

## *Multi Air Conditioning System for Buildings*

### **Comparison of Competitors**

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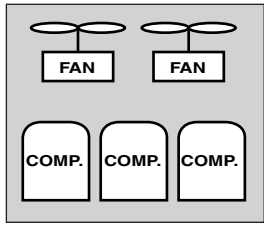
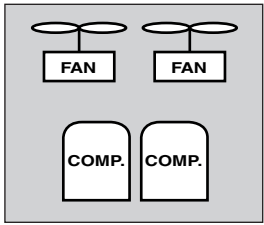
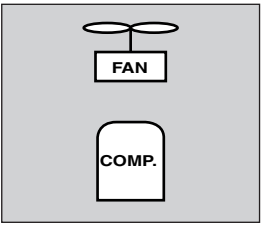
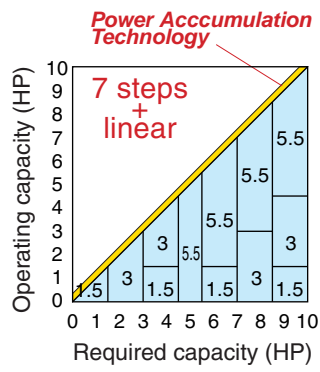
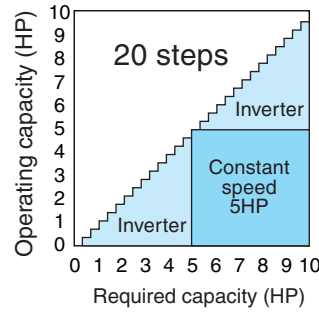
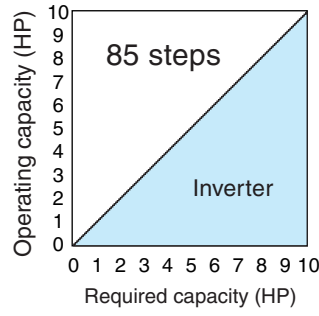
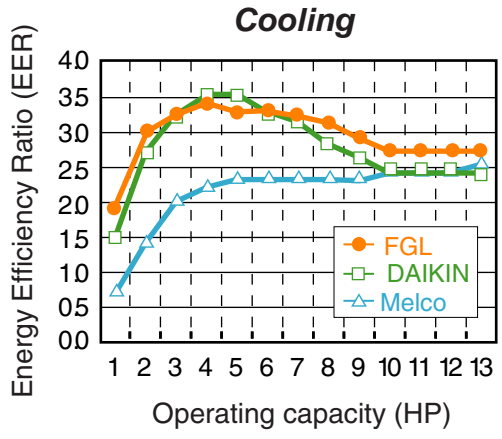
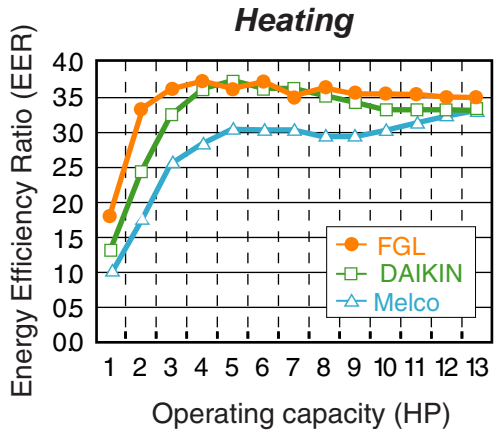
**VRF / Chiller / Roof Top**
  
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FUJITSU GENERAL LIMITED

# 1. Comparison of VRF System

## [ Comparison of Operating System ]

### 1) Structure of Refrigerant Circuit System

	<b>FGL</b>	<b>Daikin</b>	<b>Melco</b>
<b>System</b>	Constant speed + Constant speed + Constant speed 5.5 + 3 + 1.5  2 fans 3 compressors (constant speed)	Constant speed + Inverter 5 + (1.5 ~ 5)  2 fans 2 compressors (inverter + constant speed)	Full inverter (2.5 ~ 10)  1 fan 1 compressor (full inverter)
<b>Operating Capacity Change</b>	 Operating capacity (HP) vs Required capacity (HP) 7 steps + linear Power Accumulation Technology	 Operating capacity (HP) vs Required capacity (HP) 20 steps Inverter Constant speed 5HP	 Operating capacity (HP) vs Required capacity (HP) 85 steps Inverter
<b>Comparison of EER</b>	 <b>Cooling</b> Energy Efficiency Ratio (EER) vs Operating capacity (HP)		 <b>Heating</b> Energy Efficiency Ratio (EER) vs Operating capacity (HP)
<b>Merit</b>	Smooth operation by power accumulation technology through combination of compressor operation and electric expansion valve	Less higher harmonic compared with full inverter	Less starting current. Can control refrigerant flow only by compressor between 2.5HP - 10HP
<b>Demerit</b>	Starting current increases for a short time due to frequent On/Off of compressors	(1) Need to change frequency of inverter compressor quickly while On-Off of fixed speed compressor at around 5HP (2) The refrigerant flow is not smooth because of using low pressure by-pass from high pressure by-pass when operating at less than 1.5HP and 5 - 6.5HP	(1) The refrigerant flow is not smooth because of using low pressure by-pass from high pressure by-pass when operating at less than 2.5HP (2) Can not conform to EMC regulation

## 2) Operating System Summary

	<b>FGL</b>	<b>Daikin</b>	<b>Melco</b>
<b>Model No.</b>	AOY90TPAMF	RSEY10K	PURY-YMF-B
<b>Refrigerant</b>	R407C	R22	R407C
<b>Outdoor unit capacity</b>	28kW (90,000BTU)	28.8kW (99,000BTU)	29.1kW (99,300BTU)
<b>Total operation capacity</b>	2.0kW(7,000BTU) ~ 36.4kW(117,000BTU)		14.6kW (49,650BTU)~ 43.6kW(148,950BTU)
<b>Max. number of indoor units connected</b>	16 units	16 units	16 units
<b>Indoor unit capacity</b>	2.0kW(7,000BTU) ~ 17kW(60,000BTU)	2.2kW(7,000BTU) ~ 28kW(90,000BTU)	2.3kW(8,050BTU) ~ 29.1kW(99,300BTU)
<b>Pipe connection</b>	<ul style="list-style-type: none"> <li>• Line branch /Header branch</li> <li>• Mix combination</li> </ul>		<ul style="list-style-type: none"> <li>• Line branch /Header branch</li> <li>• Mix combination</li> </ul>
<b>Number of pipes</b>	<ul style="list-style-type: none"> <li>• 2 (Cooling only / Heat pump)</li> <li>• 3 (Heat recovery)</li> </ul>	<ul style="list-style-type: none"> <li>• 2 (Cooling only / Heat pump)</li> <li>• 3 (Heat recovery)</li> </ul>	<ul style="list-style-type: none"> <li>• 2 (Cooling only / Heat pump / Heat recovery)</li> </ul>
<b>Actual pipe length</b>	100 m	100 m	100 m
<b>Height difference between outdoor and indoor units</b>	50 m (Setting indoor unit below outdoor unit) 40 m (Setting indoor unit above outdoor unit)	50 m (Setting indoor unit below outdoor unit) 40 m (Setting indoor unit above outdoor unit)	50 m (Setting indoor unit below outdoor unit) 40 m (Setting indoor unit above outdoor unit)
<b>Height difference between indoor units</b>	15 m	15 m	15 m
<b>Height difference between RB units</b>	15 m (Only heat recovery)		

※RB unit (Refrigerant branch unit)

## 2. Comparison of Outdoor unit

### 1) Outdoor Unit Summary

OUTDOOR UNIT(5 ~10HP) O (external static pressure)

Item		FGL	Melco	Daikin	Hitachi	Countermeasure	
1	Line up	Cooling only	10HP	8,10HP	5,8,10HP	5,8,10HP	
		Heat pumps	10HP	8,10HP	5,8,10HP	5,8,10HP	
		Heat recovery	10HP	8,10HP	8,10HP	5,8,10HP	
		5mmH <sup>2</sup> O (external static pressure)		3mmH <sup>2</sup> O	5mmH <sup>2</sup> O		
2	Dimensions/ Carrying space	Height (10HP) (mm)	1,380	1,715	1,440	1,550	
		Width (10HP) (mm)	1,300	990	1,280	1,400	
		Depth (10HP) (mm)	650	840	690	785	
		Square measure (10HP) (m <sup>2</sup> )	0.845	0.832	0.883	1.099	
		Cubic measure (10HP) (m <sup>3</sup> )	1.166	1.426	1.272	1.703	
3	Weight	(10HP Heat recovery) (kg)	(285)	270	300	355	
4	Noise	50Hz (dB(A))	57	58	58	58	
		60Hz (dB(A))		58	58		
5	Compressor	Number	3 non inverter	1 inverter	1 inv, 1 non inv	1 inverter	
		Control frequency	ON/OFF	1 Hz step	5 Hz step and ON/OFF		
6	Current	Max.starting current (A)	68	12	67	61	
7	E.E.R (e.g.50Hz380V)	E.E.R for full load(100%) cooling	2.80	2.47	2.37	2.75	Melco and Hitachi 19.5°C WB (Indoor)
		E.E.R for full load(100%) heating	3.5	2.99	3.42	3.39	Melco and Hitachi 21.0°C DB (Indoor)
8	Control refrigerant for cooling	Refrigerant amount	less	less	more	more	
		Refrigerant phase in liquid pipe	liquid and gas	liquid	liquid and gas		
		Capacity loss in liquid pipe (40/90m)		0.94/0.83	0.92/0.81	0.93/0.83	
9	Refrigerant	Enclosed amount (kg)	13.0(R407c)	14.0(R407c)	23.5(R22)	20.5(R22)	
		Additional amount ( 12.7/9.52)	0.1/0.06kg/m	0.12/0.06kg/m+2kg	0.10/0.05kg/m-2kg	0.13/0.065kg/m	
		Total amount	less	less	more	more	
10	Piping for cooling only	Branch pipe shape	Y	T	Y	Y	
		Horizontal limitation of branch pipe	Yes	No	Yes		
		Insulation for liquid pipe	(Yes)	Yes	No		
11	Reliability	Error rate by parts number	more(bad)	less(good)	more(bad)	more(bad)	Melco has 1 comp and 1 fan.
		Error rate by connection number		less	more		
		Emergency run by user	No	No	No		
12	Service	Refrigerant amount display		Yes	No		
13	External controlling	Adapter for sequential start		No(needless)	Yes		
		Heating/Cooling selector	No(needless)	Yes	Yes		
		Fan/temperature control selector	Yes	Yes	Yes		
		Comp. run/stop monitor	No	Yes	No		
		Error/normal monitor		Yes	No		

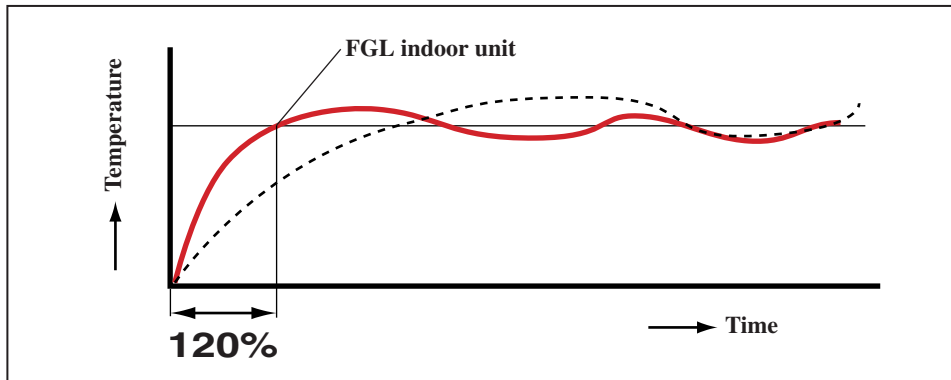
### 3. Comparison of Indoor Unit

#### 1) Features

##### 1. Reducing Start-up Time

- The time from the start of cooling and heating operation up to reaching the set temperature is reduced.

At start-up, 120% output by rated value (Conventional model      % shorter)



##### 2. Accurate Control of Room Temperature

- High performance electric expansion valve always controls optimum refrigerant circulation volume, which makes it possible to maintain precise temperature control

	<b>FGL</b>	<b>Daikin</b>	<b>Melco</b>
Temperature control method	Control refrigerant circulation volume by high performance electric expansion valve	Control refrigerant circulation volume	Control refrigerant circulation volume

##### 3. Continuous cooling Operation at Low Outdoor Temperature $-5^{\circ}\text{C}$

- Continuous cooling operation is possible by controlling the circulation volume of refrigerant, of which temperature and pressure are adjusted by the control of heat exchanger capacity of indoor unit and high performance electric expansion valve

(Performance improved from our conventional models)

	<b>FGL</b>	<b>Daikin</b>	<b>Melco</b>
Lowest outdoor temperature	$-5^{\circ}\text{C}$	$-5^{\circ}\text{C}$	$-5^{\circ}\text{C}$

##### 4. Indication for Filter Cleaning

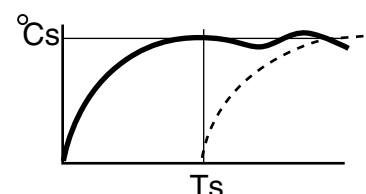
- The time for cleaning filter is detected by air outflow temperature sensor and indoor unit operating time and will be indicated by a lamp.

	<b>FGL</b>	<b>Daikin</b>	<b>Melco</b>
Detection method	The choking of filter is checked by operating time and will be indicated.	Checked only by operating time	Checked only by operating time

##### 5. Favorite Temperature Timer

- Timer which enables to provide the desired comfortable temperature from the time set on the timer: The period from start of the operation to reach the desired set temperature is calculated and memorized. Therefore the operation starts automatically a certain time before the time on the timer, so that the room will be at the desired comfortable temperature by the set time.

	<b>FGL</b>	<b>Daikin</b>	<b>Melco</b>
ON timer	The desired temperature starts from the set time	Operation starts from the set time	Operation starts from the set time








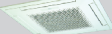



## 2) Basic Functions

Type	Function		FGL	Daikin	Melco
<b>Cassette</b>	Louver setting (Standard/draft prevention/ceiling dirt prevention)		<input type="radio"/> Dealing structurally	<input type="radio"/>	<input checked="" type="checkbox"/>
	Auto closed flap		<input type="radio"/>	—	<input type="radio"/>
	Demand input	Cooling/Heating operation compulsorily stops at peak-cut	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="radio"/>
	Power start/stop function	Start/Stop by On/Off of main power supply	<input type="radio"/> Auto restart	—	<input type="radio"/>
<b>Duct</b>	Demand input	Cooling/Heating operation compulsorily stops at peak-cut	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="radio"/>
<b>Ceiling</b>	Auto swing		<input type="radio"/> Double	—	<input type="radio"/> Up/down only
	Up/down louver setting		<input type="radio"/> 4 steps	<input type="radio"/> 5 steps	<input type="radio"/> —
	Draft prevention	Horizontal air outflow when heating starts or thermostat is off	<input type="radio"/>	<input type="radio"/>	<input checked="" type="checkbox"/>
	Dry		<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
	Demand input		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="radio"/>
<b>Wall Mounted</b>	Auto closed flap		<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
	Auto swing		<input type="radio"/> Double	<input type="radio"/> Up/down only	—
	Up/down louver setting		<input type="radio"/> 4 steps	<input type="radio"/> 5 steps	<input type="radio"/> —
	Louver setting memory	Starts with same louver position of previous operation	<input type="radio"/>	<input type="radio"/>	—
	Draft prevention	Horizontal air outflow when heating starts or thermostat is off	<input type="radio"/>	<input type="radio"/>	<input checked="" type="checkbox"/>
	Dry		<input type="radio"/>	<input type="radio"/>	—
	Demand input		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="radio"/>

## 3) Line-up

9 types, 35 models ranging from 2.2kW (7,000 BTU) to 17.5kW (60,000 BTU)

Type		Ceiling/Floor	Ceiling	Duct	Duct	Duct	Duct (High Static Pressure)	Cassette (compact)	Cassette	Wall mounted
										
Capacity	(kW)	(BTU/h)								
	16.0	54,000	(17.5)	(60,000)						●
14.0	45,000		●						●	
11.2	36,000		●						●	
8.8	30,000		●						●	●
7.0	24,000	●							●	●
5.2	18,000	●			●				●	●
4.0	14,000	●			●				●	●
3.6	12,000	●			●				●	
2.8	9,000			●					●	
2.2	7,000			●					●	

## 4. Comparison of Control System

### 1) System

		<b>FGL</b>	<b>Daikin</b>	<b>Melco</b>	
<b>Net name</b>		Undecided	DIII-NET	M-NET	
<b>Wiring system</b>		Non-polarity 2 wire	Non-polarity 2 wire	Non-polarity 2 wire	
<b>System concept</b>		One indoor unit failure does not affect total system as parallel processing is adopted.	Various control equipment can be combined and hierarchical distributed system can be built. (Central controller, on/off controller, standard wire, etc.)	Risk-diversifying design. Even if upper order building control system breaks down, total system can survive and MELANS back-up function works.	
<b>Connection with other apparatus</b>		Undecided	Total control over heat exchangers and central air conditioning equipment	Operating with ventilation related equipment freely (from remote controller on hand or central controller)	
<b>Remote controller wiring connection</b>		Remote controller wiring connection with standard remote controller (within same refrigeration system)	Remote controller wiring connection with standard remote controller	Remote controller wiring connection during MA remote controller (within same refrigeration system)	
<b>Change method of group setting (Simultaneous group control by software)</b>		Group setting is possible with central controller and PC controller	Group setting is set by remote controller on hand	Group setting is possible with remote controller on hand (network remote controller) and system controller	
<b>Error code display</b>		Error code displayed when it occurs. Failure history can be checked with remote controller on hand and central remote controller	Error code displayed when it occurs	Error code displayed when it occurs. Service efficiency improved with failure history record	
<b>Connectable units to 1 system (without using gateway etc.)</b>		400 units	128 units	50 units	
<b>Wiring system</b>		One control wiring system for refrigerant system	Wiring for each refrigerant	Wiring for each refrigerant	
<b>Monitoring system</b>		Can collect information of each unit on PC by only connecting PC to communication line (efficient maintenance)	Need D-BIP station	Made to customer's order	
<b>Max. connectable indoor units per system</b>		400 units	128 units	50 units (Systems can be connected each other with gateway)	
<b>Maximum extension</b>		3000m	1000m	200m	
<b>Total wiring length</b>		3000m	2000m	—	
<b>Address setting</b>	<b>Auto</b>	Yes	Yes	—	
	<b>Manual</b>	Yes	—	Yes	
	<b>Remote controller</b>	Yes	Yes (only central address)	—	
	<b>Central controller</b>	Yes	—	—	
<b>Minimum setting item in single refrigeration system</b>		—	—	Outdoor unit address Indoor unit address	
<b>Minimum setting item in two or more refrigeration system</b>		Refrigeration system address	—	Outdoor unit address Indoor unit address	
<b>Setting item when connecting to central controller</b>		Group setting	Central control address	Group setting	
<b>Overlapped group setting</b>		Yes	Unconfirmed	Yes	
<b>Special unit (group) operation from two or more central controllers</b>		Yes	Yes "Main" remote controller and "Sub" remote controller can be set. Whether group setting is same setting or is unknown.	Yes "Main" remote controller and "Sub" remote controller can be set. Group setting can be made optional, but overlapped group setting is not recommended.	
<b>Features relating to communication system</b>	<b>Single refrigeration system</b>	<b>Merit</b>	No special setting is required once wiring work is done. (Automatic setting can be made)	No special setting is required once wiring work is done. (Automatic setting can be made)	Series wiring is not needed as "remote controller group" is set by software. As remote controller is connected to bus line, free wiring is possible
		<b>Demerit</b>	—	—	Address setting is made only manually (rotary switch) based on "remote controller group"
	<b>Two or more refrigeration system</b>	<b>Merit</b>	Wiring work is easy as different refrigeration system can be connected with one series wiring. (same as MHI, Hitachi and Matsushita)	No special setting is required once wiring work is done. (Automatic setting can be made)	Series wiring is not needed as "remote controller group" is set by software. As remote controller is connected to bus line, free wiring is possible
		<b>Demerit</b>	Setting to distinguish refrigeration systems is required.	Wiring is required for each refrigeration system.	Wiring is required for each refrigeration system.
	<b>Others</b>	<b>Merit</b>	400 indoor units can be connected with one communication wiring system.	When central controller is not connected, only wiring work is needed and no setting is required.	—
		<b>Demerit</b>	"Remote controller wiring is 3 wire system with polarity"	When central remote controller is used, wired remote controller must be once connected for central address setting even in case of wireless model.	Automatic address is not possible.

## 2) Central Remote Controller

• Functions which are also equipped with wired remote controller

		<b>FGL</b> (UTB-YCA)	<b>Daikin</b> (DCS302B1)	<b>Melco</b> (MJ-103MTR-B)
<b>Type of control</b>	Control	○		○
	Group control	○		○
	Remote controller group control	○	○	-
<b>Setting item</b>	Central operation/stop	○	○	○
	Operation/Stop	●	○	○
	Operation mode setting	●	○	○
	Air flow mode setting	●	○	○
	Room temperature setting	●	○	○
	On timer	●		○
	Off timer	●		○
	Weekly timer	●		○
	Setting timer	○		
	Up/down air direction flap	●		
	Up/down air direction swing setting	●		
	Right/left air direction flap	●		
	Right/left air direction swing setting	●		
	Zone operation indication	●		
	Save operation indication	●		
	Group setting Manual(by indoor)	○	○	○
	Group setting Auto	○	○	○
	Group setting Manual(by operation)	○		
Failure history	○	○	○	







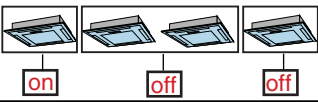
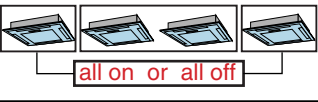
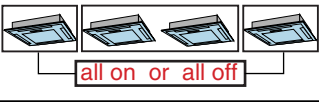



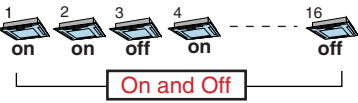
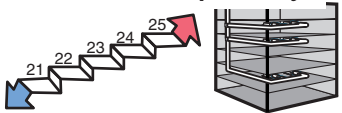



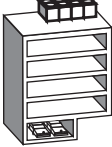

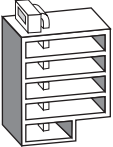




		<b>FGL</b> (UTB-YCA)	<b>Daikin</b> (DCS302B1)	<b>Melco</b> (MJ-103MTR-B)
<b>Setting item</b>	Same setting display	○		
	Change of indoor unit address	○		
	Total operation memory	○		
	Filter reset	○		○
<b>Standard remote controller setting when using standard remote controller jointly</b>	Total operation prohibited	○	○	○
	Operation/Stop	○	○	○
	Operation mode setting	○	○	○
	Air flow mode setting	○		
	Room temperature setting	○	○	○
	Air direction flap setting	○		
	Timer mode setting	○		
	Filter reset	○		○
<b>Number of connections</b>	Number of groups	64	64	50
	Number of remote controller groups	64	64	-
	Maximum number of connectable indoor units	64	64	50
	Number of connectable main units	64	2	
	Main unit leaflet price (¥10k)		10	20

		<b>FGL</b> (UTB-YCA)	<b>Daikin</b> (DCS302B1)	<b>Melco</b> (MJ-103MTR-B)
<b>Display</b>	On/Off	●	○	- - - - - Display by dialog method - - - - -
	Operation mode setting	●	○	
	Air flow mode setting	●	○	
	Room temperature setting	●	○	
	On timer	●		
	Off timer	●		
	Weekly timer	●		
	Up/down air direction setting	○		
	Up/down air direction swing setting	●		
	Right/left air direction setting	○		
	Right/left air direction swing setting	●		
	Zone operation indication	○		
	Save operation indication	○		
	Segment display (1)	○	○	
	Segment display (2)	○	○	
	Filter cleaning	○	○	
	Display of indoor unit address	○		
	Now centrally controlling	○	○	
	Check/Test operation	○	○	
	Now cooling/heating priority operation	○		
	Error display	○	○	
	Current time	●		
	Day of the week	●		

		<b>FGL</b> (UTB-YCA)	<b>Daikin</b> (DCS302B1)	<b>Melco</b> (MJ-103MTR-B)
<b>Button</b>	On/Off			○
	Operation	○	○	○
	Off	○	○	○
	Operation mode setting	●	○	○
	Air flow mode setting	●		
	Room temperature setting	●	○	○
	Timer setting	●		
	Up/down air direction setting	●		
	Up/down air direction swing setting	●		
	Right/left air direction setting	●		
	Right/left air direction swing setting	●		
	Group setting	○	○	
	Control/Group	○	○	○
	Filter reset	○	○	○
	Setting of while centrally controlling	○	○	○
	Group selection setting	○	○	○
	Test operation/Check		○	○
	Set	●	○	
	Clear		○	
	Batch operation/stop	○		
System display		○		
Error code memory clear		○		



## 5. Comparison of VRF and Other system

	VRF system	Chiller system	Roof top system
Transfer media			
Heat carrying capacity	49 kcal/kg  (10 times higher than Chiller)	5 kcal/kg 	1.2 kcal/kg 
Individual control	Indoor unit is controlled individually 	Not possible 	Not possible 
Freely selectable operation	Cooling and heating can be operated simultaneously 	Not possible 	Not possible 
Energy saving	Partial load implies 40 to 70% less energy consumption 	Not possible	Not possible
Room temperature	Temperature of room can be controlled precisely 	Not possible 	Not possible 
Operating range	Wide operating range under cooling and heating operation 	Not possible	Not possible
Installation space	No need 	Extra machine room 	Ducting space inside the building 
Maintenance	No need	Periodic overhaul 	No need
Reliability	The system does not stop in entire building 	If indoor unit breaks down, the system stops in entire building 	The system does not stop in entire building 

# Specifications

## 1) Cooling Type

MODEL		MANUFACTURE	<b>FGL</b>	<b>Daikin</b>	<b>Melco</b>	
		MODEL NAME	AO90	RSX10K7W1	PUY-250YMF-B	
INPUT POWER		V/Ph/Hz	380-415/3/50	380-415/3/50	380/400/415/3/50	
COOLING CAPACITY		kW	28.0	28.0	29.1	
		BTU/h	95 600	95 600	99 300	
HEATING CAPACITY		kW	-	-	-	
		BTU/h	-	-	-	
INPUT (kW)		COOLING	9.4		11.8	
		HEATING	-	-	-	
CURRENT (A)		COOLING	16.2			
		HEATING	-	-	-	
STARTING CURRENT (A)		COOLING	63.0		19.9/18.9/18.2	
		HEATING	-	-	-	
E.E.R (kW/kW)		COOLING	2.98		2.58	
		HEATING	-	-	-	
FAN SPEED (rpm)		HIGH	730			
		LOW	360			
AIR FLOW		m <sup>3</sup> /h	9800	10200	11100	
FAN TYPE x Q'ty			Propellar x2	Propellar x2	Propellar x1	
FAN MOTOR OUTPUT		W	150 x2		350	
COMPRESSOR	Q'ty		3(Const.3)	2(Const.1, Inv.1)	1(Inv,1)	
	MOTOR OUTPUT	kW		3.5+3.75	7.5	
DIMENSIONS HxWxD		NET(mm)	1380x1300x650	1440x1280x690	1715x990x840	
		GROSS(mm)	1535x1400x770			
WEIGHT		NET (kg)	280	250	250	
		GROSS (kg)	320			
NOISE (dB[A])		dB[A]	57	57	58	
CONDITION		INDOOR AIR TEMP. DB/WB, °C	COOLING	27/19	27/19	27/19.5
			HEATING			
		OUTDOOR AIR TEMP. DB/WB, °C	COOLING	35/-	35/-	35/-
			HEATING			
PIPE	LENGTH	m	7.5	5	5	
		HEIGHT	m	0	0	0
REFRIGERANT		TYPE	R407C	R22	R407C	
		CHARGE	10.5	17.7		
PIPE		LIQUID	12.7	12.7	12.7	
		DISCHARGE GAS	-	-	-	
		SUCTION GAS	28.6	28.6	28.6	
MAX PIPE HEIGHT		INDOOR UNIT BELOW	m	50	50	50
		INDOOR UNIT ABOVE	m	40	40	40
MAX PIPE LENGTH		m	100	100	100	
OPERATION		COOLING	°C	-5 to 52 DB	-5 to 43 DB	-5 to 43 DB
		HEATING	°C	-	-	-

# Specifications

## 2) Heat Pump Type

MODEL		MANUFACTURE	<b>FGL</b>	<b>Daikin</b>	<b>Melco</b>	<b>MHI</b>	
		MODEL NAME	AO90	RSXY10K7W1	PUHY-250YMF-B	FDCP280HKXE2	
INPUT POWER		V/Ph/Hz	380-415/3/50	380-415/3/50	380-415/3/50	380-415/3/50	
COOLING CAPACITY		kW	28.0	28.0	29.1	28.0	
		BTU/h	95 600	95 600	99 300	95 600	
HEATING CAPACITY		kW	31.5	31.5	32.6	31.5	
		BTU/h	107 500	107 500	111 200	107 500	
INPUT (kW)		COOLING	9.4		11.8	11.7	
		HEATING	10.0		10.9	9.4	
CURRENT (A)		COOLING	16.2			21	
		HEATING	17.0	-			
STARTING CURRENT (A)		COOLING	63.0		19.9/18.9/18.2		
		HEATING			18.4/17.4/16.8		
E.E.R (kW/kW)		COOLING	2.98		2.58	2.39	
		HEATING	3.15		3.10	3.35	
FAN SPEED (rpm)		HIGH	730				
		LOW	360				
AIR FLOW		m <sup>3</sup> /h	9800	10200	11100	10800	
FAN TYPE x Q'ty			Propellar x2	Propellar x2	Propellar x1	Propellar x2	
FAN MOTOR OUTPUT		W	150 x2		350	100X2	
COMPRESSOR		Q'ty	3(Const.3)	2(Const.1, Inv.1)	1(Inv,1)	2(Const.1, Inv.1)	
		MOTOR OUTPUT	kW		3.5+3.75	7.5	3.5+3.75
DIMENSIONS HxWxD		NET(mm)	1380x1300x650	1440x1280x690	1715x990x840	1450x1350x600	
		GROSS(mm)	1535x1400x770				
WEIGHT		NET (kg)	280	250	255	265	
		GROSS (kg)	320				
NOISE (dB[A])		dB[A]	57	57	58	59	
CONDITION		INDOOR AIR TEMP. DB/WB, °C	COOLING	27/19	27/19	27/19.5	27/19
			HEATING	20/-	20/-	21/-	20/-
		OUTDOOR AIR TEMP. DB/WB, °C	COOLING	35/-	35/-	35/-	35/-
			HEATING	7/6	7/6	7/6	7/6
PIPE		LENGTH	m	5	5		
		HEIGHT	m	0	0	0	
REFRIGERANT		TYPE	R407C	R22	R407C	R407C	
		CHARGE	10.5	17.7		12.0	
PIPE		SIZE, D=mm	LIQUID	12.7	12.7	12.7	12.7
		DISCHARGE GAS	-	-	-	-	
		SUCTION GAS	28.6	28.6	28.6	28.6	
MAX PIPE HEIGHT		INDOOR UNIT BELOW	m	50	50	50	50
		INDOOR UNIT ABOVE	m	40	40	40	40
MAX PIPE LENGTH		m	100	100	100	100	
OPERATION		COOLING	°C	-5 to 52 DB	-5 to 43 DB	-5 to 43 DB	-5 to 43 DB
		HEATING	°C	-15 to 21 DB	-15 to 15.5 WB	-15 to 15.5 WB	-15 to 18.5 WB

# Specifications

## 3) Heat Recovery Type

MODEL		MANUFACTURE	<b>FGL</b>	<b>Daikin</b>	<b>Melco</b>	
		MODEL NAME	AO90	RSEY10K7W1	PURY-P250YMF-B	
INPUT POWER		V/Ph/Hz	380-415/3/50	380-415/3/50	380/400/415/3/50	
COOLING CAPACITY		kW	28.0	28.0	29.1	
		BTU/h	95 600	95 600	99 300	
HEATING CAPACITY		kW	31.5	31.5	32.6	
		BTU/h	107 500	107 500	111 200	
INPUT (kW)		COOLING	9.4		11.8	
		HEATING	10.0		10.9	
CURRENT (A)		COOLING	16.2			
		HEATING	17.0			
STARTING CURRENT (A)		COOLING	63.0		19.9/18.9/18.2	
		HEATING			18.4/17.4/16.8	
E.E.R (kW/kW)		COOLING	2.98		2.47	
		HEATING	3.15		3.10	
FAN SPEED (rpm)		HIGH	730			
		LOW	360			
AIR FLOW		m <sup>3</sup> /h	9800	10200	11100	
FAN TYPE x Q'ty			Propellar x2	Propellar x2	Propellar x 1	
FAN MOTOR OUTPUT		W	150 x2		55x2+65+80	
COMPRESSOR	Q'ty		3(Const.3)	2(Const.1, Inv.1)	1(Inv.1)	
	MOTOR OUTPUT	kW		3.75+3.75	7.5	
DIMENSIONS HxWxD		NET(mm)	1380x1300x650	1440x12800x690	1715x990x840	
		GROSS(mm)	1535x1400x770			
WEIGHT		NET (kg)	280	300	270	
		GROSS (kg)	320			
NOISE (dB[A])		dB[A]	57	57	58	
CONDITION		INDOOR AIR TEMP. DB/WB, °C	COOLING	27□/19□	27□/19□	27□/19□
			HEATING	20/-	20/-	20/-
		OUTDOOR AIR TEMP. DB/WB, °C	COOLING	35/-	35/-	35/24
			HEATING	7/6	7/6	7/6
PIPE	LENGTH		m	7.5	5	5
		HEIGHT		m	0	0
REFRIGERANT		TYPE	R407C	R22	R407C	
		CHARGE	10.5	23.5		
PIPE		LIQUID	12.7	12.7	19.1	
		DISCHARGE GAS	19.1	19.1	-	
		SUCTION GAS	28.6	28.6	28.6	
MAX PIPE HEIGHT		INDOOR UNIT BELOW	m	50	50	50
		INDOOR UNIT ABOVE	m	40	40	40
MAX PIPE LENGTH			m	100	100	100
OPERATION		COOLING	°C	-5 to 52 DB	-5 to 43 DB	-5 to 43 DB
		HEATING	°C	-15 to 21 DB	-10 to 15.5 WB	-12 to 15 WB
		COOL&HEAT	°C	-15 to 21 DB	-5 to 15.5 WB	-5/-6 to 2/15.5 WB