ISO 9001
Certified number:09 100 79269
ISO 14001
Certified number:104692
Fujitsu General (Shanghai) Co., Ltd.

ISO 9001
Certified number:09 100 89394
ISO 14001
Certified number:09 104 9245
Fujitsu General (Thailand) Co., Ltd.

N807
All products specified in this brochure comply with the Australian Communications Authority's (ACA) requirements for Electromagnetic Compatibility (EMC).

Product specifications are subject to change without notice.

Distributed by :

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Refrigerant
R22 & R407C

AIRSTAGE™

Variable Refrigerant Flow System

Multi Air Conditioning System for Buildings

The Intelligent Choice in Comfort

S SERIES

FUJITSU GENERAL LIMITED

Building air conditioning developed to

Providing highly efficient, energy-saving operation.

HEAT PUMP & COOLING ONLY SERIES

A high-performance operating system utilising innovative triple high-efficiency compressors and advanced refrigerant flow control technology (Power Balance Technology). The result is superior energy savings and impressively low operating noise. Capable of connecting up to 13 (22.4kW) or 16 (28kW) indoor units to one outdoor unit. Employs environmentally friendly R407C refrigerant.

OUTDOOR UNITS LINE UP

R407C

Heat Pump Type
AO90TPBMF(28kW)
AO72TPBMF(22.4kW)

Cooling Only Type
AO90EPBMF(28kW)
AO72EPBMF(22.4kW)

R22

Heat Pump Type
AO90RPBMF(28kW)
AO72RPBMF(22.4kW)

Cooling Only Type
AO90APBMF(28kW)
AO72APBMF(22.4kW)

INDOOR UNIT

INDOOR UNITS LINE UP

Choose the right indoor unit to match the building requirements.

Various combinations of indoor unit type and capacity 12 types 45 models, ranging from 2.15kW to 17.0kW.

Cassette Type (Compact)

Compact design for easy installation and maintenance

see page 26

Cassette Type

Slim cassette designed for restricted ceiling voids. Slim Type

Compact but powerful for all user applications.

see page 27

Duct Type (Compact)

Equally suitable for ceiling installation or at floor level.

see page 28

Duct Type

Ultra-slim duct air conditioner for those tight ceiling spaces.

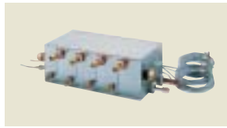
see page 28

High Static Pressure Duct Type

High static pressure duct type with no installation restrictions.

see page 29

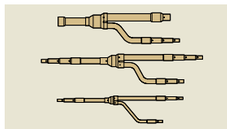
RB (Refrigerant Branch) Unit



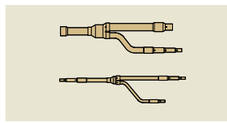
Multi Type
Model : UTF-Y90A4A

Single Type
Model : UTF-Y54A1A

Separation tube

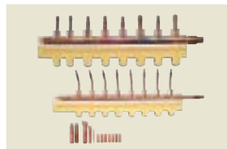


For Heat recovery
Model : UTR-BP90MA
UTR-BP54MA
Separation tubes are available for installation as necessary.

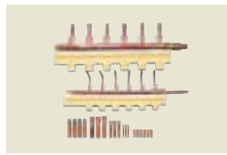


For Heat pump / Cooling only
Model : UTR-BP90TA
UTR-BP54TA
Separation tubes are available for installation as necessary.

Header



For Heat pump / Cooling only
Model : UTR-HD908A
For Heat recovery
Model : UTR-HD908R
Headers are available for installation as necessary.
*Reducer is attached to each header kit.

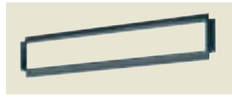


Heat pump / Cooling only
Model : UTR-HD906A
For Heat recovery
Model : UTR-HD906R
Headers are available for installation as necessary.
*Reducer is attached to each header kit.

Grille kit

Model: UTG-UDYD-W
UTG-UDGD-W
Grille for compact cassette type indoor unit.

Flange



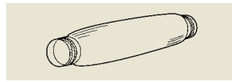
[Square]
Model : UTD-SF045T
For low pressure duct type
205 x 1,063, L=40 (mm)

[Round]
Model : UTD-RF204
For low pressure duct type
ϕ195 (ϕ205), L=85 (mm)

Outlet chamber

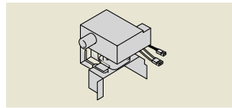
Model : UTD-BC200
ϕ195 (ϕ200), L=85,
Base size: H x W x D (mm)
297 x 1,066 x 400

Flexible duct



Model : UTD-RD202
For high static pressure duct type
ϕ200, L=2m

Drain water riser kit



Model : UTR-DPB241
For ceiling type

Long-life filter

Model : UTD-LF270
For low static pressure duct type
Model : UTD-LF400
For high static pressure duct type

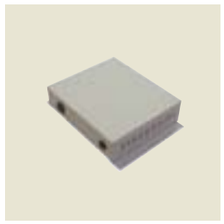
Remote sensor unit

Model : UTD-RS100
Thermo-sensor for sensing the temperature of arbitrary place in the room

Optional Parts

As for the other optional parts, refer to the other page of this catalog.

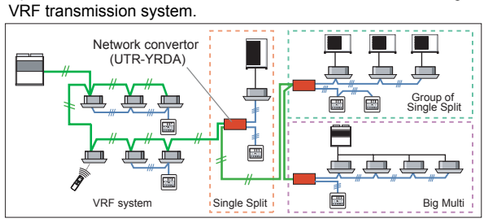
Network Convertor — Model : UTR-YRDA



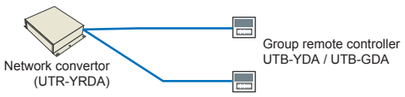
- This network converter is to be used for connecting single split system or group remote controller with the VRF system.
- Please select the function by switching the dip switch during the installation work.

Dimensions (mm)
(H x W x D) : 67 x 288 x 211
Weight (g) : 1,500

·Split type systems can be controlled from a central remote controller or PC controller by connecting it to the VRFís network convertor.
·Standard remote controller and central remote controller provide On/Off control, master control, temperature and fan control, etc.
·Up to 16 single units can be contnected to and controlled with Network convertor.
·Up to 100 units of Network convertor can be connected in a single VRF transmission system.

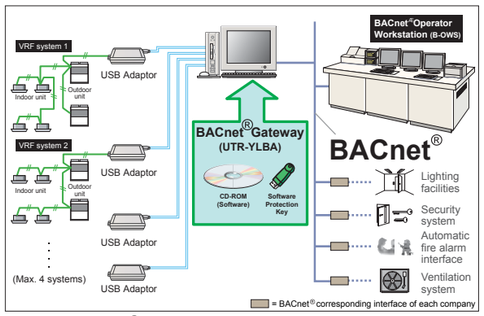


·For connection between Group remote controller and VRF system.



BACnet® Gateway [Software] — Model : UTR-YLBA

·The central control of maximum 1600 indoor units can be realized by connecting the VRF system to the BACnet,® a global standard of the open network
·ANSI / ASHRAE Standards 135-2001BACnet Application Specific Controller (B-ASC) BACnet® / IP over Ethernet
·It can be connected up to 4 systems (1600 indoor units / 400 outdoor units) for 1 gateway.
·It can be corresponded to the large-scale buildings and hotels etc.

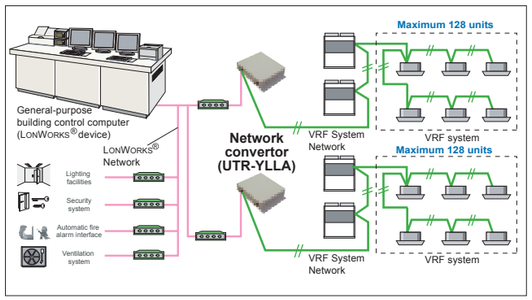


*USB Adaptor is XLON® USB Adaptor of DH electronics company.
**Twisted pair cable [22AWG(0.65mm) Level 4 shielded cable recommendation]

Network Convertor — Model : UTR-YLLA

Dimensions (mm)
(H x W x D) : 67 x 288 x 211
Weight (g) : 1,500

·For connection between our LONWORKS® system and a LONWORKS® open network for the management of a small to medium-sized BMS and VRF system.
·By using the UTR-YLLA, the VRF system can be centrally controlled or monitored from a BMS with a LONWORKS® interface.
·Up to 128 Indoor units can be connected to 1 unit of Network Convertor.

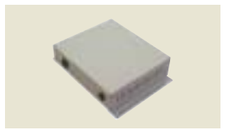


Transmission Adaptor — Model : UTR-YTMA

Dimensions (mm)
(H x W x D) : 100 x 288 x 110
Weight (g) : 1,300

·For the air condition of the medium and large size building, the control software can control and monitor the air conditioners together with the ones in the other buildings.
·This device enables control by other equipment via an Inter Link cable.

Signal Amplifier — Model : UTR-YRPC

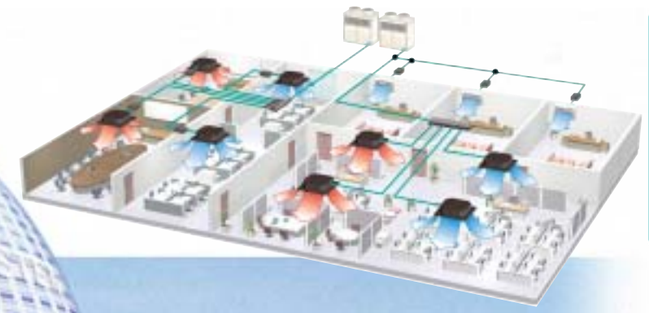


Dimensions (mm)
(H x W x D) : 67 x 288 x 211
Weight (g) : 1,500

·If the total length of Transmission Line exceeds 500m, or the number of units exceeds 62 units, a Signal Amplifier is required.
·By using this unit, it can connect the following number of each units,
(1) Transmission Line : Max. 2000m
(2) Connectable Units : Max. Indoor Unit : 400 units
Max. Outdoor Unit : 100 units
Max. Central Remote Controller : 16 unit
·Up to 8 signal amplifiers can be installed in a single VRF system.

care for people and the environment

Non-inverter system free of electrical noise emissions.



HEAT RECOVERY SERIES

TAGE™ ant Flow System

A high-performance operating system utilising innovative triple high-efficiency compressors and advanced refrigerant flow control technology (Power Accumulation Technology). With heat recovery operation, cooling and heating can be performed simultaneously and automatically within the same refrigerant system. This approach provides maximum energy efficiencies. Capable of connecting up to 16 (28kW) indoor units to one outdoor unit. Employs environmentally friendly R407C refrigerant.

OUTDOOR UNIT

R407C

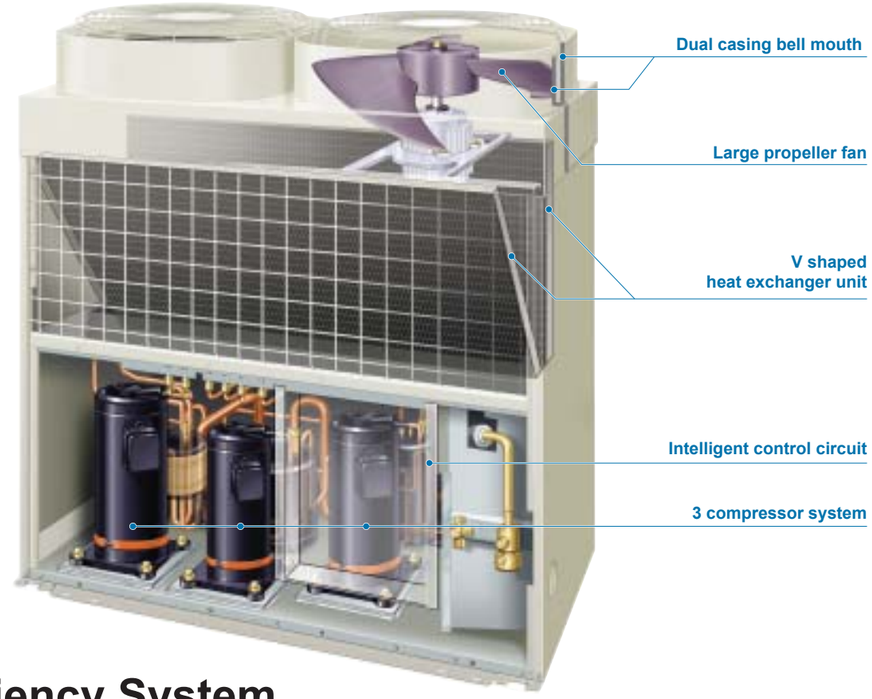
Heat Recovery Type
AO90MPAMF(28kW)

Floor & Ceiling Universal Type	Ceiling Type	Wall Mounted Type (Compact)	Wall Mounted Type	Ceiling Wall Type
				
This slim unit can be ceiling mounted or installed floor standing. Features double auto swing louvers.	Attractive design and ultra-slim build still permits extra wide air flow. Features double auto swing louvers and extremely quite.	Vertical and horizontal symmetrical design matched to the interior decor. • Wall Mounted Type (Compact) indoor unit can't be operated in the Heat Recovery Type System.	"Double Auto Swing" feature provides Omni-Directional Air Flow control	Discreet air intake is part of its attractive design. Double auto swing louvers.
see page 29	see page 30	see page 30	see page 31	see page 31

New operating system achieves high stan

R407C	Heat Pump Type	Cooling Only Type
	AO90TPBMF(28kW)	AO90EPBMF(28kW)
	AO72TPBMF(22.4kW)	AO72EPBMF(22.4kW)

R22	Heat Pump Type	Cooling Only Type
	AO90RPBMF(28kW)	AO90APBMF(28kW)
	AO72RPBMF(22.4kW)	AO72APBMF(22.4kW)



High Efficiency System

New operating system

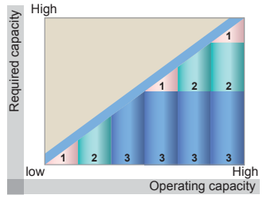
The newly developed operating system controls the refrigerant flow rate inside the refrigerant circuit through the use of dual control technology, i.e. compressor capacity control technology and power balance control technology. This approach delivers high operating efficiencies through optimum refrigerant flow.

Cooling COP	3.11※
Heating COP	3.71※

※ COP values are base on our own testing method. (AO90TPBMF)

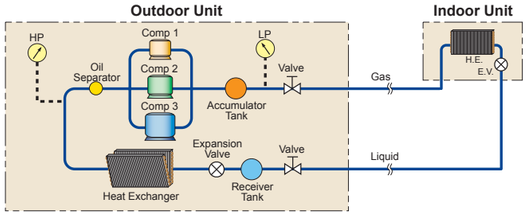
Compressor Capacity Control

Compressor capacity control is achieved through the optimum balance of three individually rated compressors.
This approach is extremely efficient as it provides a wide range of refrigerant flow rate options. Furthermore, by controlling the amount of gas "pumped" by each compressor, the system can accurately adjust refrigerant flow rates.

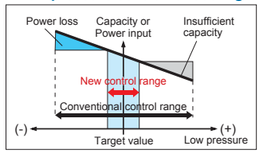


Power Balance Control

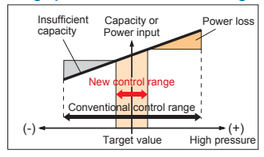
Power balance control technology achieves high operational efficiencies by detecting low pressure (evaporating temperature) during cooling and high pressure (condensing temperature) during heating and precisely controls the optimum refrigerant condition via refrigerant flow rate (capacity). Waste through excessive refrigerant flow is eliminated as is insufficient capacity due to insufficient refrigerant flow rate.



Low pressure control for cooling



High pressure control for heating



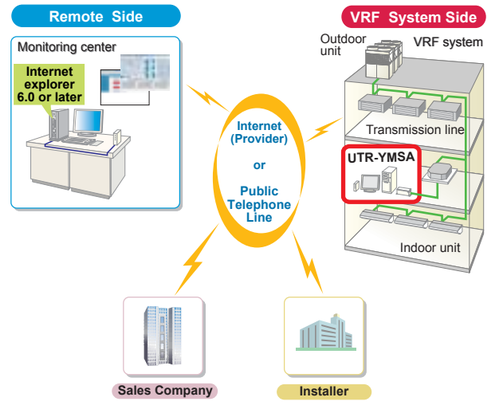
Web Monitoring Tool [Software]

Model : UTR-YMSA [Option]

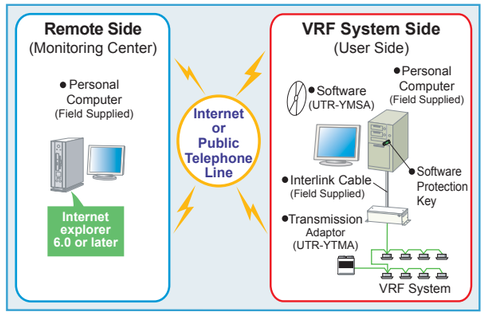
Product features

Trouble-shooting is performed by monitoring each air conditioning unit remotely during periodical system checks.

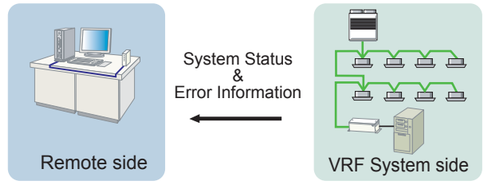
Web Monitoring System



System components



Features

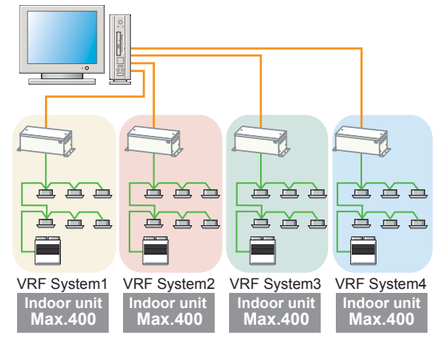


- Error notification can be automatically transmitted to up to several locations by using internet*.
- Requires either a dedicated internet connection* or public telephone line.
- Determination of an error occurrence can be made through error warnings and equipment status information obtained from a remote location.

* Dedicated connection preferred.

Supprot 4 VRF system

PC Transmission adaptors (max. four adaptors per PC) permit control and monitoring of up to 1,600 units.
Suitable for large-scale buildings or hotels.



Requirements of PC for this software

Personal Computer		AT compatible machine that runs Microsoft® Windows®
	Operating System	· Microsoft® Windows® 2000 Professional (English version / Service pack3 or later) · Microsoft® Windows® XP Professional (English version / Service pack1 or later)
	CPU	Intel® Pentium® / Celeron®, AMD Athlon™ / Duron™ 1GHz or higher
	HDD	2.1 GB or more
	Memory	512 MB or more
	Interface	Serial port (Max. 4)*1 and USB port
Software		Internet Explorer 6.0 or later / Adobe® Acrobat® Reader 4.0 or later *2
Hardware		· Interlink cable D-sub 9pin [Field supplied] · Transmission Adaptor (UTR-YTMA)

<PACKING LIST>

Packing List	CD-ROM / Software Protection Key

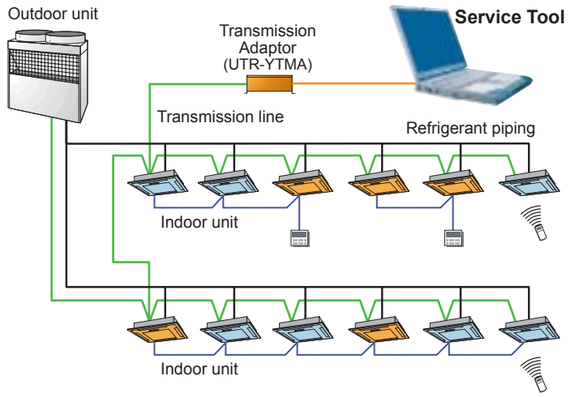
*1 1 port required for each VRF system connected.
*2 If Internet Explorer is installed on the remote side PC, remote supervision of VRF system status is available.

Service Tool [Software]

Model : UTR-YSTC [Option]

Extensive monitoring and analysis functions for installation and maintenance

·Operational status can be checked and analyzed to detect even the smallest abnormalities.
·Storage of data on system operating status on a PC allows access even from off site.
·Up to 400 units (a single VRF system) can be controlled and monitored for large scale buildings or hotels.

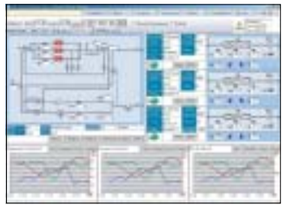


Functions

System equipment List

This list displays all equipment connected to the system.
Simple operating status parameters are displayed for instant recognition in the event of problems.

Equipment status detail



Current status of each equipment and sensor data can be displayed on a circuit diagram and plotted on a graph.
Simply move the cursor along the graph to review past data on the circuit diagram.

Commissioning Tool

Extensive test support provided; for maintenance purposes, sensor data can be saved and exported to CSV files that can be read in Microsoft Excel.
This is useful in compiling test reports.

Error History

Permits review of the current error and provides a history of the previous 50 errors for each piece of equipment.

Requirements of PC for this software

Personal Computer		AT compatible machine that runs Microsoft® Windows®
	Operating System	Microsoft® Windows® 2000 Professional (English version / Service pack3 or later) Microsoft® Windows® XP Professional (English version / Service pack1 or later)
	CPU	Intel® Pentium® / Celeron®, AMD Athlon™ / Duron™ 1GHz or higher
	HDD	2.1 GB or more
	Memory	256 MB or more
	Interface	Serial port and USB port
Software		Internet Explorer 6.0 or later / Adobe® Acrobat® Reader 4.0 or later
Hardware		Interlink cable D-sub 9pin [Field supplied] / Transmission Adaptor (UTR-YTMA)

<PACKING LIST>

Packing List	CD-ROM / Software Protection Key

dards in comfort and performance

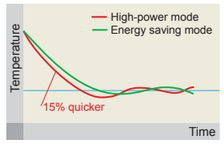
HEAT PUMP & COOLING ONLY SERIES

Selectable Operation Mode

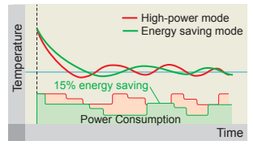
High power and energy saving

15% Energy saving

High power and energy saving modes are freely selectable and have the effect of varying the outlet air flow temperature by 2 degrees.
The energy saving mode delivers 15% energy savings, whereas the high power mode increases capacity by an equal amount.



High power mode enables set point to be achieved much quicker (approx 15% faster).

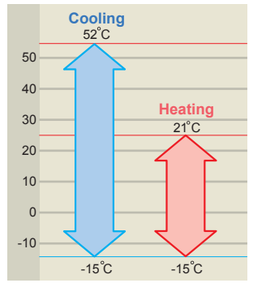


Energy saving mode discreetly adjusts room temperature to achieve a valuable 15% energy saving.

Wide Operating Range

Cooling + heating operation at low outdoor temperature of down to -15 °C

Outdoor unit operates over an outdoor temperature range of -15℃ to 52℃ for cooling and -15℃ to 21℃ for heating.



Super Quiet

Low sound pressure level

Operational noise has been reduced yet further through the application of a new dual casing bell-mouth and large fan. When set to silent operation, noise levels can be reduced by 5-6dB(A) compared to normal operation.

	28kW	22.4kW
Normal operation mode	**55 dB(A)**	**54 dB(A)**
Silent operation mode	**50 dB(A)**	**48 dB(A)**

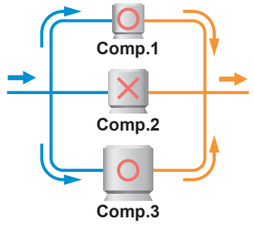
(380V)

High Reliability

Recovery operation

Outdoor Unit

In the event of compressor failure an alarm is automatically triggered and the remaining compressor(s) will continue to operate, thereby ensuring continuous operation when possible.



Indoor Unit

Each indoor unit operates independently from the others and is, therefore, not affected by a failure within any part of the network.

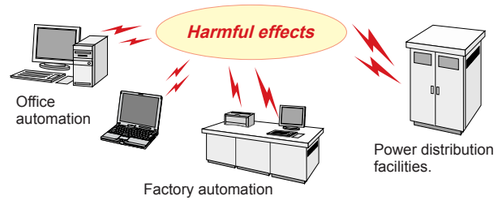
Oil Recovery operation

After a fixed period of time the oil recovery operation automatically returns accumulated oil found in the refrigerant circuit and indoor units.

Surroundings Conscious

No Harmonic Disturbances

As our VRF system is not based on inverter technology to control refrigerant flow rate harmonic emissions are almost zero. As a result, it will not interfere with electronic equipment found in the office, factory or power distribution facilities, making it the ideal air conditioning solution for hospitals where harmonic emissions are strictly controlled.



Alternative refrigerant

R407C offers greater protection to the environment.

Maximum comfort from inbuilt flex

R407C **Heat Recovery Type**
AO90MPAMF(28kW)

High Efficiency System

Operating system

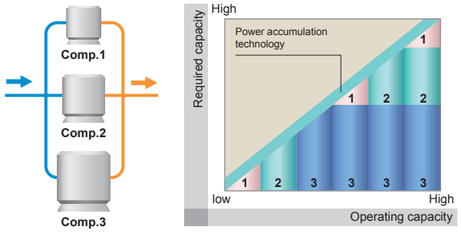
Cooling and heating can be performed simultaneously within the same refrigerant circuit.
Energy savings are made by transferring heat between the indoor units when in heat recovery operation.

Cooling COP	**2.98※**
Heating COP	**3.15※**

※ COP values are base on our own testing method. (AO90MPAMF)

Smooth operation delivering high efficiencies

The configuration of 3 constant speed compressors with differing capacities and power accumulation technology ensure smooth step changes and highly efficient operation.

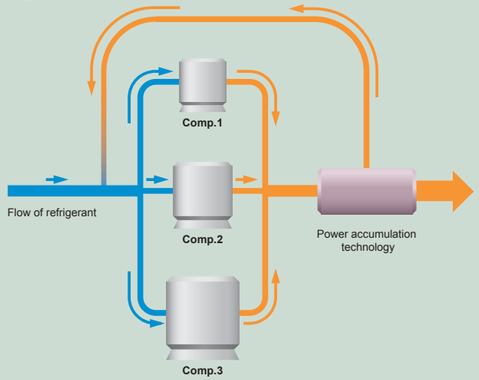


Flow rate between each step is controlled by power accumulation technology

Power Accumulation Technology

Flow rate to the indoor unit(s) is controlled through the use of 3 differently rated compressors operating in a sequential step arrangement.While power accumulation technology controls the circulating load of the refrigerant flow between those steps.

Diagram



Wall Mounted Type (Compact) / Wall Mounted Type

Model			Wall Mounted Type (Compact)				Wall Mounted Type		
			AS7	AS9	AS12	AS14	AS18	AS24	AS30
Power Source			220-240V~50Hz						
Cooling Capacity		kW	2.15	2.80	3.50	3.80	5.40	6.90	8.00
		BTU / h	7,400	9,600	11,900	13,000	18,400	23,600	27,300
Heating Capacity		kW	2.45	3.10	4.10	4.50	5.60	7.80	8.80
		BTU / h	8,400	10,600	14,000	15,400	19,100	26,600	30,000
Input		W	26	30	35	39	38	50	60
Current		A	0.15	0.16	0.18	0.20	0.18	0.24	0.28
Max. Current		A	0.18	0.19	0.22	0.24	0.22	0.29	0.34
Air Circulation	High	m^3/h	410	450	520	540	840	950	1,050
	Med		380	410	500	510	700	800	940
	Low		350	370	470	490	600	670	780
Fan Speed	High	r.p.m.	1,000	1,090	1,250	1,300	1,080	1,190	1,320
	Med		930	1,000	1,200	1,240	940	1,030	1,210
	Low		860	900	1,150	1,180	810	900	1,030
Fan Motor Output		W	16.5				38		
Noise Level (Sound Pressure)	High	dB (A)	30	33	37	38	42	45	48
	Med		28	30	36	37	39	42	45
	Low		26	27	34	35	35	38	42
Fan Type x Q'ty			Cross Flow x 1						
Heat Exchanger			Plate Fin Coil						
Dimensions (H x W x D)	Net	mm	257 x 808 x 187				320 x 1,120 x 220		
	Gross		270 x 850 x 310				348 x 1,240 x 427		
Weights	Net	kg	8				16		
	Gross		10				25		
Pipe Size	Liquid	mm	ϕ 6.35						ϕ 9.52
	Gas		ϕ 9.52		ϕ12.70		ϕ 15.88		
Pipe Connection Method			Flare						
Operation Range	Cooling	℃	18 to 30						
	Heating		16 to 30						

• Wall Mounted Type (Compact) indoor unit can't be operated in the Heat Recovery Type System.

Ceiling Wall Type

Model			Ceiling Wall Type						
			AW7	AW9	AW12	AW14	AW18	AW24	AW30
Power Source			220-240V~50Hz						
Cooling Capacity		kW	2.15	2.80	3.60	4.30	5.40	6.90	8.00
		BTU / h	7,400	9,600	12,300	14,700	18,400	23,600	27,300
Heating Capacity		kW	2.45	3.10	4.10	4.90	5.60	7.80	8.80
		BTU / h	8,400	10,600	14,000	16,700	19,100	26,600	30,000
Input		W	16	19	20	21	30	40	50
Current		A	0.08	0.09	0.10		0.14	0.19	0.24
Max. Current		A	0.10	0.11	0.12		0.17	0.23	0.29
Air Circulation	High	m^3/h	380	480	600	650	760	900	950
	Med		330	420	520	570	660	780	870
	Low		290	390	470	490	560	650	780
Fan Speed	High	r.p.m.	1,090	1,310	950	1,000	1,150	1,300	1,380
	Med		980	1,180	860	910	1,030	1,160	1,280
	Low		900	1,100	800	820	930	1,020	1,180
Fan Motor Output		W	32						
Noise Level (Sound Pressure)	High	dB (A)	34	35		37	40	44	47
	Med		32		33	35	37	41	45
	Low		30	31		32	34	37	42
Fan Type x Q'ty			Cross Flow x 1						
Heat Exchanger			Plate Fin Coil						
Dimensions (H x W x D)	Net	mm	270 x 1,150 x 285						
	Gross		400 x 1,260 x 380						
Weights	Net	kg	16						
	Gross		20						
Pipe Size	Liquid	mm	ϕ 6.35						ϕ 9.52
	Gas		ϕ 9.52		ϕ12.70		ϕ 15.88		
Pipe Connection Method			Flare						
Operation Range	Cooling	℃	18 to 30						
	Heating		16 to 30						

Note : Specifications are based on the following conditions.
Cooling : Indoor temperature of 27˚CDB/19˚CWB, and outdoor temperature of 35˚CDB/24˚CWB.
Heating : Indoor temperature of 20˚CDB/(15)˚CWB, and outdoor temperature of 7˚CDB/6˚CWB.

Specifications

High Static Pressure Duct Type

Model			High Static Pressure Duct Type		
			AR36H	AR45H	AR60H
Power Source			220-240V~50Hz		
Cooling Capacity		kW	10.5	12.7	17.0
		BTU / h	36,000	43,500	58,000
Heating Capacity		kW	10.7	13.7	17.6
		BTU / h	36,500	47,000	60,100
Input		W	445	463	733
Current		A	2.35		3.58
Max. Current		A	3.02		4.81
Air Circulation	High	m^3/h	2,000	2,200	3,000
	Med		1,700	1,900	2,750
	Low		1,400	1,600	2,500
Fan Speed	High	r.p.m.	760	890	1,150
	Med		690	820	1,075
	Low		630	760	1,000
Fan Motor Output		W	350		500
Noise Level (Sound Pressure)	High	dB (A)	47	48	53
	Med		45	46	52
	Low		43	44	51
Fan Type x Q'ty			Sirocco x 2		
Heat Exchanger			Plate Fin Coil		
Dimensions (H x W x D)	Net	mm	400 x 1,250 x 800		
	Gross		500 x 1,430 x 930		
Weights	Net	kg	75		
	Gross		90		
Pipe Size	Liquid	mm	ϕ 9.52		
	Gas		ϕ 19.05		
Pipe Connection Method			Flare		
Operation Range	Cooling	℃	18 to 30		
	Heating		16 to 30		

Floor & Ceiling Universal Type / Ceiling Type

Model			Floor & Ceiling Universal Type				Ceiling Type			
			AB12	AB14	AB18	AB24	AB30	AB36	AB45	AB54
Power Source			220-240V~50Hz							
Cooling Capacity		kW	3.5	4.05	5.3	6.6	8.8	10.5	12.7	14.1
		BTU / h	11,900	13,800	18,100	22,500	30,000	36,000	43,500	48,200
Heating Capacity		kW	4.1	5.0	5.6	7.7	9.1	10.7	13.7	15.8
		BTU / h	14,000	17,100	19,100	26,300	31,000	36,500	47,000	54,000
Input		W	57		88		124	144	160	180
Current		A	0.25		0.38		1.14	1.16	1.17	
Max. Current		A	0.30		0.45		1.36	1.39	1.40	
Air Circulation	High	m^3/h	640		770	900	1,620	1,890	2,110	2,350
	Med		560		680	780	1,540	1,710	1,890	2,810
	Low		480		560	660	1,360	1,450	1,630	1,900
Fan Speed	High	r.p.m.	850		1,030	1,180	850	1,000	1,100	1,250
	Med		760		890	1,040	800	900	1,000	1,150
	Low		670		770	900	700	750	850	1,000
Fan Motor Output		W	16		30	40	160			
Noise Level (Sound Pressure)	High	dB (A)	40		46	49	41.5	47	50	52
	Med		37		41.5	45	38	44	48	50
	Low		34		37	41	34.5	39	44	46
Fan Type x Q'ty			Sirocco x 2				Sirocco x 4			
Heat Exchanger			Plate Fin Coil							
Dimensions (H x W x D)	Net	mm	199 x 990 x 655				240 x 1,660 x 700			
	Gross		320 x 1,150 x 790				318 x 1,800 x 790			
Weights	Net	kg	28			30	48			49
	Gross		39			39	61			62
Pipe Size	Liquid	mm	ϕ 6.35				ϕ 9.52			
	Gas		ϕ 12.70		ϕ 15.88			ϕ 19.05		
Pipe Connection Method			Flare							
Operation Range	Cooling	℃	18 to 30							
	Heating		16 to 30							

Note : Specifications are based on the following conditions.
Cooling : Indoor temperature of 27℃DB/19℃WB, and outdoor temperature of 35℃DB/24℃WB.
Heating : Indoor temperature of 20℃DB/(15)℃WB, and outdoor temperature of 7℃DB/6℃WB.

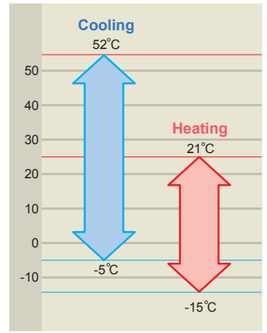
ibility

HEAT RECOVERY SERIES

Wide Operating Range

Cooling operation at outdoor temperatures down to -5∞C

Outdoor unit operates over an outdoor temperature range of -5 ℃ to 52 ℃ for cooling and -15 ℃ to 21 ℃ for heating.



Super Quiet

Low sound pressure level

Operational noise has been reduced yet further through the application of a new dual casing bell-mouth and large fan.
When set to silent operation, noise levels can be reduced by 5dB(A) compared to normal operation.

Normal operation mode	**55 dB(A)**
Silent operation mode	**50 dB(A)**

(380V)

Comfortable Operation

Heat Recovery operation

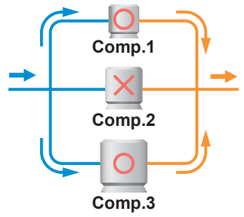
Heat Recovery operation is a cooling/heating free operation system, cooling and heating can be performed simultaneously in the same refrigerant system according to user needs. At the moment, The Heat Recovery operation is an extremely superior type that provides a still greater energy saving effect by moving heat between indoor units that are performing the cooling and heating operations. This is by having the compressors act like a pump.

High Reliability

Recovery operation

Outdoor Unit

In the event of compressor failure an alarm is automatically triggered and the remaining compressor(s) will continue to operate, thereby ensuring continuous operation when possible.



Indoor Unit

Each indoor unit operates independently from the others and is, therefore, not affected by a failure within any part of the network.

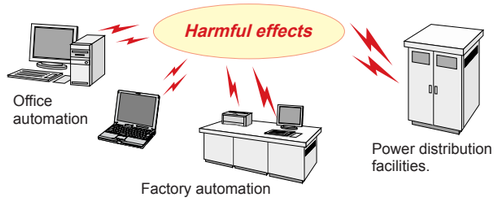
Oil Recovery operation

After a fixed period of time the oil recovery operation automatically returns accumulated oil found in the refrigerant circuit and indoor units.

Surroundings Conscious

No Harmonic Disturbances

As our VRF system is not based on inverter technology to control refrigerant flow rate harmonic emissions are almost zero. As a result, it will not interfere with electronic equipment found in the office, factory or power distribution facilities, making it the ideal air conditioning solution for hospitals where harmonic emissions are strictly controlled.



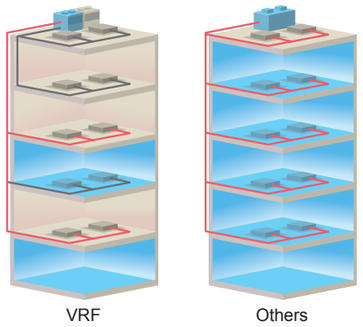
Alternative refrigerant

R407C offers greater protection to the environment.

The VRF's quality features

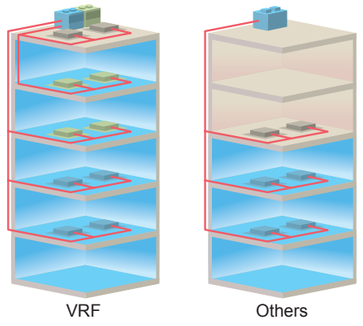
Economical Operation

VRF differs from traditional ventilation and chiller systems being an economical multi air conditioning system that has the ability to exactly match air conditioning to the needs of the space.
Whether operating continuously as required within commercial buildings and public facilities or with large load variations for hotels, etc the VRF maintains optimum operation for that building. That means optimum comfort for the occupants at minimum energy expenditure.



Easy Installation

System installation could not be easier, simply connect the refrigerant piping and data transmission line. Repositioning indoor units is just as easy.



Compact Size

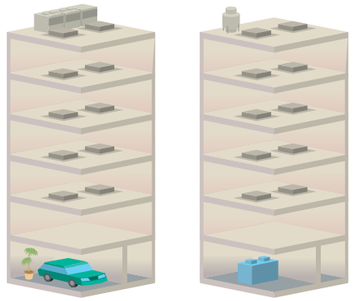
Save space by installing in tandem.

Setting size	5.72 (Unit : m²)

Offering one of the smallest footprints available the outdoor unit provides 84kW(28kW X 3) capacity within a very tight space.

Free-up Valuable Space

The VRF allows the height difference between outdoor and indoor units to be as much as 50m. Consequently for a 15 storey building, for example, all of the outdoor units can be installed out of the way on the roof, freeing-up valuable interior space.



Easy Maintenance

VRF maintenance is easy and simple! Constant monitoring by a PC and integral software service tools can predict faults enabling the service engineer to rectify before a failure occurs.

Service Tool [Software] **Model : UTR-YSTC**

Service Tool monitors the entire VRF system.
Extensive monitoring and analysing functions.
· Operational status can be checked and analysed to detect even the smallest abnormality.
· By storing system operation status in a PC, data can be checked even when offline.

Cassette Type (Compact) / Cassette Type

Model			Cassette Type (Compact)					Cassette Type					
			AU7	AU9	AU12	AU14	AU18	AU20	AU25	AU30	AU36	AU45	AU54
Power Source			220-240V~50Hz										
Cooling Capacity		kW	2.15	2.80	3.60	4.00	5.00	5.70	7.05	8.80	10.5	12.7	14.1
		BTU / h	7,400	9,600	12,300	13,700	17,100	19.500	24.100	30,000	35,800	43,400	48,100
Heating Capacity		kW	2.45	3.10	4.10	4.50	5.45	5.80	7.85	9.10	10.7	13.7	15.8
		BTU / h	8,400	10,600	14,000	15,400	18,600	19,800	26,800	31,100	36,500	46,800	53,900
Input		W	28		52		50	104	124	140	175	190	219
Current		A	0.13		0.23		0.22	0.60	0.64	0.67	0.92	0.94	0.95
Max. Current		A	0.15		0.27		0.26	0.72	0.77	0.80	1.10	1.12	1.14
Air Circulation	High	m^3/h	530		580		640	1,000	1,100	1,200	1,500	1,650	1,780
	Med		480		520		540	840	940	1,050	1,300	1,450	1,550
	Low		410		460		470	700	780	840	1,100	1,200	1,300
Fan Speed	High	r.p.m.	630		690		750	450	490	540	580	620	680
	Med		570		610		640	390	430	480	500	550	580
	Low		480		540		540	330	360	390	420	470	500
Fan Motor Output		W	9		10		15	42			90		
Noise Level (Sound Pressure)	High	dB (A)	38		41		44	42	44	46	48	49	52
	Med		35		37		38	38	42	44	44	47	48.5
	Low		31		34		35	35	39	41	41	43	45
Fan Type x Q'ty			Turbo x 1										
Heat Exchanger			Plate Fin Coil										
Dimensions (H x W x D)	Net	mm	230 x 570 x 570					246 x 830 x 830			296 x 830 x 830		
	Gross		280 x 710 x 750					355 x 1,060 x 1,025			455 x 1,060 x 1,025		
Weights	Net	kg	18					34			40		
	Gross		23					45			60		
Pipe Size	Liquid	mm	ϕ 6.35								ϕ 9.52		
	Gas		ϕ 9.52		ϕ12.70		ϕ 15.88				ϕ 19.05		
Pipe Connection Method			Flare										
Operation Range	Cooling	°C	18 to 30										
	Heating		16 to 30										

Duct Type (Compact) / Duct Type

Model			Duct Type (Compact)					Duct Type			
			AR7	AR9	AR12	AR14	AR18	AR25	AR30	AR36	AR45
Power Source			220-240V~50Hz								
Cooling Capacity		kW	2.15	2.80	3.50	4.00	5.30	7.05	8.80	10.5	12.7
		BTU / h	7,300	9,600	11,900	13,700	18,100	24,100	30,000	36,000	43,500
Heating Capacity		kW	2.45	3.10	4.10	4.80	5.60	7.85	9.10	10.7	13.7
		BTU / h	8,400	10,600	14,000	16,400	19,100	26,800	31,000	36,500	47,000
Input		W	40	43	34	50	62	155	240	265	315
Current		A	0.21		0.20	0.23	0.27	0.68	1.06	1.16	1.44
Max. Current		A	0.25		0.24	0.27	0.32	0.84	1.58	1.58	1.84
Air Circulation	High	m^3/h	340	420	460	640	750	1,200	1,650	2,000	2,200
	Med		320	390	430	560	700	1,100	1,550	1,800	2,000
	Low		290	360	390	480	640	1,000	1,350	1,600	1,800
Fan Speed	High	r.p.m.	780	960	640	840	960	890	1,240	1,280	1,320
	Med		720	880	610	740	900	820	1,140	1,200	1,270
	Low		660	810	580	650	840	745	1,040	1,130	1,200
Fan Motor Output		W	12	14	16	18	21	70	275		
Noise Level (Sound Pressure)	High	dB (A)	31	35	28	34	36	44	47		49
	Med		28	33	27	32	35	42	45		47
	Low		26	31	26	30	33	40	43		45
Fan Type x Q'ty			Sirocco x 1		Sirocco x 2						
Heat Exchanger			Plate Fin Coil								
Dimensions (H x W x D)	Net	mm	217 x 663 x 595		217 x 953 x 595			270 x 1,210 x 700			
	Gross		324 x 785 x 686		324 x 1,075 x 686			330 x 1,300 x 790			
Weights	Net	kg	18		25			43		45	
	Gross		22		29			58		60	
Pipe Size	Liquid	mm	ϕ 6.35					ϕ 9.52			
	Gas		ϕ 9.52		ϕ12.70		ϕ 15.88			ϕ 19.05	
Pipe Connection Method			Flare								
Operation Range	Cooling	°C	18 to 30								
	Heating		16 to 30								

Note : Specifications are based on the following conditions.
Cooling : Indoor temperature of 27°CDB/19°CWB, and outdoor temperature of 35°CDB/24°CWB.
Heating : Indoor temperature of 20°CDB/(15)°CWB, and outdoor temperature of 7°CDB/6°CWB.

Specifications

Heat Pump / Cooling Only Type

Model				Refrigerant Type : R407C				Refrigerant Type : R22			
				AO90 TPBMF	AO72 TPBMF	AO90 EPBMF	AO72 EPBMF	AO90 RPBMF	AO72 RPBMF	AO90 APBMF	AO72 APBMF
Power Source				3 phase, 380 - 415V, 50Hz							
Total Capacity	Cooling		kW	28.0	22.4	28.0	22.4	28.0	22.4	28.0	22.4
	Heating			31.5	25.2	——		31.5	25.2	——	
Total Input Watts	Cooling		kW	9.03	7.23	9.03	7.23	9.03	7.23	9.03	7.23
	Heating			8.50	7.64	——		8.50	7.00	——	
E.E.R.	Cooling		W/W	3.10							
	Heating			3.71	3.30	——		3.71	3.60	——	
Heat Exchanger				Plate Fin Coil							
Fan Speed	High		r.p.m.	730							
	Low			360							
Air Circulation	High		m^3/h	9800							
Fan Type x Qty				Propeller x 2							
Fan Motor Output			W	150 x 2							
Compressor	Motor Output		kW	1.5/3.4/4.9	1.5/2.5/4.8	1.5/3.4/4.9	1.5/2.5/4.8	1.5/3.7/5.0	1.5/2.5/4.8	1.5/3.7/5.0	1.5/2.5/4.8
	Protection			Internal Protector(OCR) / High Pressure Relief Valve							
Dimensions(H x W x D)	Net		mm	1,380 x 1,300 x 650							
	Gross			1,535 x 1,400 x 770							
Weights	Net		kg	285	278	284	277	296	278	292	274
	Gross			321	314	320	313	332	314	328	310
Noise Level (Sound Pressure)		380V	dB (A)	55	54	55	54	55	54	55	54
		415V		57	56	57	56	57	56	57	56
Refrigerant	Type			R407C				R22			
	Charge		kg	12	10	12	10	12	10	12	10
Pipe	Size	Liquid	mm	ϕ 12.70							
		Suction Gas		ϕ 28.58							
	Max Length		m	100							
	Max Height			50							
Operation Range (Outdoor)	Cooling		°C	-15 to 52						21 to 52	
	Heating			-15 to 21		——		-15 to 21		——	

Heat Recovery Type

Model				Refrigerant Type : R407C
				AO90MPAMF
Power Source				3 phase, 380 - 415V, 50Hz
Total Capacity	Cooling		kW	28.0
	Heating			31.5
Total Input Watts	Cooling		kW	9.40
	Heating			10.0
E.E.R.	Cooling		W / W	2.98
	Heating			3.15
Heat Exchanger				Plate Fin Coil
Fan Speed	High		r.p.m.	730
	Low			360
Air Circulation	High		m^3/h	9,800
Fan Type x Qty				Propeller x 2
Fan Motor Output			W	150 x 2
Compressor	Motor Output		kW	1.5 / 3.4 / 5.0
	Protection			Internal Protector (OCR) High Pressure Relief Valve
Dimensions (H x W x D)	Net		mm	1,380 x 1,300 x 650
	Gross			1,535 x 1,400 x 770
Weights	Net		kg	306
	Gross			343
Noise Level (Sound Pressure)			dB (A)	57
Refrigerant	Type			R407C
	Charge		kg	10.0
Pipe	Size	Liquid	mm	ϕ 12.70
		Discharge Gas		ϕ 19.05
		Suction Gas		ϕ 28.58
	Max. Length		m	100
	Max. Height			50
Operation Range (Outdoor)	Cooling		°C	-5 to 52
	Heating			-15 to 21

Note : Specifications are based on the following conditions.
Cooling : Indoor temperature of 27°CDB/19°CWB, and outdoor temperature of 35°CDB/24°CWB.
Heating : Indoor temperature of 20°CDB/(15)°CWB, and outdoor temperature of 7°CDB/6°CWB.

HEAT PUMP & COOLING ONLY SERIES

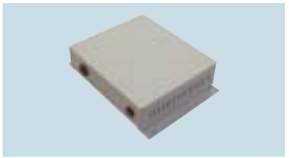
HEAT RECOVERY SERIES

Flexible Construction

Infinitely variable selection from 12 different types and 45 models of indoor unit plus 9 outdoor units.
The outdoor unit is capable of handling 130% capacity, easily accommodating future system changes and expansion.

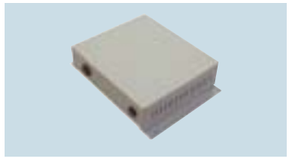
System upgrade network parts

*See details on page 38.



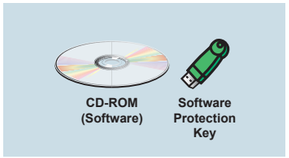
Network Convertor
Model : UTR-YRDA (Option)

With this convertor, split type systems can be controlled by PC controller or a central remote controller.



Network Convertor (LONWORKS®)
Model : UTR-YLLA (Option)

By using the UTR-YLLA, the VRF system can be centrally controlled or monitored from a BMS with a LONWORKS® interface.



BACnet®Gateway [Software]
Model : UTR-YLBA

The central control of maximum 1600 indoor units can be realized by connecting the VRF system to the BACnet®, a global standard of the open network

Comparison with the features between VRF and other system

		VRF system	Other system
Basic	Heat Transfer Media	Refrigerant	Water
	Heat Carrying Capacity	49 kcal/kg (10 times higher than chiller)	5 kcal/kg
Energy Saving	Energy Efficiency	High Energy Efficiency Direct heat transfer from refrigerant to room air	Less Energy Efficiency 1st. stage heat transfer : From refrigerant to water 2nd. stage heat transfer : From water to room air
	Overall Heat Transfer Efficiency	High Between refrigerant & room air	Low Between water & room air
	Operation Time	Short (To reach set room temperature)	Long (To reach set room temperature)
	Energy Transmission Loss	Low Heat loss through connecting pipe from outdoor unit to indoor unit	High Heat loss through connecting pipe from chilled water unit to indoor fan coil unit
	System Efficiency (Partial Load Operation)	High (Refrigerant flow reduced due to compressor power reduction)	Low Compressor power consumption reduced but constant water circulation pump consumption
Additional Benefits	Heating Operation Performance (Below 0°C)	Sufficient (Discharge air temperature from indoor unit above 37°C)	Insufficient (Except connecting water heating boiler)
	Flexibility (Choice of Fan coil Unit)	More Flexible	Less Flexible
	Maintenance	simpler and easier than "other systems"	Periodic

Note: "Other system" means water chiller system.

For consultants and building des

The VRF system offers an infinitely variable choice of indoor and outdoor units: 12 types and 45 models of indoor units together with a choice of 9 outdoor units. Plus 2-pipe (heat pump, cooling only) and 3-pipe (heat recovery) systems are available providing inbuilt reliability. VRF offers flexible and quick air conditioning design solutions supported by low running and maintenance costs, particularly when compared to conventional systems.

Design Flexibility

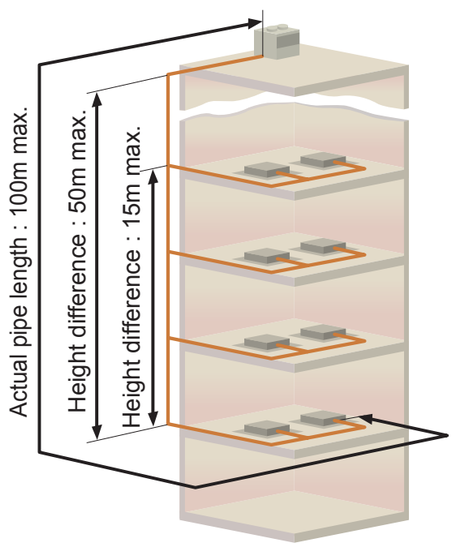
Shorten the design time

Compared to conventional building air conditioning systems, VRF system design is fast thanks to the simplicity of the outdoor unit, refrigerant piping and data transmission - and the VRF can control up to 100 outdoor units and 400 indoor units. Refrigerant piping between outdoor and indoor units can extend up to 100m in length with a height difference of 50m, making 15-storey buildings easy to accommodate. So, system design is uncomplicated and fast.

Long piping for high-rise buildings

Vertical lift between outdoor unit and indoor units :
50m maximum.
※When outdoor unit is located above indoor unit.
When outdoor unit is located below the indoor unit the height difference is 40m maximum.
Vertical lift between indoor unit and indoor units :
15m maximum.
Actual pipe length : 100m maximum.
Equivalent pipe length : 120m maximum.
Total pipe length : 200m maximum.

Heat Pump / Cooling Only
Heat Recovery



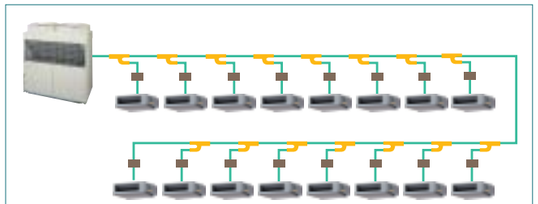
・Equivalent pipe length: 120m maximum.
・Total pipe length: 200m maximum.

Maximum number of connectable indoor units

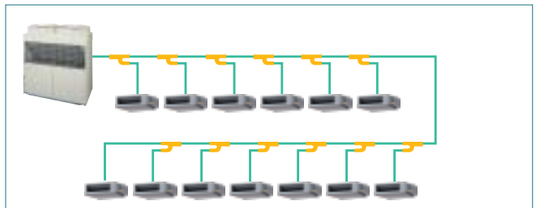
One outdoor unit can control up to 16 indoor units (28kW) or 13 indoor units (22.4kW) of different types and capacities.

Type	Capacity	Refrigerant		Max. connectable indoor unit
		R407C	R22	
Heat Recovery	28.0kW	AO90MPAMF	——	16
Heat Pump	28.0kW	AO90TPBMF	AO90RPBMF	16
	22.4kW	AO72TPBMF	AO72RPBMF	13
Cooling Only	28.0kW	AO90EPBMF	AO90APBMF	16
	22.4kW	AO72EPBMF	AO72APBMF	13

Connectable capacity of indoor units for one outdoor unit **50 to 130%**



Up to 16 indoor units for one outdoor unit **28kW**



Up to 13 indoor units for one outdoor unit **22.4kW**

INDOOR UNIT

‘Double auto swing’ feature provides omni-directional air flow control.

Wall Mounted Type

Models

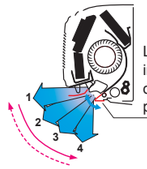
AS18 / AS24 / AS30

Features

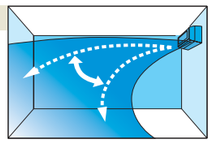
Multi air flow

Large independently driven power diffuser used

Cooling



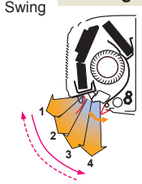
Large independently driven power diffuser

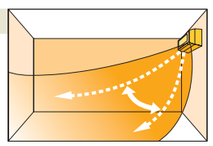


Horizontal concentration and other air direction control

Steps
Swing

Heating

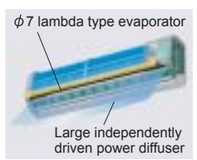




Wide down flow

Low noise

·Hi : 44dB (Existing model : 47dB)
- 24type actual data
·High efficiency fan construction
⇒ϕ7mm Lambda type evaporator improves the airflow path
·Large independently driven power diffuser



Easy installation

Larger space at base of housing means extra 15% piping space.

Others

Other features include continuation of the functions of the existing wall mounted type.

- **Double auto swing**
- **2-way draining route**

Attractive housing with discreet air intake.

Ceiling Wall Type

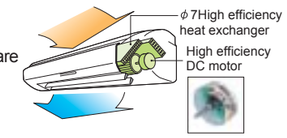
Models

AW7 / AW9 / AW12 / AW14 / AW18 / AW24 / AW30

Features

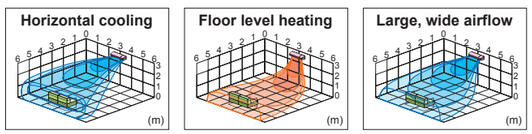
High efficiency

High output and high efficiency are achieved by using a DC motor.



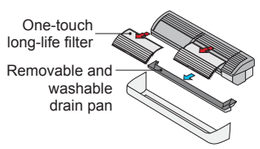
Larger, wider airflow

Introduction of the top air intake reduces the curvature of the air flow path thereby achieving lower air resistance, lower noise and larger air volume.



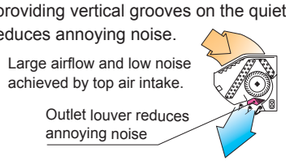
Easy maintenance

Drain pan can be easily removed for thorough washing without re-moving the unit from the wall.



Low noise

Suppressing the turbulence by providing vertical grooves on the quiet louver and the right/left louver reduces annoying noise.



Long-life filter

· Long-life filter can be removed with one touch.
· Long-life filter extends the cleaning cycle by a factor of three.

Others

- **Double auto swing/Right and left, up and down**
- **2-way draining route**
- **Air purifying filter (Optional parts)**

Ceiling / Wall Mounted (Compact) / Wall Mounted / Ceiling Wall Type igners

HEAT PUMP & COOLING ONLY SERIES

HEAT RECOVERY SERIES

An ultra-slim design that offers a variety of installation methods, this indoor unit is lightweight and extremely quiet.

Ceiling Type

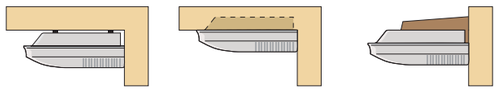
Models

AB30 / AB36 / AB45 / AB54

Features

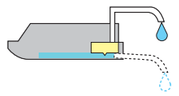
Installation

Open	Concealed	Wall mounted



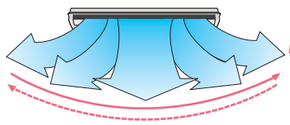
Condensate lift-up mechanism

Optional drain lift-up mechanism allows flexible installation.



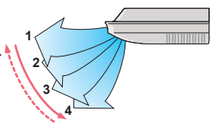
Double auto swing and wide air flow

Right and left



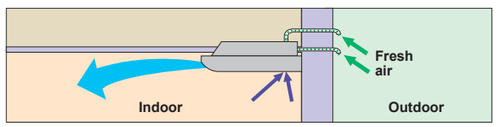
5 steps selectable

Up and down



4 steps selectable

Fresh air intake



Long-life filter

High efficiency, long-life filter extends the cleaning cycle by a factor of two.

Optional parts

Drain water riser kit UTR-DPB241

Stylish and compact, these elegant wall-mounted units complement any interior decor

- This indoor unit can't be operated in the Heat Recovery Type System.
- AS7/AS9/AS12/AS14 are only available for wireless remote controller.

Wall Mounted Type (Compact)

Models

AS7 / AS9 / AS12 / AS14

Features

Compact design

Powerful output despite small size

This compact wall mounted units have a powerful cooling capacity due to the large high pressure fan and lambda type heat exchanger.

H257 x W808 x D187 (mm)

Low noise level

(AS7)

The aerodynamic characteristics of the outlet louver contribute to a very quite indoor unit.

Fan speed	dB(A)
HIGH	30
LOW	26

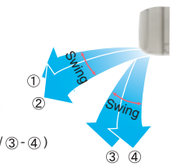
Auto swing louver

The "Auto Swing Louver" feature ensures optimum airflow for each of the operating modes.

Steps
Swing

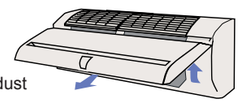
Cooling mode :
2-step (① - ②)

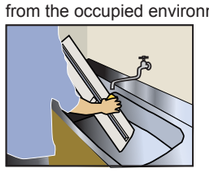
Heating mode :
4-step (① - ② / ③ - ④)



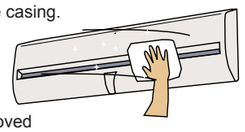
Washable panel filter

The removable and washable panel filter is an effective "air cleanser" removing mould and dust from the occupied environment.





Cleaning of the indoor unit itself is simple due to design and shape of the casing.



The top panel can also be removed for easy cleaning if neccessary.

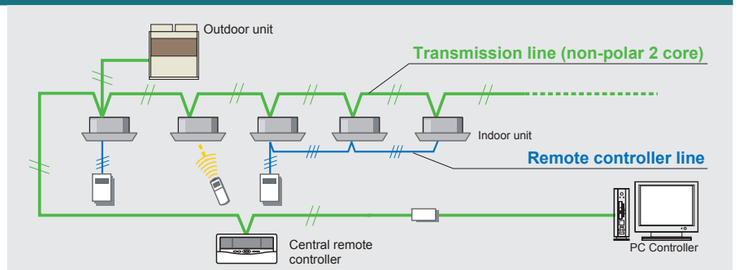
Flexible Control System

Flexible design

Flexibility is enhanced through the ability to connect outdoor units, indoor units and controllers anywhere within the data transmission line.

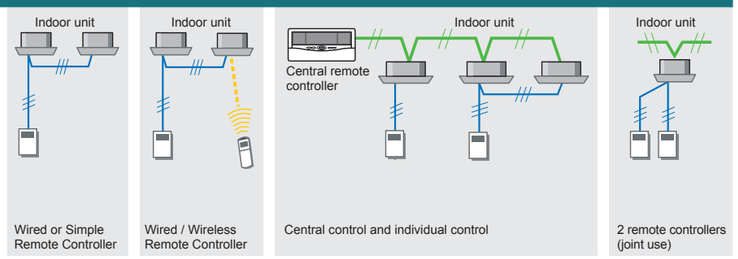
Maximum connectable number per one transmission line

Refrigerant system	100
Indoor units	400
Outdoor units	100



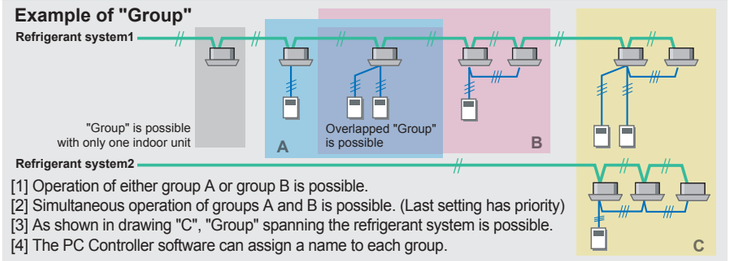
Control options

A variety of control options are available within one VRF system. As the signal receiver is built into the indoor unit a mix of wired/simple/wireless remote controllers can be used simultaneously with the same indoor unit.



Group control

This function is used when operating multiple remote controller groups at one time from a central remote controller or PC controller.

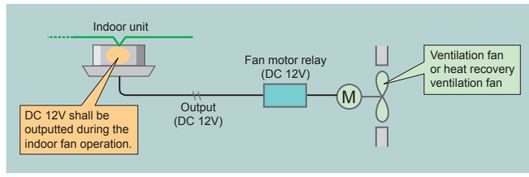


[1] Operation of either group A or group B is possible.
[2] Simultaneous operation of groups A and B is possible. (Last setting has priority)
[3] As shown in drawing "C", "Group" spanning the refrigerant system is possible.
[4] The PC Controller software can assign a name to each group.

Advanced Functions

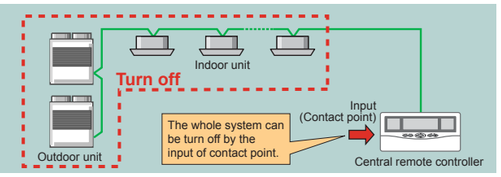
Interfacing system with external equipment

An output on the indoor PCB allows an auxiliary fan to be connected, possible to introduce outdoor air etc.



Emergency turn off

Function for emergency turn off in case of fire or earthquake, etc.



For Installers

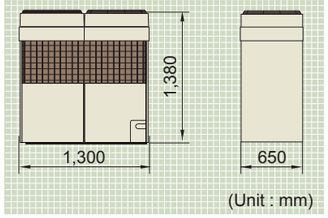
versal Type

INDOOR UNIT

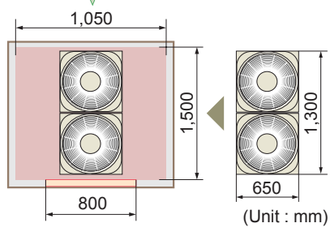
Reduced Installation Work

Compact size

Dimensions



Outdoor unit goes into elevator



Space saving

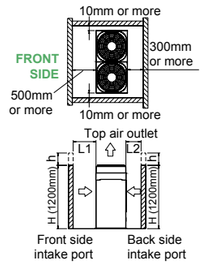
Space saving by setting side by side without space in between.

Setting size	5.72 (Unit : m²)

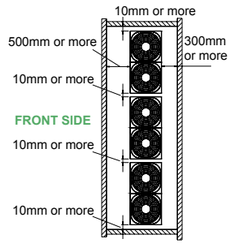
Offering one of the smallest footprints available the outdoor unit provides 84kW (28kW X 3) capacity within a very tight space.

Installation space

For individually



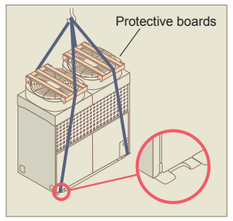
For continuous



- There is no height restriction for the side wall.
- The height(H) of front and rear wall should be less than 1,200mm.
- If the height of wall exceeds 1,200mm by h mm, add h mm to the service space width for L1 and L2.
  H≦1,200 : L1≧500, L2≧300
  H>1,200 + h : L1>500 + h, L2>300 + h

Craning into place

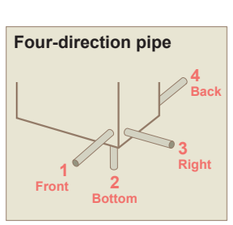
The outdoor unit can be lifted by crane and set down on the building roof.



Piping connection

Four-direction piping allows a variety of installation configurations.
Easy installation and pipe direction setting.

Four-direction pipe

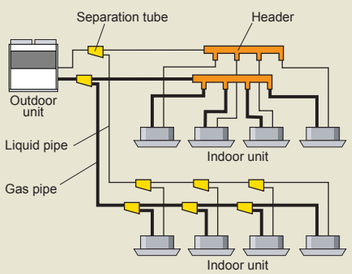


Low Piping Costs

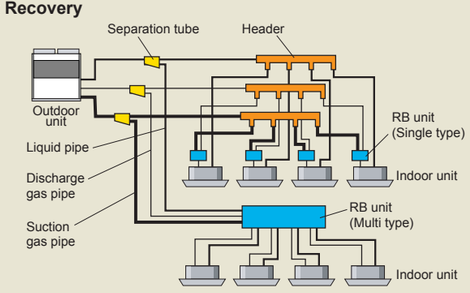
Simple piping system

The simple piping system reduces costs by increased piping flexibility.

Cooling Only & Heat Pump



Heat Recovery



A high static pressure duct type indoor unit

High Static Pressure Duct Type

Models

AR36(H) / AR45(H) / AR60(H)

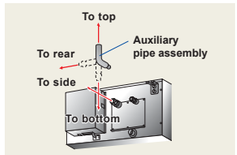
Features

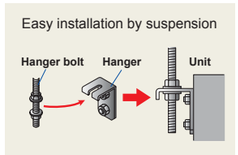
Savings in space and reduction in noise

Installed in the ceiling void this model provides savings in space and reductions in noise.
A single indoor unit can serve several rooms.

Easy installation

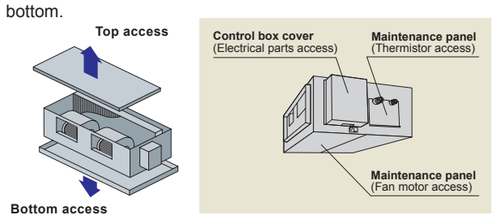
The pipe can be connected in any direction by using the L-shaped auxiliary pipe.





Easy maintenance

Fan motor maintenance can be performed from the top and the bottom.



High static pressure

Recommended external static pressure : 196 Pa (Max. 300Pa)

Optional parts

Outlet chamber	UTD-BC200
Flexible duct	UTD-RD202
Long life filter	UTD-LF400
Remote sensor unit	UTD-RS100

The slim and lightweight design allows the unit to be suspended from the ceiling or installed at floor level.

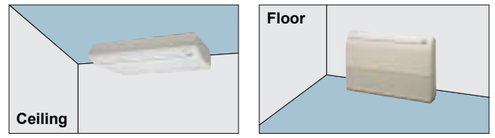
Floor & Ceiling Universal Type

Models

AB12 / AB14 / AB18 / AB24

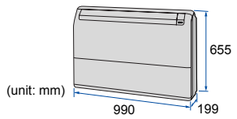
Features

Flexible installation



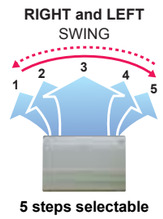
Compact design

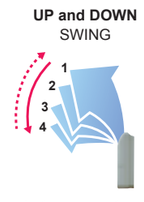
Symmetrical, slim and compact design



Double auto swing

A combination of up/down and right/left directional swing allows three-dimensional air direction control.





Super vane

Double-flap ëSuper Vaneí with newly developed special configuration boosts air flow sending cool air quickly to every corner of the room.

Auto-closing louver

This function is common to all indoor unit types except the duct type.

Duct (Compact) / Duct / High Static Pressure Duct / Floor & Ceiling Uni

HEAT PUMP & COOLING ONLY SERIES

HEAT RECOVERY SERIES

Choice of installation
Can be suspended from the ceiling or placed on the floor

Duct Type (Compact)

Models

AR7 / AR9
AR12 / AR14 / AR18

Features

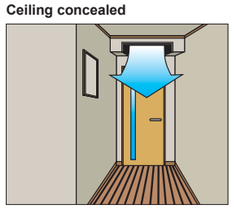
Compact design

Ultra-slim duct air conditioner for easy installation

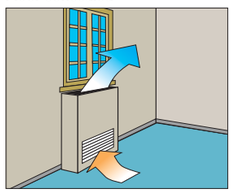
AR7 / AR9 AR12 / AR14 / AR18

Easy to install (Universal type)

Ceiling concealed



Floor concealed



Low noise level

A low noise level has been achieved for each capacity

Model		7	9	12	14	18
Static pressure (Normal/Max.)	Pa	0 / 39.6				
Volume of air-flow (High/Low)	m³ / h	340/290	420/360	460/390	640/480	750/640
Noise level (Low speed)	dB(A)	26	31	26	30	33

Optional parts

Remote sensor unit UTD-RS100

Ultra-slim duct air conditioner for very low ceilings

Duct Type

Models

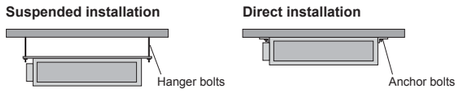
AR25 / AR30 / AR36 / AR45

Features

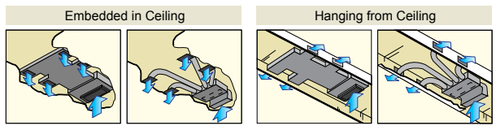
Savings in space and reduction in noise

Whether installed in the ceiling void or a false ceiling, this model provides savings in space and reductions in noise.
A single indoor unit can serve several rooms.

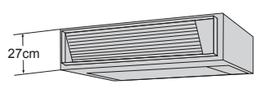
Flexible installation



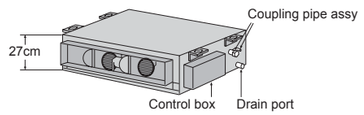
Installation styles



Ultra-slim models for very low ceilings



Piping can be run in almost any direction



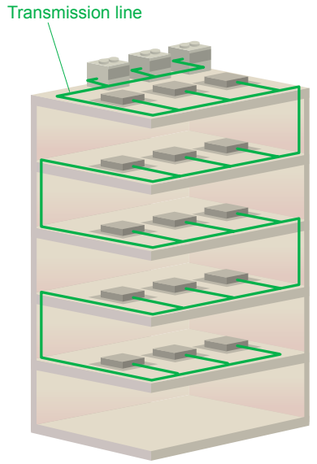
Optional parts

Flange (square)	UTD-SF045T
Flange (round)	UTD-RF204
Flexible duct	UTD-RD202
Long life filter	UTD-LF270
Remote sensor unit	UTD-RS100

Easy Wiring

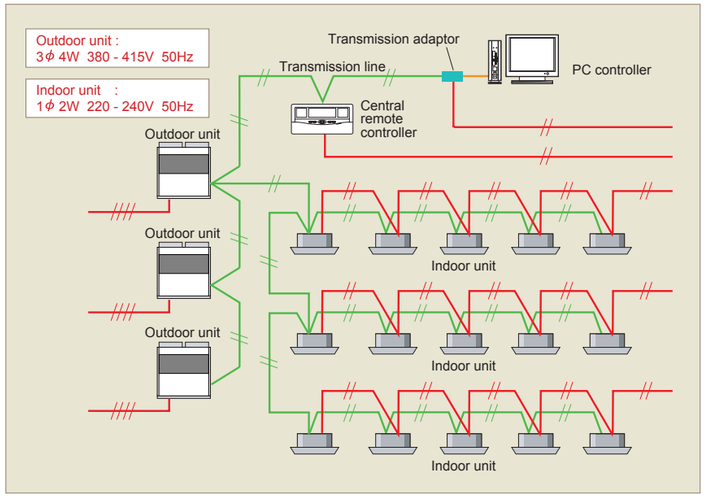
Transmission line

Non-polar 2-conductor transmission line prevents erroneous wiring.



Power supply wiring

Power supply for outdoor and indoor units is different.



Service Tool [Software] Model: UTR-YSTC

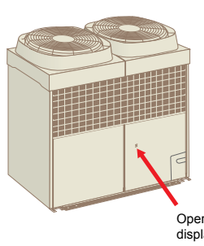
Service Tool can monitor the operation of the entire VRF system.

Extensive monitoring and analysing functions

- Operational status can be checked and analysed to detect even the smallest abnormality.
- By storing system operation status in a PC, data can be checked even when offline.

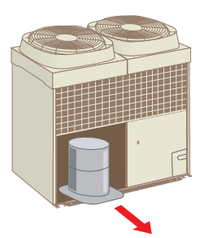
Easy Maintenance

Operating display (outdoor unit)



By indicating the operating status and details of failures on a PCB in the outdoor unit, better service and quick and easy maintenance are possible.

Easy replacement



A pull-out plate ensures easy compressor replacement if necessary.

Pump down control

Pump down can be performed from the outdoor unit using the switch on the PCB.

VRF structure and features ensure

Flexible Control System

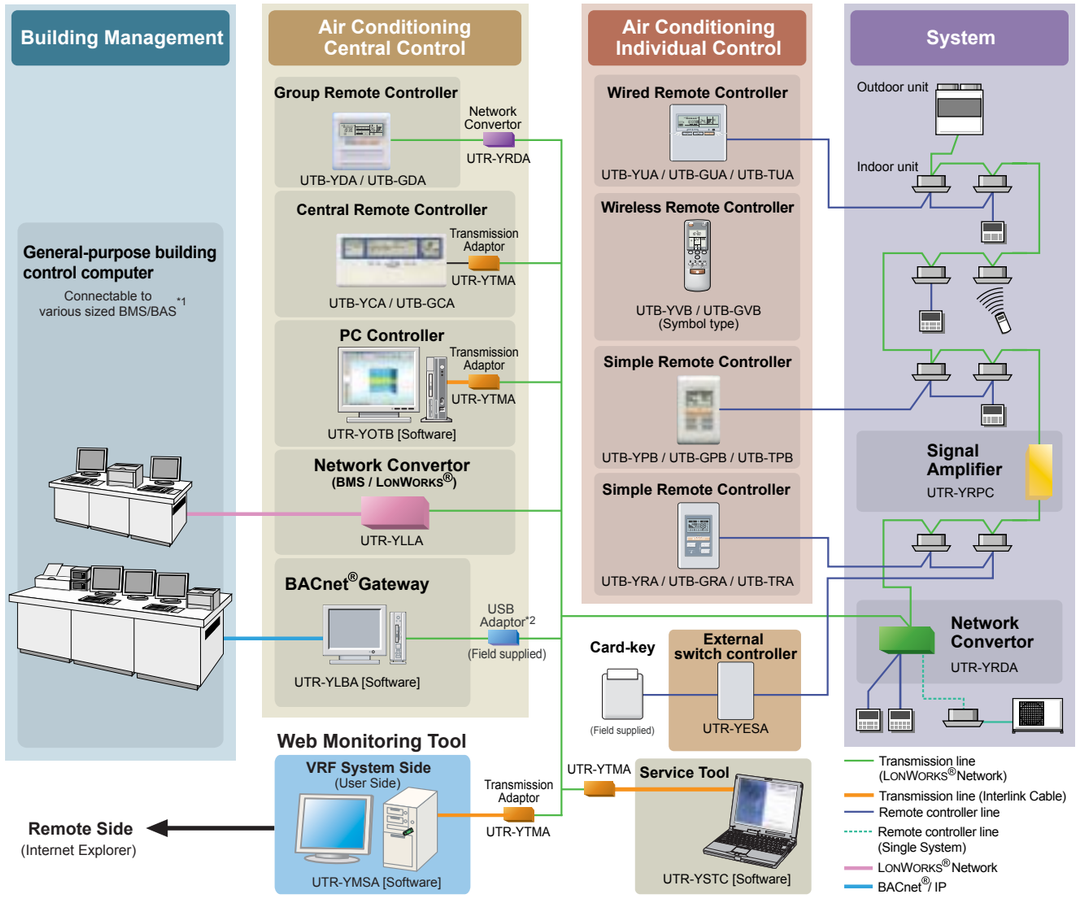
Features of control system

1. Reduced wiring as all system equipment accommodated on a single transmission line (non-polar 2-conductor).
2. Total wiring length (total length of transmission line) can be extended up to 2000m (by using signal amplifier units).
3. Maximum of 400 indoor units can be connected.
4. Indoor units can be controlled by wired, simple, wireless, group, central remote controller or PC controller.
5. Central control of single split type models (with exceptions) or big multi type air conditioners is possible from a central remote controller or PC controller.
6. Model combinations are dictated by the building's needs and not the system.
7. The 'simple' remote controller is ideal for installations such as hotel guest rooms.

Control system reliability

1. Individual operation of the indoor units ensures that the failure of one does not affect the whole system.
2. Maintenance efficiencies are raised through the connection of a PC anywhere on the data transmission line.
3. Error codes can be clearly displayed on the wired remote controller, simple remote controller, group remote controller, central remote controller or PC controller.

Configuration of control system



*1. BMS/BAS: Building Management System / Building Automation System. Building Management System is supplied by the other vendors.
*2 USB Adaptor is XLON® USB Adaptor of DH electronics company.

INDOOR UNIT

Slim cassette, designed for limited ceiling space

Cassette Type

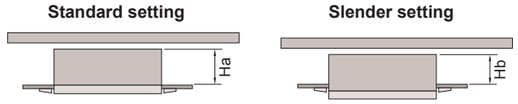
Models

AU20 / AU25 / AU30 Slim Type
AU36 / AU45 / AU54

Features

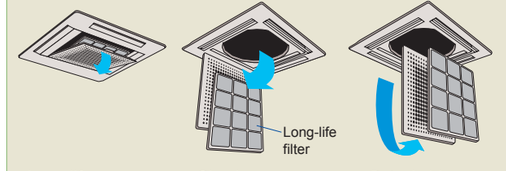
Flexible installation

Compact body ensures space saving installation.
A slender fit option is available where ceiling void space is limited.



	Standard setting	Slender setting
	Ha	Hb
AU20 / AU25 / AU30	235	200
AU36 / AU45 / AU54	285	250

Easy maintenance

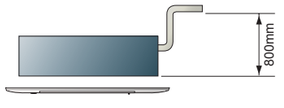


Long-life filter
High efficiency, long-life filter extends the cleaning cycle.

Simple maintenance
The control box is easy accessible for maintenance work. Wide opening for easy access.

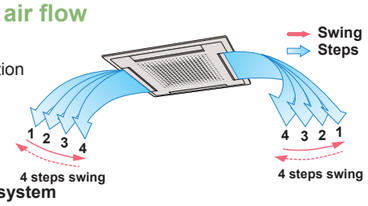
Detachable, washable filter and intake grille.

Condensate pump lift to 800mm

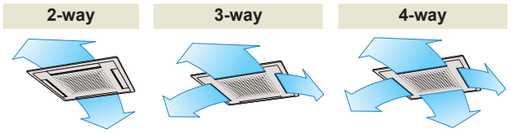


Comfortable air flow

4-step swing
Auto air flow direction and auto swing



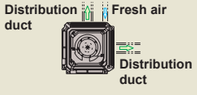
2~4 way air flow system
Select 2-way, 3-way or 4-way air flow to suit your needs.



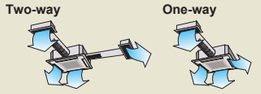
Wide air flow
Larger air flap distributes the outlet air flow a longer distance in the horizontal direction.

Duct connection hole opening

Fresh air can be introduced through this opening.



Conditioned air can be distributed by means of a distribution duct.



Improved noise level and air distribution

Noise output has been dramatically lowered.
・Improved turbo fan shape (aerodynamic design)
・Expanded air distribution
・Low internal resistance ・Moulded fan motor

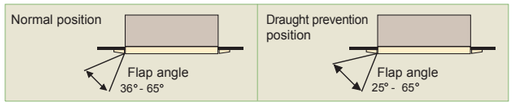
Air-flow volume can be switched

High ceiling mode (air flow up) and low-noise (air flow down) can be switched according to the height of the ceiling and other conditions by means of a PCB DIP switch.

	Standard	High 1 ceiling	High 2 ceiling	Low ceiling
Suitable ceiling height (m)	2.5—3	3—3.5	more than 3.5	less than 2.5

Draught prevention

Movement of the flap angle can be changed via a simple switch during installation, thereby preventing uncomfortable draughts.



Cassette (Compact) / Cassette Type

flexible control

FLEXIBLE CONTROL SYSTEM

Compact design for easy installation and maintenance

Cassette Type (Compact)

Models

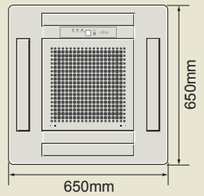
AU7 / AU9 / AU12 / AU14 / AU18

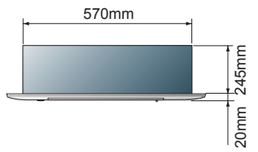
Features

Compact size

Compact grille fits European ceiling panel (600 x 600 mm).

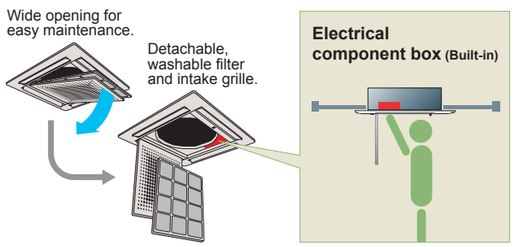
Punch Hall grille



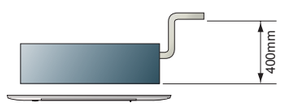


Easy maintenance

By placing the electrical component box inside the unit easy maintenance is assured.



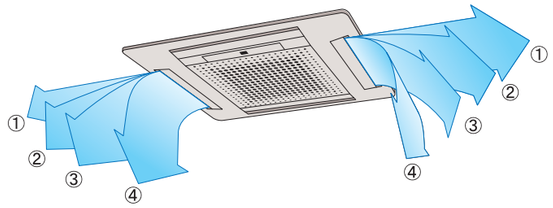
Condensate pump lift to 400mm



Comfortable air flow

4-step swing

Auto air flow direction and auto swing



2~4 way air flow system

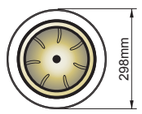
Select 2-way, 3-way or 4-way air flow to suit your needs.

2-way	3-way	4-way

Low noise

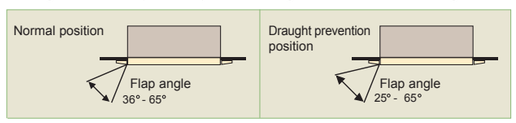
Large air flow at reduced noise output achieved by incorporating a large diameter variable pitch turbo fan.

7 blades fan



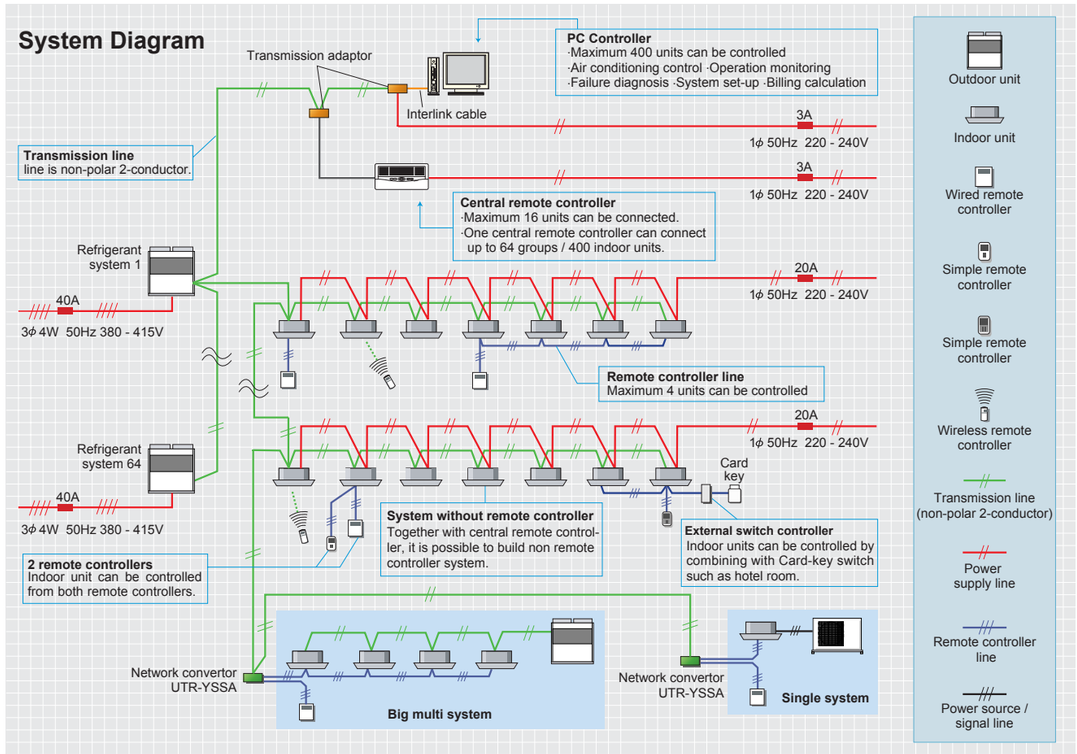
Draught prevention

Movement of the flap angle can be changed via a simple switch during installation, thereby preventing uncomfortable draughts.



Construction of Wiring System

Wiring configuration of the control system is made of power source wiring, transmission wiring and remote controller wiring.



Maximum connectable number per one transmission line

Refrigerant system	100
Indoor units	400
Outdoor units	100

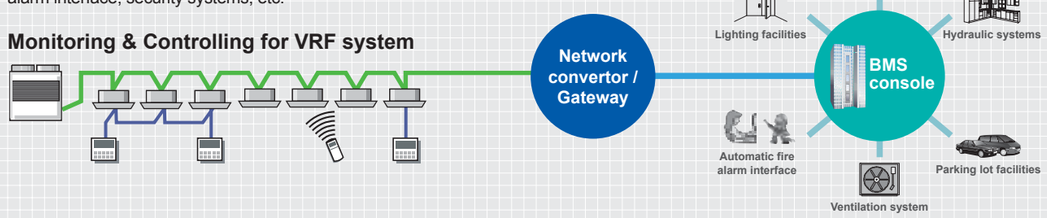
Combination of local remote controller

Wired, wireless and simple remote controllers can be used jointly.

Building Management System (BMS) Compatibility

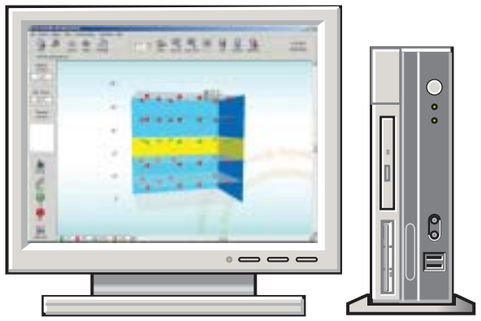
It is possible to control not just the air conditioning system but the whole building management system including lighting and electrical facilities, hydraulic systems, fire alarm interface, security systems, etc.

Monitoring & Controlling for VRF system



Controller features

Air conditioning central control



PC Controller [software]

UTR-YOTB [Option]

High performance and optimum control system for various building applications

- Up to 400 indoor units/400 groups/64 remote controller groups can be connected into one system for large scale buildings or hotels.
- Provides powerful functions for building air conditioning management, including automatic calculations of electrical costs and numerous data management functions, as well as standard equipment monitoring and control.

Functions

Central building monitoring and control

- Detailed settings can be programmed for each whole building/group/remote controller group or individual indoor unit.
- The PC and central remote controller can be used together, allowing system control from two or more locations if required.

Central control

The 6 functions of the standard controller can be locked from the PC: all functions, timer mode, operating mode, temperature setting, filter reset, on/off.
All functions can be controlled via the PC Controller only.

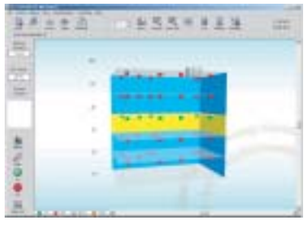
Auto mode (Priority-mode changer)

Auto mode function automatically switches between cooling and heating modes based on the temperatures set and the room temperature detected by the master indoor unit.
Other operating indoor units can be operated in the same operating mode as the master indoor unit.

Operation Control

User-friendly Operation

- Runs under Windows® 2000 and Windows® XP Professional / Home so is as easy to use as a standard PC.
- Operational status can be colour-coded for instant recognition: On/green, Off/red, test/orange, error/flashing.
- Operational status can be displayed to user's preference.



Rotating 3-D Display
When monitoring and controlling the operation by whole building.

Floor Layout Display
When monitoring and controlling the operation by each floor or group.

List Table Display
When monitoring and controlling each unit in detail.

INDOOR UNIT

	Floor & Ceiling Universal Type	Ceiling Type	Wall Mounted Type (Compact)	Wall Mounted Type	Ceiling Wall Type
					
	Model AB12 / AB14 / AB18 / AB24	Model AB30 / AB36 / AB45 / AB54	● This indoor unit can't be operated in the Heat Recovery Type System. Model AS7 / AS9 / AS12 / AS14	Model AS18 / AS24 / AS30	Model AW7 / AW9 / AW12 / AW14 / AW18 / AW24 / AW30
	see page 29	see page 30	see page 30	see page 31	see page 31
		●			
		●			
		●			
		●		●	●
	●			●	●
	●			●	●
	●				●
	●		●		●
	●		●		●
			●		●
			●		●

Linking with external control equipment is possible.

Diverse air conditioning control systems linked with various equipment inside the building can be built by using the external I/O port.

Prevents wireless remote controller interference

The signal cord of the wireless remote controller can be switched and prevents erroneous operation by interference between adjacent indoor units.

Simple external appearance by auto shut flap

Gap-free, flat, and simple external appearance by closing of the flap when operation stops.

Symmetrical design

Left and right symmetrical design harmonizes with any interior design and creates a tranquil atmosphere.

Full Range of Indoor Units

A full and complete range of indoor units is available

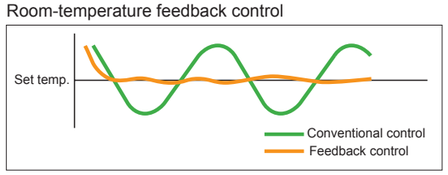
Capacity (kW)	Capacity (BTU/h)	Cassette Type (Compact)	Cassette Type	Duct Type (Compact)	Duct Type	High Static Pressure Duct Type
		 Model AU7 / AU9 / AU12 / AU14 / AU18	 Model AU20 / AU25 / AU30 (Slim Type) AU36 / AU45 / AU54	 Model AR7 / AR9 Model AR12 / AR14 / AR18	 Model AR25 / AR30 / AR36 / AR45	 Model AR36(H) / AR45(H) / AR60(H)
		see page 26	see page 27	see page 28	see page 28	see page 29
17.00	60,000					●
14.10	54,000		●			
12.70	45,000		●		●	●
10.50	36,000		●		●	●
8.80	30,000		● Slim Type		●	
7.05	25,000		● Slim Type		●	
6.80	24,000					
5.70	20,000		● Slim Type			
5.30	18,000	●		●		
4.05	14,000	●		●		
3.60	12,000	●		●		
2.80	9,000	●		●		
2.15	7,000	●		●		

Common features

Room temperature feedback control

Comfortable temperature control can be achieved by feedback control of intake air temperatures and the opening of electronic expansion valve.

Room-temperature feedback control



Energy saving operation

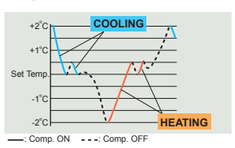
Energy saving operation is possible by changing the operation capacity according to the remote controller's setting.

COOLING operation :
The thermostat setting is automatically raised 1℃ every 60 minutes, until the thermostat is raised a total of 2℃.

HEATING operation :
The thermostat setting is automatically lowered 1℃ every 30 minutes, until the thermostat is lowered a total of 4℃.

Auto-Changeover

The unit automatically switches between heating and cooling modes based on your temperature setting and the room temperature.

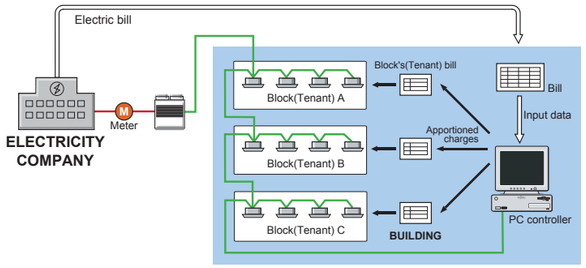


*It is only available for heat recovery type.

FLEXIBLE CONTROL SYSTEM

Calculating electrical costs

- Total electrical costs, billed for multiple indoor connected to the charge meter for air conditioning, is apportioned according to the accumulated refrigerant time and indoor unit capacity.
- Allows accounting for special rates (e.g., for night or weekend use).
- Calculations can be printed as final bills.



Schedule control

- Annual schedules can be set for each remote controller group.
- Start/stop, operating status and temperature settings can be recorded up to 72 times per day at 10 minute intervals for up to 6 configurations for each remote controller group.
- Setting over midnight is possible.
- Holiday settings including public holidays for a complete year can be programmed.
- The 6 functions of the standard controller can be locked by schedule control.

Schedule Control

Error display

Audible alarms are accompanied with explanatory text. Up to 100 alarms can be recorded for each piece of equipment, particularly useful during maintenance.

Error Warning

Operating record

The operating status of indoor units and accumulated operating time of outdoor units can be recorded and a daily or monthly report produced.

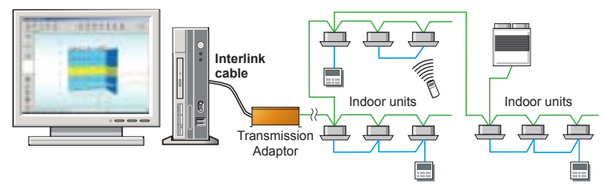
Operation Record

Pattern setting

It enables to recognize operation status, such as ON/OFF, operation mode and set temperature, as a combination pattern. An arbitrarily pattern operation can be done with just one button clicking.

Easy Installation

- Simple connection by Transmission Adaptor and Interlink cable (Interlink cable field supplied).
- Simple installation of software using only the CD supplied.



Requirements of PC for this software

Personal Computer		AT compatible machine that runs Microsoft®Windows®
	Operating System	Microsoft®Windows®2000 Professional (English version / Service pack3 or later) Microsoft®Windows®XP Professional / Home (English version / Service pack1 or later)
	CPU	Intel®Pentium®/ Celeron®, AMD Athlon™/ Duron™1GHz or higher
	HDD	4GB or more
	Memory	256 MB or more
	Interface	Serial port and USB port
	Accelerator	Requires that the internal graphics accelerator be compatible with Microsoft®DirectX®7.0 or later
Software		Adobe®Acrobat®Reader 4.0 or later
Hardware		Interlink cable (D-sub 9pin female connector) (Parts No.: KRS-L09-4K) [Field supplied]

<PACKING LIST>

Packing List	Software protection key / CD-ROM / Transmission Adaptor

Controller features

Air conditioning central control

FLEXIBLE CONTROL SYSTEM

Central Remote Controller

UTB-YCA / UTB-GCA [Option]

Functionality in a compact housing with built-in weekly timer

- Up to 400 indoor units/400 remote controller groups/64 groups can be controlled by one system.
- Up to 16 central remote controllers can be connected into one system allowing operation and monitoring to be achieved from the central control room, at each floor, by each tenant, or in the plant room.

Functions

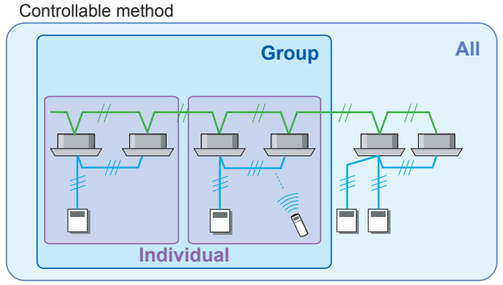
Control up to 400 indoor units

- Central remote controller can control the system by selecting All Groups, User Defined Groups or Individual Remote Controller Groups
- Accurate control of functions such as Start/Stop, Operating Mode, Temperature, and Air Velocity ensures occupancy comfort.

Central control

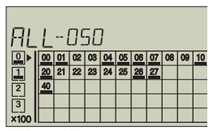
The 6 functions of the standard remote controller can be locked from the Central Remote Controller: all functions, timer mode, operating mode, temperature setting, filter reset, on/off.
All functions can be controlled via the Central Remote Controller only.

Controllable method

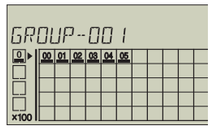


Easy Operation

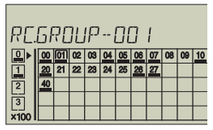
- Control functions are divided into three clusters: Timer Control, Central Control and Operational Control, which are clearly displayed.
- A large liquid crystal display clearly indicates which indoor unit is currently in operation.



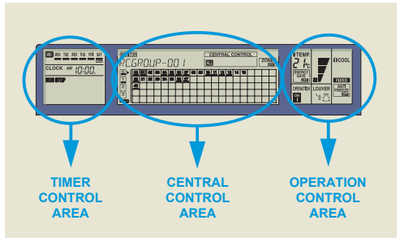
All Control Mode



Group Control Mode



Individual Control Mode




UTB-YPB / UTB-GPB / UTB-TPB


UTB-YRA / UTB-GRA / UTB-TRA

Simple Remote Controller

UTB-YPB / UTB-GPB / UTB-TPB [Option]
UTB-YRA / UTB-GRA / UTB-TRA [Option]

Simple remote controller concentrating on the basic operations.

- Up to 4 indoor units can be controlled with one remote controller.
- Suitable for hotels or offices which have many visitors coming in and going out and do not require detailed functions.

Dimension (H x W x D) (mm)	120 x 75 x 14

User friendly operation

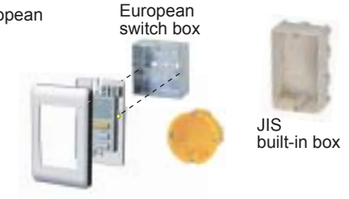
- Concentrates on the basic operations such as On/Off, Fan Control, Operation Mode Switching, and Temperature Setting.
- A large Start/Stop button is provided in the centre of the remote controller unit for easy operation.
- Simultaneous use with standard remote controller.
- Diagnostics are carried out during the 'stop' mode following an error display.

Back ground light

- Backlight enables easy operation in a darkened room.
- The backlight is lit during the button operations, and also 10 seconds more in operation mode and 5 seconds more in stop mode.

Simple installation work

- Can be mounted on the European Mounting Box (Installation dimension: 60mm) or the JIS Built-in Box (Installation dimension: 83.5mm).



Functions

Operation \ Model	UTB-YPB UTB-GPB UTB-TPB	UTB-YRA UTB-GRA UTB-TRA
On/Off	●	●
Fan control	●	●
Operation mode	●	—
Temp. setting	●	●

External Switch Controller

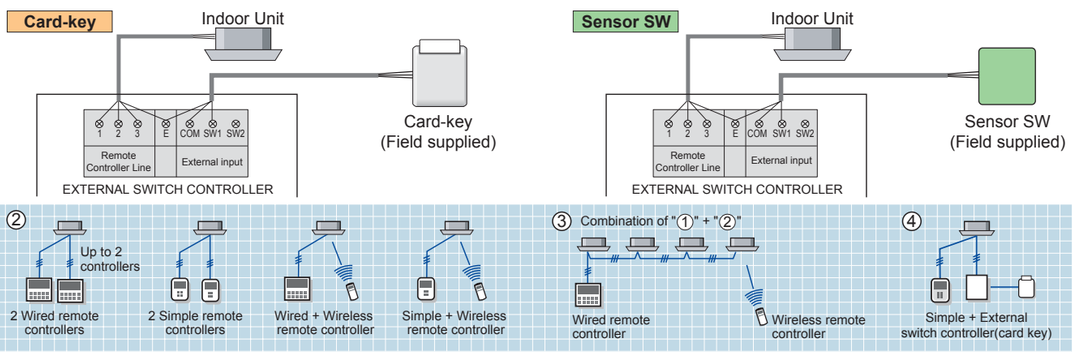
UTR-YESA [Option]

- ON/OFF, Temperature, Fan speed and Operation mode can be switched by a combination with Card-key switch equipped in facilities such as hotel room.
- Switching of air conditioner can be controlled by connecting other sensor switches.

*Card-key and other sensor switches are available as a field supplied parts.

Dimension (H x W x D) (mm)	120 x 75 x 30

Electrical wiring



Controller features

Air conditioning individual control

FLEXIBLE CONTROL SYSTEM

UTB-YVB / UTB-GVB
Symbol type

Wireless Remote Controller

UTB-YVB / UTB-GVB [Option] Symbol type

Simple Operations with a Choice of 4 Daily Timers

Dimension (H x W x D) (mm)	158 x 56 x 20

Built-in daily timer

Select from 4 different timer programs : On / Off / Program / Sleep

Program Timer :

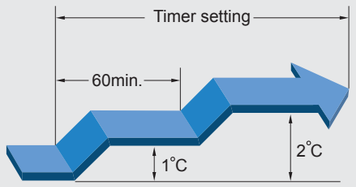
The program timer operates the ON and OFF timer once within a 24 hour period

Sleep Timer :

The sleep timer function automatically corrects the set temperature according to the time setting to prevent excessive cooling and heating while sleeping.

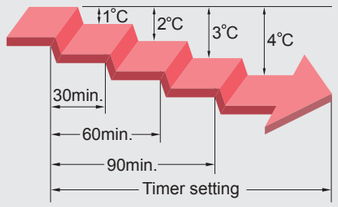
Cooling operation/dry operation

When the sleep timer is set, the set temperature automatically rises 1°C every hour. The set temperature can rise up to a maximum of 2°C.



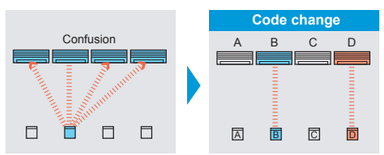
Heating operation

When the sleep timer is set, the set temperature automatically drops 1°C every 30 minutes. The set temperature can drop to a maximum of 4°C.

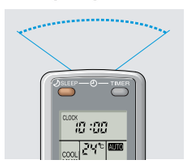


Easy installation and operation

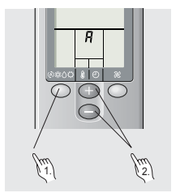
- Code selector switch prevents indoor unit mix-up. (Up to 4 codes can be set.)



- Wide and precise transmitting range.

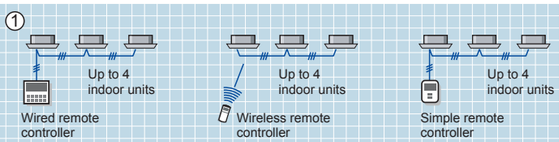


1. Press the MASTER CONTROL button for more than five seconds to start the code change.
2. Press the (+) or (-) button to select the desired code.
   A → B → C → D
3. Press the MASTER CONTROL button again to end the code change.



Standardization and simultaneous use of remote controllers

Wired, simple and wireless remote controllers can be used with the same indoor unit.
Simultaneous use is also possible.
A separate signal receiver kit is not required as the remote controller signal receiver is built into the indoor unit body.

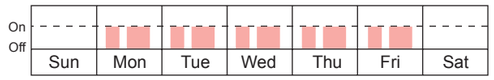


Built-in weekly timer

- The timer function, which can control up to 400 indoor units, provides detailed scheduling for each remote controller group.
- A simple approach to system configuration reduces wiring costs.

1. Possible to set different ON / OFF time twice a day for each day of the week.
2. Possible to set time in 10 minutes steps.
3. Time operation for a reserved day can be cancelled temporarily by pressing the "DAY OFF" button in advance.
4. Time setting can be carried over to the next day.
5. Copy and Paste can be used for time settings for each day.

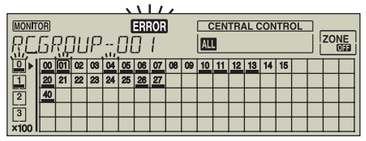
Weekly schedule Example : Office



Operation : Monday~Friday 8:00~12:00 and 13:00~18:00

Error display

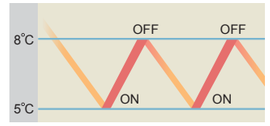
Up to 62 error codes can be displayed. The last 2 error codes can be displayed, allowing easy inspection, service and maintenance.



Advanced functions

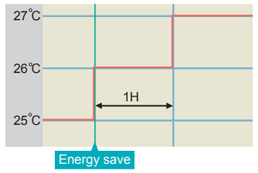
Anti Freeze :

In cold regions, room temperature drops at night. This function prevents freezing of the water and other parts. When the room temperature drops to 5°C or less the heating is automatically switched on. Then the room temperature reaches 8°C the heating automatically switched off.

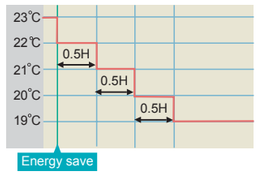


Energy Saving Operation :

During COOLING operation
When the ENERGY SAVE is pressed, the thermostat setting is automatically raised 1°C every 60 minutes, until the thermostat is raised a total of 2°C.



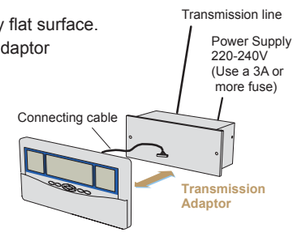
During HEATING operation
When the ENERGY SAVE is pressed, the thermostat setting is automatically lowered 1°C every 30 minutes, until the thermostat is lowered a total of 4°C.

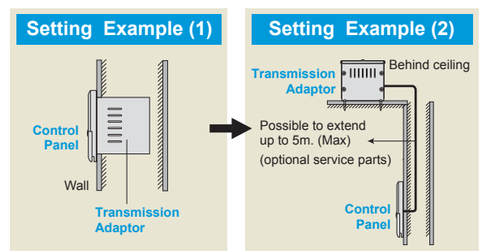


Memory : Central remote controller maintains original settings for indoor units. This data can easily be transmitted to the system even after the operating conditions have been changed.

Simple and Convenient Installation

- The controller can be installed on any flat surface.
- The control panel and transmission adaptor can be installed separately.
- For flexibility in installation, the main unit can be built into the wall or exposed.





Specifications

	UTB-YCA / UTB-GCA	
	Control Panel	Transmission Adaptor
Power Supply	DC 12V	220-240V 50-60Hz Single phase
Power Consumption (W)	4.8	4.8
Fuse Capacity (A)	3	3
Dimension (H x W x D)(mm)	143 x 296 x 22	107 x 288 x 100
Weight (g)	550	1300
Packing Size (H x W x D)(mm)	——	145 x 330 x 190
Transmission Line	——	Shielded Non-polar, 2 core cable

<PACKING LIST>

Packing List	Control Panel / Transmission Adaptor / Connecting Cable

Controller features

Air conditioning central control

Group Remote Controller

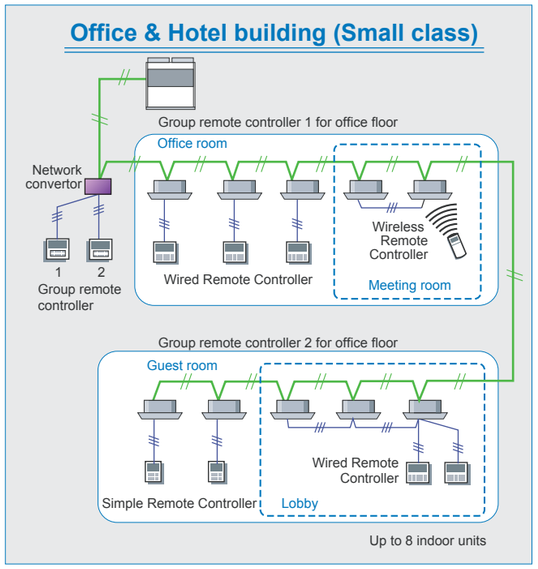
UTB-YDA / UTB-GDA [Option]

Group control of indoor units with simple operation

- Up to 8 indoor units can be controlled with a single controller.
- Up to 64 Group Remote Controllers can be connected in a single VRF system.

Control up to 8 indoor units

- Control and monitoring of up to 8 indoor units is possible with a single Group Remote Controller.
- Up to 64 Group Remote Controllers can be connected in a single VRF system.
- 4 Group Remote Controllers can be connected to a single Network Convertor (UTR-YRDA).
- A single Network Convertor (UTR-YRDA) covers 2 refrigerant circuits.



High performance and compact size

- ON/OFF, operation mode, set temperature and air flow can be controlled / monitored centrally or individually.

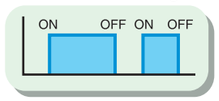
Central control + ON/OFF control + Weekly timer →

Built-in weekly timers

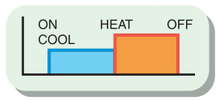
The WEEKLY TIMER is provided as a standard function.

1. The timer can be set up for up to 4 times/day. (On/Off, operating mode, set temperature)
2. Allows separate settings for each day of the week.

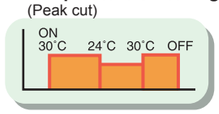
■ **ON/OFF switching**



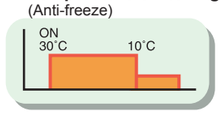
■ **Cooling/Heating switching**



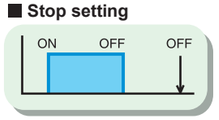
■ **Temperature switching** (Peak cut)



■ **Temperature switching** (Anti-freeze)



■ **Stop setting**



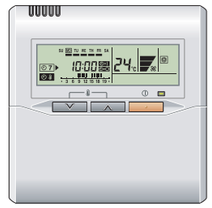
Specifications

Model		Group Remote Controller	Network Convertor
		UTB-YDA / UTB-GDA	UTR-YRDA [Option]
Power Supply		DC 12V	220-240V 50-60Hz
Dimension (mm)	Height	120	67
	Width	120	288
	Depth	20	211
Weight (g)		200	1,400

Controller features

Air conditioning individual control

FLEXIBLE CONTROL SYSTEM



Wired Remote Controller

UTB-YUB / UTB-GUB / UTB-TUB [Option]

Simple Operation with Built-in Weekly / Daily Timer

- Up to 4 indoor units can be controlled with 1 controller.
- Up to 2 wired remote controllers can be connected to 1 indoor unit.

Dimension (H x W x D) (mm)	120 x 120 x 17

- Build-in thermo sensor doesn't work in S series system.

Powerful features and compact size

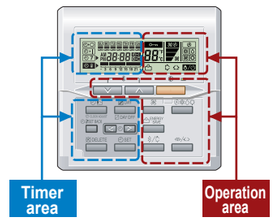
This wired remote controller incorporates three primary functions into a single unit.

Wired remote controller + Weekly timer + Setback timer →

Easy-to-understand operation

Diverse timer control

The operation / display section are zoned into a timer area and an operation area.
Also, the ON/OFF timer uses a remaining time feature and allows diverse timer settings corresponding to the application.

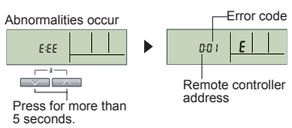


Diagnosis check function

There are two methods for interrogating the cause of failure when a malfunction occurs:

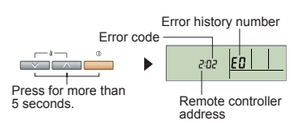
Malfunction diagnosis function :

Should an abnormality occur during system operation, the error code of the connected indoor units can be displayed.



Error history :

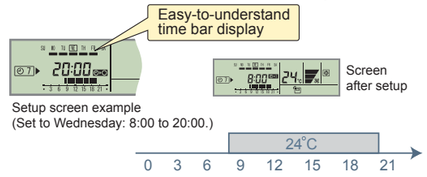
The last 16 error codes can be accessed via the controller. This is useful for troubleshooting system abnormalities and helpful for determining error causes.



Built-in timers

■ **Weekly timer :**

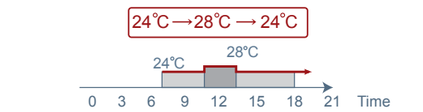
Two ON/OFF times can be set for each day of the week.



■ **Setback timer :**

Allows the user to set temperatures for two time spans over the course of each day of the week.

■ **At "Weekly timer" + "Set back timer" setup :**



Energy Saving Operation

Energy saving operation is possible by changing the operation capacity according to the remote controller's setting. (See details on page 24)

Simple installation work

Can be mounted on the European Mounting Box (Installation dimension: 60mm) or the JIS Built-in Box (Installation dimension: 83.5mm).