

Business

The VRF business range
The most advanced solutions for larger buildings.

Business



The most advanced commercial air conditioning solution.

In recent years user expectations of air conditioning systems have significantly changed.

Not only do they expect zone heating and cooling, but also demand a range of services that optimises room comfort and reduces energy and maintenance costs, combined with **maximised simplicity and operating flexibility.**

The system must be energy-efficient, versatile in installation and functionality, flexible in programming and use, reliable and easy to use. There are more and more requests for central and precise management of the system, permitting accurate and personalised calculation of the energy consumption. The VRF systems are

the perfect answer to all these requirements: and are increasingly used as an alternative to traditional water-based heating and cooling systems.

VRF. The freedom of choice.

Variable refrigerant flow benefits from the advantages of direct expansion linked to inverter control and the most sophisticated electronic control. This technology has many advantages,

from the system design to the installation and operation phase.

The wide range of indoor units makes VRF the most flexible choice to satisfy any building requirement.

Toshiba has two VRF system ranges, SMMS heat pumps providing cooling and heating, and SHRM units providing simultaneous heating and cooling - both unique, energy-efficient and versatile.



Unlimited flexibility.

Optimised product choice.

The ultimate inverter system.

Minimised consumption.



Energy savings according to Toshiba.

The advanced electronic technology in these systems permits capacity control that results in significant energy savings.

This objective is achieved thanks to the use of **sophisticated inverter control** and modulating control valves in each indoor unit.

These permit linear variation of the refrigerant flow in any circuit, directly proportional to the thermal load, resulting in further energy savings.

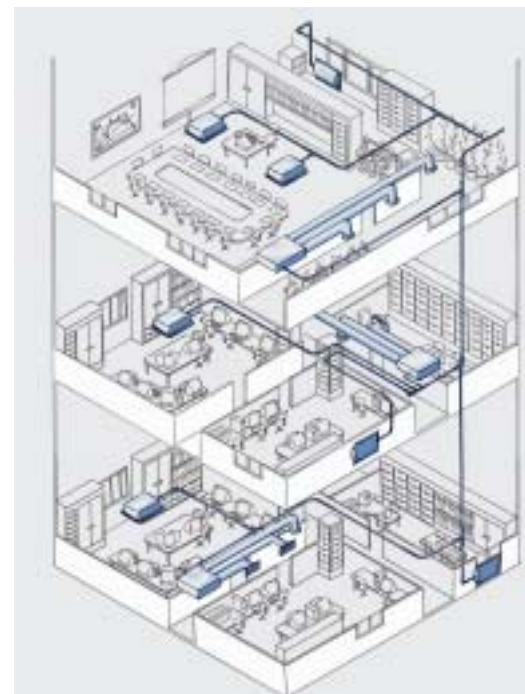
In fact the power input of the outdoor unit is dramatically reduced with the heat load reduction in the areas served. Another factor of energy savings and management cost savings is that the systems are sized for the maximum load, and usually operate at part load.

Maintenance costs are also minimised. No particular routine maintenance is required, except for periodical cleaning of the indoor unit filters.

Typical applications and advantages.

VRF systems offer safety, reliability, ambient comfort, modularity, **flexibility**, ease-of-installation and durability, but above all considerable energy savings. Typical applications of this system are those that require the product features that are linked to energy savings.

Therefore more and more commercial centres, office towers, hospitals and above all hotels have selected this type of system.



Toshiba: **R410A** VRF delivers maximum reliability and energy savings.

With the new generation of variable refrigerant flow units, SMMS cooling only and heat pump and the SHRM heat recovery ranges, Toshiba sets new technological standards, incorporating the unique DC twin-rotary compressors in all outdoor units, compatible with the high-density refrigerant R410A.

Thanks to the use of these dual-compressor systems, the system operation load is distributed more evenly, with a special controller regulating the operating sequence of outdoor units and individual compressors.

This innovative technology also allows optimisation and balancing of the operating time for each component, considerably enhancing the reliability of the complete system.

When the system is in operation, the latest Toshiba control systems select the heat exchanger and compressor to supply the required capacity in the most efficient way.

This operating method continuously optimises the power input compared with a traditional on/off system and can reduce it by up to 30%.

With the exclusive dual inverter Toshiba technology and the use of high-efficiency R410A refrigerant, the new range of SMMS and SHRM systems offers state-of-the-art air conditioning in terms of energy efficiency to the international markets, with EER values of up to 4.1 and COPs of up to 3.80.

Design optimised for high-efficiency, non-ozone-depleting refrigerant R410A

Twin-inverter compressors in all outdoor units

New DC twin-rotary compressors

Superior EER and COP values





Maximum care and respect of the environment.

Toshiba's commitment to the research and development of new technologies with zero impact on the environment demonstrated by Toshiba has led to the development of the new SMMS cooling only and heat pump and the SHRM heat recovery ranges, optimised for the high-efficiency non-ozone-depleting refrigerant R410A.

The use of the sophisticated dual-

inverter control optimises the load distribution to deliver the capacity needed to reach and maintain the required temperature, eliminating inefficient power surges typical for non-inverter systems.

Complete peace-of-mind from Toshiba: stable operation

With the use of the special inverter-controlled compressors, the new SMMS and SHRM ranges offer a significant reduction in mechanical and electrical stress.

This is due to the more gradual start-up compared with traditional on/off

compressors, increasing the durability and reliability of the components.

The models of the new range also feature the active Oil Management System that constantly checks the oil level in each compressor and automatically transfers oil from another

outdoor unit, if an oil shortage is detected in any compressor.

Precision is our top priority.

Sophisticated inverter control permits matching the actual refrigerant flow to the capacity required by the application for each indoor unit. This results in optimised efficiency of the refrigerant cycle and increased precision in maintaining the required temperature, improving comfort for the occupants.

The required capacity and the relating technical parameters for each indoor unit are electronically transmitted to the outdoor unit in order to optimise the zone load calculation and to control the actual refrigerant flow to each indoor unit, using the special Pulsed Modulating Valves (PMV).

Silence is golden.

As a result of detailed improvements such as the fan drive circuit, fan blade design and construction of the outlet duct our design teams have successfully reduced outdoor unit noise levels. These studies have eliminated the peak noises levels at start up,

normally associated with fixed-speed systems, by using soft start controls. An optional night operation/sound deadening control circuit board is available for reducing noise levels overnight by limiting the system's maximum operation. This has resulted

in operating noise levels below 50 dB(A). The exclusive use of inverter-driven compressors also significantly contributes to reducing noise emissions.

- └ SMMS
- └ R410A
- └ DUAL INVERTER VRF HEAT PUMP



SMMS R410A VRF inverter

Features

The new **2-pipe VRF** Super Modular Multi System (SMMS) operates with R410A refrigerant and incorporates the latest inverter drive technology in all outdoor unit models.

The SMMS incorporates twin-inverter compressors in every outdoor unit, unique innovation from Toshiba.

Capacities range from 14 to 135 kW in cooling mode and 16 to 150 kW in heating mode with a capability to serve up to 48 indoor units.

Key features

Best EER on the market: (4.1 with 14.4 kW size) for reduced energy consumption and increased savings.

Advanced compressor oil management system guarantees improved reliability.

Interactive Intelligence.

TCC Link: State-of-the-art communication bus system with automatically configured addressing.

Up to 48 indoor units can be connected - Toshiba exclusivity.

Latest Inverter Technology with the Intelligent Power Drive Unit (IPDU).

Extended pipe runs up to 300 m - for greater application flexibility.

Technical specifications heat pump

Outdoor unit MMY-		MAP0501HT8 5 HP	MAP0601HT8 6 HP	MAP0801HT8 8 HP	MAP1001HT8 10 HP	MAP1201HT8 12 HP
Cooling capacity*	kW	14	16	22.4	28	33.5
Power input	kW	3.65	4.64	5.67	7.67	11.92
EER	W/W	3.84	3.45	3.95	3.65	2.81
Energy efficiency class		A	A	A	A	C
Running current	A	5.85	7.28	8.62	11.55	18.30
Heating capacity**	kW	16	18	25	31.5	37.5
Power input	kW	3.84	4.56	5.88	7.97	10.19
COP	W/W	4.17	3.95	4.25	3.95	3.68
Energy efficiency class		A	A	A	A	A
Running current	A	6.09	7.08	8.93	11.98	15.65
Air flow	m ³ /h - l/s	9000 - 2520	9000 - 2520	9000 - 2520	9000 - 2520	9000 - 2520
Sound pressure level - at 1 m	dB(A)	55	56	57	58	59
Operating range	°C db	-5 - 43	-5 - 43	-5 - 43	-5 - 43	-5 - 43
Operating range	°C wb	-20 - 16	-20 - 16	-20 - 16	-20 - 16	-20 - 16
Dimensions (H x W x D)	mm	1800 x 990 x 750	1800 x 990 x 750	1800 x 990 x 750	1800 x 990 x 750	1800 x 990 x 750
Weight	kg	228	228	258	258	258
Compressor type		Hermetic	Hermetic	Hermetic	Hermetic	Hermetic
Refrigerant charge R410A	kg	8.5	8.5	12.5	12.5	12.5
Pipework						
Suction line type - diameter		Flare - 5/8	Brazed - 3/4	Brazed - 7/8	Brazed - 7/8	Brazed - 1-1/8
Liquid line type - diameter	in	Flare - 3/8	Flare - 3/8	Flare - 1/2	Flare - 1/2	Flare - 1/2
Oil balance pipe connection type - diameter	in	Flare - 3/8	Flare - 3/8	Flare - 3/8	Flare - 3/8	Flare - 3/8
Maximum equivalent length separation	m	175	175	175	175	175
Maximum actual piping separation	m	150	150	150	150	150
Maximum pipe length	m	300	300	300	300	300
Maximum lift (indoor unit above/below)***	m	40/50	40/50	40/50	40/50	40/50
Power supply	V-ph-Hz	400-3-50	400-3-50	400-3-50	400-3-50	400-3-50

* Based on an indoor air temperature of 27°C db/19°C wb and an outdoor air temperature of 35°C db.

** Based on an indoor air temperature of 20°C db and an outdoor air temperature of 7°C db/6°C wb.

*** If the height difference between indoor units exceeds 3 m and if the indoor unit is above, maximum lift is reduced to 30 m.



Protection devices.

- Discharge and suction temperature sensors
- Internal overload relay
- Compressor overcurrent relay
- Overcurrent sensor
- High pressure switch
- Low pressure sensors

- └ SHRM
- └ R410A
- └ DUAL INVERTER
- └ HEAT RECOVERY VRF



SHRM R410A VRF HEAT RECOVERY

Features

In 2004 Toshiba launched the Super Modular Multi system, featuring unbeatable energy consumption efficiency with an amazing coefficient of performance (COP), high-efficiency non-ozone-depleting R410A, and the dual inverter system with DC twin-rotary compressors. To complement the successful SMMS range, Toshiba now offers the **three-pipe VRF** that delivers simultaneous cooling and heating and exceptional energy efficiency. The three-pipe VRF Super Heat Recovery Multi systems have set new standards in the global market place.

For ease of installation and cost saving the 8 and 10 HP units are modular.

Key features

Unbeatable energy consumption efficiency: average COP of 3.97 (22.4 kW).

Increased comfort: cooling or heating is automatically selected on a unit-by-unit basis to suit local area requirements and operating environment, thanks to the compact flow selector unit.

Toshiba's unique piping branch flexibility: the three-way pipe connection between indoor and outdoor units accommodates an installation height variation between indoor units of 35 m (equivalent to a 9-story building).

Enviably reliable with the Active Oil Management system.

Wide control applications: Artificial Intelligence network system available and Building Management System (BMS) compatible.

Technical specifications heat pump

Outdoor unit		MMY-MAP0802FT8 8 HP	MMY-MAP1002T8 10 HP	MMY-MAP1202T8 12 HP
Cooling capacity*	kW CO	22.4	28.0	33.5
Power input	kW CO	6.07	8.54	12.9
EER	W/W CO	3.69	3.28	2.60
Energy efficiency class	CO	A	B	E
Running current	A CO	9.25	13.15	19.85
Heating capacity**	kW HP	25.0	31.5	35.5
Power input	kW HP	6.29	8.73	9.65
COP	W/W HP	3.97	3.61	3.68
Running current	A HP	9.55	13.4	14.85
Air flow	m ³ /h - l/s	9900 - 2750	10500 - 2916	10500 - 2916
Sound pressure level - at 1m	dB(A)	57	58	59
Operating range, cooling	°C db	-10 - 43	-10 - 43	-10 - 43
Operating range, heating	°C wb	-20 - 15.5	-20 - 15.5	-20 - 15.5
Dimensions (H x W x D)	mm	1800 x 990 x 750	1800 x 990 x 750	1800 x 990 x 750
Weight	kg	263	263	263
Compressor type		Hermetic	Hermetic	Hermetic
Refrigerant charge R410A	kg	11.5	11.5	11.5
Pipework				
Suction line type - diameter	in	Brazed - 7/8	Brazed - 7/8	Brazed - 1-1/8
Liquid line type - diameter	in	Brazed - 3/4	Brazed - 3/4	Brazed - 3/4
Discharge line connection type - diameter	in	Flare - 1/2	Flare - 1/2	Flare - 1/2
Oil balance pipe	in	Flare - 3/8	Flare - 3/8	Flare - 3/8
Maximum equivalent length separation	m	150	150	150
Maximum actual piping length	m	125	125	125
Maximum total pipe length	m	300	300	300
Maximum lift (Indoor unit above/below)***	m	30/50	30/50	30/50
Power supply	V-ph-Hz	400-3-50	400-3-50	400-3-50

* Based on an indoor air temperature of 27°C db/19°C wb and an outdoor air temperature of 35°C db.

** Based on an indoor air temperature of 20°C db and an outdoor air temperature of 7°C db/6°C wb.

*** If the height difference between indoor units exceeds 3 m and if the indoor unit is above, max. lift is reduced to 30 m.



Protection devices.

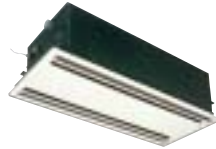
- Discharge and suction temperature sensors
- Internal overload relay
- Compressor overcurrent relay
- Overcurrent sensor
- High pressure switch
- Low pressure sensors



Four-way ceiling cassette

The classic choice

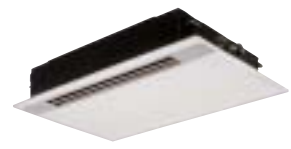
- new panel design improves air distribution and control
- easy access to control components via corner pockets, facilitating installation and height adjustment
- high lift drain (850 mm)
- simplified wiring connections



Two-way ceiling cassette

Ideal for smaller rooms

- slim and flat ceiling panel, just 8 mm high
- long-life filters fitted as standard
- fresh air intake is possible
- condensate drain pump included (510 mm)
- low noise design and balanced air flow



One-way ceiling cassette

The perfect choice for hotels and reception areas

- ideal for smaller rooms where one way air distribution is required
- compact hi-tech design
- condensate drain pump included (350 mm)



Standard ducted unit

The versatile choice

- allows complete design flexibility
- full range of filters to enhance indoor air quality
- fresh air intake is possible
- condensate drain pump included (27 mm)



High-pressure ducted unit

Meeting all your design criteria

- compatible with external static pressures up to 196 Pa
- inspection hole enables easy access and maintenance
- full range of options available



Slim-duct unit

Unobtrusive, concealed installation

- only 230 mm in height for greater application flexibility
- quiet powerful operation
- Perfect comfort throughout the room
- can use any style of air diffuser
- easy installation and maintenance



Ceiling-suspended unit

Ideal for refurbishment projects

- air distribution automatically set for cooling or heating mode
- refrigerant piping from the rear, right or top and two drain pipe directions possible
- optional high lift drain kit (600 mm)



Floor-mounted console

Suitable for refurbishment projects

- refrigerant and drain piping can be from four directions
- air distribution can be reversed to meet the occupants' preference
- wide choice of installation settings



Concealed-chassis unit

Perfect for perimeter walls

- ideal for commercial buildings with large fluctuations in load
- very quiet, ideal for specialist applications such as libraries
- split front panel for easy access
- can be hidden behind a decorative panel to blend with the room interior



Tall floor-standing unit

Ideal for rooms with no ceiling void

- reduced footprint
- wide capacity range
- air distribution angle up to 150°
- ideal for rooms with low ceilings, computer rooms and call centres



High-wall unit

Compact and stylish

- refrigerant piping can be from three directions
- 70° directional auto-swing louvre ensures even air distribution
- auxiliary piping for easy installation



Compact high-wall unit





New elegant aesthetics

- Weight reduced by 45% compared to the previous model
- Precise capacity control at all conditions
- Auto-swing mechanism
- Panel is easily removed




Technical specifications **heat pump**

Model type	Model name	Capacity code	Cooling capacity kW	Heating capacity kW	Height mm	Width mm	Depth mm	Weight kg
4-Way cassette 	MMU-AP0091H	1	2.8	3.2	256	840	840	20
	MMU-AP0121H	1.25	3.6	4.0				
	MMU-AP0151H	1.7	4.5	5.0	256	840	840	22
	MMU-AP0181H	2	5.6	6.3				
	MMU-AP0241H	2.5	7.1	8.0	256	840	840	23
	MMU-AP0271H	3	8.0	9.0				
	MMU-AP0301H	3.2	9.0	10.0				
	MMU-AP0361H	4	11.2	12.5	319	840	840	28
	MMU-AP0481H	5	14.0	16.0				
	MMU-AP0561H	6	16.0	18.0				
2-Way cassette 	MMU-AP0071WH	0.8	2.2	2.5	398	830	550	33
	MMU-AP0091WH	1	2.8	3.2				
	MMU-AP0121WH	1.25	3.6	4.0				
	MMU-AP0151WH	1.7	4.5	5.0	398	1350	550	44
	MMU-AP0181WH	2	5.6	6.3				
	MMU-AP0241WH	2.5	7.1	8.0	398	1350	550	48
	MMU-AP0271WH	3	8.0	9.0				
	MMU-AP0301WH	3.2	9.0	10.0				
1-Way cassette 	MMU-AP0071YH	0.8	2.2	2.5	235	850	400	22
	MMU-AP0091YH	1	2.8	3.2				
	MMU-AP0121YH	1.25	3.6	4.0				
	MMU-AP0151SH	1.7	4.5	5.0	198	1100	655	27
	MMU-AP0181SH	2	5.6	6.3				
	MMU-AP0241SH	2.5	7.1	8.0	198	1200	655	31
Concealed duct, standard type 	MMD-AP0071BH	0.8	2.2	2.5	320	550	800	27
	MMD-AP0091BH	1	2.8	3.2				
	MMD-AP0121BH	1.25	3.6	4.0				
	MMD-AP0151BH	1.7	4.5	5.0	320	700	800	30
	MMD-AP0181BH	2	5.6	6.3				
	MMD-AP0241BH	2.5	7.1	8.0	320	1000	800	39
	MMD-AP0271BH	3	8.0	9.0				
	MMD-AP0301BH	3.2	9.0	10.0				
	MMD-AP0361BH	4	11.2	12.5	320	1350	800	51
	MMD-AP0481BH	5	14.0	16.0				
MMD-AP0561BH	6	16.0	18.0					
Concealed duct, high static pressure 	MMD-AP0181H	2	5.6	6.3	380	850	660	50
	MMD-AP0241H	2.5	7.1	8.0	380	850	660	52
	MMD-AP0271H	3	8.0	9.0				
	MMD-AP0361H	4	11.2	12.5	380	850	660	56
	MMD-AP0481H	5	14.0	16.0	380	1200	660	67
	MMD-AP0721H	8	22.4	25.0	470	1380	1250	155
	MMD-AP0961H	10	28.0	31.5				
Slim duct, type 	MMD-AP0071SPH	0.8	2.2	2.5	210	845	645	24
	MMD-AP0091SPH	1	2.8	3.2				
	MMD-AP0121SPH	1.25	3.6	4.0				
	MMD-AP0151SPH	1.7	4.5	5.0	210	845	645	26
	MMD-AP0181SPH	2	5.6	6.3				
Ceiling-suspended 	MMC-AP0151H	1.7	4.5	5.0	210	910	680	21
	MMC-AP0181H	2	5.6	6.3				
	MMC-AP0241H	2.5	7.1	8.0	210	1180	680	25
	MMC-AP0271H	3	8.0	9.0				
	MMC-AP0361H	4	11.2	12.5	210	1595	680	33
	MMC-AP0481H	5	14.0	16.0				
High-wall (version 2) 	MMK-AP0072H	0.8	2.2	2.5	275	790	208	11
	MMK-AP0092H	1	2.8	3.2				
	MMK-AP0122H	1.25	3.6	4.0				
High-wall (version 1) 	MMK-AP0071H	0.8	2.2	2.5	368	895	210	18
	MMK-AP0091H	1	2.8	3.2				
	MMK-AP0121H	1.25	3.6	4.0				
	MMK-AP0151H	1.7	4.5	5.0	368	1055	210	19
	MMK-AP0181H	2	5.6	6.3				
	MMK-AP0241H	2.5	7.1	8.0	368	1430	210	25
Floor-standing, cabinet type 	MML-AP0071H	0.8	2.2	2.5	630	950	230	37
	MML-AP0091H	1	2.8	3.2				
	MML-AP0121H	1.25	3.6	4.0				
	MML-AP0151H	1.7	4.5	5.0				
	MML-AP0181H	2	5.6	6.3				
	MML-AP0241H	2.5	7.1	8.0	630	950	230	40
Floor-standing, concealed type 	MML-AP0071BH	0.8	2.2	2.5	600	745	220	21
	MML-AP0091BH	1	2.8	3.2				
	MML-AP0121BH	1.25	3.6	4.0				
	MML-AP0151BH	1.7	4.5	5.0	600	1045	220	29
	MML-AP0181BH	2	5.6	6.3				
	MML-AP0241BH	2.5	7.1	8.0				
Tall floor-standing 	MMF-AP0151H	1.7	4.5	5.0	1750	600	210	48
	MMF-AP0181H	2	5.6	6.3				
	MMF-AP0241H	2.5	7.1	8.0	1750	600	210	49
	MMF-AP0271H	3	8.0	9.0				
	MMF-AP0361H	4	11.2	12.5	1750	600	390	65
	MMF-AP0481H	5	14.0	16.0				
	MMF-AP0561H	6	16.0	18.0				

SMMS Technical specifications **heat pump**

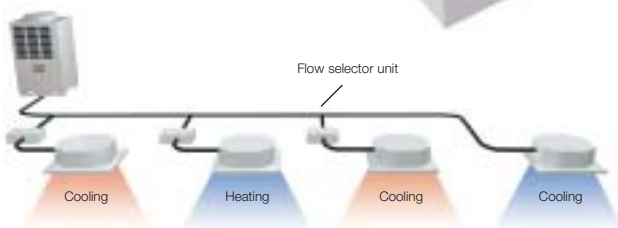
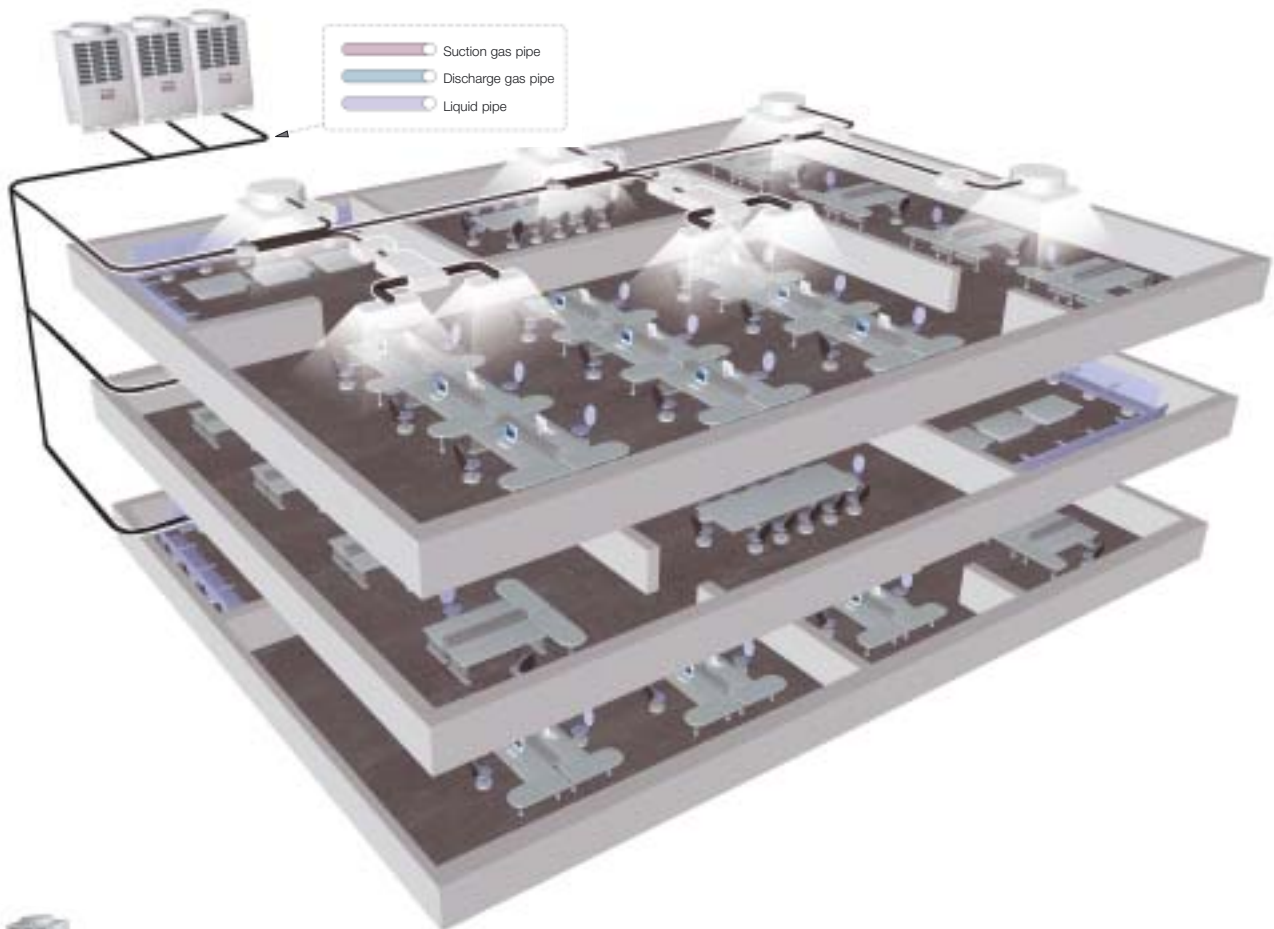
	Model name	Size	Cooling capacity	Heating capacity	Outdoor units in combination	Maximum number of indoor units
	MMY-MAP0501HT8	5 HP	14 kW	16 kW	1	8
	MMY-MAP0601HT8	6 HP	16 kW	18 kW	1	10
	MMY-MAP0801HT8	8 HP	22.4 kW	25 kW	1	13
	MMY-MAP1001HT8	10 HP	28 kW	31.5 kW	1	16
	MMY-MAP1201HT8	12 HP	33.5 kW	37.5 kW	1	20
	MMY-MAP1401HT8	14 HP	38.4 kW	43 kW	2 (22.4 kW + 16 kW)	23
	MMY-MAP1601HT9	16 HP	45 kW	50 kW	2 (22.4 kW + 22.4 kW)	27
	MMY-MAP1801HT10	18 HP	50.4 kW	56.5 kW	2 (28 kW + 22.4 kW)	30
	MMY-MAP2001HT11	20 HP	56 kW	63 kW	2 (28 kW + 28 kW)	33
	MMY-MAP2201HT12	22 HP	61.5 kW	69 kW	3 (22.4 kW + 22.4 kW + 16 kW)	37
	MMY-MAP2211HT13	22 HP	61.5 kW	69 kW	2 (33.5 kW + 28 kW)	37
	MMY-MAP2401HT14	24 HP	68 kW	76.5 kW	3 (22.4 kW + 22.4 kW + 22.4 kW)	40
	MMY-MAP2411HT15	24 HP	68 kW	76.5 kW	2 (33.5 kW + 33.5 kW)	40
	MMY-MAP2601HT16	26 HP	73 kW	81.5 kW	3 (28 kW + 22.4 kW + 22.4 kW)	43
	MMY-MAP2801HT17	28 HP	78.5 kW	88 kW	3 (28 kW + 28 kW + 22.4 kW)	47
	MMY-MAP3001HT18	30 HP	84 kW	95 kW	3 (28 kW + 28 kW + 28 kW)	48
	MMY-MAP3201HT19	32 HP	90 kW	100 kW	4 (22.4 kW + 22.4 kW + 22.4 kW + 22.4 kW)	48
	MMY-MAP3211HT20	32 HP	90 kW	100 kW	3 (33.5 kW + 28 kW + 28 kW)	48
	MMY-MAP3401HT21	34 HP	96 kW	108 kW	4 (28 kW + 22.4 kW + 22.4 kW + 22.4 kW)	48
	MMY-MAP3411HT22	34 HP	96 kW	108 kW	3 (33.5 kW + 33.5 kW + 28 kW)	48
	MMY-MAP3601HT23	36 HP	101 kW	113 kW	4 (28 kW + 28 kW + 22.4 kW + 22.4 kW)	48
MMY-MAP3611HT24	36 HP	101 kW	113 kW	3 (33.5 kW + 33.5 kW + 33.5 kW)	48	
	MMY-MAP3801HT25	38 HP	106.5 kW	119.5 kW	4 (28 kW + 28 kW + 28 kW + 22.4 kW)	48
	MMY-MAP4001HT26	40 HP	112 kW	126.5 kW	4 (28 kW + 28 kW + 28 kW + 28 kW)	48
	MMY-MAP4201HT27	42 HP	118 kW	132 kW	4 (33.5 kW + 28 kW + 28 kW + 28 kW)	48
	MMY-MAP4401HT28	44 HP	123.5 kW	138 kW	4 (33.5 kW + 33.5 kW + 28 kW + 28 kW)	48
	MMY-MAP4601HT29	46 HP	130 kW	145 kW	4 (33.5 kW + 33.5 kW + 33.5 kW + 28 kW)	48
	MMY-MAP4801HT30	48 HP	135 kW	150 kW	4 (33.5 kW + 33.5 kW + 33.5 kW + 33.5 kW)	48

SHRM: Technical specifications **heat pump**

	Model name	Size	Cooling capacity	Heating capacity	Outdoor units in combination	Number of indoor units Max	Total cap.of connectable indoor units	
							Min	Max
	MMY-MAP0802FT8	8 HP	22.4 kW	25.0 kW	1	13	5.6 HP	10.8 HP
	MMY-MAP1002FT8	10 HP	28.0 kW	31.5 kW	1	16	7.0 HP	13.5 HP
	MMY-MAP1202FT8	12 HP*	33.5 kW	35.5 kW	1	16	8.4 HP	14.4 HP
	MMY-AP1602FT8	16 HP	45.0 kW	50.0 kW	2 (22.4 + 22.4 kW)	27	11.2 HP	21.6 HP
	MMY-AP1802FT8	18 HP	50.4 kW	56.5 kW	2 (22.4 + 28.0 kW)	30	21.0 HP	40.5 HP
	MMY-AP2002FT8	20 HP	56.0 kW	63.0 kW	2 (28.0 + 28.0 kW)	33	14.0 HP	27.0 HP
	MMY-AP2402FT8	24 HP	68.0 kW	76.5 kW	3 (22.4 + 22.4 + 22.4 kW)	40	16.8 HP	32.4 HP
	MMY-AP2602FT8	26 HP	73.0 kW	81.5 kW	3 (22.4 + 22.4 + 28.0 kW)	43	18.2 HP	35.1 HP
	MMY-AP2802FT8	28 HP	78.5 kW	88.0 kW	3 (22.4 + 28.0 + 28.0 kW)	47	19.6 HP	37.8 HP
	MMY-AP3002FT8	30 HP	84.0 kW	95.0 kW	3 (28.0 + 28.0 + 28.0 kW)	48	21.0 HP	40.5 HP

* The 12 HP unit is not modular.

Simultaneous cooling and heating from different indoor units to meet all operating environments



Flow selector control
(models Y1122FE/Y1802FE/Y2802FE)
The flow selector enables the occupant to independently set the indoor unit for cooling and heating. It is compatible with the R410A S-HRM VRF system. Its light-weight, compact dimensions make it easy to install.

- ┆ 5 AVAILABLE MODELS
- ┆ FRESH AIR VENTILATION AND HEAT RECOVERY UNIT
- ┆ COMPATIBLE WITH SPLIT AND VRF SYSTEMS



- ┆ High efficiency
- ┆ Wide range
- ┆ Electric heaters (optional)
- ┆ Control options

Air-to-Air Heat Exchangers compatible with VRF + split systems

Features

The Toshiba air-to-air heat exchanger ventilation units can be integrated into the air conditioning system. They use exhaust air to pre-condition the incoming air, in order to significantly reduce the cooling or heating load placed on the air conditioning system. Integrating these units into your heating and ventilation system will reduce the overall size of the required air conditioning system. A range of electric heaters is available together with controls that enable integration with both split and VRF indoor units.

Key features

5 available models, with an air flow range from 70 to 280 l/s (250 to 1000 m³/h).

Fresh air ventilation: increasingly required in internal rooms without window access.

Changes temperature and humidity of the entering fresh air.

Reclaims 20-50% of the energy lost by ventilation.

Improved energy efficiency, especially during the hot and cold seasons.

Recovery of up to 75% heat from the outgoing air.

Helps prevent sick building syndrome.

Technical specifications air-to-air heat exchanger

Outdoor unit		VN-250SE	VN-350SE	VN-500SE	VN-800SE	VN-1SAE
Air flow (h/l)	m ³ /h - l/s	250/170 - 70/48	350/280 - 98/78	500/370 - 140/104	800/650 - 224/182	1000/810 - 218/227
Temperature exchange efficiency (h/l)	%	75/77	75/77	75/77	75/77	75/77
Sound pressure level (h/l)	dB(A)					
Heat reclaim mode		27/22	30/26	32/36	37.5/34	37/33
Bypass mode		27.5/22.5	31/27	33/27.5	38/35	37.5/33.5
Operating range	°C	-10 - 40°C	-10 - 40°C	-10 - 40°C	-10 - 40°C	-10 - 40°C
Power input (h/l)	W					
Heat reclaim mode		114/90	137/128	188/166	329/327	391/359
Bypass mode		114/90	132/125	182/164	325/316	85/355
Enthalpy exchange efficiency (h/l)						
Heating	%	70/73	69/71	67/71	71/74	71/74
Cooling	%	63/66	66/69	62/67	65/68	65/68
Max. external static pressure (h/l)	Pa	80/37	65/42	70/38	110/70	55/35
Dimensions (H x W x D)	mm	270 x 599 x 882	270 x 804 x 882	270 x 904 x 962	388 x 884 x 1322	388 x 1134 x 1322
Weight	kg	29	37	43	71	83
Duct diameter	mm	150	150	200	250	250
Filtration efficiency grade (EU3)	%	82	82	82	82	82
Power supply	V-ph-Hz	220/240-1-50	220/240-1-50	220/240-1-50	220/240-1-50	220/240-1-50
Maximum relative humidity	%	85	85	85	85	85

With Toshiba everything is easier.

Toshiba's commitment to the development of technologically innovative products with improved performances

is complemented by the responsibility to supply more sophisticated and functional tools for the design,

installation and control of these systems.

Selection Software: everything at the click of a button.

Sophisticated system design software has been developed for the whole VRF range and is a useful and irreplaceable support tool for engineers, architects, installers and in general for anyone who wants to apply the innovative Toshiba solutions.

With this software, the user can put together a complete VRF system by simply clicking on the icons for the indoor units and the other connection components.

It is also possible to define in advance relevant parameters such as outside

and inside temperatures, fan speed, pipe system length and routing etc.

The software automatically manages all the parameters entered, and the actual system capacity for the conditions required can be quickly calculated and simulated during the design stage.

Using this software, the design of VRF systems is guaranteed for the project at the given conditions. The software constantly monitors possible design errors and warns the user, when it reaches the system limits.

Graphical representation of the required pipe connection system and pipe sizing

Specific details and data of the system selected: heating capacity, sensible and total cooling capacity, actual cooling capacity, additional refrigerant charge and pricing indications

Multiple system management as a single project

Export function to transfer the project report using standard Microsoft Word software



Diagnostic software

The correct installation of sophisticated systems such as the VRF system is one of the main aspects of controlling system operation.

Indoor unit addressing errors or lower coil heat exchange capacities can considerably limit system efficiency and increase the start-up time. In

order to optimise the controls during the start-up phase and guarantee perfect system commissioning, Toshiba is offering a diagnostic software: a valuable tool developed to ensure trouble-free installation and supervision of the complete installation.

From a single work-station the user is

connected to the system via a dedicated interface, and can gather all operating parameters relating to the refrigerant circuit and to the controls installed.

Toshiba offers a team of experts who use the diagnostic software for any VRF system type using refrigerant R410A.

Evaluation of the indoor unit performance.

Evaluation of the outdoor unit performance.

Verification of the correct working of the system.

Supervision of the refrigerant circuit and the related operating parameters:

- valve conditions,
 - refrigerant flow temperature,
 - detailed refrigerant cycle diagram, etc.
-

Memorisation and evaluation of the 1000 most recent events.

Projections of the monitored data for analyses.



Technology is nothing without control.

An innovative and complete range of integrated controls for application in the new Toshiba SMMS and SHRM systems ensures maximum comfort

and excellent performance by perfectly matching the different requirements.

The range is composed of three control types: **local, central and network controls.**

Compact design and minimised installation space

Simplified display using icons

Automatic network addressing

TCC-Link connections with non-polarised wiring

Local control systems.

The wired local controller RBC-AMT31E (or simplified model RBC-AS21E) can monitor a single unit or a group of a maximum of eight indoor units. It offers the following functions: start/stop, operating mode change, temperature and fan speed adjustment, timer, auto-diagnostics and fault code display. To define a timer scheduled for each

day of the week, the weekly timer RBC-EXW21E can be used with a single local or central controller. Its main functions are: weekly programming with different daily start/stop cycles, summer/winter programming, repeat, clear, day omit. To facilitate application flexibility, a range of wireless controls is also available

(TCB AX21E, TCB AX22CE, TCB AX21U (W/E)) to manage the main control functions.



Central control systems.

With the Toshiba central controller TCB-SC642TLE, up to 64 indoor units can be monitored individually.

The central Toshiba controllers are compact and user-friendly and can also be combined with local controls

and a weekly timer to guarantee optimised user comfort under any conditions.



Toshiba network solutions.

Toshiba offers precise control of the new VRF systems in both stand-alone applications for autonomous monitoring of the air conditioning system, and integrated into a central control scheme together with Super Digital Inverter and Digital Inverter split systems.

The innovative solutions of the Toshiba network guarantee maximised integration with other building systems such as elevators, fire protection systems, lighting etc. Open-network controls are specifically designed for Building Management

Systems.

LonWorks Interface

BACnet System

Windows™ gateway

Touch screen control saver

Toshiba has everything under control.



Wired Control RBC-AMT31E

The standard remote controller can control an individual indoor unit or a group of 8 indoor units. The remote control allows the operating parameters to be set for the indoor unit. It also allows faults to be displayed and unit configurations to be set up. The weekly timer can be fitted to this remote control. A remote on/off link (RBC-SMT1) can also be fitted.



Simplified Control RBC-AS21E

The simplified remote controller is connected in the same way as the standard remote controller, but offers reduced functionality. The remote controller does not have the lapse timer and the ability to set up the indoor unit. Unit fault codes are still displayed.



Central Controller TCB-SC642TLE

The central controller can control up to 64 indoor units individually. All their individual functions can be controlled. Malfunction checks are available for each indoor unit. This controller can also connect to the weekly timer and has volt-free inputs to enable the indoor units and indicate a fault. It has the ability to shut down all units in the event of a fire. Up to four controllers can be connected to the network.



IR Remote Control RBC-AX21

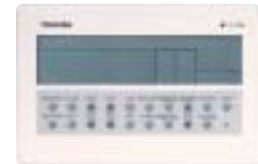
RBC-AX22U, RBC-AX-22C

The wireless remote controller can be used with the appropriate indoor units to give full control of the indoor units. Two remote controllers can be used on the same indoor unit. The sensor on the remote controller can be used to control the system. Fault codes are displayed.



Central Controller RBC-CR1-PE

The 16-way central controller allows 16 individual systems to be controlled from one location. The controller can control all the separate indoor unit functions and can be linked to the weekly timer.



Central Controller RBC-CR64-PE

The 64-way central controller allows 64 individual systems to be controlled from one location. The controller can control all the separate indoor unit functions and can be linked to the weekly timer. It also has inputs for external timers or fire alarm shutdowns. It is also possible to zone units.



Weekly Timer RBC-EXW21E

The weekly timer connects directly to the rear of a RBC-AM31 remote controller or a central remote controller. The timer allows the connected air conditioners to be enabled under a 7-day profile with up to three on/off periods per day.



Intelligent Server BMS-LSV2E

The intelligent server is the connection point between the Touch Screen and the air conditioner network. The relay interfaces are connected to the server.



LonWorks Gateway TCB-IFLN640TLE

The LonWorks Gateway uses all standard network variables to control the individual functions of the indoor units. The gateway can also be used with Interactive Intelligence.



Windows Package RBC-WP1-PE

The Windows™ package Interactive Intelligence allows all indoor units connected to the gateway to be set and monitored on the PC. All individual indoor units can be controlled. The program can be customised to allow implementation of site-specific graphics. It can perform time scheduling data logging and alarm handling.



Energy Monitoring Kit RBC-EM1-PE

The Energy Monitoring Kit is a power meter designed to connect to Interactive Intelligence. It provides the power supply for an outdoor unit. This information is then used to calculate the unit running costs, depending upon the demand from the unit.



Internet Kit RBC-IK1-PE

The Internet Kit allows Interactive Intelligence to be viewed over a network using Internet explorer for up to 5 users.



DI Module RBC-DI1

The DI1 module allows Interactive Intelligence to enable and monitor other equipment within the building. It can also be used to shut down the indoor units in the event of a fire or other conditions like a timed plant extend.



Fan Accessory RBC-SMF1-PE

The fan interface connects to the indoor unit. Its function is to control an external ventilation fan. The relay can be operated with the indoor unit or independently.



Fault Detection Panel RBC-FDP2-F-PE

The fault detection panel gives an output if any fault is present in the system. It also has preset modes for cooling, heating and automatic mode. This enables it to be used without a remote controller. Two FDP2s can be networked for a duty share application. The BMS version of the FDP (RBC-FDP-BMS-PE) is more advanced with dedicated configurable inputs. These can set the operating parameters of the indoor unit. They can be voltage or resistance inputs.



Touch Screen

BMS-TP0640ACE - up to 64 indoor units

BMS-TP0640TWE- up to 64 indoor units + electrical bill calculation

BMS-TP5120ACE - FCU

BMS-TP5120TWE- FCU + electrical bill calculation

The Touch Screen Controller is a graphical interface with the air conditioning system. It can control each of the individual indoor units and is capable of providing information from the indoor unit settings and malfunction check codes. It is also used to calculate the energy consumption for the selected indoor units. This controller runs time schedules for the indoor units and allows you to set up data logs.

The Touch Screen is connected to the air conditioner control network by several interfaces. These allow the various components to communicate on a common network that is connected to the Touch Screen. An input/output module can be connected for the control of external plant or interfacing with other systems.

The Touch Screen is configured specifically for your application. Additional interfacing components are required depending upon the number of indoor units. These will be supplied in the price at the design stage.

SMMS/SHRM, DI and SDI Control Options

Model Number	Reference	Description	Used with
RBC-AMT21E	Wired Remote Controller	To suit DI and SDI systems (excluding Flexi)	All indoor units
RBC-AS21E	Simplified Wired Remote Controller	As above but designed for hotel and domestic applications	All indoor units
TCB-SC642TLE	Central Remote Controller	Enables the control of up to 64 individual units	SMMS/SHRM, network adapter required for DI/SDI
RBC-FDP2-F-PE	Fault Display Module	Gives indication of a unit malfunction and relay output	All indoor units
RBC-EX21E	Weekly Timer	A 7 day timer complete with day omit	RBC-AMT31E/TCB-SC642TLE
RBC-SMT1	Timer Interface Lead	Timer interface lead suitable for all DI & SDI units	RBC-AMT31E/TCB-SC642TLE
RBC-SMF1	Fan Interface Kit	Enables the control of external fans	All indoor units
RBC-AX22CE	Infra-red Remote Kit	Wireless remote unit kit for Ceiling suspended units	All ceiling units
TCB-AX21E	Infra-red Remote Kit	Wireless remote unit kit for Ducted units	All ducted units
TCB-AX21U(W)-E	Infra-red Remote Kit	Designed as a replacement corner panel for Cassettes	All cassettes
TCB-TC21LE	Remote Sensor	Remote temperature sensor	All indoor units
TCB-PCNT20E	Network / Protocol Adaptor Kit	Enables the intergration with the AI network	All indoor units
TCB-IFCB-4E	On / Off Control Box	Enables remote location control of on / off	All indoor units
TCB-PCDM2E	Power Peak Cut Control Board	Power Peak Cut Control Board	SMMS/SHRM outdoor units
TCB-PCIN2E	Error Output Control Board	Error output control board	SMMS/SHRM outdoor units
TCB-PCMO2E	External Master On/Off control	External Master On/Off control board	SMMS/SHRM outdoor units
TCB-PCNT30TLE	Interface	1 : 1 model connection interface	Allows DI/SDI indoor units to be connected to TCC link network
RBC-CBK15FE	Flow Selector Box Extension	10 m Long extension cable for the flow selector boxes	SHRM flow selector
BMS-IFDD01E	Relay Interface	Digital I/O relay interface	Touch Screen
BMS-IFLSV1E	TCS -Net Relay	Relay for intergration to TCS-Net	Touch Screen
BMS-IFWH3E	Energy Monitoring Interface	Relay interface to allow energy monitoring	Touch Screen
BMS-LSV2E	Intelligent Server	Allows connection to Touch Screen	Touch Screen
BMS-STCC01E	Intelligent Server Software	Software package for the intelligent server	Touch Screen
BMS-TP0640ACE	Touch Screen Controller	Enables full control of up to 64 indoor units	SMMS/SHRM, network adapter required for DI/SDI
BMS-TP0640TWE	Touch Screen Controller	Enables full control of up to 64 indoor units with electric billing	SMMS/SHRM, network adapter required for DI/SDI
BMS-TP5120ACE	Touch Screen Controller	Enables full control of up to 512 indoor units	SMMS/SHRM, network adapter required for DI/SDI
BMS-TP5120TWE	Touch Screen Controller	Enables full control of up to 512 indoor units with electric billing	SMMS/SHRM, network adapter required for DI/SDI
RBC-CR1-PE	Central control remote unit	Central controller for AI network	All indoor units, with network adapter required
RBC-CR64-PE	Central control remote unit	Central controller for AI network	All indoor units, with network adapter required
TCB-IFLN640TLE	Lonworks® Gateway	Allows control of 64 indoor units from a Lonworks based BMS	SMMS/SHRM, network adapter required for DI/SDI
RBC-FDP2-BMS-PE	Control Interface	Allows monitoring and control of an indoor unit into an analogue BMS	All indoor units
RBC-IT3	Timer Interface	Allows a Daiseikai unit to be time controlled via 240 V signal	Daiseikai
RBC-IT4	Timer Interface	Allows all DI/SDI/SMMS/SHRM units to be time controlled via 240 V signal	All indoor units
RBC-WP1-PE	Windows Package	Windows control package	Used with Windows package
RBC-EM1-PE	Energy Kit	Energy monitoring kit (used with the Windows control package)	Used with Windows package
RBC-IK1	Internet Kit	Internet kit (used with the Windows control package)	Used with Windows package
RBC-DI1	Digital I/O Module	Digital input/output module (used with the Windows control package)	Used with Windows package

Other Accessories

Model Number	Reference	Description
RBC-ASH-A1LE	Wired Remote Controller	To suit the RAS ducted units
RB-A607DE	Zeolite filter	Daiseikai
RB-A608DE	Zeolite 3G filter	Daiseikai
RBC-TWP30E	Twin pipe kit	To enable twinning on the size 1100 condensing unit
RBC-TWP50E	Twin pipe kit	To enable twinning on the size 1400 condensing unit
TCB-DP10CE	Drain Pump Kit	Designed for the Flexi unit (ceiling mounted position)
TCB-DP22CE	Drain Pump Kit	Designed for the Ceiling suspended unit

Model Number	Size (max. indoor load)	Description
VRF - 3-pipe headers and Y-joints (SHRM only) - reducers and insulation included		
RBM-BY53FE	5 (6.3) hp	Y-joint, 3-pipe
RBM-BY103FE	10 (14.1) hp	Y-joint, 3-pipe
RBM-BY203FE	20 (25.1) hp	Y-joint, 3-pipe
RBM-BY303FE	30 (48) hp	Y-joint, 3-pipe
RBM-HY1043FE	10 (14.1) hp - 4-way	4-way header, 3-pipe
RBM-HY2043FE	20 (25.1) hp - 4-way	4-way header, 3-pipe
RBM-HY1083FE	10 (14.1) hp - 8-way	8-way header, 3-pipe
RBM-HY2083FE	20 (25.1) hp - 8-way	8-way header, 3-pipe
VRF - 2-pipe headers and Y-joints (SMMS and 2-pipe sections of SHRM)		
RBM-BY53E	5 (6.3) hp	Y-joint, 2-pipe
RBM-BY103E	10 (14.1) hp	Y-joint, 2-pipe
RBM-BY203E	20 (25.1) hp	Y-joint, 2-pipe
RBM-BY303E	30 (48) hp	Y-joint, 2-pipe
RBM-HY1043E	10 (14.1) hp - 4-way	4-way header, 2-pipe
RBM-HY2043E	20 (25.1) hp - 4-way	4-way header, 2-pipe
RBM-HY1083E	10 (14.1) hp - 8-way	8-way header, 2-pipe
RBM-HY2083E	20 (25.1) hp - 8-way	8-way header, 2-pipe
VRF accessories		
TCP-PCM02E ^{1 + 2}	External control CN 508	Low-noise operation (50 dBA) by external switch
TCP-PCM02E ^{1 + 2}	External control CN 509	Run outdoor fans by external switch (snow control)
TCP-PCM02E ^{1 + 2}	External control CN 510	Mode selection by external switch (SMMS)
TCP-PCM02E ^{1 + 2}	External control CN 512	Stop and start of all associated indoor units by pulse
TCP-PCDM02E ¹	Load shedding PCB	Limits compressor speed by external switches
TCP-PCIN2E	Output PCB from CN511	Continuous contacts made when either in system shutdown or when at least one indoor unit is operating
Dyna Doctor	Dyna Doctor	Monitoring and diagnostic software
TCB-DP31DE	High static duct (18 to 48)	Drain pump kit (600 mm lift from top of indoor unit)
TCB-DP32DE	High static duct (72 to 96)	Drain pump kit (600 mm lift from top of indoor unit)
TCB-DP22CE	Ceiling units	Drain pump kit (600 mm lift from top of indoor unit)
TCB-KP12CE ³	Ceiling unit (2 hp)	Elbow piping kit (required by drain pump kit)
TCB-KP22CE ³	Ceiling unit (3/4/5 hp)	Elbow piping kit (required by drain pump kit)

Note 1: Master outdoor unit only (if used)

Note 2: Function is dependent on which interface PCB socket is used (all four could be used if required)

Note 3: Elbow piping kits allow the refrigeration circuit connections to be routed to make space for pump