galaxy CWW-HCS			22933D	22935D	22936D	24932D	24933D	24935D	24936D
Pump set electrical characteristics									
Low lift single and dual pumps	Shaft power input	kW	1,32	1,41	1,71	1,78	1,84	2,00	2,53
	Power input		1,50	1,50	2,20	2,20	2,20	2,20	2,20
	Maximum current draw	A	3,8	3,8	4,6	4,6	4,6	4,6	6,4
High lift single and dual pumps	Shaft power input	kW	2,01	2,18	2,92	2,79	2,88	3,17	4,69
	Power input		2,20	2,20	3,00	3,00	3,00	4,00	5,50
	Maximum current draw	A	4,6	4,6	6,1	6,1	6,1	7,8	10,3
Hydronic module weight									
Low lift single pump set [5]		kg	35	38	74	74	79	79	79
Low lift fual pump set [5]			65	71	142	142	152	152	212
High lift single pump set [6]			72	75	89	85	90	97	115
High lift dual pump set [6]			141	147	175	167	177	191	227
Expansion vessel volume		l	12			40			
Max. operating pressure		bar	8						

[5] Low lift hydronic module calculations based on 15 m head pressure
[6] High lift hydronic module calculations based on 25 m head pressure
The above data may be changed without notice for future improvement on quality and performance.

FAN COIL UNITS

Fan coil unit is a kind of compound device which assemble fan and surface-type coil heating-exchanger together. Fan coil has horizontal type, vertical type, etc. A cooling (heating) supply system usually consists of fan coil terminals and chilled water system (heated water system).

REFRA commercial fan coil is designed and manufactured on the base of advanced technology, and utilize qualified galvanized iron as material. Due to its supper-thin design, it has such advantages: beautiful outlook, space saving, easy installation, etc. And the most obvious advantage is that it can decrease the outlet air Temp-difference as low as possible to make room more comfortable, as well as don't decrease cooling capacity output. For the large air flow volume design, it can increase room ventilation frequency, supply more flesh air, and balance room temperature distribution. Benefiting from adoption of advanced material and technology, it can effectively decrease the running noise and keep running smoothly. With the advantages above, it can be widely applied in market, hospital, office building, hotel airport, etc..

Wall mounted type fan coil unit 2-pipe

Benefits:
Thanks to optimized air flue design that greatly improve the fan efficiency and lower the operation noise
Reasonable airflow that makes an even temperature and humidity distribution
Wide operating range
3-speed fan motor
Wireless remote control fitted as standart

Model			RGWS021AR	RGWS027AR	RGWS036AR	RGWS042AR
Capacity	Cooling	kW	2,10	2,70	3,60	4,20
	Heating	kW	3,15	4,05	5,40	6,30
Air flow	H / M / L	m³/h	360 / 322 / 282	550 / 413 / 367	680 / 591 / 532	850 / 708 / 616
Power Supply	Type	V, Ph, Hz	220 - 240 V ~ 1 Ph- 50 Hz			
	Input	W	50	50	60	60
Water system	Water flow volume	m³/h	0,40	0,45	0,60	0,70
	Pressure drop	kPa	13	24	44	45
Coil	Operating pressure	Mpa	≤ 1,5 MPa	≤ 1,5 MPa	≤ 1,5 MPa	≤ 1,5 Mpa
Motor	Power output	W	20	20	20	20
Sound pressure level	H / M / L	dB (A)	38 / 35 / 29	40 / 36 / 30	43 / 38 / 32	48 / 41 / 36
Piping Connection	Water inlet / outlet	in	½ / ½	½ / ½	½ / ½	½ / ½
	Condensing water drain	mm	15,6	15,6	15,6	15,6
Dimension	Outline (H x W x D)	mm	275 x 845 x 180	275 x 845 x 180	298 x 940 x 200	298 x 940 x 200
	Package (H x W x D)	mm	355 x 915 x 255	355 x 915 x 255	380 x 1010 x 285	380 x 1010 x 285
Weight	Net	kg	11	11	13	13
	Gross	kg	14	14	17	17
Standart option			Wireless remote control			

OPTIONAL:
RGS2T2V 2-way valve
RGS2T3V 3-way valve

Cooling: 12/7ºC inlet/outlet water temperature; 27ºC db / 19ºC wb inlet air temperature.
Heating: 60ºC inlet water temperature; 20ºC inlet air temperature.
The above data may be changed without notice for future improvement on quality and performance.

Benefits:
Low operative noise:
- *Streamline plate ensures quitness.*
- *Creates natural and comfortable environment.*

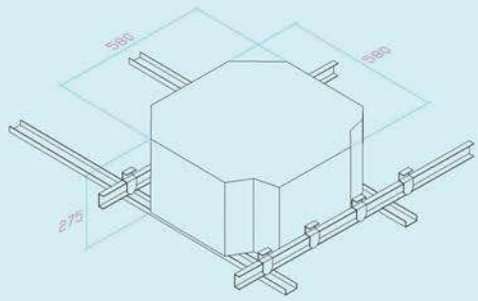
The adoption of the most advanced 3-Dimensional screw fan.
- *Reduces the air resistance passing through.*
- *Smoothes the air flow.*
- *Makes air speed distribution to the heat exchange uniform.*

Optimized makes the air volume and capacity improved rapidly.
Improvement for easy installation and maintenance:
- *Little space is required for installation into a shallow ceiling.*
- *Because of the compactness and weight reduction of the main unit and panel, all models can be installed without a hoist.*

Drainage pump can take up the condenser water to 1200 mm.
Luxurious appearance, suitable for decoration in restaurants, supermarkets, entertainment places and meeting rooms etc.
Wireless remote control fitted as standart.

RCWK300, 380, 470

RCWK600, 720, 850, 900



THE SKETCH OF INSTALLATION (COMPACT TYPE)

Cassette type fan coil unit 2-pipe

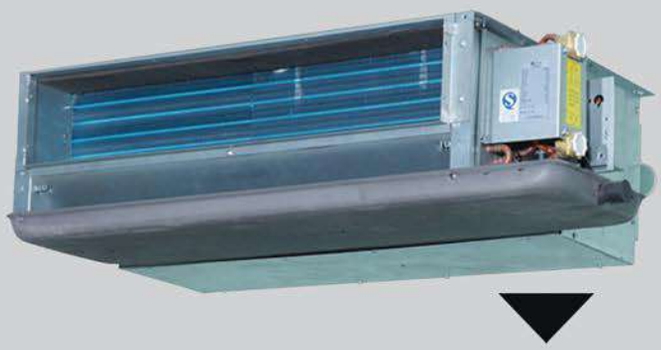
Model	Unit		RCWK300AR	RCWK380AR	RCWK470AR	RCWK600AR	RCWK720AR	RCWK850AR	RCWK900AR
	Panel		RCKPWC	RCKPWC	RCKPWC	RCKPWB	RCKPWB	RCKPWB	RCKPWB
Capacity	Cooling	kW	2,80	3,50	4,50	5,30	7,20	8,50	10,00
	Heating	kW	4,20	5,30	6,80	8,00	10,80	12,80	15,00
Air flow	H / M / L	m³/h	500 / 434 / 306	600 / 506 / 357	800 / 679 / 479	1000 / 867 / 612	1300 / 1098 / 775	1500 / 1272 / 898	1700 / 1445 / 1020
Power Supply	V, Ph, Hz		220 - 240 V ~ 1 Ph- 50 Hz						
Water system	Water flow volume	m³/h	0,48	0,60	0,78	1,10	1,24	1,46	1,55
	Pressure drop	kPa	25	28	30	36	30	38	40
Sound pressure level	H / M / L	dB (A)	40 / 37 / 35	44 / 41 / 38	44 / 41 / 38	44 / 41 / 38	47 / 44 / 41	56 / 52 / 48	56 / 52 / 48
Piping Connection	Water inlet / outlet	mm	20 / 20						
	Condensing water drain	mm	25						
Dimension	Outline, HxWxD	mm	275 x 580 x 580	275 x 580 x 580	275 x 580 x 580	230 x 840 x 840	230 x 840 x 840	285 x 840 x 840	285 x 840 x 840
	Package, HxWxD	mm	350 x 745 x 675	350 x 745 x 675	350 x 745 x 675	310 x 920 x 920	310 x 920 x 920	375 x 920 x 920	375 x 920 x 920
	Weight nett/ gross	kg	22,0 / 24,0	22,0 / 24,0	22,0 / 24,0	28,0 / 32,0	28,0 / 32,0	40,0 / 44,0	40,0 / 44,0
Panel dimension	Outline, HxWxD	mm	30 x 650 x 650	30 x 650 x 650	30 x 650 x 650	50 x 950 x 950	50 x 950 x 950	50 x 950 x 950	50 x 950 x 950
	Package, HxWxD	mm	120 x 710 x 710	120 x 710 x 710	120 x 710 x 710	105 x 1030 x 1030	105 x 1030 x 1030	105 x 1030 x 1030	105 x 1030 x 1030
	Weight nett/ gross	kg	4,0 / 5,0	4,0 / 5,0	4,0 / 5,0	5,0 / 7,0	5,0 / 7,0	5,0 / 7,0	5,0 / 7,0
Standart option			Wireless remote control						

OPTIONAL:
RCK2T3V 3-way valve

Cooling: 12/7ºC inlet/outlet water temperature; 27ºC db / 19ºC wb inlet air temperature.
Heating: 60ºC inlet water temperature; 20ºC inlet air temperature.
The above data may be changed without notice for future improvement on quality and performance.

Concealed ceiling type 2-pipes fan coil unit

Benefits:
Nested in the ceiling, space-saving and noble
High capacity of cooling / heating performance, high efficiency and energy-saving
Adjust the indoor temperature rapidly and averagely
Low noise fan direct driven by single phase, 3 speed permanent split capacitor motor
The air outlet is laid out in the way you desire
Unit constructed by electrostatic galvanized sheet, providing maximum protection against corrosion
Heavy gauge zinc coated steel drainage pan with good insulation processing, avoiding sweating and corrosion



Model			RCWD022AR	RCWD033AR	RCWD042AR	RCWD045AR	RCWD058AR	RCWD079AR	RCWD091AR	RCWD108AR	RCWD126AR
Capacity	Cooling	kW	2,13	3,26	4,17	4,84	5,81	7,92	9,07	11,49	13,00
	Heating	kW	3,48	5,32	6,81	7,91	9,98	13,59	16,02	20,29	22,56
Air flow	H / M / L	m³/h	340/285/210	510/420/320	680/580/420	850/700/520	1020/840/620	1360/1150/840	1700/1400/1000	2040/1650/1250	2380/2000/1480
Power Supply	Type	V,Ph,Hz	220 - 240 V ~ 1 Ph- 50 Hz								
ESP		Pa	12	12	12	12	30	30	30	30	30
Water system	Water flow volume	m³/h	0,37	0,56	0,72	0,83	1,00	1,36	1,56	1,97	2,24
	Pressure drop	kPa	14	20	22	24	34	34	40	42	50
Sound pressure		dB (A)	38	40	42	46	47	47	50	51	52
Piping Connec-tion	Water inlet / outlet	in	3/4 / 3/4								
	Condens-ing water drain	mm	3/4								
Dimen-sion	HxWxD	mm	240x770x472	240x827x472	240x927x472	240x927x472	240x1140x472	240x1440x472	240x1546x472	240x1835x472	240x1835x472
Weight		kg	13,0	15,0	17,0	17,0	20,0	27,0	32,0	36,0	36,0

OPTIONAL:
AE-Y308 wired controller with LCD
RCK2T3V 3-way valve

Cooling: 12/7ºC inlet/outlet water temperature; 27ºC db / 19ºC wb inlet air temperature.
Heating: 60ºC inlet water temperature; 20ºC inlet air temperature.
The above data may be changed without notice for future improvement on quality and performance.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